DELHI CHARTER TOWNSHIP
COMMITTEE OF THE WHOLE MEETING HELD ON AUGUST 16, 2016

The members of the Delhi Charter Township Committee of the Whole met on Tuesday, August 16, 2016 in the Multipurpose Room at the Community Services Center, 2074 Aurelius Road, Holt, MI. Supervisor Davis called the meeting to order at 6:30 p.m.

Members Present: Supervisor C.J. Davis, Clerk Evan Hope, Treasurer Roy Sweet, Trustees Jon Harmon, John Hayhoe, Megan Ketchum, DiAnne Warfield

Members Absent: None

BUSINESS

CURB-SIDE RECYCLING PROGRAM UPDATE - GRANGER

Tonya Olson, Granger, gave an update on the curb-side recycling program that is offered to Township residents who subscribe to Granger Trash Pickup. Curbside recycling participation by Granger customers in the Township rose from 8% to 47% since this free service began in June 2016.

DRAFT DELHI TOWNSHIP POLICY NO. 132 – LOCAL ROAD IMPROVEMENT PROCESS

The Board reviewed the Draft Delhi Township Policy No. 132 – Local Road Improvement Process (ATTACHMENT I).

Tracy Miller, Director of Community Development, stated that the use of the special assessment district process, a process imposed by State law for neighborhood road improvements at the request of the residents, is a difficult process for the Township to administer. The process and associated costs can be very unpredictable.

Ms. Miller stated that the Township is at a point where a decision has to be made as to whether the Township will opt-out of road improvements, turning them completely over to the ICRD, or to facilitate the improvements themselves.

Ms. Miller stated that the ICRD has legal jurisdiction over the roads in Ingham County; however, there is a lack of public funding in addition to the lack of ICRD staffing for the repair or replacement of local roads. As a result, neighborhood roads will continue to deteriorate under the jurisdiction of the ICRD.

Ms. Miller stated that she drafted a policy that would establish a process for Delhi Township to facilitate local road improvements. Ms. Miller further stated that she would like to propose selecting one consulting engineer, as opposed to multiple engineers, for a selected time period to administer the projects. Multiple projects could be packaged into a single bond, reducing the cost associated with bond issuance for each special assessment district.

Trustee Harmon, stated that he would prefer to opt-out of local road improvements completely; however, if the Board decides to approve a road improvement policy he would propose making the process stricter so that residents who decided to start the process were serious about the improvement. Trustee Harmon further stated that he would like to see stricter deadlines so the process is done in April. Trustee Harmon stated that he would also recommend that each

resident is approached or was attempted to be approached in regard to the improvement by the petitioner. Trustee Harmon stated that he would like to see only one road improvement done per year; on a first come first serve basis; proving that the residents are serious about the improvement in addition to eliminating the confusion of multiple projects taking place at one time.

Trustee Ketchum stated that she understands Trustee Harmon's comment in regard to one improvement per year; however she does not agree with it. Trustee Warfield concurred with Trustee Ketchum.

Clerk Hope stated that Section V, 1. Letter of Intent of the draft policy is a good step in proving that residents are serious about the improvement. Clerk Hope stated that he would not want to limit improvements to one per year.

Trustee Hayhoe asked if the Township would be liable for the initial engineering cost if the project did not move forward. Ms. Miller answered in the affirmative. Trustee Hayhoe further stated that he agrees with Trustee Harmon in the sense that the Township should opt-out of road improvements as they do fall under the jurisdiction of the ICRD; however, it is a helpful service for the Township to provide to its residents.

Trustee Harmon questioned the need to hire an on-staff engineer. Ms. Miller stated that if she has a consistent process to follow she does not believe the improvements will be difficult to administer. However, if it turns out that there were a multitude of projects done each year an on-staff engineer could be a possibility. Trustee Harmon stated that possibly a project coordinator may be helpful to eliminate some costs, better facilitate the process and alleviate some undue work on the staff.

Supervisor Davis stated that he would like to see the option for a 15 year special assessment. Ms. Miller stated that you are limited to a 10 year assessment when bonding a special assessment district.

Trustee Warfield commented that this policy would help with the Township's efficiency on the road improvement process; Ms. Miller confirmed. Ms. Miller further stated that she felt it very important for the Township to communicate their role; that the improvement is not being imposed on the subdivision but rather an option of the neighborhood.

Discussion continued on whether the Township should facilitate the road repairs or opt-out of the process all together. Supervisor Davis suggested continuing this discussion at the September 6, 2016 Committee meeting.

COMMUNITY DEVELOPMENT DEPARTMENT – JULY ACTIVITY REPORT

The Board reviewed the July Community Development Department Activity Report (ATTACHMENT II).

INGHAM COUNTY SHERIFF'S OFFICE/DELHI DIVISION – JULY ACTIVITY REPORT

The Board reviewed the July Ingham County Sheriff's Office/Delhi Division Activity Report (ATTACHMENT III).

FIRE DEPARTMENT – JULY ACTIVITY REPORT

The Board reviewed the July Fire Department Activity Report (ATTACHMENT IV).

Fire Chief Brian Ball explained how the Fire Department determines the placing of a burn ban in the Township.

PUBLIC COMMENT

Kurt Romig, 4168 Watson, commented on the road improvement process and burn bans in the Township.

ADJOURNMENT

Meeting adjourned at 7:30 p.m.

Date: September 6, 2016

Evan Hope, Township Clerk

Date: September 6, 2016

C.J. Davis, Supervisor

/af

POLICY NO. 132
Adopted November____, 2016

DELHI TOWNSHIP POLICY MANUAL

I. SUBJECT

LOCAL ROAD IMPROVEMENT PROCESS

II. DEFINITIONS & ACRONYMS

Benefitting Property Owner(s):	The legal owners of the property as shown on the current property tax record card. If there is more than one owner name listed, all listed property owners must sign any LOI or petition.
Local Connector Road:	A road that is a Local Road, but is also used by the others in the Township to gain access to community resources, public facilities or similar, but is not eligible for Federal or State funding. Pine Tree Road is an example of this type of road.
Local Road:	A road that is primarily used to gain access to property or properties that have frontage on it.
Neighborhood:	Includes all phases within a platted subdivision, all phases within a condominium development or a generally recognized area that is considered to be a cohesive community.
Neighborhood Road:	The public roads within the Neighborhood, as defined above.
Project Engineer:	The engineer under contract to the Township for work pursuant to this policy.
Road Improvement Area:	The area in which road improvements will be undertaken. The same as the SAD area.
DCD	Director of Community Development
ICRD	Ingham County Road Department
LOI	Letter of Interest
SAD	Special Assessment District pursuant to Act 188 of 1954

III. PURPOSE

Across Michigan there is a recognized lack of public funding available for the repair, replacement or improvement of local roads. Specifically relevant to this policy are those public roads located in subdivisions, site condominium developments or similar neighborhoods which are under the legal jurisdiction of the ICRD. As a result of the lack of funding at the State and County level, the cost associated with improving these Neighborhood Roads falls to the individual property owners whom benefit from the same. There is no funding made available to the Township specifically for improvements to Neighborhood Roads. The limited amount of betterment funds available through Ingham County are used by the Township to improve local connector roads, which are used by the larger population within the community.

The lack of funding is certainly undesirable. However, the fact remains that Neighborhood Roads will continue to deteriorate. This policy is intended to give property owners an option for improving their own Neighborhood Roads. Specifically, this policy establishes the process by which Delhi Township will facilitate the creation of Special Assessment Districts (SAD) pursuant to Act 188 of 1954, as amended, to fund the improvement of Neighborhood Roads when requested by Benefitting Property Owners representing more than 50% of the front footage within the Road Improvement Area.

This policy formalizes the opportunity for property owners to improve their roads and spread the cost of doing so over a maximum of ten (10) years. The Township will typically need to issue bonds to pay the costs associated with the improvement. The Township will coordinate design engineering, bidding, construction engineering and the physical construction of improvements on behalf of the ICRD. In order for this work to be practical and feasible, this policy creates the process required to facilitate the Neighborhood Road Improvement process. This process has been discussed with the ICRD and developed with agreement of their staff. It is necessary to recognize that this cooperative effort could be revoked by the ICRD at anytime, which could result in the immediate termination of this program.

IV. SCOPE

This policy applies to the improvement of all public Neighborhood Roads under the jurisdiction of the ICRD, which are typically located in subdivisions, site condominium developments or other similar Neighborhoods.

V. POLICY

Timeline and Required Steps to be completed:

1. Letter of Intent (LOI)
   By no later than February 1st of each year, a Neighborhood interested in pursuing the establishment of a Road Improvement Area shall submit to the DCD a LOI.

The LOI shall contain the names and signatures of at least 10% of the total Benefitting Property Owners and shall be on the form provided herein as Exhibit A.

Prior to the February 1st deadline, and obtaining signatures on the LOI, interested property owner(s) shall contact the DCD and obtain a map of the Neighborhood which will constitute the Road Improvement Area.

The following criteria shall be used by the DCD in determining the road improvement area:

i. The entire subdivision, condominium or Neighborhood will be included in the road improvement area. This will include all phases of a development and/or the logical inclusion of an area as a generally recognized Neighborhood.
ii. Individual roads, subdivision phases or similar shall not be addressed independently within a Neighborhood. All public roads within the Neighborhood will be addressed as a part of a Road Improvement Area.

    a. This is not permitted because doing so causes difficulties in the future when subsequent road improvements are required.

After the February 1st LOI deadline, the DCD shall verify that the LOI is valid and contains the signatures of at least 10% of the Benefitting Property Owners. All Neighborhoods that have submitted a valid LOI will advance to the next step in this process.

2. Initial Cost Estimates

   After receipt of a valid LOI, the Township will have an engineering services company, selected solely at the discretion of the Township Board; develop cost estimates for the road improvement project. The initial estimates will be based on current or expected pricing and estimated quantities. Initial estimates will include a contingency that is anticipated to be sufficient to cover any unexpected costs that may arise during construction. It is difficult to anticipate every conceivable condition that could be encountered during a road construction project. However, every attempt will be made to identify issues during this step.

   The Project Engineer will present one (1) cost estimate based on the type of construction/improvement necessary to achieve the following goals:

   i. Bring the condition of all roads within the Neighborhood up to the same quality at the conclusion of construction.
   ii. Ensure that the useful life of the roads, after construction, will be at least fifteen (15) years.

3. Neighborhood Information Meeting

   During the month of April, the DCD and the Project Engineer shall hold one information meeting for Benefitting Property Owners of the proposed Road Improvement Area, as follows:

   i. The meeting will be held on a date selected by the DCD.
   ii. The meeting will be from 6 PM to 7 PM.
   iii. Notice of the meeting will be mailed at least fourteen (14) days in advance to each property owner within the proposed Road Improvement Area.
   iv. Only one (1) information meeting will be held for each Neighborhood.
   v. At the meeting, information regarding the project and the estimated costs will be disseminated to those in attendance. A handout will be generated by the DCD for this purpose.
   vi. After the information meeting, a copy of the handout will be mailed to each property owner within the proposed Road Improvement Area.
   vii. The DCD will be reasonably available to respond to questions from property owners.

4. Petition Circulation & Submission Requirements

   A. After the public information meeting, property owners within the proposed Road Improvement Area may circulate petitions. The Township Board's intent regarding this process is expressly stated, as follows:

      The improvement of Neighborhood Roads using this Local Road Improvement Process policy shall be considered a grassroots effort undertaken by the property owners of the proposed Road Improvement Area. The Board is providing this policy for the convenience of those property owners and so that they have an opportunity to cause roads within their Neighborhood to be improved. The Board is offering this as a service to owners, at the owner's option, and is not imposing road improvements on any Neighborhood. However, if a valid petition for road improvements is received by the Board, the project will go forward.

   B. All petitions must be submitted to the DCD by no later than 5 PM on June 1st of each year. To be valid, a petition(s) must contain the signatures of more than 50% of the front road footage by Benefiting Property Owners within the proposed Road Improvement Area. Petition signatures and form will be validated by the Township.

5. Need & Necessity

   During the month of June, the Township Board will hold the required public hearing regarding "need and necessity" pursuant to Public Act 188 of 1954. If a

valid petition has been received, as described in section 5(b) above, the Board shall find that the project is necessary and needed and the Road Improvement Area project will move forward.

6. Final Project Design & Bidding

   Approximately July through September 1st, the DCD will work with the Project Engineer to finalize the road improvement design and plans.

   Bidding documents will be made available to pre-qualified contractors in the beginning of September. Pre-qualified contractors will be those that were previously vetted by the Township, Project Engineer and the ICRD. The DCD will work with the Project Engineer and ICRD to develop this pool.

   By no later than November 30th of each year, prospective contractors will submit bids to the Project Engineer. The bids will be evaluated by the Project Engineer and the most responsive bidder will be selected by the Township to perform the road improvement work.

7. Establishment of SAD Roll

   In December of each year, the Township Board will adopt a resolution scheduling the required public hearing regarding the establishment of the SAD roll, pursuant to Public Act 188 of 1954. In most instances, the public hearing will be at the second December Board meeting, but may occur later if necessary.

   The SAD roll shall pass all costs associated with design, engineering, construction and bonding onto the Benefitting Property Owners. The roll will be adjusted to reflect the actual costs after project completion.

8. Bonding Process

   The Township will, in most instances, issue bonds to pay for the road improvement and all other associated costs. The DCD and other township staff will coordinate with all necessary parties, including the Township Board, to facilitate the issuance of bonds for this purpose.

   After the adoption of the SAD Roll, likely at the second December Board meeting, the Township Board should also adopt the required notice regarding the intent to issue bonds.

   After the 35-day appeal period for the SAD has ended, the bonds can be issued. This process should, in most instances, be finalized by the end of March.

9. Construction

   In April, a “notice to proceed” will be issued to the selected contractor. Construction will occur sometime between the months of April and October. It is

important to note that actual construction will not occur until the year following the year in which the LOI was submitted.

10. Project Completion & Closeout
    As soon after construction as feasible the project will be closed out. This process will include payment by the Township of any costs associated with the Road Improvement Project in excess of the SAD, or the adjustment of the roll to reflect any reduction in cost in excess of 5%.

VI. Timeline & Steps Summary

Annual Local Road Improvement Process	
Estimated Time Frame:	Task:
Year 1	
Feb 1st	Neighborhood submits a "letter of interest" that is signed by at least 10% of the benefitting properties. • Must include language that makes it clear that the property owners will pay 100% of the costs of the project • Township to provide the form and instructions
Feb 2nd – April 1	Project Engineer creates cost estimates for projects • ICRD must approve the scope of work
April	Hold Neighborhood information meeting
June 1st	Deadline for petition submission
June	Board holds public hearing, establishes need & necessity, requests estimates and plans be prepared and posts Notices
July – Sept 1	Project Engineer prepares finalized project design
Beginning of Sept	Bids go out to contractors
End of November	Bids are received
Beginning of December meeting	Board receives the estimates and passes 4th resolution setting the public hearing on the roll (apportionment) and posts Notices
Last December Board Meeting	Board holds public hearing on the roll and adopts the roll Board adopts the "notice to issue bonds" • Bond amount must include construction cost, plus reimbursement for any costs incurred during design, construction engineering costs and township costs – including cost to issue bonds. • 35 day appeal period for roll begins

Year 2	
February	Bond sale
April	Notice to Proceed issued - Construction starts Bond funds available by this time
Spring – Fall	Construction – Project Engineer will oversee project
Fall	Project close out and ICRD acceptance of road

VII. Revisions

The Township may, from time to time, revise this policy. The policy may also be repealed by the Township Board.

Exhibit A: Letter of Intent (LOI)

Letter of Intent Regarding the Establishment of a
Neighborhood Road Improvement Area

We, the undersigned property owners, representing at least 10% of the benefiting properties within the _____ Neighborhood, request that the Township begin the process of preparing preliminary cost estimates for the improvement of all roads within the Neighborhood.

It is expressly understood that, should a Neighborhood Road Improvement Area be established and road improvements be undertaken, the property owners within the Neighborhood will bear 100% of the costs associated with the same. We understand that this will be accomplished via the creation of a Special Assessment District pursuant to Act 188 of 1954. It is understood that this Letter of Intent is only the first step and is used by the Township to ascertain the overall level of interest within the Neighborhood.

WARNING
A person who knowingly signs this petition more than once, signs a name other than his or her own, or sets opposite his or her signature on a petition, a date other than the actual date the signature was affixed, is violation the provisions of Michigan law.

Printed Name of **ALL** Property Owners:	Signature of All Property Owners:	Address:	E-mail:

CERTIFICATE OF CIRCULATOR

The undersigned circulator of the above Letter of Intent asserts that he or she is qualified to circulate same and that each signature on the petition was signed in his or her presence; and that, to his or her best knowledge and belief, each signature is the genuine signature of the person purporting to sign the petition, the person signing the petition was at the time of signing a record owner of real property in the area affected by the proposed improvements and was qualified to sign the petition.

Circulator – Do not sign or date certificate until after circulating the petition.

_____

Printed Name and Signature of Circulator (Date)

_____

Complete residence address

_____

Zip Code Township

Warning – A circulator knowingly making a false statement in the above certificate, a person not a circulator who signs as a circulator or a person who signs a name other than his/her own as circulator is guilty of a misdemeanor.

DELHI CHARTER TOWNSHIP
Department of Community Development

July 2016 Activity Report

New Permits:

Category	DDA Area Permits	Total Permits	Total Inspections
Building	13	40	117
Electrical	12	66	71
Mechanical	14	63	121
Plumbing	3	11	84
Totals	42	180	393

Soil Erosion Permits & APA Projects:

Category	DDA Area Permits	Total Permits/New Projects	Total Inspections
Soil Erosion	4	8	60
Soil Erosion Waivers	0	5	0
APA Projects	0	0	0
Totals	4	13	60

New Code Enforcement Cases:

Category	DDA Area Cases	Total Cases
Building Maintenance	0	0
Fence Violation	0	1
Junk & Debris	7	11
Junk Vehicles	3	11
Miscellaneous	6	11
Noxious Weeds	14	31
Sidewalk Snow	0	0
Sign	1	1
Site Plan	0	0
Yard Parking	0	0
Improper Zoning Use	2	2
Totals	33	68
Total # of Inspections	138	

Rental Program Information:

Number of New Registered Rental Properties	13
Number of Rental Re-inspections	54
Number of Rental Investigations	3
Number of Rental Cycle Inspections	5

Civil Infraction/Abatement Information:

Abatement/Clean-ups	18
Abatement/Clean-up Fees Issued (Year to date)	$9,323.67
Civil Infractions Issued	10
Civil Infraction Fines Issued (Year to date)	$3,350.00

DELHI CHARTER TOWNSHIP

Building Permit Details

Permit No.	Property Address	Permit Applicant	Work Description	Estimated Cost	Permit Fee	DDA?	# of Permits
COMMERCIAL ALTERATION							
PB16-359	2380 CEDAR ST 206	NNI CONSTRUCTION	*TENANT BUILD OUT FOR PLANET FITNESS*	$508,750	*$3,919.30*	Y	
PB16-377	2556 ALAMO DRIVE	EYDE, LOUIS J & GEORGE F	*MINOR INTERIOR REMODEL TO #20 FOR FIRST CHOICE SERVICES*	$6,902	*$66.00*		
COMMERCIAL ALTERATION				$515,652	*$3,985.30*		Total: **2**
COMMERCIAL MISCELLANEOUS							
PB16-360	2560 EATON RAPIDS ROAD	LIFE CHRISTIAN CHURCH	*PUTTING UP A 70' X 50' TENT JULY 13 - JULY 20*	$0	*$60.00*		
PB16-380	3201 PINE TREE ROAD	GUNTHORPE PLBG & HTG INC	*ADD TEMPORARY WALLS FOR BATHROOM*	$800	*$60.00*		
COMMERCIAL MISCELLANEOUS				$800	*$120.00*		Total: **2**
DECK							
PB16-356	1562 TAGALAK TRAIL	MATTHEWS, AARON M	*CONSTRUCTING TWO DECKS - UPPER (12' X 12') & LOWER (16' X 20')*	$2,500	*$100.00*		
PB16-379	1881 SUNSHINE PATH	PATRICK, THOMAS E & LILLIAN	*CONSTRUCT A 16' X 20' DECK*	$0	*$100.00*		
PB16-382	1679 GUNN ROAD	J'S BUILDING RENOVATIONS	*ADD 9' X 6' TO EXISTING DECK*	$1,221	*$100.00*		
PB16-386	3894 CALYPSO LANE	POWERS, SHERRI	*CONSTRUCTING A 16' X 34' DECK ON RESIDENCE*	$5,984	*$100.00*	Y	
PB16-390	2530 WINTERBERRY STREET	K FEDEWA BUILDERS, INC	*CONSTRUCT A 12' X 12' DECK (NO STAIRS)*	$1,100	*$100.00*		
PB16-392	2567 SANIBEL HOLLOW	OVERMAN, JOHN F & SAMANTHA MARIE	*CONSTRUCT A 16' X 16' DECK*	$2,816	*$100.00*		
PB16-393	2451 SHARPTAIL LANE	WYANT, MICHAEL C & MELISSA A	*CONSTRUCT A DECK (12 X 30) HALFWAY AROUND A 24' ABOVE GROUND POOL*	$3,916	*$100.00*	Y	
DECK				$17,537	*$700.00*		Total: **7**
DEMOLITION							
PB16-372	1869 PHILLIPS AVENUE	BARNHART & SONS	*DEMOLITION OF POOL (18' X 36')*	$0	*$60.00*		

DELHI CHARTER TOWNSHIP

Building Permit Details

Permit No.	Property Address	Permit Applicant	Work Description	Estimated Cost	Permit Fee	DDA?	# of Permits
DEMOLITION				$0	*$60.00*		Total: **1**
FENCE							
PB16-362	2444 PINE TREE ROAD	JENSEN, ROBERT	*INSTALL A 6' SOLID VINYL FENCE IN REAR YARD*	$0	*$60.00*		
PB16-367	4326 BOND AVENUE	COLE, JOHN & ALLISON	*INSTALLING 5' CHAIN LINK FENCE TO ENCLOSE REAR YARD*	$0	*$60.00*	Y	
PB16-368	1829 NIGHTINGALE DRIVE	HEBDEN, ELLIOTT V	*INSTALLING 6' PRIVACY FENCE IN REAR YARD*	$0	*$60.00*		
PB16-370	1932 PERSIMMON PATH	RANCH LIFE PLASTICS	*INSTALL A 6' VINYL FENCE ALONG THE REAR PROPERTY LINE*	$0	*$60.00*		
PB16-371	4211 WOODWORTH AVENUE	STEWART, TRACY	*INSTALL A 6 FT SOLID FENCE IN THE REAR YARD*	$0	*$60.00*	Y	
PB16-381	1835 MERGANSER DRIVE	MCNAMARA, BRANDON & RAINA	*INSTALL A 4' SPLIT RAIL FENCE*	$0	*$60.00*		
FENCE				$0	*$360.00*		Total: **6**
RESIDENTIAL ADDITION							
PB16-385	1575 ARCHWOOD DRIVE	PERDUE, DONALD L	*ADD A 16' X 10' 4 SEASONS ROOM TO THE BACK OF THE RESIDENCE*	$18,000	*$126.00*		
RESIDENTIAL ADDITION				$18,000	*$126.00*		Total: **1**
RESIDENTIAL ALTERATION							
PB16-358	3641 CREOLE WAY	ORTELL, STEVEN & KELLY	*CONSTRUCTING TWO BEDROOMS IN THE BASEMENT*	$9,000	*$63.00*		
PB16-363	2435 SHARPTAIL LANE	BOTTOMS UP BASEMENT FINISHING	*FINISH BASEMENT*	$14,400	*$105.00*	Y	
RESIDENTIAL ALTERATION				$23,400	*$168.00*		Total: **2**
RESIDENTIAL DWELLING/GARAGE							
PB16-361	4367 RINGNECK LANE	MAYBERRY HOMES, INC.	*CONSTRUCT A 1,892 SQ FT SINGLE FAMILY DWELLING*	$212,440	*$1,491.00*	Y	
PB16-374	1035 GROVENBURG ROAD	MODERN HOMES, INC.	*CONSTRUCT A 2,700 SQ FT SINGLE FAMILY DWELLING*				

DELHI CHARTER TOWNSHIP

Building Permit Details

Permit No.	Property Address	Permit Applicant	Work Description	Estimated Cost	Permit Fee	DDA?	# of Permits
			DWELLING				
PB16-378	1138 MATTHAEI COURT	ALLEN EDWIN HOMES	2,925 SQ FT SINGLE FAMILY DWELLING	$280,497	*$1,967.00*		
PB16-389	1124 CRANBROOK LANE	ALLEN EDWIN HOMES	*CONSTRUCT A 2,368 SQ FT SINGLE FAMILY DWELLING*	$267,316	*$1,876.00*	Y	
RESIDENTIAL DWELLING/GARAGE				$994,855	*$6,979.00*		Total: **4**
RESIDENTIAL MISCELLANEOUS							
PB16-364	4189 SANTA CLARA DRIVE	SIMON ROOFING	*TEAR OFF AND RE-ROOF EXISTING DWELLING*	$8,000	*$60.00*		
PB16-365	1823 PAGEANT WAY	SIMON ROOFING	*TEAR OFF AND RE-ROOF EXISTING DWELLING*	$8,000	*$60.00*		
PB16-369	4046 DELL ROAD	HANSON'S WINDOW AND CONSTRUCTION IN	*TEAR OFF AND RE-ROOF EXISTING DWELLING*	$8,000	*$60.00*	N	
PB16-373	3694 OBSERVATORY LANE	SHERRIFF-GOSLIN CO	*TEAR OFF AND RE-ROOF*	$8,000	*$60.00*		
PB16-375	4395 WILLESDON AVENUE	RESIO, ROBERTO T & CONCEPCION	*TEAR OFF AND RE-ROOF*	$8,000	*$60.00*		
PB16-376	1914 MAPLE STREET	BRUNETTE EXTERIORS INC	*TEAR OFF AND RE-ROOF EXISTING DWELLING*	$8,000	*$60.00*	N	
PB16-383	4665 DON STREET	HOME PRO ROOFING	*TEAR OFF AND RE-ROOF EXISTING DWELLING*	$8,000	*$60.00*		
PB16-384	3601 ORCHID LANE	BRUNETTE EXTERIORS INC	*TEAR OFF AND RE-ROOF EXISTING DWELLING*	$8,000	*$60.00*	N	
PB16-387	899 GROVENBURG ROAD	SIMON ROOFING	*TEAR OFF AND RE-ROOF EXISTING DWELLING*	$8,000	*$60.00*		
PB16-388	2349 AURELIUS ROAD	MICHIGAN BUILDERS	*INSULATE & DRYWALL IN BEDROOM*	$3,000	*$60.00*	Y	
PB16-391	2271 AUDEAN STREET	MERRELL ROOFING	*TEAR OFF AND RE-ROOF EXISTING DWELLING*	$8,000	*$60.00*		
RESIDENTIAL MISCELLANEOUS				$83,000	*$660.00*		Total: **11**

DELHI CHARTER TOWNSHIP

Building Permit Details

Permit No.	Property Address	Permit Applicant	Work Description	Estimated Cost	Permit Fee	DDA?	# of Permits
RESIDENTIAL STORAGE/GARAGE							
PB16-366	2145 CENTER STREET	CORNELIUS, KEVIN	*CONSTRUCTING A 36 x 40 POLE BARN*	$27,000	*$150.00*	Y	
RESIDENTIAL STORAGE/GARAGE				$27,000	*$150.00*	Total: **1**	
SIGN							
PS16-021	4625 WILLOUGHBY ROAD STE 4	TARLETON, ROB	*INSTALL A 20.25 SQ FT WALL SIGN*	$0	*$81.00*	Y	
PS16-022	4265 FIVE OAKS DRIVE	DOUGLAS SIGNS	*GROUND SIGN FACE CHANGE - 26.25 SQ FT*	$0	*$87.00*	Y	
PS16-023	4265 FIVE OAKS DRIVE	DOUGLAS SIGNS	*INSTALL A 32 SQ FT WALL SIGN*	$0	*$92.00*	Y	
SIGN				$0	*$260.00*	Total: **3**	
			Totals:	**$1,680,244**	**$13,568.30**		**40**

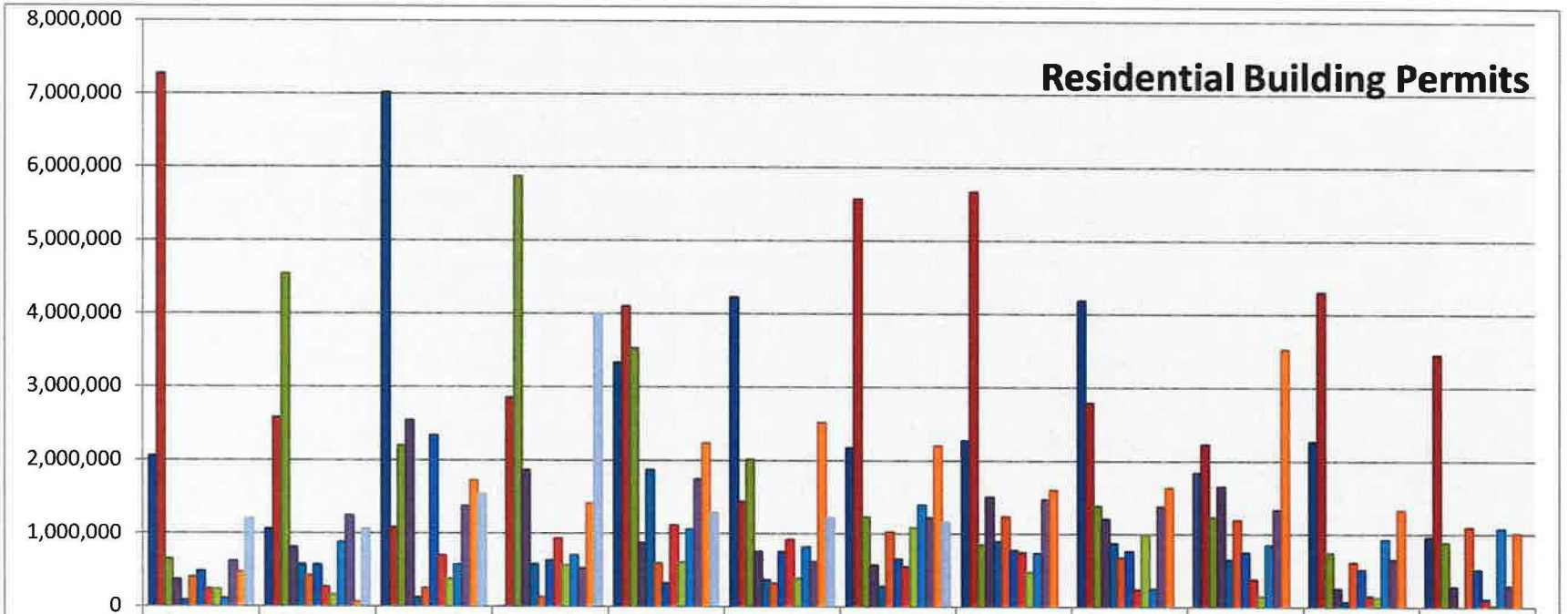
Permit.DateIssued Between 7/1/2016 12:00:00 AM AND 7/31/2016 11:59:59 PM
AND
Permit.PermitType = Building OR
Permit.PermitType = Sign

SUMMARY OF CONSTRUCTION VALUES

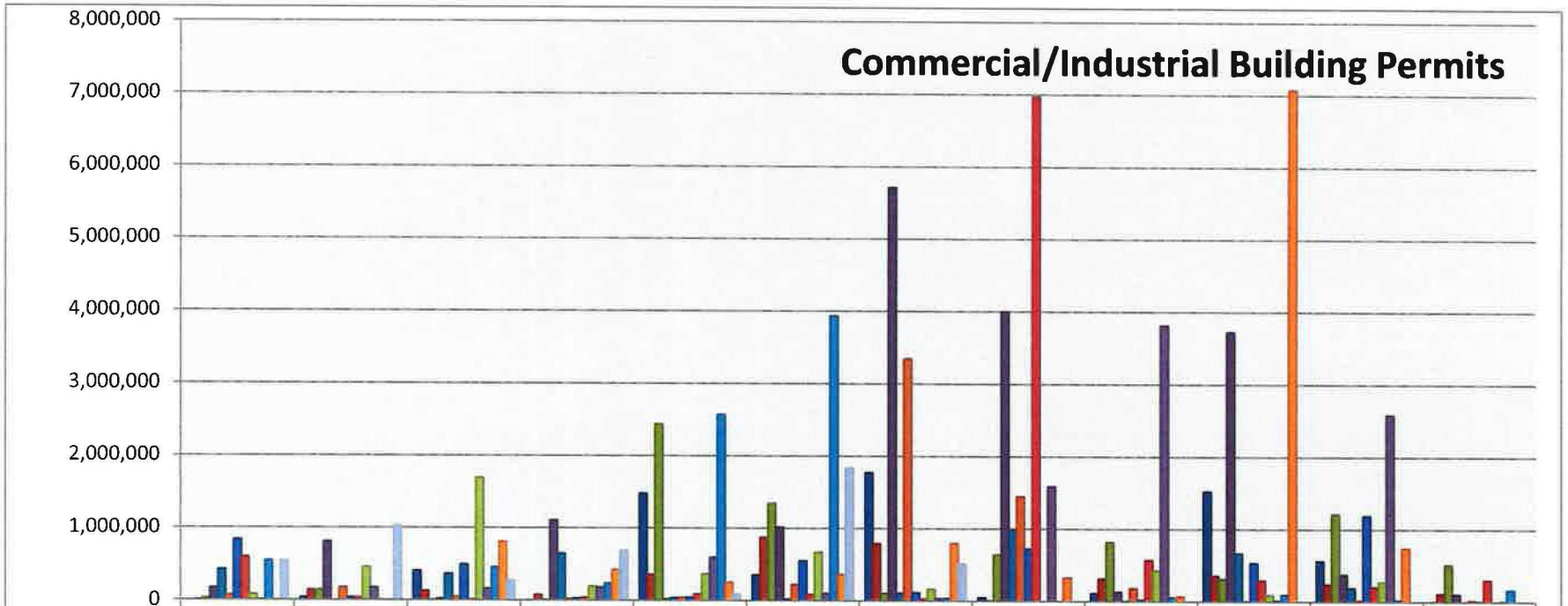
Year	2010		2011		2012		2013		2014		2015	
Type	Total Permits	Total Value	Total Permits	Total Value	Total Permits	Total Value	Total Permits	Total Value	Total Permits	Total Value	Total Permits	Total Value
Commercial Addition, Alteration & Commercial Misc	27	$ 1,665,320.00	37	$1,029,347.00	38	$3,549,664.00	37	$3,970,461.00	29	$1,475,494.00	40	$ 2,009,133.00
Commercial New Structures	3	$ 1,712,188.00	5	$3,951,772.00	4	$906,716.00	1	$396,560.00	3	$164,680.00	7	$ 1,401,179.00
Commercial Sub-Totals	**30**	**$ 3,377,508.00**	**42**	**$ 4,981,119.00**	**42**	**$ 4,456,380.00**	**38**	**$4,367,021.00**	**32**	**$1,640,174.00**	**47**	**$ 3,410,312.00**
Deck, Fence, Pool, Residential Misc, Residential Storage/Garage, Demolition, Sign, Sign Business, Sign Grand Openings	372	$ 2,103,596.00	233	$ 1,262,153.00	243	$ 1,097,292.00	305	$ 1,433,877.00	295	$ 1,270,494.00	332	$ 1,480,872.00
Pre-Manufactured Home, Residential Condo w/Garage, Residential Dwelling, Residential Dwelling/Garage	37	$ 5,998,675.00	28	$ 3,849,279.00	25	$ 3,065,174.00	37	$ 7,191,454.00	59	$ 10,028,527.00	168	$ 16,725,746.00
Residential Addition, Residential Alteration	51	$ 1,105,827.00	46	$ 1,021,182.00	48	$ 1,055,333.00	46	$ 774,740.00	47	$ 984,157.00	50	$ 1,031,243.00
Residential Multiple Family & Apartment Units	2	$ 1,237,795.00	3	$ 3,694,734.00	0	$ -	3	$ 4,098,671.00	5	$ 6,512,129.00	9	$ 6,982,113.00
Residential Sub-Totals	**462**	**$ 10,445,893.00**	**310**	**$ 9,827,348.00**	**316**	**$ 5,217,799.00**	**391**	**$ 13,498,742.00**	**406**	**$ 18,795,307.00**	**559**	**$ 26,219,974.00**

2016 Year to date Construction Values:

Commercial / Industrial:	***$***	***2,352,765.00***
Residential:	***$***	***9,222,303.00***
Total Single Family Homes:		***4***



	January	February	March	April	May	June	July	August	September	October	November	December
2004	2,057,874	1,061,075	7,018,665	2,409	3,332,125	4,230,009	2,171,175	2,269,297	4,189,316	1,838,373	2,261,219	958,547
2005	7,272,620	2,580,999	1,080,570	2,848,833	4,100,194	1,438,787	5,569,135	5,666,330	2,785,505	2,223,344	4,305,671	3,448,286
2006	653,107	4,544,462	2,200,224	5,876,530	3,533,055	2,016,011	1,231,992	852,573	1,387,170	1,230,662	745,550	881,456
2007	366,901	807,589	2,542,647	1,865,777	870,683	755,569	571,666	1,504,157	1,209,407	1,651,929	251,475	274,952
2008	84,176	576,220	127,628	579,796	1,872,379	368,071	279,260	896,898	873,804	652,707	73,000	0
2009	401,319	425,655	252,651	130,696	589,254	319,608	1,028,683	1,240,799	674,200	1,194,808	611,112	1,094,312
2010	484,464	571,973	2,339,559	633,374	323,160	755,450	656,705	777,918	768,831	750,411	513,137	509,014
2011	241,340	269,142	698,082	931,543	1,110,943	915,267	547,390	748,734	238,720	374,395	148,666	107,068
2012	236,170	162,820	379,179	566,030	604,628	388,176	1,084,941	477,119	991,532	149,082	134,136	22,202
2013	111,336	882,567	574,514	707,082	1,062,191	823,864	1,398,170	741,954	249,737	851,190	927,031	1,076,756
2014	619,352	1,245,681	1,375,802	527,079	1,741,988	617,175	1,218,653	1,475,449	1,379,581	1,336,288	652,830	287,567
2015	472,729	64,520	1,722,61	1,413,740	2,233,484	2,514,933	2,201,461	1,602,344	1,631,603	3,523,446	1,328,880	1,011,212
2016	1,199,949	1,064,658	1,544,657	4,006,459	1,287,596	1,219,799	1,163,792					



	January	February	March	April	May	June	July	August	September	October	November	December
2004	0	40,000	409,002	4,000	1,480,444	359,950	1,773,063	52,425	115,160	1,522,191	566,020	1,000
2005	7,760	140,049	129,496	81,459	358,820	871,298	791,555	8,000	312,938	358,465	247,127	114,525
2006	27,000	138,900	9,000	9,540	2,438,077	1,341,443	106,100	641,986	821,772	313,363	1,209,475	513,940
2007	172,221	808,786	25,206	1,105,534	20,293	1,016,148	5,714,648	4,000,820	134,031	3,722,518	376,371	108,000
2008	421,042	0	370,000	647,000	41,000	25,000	110,000	990,923	9,500	670,442	195,000	0
2009	72,000	178,233	54,600	25,000	41,440	222,525	3,343,047	1,443,417	187,500	8,000	22,000	19,005
2010	834,198	40,992	496,441	32,997	50,000	553,319	117,975	727,220	25,000	536,616	1,192,795	7,740
2011	600,000	35,500	13,000	38,000	92,575	88,000	29,000	6,970,497	571,242	294,317	204,730	301,000
2012	84,908	460,875	1,695,784	195,935	370,500	674,345	165,000	0	427,768	96,584	275,202	0
2013	10,600	173,820	162,018	181,312	600,540	104,400	34,275	1,584,432	3,812,956	18,000	2,584,239	10,000
2014	550,782	225	459,420	240,024	2,575,239	3,936,890	38,000	0	61,350	101,018	23,000	166,580
2015	0	2,500	809,360	424,793	251,362	364,400	796,471	327,106	73,000	7,076,433	740,911	0
2016	544,537	1,036,087	274,000	697,500	93,000	1,836,313	515,452					

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Greg S. Harless
Chief Deputy

Joel Maatman
Major

TO: Delhi Township Board of Trustee's

FROM: Lt. Dennis Hull

DATE: August 8, 2016

RE: July 2016 Monthly Report

HIGHLIGHTED CASES AND INCIDENTS:

July 1 thru 5, Delhi Units experienced a very high call volume over the holiday weekend. We were dispatched to 101 calls for service, 51 of those were fireworks complaints due to the "Burning Ban". We issued 2 citations for the firework violations.

July 7, Night shift was dispatched to Delhi Manor for a domestic violence complaint. During the investigation it was determined that a female was assaulted by her boyfriend. The boyfriend fled the scene prior to our arrival. The female was taken to the hospital for medical treatment for the injuries she sustained as a result of the assault. Day shift was able to locate the boyfriend at his mother's residence in Huntley Square. He was found hiding in the shower. He denied the assaulting his girlfriend but he couldn't give a good reason for being in the shower fully clothed. He was arrested and lodged at the jail.

July 8, we were contacted on our Delhi face book page by a lady who lives on Pleasant River Drive wanting to report a larceny of Jewelry. We made contact with her and she told us that she takes in "Way Ward" teens that are having issues in their lives. One of the teens just moved out and she noticed a large amount of Jewelry missing. It was determined that approximately $70,000 worth of Jewelry is gone. We have a suspect in the case and the detective bureau is still investigating the case.

July 18, in the early morning hours the out county units were dispatched to Alaiedon Township for a suspicious person knocking doors. Dispatch gave a description of the subject and the vehicle in which he was driving. They went to the area and unable to locate him. A short time later the Deli

units were dispatched to the intersection of Waverly and Holt for a 3 car injury accident. Upon arrival it was determined the at fault driver was the suspicious person from Alaiedon Township. The subject was arrested and lodged at ICJ for driving under the influence of drugs. We are still awaiting lab reports to determine what drugs he was on.

July 18, Delhi Detective assisted MSP fugitive team apprehend a suspect wanted for murder in North Carolina. It was believed that the suspect was at his parents' house in Delhi Township. They made contact with the parents and he was not there. The suspect was located 3 hours later in Portland Mi and arrested. He is currently being held for North Carolina.

July 20, several Larcenies from Auto's were reported in the area Hope Middle School. All vehicles that were entered were left unlocked by their owners. We do not have any suspects in the case. We continue remind Delhi residents to keep the vehicles locked when they are not using them.

July 25, I was contacted by a Delhi Township employee who wanted us to check a female on Onondaga Rd between Holt and McCue. The female was carrying a long gun and only wearing underwear. All of the Delhi units responded to the area and we quickly located the female. We secured her shot gun that she was carrying and began the investigation. The female told us that she was chasing an older female who had white hair and a very wrinkly face through the woods because she had broken into her home. At that time we set a perimeter in the area and called for K9 unit's however the wooded area was so thick that K9's were of no use because they could get through the heavy brush. At the time we requested the emergency mangers from both Delhi and ICSO set a mobile command post as we were going to utilize several of their services to finish the search. Once a command post was established and set a helicopter from MSP was requested. As the search continued we kept being lead in many different directions. It got to the point that we had to re interview the home owner. When doing so the homeowner said "this Sh@& is like Vietnam, this old lady has all kinds of secret tunnels dug back in the woods". Also, during the second interview it was determined that the only person that saw anyone was the homeowner however she had at least 6 other people (friends) helping her look and none of them scene this lady at all. At this time it was determined that the homeowner was seeing and hearing things that no one else could, so we ended the search.

July 28, Delhi nightshift was dispatched to 4330 Keller Rd for a suicidal subject. When they got to the area they had no luck finding the subject. They eventually located the subjects' mother in the parking lot who directed them into the woods on the west side of the property. During the search of the woods the units started to yell out to the subject. They heard a faint voice from the subject and were able to follow the voice until they located the subject hanging from a tree with a rope around his neck. They were able to get the subject cut down and rope off his neck. At this time he was barely hanging on. He was rushed to the hospital by Delhi Fire. Due to the quick actions of all the deputies and fire personnel this subject is still alive today.

STATISTICS:

During the month of July, Deputies responded to 465 calls for service (written and blotter complaints). They made 98 arrests of which 48 were self – initiated, and 4 were for OWI. Deputies responded to 32 traffic crashes. Deputies made 372 traffic stops and issued 156 citations.

Deputies conducted 249 business/property checks, 19 school contacts, and spent 110.9 hours in Community Policing. Deputies participated in 121.5 hours of training.

Calls for Service

	2014	**2015**	**2016**
July	390	364	465
Year to Date	1098	1730	2490

Total Arrests

	2014	**2015**	**2016**
July	233	77	98
Year to Date	793	396	566

Total Self – Initiated Arrests

	2014	**2015**	**2016**
July	71	221	48
Year to Date	328	415	403

Citations Issued

	2014	**2015**	**2016**
July	220	219	156
Year to Date	532	532	1282

COUNTY of INGHAM

State of Michigan

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INGHAM COUNTY

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Undersheriff

Sam Davis
Major

630 North Cedar Street
Mason, MI 48854
(517) 676-2431
FAX (517) 676-8299

Greg S. Harless
Chief Deputy

Joel Maatman
Major

To: Lieutenant Hull

From: Deputy Rowley 5378

Date: August 4, 2016

Re: July 2016 Monthly Report

Statistics:
Criminal Complaints: 17
Complaint hours: 55.4 hours
Accident Reports: 0
Abandoned Vehicle Reports: 32
Business Community Policing hours: 14.0 hours
Training hours: 15.1 hours
Blotter Reports: 3
Business Checks: 47
Liquor Inspections: 8
Traffic Stops: 10
Citations: 4
Motorist Assist: 1

The month of July saw an increase in the amount of activity surrounding the business district. I will list this report chronologically with calls of interest.

July the first I responded to the Red Wing Shoe store at 2490 Cedars St. for a found bicycle. I spoke with the manager of the store and also the dentist office next door. The bike was left behind the building where parties from both businesses state they have seen a person from time to time, who they believe is homeless. I removed the bicycle and entered it into ICSO evidence as found property.

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July first I also received a shoplifting report from Kroger Manager Anita Patton. I checked the area as dispatch gave a description and direction of the suspect. I was not able to locate the suspect. I returned to Kroger where Ms. Patton provided me with video of a male stealing two bottles of alcohol valued at $75. I completed an I-Bulletin sheet and it was distributed to area agencies with no leads as to the identity of the suspect at this time.

July 5th I responded to unknown trouble at 2297 Main St. The incident was discovered to be a domestic assault incident. The suspect was taken into custody and transported to St. Lawrence Hospital Emergency Room for psychological evaluation.

On July sixth I responded to 3960 Patient Care Dr. Suite 104 where a female subject began to destroy property and throw objects at the staff inside. The subject was placed into protective custody and transported to St. Lawrence Hospital Emergency Room where her mother signed her into the hospital for care and evaluation. No injuries were reported at the scene.

I received a larceny complaint against Shroyer Towing at 2740 Eaton Rapids Rd. The complainant stated his vehicle was towed from I96 during a ten car accident and he was missing items from his vehicle. The reporting party's vehicle was very heavily damaged and opened from the incident. I interviewed the tow truck driver from the incident and management at Shroyer. I listed the missing items for the insurance purposes of the reporting party but have no suspects at this time.

I was dispatched on July 18th to a civil dispute regarding property at Woodland Lakes Apartments on Dell Rd. I was on scene with the management staff and kept the peace as a recently separated couple picked up provisions. I backed the management staff as they sorted out further access information.

On July 21st I was dispatched to Kroger where they reported a Retail Fraud had just occurred in their store. I interviewed the suspect and watched the video of the incident. I arrested the suspect and lodged him at the Ingham County Jail for the theft charge.

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On July 25th I was dispatched to a missing person report on Onondaga Rd. A perimeter was set up and the area was searched. Upon further investigation the reliability of the information funneled into dispatch was in question. The perimeter was disbanded after all area care homes and facilities reported their internal patient counts cleared and a thorough search of the area was completed.

July 26th I received a walk in complaint at the Delhi Division Office from an elderly female. She reported there were charities in Arizona that were fraudulently attempting to bill her. I contacted Dart Bank in Holt where her checking account is located to change her account information. I advised the woman her account had been compromised and the bank would gladly cancel her former checking account and issue her a new account for number purposes.

Also on July 26th I received a telephone call from a loss prevention worker at Kroger who stated she had two suspects in the store that were involved in previous recent retail fraud thefts. I went to Kroger and the two individuals past the point of purchase with the merchandise. Upon seeing me, the two suspects turned around in the vestibule and re-entered the store. I detained a male suspect and a female suspect. I interviewed both suspects and arrested them at Kroger. I lodged the suspects at the Ingham County Jail for Retail Fraud. The female was currently on parole from the Michigan Department of Corrections. The male was currently on probation for pleading guilty to a retail fraud at that same Kroger location. I advised his probation agent who issued a warrant for the violation of probation.

Respectfully submitted,
Deputy James Rowley 5378
Delhi Township Division

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Greg S. Harless
Chief Deputy

Joel Maatman
Major

TO: Lt. Dennis Hull

FROM: Deputy Matt Hutting #5312

DATE: Wednesday, August 03, 2016

RE: July 2016 Monthly Report

STATS:

Complaints:	11
School Checks:	16
Community Policing Hours:	14.3
Training Hours:	13
Special Assignment Hours:	32

COMMUNITY POLICING HIGHLIGHTS:

During the month of July I spent most of the time getting acclimated to my new position. On July 21st I attended the Small Business Alliance Breakfast and introduced myself to many of the local business owners.

The last week of July I began a long week of bike patrol in Delhi. I made contact with many children and parents throughout the area and introduced myself as the new School Resource Officer. Furthermore, this allowed me to check all of the schools for future reference regarding

SPECIAL ASSIGNMENTS:

On July 15th as a member of the Ingham County Sheriff's Office Honor Guard I attended the funeral of Berrien County Deputy Joseph Zangaro. Deputy Zangaro was killed at the Berrien County Courthouse when inmate Larry Gordon was able to unarm another Deputy and attempting to escape by shooting his way out of the building. Hundreds of officers from all over the country were in

attendance to honor Deputy Zangaro.

On July 18th as a member of the Ingham County Sheriff's Office Honor Guard I attended the funeral of Berrien County Deputy Ron Kienzle. Deputy Kienzle was killed at the Berrien County Courthouse along with Deputy Zangaro when he responded to gunshots only to be killed by Inmate Larry Gordon. Larry Gordon had disarmed one deputy and attempted to escape by shooting his way out of the building. Just liked Deputy Zangaro's funeral only three days prior, hundreds of officers from all over the country were attendance to honor Deputy Kienzle.

On July 19th again as a member of the Ingham County Sheriff's Office Honor Guard I attended the funeral of Dallas City Police Officer Michael Krol. Officer Krol was shot and killed by Micah Xavier Johnson. Johnson was a former Army Reserve member that had served over seas. JOHNSON shot and killed six officers in the city of Dallas. Officer Krol was a former corrections Deputy at Wayne County Sheriff's Department. The city of Dallas sent about 100 officers to the funeral. Additionally, numerous officers from all over the country were in attendance.

COMPLAINTS:

During the month of July I responded to 11 calls for service that required a report and 7 calls that did not result in a report. 1 of the calls was school related.

On July 1st I responded to a 2 car traffic crash on Cedar just south of Willoughby Rd. No injuries occurred but the at-fault driver admitted to looking at his cellphone prior to the crash.

On July 6th I responded to a family dispute between an intoxicated male and his mother. The intoxicated male had become argumentative with his mother and she wanted him out of the residence. Mom later agreed to allow her son stay home as long as he went directly to bed.

On July 12th I responded to a possible Personal Protection Order violation. The complainant observed a vehicle drive by his residence at a high rate of speed then turn around and pass his house again. The complainant believed the vehicle belonged to a subject that he had served with a Personal Protection Order and that the subject was a passenger in the vehicle as it passed. The investigation determined that the vehicle did not belong to the subject that was served the P.P.O. nor was that subject in the vehicle.

On July 14th I responded to the area of Dallas and Cedar regarding a fireworks complaint. Due to the dry weather there was a fireworks/burn ban at the time of the incident. I did a neighborhood canvas and located the subject who had set off the fireworks at a local business. The individual was issued a citation under the Delhi Township Ordinance for the violation.

On July 21st I responded to a Malicious Destruction of Property complaint at Midway Elementary. The complainant was a staff member who believed that her windshield was shot with a BB gun. It was determined that the windshield was struck by a rock possibly from when the vehicle was being driven at a different time for from an unknown vehicle that threw some loose gravel that was nearby on the road.

On July 28th I was on bike patrol when I observed a pick-up truck run the stop sign at Audean/Tolland. I made a traffic stop on the vehicle and it was determined that the driver had two (2) warrants for his arrest. The subject was arrested and turned over to another unit for the transport. Furthermore, the passenger of the vehicle had just gotten out of Eaton County Jail and had a non-

extraditable warrant out of New Mexico.

Respectfully submitted,

Dep. Matt Hutting #5312
Ingham County Sheriff's Office

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Greg S. Harless
Chief Deputy

Joel Maatman
Major

TO: Lt. Dennis Hull

FROM: Deputy Cheryl Huhn #5430

DATE: 08/03/16

RE: July 2016 Monthly

STATISTICS:

Comm. Policing Hours:	28.1
Special Assignment:	18.9
Training:	27.0
Complaints taken:	11
Traffic stops:	1
Citations issued:	1
Arrests:	1
Contacts (school):	2
Contacts (business):	8

COMMUNITY POLICING ACTIVITY:

I attended the monthly Holt Business Alliance meeting at Charlar Place. Paul from McKenna Associates spoke about the "Realize Cedar" project.

During the month of July I continued to coordinate National Night Out. I contacted the county print shop vendor and had flyers made. I passed out flyers at local businesses and the Delhi Township Offices to advertise the event. I made contact with Debra Mulder from the Holt Nazarene Church to ask for volunteers to assist with making popcorn and snow cones. Contact was made with Chief Ball from Delhi Township Fire Department to

coordinate getting a smoke house and fire truck. Shenanigan's the Clown advised that she would do face painting and make balloons for the children. I made contact with Adam Garver, the manager at Kroger about supplying donations. Kroger advised that they would supply the bottled water and snacks.

I went to Windmill Mobile Home Park and made contact with Tracy in the office. We tentatively scheduled Hotdogs in the Park for August 14th from 2-4pm. Tracy reported that there have not been any complaints made in the office that she felt needed to be addressed by the police.

I assisted Rob Dale with maintaining the Ingham County Sheriff's Office // Delhi Division Facebook webpage.

On July 23rd I gave a safety presentation at Rainbow Homes. Rainbow Homes is located at 2111 Adelpha Ave. Rainbow Homes is a housing unit that houses cognitively impaired and/or disabled adults. There were approximately 30 residents at the presentation. Deputy Paul Narlock and K-9 Smoke stopped by and visited with the residents. There were paramedics from Delhi Fire that gave demonstrations on fire safety. The residents were given information on pedestrian and bicycle safety. I spoke about when it is appropriate to call 911 and what types of information should be given to the dispatcher. We discussed personal safety when they are out in public and the appropriate actions when contacted by a police officer.

I made contact with Ashley Gould at Delhi Manor. We scheduled to have the Beach Party on Sunday August 28th from 12-5pm. Ashley advised Delhi Manor is housing a lot more residents since being taken over by a different company and she believes there will be a lot higher turnout for the party.

I patrolled several subdivisions on bicycle patrol with Deputy Matt Hutting. I made contact with a resident on Holbrook Drive that had a travel trailer parked in his driveway that was blocking the sidewalk. The trailer was moved after I made contact.

I attended weekly sobriety court meetings at 55th District Court with Judge Allen. Each week we would discuss who was in compliance with the probation and who was in violation. If any induvial absconded from the probation or was noncompliant then a warrant would be entered for their arrest. I would make arrangements to have those individuals picked up and arrested on the warrants.

OTHER MATTERS

During the month of July I responded to 11 calls for service. Some of these calls included a civil complaint, harassment, fraud, identity theft, malicious destruction of property, and a vehicle accident. On July 7th and 10th I worked a special assignment for the Capital Area Dive team. I patrolled the Grand River in the boat during Common Ground.

On July 5th I took a report of a larceny complaint were the victim found the location of some of her stolen property. The victim was missing a wedding band set that was customized to have chocolate diamonds in the band. The person that had the property was the fiancé to the victim's ex-boyfriend. The ring was posted on Facebook. I am seeking charges against the ex-boyfriend.

On July 12th I took a report of an identity theft. Someone opened and charged $15,000.00 to an account at the Nebraska Furniture Mart with my victim's information. I worked with the fraud department at the Furniture Mart and the suspect was identified by previous activity at the store. I turned over my investigation to the Colony Police Department and will be seeking fraud charges against the suspect.

On July 18th I took a report of a malicious destruction of property to a vehicle on the corner of Gunn Rd and Willoughby Rd. Someone used a 22 caliber gun and shot out two windows on a motorhome that was parked at the residence. There were no suspects or witnesses.

On July 18th I took a report of a civil complaint at Huntley Villa. A resident reported that her son drove off in his vehicle and there was a tote containing scrap metal in the trunk. The complainant reported that she had an agreement with her son that she would get half of the scrap metal if she stripped down the copper wires. Contact was made with the son via the telephone and he brought back his mother's half of the scrap metal.

On July 20th I responded to Delhi Manor for a harassment complaint. A resident was complaining that she felt like her neighbor across the road was harassing her because her dog bit another resident. Contact was made with both parties involved and they were advised to stop having contact with each other. No additional complaints have been made since I spoke with both residents.

On July 21st I spoke with a concerned citizen at the Delhi Township Office about a young teenage male that had been driving recklessly on Pinetree Rd near Willoughby Rd in a BMW. I went and monitored traffic in the area. I did not locate the suspect vehicle. When I returned to the Delhi Office I spoke with a citizen that recognized the vehicle and I was then able to identify the driver. Deputy Ward made contact with the male driver and his parents. On July 28th I received another complaint about the same juvenile driver driving recklessly in the same area. I went and made contact with the parents about their son. The parents decided to take the vehicle away until the son could improve his driving skills.

On July 21st I responded to Delhi Manor for a harassment complaint. The reporting party advised that someone hacked into her daughter's Facebook page and posted inappropriate things on her page. The suspect sent the complainant inappropriate instant messages off from the Facebook page about her daughter getting raped. Through my investigation I was able to locate the suspect. The suspect was a 16 year old boy from the Grand Rapids area that met the victim's daughter on social media sites. All of the inappropriate posts

were taken down from Facebook and the Facebook account was deactivated. The suspect and his parents were contacted and interviewed about this investigation.

Respectfully submitted,
Deputy Cheryl Huhn #5430

Delhi Township Fire Department
Monthly Report *July, 2016*

Total Calls

	Delhi	*Alaiedon*	*Total*
EMS / Medical	235	0	235
Fire / Rescue	57	2	59
Total Calls	292	2	294
Staff Hours	619	3	622.3

Total calls in 2016: 1,848
Total calls for 2015:3,342

Inspections

Commercial Fire Inspections – 30
Plan Reviews – 6 (including Alaiedon)

Training

214 Personnel participated in 313 Hours of Training

Mutual Aid: Given – 28 Received –6 Auto Aid- 40
Overlapping Calls - 83

Miscellaneous

- July 3 Aurelius/Garden Gate Brush Fire
- July 8 Assist East Lansing Fire 100 Blk Northlawn, building fire.
- July 8 Assist Meridian and East Lansing
- July 23 4000 Blk Bonnyview vehicle fire.
- July 26 1300 Blk. Eifert vehicle fire.

Delhi Charter Township Board of Trustees met in a regular meeting on Tuesday, August 16, 2016 in the Multipurpose Room at the Community Services Center, 2074 Aurelius Road, Holt, Michigan. Supervisor Davis called the meeting to order at 7:33 p.m.

PLEDGE OF ALLEGIANCE

ROLL CALL

Members Present: Supervisor C.J. Davis, Clerk Evan Hope, Treasurer Roy Sweet, Trustees Jon Harmon, John Hayhoe, Megan Ketchum, DiAnne Warfield

Members Absent: None

COMMENTS FROM THE PUBLIC

Dennis McKee, Consumers Energy, commented that Consumers Energy is installing upgraded meters. The meter will send energy use to Consumers Energy each day, providing an accurate read each month.

CONSENT AGENDA

A. Approval of Minutes – Regular Meeting of August 3, 2016

B. Approval of Claims – August 2, 2016 (ATTACHMENT I)

C. Approval of Payroll – August 11, 2016 (ATTACHMENT II)

Warfield moved to approve the Consent Agenda as presented.

A Roll Call Vote was recorded as follows:
Ayes: Hayhoe, Hope, Ketchum, Sweet, Warfield, Davis, Harmon
MOTION CARRIED

PROPOSAL FOR PROFESSIONAL ENGINEERING SERVICES – RIVER POINTE SUBDIVISION ROAD SPECIAL ASSESSMENT DISTRICT

The Board reviewed a memorandum dated July 28, 2016 from Twp. Mgr. Elsinga (ATTACHMENT III).

Hayhoe moved to accept the Proposal for Professional Engineering services in the amount of $74,530 for the design and construction engineering associated with the River Pointe Subdivision road improvement project and special assessment district.

A Roll Call Vote was recorded as follows:
Ayes: Ketchum, Sweet, Warfield, Davis, Harmon, Hayhoe, Hope
MOTION CARRIED

REPORTS

SUPERVISOR

Supervisor Davis reported on the upcoming Holt Hometown Festival and Maker Expo to be held on August 20, 2016.

Supervisor Davis reported on the World War II video project that the Holt/Delhi Historical Society is working on.

PUBLIC HEARING – 7:45 P.M.

APPLICATION FOR INDUSTRIAL FACILITIES TAX (IFT) EXEMPTION – TRICK TITANIUM

Hope moved to open the public hearing on the Application for Industrial Facilities Tax Exemption – Trick Titanium.

A Voice Poll was recorded as follows: All Ayes
MOTION CARRIED

Tracy Miller, Director of Community Development, gave an overview of the application for Industrial Facilities Tax Exemption from Trick Titanium.

Trustee Ketchum questioned how much of the tax money would stay in the Township if this were not abated. Ms. Miller stated that the average amount abated per year over a twelve year period is estimated at $7,400 - $8,200 a year. If the taxes were not abated, they would have paid that amount in addition to the abatement to the entire taxing authorities.

Trustee Harmon asked what new positions would be added to the business as indicated in the application. A representative of Trick Titanium stated that they would be adding 6-12 machinist positions with wages ranging from $15-$30 per hour.

There were no comments from the public.

Motion to Close Public Hearing – 7:50 p.m.

Hope moved to close the public hearing.

A Voice Poll was recorded as follows: All Ayes
MOTION CARRIED

NEW BUSINESS

RESOLUTION NO. 2016-017 – APPLICATION FOR INDUSTRIAL FACILITIES TAX (IFT) EXEMPTION – TRICK TITANIUM

The Board reviewed a memorandum dated August 9, 2016 from Twp. Mgr. Elsinga (ATTACHMENT IV).

Ketchum moved to adopt Resolution No. 2016-017 which approves the Application for Industrial Facilities Tax (IFT) Abatement Certificate for Trick Titanium.

A Roll Call Vote was recorded as follows:
Ayes: Sweet, Warfield, Davis, Harmon, Hayhoe, Hope, Ketchum
MOTION CARRIED

REALIZE CEDAR PLAN– RESOLUTION NO. 2016-018

The Board reviewed a memorandum dated August 11, 2016 from Tracy Miller, Director of Community Development (ATTACHMENT V).

Harmon moved to adopt Resolution No. 2016-018 which supports beginning the Public Review of the Realize Cedar Urban Design Framework, a Sub-Area Plan and Amendment of the Delhi Township Master Plan.

Tracy Miller, Director of Community Development, stated that the draft Realize Cedar Plan was presented to the Planning Commission at their August 8, 2016 meeting at which time they gave recommendation for the Board of Trustees to begin the formal 63 day public review period.

Ms. Miller stated that if the Board supports the public review, the plan will be forwarded to all required agencies on August 17, 2016; it will be placed on the Realize Cedar website and the Township website for public input. The official public hearing is planned for October 24, 2016. Ms. Miller further stated that the public is encouraged to submit written comments to the Township at anytime.

Ms. Miller stated that a Steering Committee met once a month for nine months to get the plan where it is today. A large amount of public input gathering went into developing the goals that are the frame work on which this plan was built. These included a series of pop-up meetings at locations such as Holt High School basketball games, the Farmer's Market and Valhalla Park during the Kids Day event. A key component of the plan was to go out into the community to get input. A series of three focus group meetings were conducted; one for seniors, one for the residents on Cedar Street and one for business owners on Cedar Street. The plan was presented to the Holt School Business Alliance and will be presented to the Lions Club. Ms. Miller stated that she met with residents and business owners individually upon their request and will continue to meet with whoever would like to meet with her throughout the review period. A questions and answers sheet was compiled of the most frequently asked questions to date. The document will be amended as additional questions become frequent to provide a snapshot for others who may have the same questions.

Paul Lippens, McKenna Associates, stated that this plan is an urban design framework and is being proposed as part of the Delhi Township Master Plan which is why the Master Plan process is being followed. The 63 day public review is a State requirement for the adoption of Master Plans. The plan includes long term recommendations for redesigning the entire Cedar Street corridor from College Road to Willoughby Road. It also focuses on the land use development vision and corridor vision for the triangle area which the Township has been looking to develop as a downtown for more than twenty years.

Mr. Lippens presented a video to the Board that illustrated the proposed design vision. One consideration is the reduction of Cedar Street from four lanes to three lanes incorporating a left

turn lane and a bike lane. Pedestrian islands are being proposed as well. Existing housing elements will continue to exist as housing and businesses. On street parking, as well as public parking behind businesses, is proposed. To improve traffic flow at Aurelius Road, a re-alignment of Keller Road into Cedar Street is proposed.

Mr. Lippens stated that the Township will use Downtown Development Authority funds to pay for infrastructure improvements. The project is also eligible for grant funding and Federal assistance. The project will potentially bring new funds into the Township and keep tax money in the Township that would otherwise leave the area.

Trustee Hayhoe stated that the item before the Board this evening is to begin the process of public review. Ms. Miller answered in the affirmative; stating that this will enable a 63 day public review. A public hearing will be held at the October 24, 2016 Planning Commission meeting.

Trustee Ketchum stated that there is no plan to dislocate residents on Cedar Street; Ms. Miller concurred. The proposed plan will build a frame work that supports the value of the businesses and properties.

Nancy Romig, 4168 Watson Avenue, stated that she would like more community outreach. Ms. Romig asked what the three alternative plans are and how they may better impact the community. Ms. Romig requested to view the traffic analysis.

Criselle Mann, 1947 Summit Street, asked what the breakdown of cars traveling through the intersection per hour was. Ms. Mann commented on the cut-throughs, speeding and the disobeying of the stop sign on her street. Ms. Mann spoke of the impact to the area subdivisions in regard to the reduction of lanes on Cedar Street.

Kurt Romig, 4168 Watson Road, opposes the reduction of lanes on Cedar Street.

Amanda Miller, 4285 Veterans Drive, spoke in favor of the street reduction on Cedar Street in conjunction with the proposed alley. Ms. Miller also spoke in favor of the pedestrian islands.

Criselle Mann, 1947 Summit Street, commented on the crosswalk signals.

A Roll Call Vote was recorded as follows:
Ayes: Hope, Ketchum, Sweet, Warfield, Davis, Harmon, Hayhoe
MOTION CARRIED

LIMITED PUBLIC COMMENTS – None

ADJOURNMENT

Meeting adjourned at 8:27 p.m.

Date: September 6, 2016

Evan Hope, Township Clerk

Date: September 6, 2016

C.J. Davis, Supervisor

/af

ACCOUNTS PAYABLE APPROVAL

August 2, 2016

I. Certification of Authorized Signatures: The attached Check Register and Invoice Distribution Report encompass checks dated August 2, 2016 numbered 91714 thru 91834 & ACH 4354 thru 4387. Every invoice has a payment authorizing signature(s).

Dated: August 2, 2016

Lora Behnke, Accounting Clerk

II. Certification of Fund Totals:
The attached Invoice Distribution Report and Check Register for checks dated August 2, 2016 show payments made from the following funds:

General Fund	$	166,557.10
Fire Fund		7,102.21
Police Fund		214,301.85
Fire Equip. & Apparatus Fund		3,721.28
Downtown Development Fund		27,822.26
Sewer Fund		188,186.47
Local Site Remediation Fund		5,333.35
Trust & Agency Fund		21,772.47
Current Tax Fund		196.38
Grand Total	$	634,993.37

Includes the following to be reimbursed from separate bank accounts:

Current Tax Fund	$	196.38
Farmer's Market Account	$	6,030.00

Dated: August 2, 2016

John B. Elsinga, Township Manager

III. Approval for Distribution: I have reviewed the above checks and invoices and all of them should be distributed. All invoices over $10,000.00 have been approved by general policy or previous motions of the board. (** $12,398.00 Associated Government Services for 4 months of Inspections, $83,937.87 Barnhart & Son, Inc. for Cartago SS Improvements, 6/7/16, ** $10,841.90 Harper Industrial Construction for Emergency Repair to Secondary Clarifier, $82,616.08 Laux Construction for CSC Roof Project, 4/5/16, $10,270.00 McKenna Associates for Cedar St Revisioning Plan, 10/1/15, **$12,743.50 Spicer Group for Emergency ArcGIS License Renewal)**** to be approved by consent****

Dated: August 2, 2016

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John B. Elsinga, Township Manager

Evan Hope, Township Clerk

Roy W. Sweet, Treasurer

IV Board Audit and Approval: At a regular meeting of the Township Board held on August 16, 2016 a motion was made by _____and passed by ____yes votes and ____no votes (_____absent) that the list of claims dated August 2, 2016, was reviewed, audited and approved

Evan Hope, Township Clerk

U:Accounting Private\Payables\Accounts Payable Approval Form
CC: Central File

INVOICE GL DISTRIBUTION REPORT FOR DELHI CHARTER TOWNSHIP
EXP CHECK RUN DATES 08/02/2016 - 08/02/2016

Vendor	Invoice Line Desc	Amount
Fund 101 GENERAL FUND		
Dept 000.00		
VERIZON WIRELESS	ACCTS RECEIVABLE	99.99
INTIER AUTOMOTIVE INTERIORS	INTIER MTT 2015 IFT REFUND	172.84
	Total For Dept 000.00	272.83
Dept 171.00 MANAGER		
ADP SCREENING & SELECTION	SUBSCRIPTION/BACKGROUND CHECKS	31.13
VERIZON WIRELESS	CELLULAR JULY	114.74
	Total For Dept 171.00 MANAGER	145.87
Dept 191.00 ACCOUNTING		
ABRAHAM & GAFFNEY, P.C.	ACCOUNTING SERVICES JUNE	1,934.75
H.J. UMBAUGH & ASSOCIATES	ANNUAL CONTINUING DISCLOSURE	450.00
	Total For Dept 191.00 ACCOUNTING	2,384.75
Dept 215.00 CLERK		
VERIZON WIRELESS	CELLULAR JULY	150.00
	Total For Dept 215.00 CLERK	150.00
Dept 228.00 INFORMATION TECHNOLOGY		
APPLICATION SPECIALIST KO	HARDWARE & SOFTWARE MAINT	3,377.00
SPICER GROUP, INC.	GIS SERVICE/EMERGENCY LICENSE	2,343.50
VERIZON WIRELESS	CELLULAR JULY	50.00
SPICER GROUP, INC.	GIS SERVICE/EMERGENCY LICENSE	6,375.00
	Total For Dept 228.00 INFORMATION TECHNOLOGY	12,145.50
Dept 253.00 TREASURERS		
PROGRESSIVE IMPRESSIONS	2016 SUMMER TAX BILLS	2,810.30
D & K INVESTIGATIVE SERVICES	SERVICE OF COURT PAPERS	76.16
D & K INVESTIGATIVE SERVICES	SERVICE OF COURT PAPERS	104.16
DELHI TOWNSHIP TREASURER	2/1-3/8/2016 MILEAGE/TEBEAU	27.54
DELHI TOWNSHIP TREASURER	4/13/16 MILEAGE/TEBEAU	8.60
	Total For Dept 253.00 TREASURERS	3,026.76
Dept 257.00 ASSESSING		
LANSING ICE & FUEL CO	GASOLINE 7/1-15/2016	25.21
JAMES MUNSON	7/11-24/2016 MILEAGE/MUNSON	23.76
DELHI TOWNSHIP TREASURER	REFRESHMENTS/BOARD OF REVIEW	38.34
	Total For Dept 257.00 ASSESSING	87.31
Dept 262.00 ELECTIONS		
DBI BUSINESS INTERIORS	OFFICE SUPPLIES	180.46
DBI BUSINESS INTERIORS	OFFICE SUPPLIES	10.56
ELECTION SOURCE	AUTOMARK INK CARTRIDGES	125.53
ELECTION SOURCE	PRIMARY SUPPLIES & SHIPPING	394.08
LOWE'S CREDIT SERVICES	HARDWARE TO INSTALL NEW SIGNS	30.80
EXTEND YOUR REACH	POSTAGE & FEES JUNE	224.65
ELECTION SOURCE	TABULATOR CONTRACT	2,940.00
	Total For Dept 262.00 ELECTIONS	3,906.08

Dept 265.00 BUILDING & GROUNDS		
LANSING ICE & FUEL CO	GASOLINE 7/1-15/2016	380.93
MODEL COVERALL SERVICE	UNIFORMS/ B & G	21.69
MODEL COVERALL SERVICE	UNIFORMS/ B & G	58.88
QUALITY FIRST MAID SERVICE	CLEANING SERVICES/CSC	975.00
METRONET LONG DISTANCE	JULY LONG DISTANCE	30.11
VERIZON WIRELESS	CELLULAR JULY	50.00
TDS METROCOM	LOCAL SERVICE JULY	1,102.90
DELHI TOWNSHIP TREASURER	SEWER 2074 AURELIUS	454.40
CONSUMERS ENERGY	ELECTRIC 2004 AURELIUS	129.26
CONSUMERS ENERGY	ELECTRIC-2074 AURELIUS	6,670.26
CONSUMERS ENERGY	ELECTRIC 4149 WILLOUGHBY	44.66
CONSUMERS ENERGY	GAS-2074 AURELIUS	116.44
FERGUSON ENTERPRISES, INC.	SLOAN PERFORMANCE KITS	281.28
MENARDS LANSING SOUTH	PVC PIPE, ADAPTERS, CEMENT, PRIME	15.84
PURE GREEN LAWN & TREE	CEDAR & HOLT FERTILIZER & WEED	25.00
PURE GREEN LAWN & TREE	FERTILIZER & WEED/DDA & SHERIFF	25.00
SPARTAN IRRIGATION, INC.	REPAIR IRRIGATION LINES	178.58
SUPERIOR SAW	1 SCAG HANDLE	35.87
FERGUSON ENTERPRISES, INC.	6 TOILET REPAIR KITS	221.76
LAUX CONSTRUCTION, LLC	CSC ROOF PROJECT	82,616.08
MAYOTTE GROUP ARCHITECTS	CSC ROOF PROJECT	910.80
	Total For Dept 265.00 BUILDING & GROUNDS	94,344.74
Dept 446.00 INFRASTRUCTURE		
BOARD OF WATER & LIGHT	STREETLIGHTS	8,012.75
CONSUMERS ENERGY	LIGHTING 2116 CEDAR	285.81
CONSUMERS ENERGY	LIGHTING 3970 HOLT	105.15
CONSUMERS ENERGY	LIGHTING 4115 HOLT	201.34
CONSUMERS ENERGY	LIGHTING 2228 AURELIUS	113.20
	Total For Dept 446.00 INFRASTRUCTURE	8,718.25
Dept 721.00 PLANNING/COMMUNITY DEVELOPMENT		
LANSING ICE & FUEL CO	GASOLINE 7/1-15/2016	101.77
ASSOCIATED GOVERNMENT	AGS PAYROLL 2/16-6/15/2016	12,398.00
LANDSCAPE ARCHITECTS	NON-MOTORIZED TRANS PLAN UPDATE	5,000.00
MC KENNA ASSOCIATES, INC	CEDAR ST REVISIONING PLAN AGREE	10,270.00
METRONET LONG DISTANCE	JULY LONG DISTANCE	16.77
VERIZON WIRELESS	CELLULAR JULY	5.56
VERIZON WIRELESS	CELLULAR JULY	278.00
TDS METROCOM	LOCAL SERVICE JULY	55.95
DELHI TOWNSHIP TREASURER	WINDSHELD REPAIR #57	29.95
SCHAFER'S INC.	MOWING 4435 HARDING	34.50
SCHAFER'S INC.	TRASH REMOVAL 6303 BISHOP	108.90
SCHAFER'S INC.	TRASH REMOVAL 2401 EIFERT	428.50
SCHAFER'S INC.	BRUSH REMOVAL 4996 DEER RUN	223.20
SCHAFER'S INC.	MOWING 4495 HOLT	69.00
SCHAFER'S INC.	MOWING 2498 GILBERT	51.75
SCHAFER'S INC.	MOWING 1185 WILDFLOWER	34.50
SCHAFER'S INC.	MOWING 1218 WILDFLOWER	34.50
SCHAFER'S INC.	MOWING 1228 WILDFLOWER	34.50
SCHAFER'S INC.	MOWING 1236 WILDFLOWER	34.50
SCHAFER'S INC.	MOWING 1246 WILDFLOWER	34.50
SCHAFER'S INC.	MOWING 1282 WILDFLOWER	34.50
SCHAFER'S INC.	MOWING 1308 YARROW	34.50
SCHAFER'S INC.	MOWING 1850 CEDAR	69.00
SCHAFER'S INC.	MOWING 4266 WOODWORTH	69.00
SCHAFER'S INC.	ABATEMENT/4521 GROVE ST	51.75
SCHAFER'S INC.	ABATEMENT/6303 BISHOP RD	51.75
	Total For Dept 721.00 PLANNING/COMMUNITY DEVELOPMENT	29,554.85

Dept 752.00 PARKS ADMINISTRATION

DELHI CHARTER TOWNSHIP OR	POSTAGE	8.52
DELHI CHARTER TOWNSHIP OR	POSTAGE	9.42
METRONET LONG DISTANCE	JULY LONG DISTANCE	0.98
VERIZON WIRELESS	CELLULAR JULY	0.83
VERIZON WIRELESS	CELLULAR JULY	101.19
TDS METROCOM	LOCAL SERVICE JULY	98.12
TDS METROCOM	LOCAL PHONE SERVICE-SR. CENTER	297.75
	Total For Dept 752.00 PARKS ADMINISTRATION	516.81

Dept 771.00 PARKS

LANSING ICE & FUEL CO	GASOLINE 7/1-15/2016	270.81
MODEL COVERALL SERVICE	UNIFORMS/PARKS	58.88
MODEL COVERALL SERVICE	UNIFORMS/PARKS	21.69
LOWE'S CREDIT SERVICES	2 WRENCHS/SNIPS	28.78
LOWE'S CREDIT SERVICES	DRILL	84.55
MENARDS LANSING SOUTH	GREASE GUN & GREASE HOSE	20.48
THE PARTS PLACE	GREASE GUN/2 FILTERS	49.97
ACE HARDWARE	2 SKEWER PEGS	6.98
DELHI CHARTER TOWNSHIP OR	2 BAGS ICE	3.78
DELHI CHARTER TOWNSHIP OR	2 BAGS ICE	3.78
DELHI CHARTER TOWNSHIP OR	2 BAGS ICE	3.78
DELHI CHARTER TOWNSHIP OR	3 BAGS ICE	5.67
AMERICAN RENTALS, INC.	PORTABLE TOILETS	320.00
AMERICAN RENTALS, INC.	PORTABLE TOILETS	560.00
QUALITY FIRST MAID SERVICE	CLEANING SERVICES/SENIOR CENTER	260.00
BOARD OF WATER & LIGHT	WATER 2108 CEDAR	292.83
DELHI TOWNSHIP TREASURER	SEWER 1750 MAPLE	36.35
DELHI TOWNSHIP TREASURER	SEWER 2108 CEDAR	121.20
DELHI TOWNSHIP TREASURER	SEWER 2287 PINE TREE	59.08
DELHI TOWNSHIP TREASURER	SEWER 4030 KELLER	196.88
CONSUMERS ENERGY	ELECTRIC 2287 PINE TREE 2939	59.78
CONSUMERS ENERGY	ELECTRIC 1750 MAPLE	23.14
CONSUMERS ENERGY	ELECTRIC 2177 WEST BLVD	22.59
CONSUMERS ENERGY	ELECTRIC 2287 PINE TREE 3200	162.64
CONSUMERS ENERGY	ELECTRIC 2074 AURELIUS #PARK	1,422.40
CONSUMERS ENERGY	ELECTRIC 2108 CEDAR	1,169.41
CONSUMERS ENERGY	ELECTRIC 4080 KELLER	145.20
CONSUMERS ENERGY	GAS 2108 CEDAR	25.72
CONSUMERS ENERGY	GAS 2287 PINE TREE 2939	19.66
ACE HARDWARE	5 KEYS/RESTROOM ELLIOTT FIELD	9.95
MENARDS LANSING SOUTH	D4" CEDAR CREEK .040	4.24
PARRY BROTHERS REFRIG	ICE MACHINE REPAIR/SENIOR CENTER	98.00
PURE GREEN LAWN & TREE	FERT/WEED CONTROL @ HOLT/AUR	44.00
ACE HARDWARE	2 ANCHOR SHACKLES/VALHALLA	7.18
HAMMOND FARMS SOUTH	15 YDS PRO MULCH	314.40
HAMMOND FARMS SOUTH	10 YARDS OF MULCH	209.60
LOWE'S CREDIT SERVICES	80-LB CONCRETE MIX/PALLET	164.02
LOWE'S CREDIT SERVICES	DRILL BITS & SCREWS	27.52
MENARDS LANSING SOUTH	FOUNTAIN SUPPLIES & GREASE	113.91
MENARDS LANSING SOUTH	2) 100W METAL HALIDE CLR/2 LOCK	55.94
SITEONE LANDSCAPE SUPPLY	(4) PROSECUTOR PRO 2.5 GAL.	292.52
D & G EQUIPMENT INC	CAP/SHEAVEBLADE DRIVE/HOUSING	360.47
DELHI CHARTER TOWNSHIP OR	EXMARK TIRE REPAIR	10.00
TASMANIAN TIRE CO.	TIRE/EXMARK MOWER	87.50
GAMETIME	CHILD/TOT BLACK SWING	300.00
GAMETIME	SEAT LATCH	140.00
GAMETIME	SHIPPING	62.00
MENARDS LANSING SOUTH	(2) CLASSIC X 4' CROSS TEE	4.74
STONE RIVER PHARMACY	POISON IVY TREATMENT/SEASONAL	86.78
	Total For Dept 771.00 PARKS	7,848.80

Dept 774.00 RECREATION		
JOHN'S PRO-CLEAN, INC	10 TROPHIES	385.00
DENNIS BRAVENDER	OFFICIAL SOFTBALL	480.00
DANIEL D. DAVID	OFFICIAL SOFTBALL	420.00
BRENT NOVAK	OFFICIAL SOFTBALL	80.00
MANDY SIMON	OFFICIAL SOFTBALL	260.00
MICHAEL J. WILLIAMS	OFFICIAL SOFTBALL	310.00
POP-ITY POPCORN CO. LLC	POPCORN & SNOW CONE SUPPLIES	131.00
	Total For Dept 774.00 RECREATION	2,066.00
Dept 850.00 OTHER FUNCTIONS		
DBI BUSINESS INTERIORS	OFFICE SUPPLIES	225.52
DBI BUSINESS INTERIORS	OFFICE SUPPLIES	13.61
EXTEND YOUR REACH	POSTAGE & FEES JUNE	914.31
RICOH USA, INC.	RICOH COPIER MAINTENANCE	205.38
DELHI TOWNSHIP TREASURER	REFRESHMENTS/GOALS & OBJECTIVES MT	19.98
ORCHID STEALTH ORTHOPEDIC	STEALTH 2015 IFT REFUND 2016 JBOR	9.75
	Total For Dept 850.00 OTHER FUNCTIONS	1,388.55
	Total For Fund 101 GENERAL FUND	166,557.10
Fund 206 FIRE FUND		
Dept 000.00		
INTIER AUTOMOTIVE INTERIORS	INTIER MTT 2015 IFT REFUND	359.10
	Total For Dept 000.00	359.10
Dept 336.00 FIRE DEPARTMENT		
BARYAMES CLEANERS	UNIFORM CLEANING FOR FIREFIGHTERS	168.05
LANSING ICE & FUEL CO	GASOLINE 7/1-15/2016	865.30
LANSING UNIFORM CO	5 OFFICER BADGES/5 COLLAR BRASS	507.50
BOUND TREE MEDICAL, LLC	MEDICAL SUPPLIES	958.77
BOUND TREE MEDICAL, LLC	MEDICAL SUPPLIES	906.64
BOUND TREE MEDICAL, LLC	MEDICAL SUPPLIES	88.00
BOUND TREE MEDICAL, LLC	MEDICAL SUPPLIES	32.36
BOUND TREE MEDICAL, LLC	MISC MEDICAL SUPPLIES	9.39
LIFEGAS LLC	OXYGEN	139.70
MICHIGAN STATE UNIVERSITY	MEDICAL SUPPLIES	424.63
MOORE MEDICAL, LLC	MEDICAL SUPPLIES	196.00
APPLICATION SPECIALIST KO	HARDWARE & SOFTWARE MAINT	1,475.00
HASSELBRING-CLARK	COPIER OVERAGE	5.52
METRONET LONG DISTANCE	JULY LONG DISTANCE	2.52
VERIZON WIRELESS	CELLULAR JULY	173.75
VERIZON WIRELESS	CELLULAR JULY	710.17
TDS METROCOM	LOCAL SERVICE JULY	41.93
DELHI TOWNSHIP TREASURER	SEWER 6139 BISHOP	37.88
	Total For Dept 336.00 FIRE DEPARTMENT	6,743.11
	Total For Fund 206 FIRE FUND	7,102.21
Fund 207 POLICE FUND		
Dept 000.00		
INTIER AUTOMOTIVE INTERIORS	INTIER MTT 2015 IFT REFUND	359.10
	Total For Dept 000.00	359.10
Dept 301.00 POLICE		
INGHAM COUNTY TREASURER	POLICE CONTRACT JULY	213,942.75
	Total For Dept 301.00 POLICE	213,942.75
	Total For Fund 207 POLICE FUND	214,301.85

Fund 211 FIRE EQUIP. & APPARATUS FUND
Dept 339.00 EQUIPMENT & APPARATUS

FIRE SERVICE MANAGEMENT	TURNOUT GEAR CLEANING & REPAIR	45.00
THE PARTS PLACE	(5) 40# OIL DRY	52.45
COMMUNICATIONS SERVICES	PAGER REPAIR	35.00
COMMUNICATIONS SERVICES	RADIO REPAIR	480.00
COMMUNICATIONS SERVICES	MOVE MACOM BASE RADIO & MATERIAL	2,182.00
LOWE'S CREDIT SERVICES	BINS FOR NEW AMBULANCE	39.83
ROGER'S CLINE TIRE & AUTO	TIRE/#373	172.00
THE STRIPE MAN	GRAPHICS FOR #821	715.00
	Total For Dept 339.00 EQUIPMENT & APPARATUS	3,721.28
	Total For Fund 211 FIRE EQUIP. & APPARATUS FUND	3,721.28

Fund 248 DOWNTOWN DEVELOPMENT AUTHORITY
Dept 000.00

CRISP COUNTRY ACRES	JULY 2016 VENDOR PAYMENT	644.00
LYNN CUMMINS	JULY 2016 VENDOR PAYMENT	81.00
TODD DELO	JULY 2016 VENDOR PAYMENT	106.00
GLUTEN FREE ROX	JULY 2016 VENDOR PAYMENT	14.00
HARVEST DAY FARM, LLC	JULY 2016 VENDOR PAYMENT	1.00
LAUREN E. HELLERMAN	JULY 2016 VENDOR PAYMENT	6.00
LONESOME PINES BEEF	JULY 2016 VENDOR PAYMENT	264.00
RED'S SMOKEHOUSE BBQ	JULY 2016 VENDOR PAYMENT	57.00
AMBER TAYLOR	JULY 2016 VENDOR PAYMENT	18.00
THE 517 COFFEE COMPANY	JULY 2016 VENDOR PAYMENT	24.00
WILLOW BLOSSOM FARMS, LLC	JULY 2016 VENDOR PAYMENT	142.00
NEVA AUSTIN	JULY 2016 VENDOR PAYMENT	94.00
BEAGLE'S CAFE & BAKERY	JULY 2016 VENDOR PAYMENET	79.00
OFILIA DIAZ	JULY 2016 VENDOR PAYMENT	276.00
DV DESIGNS BY DEBI FROST	JULY 2016 VENDOR PAYMENT	19.00
ELAINE J. ERNST	JULY 2016 VENDOR PAYMENT	170.00
ROBIN GEYER	JULY 2016 VENDOR PAYMENT	36.00
DENNIS C. GREENMAN	JULY 2016 VENDOR PAYMENT	442.00
MICHAEL GENE HACKNEY	JULY 2016 VENDOR PAYMENT	25.00
DAVID HOLDWICK	JULY 2016 VENDOR PAYMENT	40.00
KAY JOHNSON	JULY 2016 VENDOR PAYMENT	65.00
FRED LONG	JULY 2016 VENDOR PAYMENT	88.00
GLORIA MCDANIEL	JULY 2016 VENDOR PAYMENT	5.00
TRAVIS NIGHTENGALE	JULY 2016 VENDOR PAYMENT	265.00
TERESA NORTON	JULY 2016 VENDOR PAYMENT	7.00
JONATHAN S. ORR	JULY 2016 VENDOR PAYMENT	6.00
OTTO'S POULTRY, INC	JULY 2016 VENDOR PAYMENT	1,695.00
SHAYNA QUILLIN	JULY 2016 VENDOR PAYMENT	95.00
RUSSELL ROWE	JULY 2016 VENDOR PAYMENT	260.00
MAI KOU VANG	JULY 2016 VENDOR PAYMENT	107.00
DONNA WYNNE WRIGHT	JULY 2016 VENDOR PAYMENT	221.00
INTIER AUTOMOTIVE INTERIORS	INTIER MTT 2015 IFT REFUND	5,556.45
	Total For Dept 000.00	10,908.45

Dept 728.00 DDA ADMINISTRATION

APPLICATION SPECIALIST KO	HARDWARE & SOFTWARE MAINT	118.00
C. HOWARD HAAS	CELL PHONE REIMBURSEMENT/HAAS	75.00
METRONET LONG DISTANCE	JULY LONG DISTANCE	2.80
TDS METROCOM	LOCAL SERVICE JULY	127.13
	Total For Dept 728.00 DDA ADMINISTRATION	322.93

Dept 729.00 DDA MARKETING & PROMOTION

BLOHM CREATIVE PARTNERS	JUNE OUR TOWN ACCOUNT MANAGE	1,000.00
BLOHM CREATIVE PARTNERS	JULY 2016 OUR TOWN	9,050.00
SOUND EFX PRODUCTION SERV	MIG AUDIO SYSTEM	2,250.00
SAM'S CLUB DIRECT	POP & WATER	38.80
SAM'S CLUB DIRECT	SALES BOOK/DRUM LINER/POP/JUICE	70.44
CRISP COUNTRY ACRES	JULY 2016 DOUBLE UP BUCKS	274.00
HARVEST DAY FARM, LLC	JULY 2016 DOUBLE UP BUCKS	16.00
DENNIS C. GREENMAN	JULY 2016 DOUBLE UP BUCKS	286.00
TRAVIS NIGHTENGALE	JULY 2016 DOUBLE UP BUCKS	58.00
RUSSELL ROWE	JULY 2016 DOUBLE UP BUCKS	44.00
BLOHM CREATIVE PARTNERS	JUNE 2016 WEB MAINTENANCE & HOST	965.00
	Total For Dept 729.00 DDA MARKETING & PROMOTION	14,052.24

Dept 731.00 DDA INFRASTRUCTURE PROJECTS

LOWE'S CREDIT SERVICES	10 POSTS	31.70
	Total For Dept 731.00 DDA INFRASTRUCTURE PROJECTS	31.70

Dept 850.00 OTHER FUNCTIONS

QUALITY FIRST MAID SERVICE	CLEANING SERVICES/SHERIFF & DDA	420.00
DELHI TOWNSHIP TREASURER	SEWER 2045 CEDAR	52.25
DELHI TOWNSHIP TREASURER	SEWER 2150 CEDAR	27.33
DELHI TOWNSHIP TREASURER	SEWER 2230 CEDAR	162.21
CONSUMERS ENERGY	ELECTRIC-2150 CEDAR	286.90
CONSUMERS ENERGY	ELECTRIC-2045 CEDAR #A	1,250.74
CONSUMERS ENERGY	ELECTRIC-2045 CEDAR #B	145.07
CONSUMERS ENERGY	ELECTRIC 2224 CEDAR	39.98
CONSUMERS ENERGY	ELECTRIC 4469 KELLER	13.45
CONSUMERS ENERGY	GAS 4469 KELLER	11.75
CONSUMERS ENERGY	GAS 2224 CEDAR	11.34
CONSUMERS ENERGY	GAS 2226 1/2 CEDAR	9.01
CONSUMERS ENERGY	GAS-2150 CEDAR	21.86
CONSUMERS ENERGY	GAS-2045 CEDAR	21.65
CONSUMERS ENERGY	GAS 2228 CEDAR	33.40
	Total For Dept 850.00 OTHER FUNCTIONS	2,506.94

Total For Fund 248 DOWNTOWN DEVELOPMENT AUTHORITY	27,822.26

Fund 590 SEWAGE DISPOSAL SYSTEM

Dept 000.00

ALLEN EDWIN HOMES	Basic Service Charge	68.90
AWREY, JOSHUA	Basic Service Charge	5.30
BELL, RONDA	Basic Service Charge	25.75
BOCK, CHAD	Basic Service Charge	64.20
BURCH, CANDACE	Basic Service Charge	48.64
COOK, DUSTIN	Basic Service Charge	5.23
CVE	Basic Service Charge	5.30
HYDEN, JOHN	Basic Service Charge	5.30
JACKSON, STEVEN	Basic Service Charge	89.35
LUCAS, WILLIAM	Basic Service Charge	15.15
MCCOLLOM, DAVID	Basic Service Charge	15.15
MEMBER FIRST MORTGAGE LLC	Basic Service Charge	15.15
MIDSTATE TITLE AGENCY LLC	Sewer Usage	5.30
MOGIS, ESTHER	Basic Service Charge	101.99
ODELL, JACOB	Sewer Usage	41.65
RGH INVESTMENTS LLC	Sewer Usage	162.80
SCHWEGEL, CASEY & RACHEL	Basic Service Charge	31.05
SHAW, JEFF	Basic Service Charge	20.45
WARD, DEREK	Basic Service Charge	25.50
ZEZULKA, LINDA J	Basic Service Charge	46.95
	Total For Dept 000.00	799.11

Dept 548.00 ADMINISTRATION & OVERHEAD

EXTEND YOUR REACH	POSTAGE & FEES JUNE	43.67
	Total For Dept 548.00 ADMINISTRATION & OVERHEAD	43.67

Dept 558.00 DEPT OF PUBLIC SERVICE

LANSING ICE & FUEL CO	GASOLINE 7/1-15/2016	981.88
AVERY OIL & PROPANE	GENSET DIESEL FUEL	662.00
MODEL COVERALL SERVICE	STAFF UNIFORMS/MAINTENANCE	52.06
MODEL COVERALL SERVICE	STAFF UNIFORMS-POTW	83.09
MODEL COVERALL SERVICE	STAFF UNIFORMS-MAINT	52.06
MODEL COVERALL SERVICE	STAFF UNIFORMS/POTW	83.09
BARYAMES CLEANERS	UNIFORM DRY CLEANING	50.00
APPLICATION SPECIALIST KO	HARDWARE & SOFTWARE MAINT	2,613.00
SPICER GROUP, INC.	GIS SERVICE/EMERGENCY LICENSE	4,025.00
ACE HARDWARE	1 KEY/DIORKA	1.99
ACE HARDWARE	2 KEYS/MAINTENANCE BLDG	3.98
ENVIRONMENTAL RESOURCE	QUARTERLY CHECK SAMPLE RENEWAL 20	852.26
HACH COMPANY	DRB200 REACTOR	1,305.00
HACH COMPANY	SHIPPING	66.39
HACH COMPANY	NITRIVER 2 NITRITE REAGENT	40.39
HACH COMPANY	NITRIVER 5 NITRATE REAGENT	48.65
HACH COMPANY	SHIPPING	17.79
ALEXANDER CHEMICAL CORP	DEPOSIT REFUND	(225.00)
ALEXANDER CHEMICAL CORP	SODIUM BISULFITE	884.50
ALEXANDER CHEMICAL CORP	CALCIUM NITRATE	10,648.36
ALEXANDER CHEMICAL CORP	CREDIT	(225.00)
ALEXANDER CHEMICAL CORP	HYPOCHLORITE	3,686.72
KEMIRA WATER SOLUTIONS, INC	FERRIC CHLORIDE	4,873.80
ALS LABORATORY GROUP	QUARTERLY SLUDGE TESTING	370.00
BIO-CARE, INC.	13 FIT TESTS	325.00
MODEL COVERALL SERVICE	8 BOXES WORK GLOVES 120PR/BX	1,240.00
SPICER GROUP, INC.	GIS NETWORK & ASSET MANAGEMENT	7,279.50
UNITED PARCEL SERVICE	SHIPPING CHARGES	94.60
UNITED PARCEL SERVICE	SHIPPING CHARGES	63.24
METRONET LONG DISTANCE	JULY LONG DISTANCE	4.35
VERIZON WIRELESS	CELLULAR JULY	605.99
TDS METROCOM	LOCAL SERVICE JULY	391.08
BOARD OF WATER & LIGHT	WATER 1492 AURELIUS	78.00
BOARD OF WATER & LIGHT	WATER 1988 WAVERLY	180.88
DELHI TOWNSHIP TREASURER	SEWER 1490 AURELIUS	168.90
CONSUMERS ENERGY	ELECTRIC-5999 HOLT	44.39
CONSUMERS ENERGY	ELECTRIC-6055 MC CUE	472.75
CONSUMERS ENERGY	ELECTRIC-1494 AURELIUS	52.98
CONSUMERS ENERGY	ELECTRIC 1490 AURELIUS	2,199.58
CONSUMERS ENERGY	ELECTRIC-2358 EIFERT	487.85
CONSUMERS ENERGY	ELECTRIC-2870 PINE TREE	487.85
CONSUMERS ENERGY	ELECTRIC-3505 HOLT	101.47
CONSUMERS ENERGY	ELECTRIC-4280 DELL	406.78
CONSUMERS ENERGY	ELECTRIC-4828 HOLT	87.98
CONSUMERS ENERGY	ELECTRIC-5961 MC CUE #2509	15,340.53
CONSUMERS ENERGY	ELECTRIC-1988 WAVERLY	489.21
CONSUMERS ENERGY	ELECTRIC-4000 N MICHIGAN#B	108.84
CONSUMERS ENERGY	GAS-5961 MC CUE #2	21.86
CONSUMERS ENERGY	GAS-5961 MC CUE #3	13.58
CONSUMERS ENERGY	GAS-4280 DELL	17.45
CONSUMERS ENERGY	GAS-3505 HOLT	13.58

CONSUMERS ENERGY	GAS-2481 DELHI COMM	15.79
CONSUMERS ENERGY	GAS-1492 AURELIUS	61.03
CONSUMERS ENERGY	GAS 5961 MC CUE #4	220.71
CONSUMERS ENERGY	GAS-5961 MC CUE #2319	30.08
CONSUMERS ENERGY	GAS-1988 WAVERLY	25.85
SAM'S CLUB DIRECT	2 PAPER TOWELS & 4 TOILET TISSUE	152.94
RS TECHNICAL SERVICES, INC.	2 OFF DELAY TIMERS/DELL RD L.S.	224.00
USA BLUE BOOK	(4) 47719 FLOAT SWITCH	515.80
USA BLUE BOOK	SHIPPING	26.25
LOWE'S CREDIT SERVICES	ANT KILLER/EIFERT LS	5.20
USA BLUE BOOK	3 GREEN MISS DIG MARKING PAINT	158.85
USA BLUE BOOK	SHIPPING	28.77
ACE HARDWARE	5 MARKING PAINT/MISS DIG	37.45
ACE HARDWARE	2 MARKING PAINT/MISS DIG	14.98
BARNHART & SON, INC.	POCASSET WAY & WASHINGTON SS	2,137.77
BARNHART & SON, INC.	PLEASANT RIVER DR L.S. FORCE	2,694.27
BARNHART & SON, INC.	PLEASANT RIVER DR L.S. FORCEMAIN	9,452.93
MATERIALS TESTING CONSULT	FORCE MAIN CONDITION ASSESSMENTS	5,539.40
CATHEY COMPANY	4" QUICK COUP ALUM	37.74
CATHEY COMPANY	1 1/2' MIP BY FEMALE CAMLOCK FITTING	13.50
CATHEY COMPANY	1 1/2' MALE CAMLOCK PLUG	5.52
INTERSTATE BATTERIES OF	BATTERY/SCAGG MOWER	38.95
LOWE'S CREDIT SERVICES	2 CYCLE OIL/POTW	8.31
LOWE'S CREDIT SERVICES	POWER WASHER WAND/2 BRUSHES	64.54
THE PARTS PLACE	60 TIRE PLUGS	29.40
PURE GREEN LAWN & TREE	TREE SERVICE-POTW	240.00
PURE GREEN LAWN & TREE	LAWN AND TREE SERVICE-MAINT	232.00
QUALITY FIRST MAID SERVICE	CLEANING SERVICES/MAINTENANCE	260.00
QUALITY FIRST MAID SERVICE	CLEANING SERVICES/POTW	260.00
JACK DOHENY SUPPLIES, INC	VACTOR INSPECTION/UNIT 5A	750.00
BALLARD ELECTRIC, INC	INSTALL MIXERS IN AERATION TANKS	6,788.80
METTLER-TOLEDO, LLC	2 LAB BALANCE CALIBRATION	441.18
INTERSTATE BATTERIES OF	BATTERIES #6	274.68
TASMANIAN TIRE CO.	USED TIRE/#11	47.00
HARPER INDUSTRIAL CONST	INSTALL DRIVE UNIT ON SECONDARY	10,841.90
	Total For Dept 558.00 DEPT OF PUBLIC SERVICE	103,405.82
Dept 578.01 CAPITAL IMPROVEMENTS		
BARNHART & SON, INC.	CARTAGO SS IMPROVEMENTS PYMT #1	83,937.87
	Total For Dept 578.01 CAPITAL IMPROVEMENTS	83,937.87
	Total For Fund 590 SEWAGE DISPOSAL SYSTEM	188,186.47
Fund 643 LOCAL SITE REMEDIATION REVOLVING FUND		
Dept 735.00 LOCAL SITE REMEDIATION		
FOSTER, SWIFT, COLLINS	ENVIRONMENTAL LEGAL FEES JUNE	5,333.35
	Total For Dept 735.00 LOCAL SITE REMEDIATION	5,333.35
	Total For Fund 643 LOCAL SITE REMEDIATION REVOLVING FUND	5,333.35
Fund 701 TRUST & AGENCY FUND		
Dept 000.00		
AFLAC	WITH DEDUCT-AFLAC DISABILITY	596.80
AFLAC	WITH DEDUCT-AFLAC LIFE INSUR	7.62
AFLAC	WITH DEDUCT-AFLAC ACCIDENT	500.58
AFLAC	WITH DEDUCT-AFLAC SICKNESS	324.38
AFLAC	WITH DEDUCT-AFLAC CANCER	450.84
AFLAC	WITH DEDUCT-DISABILITY RIDER	18.48
AFLAC	WITH DEDUCT-AFLAC ACCIIDENT RIDER	11.88
CHELSEA VANSIPE	JULY 2016 BOR REFUND	37.37
DELHI TOWNSHIP TREASURER	JULY BOR REFUND/APPLY TO DELQ TAX	55.97
GERALD WILKINSON	JULY 2016 BOR REFUND	7.27

HAROLD HORNBECK	JULY 2016 BOR REFUND	57.07
LYNETTE WEDDLE	JULY 2016 BOR REFUND	22.58
MARIA & DAVID WARVEL	JULY 2016 BOR REFUND	22.05
MICH SOYBEAN PROMOTION	JULY 2016 BOR REFUND	640.68
RALPH HORNBECK	JULY 2016 BOR REFUND	78.47
RICHARD FELDPAUSCH	JULY 2016 BOR REFUND	22.06
ROBERT G. SCHMUNSLER	JULY 2016 BOR REFUND	26.57
STEVE LOCKHART	JULY 2016 BOR REFUND	19.71
STEVEN BAIRD	JULY 2016 BOR REFUND	28.14
INTIER AUTOMOTIVE INTERIORS	INTIER MTT 2015 IFT REFUND	11,009.55
ORCHID STEALTH ORTHOPEDIC	STEALTH 2015 IFT REFUND 2016 JBOR	7,834.40
	Total For Dept 000.00	21,772.47
	Total For Fund 701 TRUST & AGENCY FUND	21,772.47

Fund 703 CURRENT TAX ACCOUNT
Dept 000.00

DBT CENTER OF MICHIGAN	REFUNDS DUE TAXPAYERS	196.38
	Total For Dept 000.00	196.38
	Total For Fund 703 CURRENT TAX ACCOUNT	196.38
	Total For All Funds:	634,993.37

DELHI CHARTER TOWNSHIP
FUND TRANSFERS AND PAYROLL APPROVAL
For Payroll Dated August 11, 2016

I. Certification of Preparation and Distribution

The attached check and payroll registers encompass check numbers: 109154 through 109277 & direct deposits numbers: DD22982 through DD23082. The payroll was prepared in accordance with established payroll rates and procedures.
The Treasurer's & Clerk's signatures were printed on the payroll checks using an electronic image signature

_____
Lora Behnke, Accounting Clerk

The attached Check and Payroll Registers were reviewed. The payroll checks were distributed in accordance with established procedures.

Dated: August 11, 2016 Director of Accounting

II. Payroll Report

The August 11, 2016 payroll encompasses the following funds and expenditures:

	Gross Payroll	Payroll Deductions	Net Pay
General Fund	$112,393.59	$25,883.91	$86,509.68
Fire Dept. Fund	53,699.69	18,312.98	$35,386.71
DDA	4,298.43	982.47	$3,315.96
Sewer Fund/Receiving	41,206.50	12,814.19	$28,392.31
Total Payroll	$211,598.21	$57,993.55	**$153,604.66**
	Township FICA	**Township RHS & Pension Plan**	**Total Deductions & TWP Liabilities**
General Fund	$6,137.14	$7,615.97	$39,637.02
Fire Dept. Fund	3,997.54	4,340.21	26,650.73
DDA	153.64	84.76	1,220.87
Sewer Fund/Receiving	3,045.42	4,167.73	20,027.34
Total Payroll	$13,333.74	$16,208.67	$87,535.96

Director of Accounting

III. FUND TRANSFERS

Transfers covering the foregoing payroll were made on August 11, 2016 and identified as follows:

8/11 Net Pay Disbursement in Common Savings ($153,604.66)

Roy W. Sweet, Treasurer

IV. Board Audit and Approval:

At a regular meeting of the Township Board held on August 16, 2016, a motion was made by _____and passed by_____yes votes and _____no votes(_____absent) that the payroll dated August 11, 2016 was reviewed, audited, and approved.

Attachment to Payroll Register
cc: Sweet(1)Vander Ploeg(1)

Evan Hope, Clerk

DELHI CHARTER TOWNSHIP

MEMORANDUM

TO: Delhi Township Board Members

FROM: John B. Elsinga, Township Manager

DATE: July 28, 2016

RE: Proposal for Professional Engineering Services – River Pointe Subdivision Road Special Assessment District

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Enclosed for your review and approval is a proposal from Hubbell, Roth and Clark in the amount of $74,530 for the design and construction engineering of the River Pointe Subdivision Road Improvement project. This amount was included in the total estimated road improvement budget of $528,484.25 which will be special assessed to the benefiting properties.

This proposal will enable us to better define the full scope of improvement required, better coordinate the same with other utilities within the right-of-way and bid the work in order to establish a fair and equitable assessment roll to pay for the improvements. The use of HRC is welcomed by both from the Township and the Ingham County Road Department as they have extensive experience with road improvement and special assessment projects such as this in Oakland County and are accustomed to working with staff from the Ingham County Road Department. Therefore, I recommend the Board approve the proposal from HRC in the amount of $74,530 which will be special assessed to the benefiting properties as part of the road improvement project for River Pointe Subdivision.

Recommended Motion:

To accept the Proposal for Professional Engineering services in the amount of $74,530 for the design and construction engineering associated with the River Pointe Subdivision road improvement project and special assessment district.

HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915

PRINCIPALS
George E. Hubbell
Thomas E. Biehl
Keith D. McCormack
Nancy M. D. Faught
Daniel W. Mitchell
Jesse B. VanDeCreek
Roland N. Alix
Michael C. MacDonald
James F. Burton

SENIOR ASSOCIATES
Gary J. Tressel
Randal L. Ford
William R. Davis
Dennis J. Benoit
Robert F. DeFrain
Thomas D. LaCross
Albert P. Mickalich
Timothy H. Sullivan

ASSOCIATES
Jonathan E. Booth
Marvin A. Olane
Marshall J. Grazioli
Donna M. Martin
Charles E. Hart
Colleen L. Hill-Stramsak
Bradley W. Shepler
Karyn M. Stickel
Jane M. Graham
Thomas G. Maxwell
Todd J. Sneathen
Aaron A. Uranga

HUBBELL, ROTH & CLARK, INC.
OFFICE: 2101 Aurelius Road, Suite 2A
Holt, MI 48842
PHONE: 517.694.7760
WEBSITE: www.hrc-engr.com
EMAIL: info@hrc-engr.com

July 26, 2016

Delhi Charter Township
2074 Aurelius Road
Holt, Michigan 48842

Attn: Ms. Tracy Miller, Director of Community Development

Re: Proposal for Professional Engineering Services HRC Job No. 20160615
River Pointe Subdivision
Road Special Assessment District

Dear Ms. Miller:

We appreciate the opportunity to provide this proposal for professional engineering services for the design and construction of the River Pointe Subdivision Road Special Assessment District which will include road resurfacing, drainage improvements, and ADA sidewalk ramp upgrades as necessary.

Statement of Understanding

We understand that the Township is proceeding with the special assessment process for the River Pointe Subdivision. The Township Board held a public hearing for need and necessity for the project and requested estimates and plans be prepared for the proposed work. HRC will finalize the plans and specifications and have them ready for bid to contractors by September. The bid documents will need to meet the requirements of the Ingham County Road Department (ICRD) because the roads included in this project are under their jurisdiction. ICRD requirements have been incorporated into this proposal to ensure the documents prepared meet the needs of all parties.

Project Tasks

Task 1 – Preliminary Review

The first step in our design proposal includes the review of background information, cost estimates, and "as built" plans. HRC will also deploy its Client Interview Process (CIP) to first identify, and then document, track, and measure the outcomes the Township desires for this project. We consider this an essential element to obtain stakeholder, i.e. Township and ICRD staff, input and to get the project right. There will be no cost to the Township associated with the CIP.

HRC will also walk the proposed work area to identify potential road issues and any other potential concerns to discuss with the Township. At this phase, we will also complete pavement cores to determine the thickness of the existing asphalt and subbase material located under the roadway to aid in design.

Finally, all utility companies and local agencies will be contacted for maps and existing data and informed as to the project timing to facilitate coordination.

Task 2 –Survey
This task will include a visual survey of the project, in order to prepare plans and specifications to meet ICRD standards.

Task 3 – Preliminary Design
Based on the site visit, this task will include identification of specific project limits, an existing drainage review, and other project related elements. This will also include an initial meeting with the Ingham County Drain Commissioner's (ICDC) office to discuss any drain impacts.

Task 4 – Preparation of Plans and Specifications
HRC will proceed with the final design in accordance with ICRD requirements based on outcome of the above tasks. This will include the development of final plans, specifications, and estimates for construction. Key steps within this task include any modifications to the existing drainage system, and development of the pavement cross sections. The plans will be designed and submitted for Township, ICRD, and ICDC reviews.

The plans will be set up as a "log" type project that includes: a location map, typical sections for the roadway, project details, SESC plans, and list of quantities. Full plans are not required. HRC is experienced with the required plan preparation guidelines and procedures, as well as the strict scheduling requirements for the SAD process. This item does not include the design of any other utilities to be relocated other than road related drainage infrastructure.

Task 5 – Bidding
This project bidding will be let by Delhi Township. The HRC team will prepare the advertisement, respond to all Contractor inquires, provide addenda as required and prepare a recommendation for award to the low bidder.

Task 6 – Permitting
Several permits will be required for the construction of this project. An ICRD permit will be required for work within the right-of-way. The Township, as an APA, will issue the required SESC permit. This task will include preparation and submittal of the permit applications. Permit fees will be paid directly by the Township

Task 7 – General Administration
During the course of the project, there are several task and milestones that will need to be met. This task will include a kickoff meeting, biweekly progress reports, two (2) status update meetings with Township staff, and two Public Meetings/Board Meetings. This task will include the preparation of meeting minutes for each of the meetings held.

Task 8 – Construction Services
During the construction of this project, HRC's construction administrator and onsite construction observer/inspector will provide the day to day interface with the contractor and perform the coordination with the property owners. HRC will track daily work, ensure that work is completed according to contract documents, limited

material testing, and prepare required pay estimates. Further, HRC will perform the necessary SESC inspections and administration.

The remainder of the budget is allocated towards conducting a pre-construction meeting including representatives of the Township, Contractor, and Utility Companies to review the project requirements and the Contractor's plan to complete the work, shop drawing and material certification review, pay application processing, progress meetings with the Township and Contractor, project oversight, and routine updates to the Township and residents. HRC will also provide a post construction walkover, punch lists, review of Contractor closeout forms, and copies of construction photos and field reports. This item does not include record drawings or any contractor dispute resolution.

Deliverables

We anticipate the following deliverables:

- Client Interview Process documentation
- Permit Applications
- Preliminary Plans and Specifications
- Final Plans and Specifications
- Addenda
- Bid Recommendation
- Biweekly Progress Reports
- Meeting Minutes

Fee

Based on the above project scope and estimated staff requirements, we propose to perform the design phase and soil and pavement investigation for this project for an estimated time and materials fee of **$27,180.** The construction services which include the on-site inspection and the contract administration will be completed for an estimated time and materials fee of **$47,350**. This is a total not to exceed amount of **$74,530.**

HRC Tasks	**Proposal**
Design Phase	$23,680
Pavement Cores and Borings	$3,500
Construction Services	$47,350
Total	**$74,530**

Work Not Presently Included in our Scope

- Environmental or habitat assessments
- Wetland mitigation
- Additional meetings beyond those identified
- Shop drawing reviews

Schedule

HRC is prepared to begin immediately upon Township approval and to meet the project schedule for the SAD.

Project Team

HRC will utilize Todd Sneathen, Miranda Thompson, and Roger Crouse in the Delhi Township office to complete this work.

We look forward to the opportunity to be of continued service to the Township. Please feel free to contact Jamie Burton at (248) 454-6363 should you have any comments or questions on this proposal.

Very truly yours,

HUBBELL, ROTH & CLARK, INC.

James F. Burton, P.E.
Vice President

TS
pc: HRC; T. Sneathen, File

DELHI CHARTER TOWNSHIP

MEMORANDUM

TO: Delhi Township Board Members

FROM: John B. Elsinga, Township Manager

DATE: August 9, 2016

RE: Resolution No. 2016-017 – Application for Industrial Facilities Tax (IFT) Exemption – Trick Titanium

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Enclosed for your review and consideration is Resolution No. 2016-017 which would approve the Application for Industrial Facilities Tax (IFT) Exemption for Trick Titanium located at 2046 Depot Street. This application is for $500,000 for the construction of a new building.

A public hearing will be held on August 16, 2016 at 7:45 p.m. A Notice of Hearing was mailed certified to all legislative bodies of each taxing unit that levies ad valorem property taxes within Delhi Township and gives them the opportunity for comments on the application during the public hearing.

Therefore, subsequent to the public hearing, I recommend the Board approve the IFT application for Trick Titanium.

Recommended Motion:

To adopt Resolution No. 2016-017 which approves the Application for Industrial Facilities Tax (IFT) Abatement Certificate for Trick Titanium.

DELHI CHARTER TOWNSHIP

RESOLUTION NO. 2016- 017

A Resolution to Approve the Application of Trick Titanium for
Industrial Facilities Exemption Certificate

At a Regular Meeting of the Township Board of Trustees, of the Charter Township of Delhi, Ingham County, Michigan, held at the Community Services Center, 2074 Aurelius Road, Holt, Michigan on Tuesday, the 16th day of August, 2016, at 7:30 p.m.

PRESENT:

ABSENT:

The following Resolution was offered by_____.

WHEREAS, pursuant to 1974 PA 198, as amended, the Township Board created an Industrial Development District (the "Industrial Development District"), with boundaries as outlined in Exhibit A of Resolution No. 2007-036 which includes the property at 2046 Depot Street, Holt, MI; and

WHEREAS, the Township Clerk received an Application (the "Application") for an Industrial Facilities Exemption Certificate from Trick Titanium (the "Applicant") on July 18, 2016 with respect to real property improvements described in the Application (the "Facility") to be acquired and installed within the Industrial Development District; and

WHEREAS, before acting on the Application, the Township Board held a hearing on August 16, 2016 at the Community Services Center, at 7:45 p.m., for which hearing the Applicant, the Township Assessor, the public and a representative of each of the affected taxing units were given written notice, and at which hearing were afforded an opportunity to be heard on the Application; and

WHEREAS, acquisition and installation of the Facility is anticipated to have the reasonable likelihood to retain, create or prevent the loss of employment in Delhi Charter Township; and

WHEREAS, the aggregate SEV of real and personal property exempt from ad valorem taxes within Delhi Charter Township, after granting this exemption, will exceed 5% of an amount equal to the sum of the SEV of Delhi Charter Township, plus the SEV of personal and real property thus exempted.

NOW, THEREFORE, BE IT RESOLVED;

1. The Township Board finds and determines that:

    a. The granting of the Application under Public Act 198 of 1974, as amended, together with the aggregate amount of Industrial Facilities Tax Exemption Certificates previously granted and

currently in force under Act No. 198 of the Public Acts of 1974 and Act No. 255 of the Public Acts of 1978, shall not have the effect of substantially impeding the operation of Delhi Charter Township, or impairing the financial soundness of a taxing unit which levies ad valorem property taxes in Delhi Charter Township.

2. The Application for Industrial Facilities Tax Exemption for Facilities to be acquired and installed on the parcel of real property described in the Application and situated within the Industrial Development District is hereby approved.

3. The Industrial Facilities Tax Exemption granted pursuant to PA 198 of 1974, as amended, shall be for a period of twelve (12) years, plus up to two (2) years construction/acquisition.

4. Subject to the condition that any written agreements, assurances, and representations otherwise made by the Applicant to Delhi Charter Township concerning the Facility and the taxation thereof are not thereby superseded, the Township Clerk is hereby authorized to execute agreements and such other certificates, instruments, and papers necessary or convenient to effectuate the Industrial Facilities Tax Exemption, including enabling the Applicant to correct inadvertent errors in the Application prior to its submission to the State of Michigan.

AYES:

ABSENT:

The foregoing Resolution declared adopted on the date written above.

_____
Evan Hope, Township Clerk

STATE OF MICHIGAN }
}ss
COUNTY OF INGHAM }

I, the undersigned, the duly qualified Clerk of the Charter Township of Delhi, Ingham County, Michigan, DO HEREBY CERTIFY that the foregoing is a true and complete copy of the proceedings taken by the Township Board at a regular meeting held on the 16th day of August, 2016.

IN WITNESS THEREOF, I have hereunto affixed my official signature this ____ day of August, 2016.

_____
Evan Hope, Township Clerk

Michigan Department of Treasury
1012 (Rev. 7/05)

RECEIVED
JUL 18 2016
Community Development Department

Application for Industrial Facilities Tax Exemption Certificate

Issued under authority of P.A. 198 of 1974, as amended. Filing is mandatory.

INSTRUCTIONS: File the original and two copies of this form and the required attachments (three complete sets) with the clerk of the local government unit. The State Tax Commission (STC) requires two complete sets (one original and one copy). One copy is retained by the clerk. If you have any questions regarding the completion of this form or would like to request an informational packet, call (517) 373-3272.

To be completed by Clerk of Local Government Unit	
Signature of Clerk	Date received by Local Unit: 7/18/16
STC Use Only	
Application Number	Date Received by STC

APPLICANT INFORMATION
All boxes must be completed.

1a. Company Name (Applicant must be the occupant/operator of the facility): TRICK TITANIUM	1b. Standard Industrial Classification (SIC) Code - Sec. 2(10) (Four Digit Code): 3490	
1c. Address of Facility (real property or personal property location): 2046 DEPOT ST, BLDG B	1d. Name of City/Township/Village (Indicate which): DELHI Township	1e. County: INGHAM
2. Type of Approval Requested: [x] New (Sec. 2(4)) [ ] Transfer (1 copy to only) [ ] Speculative Building (Sec. 3(8)) [ ] Rehabilitation (Sec. 3(1)) [ ] Research and Development (Sec. 2(9))	3a. School District where facility is located: HOLT	3b. School Code: 33070
	4. Amount of years requested for exemption (1-12 Years): 12	

5. Thoroughly describe the project for which exemption is sought: Real Property (Type of Improvements to Land, Building, Size of Addition); Personal Property (Explain New, Used, Transferred from Out-of-State, etc.) and Proposed Use of Facility. (Please attach additional page(s) if more room is needed).

NEW 8,400 SQ FT MANUFACTURING BUILDING, LANDSCAPING, RUNOFF RETENSION, DRIVEWAY IMPROVMENTS, PARKING IMPROVEMENTS, MISC OTHER IMPROVEMENTS AND ASSOCIATED COSTS.

ALSO SEE ATTACHED

6a. Cost of land and building improvements (excluding cost of land) * Attach list of improvements and associated costs. * Also attach a copy of building permit if project has already begun.	$500,000.00	Real Property Costs
6b. Cost of machinery, equipment, furniture and fixtures * Attach itemized listing with month, day and year of beginning of installation plus total costs		Personal Property Costs
6c. Total Project Costs	$500,000.00	Total of Real & Personal Costs

7. Indicate the time schedule for start and finish of construction and equipment installation. Projects must be completed within a two year period of the effective date of the certificate unless otherwise approved by the STC.

	Begin Date (M/D/Y)	End Date (M/D/Y)		
Real Property Improvements	7/1/16	7/31/17	[x] Owned	[ ] Leased
Personal Property Improvements			[ ] Owned	[ ] Leased

8. Are State Education Taxes reduced or abated by the Michigan Economic Development Corporation (MEDC)? If yes, applicant must attach a signed MEDC Letter of Committment to receive this exemption. [ ] Yes [ ] No

9. Number of existing jobs at this facility that will be retained as a result of this project: 15	10. Number of new jobs at this facility expected to be created within two years of project completion: 4

11. Rehabilitation applications only: Complete a, b and c of this section. You must attach the assessor's statement of valuation for the entire plant rehabilitation district. The SEV data below must be as of December 31 of the year prior to the rehabilitation.

a. SEV of Real Property (excluding land)
b. SEV of Personal Property (excluding inventory)
c. Total SEV

12a. Check the type of District the facility is located in: [x] Industrial Development District [ ] Plant Rehabilitation District

12b. Date district was established by local government unit (contact local unit): 7/17/01	12c. Is this application for a speculative building (Sec. 3(8))? [ ] Yes [x] No

APPLICANT CERTIFICATION - complete all boxes.

The undersigned, authorized officer of the company making this application certifies that, to the best of his/her knowledge, no information contained herein or in the attachments hereto is false in any way and that all are truly descriptive of the industrial property for which this application is being submitted.

It is further certified that the undersigned is familiar with the provisions of P.A. 198 of 1974, as amended, being Sections 207.551 to 207.572, inclusive, of the Michigan Compiled Laws; and to the best of his/her knowledge and belief, (s)he has complied or will be able to comply with all of the requirements thereof which are prerequisite to the approval of the application by the local unit of government and the issuance of an Industrial Facilities Exemption Certificate by the State Tax Commission.

13a. Preparer Name	13b. Phone Number	13c. Fax Number	13d. E-mail Address
JOHN GULLIVER	(517) 694-7449	(517) 694-7490	johng@tricktitanium.com
14a. Name of Contact Person	14b. Phone Number	14c. Fax Number	14d. E-mail Address
JOHN GULLIVER	(517) 694-7449	(517) 694-7490	johng@tricktitanium.com
15a. Name of Company Officer (No Authorized Agents)			
MICHAEL E MILLER			
15b. Signature of Company Officer (No Authorized Agents)		15c. Fax Number	15d. Date
		(517) 694-7490	
15e. Mailing Address (Street, City, State, ZIP)		15f. Phone Number	15g. E-mail Address
2046 DEPOT ST, BLDG B, HOLT MI 48842		(517) 694-7449	mikem@tricktitanium.com

LOCAL GOVERNMENT ACTION & CERTIFICATION - complete all boxes.

This section must be completed by the clerk of the local governing unit before submitting application to the State Tax Commission. Check items on file at the Local Unit and those included with the submittal.

16. Action taken by local government unit

- ☐ Abatement Approved for _____ Years (1-12)
  - After Completion ☐ Yes ☐ No
- ☐ Denied (Include Resolution Denying)

16a. Documents Required to be on file with the Local Unit

Check or Indicate N/A if Not Applicable

- ☐ 1. Notice to the public prior to hearing establishing a district.
- ☐ 2. Notice to taxing authorities of opportunity for a hearing.
- ☐ 3. List of taxing authorities notified for district and application action.
- ☐ 4. Lease Agreement showing applicants tax liability.

16b. The State Tax Commission Requires the following documents be filed for an administratively complete application:

Check or Indicate N/A if Not Applicable

- ☐ 1. Original Application plus attachments, and one complete copy
- ☐ 2. Resolution establishing district
- ☐ 3. Resolution approving/denying application.
- ☐ 4. Letter of Agreement (Signed by local unit and applicant)
- ☐ 5. Affidavit of Fees (Signed by local unit and applicant)
- ☐ 6. Building Permit for real improvements if project has already begun
- ☐ 7. Equipment List with dates of beginning of installation
- ☐ 8. Form 3222 (if applicable)
- ☐ 9. Speculative building resolution and affidavits (if applicable)

17. Name of Local Government Body	18. Date of Resolution Approving/Denying this Application

Attached hereto is an original and one copy of the application and all documents listed in 16b. I also certify that all documents listed in 16a are on file at the local unit for inspection at any time.

19a. Signature of Clerk	19b. Name of Clerk	19c. E-mail Address
19d. Clerk's Mailing Address (Street, City, State, ZIP Code)		
19e. Phone Number	19f. Fax Number	

State Tax Commission Rule Number 57: Complete applications approved by the local unit and received by the State Tax Commission by October 31 each year will be acted upon by December 31. Applications received after October 31 may be acted upon in the following year.

Local Unit: Mail one original and one copy of the completed application and all required attachments to:

State Tax Commission
Michigan Department of Treasury
P.O. Box 30471
Lansing, MI 48909-7971

STC USE ONLY			
LUCI Code	Begin Date	End Date	End Date2

TIMBERLAND / C.B.S

JOINT VENTURE

4205 Charlar Dr Suite 2
Holt Michigan 48842

CBS

JOINT VENTURE BETWEEN TIMBERLAND DEVELOPMENT GROUP, INC. AND COMMUNITY BUILDING SERVICES L.L.C.

DESIGN/ BUILD PROPOSAL

7/8/2016

Attention MEM Leasing Inc
Company Trick Titanium
Street Depot St
City State Holt, Michigan 48842

Proposal Regarding Design and construction of a n 8,400 S.F. Inland pre-Engineered steel Building including associated site work

Timberland Development Group, Inc is please to submit this Design/Build proposal as related to your exciting referrenced project.It is the intent of this proposal to offer you. a comprehensive and accurate budget, that will assist you in your preparation and or finalization of your business planning, as well as give you a proffesional and accurate prjection for your financial institution.

The lump sum cost of a Design/Build project can be broken down into Six components,as follows:

1) Architectural and Engineering
2) Building (Hard Cost)
3) Utilities (Infrastructure)
4) Permits and Fees
5) Site Work (Surface Inprovemnets)
6) Land

The work items in these catagories as listed below, are included, but not limited to the following

Architectural -architectural design,Material specification, Civil and Structural Engineering, mechanical engineering, Electrical engineering,landscaoe Planning and submittals

Building Hard Cost -Building Excavation, Building Concrete, Masonary work, Misc and Structural Steel, Rough and Finish Carpentry, Thermo Protection (Insulation, Roofing, Siding, Gutters &Down spouts, Soffit & Fascia,Copings & Flashings, water proofing, EIFS), Doors and Windows, Finishes (Drywall Accoustical Sound Attenuation, Painting, Floor Covering, Cabinets and Counter Tops, Specialties, Mechanical (HVAC, Plumbing, Fire Protection,) Electrical

Infrastructure - Sanitary services, Storm Water Management, Water Service, Electrical, Gas Service

Site Work -Sidewalks, Curbs, Paving, Demo, Clearing, Landscape, Dumpster Enclosure, Site Lighting.

Permits and Fees - Building permit, Sanitary Tap Fees or Private Sceptic System, Water Tap Fees or Private well, Drive Cut permit or MDOT, Erosion Permit, Work in Right of way Permit, Plan Review Fees.

Land - Generally controlled by Owner

See the attached Scope of work (Exhibit 2), for particulars related to this project and proposal.

Timberland Development Group has 30 years and over 2,000,000 Sq, Ft. of completed project experience, from which to draw from, and we have developed an hand picked team of subcontractors and associates, that help to create the intial design and budgets for your project. This team assures you that the working drawings are completed to match the budget given here-in.

This process helps to eliminate the cost over runs, so often associated with the standard architect prepared documents, then bid out procedure.

We and our team have spent a great deal of time working up front on your project.And, from this process, we hereby propose to furnish all labor, and materials, and provide those services necessary to complete your project for the **Lump Sum of .....** **$467,617.14**

Below is a **preliminary breakdown** of the categorized cost for your project.

Architectural/Eng.	$10,500.00
General Conditions	$28,611.60
Excavation	$59,265.00
Building Concrete	$66,625.00
Masonry	$2,420.00
Steel	$104,170.00
Carpentry	$1,400.00
Thermo Protection	$14,754.00
Doors and Windows	$22,035.00
Finishes	$6,000.00
Cabinets Counter Tops	$0.00
Specialties	$400.00
Mechanicals	$27,343.00
Electrical	$25,600.00
Paving	$33,000.00
Infrastructure	$0.00
Permits and Fees	OWNER
FF&E	$4,500.00
Contingency	$0.00
Contractor O.H.	$20,737.80
Contractor Margin	$40,255.74
Project Total	**$467,617.14**

Allowances included in this proposal

Permits	Owner
Infrastructure	0.00
Landscape	0.00
Wall Covering	0.00
Cabinets and Tops	0.00
Fireplace	0.00
Appliance	0.00
I.T. Wiring	0.00
Flooring	0.00

Please note Allowances are items which are supplied by sources outside the control of the Contractor (Ie; Government authorities, Power Companies etc.)

Or are items, of which the owners selections, could have an effect on the cost.

TRICK TITANIUM - *ESTIMATE OF POTENTIAL IFT BENEFIT* 8/4/2016

Est. New Investment:		Millage Rate Assumptions:			
Real Property	$500,000	Real Property		Personal Property	
Personal Property	$0	IFT Rate:	35.51755	IFT Rate:	20.859
		Non-IFT Rate:	65.0351	Non-IFT Rate:	41.0351

Abatement Year	*Const. Yr1*	*Const. Yr2*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
	2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Est. Real Property Value (SEV)	$250,000	$252,500	$255,025	$257,575	$260,151	$262,753	$265,380	$268,034	$270,714	$273,421	$276,156	$278,917
Est. Personal Property Value (SEV)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total SEV	***$250,000***	***$252,500***	***$255,025***	***$257,575***	***$260,151***	***$262,753***	***$265,380***	***$268,034***	***$270,714***	***$273,421***	***$276,156***	***$278,917***
Est. Tax **with no** IFT												
Real Property	$16,259	$16,421	$16,586	$16,751	$16,919	$17,088	$17,259	$17,432	$17,606	$17,782	$17,960	$18,139
Personal Property	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Est. Tax **with** IFT												
Real Property	$8,879	$8,968	$9,058	$9,148	$9,240	$9,332	$9,426	$9,520	$9,615	$9,711	$9,808	$9,906
Personal Property	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Est. Tax Incentive Provided (difference)	***$7,379***	***$7,453***	***$7,528***	***$7,603***	***$7,679***	***$7,756***	***$7,833***	***$7,912***	***$7,991***	***$8,071***	***$8,151***	***$8,233***

Total Est. Value of IFT Incentive*: **$110,303**

*Assumptions Used in Above Calculations:

1. Personal property (PP) is depreciated by 6% per year for the duration of the abatement period and comes on the roll at 90%.
2. Real property (RP) will increase in value by 1% per year.
3. The millage rate is assumed to remain constant over the duration of the abatement, which it will not. Also, beginning in 2010, the new MBT specifies that industrial personal property is exempt from the State Ed. Tax and local school operating.
4. All numbers and calculations above are estimates only and should not be used by anyone for financial planning or other similar purposes. The figures contain multiple variables that can and will change the outcome of the estimates.
5. The above information is not an implication or contract that the tax savings represented above will be achieved or provided by the Township or the State of Michigan.
6. That the full value of the "facility" will be on the tax rolls by Dec. 31, 2012, which may or may not be the case. 2 years is allowed for construction.

Delhi Charter Township
Department of Community Development

MEMORANDUM

TO: John B. Elsinga, Township Manager

FROM: Tracy L.C. Miller, Director of Community Development

DATE: August 11, 2016

RE: Realize Cedar Plan

As you know, last fall McKenna & Associates was retained by the Township for the purpose of completing the Cedar Street Revisioning Plan. McKenna's approach to the project was carefully laid out in their proposal and included the use of a steering committee to develop the initial draft plan. One of the things that set McKenna's approach apart from others was their proposed method for incorporating significant public input in unique ways. Once the contract was awarded to McKenna, the steering committee was established. It includes seven participants, who were selected because of the community cross-sections and interests they represent. Steering Committee members included Howard Haas, Jon Harmon, Steve Warfield, David Leighton, Evan Hope, Jaime Burton and I.

The first work effort was a walking audit, which was conducted last November (2015) by McKenna and the steering committee members. Thereafter, the steering committee met each month with the consultant to guide the process. During the process, the steering committee determined that the plan should be called "Realize Cedar" because they felt the name would be easier for residents to remember and that the brand could be further developed over the coming years as implementation occurs.

The first of three focus group meetings was conducted in January (2016). It was geared specifically towards the Township's seniors and took place at the Senior Center. The gathering was very well attended. The second focus group was for residents of Cedar Street. Residents were sent a personal invitation and asked to attend the meeting to provide feedback. Several individuals attended. While the turnout was less than what was hoped for, the feedback received was insightful and useful. The final focus group meeting was held in April and was for Cedar Street business owners. Again, overall attendance was lower than hoped, but the feedback was positive and helpful in developing the plan.

The consultant also gathered public input by conducting a number of "pop-up" meetings. A total of three pop-ups were conducted. We estimate that this effort reached well over 2000 residents. The first pop-up was held at the Holt High School during a home basketball game. The second was during the kid's day event in Valhalla Park and the third was during a concert at

Veteran's Memorial Garden. Many people stopped to talk about the planning effort and weigh-in on the concepts being presented.

Feedback and public input was also received using an online survey process. The Realize Cedar website has been active for many months. On the website, a survey was available which asked residents to provide feedback on topics like "what's your big idea for Cedar Street" as well as more specific design proposals. An interactive kiosk was also installed in the lobby at the Community Services Center. Overall, a total of 101 people used the kiosk to provide feedback and their overall reaction to the design concepts presented in the Realize Cedar plan. Of those responses, the majority were positive. Over 400 people interacted with the kiosk.

Finally, McKenna presented the draft Realize Cedar Plan to the Holt Business Alliance at the meeting on July 21st. I also attended and felt that the group was interested and engaged. Again, the majority of the feedback was positive and encouraging. The only questions posed were with regards to whether or not a 3-lane road profile will adequately handle the traffic on Cedar between Holt and Willoughby Roads. Staff will be providing a similar presentation to the Holt Lions Club on August 18th and will provide the PC with information in the future on how that meeting goes.

Staff has also met individually with some business owners and residents. Staff has provided the draft plan and specifically requested their input. As this input is received, it will be passed along to the PC. However, the overall impression during the discussions is that there is support for the plan.

After the majority of the public process was completed, the steering committee worked with McKenna to finalize the draft plan. You will recall that one of the most important requirements for this plan is that it must be implementable. All of the recommendations and goals are organized into short-term and longer-term implementation timeframes. This "reality check," relative to implementation of recommendations, was a clearly communicated goal at the onset of the planning process. As a result, the Township opted to add Jaime Burton, from Hubble, Roth & Clark (HRC), to our steering committee team. HRC's roll is to work with McKenna to ensure that recommendations are possible from an engineering perspective, given the financial constraints that will be applied to the project going forward.

HRC's perspective has been valuable during the process. For example, one of the recommendations that have required verification is the conversation from four lanes to three lanes between Holt Road and Aurelius Road. We wanted to make sure that doing this would not result in unreasonable traffic delays or an otherwise dysfunctional traffic situation. HRC completed a traffic modeling analysis which confirmed that the recommended change will actually result in *better traffic flows and shorter wait times* at the two intersections. This is extremely important because this is a recommendation that will likely draw scrutiny from the public. Having the facts is essential to defending this specific recommendation within the Plan.

The draft plan was reviewed by the Planning Commission (PC) at their meeting on August 8. The PC asked questions and provided input and ideas. There were also four members of the public who spoke during the public comment period. A copy of the draft meeting minutes is attached. However, the PC ultimately took action to approve the attached resolution which forwards the plan to the Township Board and recommends that they begin the official review period.

A resolution to begin the review period is also attached for the Township Board's consideration and action. After the Board takes action we will make the plan available on the Township's website. It will also be provided to the required agencies and utilities per the requirements of the Michigan Zoning Enabling Act. The Planning Commission will hold the official public hearing at the October 24th PC meeting. Hopefully the PC will be able to adopt the plan, with any changes deemed necessary as a result of the public input, thereafter.

I would ask that you encourage Board Members to review the plan and provide input within the next several weeks. I am hopeful that we will also continue to receive input from the public. However, I have already received some letters supporting the plan, which are enclosed for your review.

If you have any questions, please let me know. Otherwise, I will look forward to reviewing the draft plan with the Board at Tuesday's meeting. Thanks!

Recommended Motion:

To adopt Resolution No. 2016-018 which supports beginning the Public Review of the Realize Cedar Urban Design Framework, a Sub-Area Plan and Amendment of the Delhi Township Master Plan.

REALIZE CEDAR

DELHI CHARTER TOWNSHIP · MICHIGAN

CEDAR STREET REVISIONING PROJECT FREQUENTLY ASKED QUESTIONS

Q1: WHY IS THE TOWNSHIP PLANNING FOR CEDAR STREET?

Cedar Street and downtown Holt have been a focal point of Township Planning for more than 20 years. The 2004 Cedar Street Corridor, the 2013 Master Plan, and the 2014 Cedar Street Market Study all supported the redevelopment of Cedar Street. The Realize Cedar Urban Design Framework fills in the gaps and answers the questions unresolved in these efforts. It will be adopted as a Master Plan Amendment.

Q2: DIDN'T THE TOWNSHIP TRY TO REBUILD CEDAR STREET BEFORE?

Yes; however, a lot has changed since then and the Realize Cedar initiative includes updated traffic studies, design solutions, and market data.

New information informing the plan:

- ***Holt Road and Aurelius Road are both now three lanes***
- ***The previous plan suggested a roundabout at Aurelius Road, which was eventually determined to be an unfeasible strategy***
- ***The Realize Cedar effort will realign Keller Road and re-time the signals at Holt Road and Aurelius Road to improve wait times***
- ***The Market data provided in 2014 by the Chesapeake Group and panel research conducted by the DDA found that there is a demand for 500-1200 new housing units and as much as 205,000 sq. ft. of retail, if Cedar Street can be designed to support walkable development***

Q3: WILL TAXES GO UP?

The Township has no intention of raising taxes or creating any special assessments to pay for the reconstruction of Cedar Street.

Q4: HOW WILL THE TOWNSHIP FUND THE CEDAR STREET RECOMMENDATIONS?

The Township will use Downtown Development Authority funds to pay for its portion of infrastructure changes. Conservative estimates of approximately 1% growth put the current DDA bond value at approximately $4 to $6 million. The Cedar Street project is also eligible for grant funding and Federal dollars. The project will keep tax money in Delhi Township that would otherwise leave the area and potentially bring new funds into the Township.

Q5: WHEN WILL WORK START IF THE TOWNSHIP MOVES FORWARD WITH THE PLAN?

If the Plan moves forward, the Township will begin construction in 2018. The Township will work with residents and business owners to minimize construction impacts.

Q6: IS THE PLAN SUPPORTED BY THE REGION?

The Realize Cedar Project has been coordinated with the Ingham County Road Department and has received the endorsement of the Lansing Economic Area Partnership (LEAP). Other Jurisdictions will be supplied copies of the Plan to review per the State of Michigan requirements when the 63-day review period is authorized.

Q7: CAN CEDAR STREET HANDLE ITS TRAFFIC IN THREE LANES?

Cedar Street currently has 10,550 cars per day. A three lane roadway profile can handle three times that number and even if the township experienced 36% growth in the next 10 to 20 years, Cedar Street would be under 15,000 cars per day. The township has gone beyond Federal Highway Administration guidance and conducted an operations analysis of the Aurelius Road and Holt Road intersection that shows these intersections will be improved if Cedar Street is redesigned as a three lane profile.

Q8: I CURRENTLY HAVE TO WAIT TOO LONG AT HOLT ROAD - CAN THIS PROJECT FIX THAT?

Yes. The operational analysis shows that Holt Road wait times will be reduced.

Q9: I'VE HEARD AURELIUS ROAD IS THE WORST INTERSECTION IN THE REGION – CAN THIS PROJECT FIX THAT?

Yes. Realigning Keller Road will allow signals to be retimed for two-way traffic processing at Aurelius Road and wait times will be reduced.

Q10: WILL PROPERTY VALUE GO UP?

A 2009 CEOs for Cities Study found that homes in walkable neighborhoods were worth $4,000 to $34,000 more than their suburban counterparts. It's a good bet.

Q11: CAN ANYTHING BE DONE ABOUT CUT-THROUGH TRAFFIC AT VETERANS DRIVE AND PARK LANE / COOLRIDGE ROAD?

Yes. Reducing the wait times at the Holt Road and Cedar Street intersection is the best way to reduce cut-through traffic. The plan also recommends that Veterans Drive be turned into an alley, or similar, primarily to be used as a driveway to access parking lot areas. The plan states that cut-through traffic should be discouraged.

DELHI CHARTER TOWNSHIP

RESOLUTION NO. 2016- 018

A Resolution to Begin Public Review of the Realize Cedar Urban Design Framework a Sub-Area Plan and Amendment of the Delhi Township Master Plan

At a Regular Meeting of the Township Board of Trustees, of the Charter Township of Delhi, Ingham County, Michigan, held at the Community Services Center, 2074 Aurelius Road, Holt, Michigan on Tuesday, the 16th day of August, 2016, at 7:30 p.m.

PRESENT:

ABSENT:

The following Resolution was offered by_____.

WHEREAS, the Township recognizes the importance of Cedar Street as a key corridor for the commerce, economic development and the creation of place and vitality within the community; and

WHEREAS, the Township has undergone a planning process for the future of Cedar Street; and

WHEREAS, the Township has engaged members of the public throughout the entire planning process in order to determine how the community desires to see Cedar Street function in the future and to learn what concerns people have about Cedar Street; and

WHEREAS, the Township has used the information from multiple public engagement activities, as well as information from other professionals and public agencies, to advance the planning process and develop the Document; and

WHEREAS, the Planning Commission recommends the Township begins the official public review period and distribute the Realize Cedar plan to the public and to neighboring jurisdictions;

NOW, THEREFORE, BE IT RESOLVED that the Township Board, in accordance with the Michigan Planning Enabling Act of 2006, as amended, authorizes a 63-day public review period and distribution of the Realize Cedar Urban Design Framework to neighboring jurisdictions and planning agencies.

AYES:

ABSENT:

The foregoing Resolution declared adopted on the date written above.

_____

Evan Hope, Township Clerk

STATE OF MICHIGAN }

}ss

COUNTY OF INGHAM }

I, the undersigned, the duly qualified Clerk of the Charter Township of Delhi, Ingham County, Michigan, DO HEREBY CERTIFY that the foregoing is a true and complete copy of the proceedings taken by the Township Board at a regular meeting held on the 16th day of August, 2016.

IN WITNESS THEREOF, I have hereunto affixed my official signature this ____ day of August, 2016.

_____

Evan Hope, Township Clerk

REALIZE CEDAR

URBAN DESIGN FRAMEWORK

DELHI CHARTER TOWNSHIP · INGHAM COUNTY · MICHIGAN

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Corridor Context

REALIZE CEDAR URBAN DESIGN FRAMEWORK

Acknowledgments

Steering Committee
Tracy Miller — Delhi Township Community Development Director
Howard Haas — Delhi Township DDA Executive Director
Jon Harmon — Delhi Township Board Trustee
Evan Hope — Delhi Township Clerk
David Leighton — DDA, Leightronix
Steve Warfield — Cedar Street Resident
Will Kangas — Delhi Township Communications
Jamie Burton, PE — Hubbell, Roth, & Clark

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Megan Ketchum — Trustee
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Brian Houser
David Leighton
Steven L. Marvin
Nanette Miller
Tonia Olson

Consultant Team
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John R. Jackson, AICP — Executive Vice President
Paul Lippens, AICP — Principal Planner, Project Manager
Steven Wiltse, AICP — Associate Planner
Stephen Hannon — Assistant Planner
Sabah Aboody-Keer — GIS Designer
Carrie Leitner — Graphic Designer
Kacy Smith — Administrative Assistant

Marc R. Russell, LLA — Principal Landscape Architect
Maudi Smith — Landscape Architect
Michael A. Campbell, RA, PLC — Architect

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Cedar St
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Coolridge Rd
Meadowlawn Dr
Park Ln
Richard St
Auburn Ave
Adelpha Ave
Decamp Ave
Jefferson St
Dean Ave
Burton Ave
Bond Ave
Woodworth Ave
Jones Rd
Elliott St
Greenwood Ave
Veterans Dr
Depot St
Hill St
Delhi St NE
Woven Heart Dr
W Holt Rd
Hamilton St
Pageant Way
Heatherton Dr
Cromwell St
Elm St
Maple St
Walnut St
Grove Ave
Hall St
Summit St
Michael Ave
Dallas Ave
Hancock St
Holiday Dr
Monterey Dr
Manor Dr
Castle Dr
Manhattan Dr
Cindy Ln
Belaire Dr
Deer Run Ln
Persimmon Path
Cottonwood Rd
Dogwood Dr
Sycamore St
Lambeth Way
Miles Dr
Lynn St
Jeanne St
Lee St
Schoolcraft St
Charlar Dr
Sugar Bush Ln
Crampton Way
Enfield Dr
Meadow Dr
Wilcox Rd
Aurelius Rd
Tinkler Ct
Holbrook Dr
Laurelwood Dr
Tartan Ln
Heather Haven Dr
Sutherland Dr
Stonehaven Dr
Applecroft Dr
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Turnbridge Dr
Doncaster Ave
Glenberry Dr
Thimbleberry Ln
Eastlund Cir
Willesdon Ave
Rexford Ave
Davlind Dr
Grayfriars Ave
Huntshire Dr
Tuscany Ln
Berkley Dr
Jacqueline Dr
Wanstead Dr
Santa Clara Dr
Catalina Dr
Archwood Dr
Hogsback Rd
Edgar Rd
Yarrow Dr
Bison Dr
Garden Gate Dr
Moose Dr
Daylily Dr
Hosta Ct
Gateway Dr
Sumac Ln
Windflower Dr

1.1 Purpose

The Cedar Street corridor, at just over four miles, traverses the Township from border-to-border. The Corridor begins at from the large-scale commercial retail aesthetic found on the northwest end of Willoughby Road. There is an increase to the 'downtown' feel southeast of Aurelius Road, before reaching the more rural land-use characteristics south of Holbrook to College Road. The corridor provides regional connections for civic institutions, employers, and retailers with some success, yet unified need and desire exists for a transformative change.

As Cedar Street traverses the Township's many contexts and uses, the design of the street itself varies. The changing roadway design is indicative of different transportation and land use demands. The challenge of this Urban Design Framework is to chart a course towards a more unified, functional, and multimodal future for Cedar Street. The variation in the character of the street, from the Holt, Aurelius, Cedar triangle to suburban convenience retail to light industrial uses, presents an opportunity but also poses a question – how do these areas relate to each other? A well designed, zoned, and branded Cedar Street corridor is the best way to bring the community together, while also serving the needs of the regional population.

Veterans Memorial Garden
Entrance to Veterans Memorial Garden along Cedar Street

In order to ensure that Cedar Street is well positioned for future success, the Realize Cedar Urban Design Framework takes several important leaps forward. The process engaged the public in a broad, yet unique way, to get over 'meeting fatigue' that has led to unproductive public meetings and low turnout. More importantly, the plan offers specific infrastructure and development concepts that range from building type and architectural guidelines to regional connections to monument design, materials and driveway consolidations.

Realize Cedar when implemented to reach its full potential, will address all of the essential functions of the public realm.

- Efficient traffic circulation
- Regional multi-modal connections & sustainability considerations
- Aesthetic beauty
- Land use and urban design context
- Promotion of business viability

Cedar Street is the embodiment of Delhi Township's unique and diverse community. Realize Cedar will lay the foundation for its evolution into a beautiful civic space that successfully and equitably meets the needs of vehicle traffic, bicyclists, and transit; that is a vibrant and walkable thoroughfare; and is the model for the Township's sustainable future over the next 5, 10, and 20 years.

1.2 Process

The Realize Cedar project spanned one year from October of 2015 to November of 2016. The planning process followed the State of Michigan requirements for Master Planning and the Realize Cedar Urban Design Framework is an adopted sub-area plan of the Delhi Township Master Plan.

In accordance with state law the following jurisdictions were coordinated with in the creation of the framework plan:

- Alaiedon Township
- Aurelius Township
- City of Lansing
- Windsor Township
- Ingham County Board of Commissioners
- Consumers Energy
- Lansing Board of Education
- Ameritech-Engineering
- Eaton Rapids Township
- Meridian Township
- Vevay Township
- Lansing Township
- City of East Lansing
- Tri-County Regional Planning Commission
- Comcast Cable
- Adrian & Blissfield Railroad Company
- Delta Charter Township

The Realize Cedar Urban Design Framework included a robust and diverse public engagement process that was designed to engage residents in places where it was convenient for them and to maximize civic participation. A steering committee led the process and outreach tactics included a walk audit, agency meetings, online outreach, focus groups, pop-up engagement, and a digital kiosk at Township Hall.

Walk Audit
Members of the steering committee participate in a walk audit of Cedar Street during their first meeting in November 2015

Steering Committee

McKenna worked with the Township to establish a steering committee responsible for overseeing and reviewing the project. The steering committee met monthly from November 2015 through July 2016, for a total of nine meetings. The steering committee consisted of the following participants:

- Tracy Miller: Delhi Township Community Development Director
- Howard Haas: Delhi Township DDA Executive Director
- Jon Harmon: Delhi Township Board Trustee
- Evan Hope: Delhi Township Clerk
- David Leighton: Owner of Leightronix (Cedar Street business)
- Steve Warfield; Cedar Street Resident
- Will Kangas; Delhi Township Communications (advisory, participated as needed)
- Jamie Burton, PE: Hubbell, Roth, & Clark (advisory, participated as needed)

At their first meeting, the steering committee participated in a walk audit of Cedar Street, walking as far north as just beyond Aurelius Road, and as far south as Hancock Road. Some of the key issues identified included narrow sidewalks and buffers, blight, noise, an uncomfortable environment in which to walk, and a lack of connectivity especially to neighborhoods on the east. The steering committee also noted several opportunities and ideas for improvement along the corridor. The property just south of AutoZone and the areas around the motels were cited for potential redevelopment. Other low-hanging fruit included benches along sidewalks, landscaping and potential DDA assistance to green up properties, and Farmers Market driveway access tightening.

Over the course of the project there were nine steering committee meetings. The committee members provided feedback on the draft goals and objectives, branding and logo, content for public engagement exercises, and conceptual designs of Cedar Street elements.

Agency Meetings

Our team met with staff at the Ingham County Road Department (ICRD) to discuss the possibilities and process for changing Cedar Street, which is a County-owned road within Delhi Township. At our first meeting, ICRD staff shared their approach to changing the design of a roadway. ICRD typically uses the standards and procedures from the MDOT Road Design Manual, and also uses American Association of State Highway and Transportation Officials (AASHTO) standards. We discussed converting part of Cedar Street from four lanes to three lanes using the best practices outlined by the Federal Highway Administration (FHWA). The FHWA road diet feasibility methodology was followed to create this document. At our second meeting we reviewed the design concept and project development schedule. It was acknowledged that the four to three lane conversion is an essential element to the overall corridor vision.

Online Outreach

McKenna established a project website which served as the clearinghouse for project information. The website used the Realize Cedar brand and provided a description of the project, along with links to our surveys on mySidewalk and Survey Monkey. McKenna created and printed business cards for the project with the website listed on the card, including a QR code to access the website by mobile phone. Business cards were primarily distributed at the Holt High School basketball games and at Valhalla Park to raise awareness of the project at pop-up workshops and to encourage participation in the surveys.

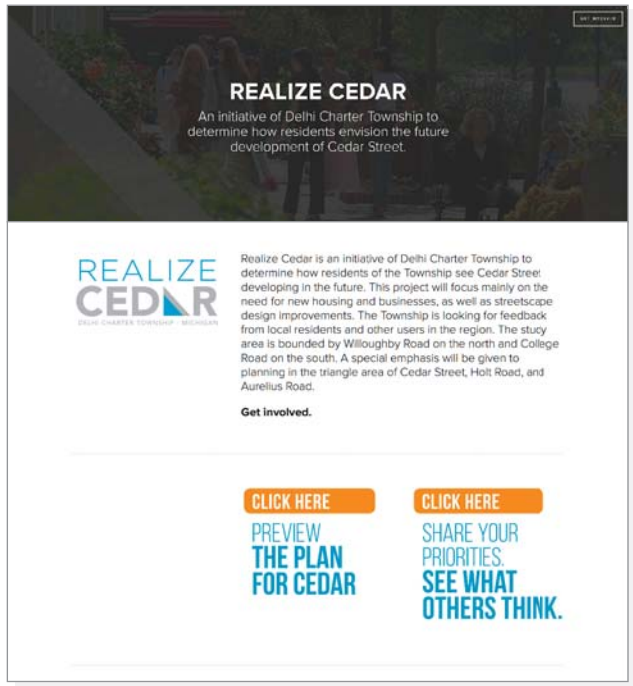
McKenna used Survey Monkey to gain feedback throughout the project from Delhi Township residents and any other users of Cedar Street. One of our first two surveys asked people to provide one big idea for improving Cedar Street, whether it was changes to the road, new land uses, or something else. The second survey asked people for their level of agreement with goal statements regarding both land use and transportation, mirroring the goal priority exercise done by the steering committee members. The feedback from these surveys guided the proposed architecture, streetscape design, and changes to the roadway. We developed drawings for key development nodes and the roadway, and asked people for their reactions in a third survey.

The McKenna team also developed polls via mySidewalk to gauge how important several street design concepts were to the users of Cedar Street. We asked people about the importance of having convenient places to eat and drink, shop, bike, walk, and drive, as well as the importance of having a well-maintained and well-designed streetscape along Cedar Street. These polls were created at the beginning of the project to provide a general indication of what people would want to see if Cedar Street were redesigned, and helped influence what concepts were emphasized in our recommendations.

A third online survey was conducted to preview the proposed design concepts included in this Urban Design Framework. Participants provided comments and indicated their support level as either "Yay, OK, Meh, or No Way." Of 90 responses, the Township received votes of 48% Yay, 6% OK, 12% Meh, and 34% No Way. The comments on the "Yay" votes were supportive of a walkable streetscape and a four to three lane conversion on Cedar Street. The "No Way" votes expressed concerns about tax increases and intersection wait times. Two factors address these concerns; 1) the Township intends to fund the project using DDA revenues and grants without tax increases, 2) traffic counts of 10,550 cars per day and intersection operational analysis indicate that the traffic is well within the accepted norms for three vehicle lanes. Further, a three lane profile will enable the consideration of signal timing adjustments at Holt and Aurelius that could improve the existing wait times.

Partner Agencies
Partners in the Realize Cedar project included Delhi Charter Township and Ingham County

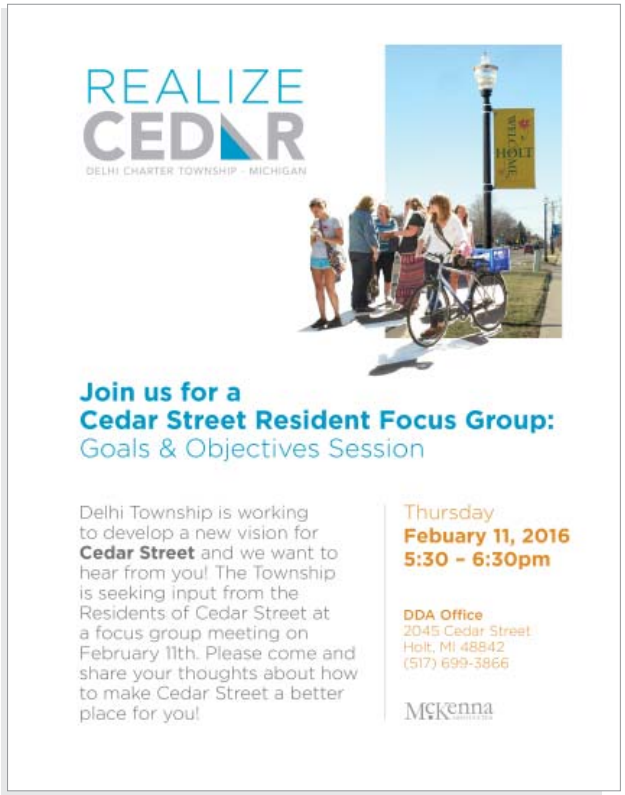
Project Website
Our team created a website to inform people about the project, provide links to surveys, and publicize draft plan materials



Focus Groups
Focus groups were used to gain the perspectives of specific stakeholders

(Above) Participants gave feedback on streetscape elements in a visual preference survey

(Right) Our team used the flyer on the right to publicize the focus group for Cedar Street residents



Focus Groups

Our team held three focus groups to learn the perspectives of specific stakeholders along Cedar Street, specifically seniors, residents, and business owners. Each focus group consisted of four activities. We first led the focus group in a brainstorming activity similar to the big idea survey. We then had people take the goal priority survey. Next, we led a group discussion on specific questions regarding different aspects of Cedar Street. The final activity was the visual preference survey with dot voting exercise, in which, people placed dots next to their preferred landscape and streetscape elements.

The first focus group was held in January at the Sam Corey Senior Center and was targeted toward the senior Township residents. There were 17 total participants in the focus group. Some of the concerns raised during this focus group included lack of safety walking along or crossing Cedar Street, a need for higher quality restaurants and other destinations, and traffic issues including vehicles speed and difficulty turning.

The second focus group was held in February at the DDA Office and was targeted toward the residents of Cedar Street. There were five total participants in the focus group. Some of the ideas raised during this focus group included greater walkability and safety in the downtown area, enhancing the potential of new and existing businesses to thrive, and ensuring adequate parking for both residents and visitors.

The third focus group was held in April at the DDA Office and was targeted toward business owners on Cedar Street. There were three total participants in the focus group. Some ideas and issues that were raised during this focus group included improving the traffic flow during heavy congestion especially at the beginning and end of school, improving the walking and biking environments, and consistency with governmental expectations and guidelines for development along Cedar Street.

Pop-Up Engagement

McKenna staff hosted pop-up tabling sessions at four community events. The pop-up tabling allowed our team to raise awareness of the project to large groups of people and collect input without needing to conduct separate meetings. We conducted intercept surveys to gauge public reactions on different elements of the project and to encourage people to interact with the workshop display. The team also established a digital kiosk to display at Township Hall, which was used to receive feedback on the draft plan for the Downtown Node, Market Node, and roadway changes.

Our first pop-up tabling workshop was held in March of 2016 at the Holt High School junior varsity and varsity basketball games, which we estimate more than 500 people attended. For this workshop we focused on describing the project to attendees and asked for people to provide their big idea for Cedar Street. Many people were engaged in discussion about their big ideas for Cedar Street and the team handed out the project business cards to people and encouraged them to check out the project website to get involved. Overall, through talking to people at our display boards and handing out the business cards, we engaged with approximately 45-50 people. Residents expressed a desire for reinvestment in the service-oriented shopping destinations, including restaurants, grocers, and entertainment.

Our second pop-up tabling session was held in June at Holt Farmers Market and Valhalla Park. At these workshops, we asked for feedback on the draft plan for the Downtown Node, Market Node, and roadway changes. This display was set up like our second-round survey question, and we explained to attendees how the feedback and ideas from the first surveys were used to form the proposed street and site designs.

We received 10 completed comment cards on the draft plan, which was displayed at Holt Farmers Market. Nine respondents enthusiastically supported the plan concepts and one expressed concerns with the Aurelius intersection. We also handed out approximately 100 project business cards at Valhalla Park.

The third pop up meeting was held in July at the July 14 “Music in the Garden” with the Sea Cruisers singing popular hits form the 50’s, 60’s, and 70’s. Many residents took time to discuss their thoughts and express support for Realize Cedar and additional business cards were distributed to people who preferred to participate online. The event was attended by more than 820 people and we received six comment cards offering support of the project.

The fourth pop up meeting was held at the July 21 breakfast meeting of the Holt Business Alliance. Township staff and the planning team presented the planning concepts to the Alliance and fielded questions. Alliance Members were provided with business cards to provide feedback through the online engagement platform.

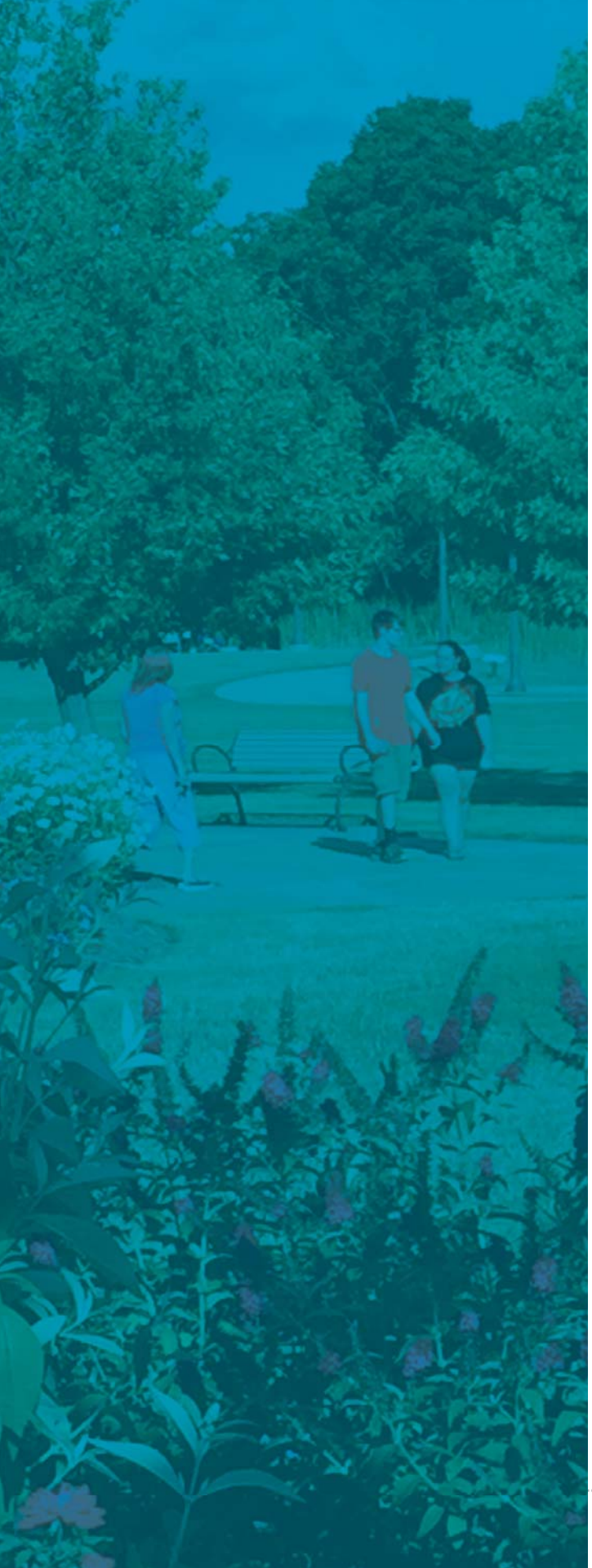
Pop-Up Engagement
(Above) Realize Cedar display at the Farmer’s Market on June 11 and Music in the Garden on July 14, where our team gave people the opportunity to provide feedback on the draft plan.

(Right) Display

Digital Kiosk
This digital kiosk was displayed in Township Hall beginning in June in order to capture new participants into the project

Digital Kiosk

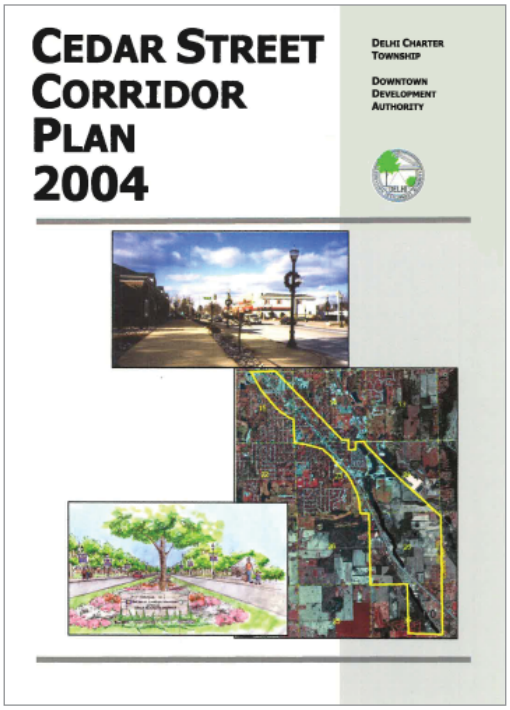
A digital kiosk was displayed in Township Hall beginning in June to gather feedback on the draft plan for the Downtown Node, Market Node, and roadway changes. The kiosk display contained the images from the boards used at the Farmers Market and Summer Concert Series pop-up workshops. The display gave us the ability to extend our outreach by providing an opportunity for engagement during normal business hours and by capturing new participants in the project. The digital kiosk received 428 interactions.



1.3 Plans

Market Study

In 2014, The Chesapeake Group conducted a Market Opportunities Assessment for Delhi Township. The study examined Ingham County and Delhi Township trends, the impact of the 'Great Recession', as well as the impact of 'mega trends' in local patterns. Using an adopted trend forecast, the study found that Delhi Township is projected to gain just under 4,000 people between 2010 and 2045, for an expected percent change ranging between 1.1-2.4% every five years. The study also found that Delhi Township has the market to absorb between 500-650 and 1,100-1,200 housing units over the next five to ten years respectively. Between 50-65% of the new housing units are projected to be multiple unit developments.



Previous Plan
The Delhi Township DDA previously conducted a corridor plan for Cedar Street in 2004 to supplement the current Township Comprehensive Plan at the time

The study also found projected growth in the non-residential development market. Between 2014 and 2024, there is a projected commercial square footage growth of nearly 250,000. Much of this anticipated growth is in the transportation/vehicle service, hardware, and general merchandise sectors. This projected growth comprises just over half of all projected market space growth in Ingham County. Several non-residential development opportunity sites were identified along, or near, the Cedar Street corridor, including 1465 N Cedar Street, 1694 N Cedar Street, and the Cedar Point site at Cedar and Fernwood. The market study concludes by recommending development projects such as active adult housing, retail plus office, and/or rehabbing current multi-story structures.

Delhi Charter Township Master Plan – 2013

Originally adopted in 2002, Delhi's Master Plan has been amended in 2007 and most recently in 2013. The 2013 Master Plan makes several references to Cedar Street and works to implement planning projects and goals from the past, including the South Cedar Street Corridor Plan (1995), Downtown Development Plan, Sidewalk Master Plan, Cedar Street Corridor Plan (2004), Non-Motorized Transportation Plan (2007), and the Complete Streets Ordinance (2012).

The Master Plan highlights the use of transitional zoning, or density standards from high density commercial to low density residential, for the Cedar Street corridor. The Master Plan recommends the use of overlay zones to indicate the areas of transition and ensure, on a case by case basis, that proper space is given for transition. The Future Land Use map identifies Cedar Street as predominately maintaining its commercial corridor character into the future. The map does identify a large portion of the east side of Cedar Street south of Holt Road and north of Harper as a large Planned Development site.

Cedar Street Corridor Plan – 2004

The DDA undertook a Cedar Street corridor study in 2004 as a more specific planning effort to complement the current Comprehensive Plan at the time. The plan set out to evaluate the market and physical conditions to determine future land use mixes, as well as provided concept designs. The 2004 plan informs for this study; however, the assumptions, the traffic data, market data, and land use trends are no longer current. Additionally, some of its recommendations, like a roundabout at Aurelius Road, were explored and deemed unfeasible.

The 2004 plan broke the Cedar Street corridor into four different districts. The North Cedar Business Area district called for infill development, improved landscaping and pedestrian connections, and driveway consolidation. The Holt Town Center district encouraged an appropriate blend of residential and non-residential uses, with an emphasis on filling vacant lots and excessive parking areas, while still being compatible for residential neighborhoods nearby. The Central Cedar Business Area district encouraged the expansion of residential development, complimented by institutional, office, and limited retail uses. Site design guidelines were also recommended in order to prevent the linear sprawl of retail development as residential uses increased. The South Cedar Business Area district recommended planned unit developments in order to ensure controlled and efficient development projects, with a focus on major retail complexes, research and development facilities, and/or planned residential communities.

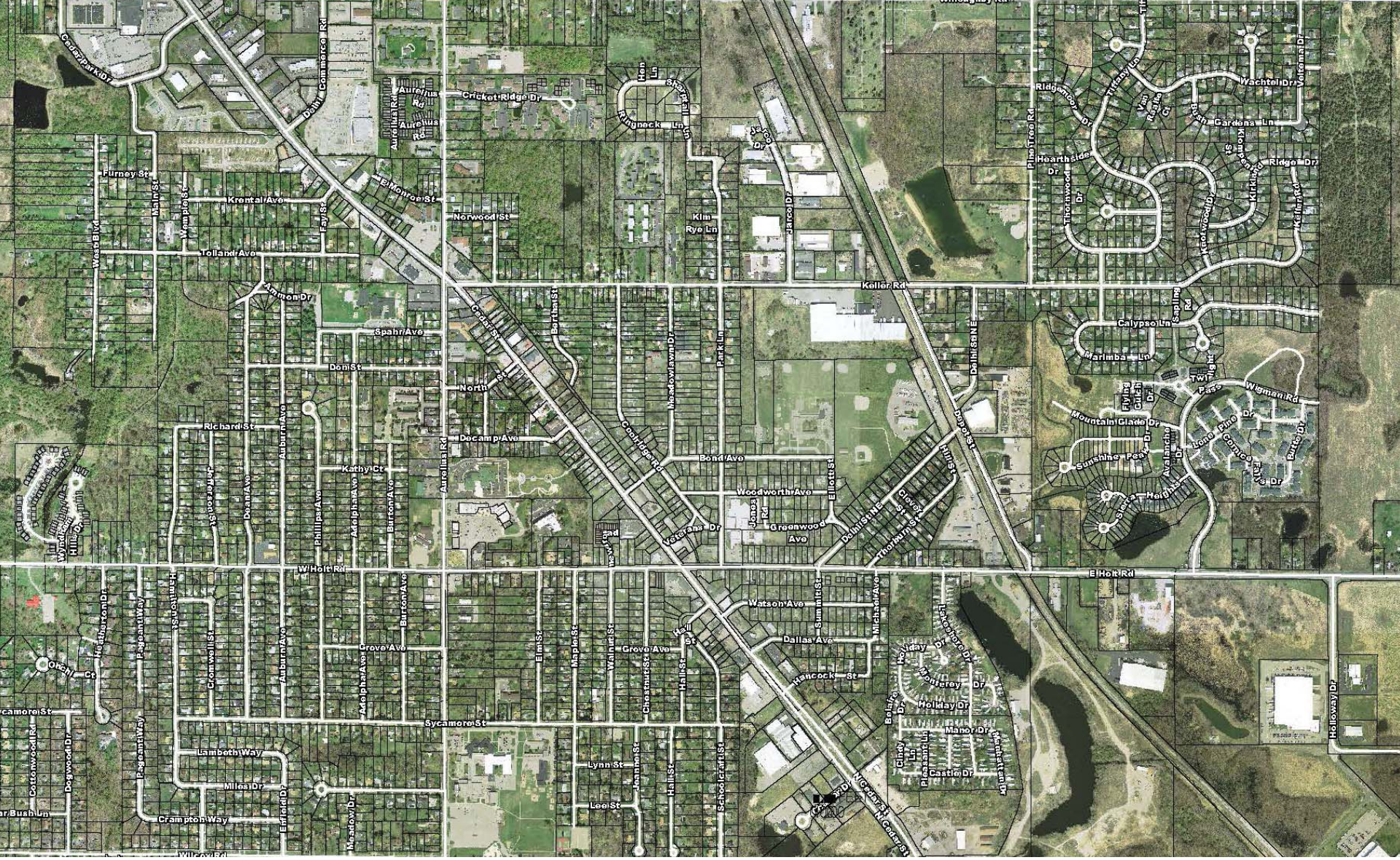
1.4
Scale

Regional Scale

Cedar Street is a major north-south corridor in the Lansing metropolitan area. Cedar Street runs for 14 miles from Grand River Avenue in Lansing to Kipp Road in Mason, connecting Downtown Lansing to the neighborhoods and communities to the south. From the beginning of the road in Lansing to Holt Road in Delhi Township, Cedar Street is classified as a principal arterial, meaning that it carries a large volume of commercial and inter-city traffic in an urban setting.

From Holt Road south to the end of the road in Mason, Cedar Street is classified as a minor arterial road, meaning that it carries mostly local traffic and facilitates shorter trips than principal arterials. The entire corridor acts as a local alternative route from US 127 and Interstate 96.

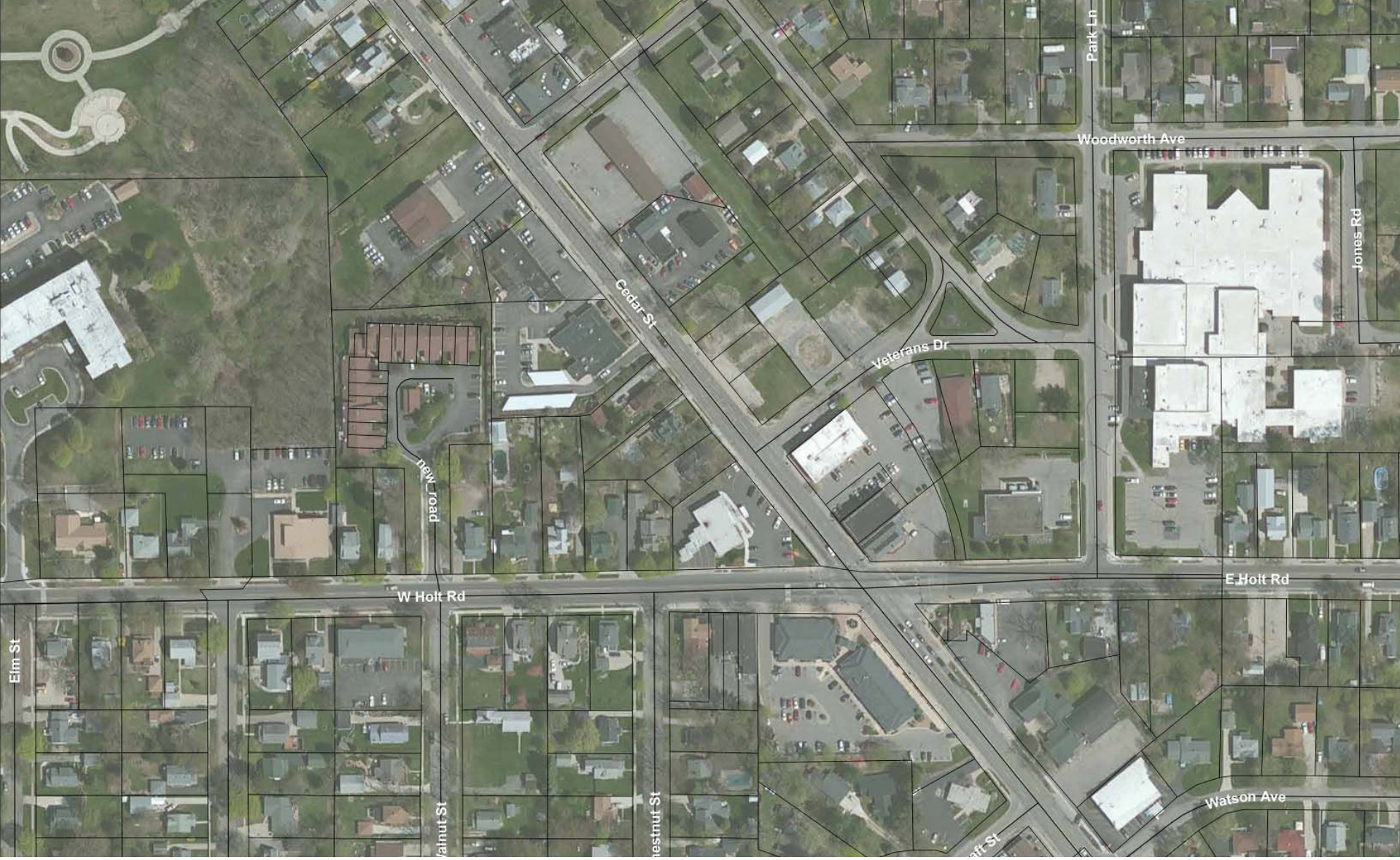
Regional Context
Cedar Street in context with the greater Lansing metropolitan region, with distances of 2, 6, and 10 miles from the Downtown Holt area shown



Downtown Holt Area
The Downtown Holt area with parcels shown in context with the surrounding neighborhoods of Delhi Township

Township Scale

Cedar Street enters Delhi Township at its northern border with the City of Lansing at Willoughby Road, and runs southeast for approximately 4 miles to the eastern border with Alaiedon Township at College Road. The northern part of Cedar Street from Willoughby to Holbrook has a variety of commercial uses along its entire length, with some residential pockets especially between Fay and Aurelius and between North and Bond. The southern part of Cedar Street from Holbrook to College is more rural in character and businesses tend to be larger and spaced apart from other businesses. Spartan Speedway is located at the intersection of Cedar and College, and is a regional attraction.



Block Scale

Cedar Street between Aurelius and Holt Roads is considered the downtown of Holt and the community hub of activity for Delhi Township. Several key community resources are located on this part of Cedar Street. The Holt Farmers Market is located across from the intersection with North Road, and with the corner lot forms the Market Node opportunity discussed in this study. The Sam Corey Senior Center is located roughly across from De Camp Street, and is a gathering place for senior activities and programs. Just to the south is the entrance to Veterans Park, which hosts the Summer Concert Series and attracts other visitors to the area. The area around the Holt Road intersection has several commercial buildings close to each other, creating a hub of activity. The area at this corner and extending to Bond forms the Downtown Node opportunity discussed in this study.

Downtown Node Block
Two blocks of Cedar Street from Holt Road to Bond Avenue forming the Downtown Node opportunity discussed in this study

Population and Housing
Delhi Township Population and Housing Trends, 2000-2010

Population

Delhi Township's population has increased by just over 3,000 people, or 14.7% from 2000 to 2010. At the same time, the population of the Township has aged slightly, with an increase of almost 700 people aged 65 years or older. This accounts for a 1.3% increase in the proportion of older adults living in Delhi Township. This will be an important trend to keep in mind for Delhi Township as the baby boomer generation continues to enter into retirement age, particularly considering many in this demographic have a desire to 'age in place'.

Table 1A: Population Trends — Delhi Township, 2000-2010

	2000	2010
Population	22,569	25,877
0-17 Years Old	6,514 (28.9%)	6,586 (25.5%)
65+ Years Old	2,166 (9.6%)	2,808 (10.9%)
Median Age	35.9	37.7

Source: U.S. Census

Housing

The number of occupied housing units, or households, has increased with the increase in population. While both family and non-family households have seen significant growth since 2000, non-family household's share of occupied housing has increased by 3.9%. This trend is similarly reflected in the rise of renter-occupied units, a demographic which is typically associated with non-family households. Vacancy has also seen a slight up-tick since 2000, by just over 200 units, suggesting the Township may have experienced housing expansion faster than demand had warranted.

Table 1B: Housing Trends — Delhi Township, 2000-2010

	2000	2010
Households	8,563	10,191
Family Households	6,266 (73.2%)	7,066 (69.3%)
Non-Family Households	2,297 (26.8%)	3,125 (30.7%)
Owner Occupied	6,656 (77.7%)	7,539 (74.0%)
Renter Occupied	1,907 (22.3%)	2,652 (26.0%)
Vacant Units	425 (4.7%)	626 (5.8%)

Source: U.S. Census

Workforce

As of 2013, there were just over 12,000 employed residents in Delhi Township. Approximately 5,000 residents had at least a Bachelor's degree, or 34.7% of the population 25+ years old. Employment and educational attainment have led Delhi Township to being a relatively affluent community, with a median household income of over $60,000. Just under 6% of Delhi residents live in poverty.

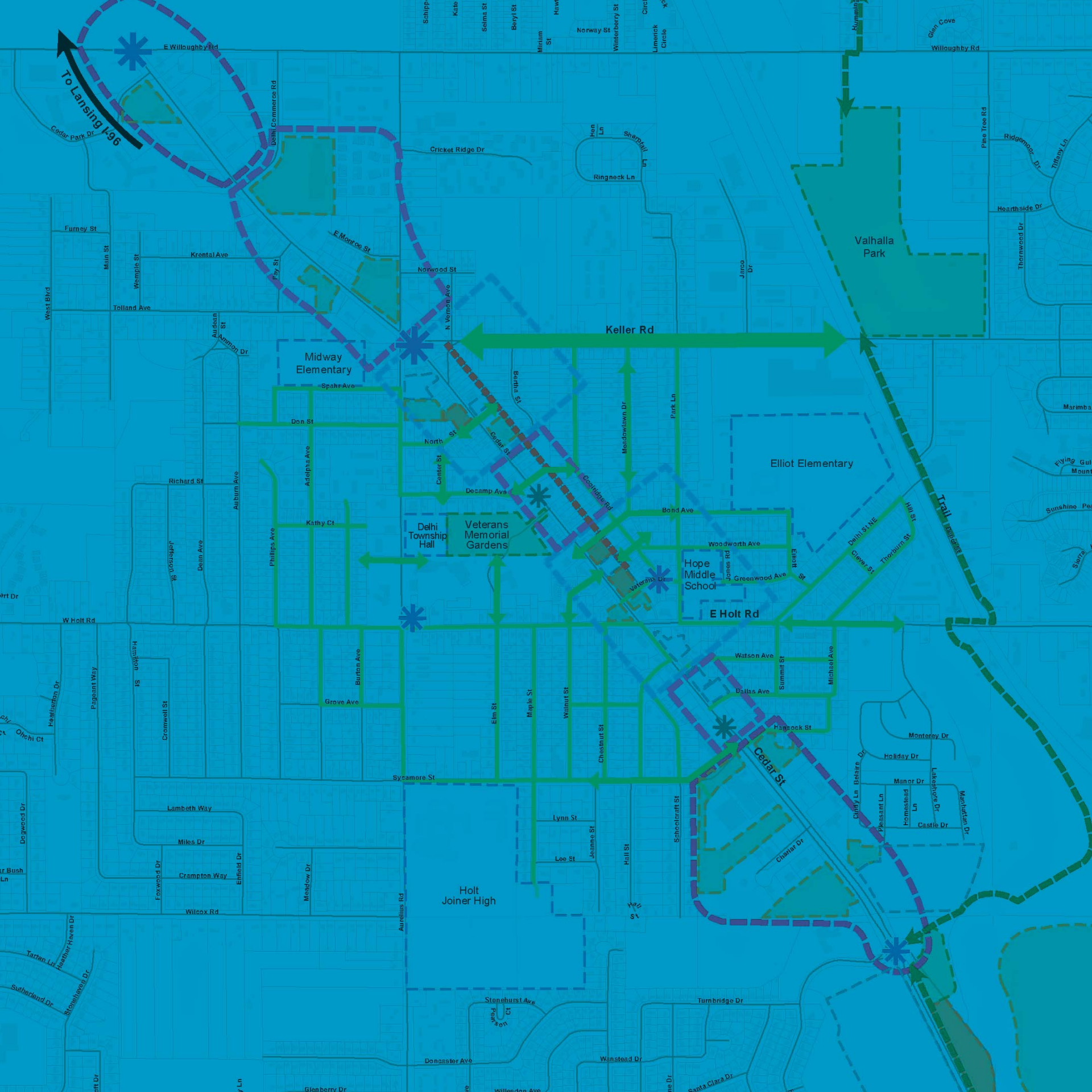
Only 5.5% of the community either walks or takes public transit to work. These statistics point to the potential need for a more comprehensive transportation planning approach that may be more conducive to alternative modes of transportation. This is particularly the case for those living in poverty or that are disabled (6.0%) as they may not have access to a car.

Table 1C: Economic, Educational, and Work Commute Trends
— Delhi Township 2009-2013

Economic Trends	
Workers 16+ Years Old	12,353
Median Household Income	$61,273
Median Family Income	$73,204
Poverty Status	1,528 (5.9%)
Disability Status	1,560 (6.0%)
Educational Attainment	
Less than High School Graduate	762 (5.3%)
Bachelor's Degree or Higher	4,999 (34.7%)
Work Commute Trends	
Drove Alone	10,668 (86.4%)
Public Transit	182 (1.5%)
Worked at Home	500 (4.0%)
Mean Travel Time	20.6 minutes

Source: American Community Survey 2009-2013

Workforce Trends
Delhi Township Economic, Educational, and Work Commute Trends, 2009-2013


To Lansing I-96
E Willoughby Rd
Cedar Park Dr
Delhi Commerce Rd
Cricket Ridge Dr
Pen Ln
Shamrail Ln
Ringneck Ln
Furney St
Main St
Wemple St
Krental Ave
Fay St
E Monroe St
Norwood St
West Blvd
Tolland Ave
Audsen St
Ammon Dr
N Vernon Ave
Midway Elementary
Spahr Ave
Don St
North St
Cedar St
Bertha St
Meadowlawn Dr
Park Ln
Keller Rd
Jarco Dr
Valhalla Park
Willoughby Rd
Glen Cove
Pine Tree Rd
Ridgemoor Dr
Tiffany Ln
Hearthside Dr
Thornwood Dr
Marimba
Elliot Elementary
Flying Gul
Mount
Sunshine Pe
Sierra
Trail
Richard St
Auburn Ave
Adelpha Ave
Center St
Coolidge Rd
Decamp Ave
Bond Ave
Kathy Ct
Phillips Ave
Jefferson St
Dean Ave
Delhi Township Hall
Veterans Memorial Gardens
Veterans Dr
Hope Middle School
Woodworth Ave
Jones Rd
Greenwood Ave
Elliott St
Delhi St NE
Clever St
Thorburn St
Hill St
E Holt Rd
W Holt Rd
Hamilton St
Burton Ave
Grove Ave
Watson Ave
Summit St
Michael Ave
Dallas Ave
Elm St
Maple St
Walnut St
Chestnut St
Hancock St
Monterey Dr
Holiday Dr
Manor Dr
Cedar St
Cindy Ln
Belaire Dr
Pleasant Ln
Homestead Ln
Lakeshore Dr
Manhattan Dr
Castle Dr
Chantar Dr
Schoolcraft St
Hall St
Jeanne St
Lynn St
Lee St
Sycamore St
Lambeth Way
Miles Dr
Crampton Way
Enfield Dr
Meadow Dr
Foxwood Dr
Aurelius Rd
Wilcox Rd
Holt Joiner High
Pageant Way
Heatherton Dr
Cronwell St
Ohchi Ct
Dogwood Dr
Tartan Ln
Heather Haven Dr
Sutherland Dr
Stonehaven Dr
Stonehurst Ave
Nob Hill Ct
Turnbridge Dr
Doncaster Ave
Wanstead Dr
Glenberry Dr
Santa Clara Dr

1.5 Opportunities

Cedar Street is a vital connection in Delhi Township that links to US 127 and Mason on the south and to Interstate 96 and Lansing on the north. In the middle of Cedar Street is the historic hamlet of Holt, which serves the role of Delhi Township cultural center. Upon thorough analysis of the Cedar Street corridor within Delhi Township, many real and perceived opportunities and issues emerge. This analysis presents research, design assessment, and transportation system examination. It will provide a basis for corresponding recommendations in the Urban Design Framework. The following opportunities and issues are illustrated on the corresponding Opportunities and Issues Map.

Transitional Uses

Sites designated as Transitional Uses represent non-conforming uses, with respect to their current zoning classification or sites otherwise ripe for change based upon development potential. These include an old motel site, vacant lots, an automotive repair shop, and a large tract of agricultural land at the south end of the corridor which has been zoned General Business. The realization of untapped potential at any of these locations represent a significant opportunity for the corresponding property owners or developers.

Key Opportunity Sites

Sites designated as Key Opportunity sites are those that could have a major impact on the community as a whole as a result of the scale or nature of their potential development. Such sites include an underutilized shopping center, three development opportunity sites near the Farmer's Market, and three additional development sites closer to the Holt Road intersection.

Parks and Recreation

As the Cedar Street Corridor develops, current and future residents will desire reasonable proximity to recreational opportunities and green space. An understanding of park locations and access existing will be instrumental in addressing this issue. Veterans Memorial Garden offers a high quality central recreational opportunity. However, Valhalla, Kiwanis, and the new park being developed at Hogsback Road are well within a walkable and bikable distance to the downtown area.

Public Uses

Civic uses such as libraries and government centers can serve to anchor retail centers and restaurants in existing and new town centers. Additionally, elementary schools and their associated green spaces can serve as excellent neighborhood centers. The public uses within walking distance of the study area could be improved with connections to downtown. These uses in particular could shape a recommendation for new biking, walking, or even vehicle connections to retrofit the street grid.

Gateway Areas

Any entry points and pathways that have been designed with landmark emphasis have the potential of defining a community in the minds of residents and visitors alike by the impressions that they create. A welcome sign with a compelling message and design can achieve this kind of impact in the right context. Sometimes a landscaped promenade, archway, or public art installation can achieve the desired result. The Opportunities and Issues map identifies key entry points for thoughtful consideration and future recommendations.

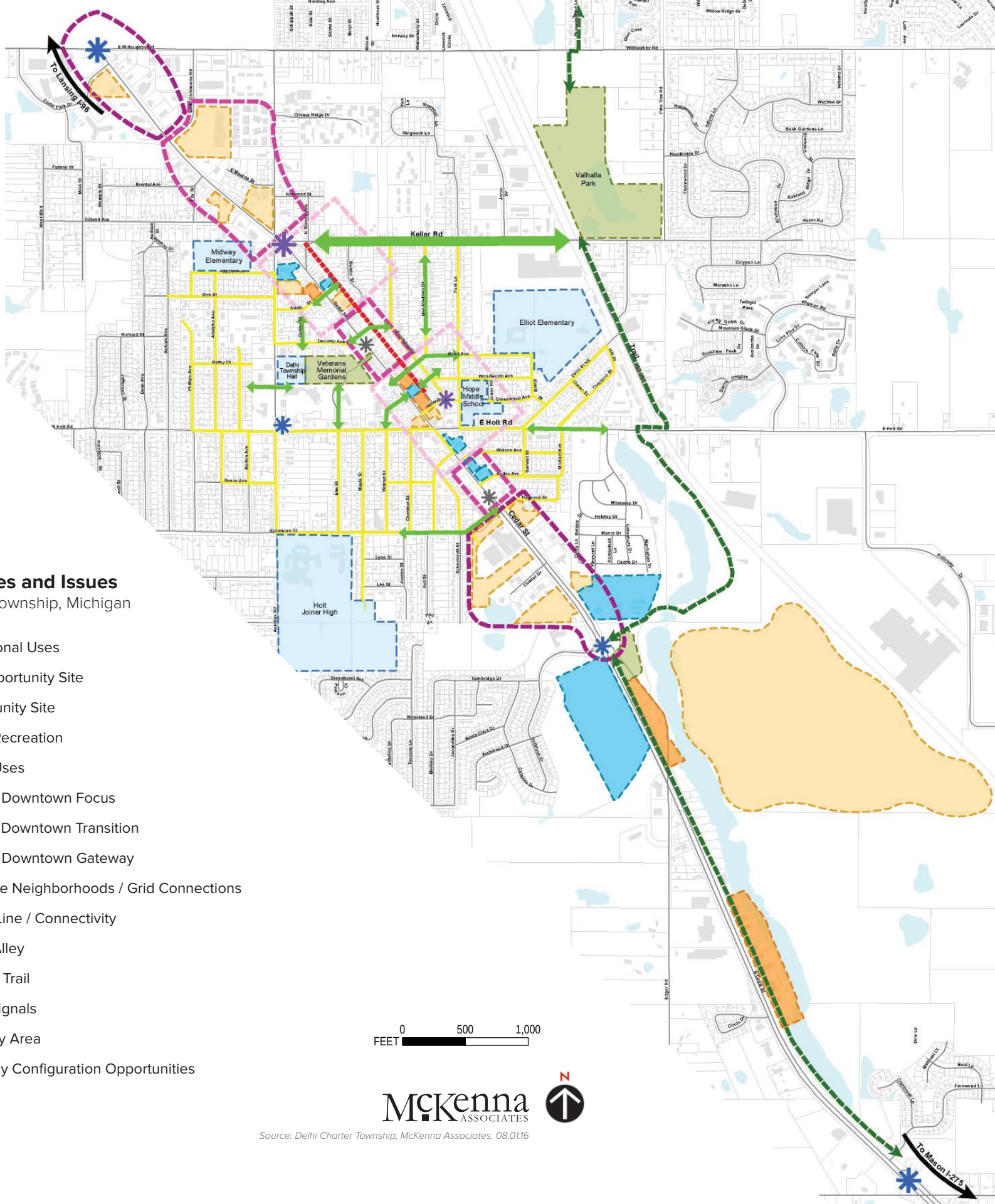
Intersection Redesign

Occasionally, due to natural features, property ownership, travel trajectories, or competing functional objectives, difficult conditions arise regarding roadway intersections and other roadway configurations that cannot be resolved via signaling or marking. Additionally, with changing needs, opportunities may arise to simplify or enhance a roadway condition. A notable issue that must be addressed is the confluence of Keller, Aurelius and Cedar, which is confusing and only permits movement in one direction at a time. The Holt/Cedar and Coolridge/Veterans intersections could also be improved.

Type A: Downtown Focus

The general area of the existing Holt town center, as well as the area around the Farmer's Market, have each been delineated for intensifications. Within these districts, there is the general expectation that a destination for entertainment, shopping, working and living in a compact, walkable environment will be supported. It is further implied that new uses within each of these districts and their respective existing adjacent uses will be separated from one another by compatible uses or zones. Finally, new buildings along designated frontages could be constructed to a build-to-line (or Right-of-Way line) with a shopfront-style private frontage. The Township has the opportunity to partner to create this kind of development in designated areas.

Opportunities and Issues
An aerial overview map of Cedar Street showing the opportunities and issues in different segments of the corridor



Map 1A:
Opportunities and Issues

Delhi Charter Township, Michigan

- Transitional Uses
- Key Opportunity Site
- Opportunity Site
- Parks/ Recreation
- Public Uses
- Type A: Downtown Focus
- Type B: Downtown Transition
- Type C: Downtown Gateway
- Walkable Neighborhoods / Grid Connections
- Desire Line / Connectivity
- Public Alley
- Valhalla Trail
- Hawk Signals
- Gateway Area
- Roadway Configuration Opportunities

McKenna Associates

Source: Delhi Charter Township, McKenna Associates. 08.01.16

Type B: Downtown Bridge

Adjacent to the Downtown Focus areas there are transitional districts designated to be of similar character but lower intensity. These districts should contain a mix of building types, including those of both residential and commercial character, as well as a small range of building setbacks and private frontage types. The existing configurations of these districts are suited to this designation supporting the opportunity for positive transformation.

Type C: Downtown Gateway

Along the southern and northern reaches of the Cedar Street corridor opportunities exist to create downtown gateways and transition to an area where pedestrians are prioritized. On the south, this area is between the roundabout and Holt Road. On the north, this area is between Delhi Commerce Road and Aurelius Road. The further development of the vision for these areas and ensuring appropriate corresponding development present opportunities for the Township.

Walkable Neighborhood Grid Connections

Delhi has several proximate neighborhoods that area within a ½ mile of the Downtown area. While the inherent connectivity of a street grid generally enhances walkability, barriers to the grid can isolate blocks or neighborhoods from desirable destinations. Therefore, it is imperative that existing streets be retrofitted to restore connections to downtown. When vehicle connections are unfeasible or impractical, biking and walking connections can be pursued. Improving such connectivity presents both a challenge and an opportunity.

Desire Lines and Connectivity

There are naturally occurring places where increased connectivity is desirable, such as new street openings or the creation of new pedestrian connections. Desire lines link neighborhoods into Cedar Street at strategic locations. Such opportunities have been illustrated here using green arrows.

Public Alley

Walkable districts include buildings constructed to a build-to line or right-of-way line and facades that occupy all (or close to all) of lot frontages. As Cedar continues to develop in this manner an alley can be used to develop secure individual lot access from some location other than the front. Traditional Downtown-style development achieves this with alley easements along rear property lines. Consequently, a record of existing alley easements has tremendous inherent value in the planning of any corridor. Alley easements potentially accommodate new and existing utilities as well.

Valhalla Trail

The Valhalla Trail is one of Delhi Township's premier trails. According to the Delhi Trails website, “the long-term plan is to link the majority of Delhi Township with interconnected non-motorized pathways and to connect those pathways with the trails of surrounding communities.” Thus, the creation of clear and convenient bicycle route or bicycle path connections from Cedar Street to the Valhalla Trail presents an enormous opportunity for the future.

Midblock Crossings

Midblock crossings allow pedestrians to cross safely at unsignalized locations. They often use beacons, flashing lights, or stop signs. Two such crossings exist currently along the Cedar Street corridor: one near Veterans Memorial Gardens and the other between Dallas Avenue and Hancock Street

Summary

The opportunities and issues outlined here are multi-faceted. Implementation of the vision for the Cedar Street should capitalize on the opportunities and issues to realize the corridor’s potential.

1.6 Action Plan

The Strategic Action Plan for Cedar Street is organized around the following three goals:

Goal 1:
Promote Cedar Street as a desirable corridor for development, with various desired and needed uses available in the different sections of the corridor.

Goal 2:
Foster connectivity and access between the surrounding neighborhoods and destinations along Cedar Street.

Goal 3:
Create a cohesive, consistent design along Cedar Street to attract investment and activity, and to enhance the identity of the corridor.

Abbrev	Partners
TWP	Delhi Charter Township
DDA	Downtown Development Authority
BO	Business Owners
ICRD	Ingham County Road Department
CM	Community Members
PC	Planning Commission
PR	Parks and Recreation Department
FLRT	Friends of the Lansing River Trail
HFM	Holt Farmers Market
UC	Utility Companies
SFG	State and Federal Grants

Abbrev	Priority
A	Top Priority
B	Near-Term Priority
C	Long-Term Priority

Goal 1: Promote Cedar Street as a desirable corridor for development, with various desired and needed uses available in the different sections of the corridor.

Objective 1.1: Encourage the preferred level of density in each section of Cedar Street.				
Actions	**Priority**	**Time Frame**	**Partnerships**	**Funding**
Action 1.1.1: From Willoughby to Fay, allow for low-medium density that supports strip and auto-oriented commercial activity to continue	Ongoing	Ongoing	TWP	TWP
Action 1.1.2: In the Community Activity Center, encourage a transition from low-medium to high-medium density according to Section 2.1	A	1-2 years	TWP, DDA, PC, BO	TWP BO
Action 1.1.3: In the Community Core, require high density to create activity hubs at the Downtown Node and Farmers Market Node and seek out developers to invest in these sites	A	1-2 years	TWP, DDA, PC, HFM, BO	TWP DDA BO
Action 1.1.4: From Hancock to College, allow for low-density development to continue	Ongoing	Ongoing	TWP	TWP
Objective 1.2: Allow for the desired land uses in each section of Cedar Street.				
Actions	**Priority**	**Time Frame**	**Partnerships**	**Funding**
Action 1.2.1: From Willoughby to Fay, continue to encourage drive-thru and other commercial uses oriented toward automobiles and Interstate traffic	Ongoing	Ongoing	TWP	TWP
Action 1.2.2: In the Community Activity Center, encourage a transition from auto-oriented commercial uses toward smaller scale and pedestrian-oriented development	A	1-2 years	TWP, DDA, PC, BO	TWP BO
Action 1.2.3: From Hancock to College, continue to encourage larger sites as needed including those requiring outdoor storage	Ongoing	Ongoing	TWP	TWP
Objective 1.3: Enforce site design standards for new development.				
Actions	**Priority**	**Time Frame**	**Partnerships**	**Funding**
Action 1.3.1: Require new buildings to be of the types found within Section 2.3 by amending the Delhi Township Ordinance Section 5.13	A	1-2 years	TWP, DDA PC	TWP BO
Action 1.3.2: Require parking to be designed according to Section 2.4 including parking in the rear of the building within the Community Core areas according to Delhi Township Ordinance Section 5.13	A	1-2 years	TWP, DDA, PC, BO	TWP BO
Action 1.3.3: Enforce architecture guidelines according to Section 2.5 by amending the Delhi Township Ordinance Section 5.13	A	1-2 years	TWP, DDA, PC	TWP

Goal 2: Foster connectivity and access between the surrounding neighborhoods and destinations along Cedar Street.

Objective 2.1: Reconfigure the roadway on Cedar Street between Holt and Aurelius Roads.				
Actions	**Priority**	**Time Frame**	**Partnerships**	**Funding**
Action 2.1.1: Install 4-lane to 3-lane conversion on Cedar between Aurelius and Holt Roads	A	1-2 years	TWP, DDA, ICRD	TWP, DDA, ICRD, SFG
Action 2.1.2: Add on-street parking along Cedar Street in the reconfigured roadway, especially near activity nodes at the Downtown and Farmers Market	A	1-2 years	TWP, DDA, ICRD	TWP, DDA, ICRD, SFG
Objective 2.2: Create connections to neighborhoods through grid retrofits.				
Actions	**Priority**	**Time Frame**	**Partnerships**	**Funding**
Action 2.2.1: Encourage vehicular access to the surrounding neighborhood streets, especially to Bertha Street, Coolridge Road and Sycamore Street	C	5+ years	TWP, DDA	TWP, DDA
Action 2.2.2: Where vehicular access points are impractical, install sidewalk-only connections	C	5+ years	TWP, DDA	TWP, DDA
Objective 2.3: Require cross access management between sites.				
Actions	**Priority**	**Time Frame**	**Partnerships**	**Funding**
Action 2.3.1: Create an alley in the existing utility corridor on the east side of Cedar Street	B	3-5 years	TWP, DDA, UC	TWP, DDA, UC
Action 2.3.2: Reduce the number of driveways as sites are redeveloped	B	3-5 years	TWP, DDA, BO	TWP, DDA, BO
Objective 2.4: Consider all modes of transportation including bicycling and walking.				
Actions	**Priority**	**Time Frame**	**Partnerships**	**Funding**
Action 2.4.1: Between Willoughby and Aurelius, develop a multi-use side path on the north/east side of Cedar Street to provide non-motorized access	B	3-5 years	TWP, DDA, BO	TWP, DDA, BO
Action 2.4.2: Between Aurelius and Holt, install sharrows on Cedar Street and enhance existing sidewalks as sites are redeveloped	A	1-2 years	TWP, DDA, ICRD	TWP, DDA, ICRD, SFG
Action 2.4.3: Between Holt and College, develop trail to link Delhi Township to Mason and to other trails in the region	B	3-5 years	TWP, DDA, BO, FLRT, PR	TWP, DDA, SFG

Goal 3: Create a cohesive, consistent design along Cedar Street to attract investment and activity, and to enhance the identity of the corridor.

Objective 3.1: Develop activity nodes in the designated Community Core areas.				
Actions	**Priority**	**Time Frame**	**Partnerships**	**Funding**
Action 3.1.1: Develop Downtown Node near Cedar and Holt Road intersection according to framework in Section 4.1, and seek developers who will invest in the site	A	1-2 years	TWP, DDA, PC, BO	TWP, DDA, BO
Action 3.1.2: Develop Farmers Market Node near Farmers Market/Post Office according to framework in Section 4.2, and seek developers who will invest in the site	A	1-2 years	TWP, DDA, PC, HFM, BO	TWP, DDA, BO
Action 3.1.3: Amend Section 5.13 of the Delhi Township Ordinance to encompass the new boundaries of Community Activity Center and Community Core areas according to the map in this document	A	1-2 years	TWP, DDA, PC	N/A
Objective 3.2: Enhance the streetscape along the entire corridor.				
Actions	**Priority**	**Time Frame**	**Partnerships**	**Funding**
Action 3.2.1: Install landscaping according to palette in Section 4.4	B	3-5 years	TWP, DDA, BO	TWP, DDA, BO
Action 3.2.2: Amend Delhi Township Ordinance Section 6.10 to regulate landscaping for parcels with frontage on Cedar Street	A	1-2 years	TWP, DDA, PC	N/A
Action 3.2.3: Install hardscape elements according to palette in Section 4.5	B	3-5 years	TWP, DDA, BO	TWP, DDA, BO
Action 3.2.4: Create opportunities for public art to enhance other streetscape elements	C	5+ years	TWP, DDA, BO, CM	TWP, DDA, BO, SFG
Objective 3.3: Install signage and other elements to enhance the corridor identity.				
Actions	**Priority**	**Time Frame**	**Partnerships**	**Funding**
Action 3.3.1: Install gateway entrance signs to the corridor at Fay Avenue and Hancock Drive	B	3-5 years	TWP, DDA, BO	TWP, DDA, BO
Action 3.3.2: Install business oriented identity and wayfinding ground signs at major activity nodes and near key intersections	B	3-5 years	TWP, DDA, BO	TWP, DDA, BO
Action 3.3.3: Use other identity elements including banners according to Section 4.6	C	5+ years	TWP, DDA, BO	TWP, DDA, BO

Development Framework

2

REALIZE CEDAR URBAN DESIGN FRAMEWORK

Acknowledgments

Steering Committee
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Howard Haas — Delhi Township DDA Executive Director
Jon Harmon — Delhi Township Board Trustee
Evan Hope — Delhi Township Clerk
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Steve Warfield — Cedar Street Resident
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2

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2.1 Development Scenarios

The Realize Cedar Development Framework utilized scenario planning to evaluate potential development around two key project sites that the Township controls: A *Downtown Node*, that will expand on the traditional urban scale of the Cedar and Holt intersection and a *Farmer's Market Node,* that will expand on the successful market located at Cedar and North.

The foundation of this approach and the focus on these specific places was established during previous plans, as well as verified during public outreach activities and steering committee input. The scenarios tested recommendations for development intensity using plan schematics, perspective views and preference surveys. The feedback was synthesized into three alternatives and one preferred intensity level was selected for each area.

The preferred development scenario indicates the desired physical and economic patterns; including the desired form of land, buildings, lots, blocks, and use mix. The preferred development scenario also provides the context for evaluating roadway function explored in the *Connectivity Framework*. The existing roadway conditions like utilities, traffic speed, traffic volumes, and right-of-way constraints, and the strategies used to improve the roadway function for all user conditions is dependent on the preferred development intensity and character.

Redevelopment Nodes
The two redevelopment sites in the Community Core area of Cedar Street, the Downtown Node and the Farmer's Market Node

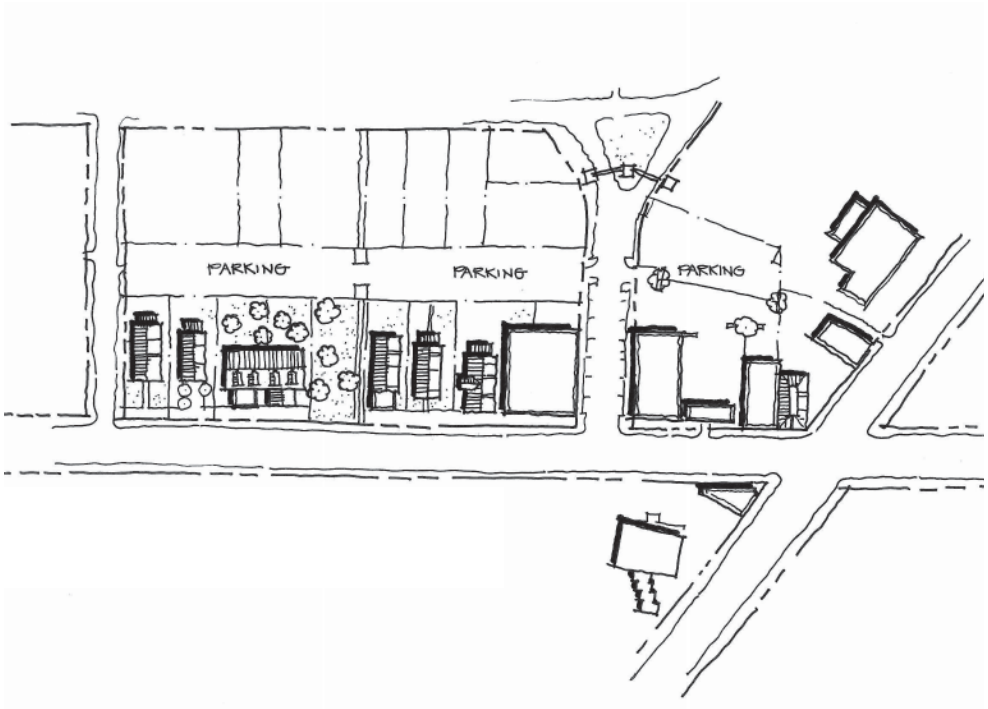
Cedar Street

Redevelopment Nodes

Downtown Node:
Low-Intensity — Cottage Retail

This scenario preserves downtown Holt's current village character by allowing for the further expansion of retail into only new residential building types, or cottage retail, excepting one new two-story building to match the existing retail building opposite Veterans Drive. Their new retail would emulate existing houses elsewhere along Cedar Street that have been converted from residential to retail in the past, but permit open layouts and mixed uses more conducive to a modern downtown. These Cottage Retail buildings are also positioned to reflect existing residential buildings opposite Cedar Street

In this scenario, parking behind new development is visible between new buildings and accessed by the dedication of one existing parcel for a green path, connecting the sidewalk along Cedar Street to that parking lot.



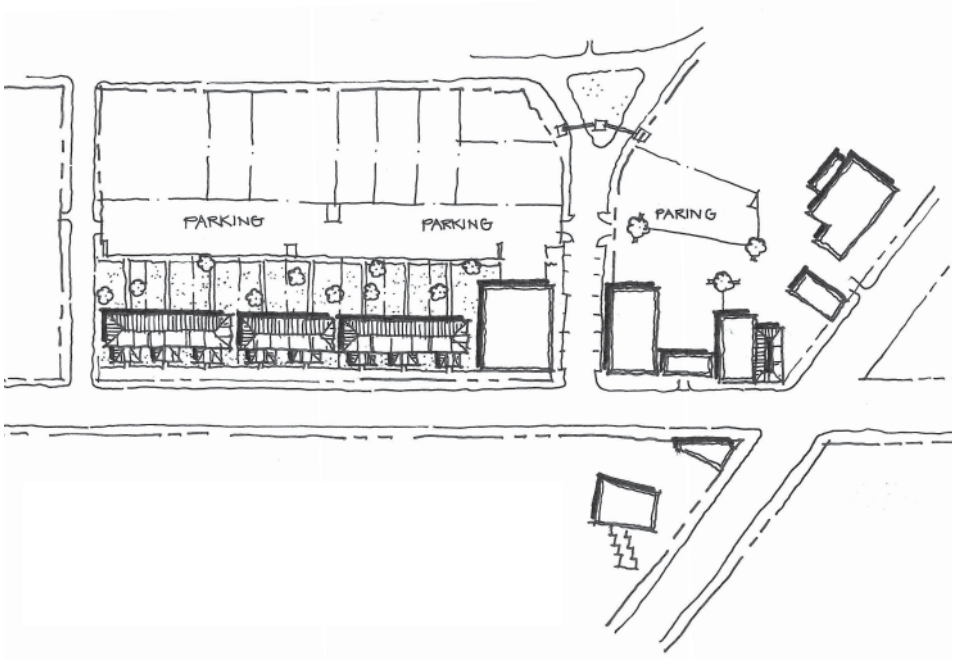
Low-Intensity Plan View
(Above) The low-intensity scenario extends the garden retail pattern of the housing along Cedar into the development sites in the Downtown Node

Low-Intensity Perspective View
(Right)

Downtown Node: Medium-Intensity — Townhome / Mixed-Use

As in Scenario 1, this plan matches the existing retail building opposite Veterans Drive. However, the residential density of downtown is modestly intensified with the addition of rowhouses mid-block to the north and west of that new commercial building. Furthermore, it is intended that these rowhouses reflect the single-family residential character of Holt / Delhi through the use of a compatible architectural style and generous front setbacks, as well as the inclusion of front porches.

Given the relatively low parking demand generated by the proposed quantity of residential units, the space behind these rowhouses may become dedicated to a common yard and public parking.



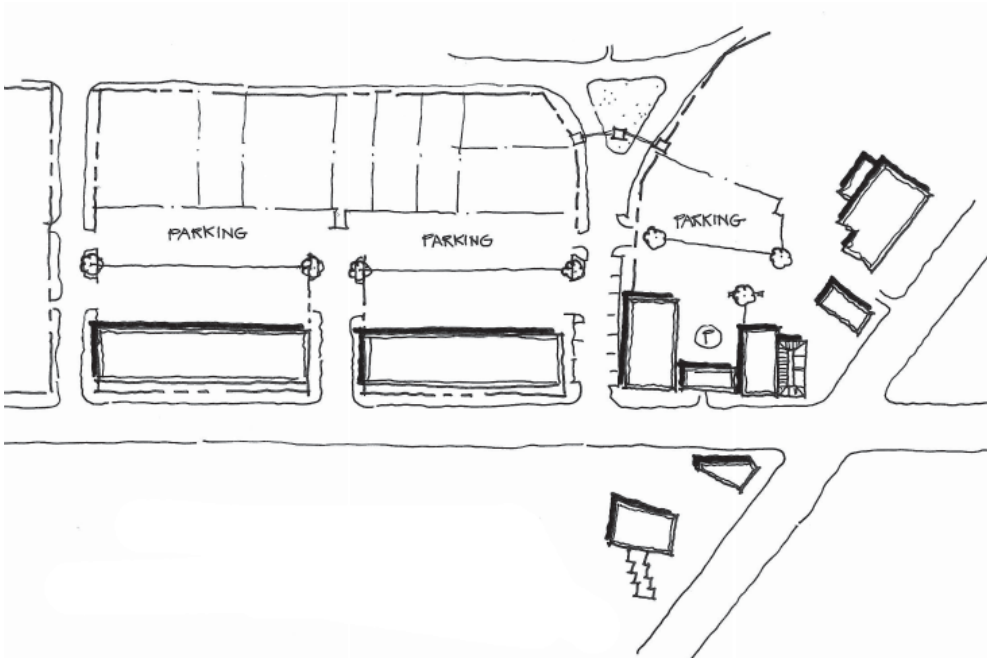
Medium-Intensity Plan View
(Above) The medium-intensity scenario envisions townhome style housing along Cedar with some mixed-use structures on the development sites in the Downtown Node

Medium-Intensity Perspective View
(Left)

Preferred Downtown Node: High-Intensity — Mid-Rise Apartments / Mixed-Use

This development scenario continues the ground floor shopfront pattern of the existing downtown buildings, but with a shallower building footprint and increased building heights from low to mid-rise. On the upper floors, residential apartments are envisioned, dramatically increasing residential density in the downtown area.

The expected high parking demand, associated with taller mixed-use buildings of this nature, can be accommodated behind these new buildings on the ground plane due to shallower than normal building footprints.



Preferred - High-Intensity Plan View
(Top) The preferred higher-intensity scenario envisions 3 to 4 story mixed use buildings in the Downtown Node along Cedar with housing, retail, and office uses

Preferred - High-Intensity Perspective View
(Bottom)

Downtown Node Preferred Development Concept

Preferred Development Concept Rendering

Preferred Development Concept Perspective

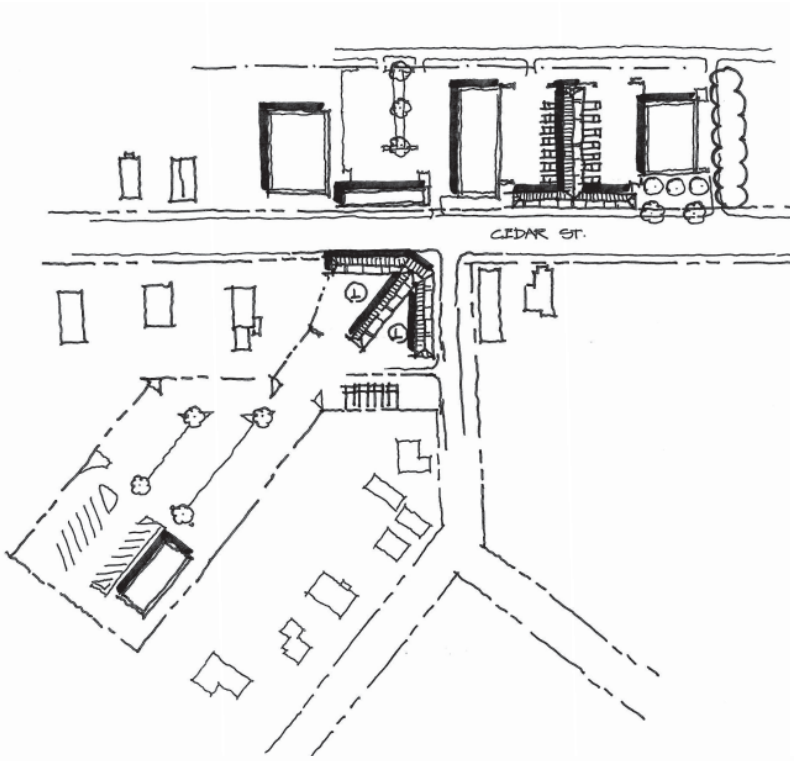
Existing Conditions

The Downtown Node is mostly located on currently vacant parcels, which means there is a prime opportunity for redevelopment at this location

Farmer's Market Node: Low-Intensity – Outdoor Market

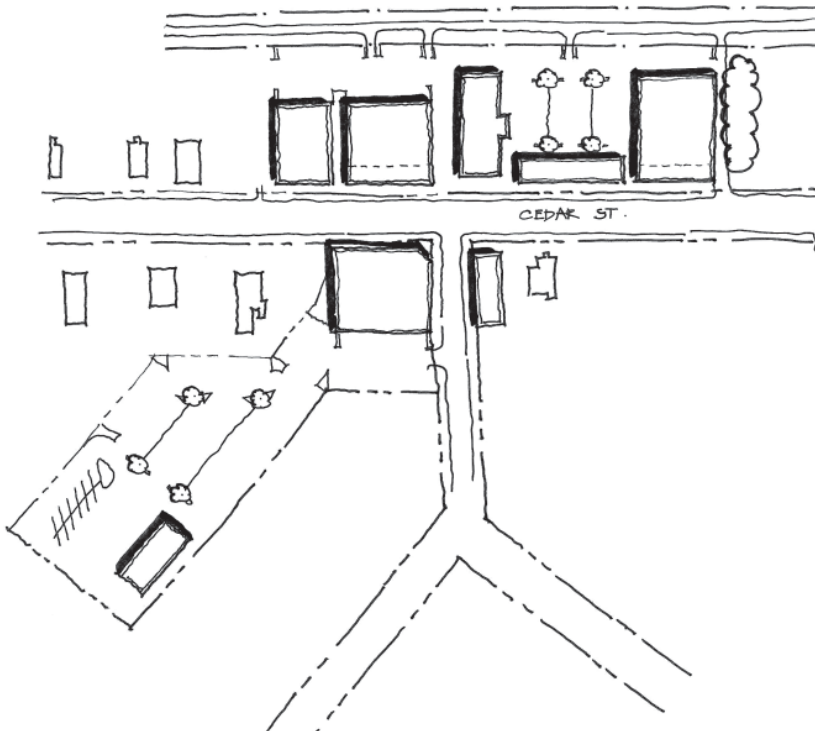
This scenario envisions a stronger node at this location anchored by an existing Farmer's Market that has been expanded to include formal outdoor sales. Covered aisles have been delineated for the protection of outdoor market activities and the market itself is shown to continue across Cedar Street and to the west.

New liner buildings along the east side of Cedar Street conceal new parking while parking is greatly expanded west of Cedar Street by a new lot consisting of parking to be shared with the existing Post Office on N. Aurelius Road.



Low-Intensity Plan View
(Right) The low-intensity scenario for the Farmer's Market Node envisions an extension of the outdoor market with a covered vending/parking area

Low-Intensity Perspective View (Below)



Farmer's Market Node: High-Intensity – Mid-Rise / Mixed-Use

In this scenario, taller Mixed-Use buildings with larger footprints occupy much of the ground plane, forcing some parking indoors at the ground-floor level. Where parking is to be accommodated as such, the first 20 feet of the corresponding ground floors of such buildings are envisioned to have retail uses adjacent to the sidewalk, concealing the proposed parking use behind.

Since the new building shown west of Cedar has the potential luxury of sharing a large parking lot with the existing Post Office along N. Aurelius Road, it can have its entire ground floor dedicated to retail or restaurant uses.

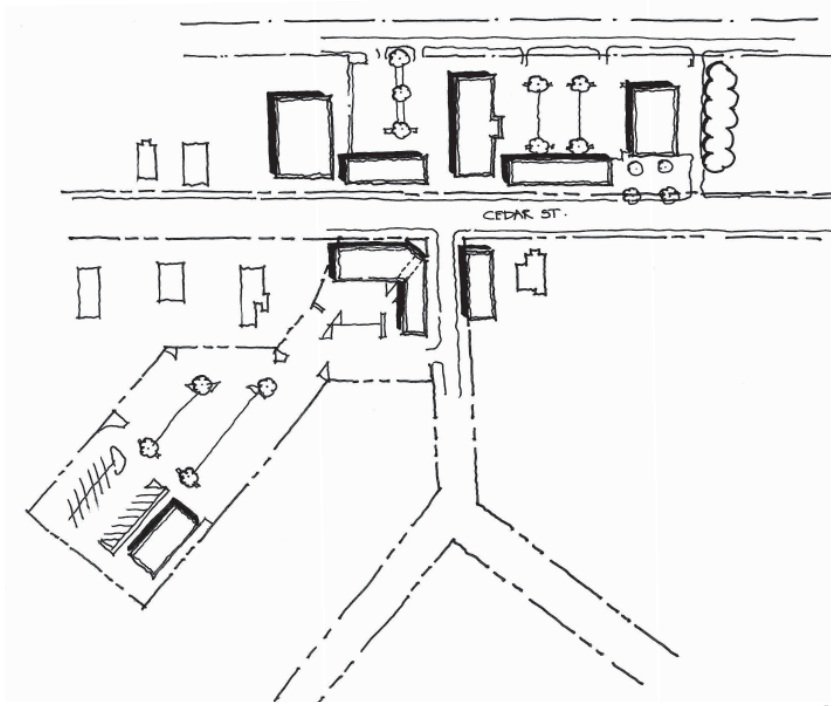
High-Intensity Plan View
(Right) The preferred high-intensity scenario for the Farmer's Market Node envisions mid-rise mixed use structures that could have office, retail, and service based uses, as well as be new indoor sales or kitchen space for the market.

High-Intensity Perspective View
(Below)

Preferred Farmer's Market Node: Medium-Intensity – Low-Rise / Mixed-Use

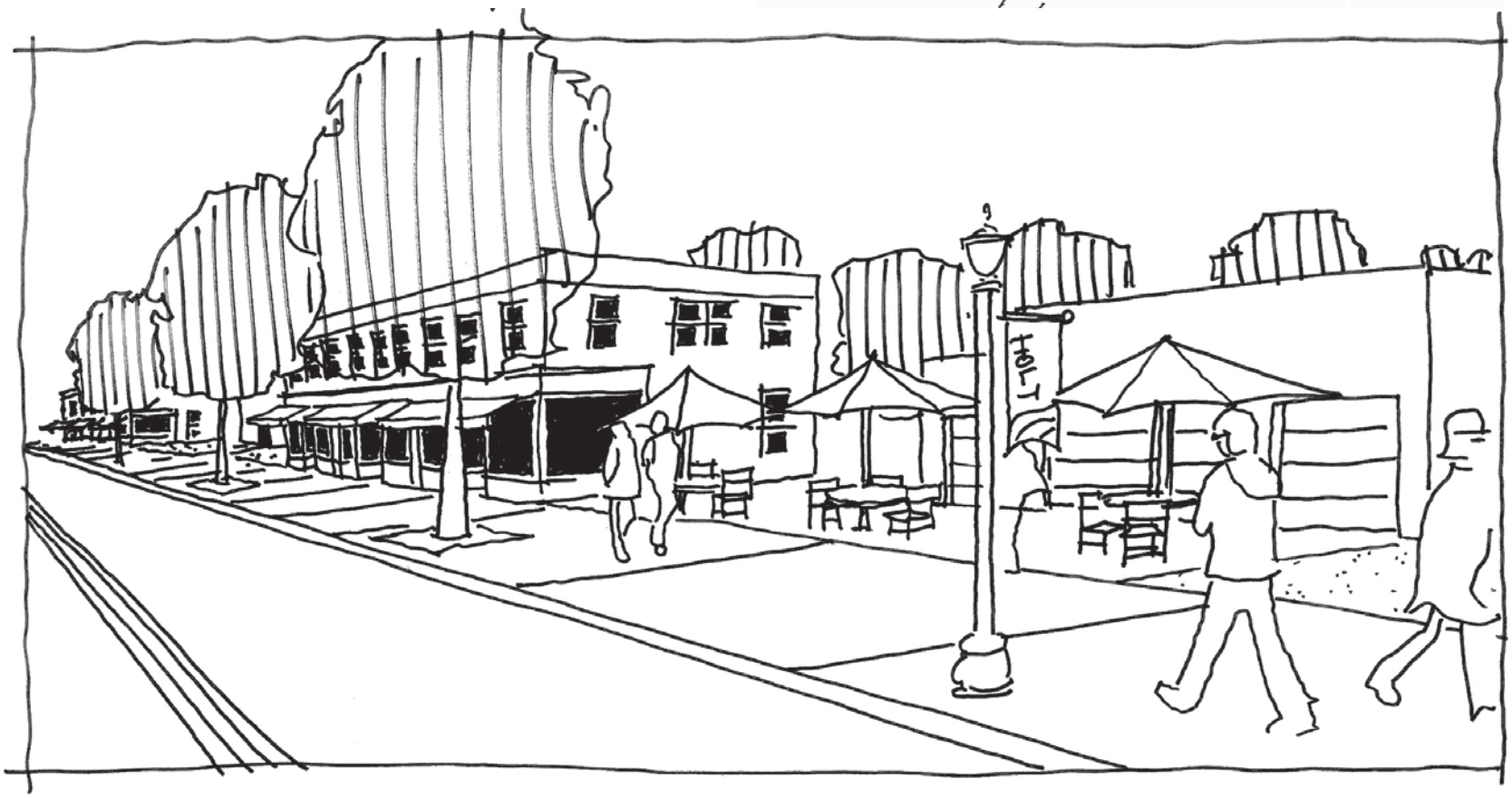
Along the east side of Cedar Street, the existing parking lot, immediately adjacent to the Farmer's Market building, has now been concealed with shallow retail liner buildings one to two stories in height, while the paved apron in front of the Farmer's Market building has been configured to accommodate seasonal outdoor sales.

At the northwest quadrant of Cedar Street and North Street, a new two-story mixed-use building is envisioned up to the Right-of-Way, including a pedestrian cut-through extending from that corner to a new parking lot behind shared with the existing Post Office along N. Aurelius Road.



Medium-Intensity Plan View
(Left) The medium-intensity scenario for the Farmer's Market Node envisions single story infill development on sites to accent the market

Medium-Intensity Perspective View (Below)



Farmer's Market Node Preferred Development Concept

Preferred Development Concept Rendering

Existing Conditions
The Farmer's Market site provides an opportunity to increase density and create an activity hub at a central part of the corridor

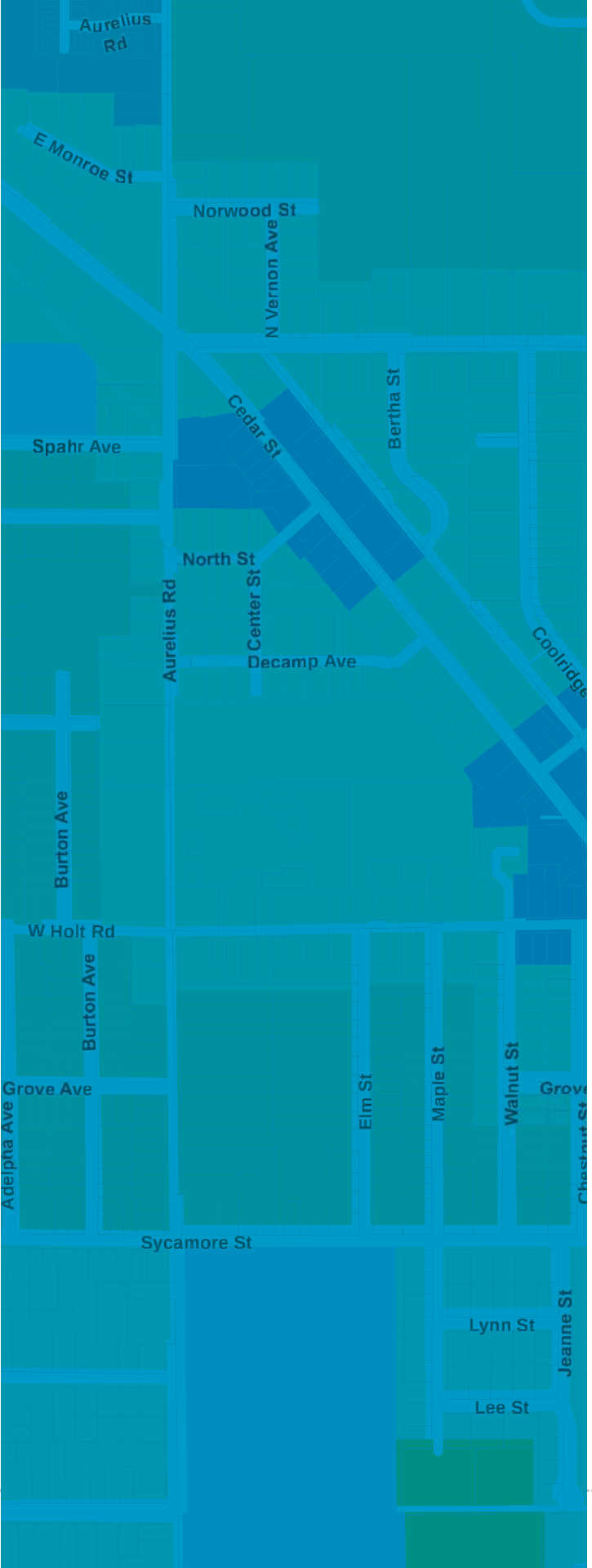
Preferred Development Concept Perspective
Perspective sketch of the Preferred Development Concept along the east side of Cedar Street

Farmer's Market Node Preferred Development Concept

Preferred Development Concept Rendering
Perspective sketch of the Preferred Development Concept along the west side of Cedar Street

Existing Conditions
The vacant parcel at the corner of Cedar and North is an opportunity for redevelopment to connect the Farmer's Market with the Post Office

Preferred Development Concept Perspective
Color rendering of the Preferred Development Concept along the west side of Cedar Street



2.2 Future Land Use

The Development Framework includes two modifications to the Township's Future Land Use Map. A new designation–Community Core Area—and an expansion and modification to the previous designation –Community Activity Area.

Community Core Area

The Community Core Area is a new land use category recommended to implement the 2016 Realize Cedar Urban Design Framework. The Community Core Area has two focal points, as designated on the Future Land Use Map. These are envisioned as the new commercial focal points of the Township and are made up exclusively of parcels fronting Cedar Street. The vision for this area shall be achieved primarily through the development of Mixed-Use and Retail Building Types (to the exclusion of other Building Types) built to frontage lines with on-street parking and landscaped sidewalks accommodating shoppers and other pedestrians. Other features of this area include pedestrian-scaled building proportions and amenities, off-street parking located behind buildings, high-back concrete curbing separating vehicular lanes and sidewalks from one another, and a vertical mix of uses for multi-story buildings that places retail and restaurant uses at the ground-floor level with office, light industrial, and residential uses located above.

The Community Core Area, along with the Community Activity Area described below, can be most effectively regulated by Building Types. Allowable building uses, setbacks, lot sizes, and heights can be assigned to specific Building Types to regulate these areas. The zoning code of Delhi Township should be updated to reference this framework with corresponding zoning categories for these land use areas to be regulated. A schedule of allowable Building Types, "Schedule of Regulations," is provided here at the end of this section.

Music in the Garden
Residents take in a show at
Veterans Memorial Gardens

The Community Core Area will be most effective and more urban if only mixed-use and retail building types are permitted because they will provide a continuity of activity, frontage type, and building setback. The “Schedule of Regulations” provided has been designed to achieve this objective.

To foster success in the commercial center, the Township must require continuity of frontages and building setbacks within retail centers and limit the extent of the center to the designated areas. This strategy accommodates pedestrian shoppers and keeps them continually engaged while recognizing that there is a limit to how far and long this activity can continue before individuals tend to stop, turn around, and head home. This practice also lends itself to the creation of shopping nodes near prominent intersections, as opposed to endless shopping corridors.

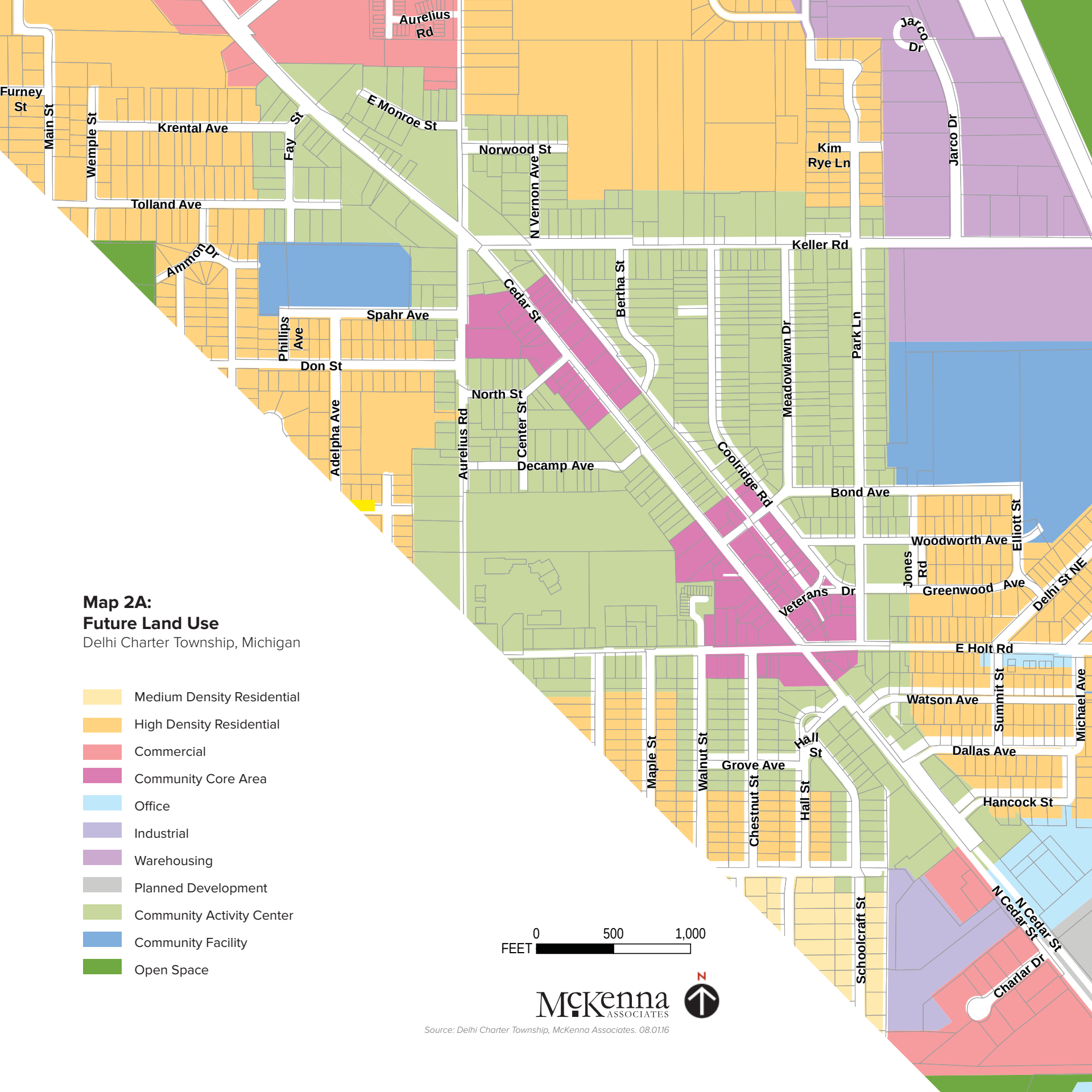
Community Activity Center

The Community Activity Center land use area is a land use area recommended for expansion to implement the 2016 Realize Cedar Urban Design Framework. Given the introduction of a new land use category Community Core Area (as described above), the Community Activity Center area is no longer intended to act as the focal point of commercial activity for the Township. This area is now instead intended to serve as a transitional zone between the more recently designated Community Core Areas and surrounding residential neighborhoods. Expansion and densification, through the inclusion of additional building types such as duplexes and rowhouses, as well as improved connection into the newly designated Community Core Areas, are recommended for the Community Activity Center.

Mixed-Use and Retail Building Types (which occur at the frontage lines) are no longer envisioned for this land use area and are now confined to the designated Community Core Areas. Thus, commercial uses within the Community Activity Center area are envisioned to take place instead within residentially styled building types referred to as Cottage Retail. While such building types do indeed have storefronts incorporated within them, they do not provide a continuity of frontage. Where shopfronts are setback they can serve a variety of purposes, from outdoor dining to product display, as well as receiving a variety of landscape treatments, from hardscape to manicured lawns with decorative fencing, shrubbery, hedges, and ground covers.

Additionally, the Community Activity Center area now accommodates, in addition to abundant existing single-family homes, a variety of “missing middle” residential building types including apartment buildings, rowhouses, duplexes, and garage apartments.

Accordingly, the vision for the Community Activity Center is that of an area not just in transition from residential to commercial activity, but also in a gradual transition from single-family to multiple-family uses. Multiple-family housing accommodates a greater density of population and both the Community Activity Center area and its adjacent Community Core areas will benefit from a correspondingly higher level of foot traffic, because more people on the street should correspond to higher sales revenue, contribute to the general success of the district, and increase property values.



Map 2A:
Future Land Use
Delhi Charter Township, Michigan

McKenna Associates

Source: Delhi Charter Township, McKenna Associates. 08.01.16

2.4
Building Types

The Community Core and Community Activity Center land use categories of Delhi Township can be effectively regulated by Building Type. This system is highly intuitive for the user and well suited to the particular range of Building Types typically found in Midwestern towns and cities. Thus, these two future land use categories are targeted by form-based codes which have been organized around Building Types. The other areas may remain regulated by their corresponding zones.

Additionally, since permitted building setbacks, building heights, and zoning categories can be assigned by Building Type, these attributes need not be regulated elsewhere within the zoning code; but instead referenced to this document.

Following here is a comprehensive list of Building Types recommended for form-based zones in Delhi Township and their recommended associated regulations. A custom Schedule of Regulations is subsequently provided for these Building Types.

Mixed-Use

The Mixed-Use Building type is a multi-story Building Type with storefronts along all primary frontage lines and extending, from the primary frontage, minimum 20-feet into secondary frontages) that has been assigned setbacks at frontage lines of zero feet. Storefronts should have minimum 60% glass at the ground-floor level, doors should be recessed minimum 3.5 feet from primary frontages lines, and minimum 5-foot deep canvas or metal awnings should be provided above all storefront windows. Upper level windows should be no more than 50% glass. All exterior building glass should be clear.

This Building Type should also have a vertical zoning requirement. Ground floor permitted uses are restricted to retail and restaurant uses, while the upper floors are restricted to office, light industrial, and residential uses. These buildings should also be large enough to extend along the majority of all frontage lines thus, due to their zero-feet maximum setback, providing an immediate physical presence along frontages.

This Building Type is ideal for downtowns and the retail segments of downtown shopping streets.

Retail

The Retail Building type is a single-story limited-use building with storefronts along all primary frontage lines and extending, from the primary frontage, minimum 25 feet into secondary frontages. Storefronts should have minimum 50% glass, doors should be recessed minimum 3.5 feet from frontage lines, and minimum 5-foot deep canvas or metal awnings should be provided above all storefront windows. This building has frontage setbacks of zero feet. Permitted uses are limited to uses that serve to create continuity of activity along the street, such as retail, restaurant, and some entertainment-based uses. These buildings should also be large enough to extend along the majority of all frontage lines thus, due to their zero-feet maximum setback, providing an immediate physical presence along frontages.

This Building Type is ideally configured for downtowns and in the retail segments of downtown shopping streets.

Liner

The Liner Building type is merely a Mixed-Use or Retail Building Type (see descriptions of those above) that has been limited in depth to between 20 and 36 feet from frontage lines and used to conceal parking behind. Grade level permitted uses include uses that serve to create activity along the street such as retail, restaurant, and some entertainment-based uses. If multi-story, upper floor uses permitted include residential, office, service, or light industrial.

This Building Type is ideally configured for mid-block conditions, secondary streets in downtowns, and adjacent to (located toward the edges of) the retail segments of downtown shopping streets. If extending to corner locations, then storefronts should extend into the secondary frontage for minimum 25 feet or the depth of the building, whichever is greater.

Cottage Retail

The Cottage Retail Building Type is a mixed-use building type with a residential building form that permits storefronts along all primary frontage lines and, where storefronts have been employed, extending minimum 7.5 feet from the primary building frontage down the sides of the corresponding building. Storefronts should have minimum 60% glass at the ground-floor level and doors recessed minimum 3.5 feet from the frontage line. This Building Type emulates or repeats a building form that has often evolved to become an existing condition in older neighborhoods adjacent to formal retail centers. The resulting form is a modestly-scaled building, including a gable and a pitched roof, usually with a storefront at the ground floor. Uses on the ground floor behind the storefront may or may not include retail or restaurant uses and the storefront may or may not be setback from the frontage line.

Permitted uses include retail, restaurant, office, service, or light industrial. Residential uses may be located behind other uses on the ground floor level and/or on upper levels. These buildings may be designed from scratch or result from the modification of any residential Building Type (building code permitting), within designated zones.

Rowhouse

The Rowhouse Building Type consists of a contiguous row of individual residential units (three or more) side-by-side, sharing common walls with one another, and with each unit extending front to back and continuously from below grade through to the roof. Another term for rowhouses is townhouses. Additionally, each unit features a main exterior entrance along a frontage line, and typically in the Midwest, such buildings are set back from that frontage line with individual or shared front porches accessed from each unit.

In addition to parking and residential, permitted uses for this Building Type include home occupations and retail.

Permitted uses in this Building Type are restricted to residential uses.

Apartment Building

Apartment buildings may take on a small variety of multi-family building configurations, three units or more, that do not correspond to the rowhouse configuration. For instance, apartment buildings do not have units continuous from the ground floor to the roof. This small variety of configurations includes shotgun (one or two units wide, front to back), courtyard, and forecourt configurations.

All of these apartment building configurations feature significant building setbacks, around 10 - 15 feet, on all sides except along secondary frontages and alleys, which often do not include building setbacks.

Additionally, apartment buildings are limited to 3 - 4 stories in height, where the lowest level is usually partially below grade and the second level partially above grade in order to achieve a privacy separation between the unit and the adjacent street and sidewalk. Building entry is typically at-grade.

Permitted uses in this Building Type are restricted to residential uses.

Duplex

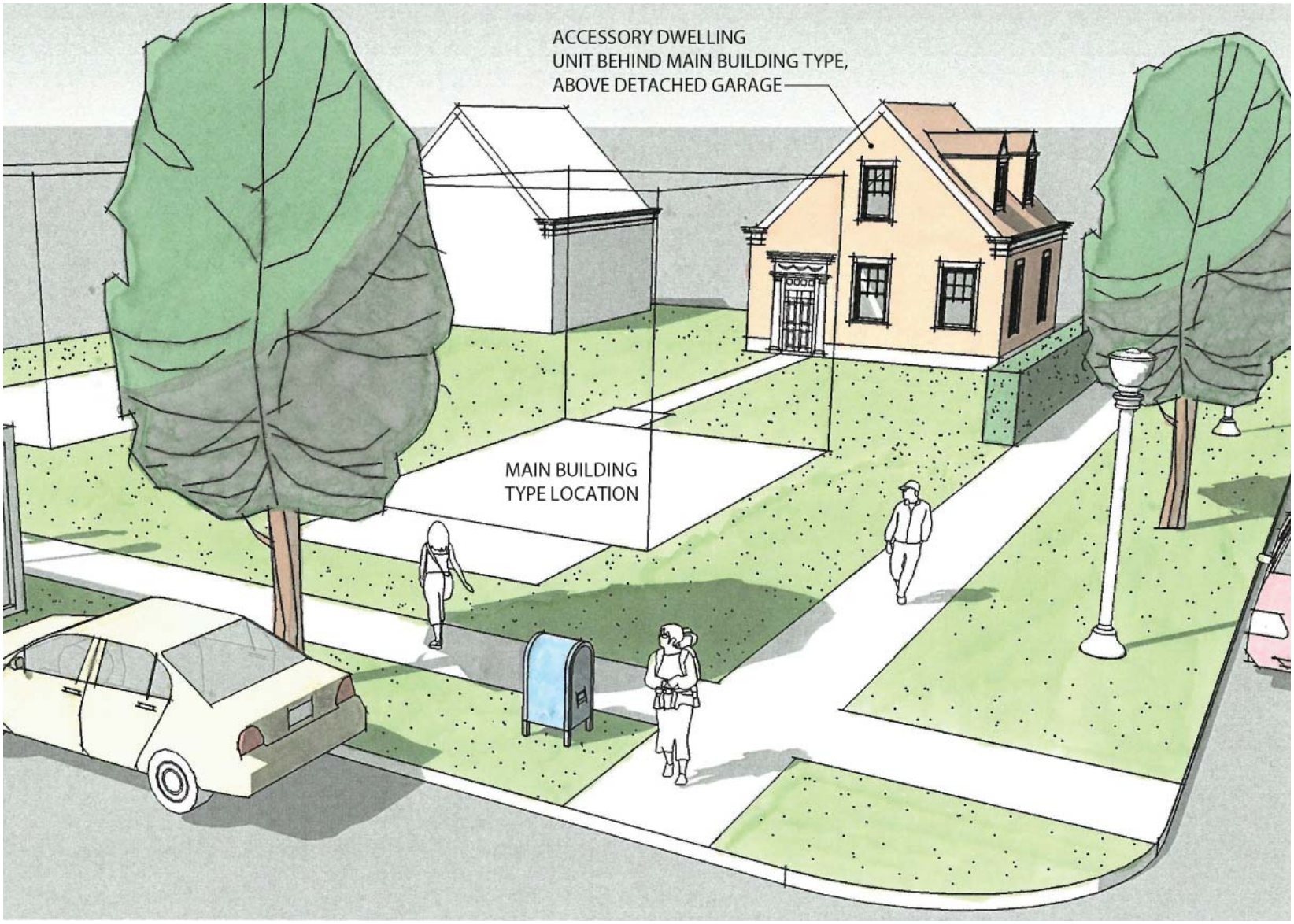
The Duplex Building Type is any independent building configuration consisting of exactly two residential units, usually surrounded by a private or common yard, meeting minimum room quantity and size requirements as dictated by the local building code, zoning code, or both.

The units can be side-by-side (similar to rowhouses) or stacked one above the other. Similarly, to single-family residential buildings, these buildings include front porches that encroach into the established building setback and optional detached garages.

In addition to parking and residential, permitted uses for this Building Type include home occupations and retail.

Single-Family

A Single-Family Building Type consists of a detached building containing one residential unit, usually surrounded by a private or common yard, and meeting minimum room quantity and size requirements as dictated by the local building code, zoning code, or both. Similar to duplex residential building types, these buildings include front porches that encroach into the established building setback and optional detached garages. In addition to parking and residential, allowable uses for this Building Type include home occupations, restaurant, light industrial, and retail.



Accessory Dwelling Unit

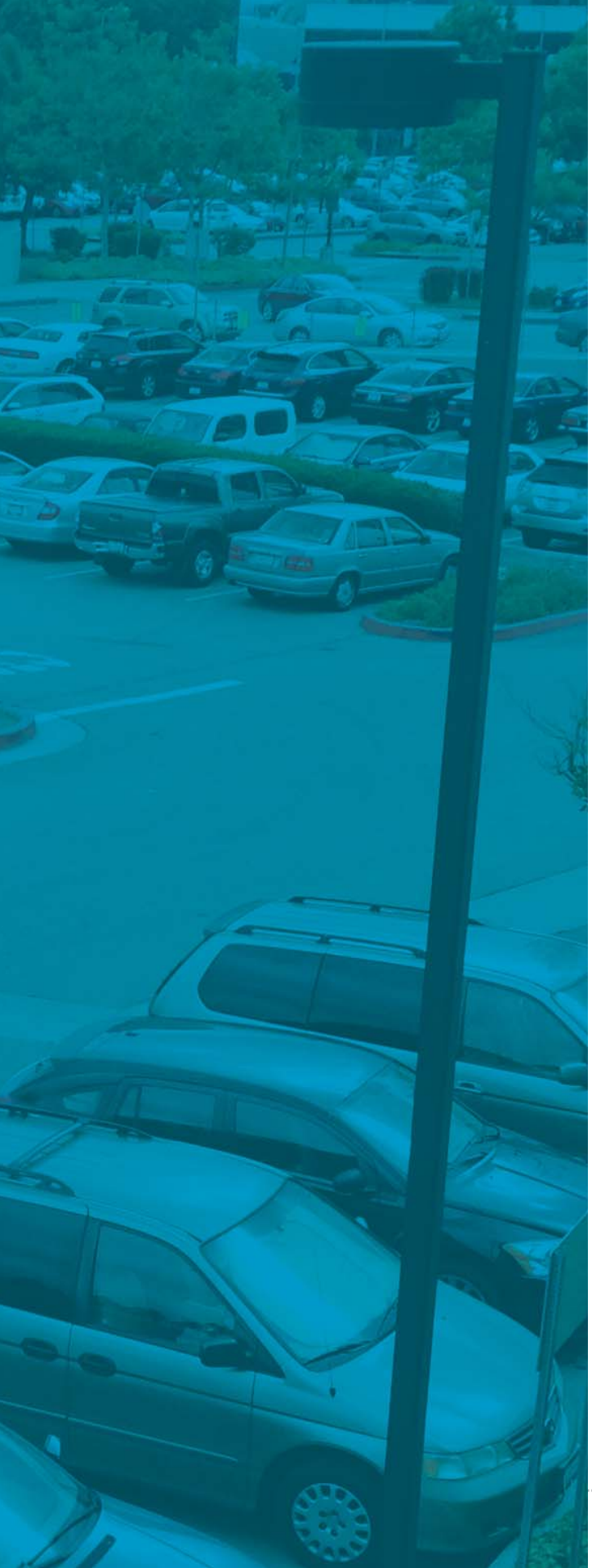
Accessory Dwelling Units consist of one or more apartment units located above a detached garage. Like other detached garages, these buildings are typically setback 3 feet from an alley easement and adjacent property lines. Entry is at grade with an interior stairway servicing the upper level.

In addition to parking and residential, allowable uses for this Building Type include service, light industrial, office, and retail.

Schedule of Regulations

Building Type	Front Setback	Side Setback	Rear Setback	Height	Allowable Zones	Maximum Lot Size
Mixed-Use	Max. 0’	Min. 0’	Min. 0’	Max 42’ / 3 Stories	Community Core	50’ Width, 150’ Depth
Retail	Max. 0’	Min. 0’	Min. 0’	18’ Max. / 1-Story	Community Core	50’ Width, 150’ Depth
Liner	Max. 0’	Min. 0’	Min. 0’	30’ Max. / 2 Stories	Community Core	60’ Width, 36’ Depth
Cottage Retail	Min. 0’	Min. 10’	Min. 10’	42’ Max. / 2 ½ Stories	Community Activity Center	50’ Width, 150’ Depth
Apartment	Min. 10’ / Min. 0’ at Secondary Frontages	Min. 10’	Min. 10’ / Min 0’ at alley easements	42’ Max. / 3 ½ Stories	Community Activity Center	100’ Width, 150’ Depth
Rowhouse	Min. 25’ / Front porches may encroach 12’	Min. 10’	Min. 10’ / Min. 0’ at Secondary Frontages	42’ Max. / 3 Stories	Community Activity Center	140’ Width, 150’ Depth
Duplex	Min. 25’ / Front porches may encroach 12’	Min. 10’	Min. 10’	42’ Max. / 2 ½ Stories	Community Activity Center	50’ Width, 150’ Depth
Single-Family	Min. 25’ / Front porches may encroach 12’	Min. 10’	Min. 10’	42’ Max. / 2 ½ Stories	Community Activity Center	50’ Width, 150’ Depth
Accessory Dwelling Units (and other detached garages	Min. 60’ / Min. 10’ from Main Building Type	Min. 3’	Min. 3’	42’ Max. / 2 ½ Stories	Community Activity Center	N/A

Notes: 1. Front Setback requirements apply along all frontage lines.
2. Buildings with 0’ side setbacks may open into one another.
3. If the right-of-way line is modified setbacks shall be taken from the new line.



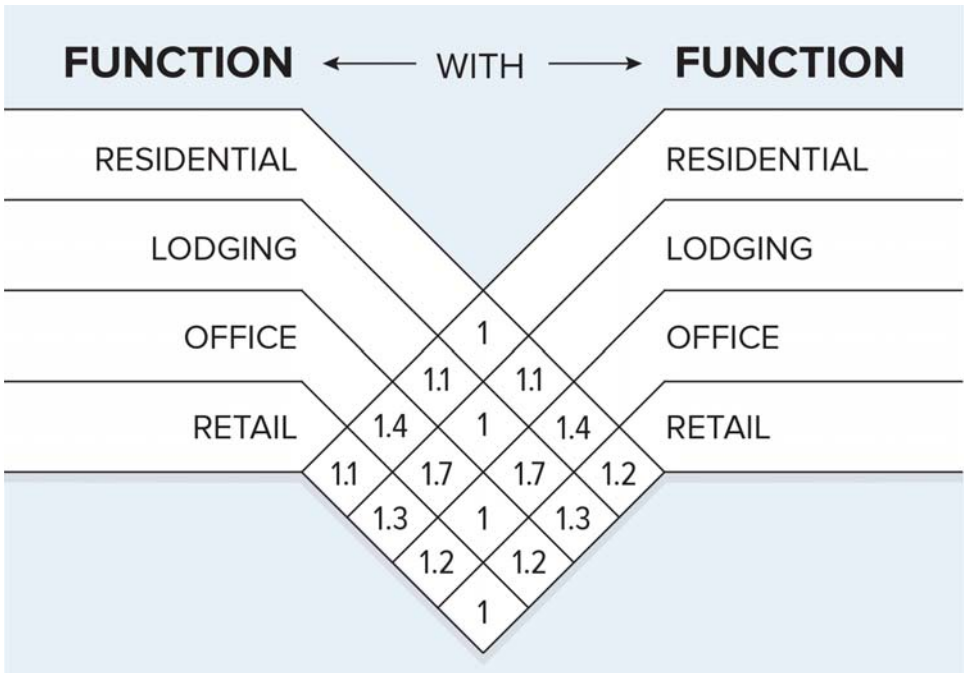
2.5 Parking

Current zoning in Delhi Township permits parking reductions corresponding to mixed-use developments that contain uses with differing parking demand peaks. Shared parking is permitted when the proposed uses within a development have their highest demand for parking at different times of day and or different days of the week.

This *Development Framework* recommends a straight-forward method for determining parking requirements in the Community Core area and the Community Activity area using the following two tables. The first table provides required parking based upon use. The second table provides a denominator for every combination of those use categories that can be divided into the required parking totals which have been derived from the first table. This methodology reduces the required parking total based upon the sharing of those particular uses.

Building Use / Zone (or Land Use)	Community Activity Area	Community Core Area
Residential	1.5 / dwelling	1.0 / dwelling
Lodging	1.0 / bedroom	1.0 / bedroom
Office	3.0 / 1000 sq. ft.	2.0 / 1000 sq. ft.
Retail	4.0 / 1000 sq. ft.	3.0 / 1000 sq. ft.
Civic	To be determined	To be determined
Other	To be determined	To be determined

Adopting shared parking standards along Cedar Street will facilitate ease of use for prospective developers.



Shared Parking
Diagram of shared parking factors

2.6 Architecture

The following general architectural standards are strongly encouraged for developments along Cedar Street, in the Community Core and the Community Activity Center areas. Further, a Cedar Street overlay district is recommended to apply special development review processes to north and south Cedar.

General Architectural Standards:

1. Storefronts, where applicable to particular Building Types, are always located at grade-level and consist of minimum 60% glass (between 2 feet and 10 feet above finish grade or sidewalk) and doorways (main entrances) recessed minimum 3.5 feet. Refer to the Mixed-Use Architectural Standards diagram (ground floor level), for additional storefront requirements.

2. Exterior finish materials on all façades shall be limited to brick, cut stone, wood siding or shingles, cementitious siding or shingles, and/or Portland Cement stucco (no E.I.F.S. or other synthetic stucco or rusticated elements).

3. All window glass shall have a minimum transparency of 80%.

4. Wall materials may be combined on each façade only horizontally (one above the other, not side-by-side), with the heavier material below the lighter.

5. Use fine and smooth textured surfaces when using materials such architectural pre-cast concrete, textured block or stucco for exterior cladding. Rusticated stone is prohibited.

6. Allow any natural color of primary materials such as stone or brick to dominate the majority of façade surface as its base color.

7. Use accent colors for elements such pilasters, horizontal bands, cornices and window frames to complement the shade of the base color.

8. Flat roofs shall be enclosed by parapets a minimum of 42 inches above the roof surface, or as required to conceal rooftop mechanical equipment.

9. All wall openings, including porches, galleries, arcades and windows (with the exception of storefronts) shall be square or vertical in proportion.

10. Excluding storefronts at grade, wall openings shall be punched through an opaque façade and not exceed 50% of the total building wall area, with the façade corresponding to each structural bay calculated independently.

11. Doors and windows that operate as sliders are prohibited along frontages.

12. Pitched roofs, if provided, shall be symmetrically sloped no less than 5:12, except that roofs for porches and attached sheds may be no less than 2:12.

13. Balconies and porches shall be made of painted wood, decorative iron, or steel.

14. Along Mixed-Use, Liner, and Retail Building Type frontages, include a minimum 72-inch height manicured hedge, a low brick wall with a 4 inch concrete cap (between 32 and 36 inches above sidewalk in height, including wall and cap), or decorative metal fencing inset between capped brick piers as a parking screen where said frontage line is not already occupied by the corresponding building façade.

15. Pertaining to sites with other than Mixed-Use, Liner, or Retail Building Types, fences within the first 25 feet of the primary building frontage shall be painted wood or decorative metal and be 30 to 36 inches in height. Fences otherwise may be of wood board or chain link up to 6 feet in height.

16. Additionally, street screens should be constructed of a material matching the adjacent building facade.

17. Employ a minimum 11 feet and maximum 15 feet height floor-to-floor height between finish grade and/or sidewalk surface at the primary frontage of the building and the second floor finish floor line. Employ a maximum 10.5 feet floor-to-floor height between upper floors.

18. Accessory Dwelling Units excepted, locate the main entrance and any signage of all buildings so as to address a street (not at the rear of building or addressing a parking lot).

19. Construct all facades and façade segments parallel with a street at the corresponding frontage line (or, in cases where there is a building setback along the frontage of minimum 25 feet, alternately provide decorative metal fencing inset between capped brick piers at the R.O.W line).

20. Pertaining to Mixed-Use Building Types, create a sense of scale and proportion with the street level façade by using storefront spacing and rhythm that provides for a visually interesting façade. Rhythm implies that storefront spacing repeats and that pilasters and entryways have been provided to accommodate repetition. Provide a hierarchy of architectural details and features with the emphasis on the street level.

21. Flat-roofed buildings should have a base, shaft, and capital similar to that of a column. A building base can be created minimally with the use of storefronts while a building capital can be achieved with the inclusion of a building cornice line. The shaft, in this case, would be implied by the remaining body of the building itself. See the Mixed-Use Architectural Standards diagram for an

example of a flat roofed building with a base, shaft, and capital.

22. Set storefront window frames 15 to 30 inches above the finished grade to provide durability and to accommodate traditional main street building features, such as base panels, sills, and display windows.

23. Recess all window frames (including at storefronts) 4 to 8 inches to provide a shadow line and accentuate exterior wall thickness and, correspondingly, employ exterior wall thicknesses sufficient to provide a such shadow line.

24. Storefront glass excepted, all building windows should be operable.

25. Provide awnings or building overhangs to shade storefront glass.

26. For storefront and display windows along frontages, provide and maintain at least 80% of the storefront and display windows as free from visual obstructions such as signs, logos, advertisements, window screens, security grille, blinds or window covering.

27. Employ awning and canopy materials such as canvas, metal or glass. Vinyl and plastic are unacceptable materials for awnings and canopies.

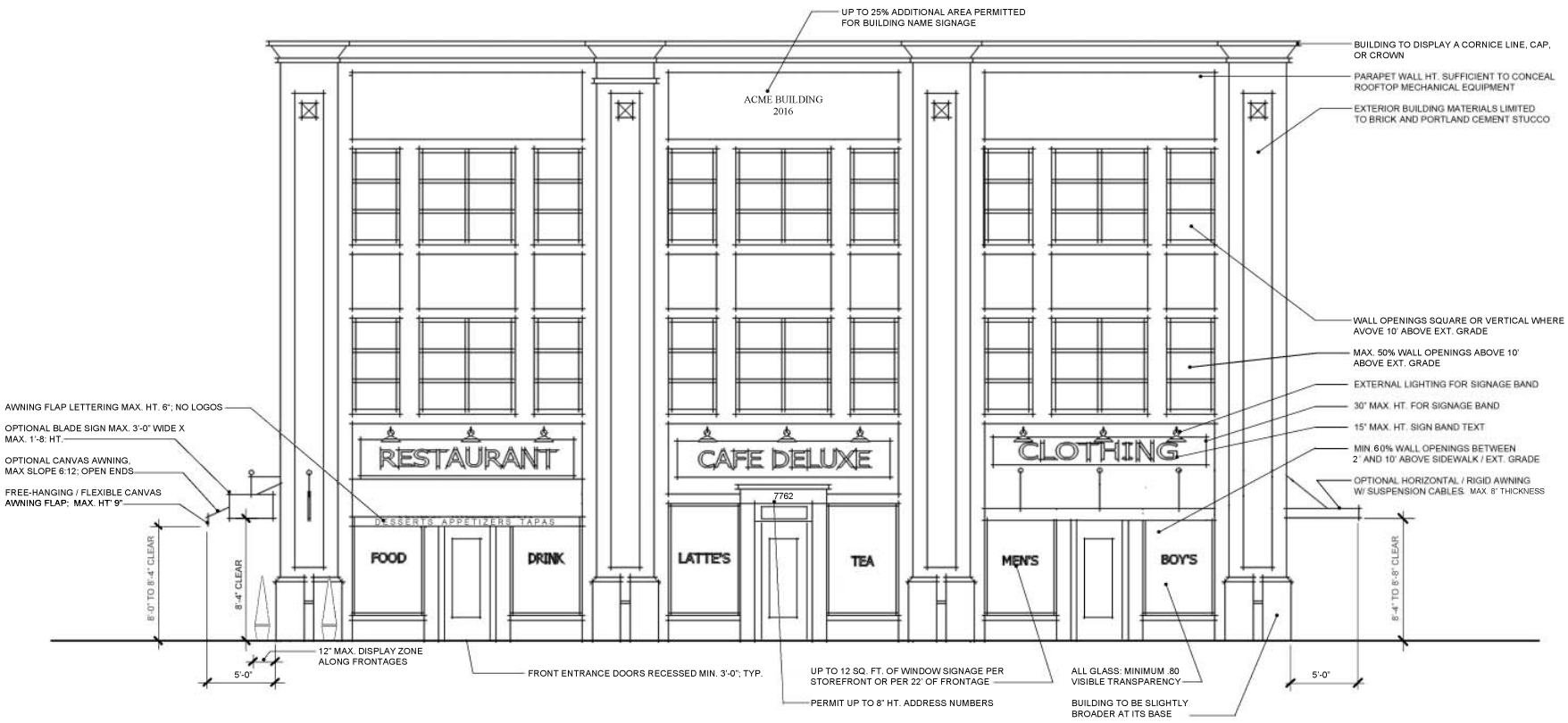
28. Internally illuminated awnings are unacceptable.

29. Use awnings to define individual storefront openings only. The continuation of awnings along blank walls is unacceptable.

30. First floors not associated with storefronts (or contiguous with lobbies) should be elevated minimum 18 inches above exterior finish grade.

31. Sloped roof materials may include slate, terracotta, cedar shingles, standing seam metal, dimensional (or solid dark green, dark red, or dark gray) asphalt shingles.

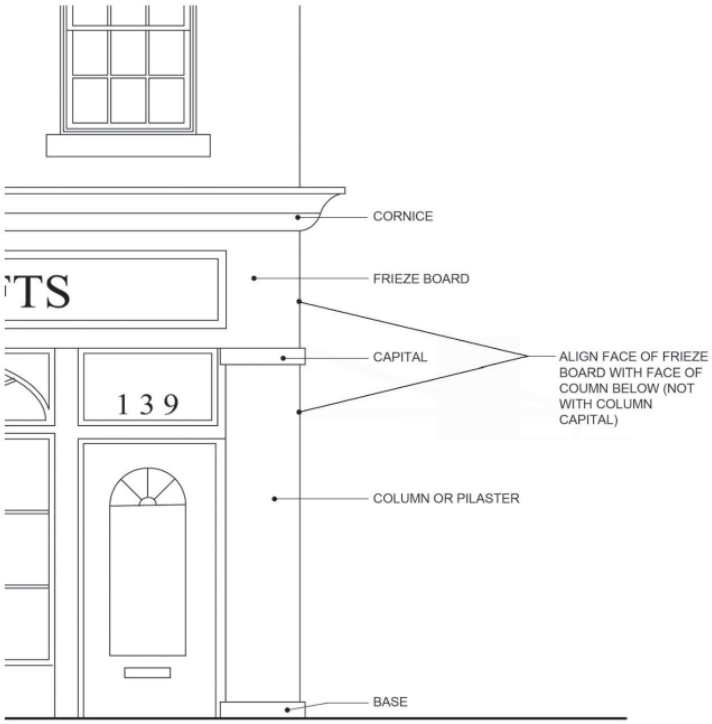
Mixed-Use Building Regulations



Miscellaneous Building Detail Requirements

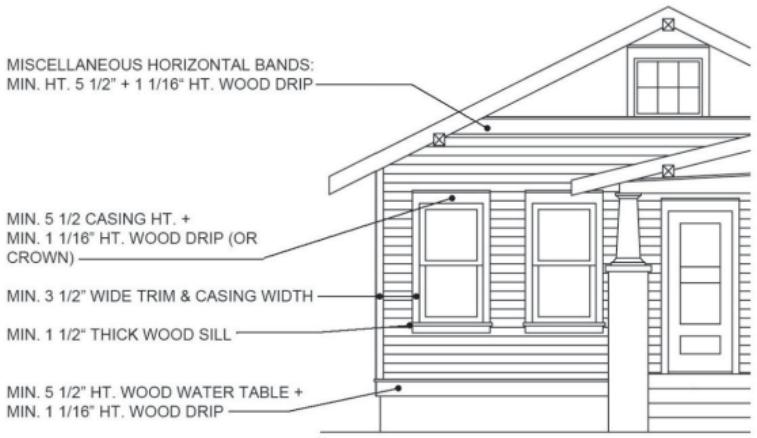
Frieze Board Location

For roofs and upper floors that are supported by, or appear to be supported by, columns or pilasters.



Frieze Boards
Close-up of architectural regulations for frieze boards

Masonry Windows
Close-up of architectural regulations for masonry windows



Siding and Trim Casing
(Below) Close-up of architectural regulations for siding and trim casing

3

Connectivity Framework

REALIZE CEDAR URBAN DESIGN FRAMEWORK

Acknowledgments

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Jon Harmon — Delhi Township Board Trustee
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3

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3.1 Complete Streets

Complete Streets are designed and operated to improve safe access for all users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities must be able to safely move along and across a Complete Street.

On June 19, 2012 the Township adopted a Complete Streets Ordinance. The Complete Streets Ordinance demonstrates that elected officials and decision makers are dedicated to improving multimodal access to all residents. Creating the Ordinance required the coordination and input of multiple jurisdictions, including the Ingham County Road Department, as well as the dedication of Township planning and engineering staff.

The recommendations to increase connectivity along Cedar Street are consistent with the Township's Complete Streets Ordinance, as follows.

- **Public Process:** Significant public engagement was conducted and substantial need for pedestrian and bicycle improvements was expressed. This need will be addressed through reconfiguring the Cedar Street roadway to support new development, a 4-3 lane conversion, and an enhanced streetscape.
- **Evaluation:** Data collected, including 2016 traffic counts for Cedar Street of 10,550 cars per day, indicate that vehicle impacts, if any, can be mitigated with signal timing improvements or use of alternate routes. Pedestrian and bicycle accommodations and safety will be significantly improved.
- **Exceptions Not Warranted:** Cedar Street does not qualify for an exception to the Complete Streets Ordinance. The modifications recommended in the Realize Cedar Urban Design Framework will be financially, geometrically, operationally, and physically feasible.

The Realize Cedar Urban Design Framework, is an adopted subcomponent of the Township Master Plan and the non-motorized recommendations supplant the Township Non-Motorized Plan.

Resolution of Support

The Delhi Township Planning Commission, in recommending the adoption of this plan, effectively passes a resolution of support for a roadway reconfiguration project on Cedar Street and the creation of an active and walkable district. This action is consistent with the Federal Highway Administration's (FHWA) recommended best practices for the implementation of Road Diets.

Pedestrian First Mode Hierarchy

The Realize Cedar Urban Design Framework adopts a pedestrian-first mode hierarchy. This mode hierarchy shall be used to evaluate design objectives throughout project design, construction, and maintenance and shall take precedence in the consideration of geometric optimization and traffic operations.

Unless otherwise noted, the mode hierarchy assignment shall be pedestrian > bicycle > vehicle > transit, to inform a continuum of design considerations. All modes should be considered to ensure Cedar is a Complete Street. However, reconfiguration may force trade-offs between competing priorities.

Mode Hierarchy
Mode hierarchy shows how a community chooses which users of the road take precedence when designing a roadway and a complete network prioritizes the safety of vulnerable road users

3.2 Street Typology

The design of Cedar Street's roadway and streetscape—the public realm—utilizes a roadway's design context approach to integrating user needs with land use transitions, called *Street Typology*. A focus on roadway characteristics, such as traffic volume, speed and functional classification, is less effective at achieving a complete network than a contextual approach based on people and places.

Each Street Typology noted below has its own particular feel and role to play within the transportation and land use systems. Currently, the corridor has developed haphazardly and without a cohesive vision and areas blend together without intentional urban design. However, there are common elements between segments to build upon, like the Township's standard street lamp, similarity of building types and setbacks, and consistency in the desired land use patterns.

Exceptions to the desired land form in each area can detract from the overall user experience. To address this, key places along the corridor are prioritized for reinvestment and design transitions between street types. While elements like landscaping and identity signs are recommended to be consistently utilized along Cedar Street, areas like the Farmer's Market Node and the Downtown Node are recommended for more substantial investments in on-street parking, hardscaping, street furniture and off-street parking. In the minds of visitors and residents alike Cedar Street will have entrances to each distinct area, a central district, and a unified character.

Street Typologies

The Street types recommended are Core Street, Cottage Retail Street, Community Avenue, Commercial Boulevard, and Commercial Parkway.

- **Core Street:** Corresponds to locations intended to become the central places in Delhi Township, centered on the Farmer's Market and Downtown Holt nodes.
- **Cottage Retail Street:** Corresponds to the area between the two Core Street areas, centering on Veterans Memorial Gardens and the Sam Corey Senior Center.
- **Community Avenue:** The Community Avenue is a transitional typology between the two Commercial Boulevard Areas located to the north and south of the Community Activity Center Future Land Use designation. The Community Avenue is designed to become the entrance to the proposed three-lane segment of Cedar.
- **Commercial Boulevard:** The area north of Fay Street and south of Dallas, which will be designed to continue support of vehicle-oriented commercial business, but with aesthetic enhancements and complete streets elements.
- **Commercial Parkway:** Corresponds to the area south of the Holbrook roundabout, which is largely rural and industrial in character. Identity enhancements and landscaping to unify the Cedar Street corridor are recommended.

Transition Elements

Transitions elements are recommended to be installed at changes in the street typologies. These locations are important places to provide visual cues to denote the change in roadway context. These locations are noted on the *Street Typology Map* as Nodes, Gateways and Transitions.

- **Nodes:** Corresponds to the Core Street typology and the Community Core Future Land Use area. Pedestrian priority should be established through traffic calming, frequent and safe crosswalks and midblock crossings.
- **Gateways:** Located at the entrances to the Community Activity Center Future Land Use area and the entrance to the Community Avenue typology from the south and the north. Prominent gateway features, public art, lane narrowing and bump outs are recommended to begin the transition to a three lane roadway profile.
- **Transitions:** Spaced every ¼ mile to ½ mile throughout the Commercial Boulevard, Community Avenue, Core Street and Cottage Retail typologies. Landscaping, identity features and public art are appropriate design treatments.

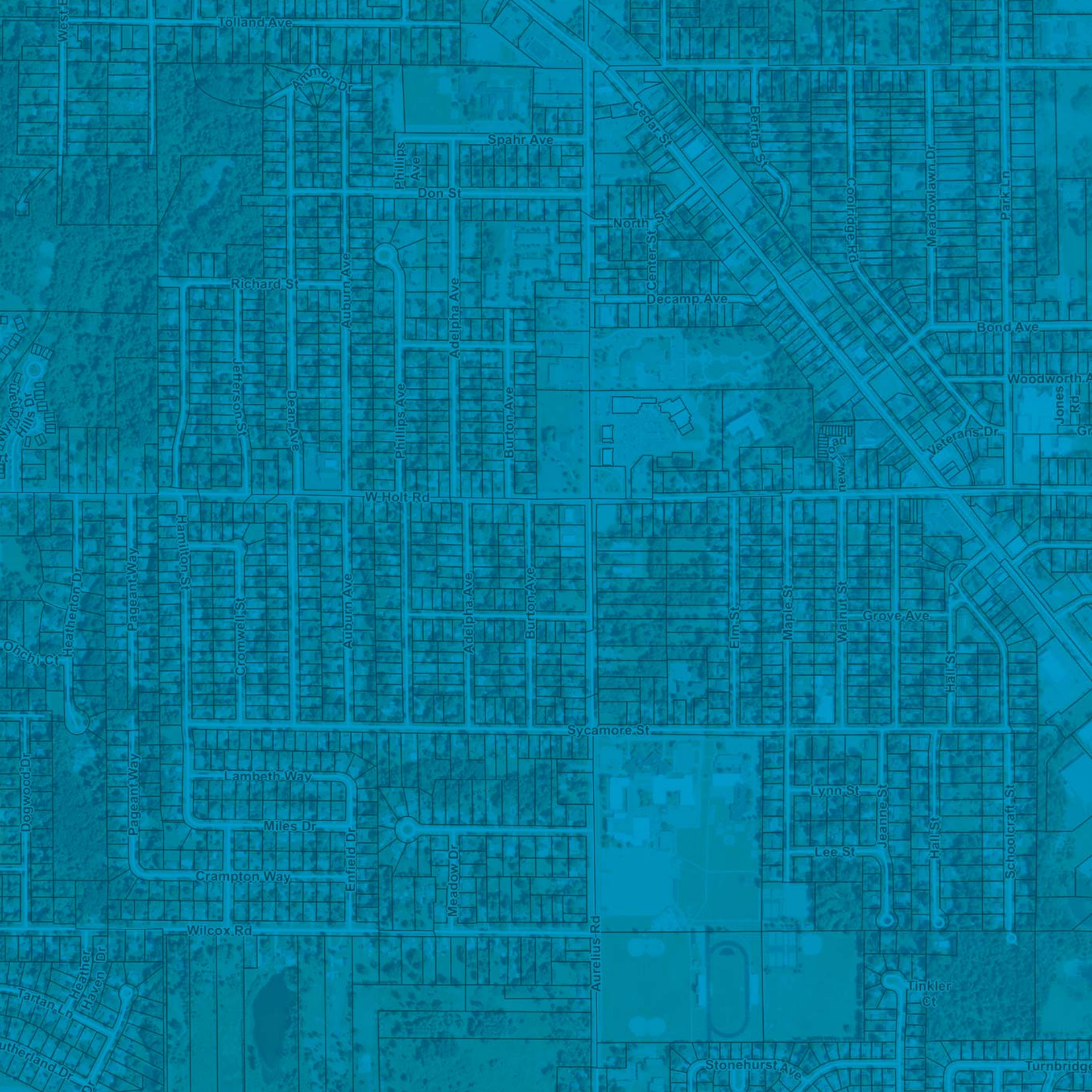
The design palettes included in *Design Framework (Book 4)* contain guidelines for installing traffic calming, landscaping, street furnishing, wayfinding, and identity features in these locations to enhance the user experience and operations of Cedar Street.

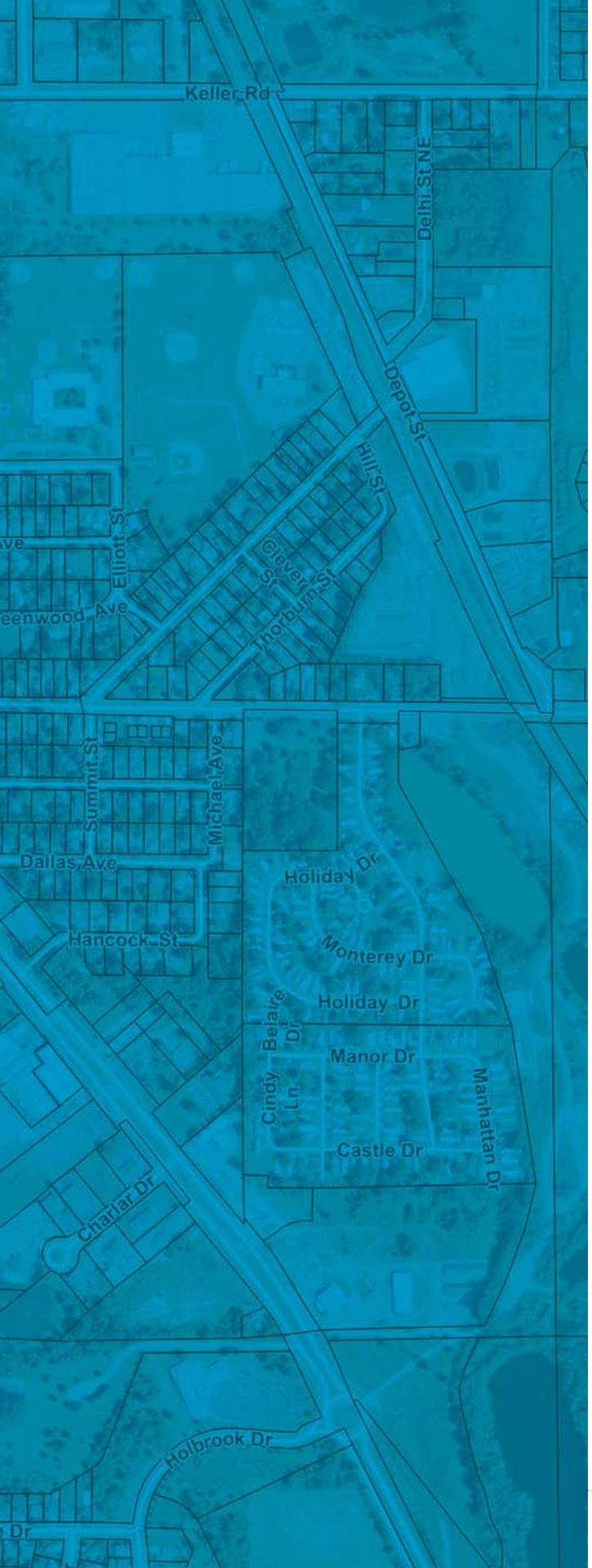
Map 3A:
Street Typology
Delhi Township, Michigan

- Cottage Retail Street
- Core Street
- Commercial Boulevard
- Community Avenue
- Commercial Parkway
- Gateway
- Node
- Transition

McKenna Associates

Source: Delhi Charter Township, McKenna Associates. 08.01.16


Tolland Ave
Ammon Dr
Spahr Ave
Phillips Ave
Don St
North
Cedar St
Bertha St
Coolidge Rd
Meadowlawn Dr
Park Ln
Center St
Decamp Ave
Bond Ave
Richard St
Auburn Ave
Adelpha Ave
Burton Ave
Jefferson St
Dean Ave
Phillips Ave
Veterans Dr
Jones Rd
W Holt Rd
Hamilton St
Cromwell St
Auburn Ave
Adelpha Ave
Burton Ave
Elm St
Maple St
Walnut St
Grove Ave
Hall St
Heatherton Dr
Pageant Way
Ohchi Ct
Sycamore St
Lambeth Way
Miles Dr
Enfield Dr
Meadow Dr
Crampton Way
Dogwood Dr
Lynn St
Jeanne St
Lee St
Schoolcraft St
Wilcox Rd
Aurelius Rd
Heather Haven Dr
Tartan Ln
Tinkler Ct
Stonehurst Ave



3.3 Reconfiguration

The character of the Cedar Street corridor in Delhi Township changes context from one end to the other. This section identifies specific points where changes in existing infrastructure or land use types are planned to occur. At these points, gateways or speed control elements will be utilized to effectively divide the corridor into the character segments.

The opportunity to implement a unified vision for Cedar Street that enhances and defines its character segments will require a concentrated approach to address urban design inconsistencies in both the private and public realms. Cedar Street has many outstanding features to enhance with design improvements as well as places to preserve. Future development should enhance rather than further obscure the sense of place.

Commercial Boulevard 1: Location
(Above) Cedar Street from Willoughby Road to Fay Street

(Right) Aerial view

Commercial Boulevard 1: Willoughby Road to Fay Street

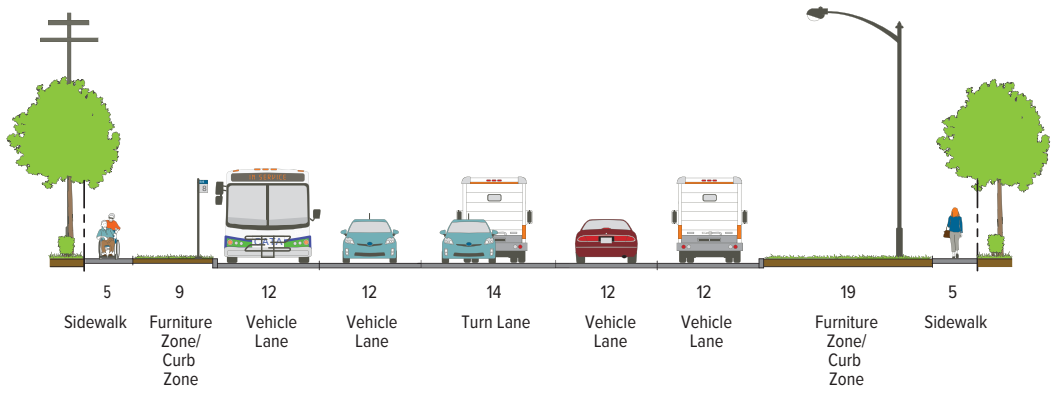
This character segment is zoned for General Business and Highway Service and is characterized by commercial enterprises that are designed to be accessed by private vehicle. This development pattern is desirable and many residents want to see newer chain restaurants and shopping area reinvestments along this segment of the corridor. The challenge is to improve the aesthetic and safety of this stretch of Cedar Street and turn it into a vital entryway to Delhi Township from the north.

This segment of Cedar Street contains a “Welcome to Delhi Township” sign that greets motorists and passengers coming from Lansing or the nearby I-96 freeway interchange, and therefore acts as the face of the Township. There are prominent redevelopment sites in this segment that could include new housing, including the site at the corner of Cedar Street and Cedar Park Drive. Delhi Village Square, at the corner of Cedar Street and Delhi Commerce Drive, is an underutilized shopping at the south end of this segment.

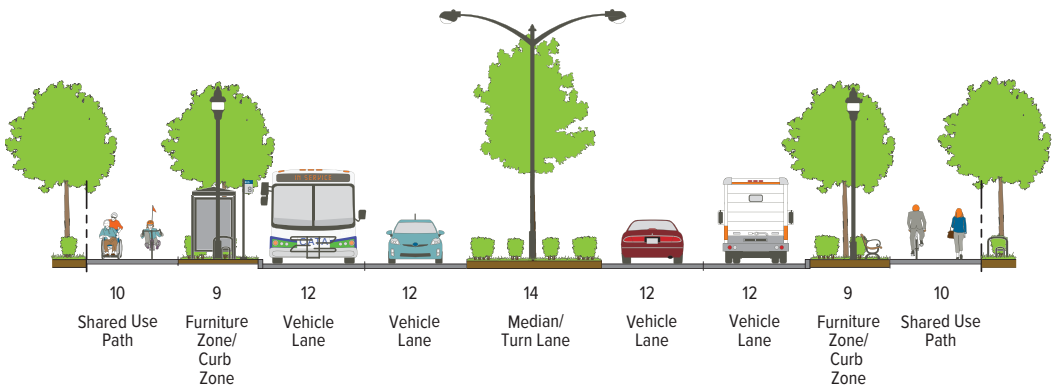
Improvements can be made to encourage walking, biking, and the use of transit on the corridor to while maintaining the form and function of a commercial boulevard. While walking is not necessarily promoted in this area by the current development pattern, there are sidewalks and bus service, which can be enhanced with landscaping, shared used paths, medians and improved business signing. Additionally, public art could be used to enhance the character of the entrance corridor to Delhi Township.

Parking should remain off-street but driveways should be consolidated. Rear access drives should be developed to connect between parking lots. Median islands are recommended to be installed in areas where driveways have been consolidated to calm traffic and reduce turning conflicts.

The roadway is recommended to remain two lanes of traffic moving in each direction separated by a center turn lane or median lane. A shared use path is recommended for the east side of the street. Utilities should be buried and a shared use path should be considered on both sides of the street.



Commercial Boulevard 1 - Existing Typical
ROW = 100
Curb to Curb = 62



Commercial Boulevard 1 - Proposed
ROW = 100
Curb to Curb = 62
Mode Hierarchy = A>T>P>B

Not to architectural scale.

Community Avenue 1: Location
(Above) Cedar Street from Fay Street to Keller Road

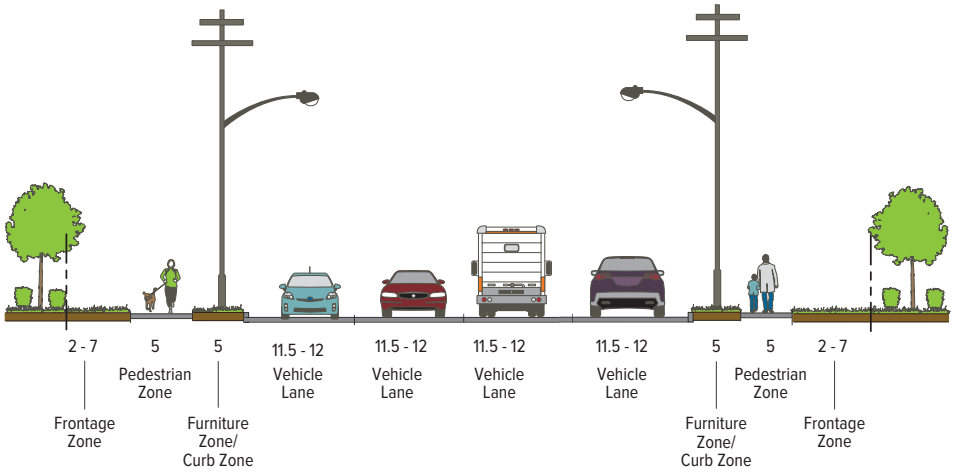
(Right) Aerial view

Community Avenue 1: Fay Street to Keller Road

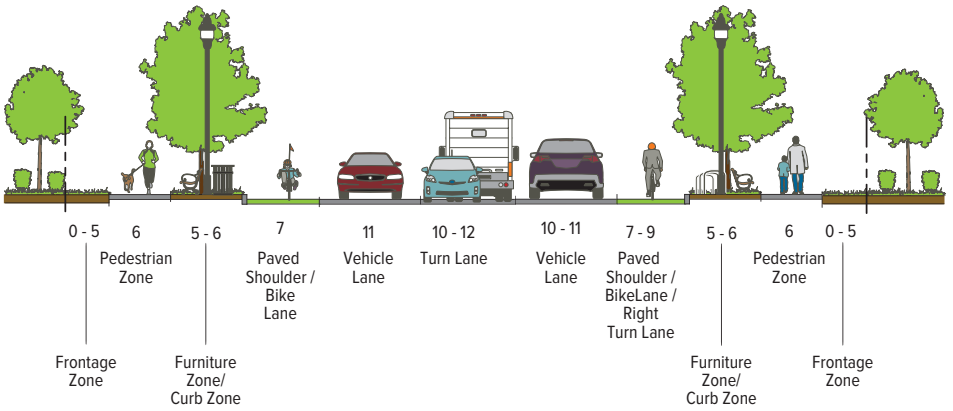
This this character segment starts at Fay and continues to Keller. It is zoned General Business, Low-Impact Commercial, and Residential. The Future Land Use plan for this area recommends the expansion of the Community Activity Center Designation. The Community Avenue typology is intended to transition traffic from the Commercial Boulevard typology into the Core Street typology.

There are some vacant sites that could be redeveloped in this area, including the old Marathon filling station site, located southeast of Fay Street. Additionally, a large church parking lot near the intersection of Cedar Street and Aurelius Road is an opportunity for development to enhance the street frontage. The church site has a well maintained green space at the corner and a bus shelter.

Beginning at Fay Street and also continuing south the pavement narrows from five lanes to four and the placement of mature and new shade trees is adjacent to the sidewalk, opposite the roadway, consistent with a residential porch and lawn frontage type. Fay Street is the start of the four lane to three lane conversion from the north. On street parking is not recommended, instead a paved shoulder or a conventional marked bike lane can be used to connect to the shared use path recommended to the north. Right turn lanes are recommended when feasible, however, when there are right turn lanes, bike lanes must transition to marked shared lanes or be located between the right turn lane and the travel lane per AASHTO guidance.



Community Avenue 1 - Existing
ROW = 70 to 80
Curb to Curb = 46 to 48



Community Avenue 1 - Proposed
ROW = 70 to 80
Curb to Curb = 46 to 48
Mode Hierarchy = V>P>B>T

Not to architectural scale.

Core Street 1: Location
(Above) Cedar Street from Keller Road to Bertha Street

(Right) Aerial view

Core Street 1: Keller Road to Bertha Street

This character segment starts east of Keller Road and includes the Farmer's Market node. It is zoned Town Center with a few sites zoned Public Property. The Future Land Use plan recommends the creation of a new Community Core land use designation to correspond with this area.

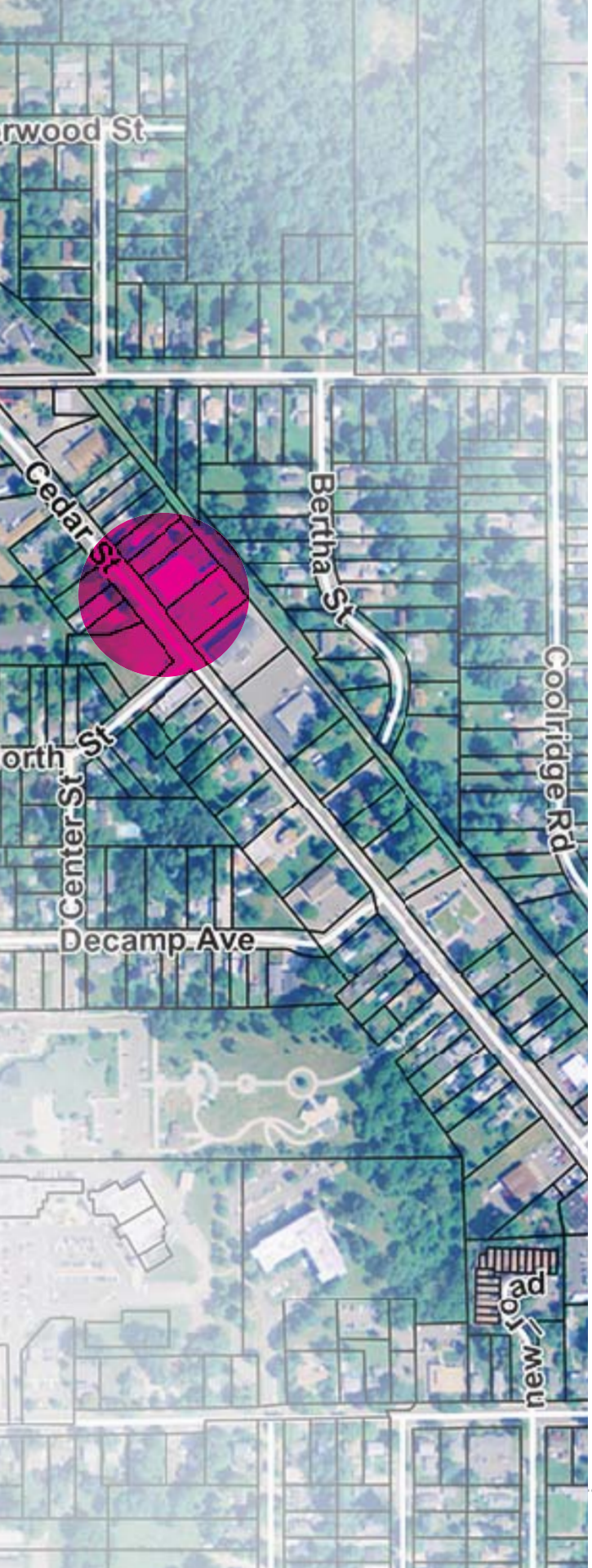
The current uses and single-family residential site configurations generally reflect these zoning classifications, although there are some existing buildings setback and off-street parking on the street side. These sites are priorities for redevelopment, with the Farmer's Market node as the focus point. This area has a parking lot of considerable size and several buildings that front to the sidewalk. The intersection of Cedar and North Street includes several redevelopment site opportunities. The northwest corner is recommended for the development of a mixed-use building with a public parking lot that links to and shares parking with the Post Office, which fronts on Aurelius Road.

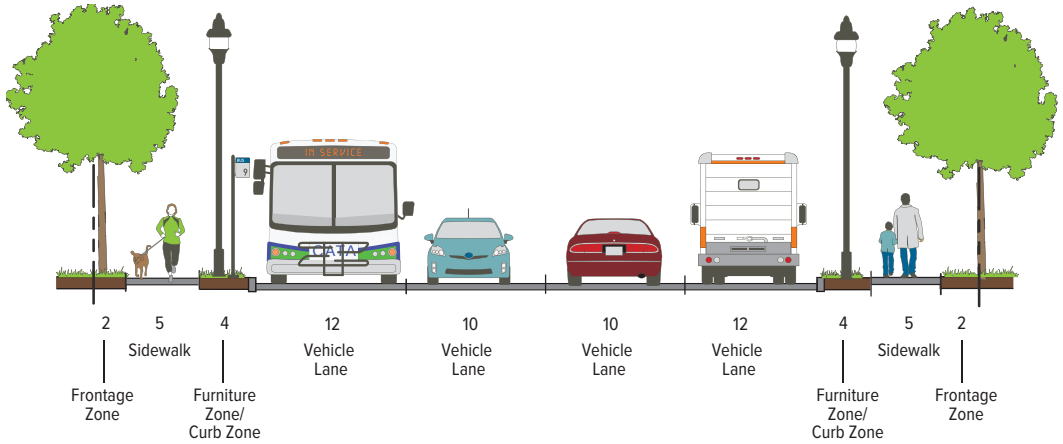
Streetscape and hardscape elements will complement the Township's traditionally-styled pedestrian-oriented lights, which begin at Aurelius Road and continue south until Watson Road. The spacing of these lights should be 40 to 80 feet and complemented with landscape islands. This area should be prioritized for on-street parking with bump-outs.

The curb line could be moved in sections with on-street parking to provide 8-foot parking lanes, or 11-foot travel lanes, depending on engineering judgment, however, a 10.5-foot travel lane and 7-foot parking lane will be more cost effective. Additionally, if turning movement analysis concludes that a center turn lane is not a necessary design feature in the sections where on-street parking is proposed, 8-foot parking lanes and a 14-foot marked shared lane is preferred.

Bicycles should be accommodated through the use of marked shared lanes (sharrows). The optimal lane width for a marked-shared lane is 13 feet. For a 10-foot marked shared lane, the sharrow marking should be placed in the center of the travel lane because there is not room for vehicles to safely pass cyclists and cyclists must take the lane. This condition is appropriate for short intervals of 600 to 800 feet (1/8 mile) to accommodate a connected bikeway system.

Utilities are located in a separate utility corridor that runs parallel on the north/east side of Cedar. The utilities should be buried to create a rear alley for pedestrian, bicycle and vehicle circulation. This can be achieved iteratively through site planning or as a single project. Streetscape and hardscape elements will complement the Township's traditionally-styled pedestrian-oriented lights, which begin at Aurelius Road and continue south until Watson Road. The spacing of these lights should be 40 to 80 feet and complemented with landscape islands. This area should be prioritized for on-street parking with bump-outs.





Core Street 1 - Existing
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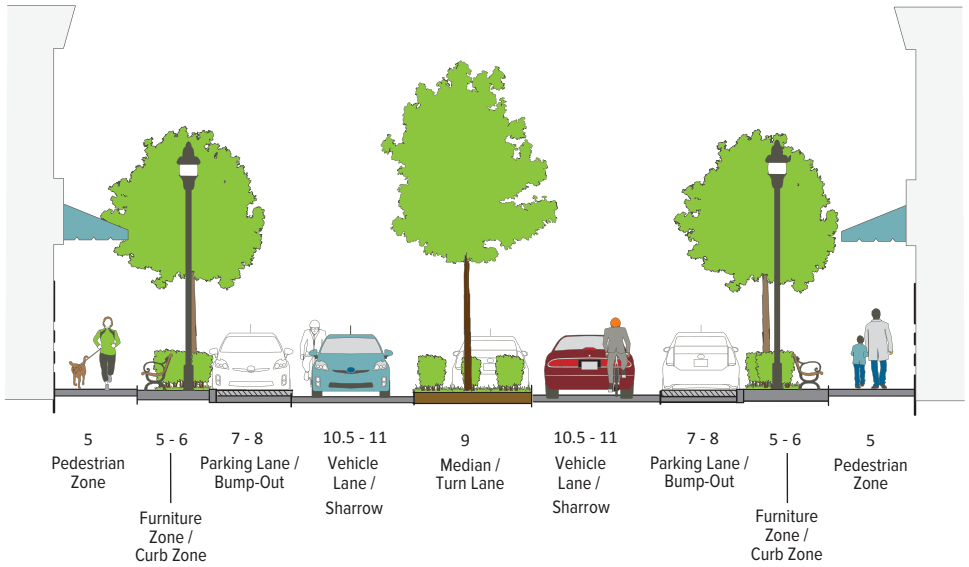
Curb to Curb = 44



Core Street 1 - Proposed
ROW = 66 - 69
Curb to Curb = 44 - 47
Mode Hierarchy = P>B>V>T

Not to architectural scale.

Cottage Retail Street: Location
(Above) Cedar Street from Bertha Street to Bond Avenue

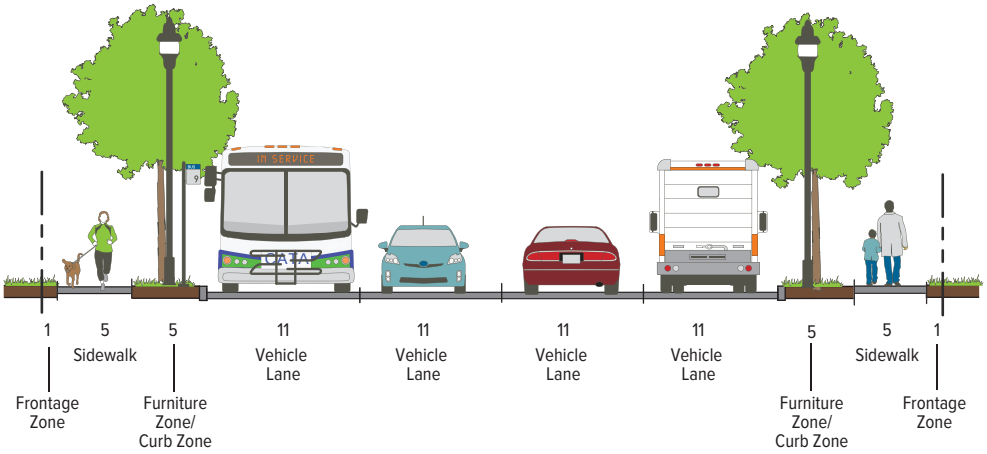
(Right) Aerial view

Cottage Retail Street: Bertha Street to Bond Avenue

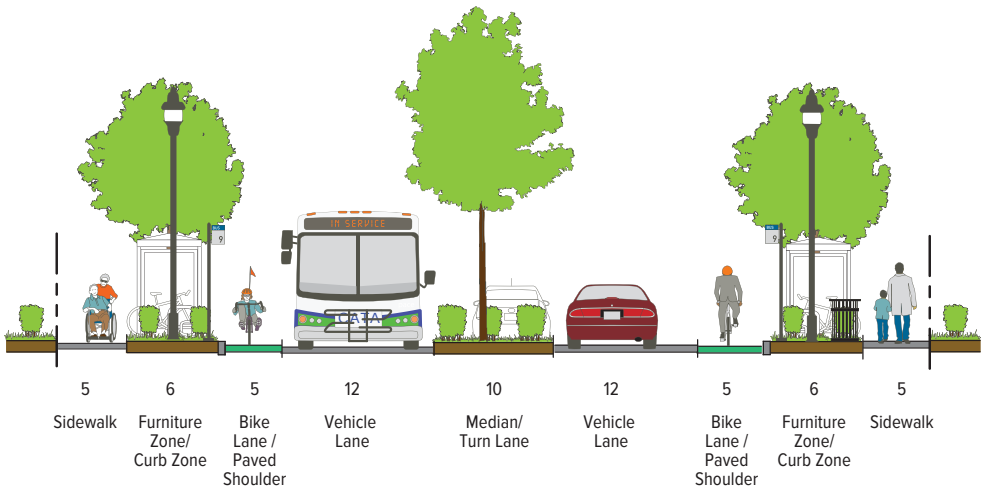
The segment between the Farmers Market and the Bond Street is characterized by either single-family homes with uniform setbacks, porches and lawn frontages, or commercial enterprises and building types setback from the right-of-way and landscaped in a manner more or less consistent with these homes. The major development objective for this character segment will be to reinforce the character of these buildings to enhance walkability and a sense of place.

The focal points of the Cottage Retail Area are civic uses, including the Sam Corey Senior Center and the Veterans Memorial Gardens, which link to Township Hall. An existing mid-block crossing has been installed at this location, but the beacon only flashes yellow and does not have an all-red phase. This beacon could easily be updated to a High-Intensity Activated Crosswalk beacon (HAWK) to improved crossing safety. When the three lane profile is installed a median island is recommend at this crossing as well.

On-street parking is not as needed in this section of the street. Alternatively, a paved-shoulder or on-street bike lane is recommended on both sides of the street. Driveway consolidation and access management is recommended if sites are assembled and redeveloped together. A rear alley can be created if the utilities are buried on the north/east side of Cedar would benefit circulation. Additionally, circulation to the neighborhoods would be improved if Bertha Street were connected into Cedar. Minimally, a bicycle and pedestrian connection to Bertha Street should be considered.



Core Street 1 - Existing
ROW = 66
Curb to Curb = 44



Core Street 2 - Proposed
ROW = 66
Curb to Curb = 44
Mode Hierarchy = P>B>V>T

Not to architectural scale.

Core Street 2: Location
(Above) Cedar Street from Bond Avenue to Holt Road

(Right) Aerial view

Core Street 2: Bond Avenue to Holt Road

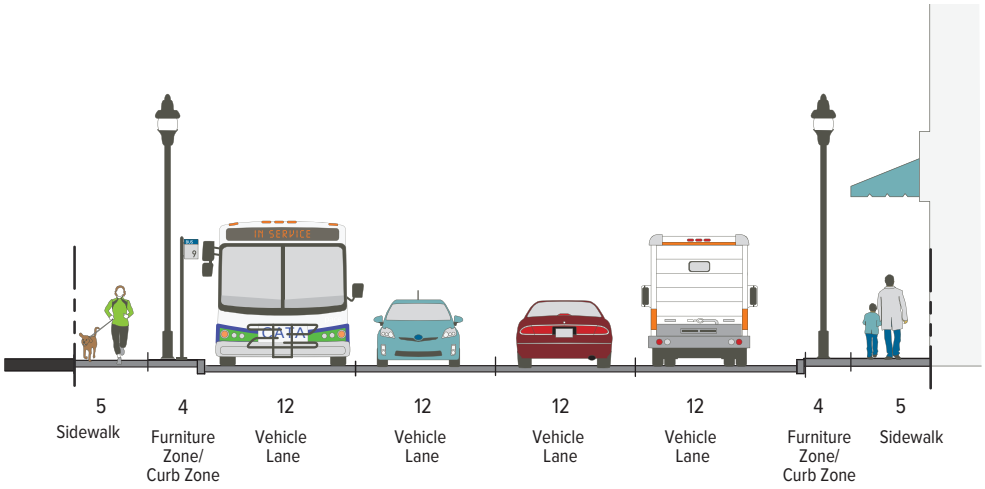
This intersection also represents the commercial center of the unincorporated community of Holt, Michigan. This report refers to the area as the Downtown Nodes, although Downtown Holt may be a more appropriate moniker.

High quality traditional downtown anchor buildings are located at the portion of Cedar Street within one block of Holt Road. Many of the existing buildings do not have side-yards and are close to the sidewalk, resulting in a pedestrian friendly environment. The entire north/east block between Bond Street and Veterans Drive is a high priority for redevelopment. This site is the heart of a future downtown district and it is large enough to provide, retail, shopping, office, and residential uses, as well as a formal public parking area with rear alley access.

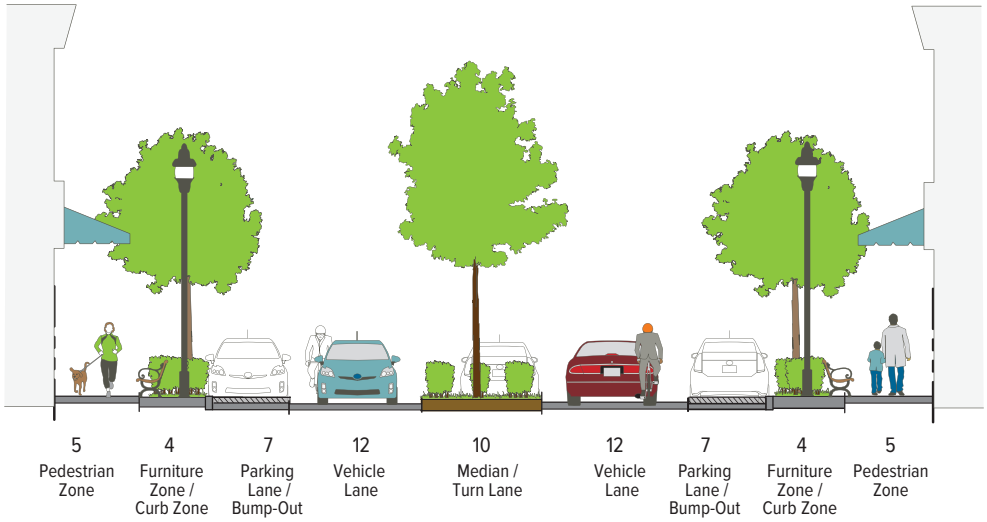
The bank site at the northwest corner of Holt Road and Cedar Street has off-street parking in the front, which presents a challenge for the further development of a walkable town center at this location.

Street lamps, landscaping islands, benches, bike parking, and other street furnishing and hardscape elements are recommended. This area is prioritized for on-street parking with bump-outs. Bicycle accommodations are recommended through the use of marked shared lanes (sharrows).

Refer to the discussion in the Core Street 1 section for design considerations related to on-street parking and marked shared lanes.



Core Street 1 - Existing
ROW = 66
Curb to Curb = 48



Core Street 1 - Proposed
ROW = 66
Curb to Curb = 48
Mode Hierarchy = P>B>V>T

Not to architectural scale.

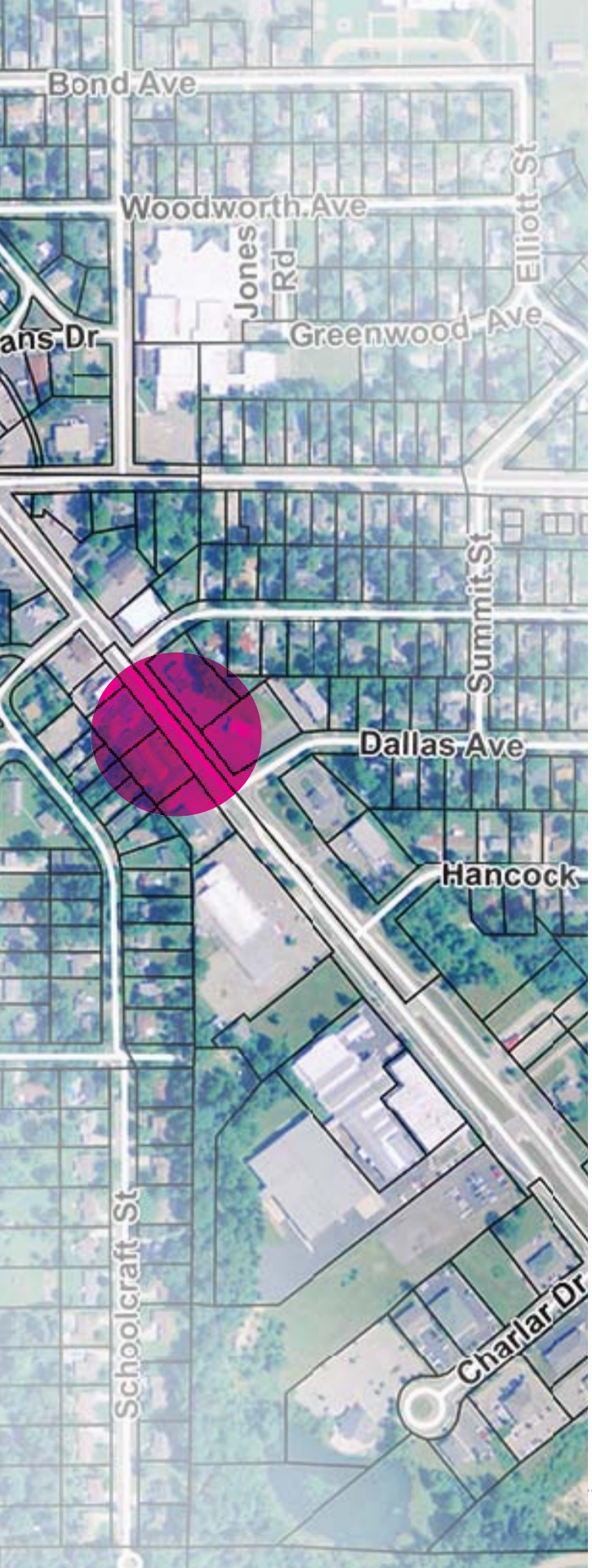
Community Avenue 2: Holt Road to Dallas Avenue

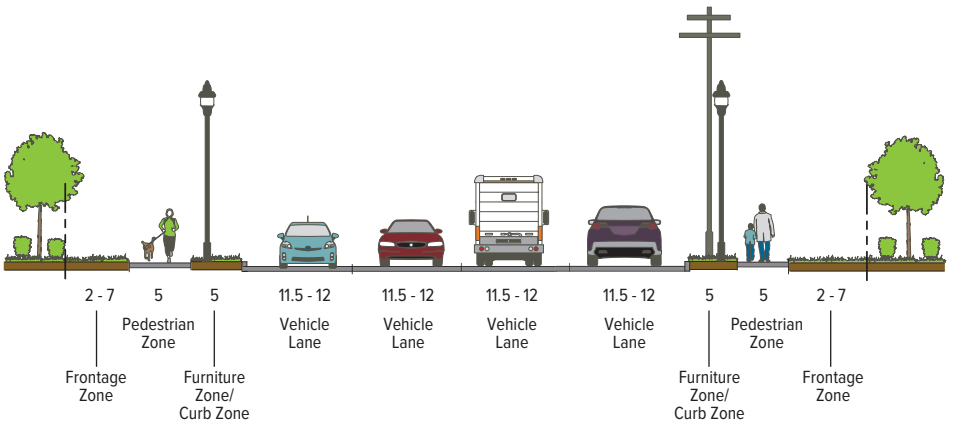
This segment of Cedar Street traverses the Town Center zoning and General Business districts. The area is recommended for the expansion of the Community Activity Center Future Land Use area. The existing cross-section throughout this segment of the Cedar Street corridor remains at four lanes, without a center turn lane. Street tree placement through this segment of the corridor continues adjacent to the sidewalk but opposite the roadway.

Traditionally-styled and pedestrian-oriented light standards are located along Cedar Street throughout this character segment, spaced for an urban context. This area is recommended to begin the four lane to three lane conversion from the south. On street parking is not recommended, instead a paved shoulder or a conventional marked bike lane can be used to connect to the shared use path that begins on the east side of Cedar and extends south to the roundabout. Right turn lanes are recommended when feasible, however, bike lanes must become marked shared lanes or be located between the right turn lane and the travel lane per AASHTO guidance.

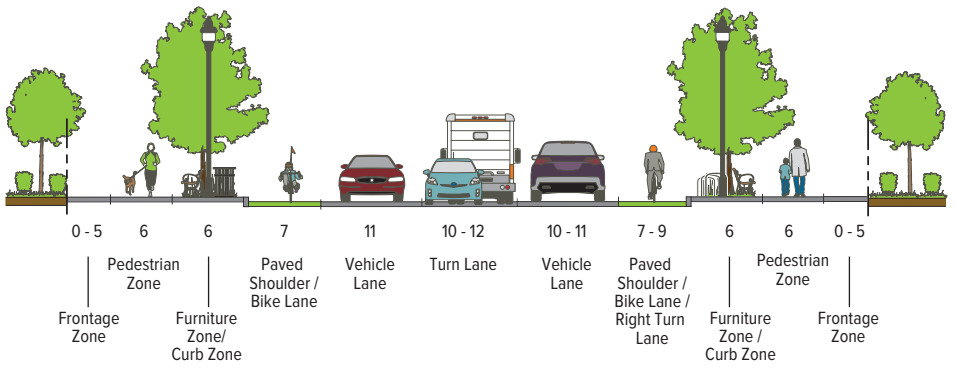
Community Avenue 2: Location
(Above) Cedar Street from Holt Road to Dallas Avenue

(Right) Aerial view





Community Avenue 2 - Existing
ROW = 70 to 80
Curb to Curb = 46 to 48



Community Avenue 2 - Proposed
ROW = 70 to 80
Curb to Curb = 46 to 48
Mode Hierarchy = V>P>B>T

Commercial Boulevard 2: Location
(Above) Cedar Street from Dallas Avenue to Holbrook Drive

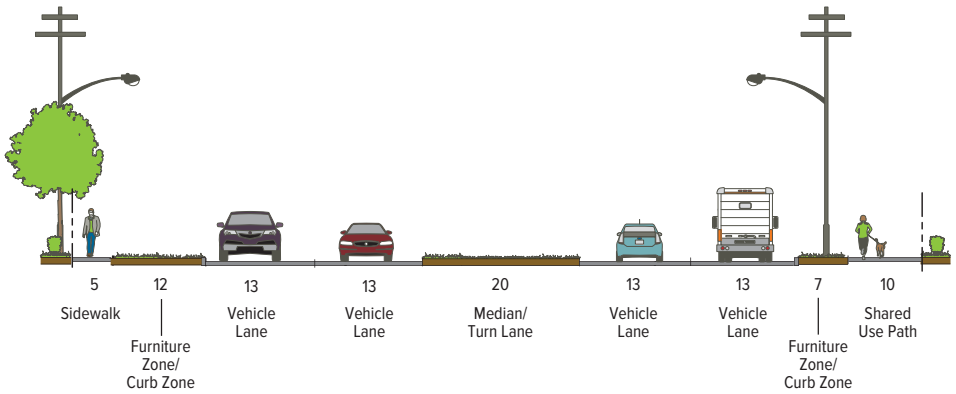
(Right) Aerial view

Commercial Boulevard 2: Dallas to Holbrook

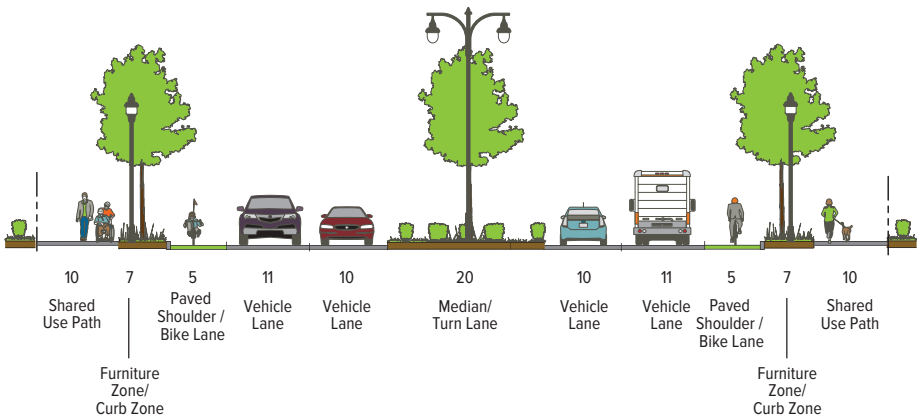
Zoning classifications along this character segment vary widely including Town Center, General Business, Low Impact Business and Industrial. At approximately Dallas Avenue the building character abruptly changes back to auto-oriented design, similar to the northernmost segment of Cedar. Setbacks and frontages are less consistent in styles and the quality of building type varies notably. Beyond Hancock Drive building setbacks increase and industrial or campus office uses begin to dominate.

The roadway is recommended to remain two lanes of traffic moving in each direction separated by a center turn lane or median lane. A shared use path exists on the east side of the street. Utilities are overhead and adjacent to the west side of the roadway seems to be established and viable. If utilities can be feasibly buried, a shared use path should be considered for the west side of the street as well.

This area of the street is recommended for lane narrowing and landscaping to encourage reduced travel speeds. The current configuration encourages high-speeds prior the roundabout. A commercial boulevard should support more site access and landscaping islands and lane narrowing may be the most effective treatments. Chicane-style bump-out islands, or shoulders should be added on the east and west curb side and lane width should be reduced to 10 to 11 feet. A median is existing and can be used for public art and plantings.



Commercial Boulevard 2 - Existing
ROW = 110
Curb to Curb = 72



Commercial Boulevard 2 - Proposed
ROW = 110
Curb to Curb = 72
Mode Hierarchy = A>T>P>B

Not to architectural scale.

Commercial Parkway: Location
(Above) Cedar Street from Holbrook Drive to College Road

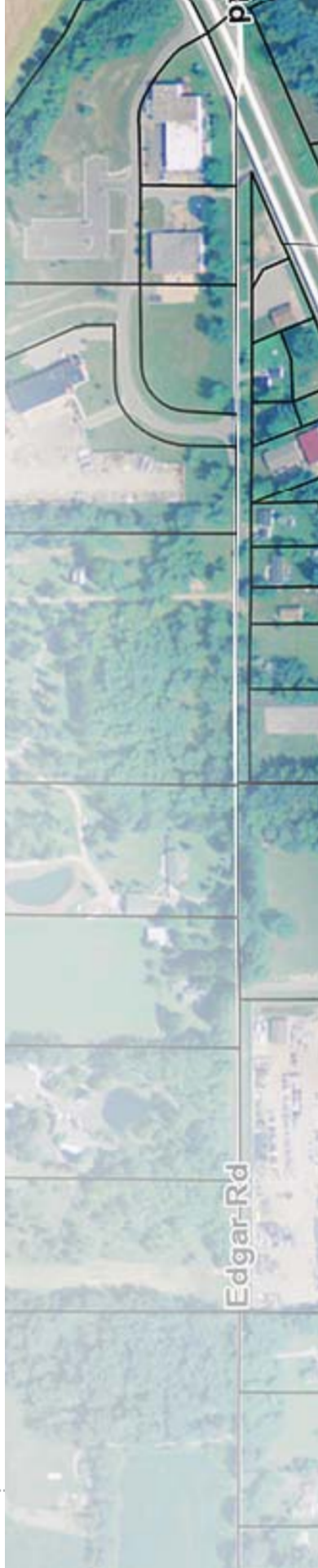
(Right) Aerial view

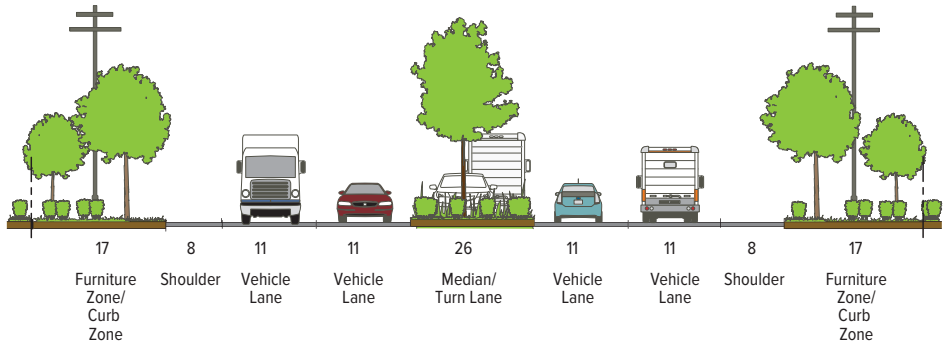
Commercial Parkway: Holbrook to College

South of the Holbrook roundabout the building setbacks become greater and the built environment gives way to a natural or agrarian landscape. Where existing businesses can share access drives, driveway consolidation is recommended.

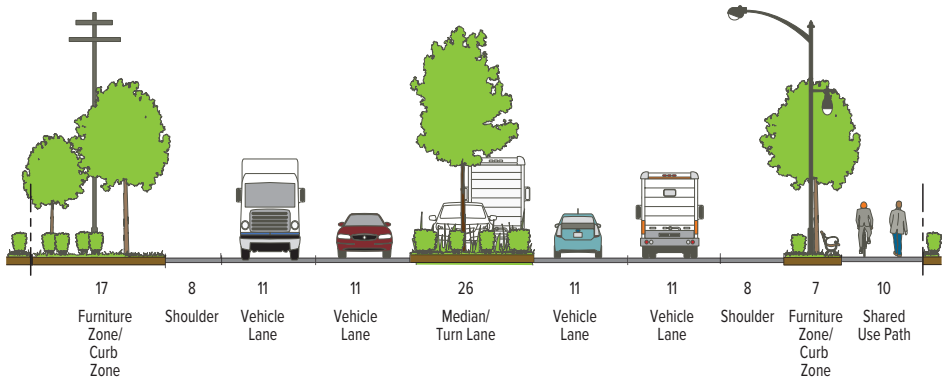
The current roadway configuration is consistent with a parkway typology and a few minor modifications will greatly improve Cedar's entrance into Delhi Township from the south. Signing and other identity features should be consistent with the rest of the corridor to create a unified identity. Additionally, landscaping elements are recommended for the median and along business frontages. A native prairie and/or street trees are recommended to be installed in the entire median from College to Holbrook.

A shared use path or trail is recommended to be installed on the east side of the roadway. Where feasible, trail separation of greater than 10 feet from the roadway is desirable and a screen row of shrubs, native grasses and trees should be used to improve the comfort level of trail users.





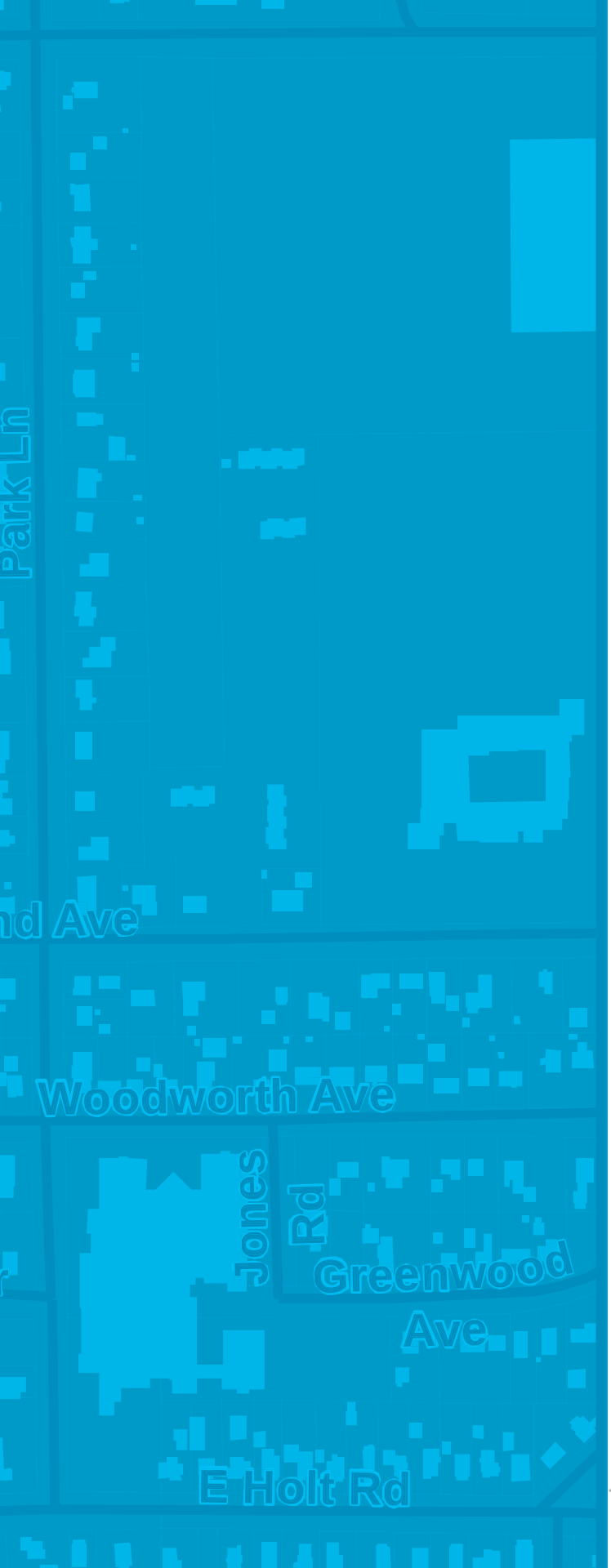
Industrial Parkway - Existing
ROW = 120
Curb to Curb = 86



Industrial Parkway - Proposed
ROW = 120
Curb to Curb = 86
Mode Hierarchy = A>T>B>P

Not to architectural scale.


Keller Rd
Bertha St
Spahr Ave
Don St
North St
Center St
Meadowlawn Dr
Coolridge Rd
Decamp Ave
Cedar St
Aurelius Rd
Veterans Dr
W Holt Rd



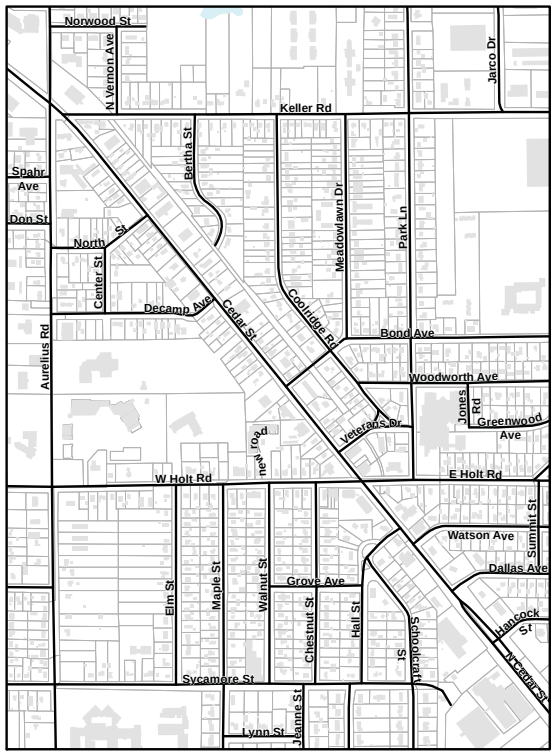
3.4 Grid Retrofits

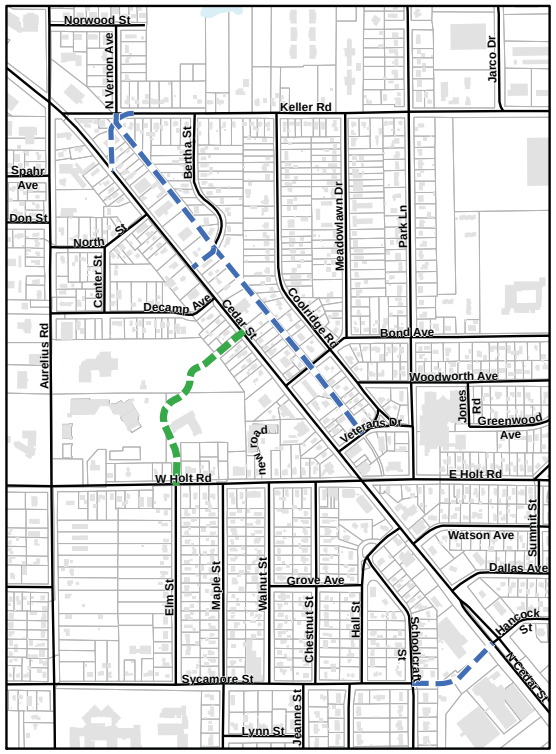
Currently, there are some limitations in the intersection density of the street grid in the triangle area on Cedar between Holt and Aurelius. The segment is approximately 2/3 of a mile or 3,427 feet and has only two intersections on each side. A desirable standard block length for walkability and vehicle circulation in a downtown area is 300 feet to 600 feet. On the east side of the street, the Bond to Keller block is approximately 2,400 feet. On the west side of the street, the De Camp to Holt block is approximately 1,600 feet. The other blocks, range roughly from 600 feet to 800 feet.

Grid Retrofit
This diagram shows the existing street grid and the proposed additional connections to the surrounding neighborhoods.

Existing (top)

Proposed (bottom)





Map 3B: Proposed Grid

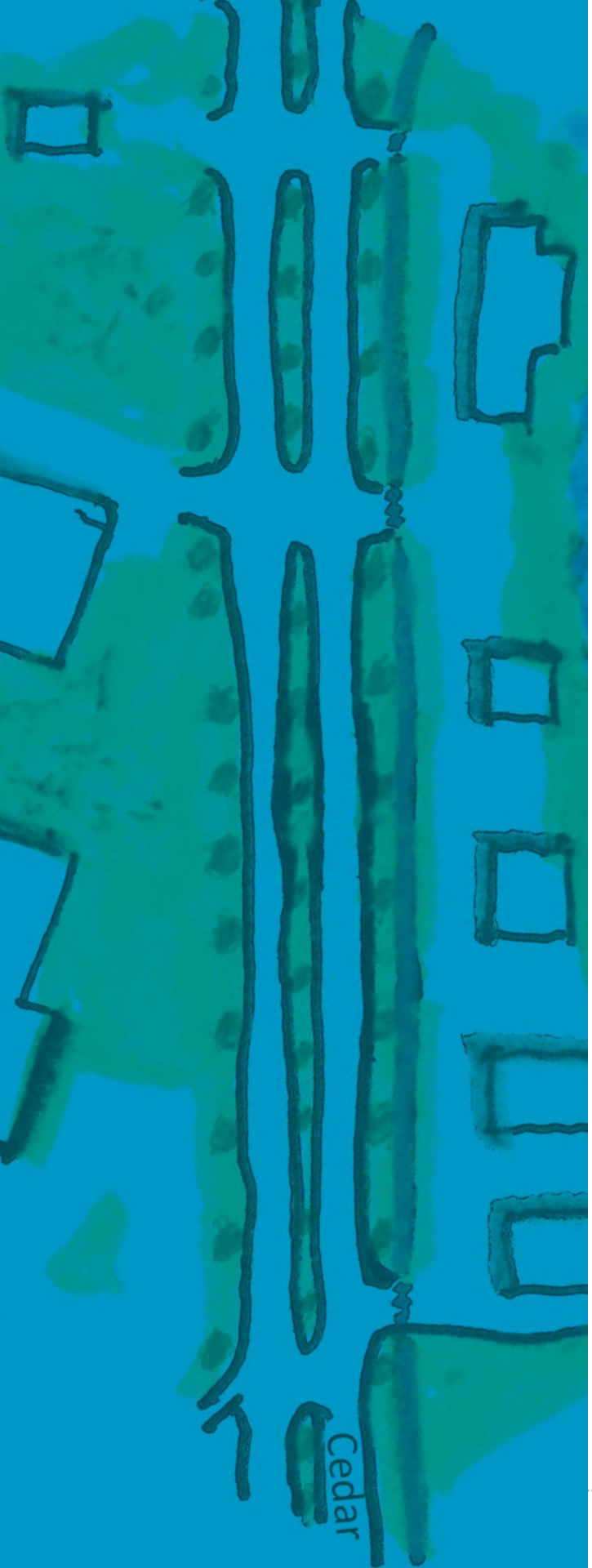
- New Connections
- Pedestrian Link

While it is not practical to completely retrofit the street grid to create 300 to 600 foot block lengths, there is potential to add a few key retrofits to the network to eliminate the two mega-blocks noted above, as follows:

- Realign Keller Street by moving it approximately 200 feet to the south to create more than 300 feet of distance between the Aurelius Road intersection
  - Realigning Keller will permit the intersection to be on a separate signal, or possibly a stop sign
  - The realignment can improve the signal phasing and functioning of both Aurelius and Keller to allow shared phases, currently each direction of travel has its own dedicated signal phase
- Connect Bertha through to Cedar between North and De Camp
- Add a rear alley from Keller to Veterans on the parallel to Cedar in the north/east utility corridor
  - For bicyclists less comfortable biking on-street or in shared travel lanes with vehicles, the rear ally will provide an alternate bike connection along Cedar between Keller and Holt
- Link Elm Street through to Cedar between De Camp and Bond with a pedestrian and bicycle connection
- Connect Sycamore through to Cedar south of Hancock
- Convert Veterans Drive to an alley, shared street, or parking lot driveway to discourage cut-through traffic and prioritize walking and biking connectivity

New connections should be skinny streets or alleys with target vehicle speeds of 15 mph to 20 mph, and 16 to 22 feet curb to curb, shared biking and pedestrian access and two-way traffic. Where feasible, to match the context of the residential neighborhoods, a 5 foot sidewalk with a 5 foot separation lawn should be added.

Currently, every site in the district manages its own parking, with no on-street parking, shared parking, or cross site access. Adding new streets will provide circulation and access to new on-street parking, shared private parking, and new public parking areas so customers can park once to access multiple destinations.



3.5 Access Management

Another way to improve pedestrian and traffic circulation along Cedar Street is through the application of access management. Access management reduces the number of points of access to the street from adjacent properties. This benefits pedestrians by reducing the number of points along a sidewalk where they may encounter a vehicle, and it benefits traffic by reducing the number of points for other vehicles to enter the street. Cross access should be required on Cedar Street and the total number of driveways should be reduced as sites are redeveloped. An alley should also be constructed in the utility corridor on the east side of Cedar Street.

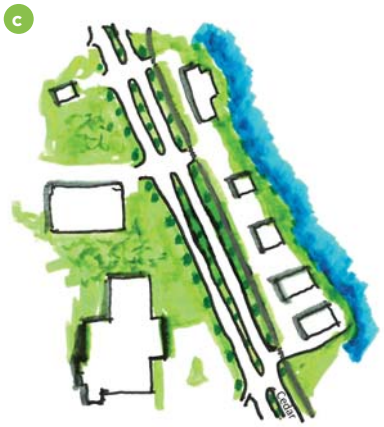
Although access management reduces the number of access points, an adequate supply of parking still must be provided. Part of the proposed Cedar Street redesign includes on-street parking near nodes of activity. Public off-street parking can use existing parking lots at the Holt Farmer's Market and the Post Office, as well as new parking lots behind the buildings within new developments. Providing consistent and adequate public parking, along with cross access parking lot connections, will encourage people to use businesses along Cedar Street by enabling people to park once and visit multiple destinations. This allows for a decrease of turning movements, a reduction of traffic looking for open parking spaces, and an increase in pedestrian activity especially in the Community Core and Community Activity Center.

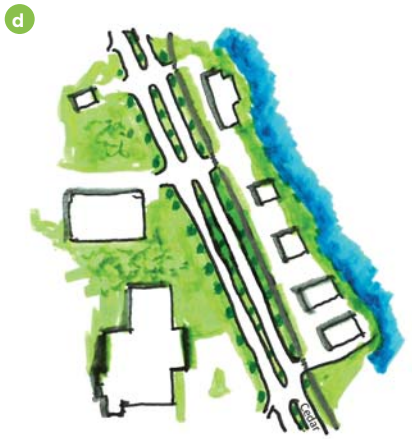
Commercial Boulevard 1

Commercial Parkway

a **Existing Access Management**
The existing driveway and access conditions in the Commercial Boulevard 1 area allow several driveways that are close together, creating potential vehicle conflict points.

b **Proposed Access Management:**
Proposed access management for the Commercial Boulevard 1 area consolidates several driveways, allows cross access at the rear of sites, installs medians where turning movements are no longer needed, and allows for walking and biking access.





c **Existing Access Management**
The existing driveway and access conditions in the Commercial Parkway area permit several driveways on the east side which are inaccessible for the traffic going southbound on Cedar Street.

d **Proposed Access Management:**
The proposed access management for the Commercial Parkway area consolidates several driveways, continues the existing cross access at the front of sites, enables all driveways to be accessible for both directions of traffic, and allows for the future construction of a trail on the east side of the roadway.

3.6 Mode Accommodation

Improving the pedestrian and bicycle networks in Delhi Township with connections to the employment and shopping destinations along Cedar Street will support residents' health and wellness. With network improvements, more Township residents will be able to make safe, short trips to parks, schools, and even downtown entertainment and shopping, all without getting in the car. Bicycle network improvements are recommended based on the need for separation from vehicle traffic, existing signal locations to cross major roadways, and alignment with desirable community destinations, like schools, parks, public facilities, and commercial areas.

Shared Use Paths and Trails

Shared use paths and trails are paved concrete or asphalt paths wide enough to accommodate both pedestrians and bicyclists. They are typically a minimum of 10 feet wide with 2 feet of clearance on either side of the path. Shared use paths offer cyclists a safe place to bike off-street when there is no space for a bike lane, or it is unsafe to bike on the street.

Conventional Bike Lanes and Paved Shoulders

Bike lanes create a dedicated space for cyclists on a roadway. They are appropriate on streets with moderate to heavy traffic. Bike lanes are indicated by on-street markings, which can be supplemented with signage. Bike lanes reinforce proper roadway etiquette, raise the visibility of bicyclists, and help both bicyclists and drivers behave predictably when sharing road space. For safe cycling, bike lanes should be 4 feet to 6 feet wide.

Marked Shared Lanes or Sharrows

Marked shared lanes use a double chevron and bicycle marking, or “sharrow,” in a lane intended for the joint use of motorized and bicycle traffic. Chevron symbols direct bicyclists to ride in the safest location within the lane, outside of the door zone of parked cars and areas where debris is likely to collect. Generally, marked shared lanes are a low-cost treatment suitable for lightly traveled collector and arterial roads.

Improved Pedestrian Crossings

Improved and frequent pedestrian crossings are recommended to support safety, comfort, speed, and convenience of walking trips. Pedestrian crossings also serve bicyclists. The crosswalk at Sam Corey Senior Center was cited as dangerous for pedestrians because the traffic does not slow down or stop, even when the light is activated.

a Shared Use Path
Shared use paths of 10 feet are ideal for shared pedestrian and cycling spaces on higher speed commercial corridors with limited driveways

b Bike Lane
Bike lanes create a separate operational area for cyclists and should be striped at 5 to 6 feet

c Sharrows
Sharrows can be used to indicate the preferred space for a bicycle to operate on the roadway, especially for streets that are too narrow to install a bike lane; enough space should be provided to prevent "dooring" by parked car doors and, in tight areas, markings should be placed in the center of the vehicle lane

d Crosswalks
Example of a ladder, or continental style crosswalk that features highly visible roadway markings

Non-Motorized Connections
Map showing potential biking and walking connections from Cedar Street to other parts of the Township and to the region

Map 3C:
Non-Motorized Connections
Delhi Charter Township, Michigan

- New Existing Trail
- Marked Share Lanes
- On Street Bike Lanes
- Paved Shoulders
- Shared Use Path
- New Grid Connections
- Shared Bicycle Alley
- Improved Pedestrian Crossings

FEET 0 500 1,000

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McKenna ASSOCIATES

Source: Delhi Charter Township, McKenna Associates. 08.01.16


CROSS WALK
CROSS WALK

3.7 Feasibility

A four lane to three lane roadway conversion, or "road diet" is essential to achieve the redevelopment vision for Cedar Street in Delhi Township and improve the safety of all potential users along the corridor. Between Fay Street and Dallas Avenue, Cedar Street currently has a four-lane profile with two travel lanes for through traffic in each direction. This road design increases the probability of rear-end crashes and left-turn crashes from drivers attempting to maneuver behind or around turning traffic.

Safety Factors

Crash Analysis

Cedar Street has two major intersections near the downtown area of the Township, with Aurelius Road and Holt Road. The design and operation of these two intersections make them susceptible to crashes. Cedar Street and Aurelius Road is essentially a five-way intersection with Keller Road enabling traffic to and from the east Cedar Street intersects Aurelius Road at a sharp angle, reducing visibility. The Cedar and Aurelius intersection is one of the most crash-prone within Ingham County. According to Michigan Traffic Crash Facts data, there were a total of 14 crashes in 2015 and 21 crashes in 2014 within 150 feet of this intersection. Cedar Street and Holt Road is another intersection at an angle, although less sharp of an angle than at Aurelius Road. The intersection had 8 crashes in 2015 and 10 crashes in 2014 within 150 feet according to Michigan Traffic Crash Facts.

The data shows a significant number of pedestrians or bicyclists involved in crashes, with 2-3 on average in the entire Township per year. Additionally, there may not be a large amount of walking or biking activity along major corridors in the Township since not all major destinations are reachable on foot or on a bike. As Cedar Street is redeveloped, it is important to keep in mind bicycle and pedestrian safety with the expected increase in walking and biking activity.

The northern end of Cedar Street has had a high number of crashes causing injury, with approximately 12-15 injury crashes each year over the past 4 years. Injury crashes were generally concentrated near Cedar and Holt, Cedar and Aurelius, and along Cedar between Delhi Commerce and Willoughby. These crashes imply that operational improvements can be made to the roadway to reduce the likelihood of future crashes, including improved signal timing on Cedar at both Holt and Aurelius, and shared access drives with reduced driveways on Cedar especially near Willoughby and Delhi Commerce.

Crosswalks (Pedestrian Issues)

The four-lane profile of Cedar Street presents several conflicts for pedestrians traveling in the corridor. The only mid-block crossing between Aurelius and Holt is located at the Sam Corey Senior Center. The pedestrian crossing is controlled by a pedestrian-activated light which only warns traffic to slow down. This light does not stop traffic and the design of the street does not encourage traffic to slow down.

Driveway Access

Cedar Street contains a high frequency of driveway access points. This frequency encourages weaving around turning traffic and creates conflicts between drivers traveling in different directions. The road diet would provide an opportunity for drivers turning left to move out of the travel lane and would result in fewer conflict points, easier maneuverability, and improved sight distance.

Crosswalks
The crosswalk at Sam Corey Senior Center was cited as dangerous for pedestrians because the traffic does not slow down or stop, even when the light is activated

Context Sensitive Solutions and Complete Streets

Design Excellence and Geometrics

A road diet on Cedar Street would support the existing and future land uses desired in the community. People in the community and Township leaders have expressed a goal of making the segment of Cedar Street between Aurelius and Holt Roads feel more like a downtown. Redesigning the street profile will create a safer environment for pedestrian traffic, provide opportunities for on-street parking, and calm the speed of through traffic.

Community Support

Delhi Township has undergone extensive public engagement to determine how Cedar Street can best serve the community in the future. The Township held three focus groups to gauge ideas about Cedar Street: one each for senior citizens, residents in the corridor, and business owners. Attendees at each focus group were asked about their big ideas for Cedar Street, participated in an exercise to rank goals and priorities, and took part in a visual preference survey. Residents were also asked to contribute big ideas and take the goal and priority ranking exercise through online surveys. Throughout all the public engagement, people expressed an interest in improving pedestrian safety and movement along Cedar Street, improving the flow of traffic and signal timing at key intersections, and adding new land uses to the corridor especially between Aurelius and Holt Roads. These goals can be supported by a road diet.

Pedestrian / Bicycle Accommodation and Mode Hierarchy

Discussion with Township staff and engagement with the public produced the desired modal hierarchy for Cedar Street between Aurelius and Holt Roads. Pedestrians will be given the highest priority, followed by bicyclists, vehicles, and transit respectively. There was a strong desire to improve pedestrian safety in this segment, but also a recognized need to allow for the movement of cars and to improve safety near several key intersections. Cedar Street is a key connection between both existing and planned bikeways and parallel bike routes. Adding marked shared lanes to Cedar Street will support potential bicycle riders there, which is a beneficial outcome of the road diet. The transit route serving Cedar Street only goes northbound toward Lansing, and pullout areas will be created along this section to provide operational space for buses. These pullout areas will also allow pedestrian bump outs to be constructed, and a future design operational analysis will not be needed for these bump outs based on the AADT of only 10,550 cars per day.

Cedar Street Operations
(Top) Because of the frequency of driveway access points and the lack of a center turn lane, parts of Cedar Street with four lanes function as if there were only three lanes

3Q Signal Timing
(Bottom) The intersections at Cedar and Aurelius and at Cedar and Holt would be improved with shared signal phasing to allow both directions of the road to move at once

Operations

De Facto Three Lane Operation

The segment of Cedar Street between Aurelius and Holt Roads often functions as a de facto three lane roadway. There are several small lots with small commercial buildings, single family houses, converted single family houses for offices, and others, resulting in a high driveway frequency. Traffic turning into these driveways can cause backups in either through lane, and drivers will often weave around turning cars to avoid having to stop. A three-lane profile moves left turning traffic to its own lane and does not allow for weaving around right turning traffic.

Speed and Traffic Calming

Pedestrian safety and the streetscape environment can be improved by reducing speed along this segment of Cedar Street. The overall operation of Cedar Street can also be improved by streamlining speed limits along the entire corridor. The speed limit south of the roundabout currently is 50 mph. This decreases to 25 mph in the roundabout, then up to 45 mph exiting the roundabout. The speed limit becomes 35 mph leading into and through the downtown area. The speed limits create erratic speed patterns and cause safety issues for all users of the corridor.

Delay

Based on traffic counts, minimal impact to the vehicle level of service (LOS), especially at off-peak times, is expected. Significant improvement in safety and operations, especially at on-peak times, is expected. Some delay should be tolerated based on the volume of peak hour traffic and the loss of a through lane in each direction. However, the safety and operation of the roadway can be improved by adding the left turn lane and eliminating the possibility of weaving.

Signal Timing

Signal timing at Cedar and Aurelius and at Cedar and Holt will be adjusted to improve the operation of the roadway. The signal at Aurelius currently allows only one segment of each road the chance to move per phase, meaning a complete cycle must go through four steps to go through each direction of each road. The signal at Holt currently has two phase cycles on Cedar and a dedicated left phase on Holt. With a three-lane profile, the approaches to these intersections will have a more natural separation of left turning traffic and through traffic, and the signals will be timed to allow both directions of the road to move at once. Operations analysis shows that shorter and more shared signal phasing will improve traffic flow on Cedar, as well as on Aurelius and Holt Roads and wait times will be reduced by a three lane profile. New on-street parking and off-street parking will reduce turning movements when motorists visit multiple destinations because they can park once.

Quality of Service (Multimodal Level of Service)

The multimodal level of service is likely to increase with a road diet. Pedestrian LOS scores are likely to improve due to the lane reduction, speed reduction, and addition of on-street parking. A refuge island for the crossing at Sam Corey Senior Center, as well as a HAWK signal, would greatly improve safety at this key mid-block crossing. Adding a refuge island would not require an operational analysis based on the Annual Average Daily Traffic (AADT) of 10,550 cars per day.

Annual Average Daily Traffic

The AADT for Cedar Street is approximately 10,550 vehicles per day based on data from May 18-19, 2016. Road diets are generally feasible for roads with an AADT of up to 24,000 cars per day, so Cedar Street falls well into the acceptable range.

Based on FHWA guidance, a roadway that has a design year AADT under 15,000 does not require an operational analysis. The current AADT based on our counts from May 18-19, 2016 is substantially lower than this benchmark. The amount of growth needed to reach 15,000 AADT would be about 36% growth over the next 10-20 years. There was construction on Cedar under Interstate 96 when the counts were taken, which may have diverted some traffic away from Cedar, but the Township engineer estimates the impact to be approximately 10%.

Peak Hour Peak Direction

The segment of Cedar Street between Aurelius and Holt Roads has a flat peak traffic time based on the proximity of several schools. Peak traffic is split among morning commute to work, morning drop off at school, afternoon pickup from school, and evening commute from work. A road diet will not adversely affect the peak traffic. Defined spaces for the different turning motions allows for better management of traffic at peak times.

Frequent Stopping/Slow Vehicles

Some transit and truck traffic exists along this portion of Cedar Street. There is a bus that only reaches as far south as Holt Road, and only travels north between Aurelius and Holt Roads. The proposed road design after the road diet includes designated pullout areas for buses and designated loading areas for delivery trucks. These spaces will help keep the flow of traffic moving while still providing the benefits of the road diet to the corridor, and bump outs can provide specific benefits to pedestrians without the need for an operational analysis.

Frequent Stopping Vehicles
Pullout areas for frequent stopping vehicles such as delivery trucks and buses will reduce the interruption of traffic flow

Rooftop art at Edru Skate

Bicycle, Pedestrian, Transit, and Freight Considerations

The three-lane profile of a road diet for Cedar Street can reduce conflicts between vehicles, bicyclists, and pedestrians, and decrease the complexity of traffic crossing maneuvers. Pedestrian activity would be expected to increase with improved safety and future land uses along the corridor. Bicycle activity would likely increase, as Cedar Street is near a regional trail network and the road diet will help fill a gap in this network. Transit and freight traffic would each be provided with their own spaces to pull out of travel lanes and not interrupt the traffic flow.

Other Factors

Cost and Right-of-Way

A road diet is feasible for Cedar Street because it can be accommodated using the width of the existing right of way. A road diet can be accomplished solely by re-striping the lanes. No additional right of way purchase is necessary, and the curb line does not need to be moved further back. Thus, a road diet can be accomplished within a reasonable budget.

Parallel Roadways

The segment of Cedar Street within Delhi Township is not a State Highway, but it is an National Highway System Map-21 Primary Arterial. Cedar is used mostly as a connector from Lansing to Mason. Parallel routes are available in the area. Traffic between Lansing and Mason, which acts as cut through traffic within Delhi Township, can use the freeway system including I-96 and US 127. Local traffic can use some nearby streets, although many of these streets go through neighborhoods and cut through traffic is discouraged. A bypass road was once considered for this corridor, and if necessary the bypass could be reconsidered in 20-30 years in case traffic volumes warrant such consideration.

Parking

Parking availability was cited as a key need in the corridor. The road diet will allow on-street parking to be added within strategic locations between Aurelius and Holt Roads. On-street parking will add to the total supply of parking in the area, support existing and future businesses, and help create a downtown feel along this section of Cedar Street.

Public Outreach and Political Considerations

The public engagement process has shown broad support for this project. People have cited key issues such as pedestrian safety, parking, and the lack of a downtown, which can all be addressed with a road diet. The Township and other regional stakeholders such as the Ingham County Road Department, the Lansing Economic Area Partnership and others support th Realize Cedar project.

Design Framework

4

REALIZE CEDAR URBAN DESIGN FRAMEWORK

Acknowledgments

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Jon Harmon — Delhi Township Board Trustee
Evan Hope — Delhi Township Clerk
David Leighton — DDA, Leightronix
Steve Warfield — Cedar Street Resident
Will Kangas — Delhi Township Communications
Jamie Burton, PE — Hubbell, Roth, & Clark

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Evan Hope — Clerk
Roy Sweet — Treasurer
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4.0 Design Framework

An improved identity for the Cedar Street corridor will be created by enhancing the streetscape through a high-quality built environment boasting safe accessible pedestrian circulation, traffic calming measures, marked shared bike lanes, on street parking, streetscape furniture, and plantings. The rhythmic placement of the streetscape elements establishes a cohesive streetscape setting.

The overarching goal of the proposed Realize Cedar Design Framework promotes pedestrian safety, accessibility and unified design treatment. Modified widths of vehicular travel lanes provide ample room for on street parallel parking, and marked shared lanes reinforce the Township's commitment to introducing traffic calming measures and multimodal circulation systems.

Streetscape enhancements will be focused in the Community Core area, which has two prominent locations; the intersection of Holt Road and Cedar Street (Downtown Node) and the intersection of North Street and Cedar Street and the current location of the Farmer's Market (Market Node). The development of the streetscape in these two areas will establish the design framework and palette of the proposed streetscape elements.

Many of the enhancements noted in the *Design Framework* are also recommended for installation along the entire corridor to foster a unified aesthetic to the entire Delhi Township portion of Cedar Street, from Willoughby to College.

Aerial Image of Market Nodes
Highlights of the portions of Cedar Street that links the two key redevelopment sites

Cedar Street

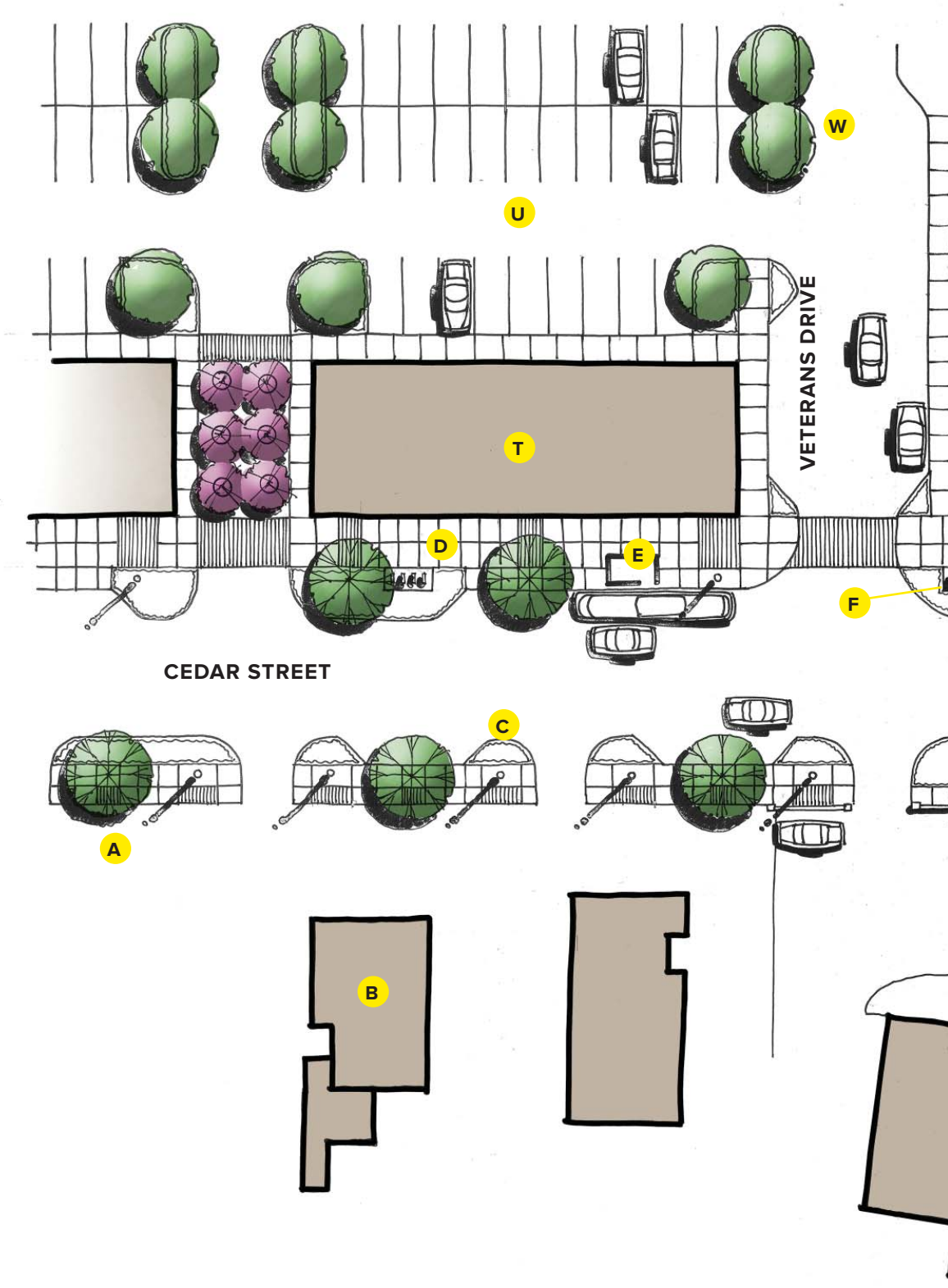
Redevelopment Nodes

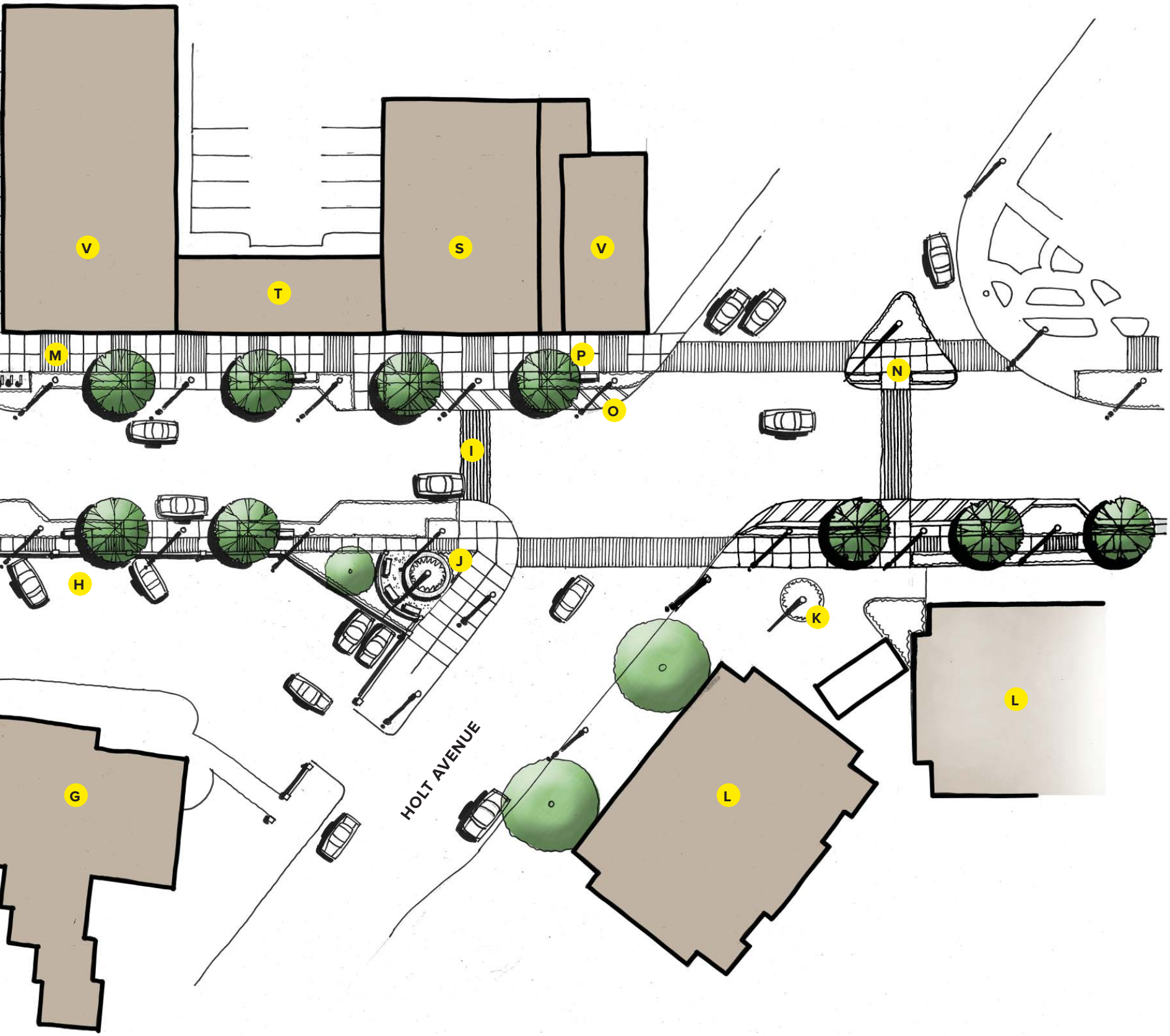
4.1 Downtown Node

The Downtown Node is recommended to be developed to incorporate the following design features, which are shown on the *Downtown Node Plan*.

Figure 4A:
Downtown Node Urban Design Plan
Plan view of proposed streetscape and urban design features of Cedar Street near the Downtown Node redevelopment site.

A. Street tree
B. Residential
C. Street light
D. Concrete paving
E. Bus stop with shelter
F. Bike rack
G. PNC Bank
H. Low masonry wall to screen parking
I. Crosswalk
J. Small pocket park with feature
K. Add feature to existing planter
L. Office/Commercial
M. Decorative paving
N. Add new directional island w/feature
O. Loading area/Future transit stop
P. Bench
Q. Planting bed
R. Original Okinawan Karate
S. Biggby Coffee
T. New mixed-use building
U. New Parking Lot
V. McPhail Insurance
W. Canopy Tree
X. Movable planters with flowering trees to allow possible vehicular circulation (festivals)

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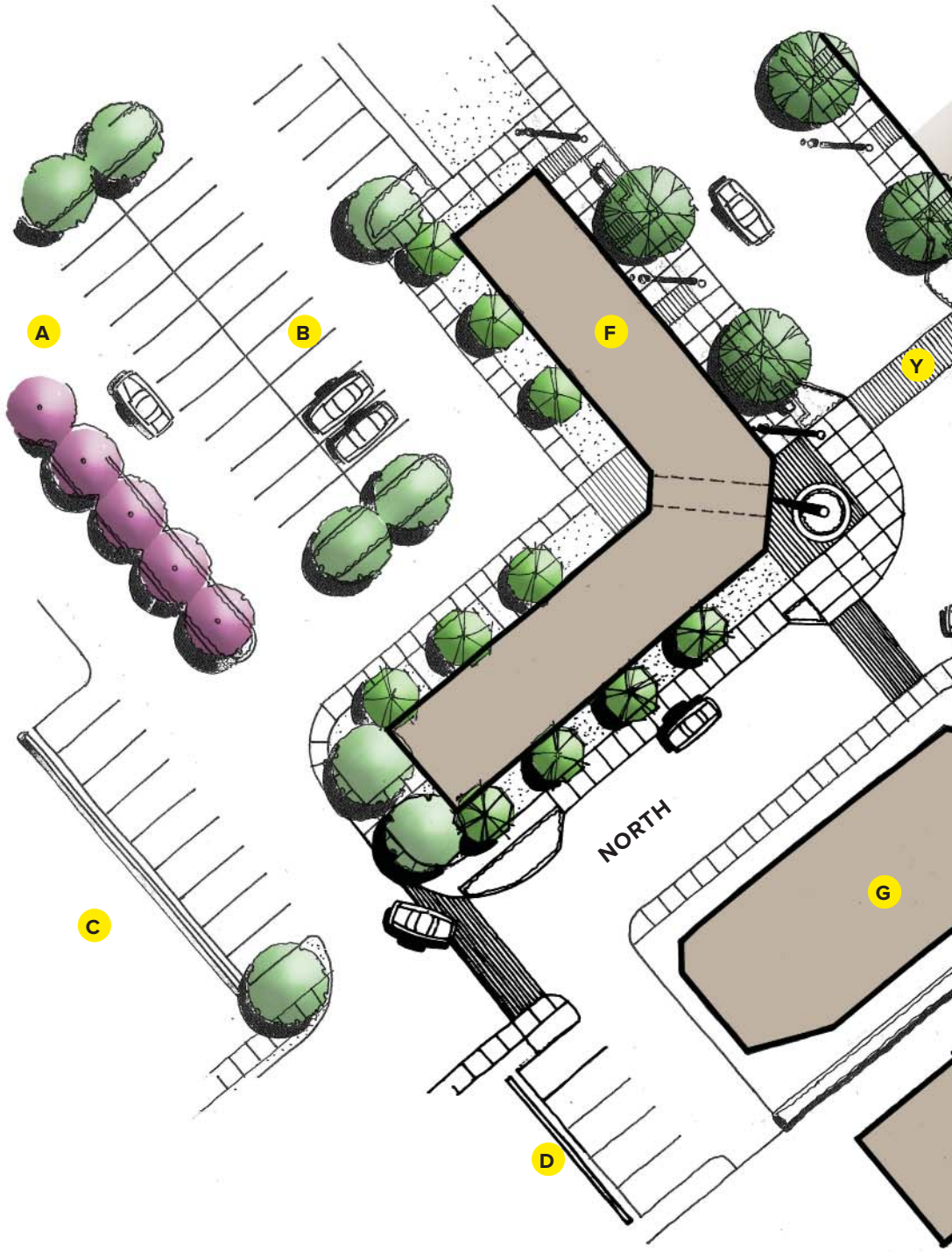
4.1 Farmer's Market Node

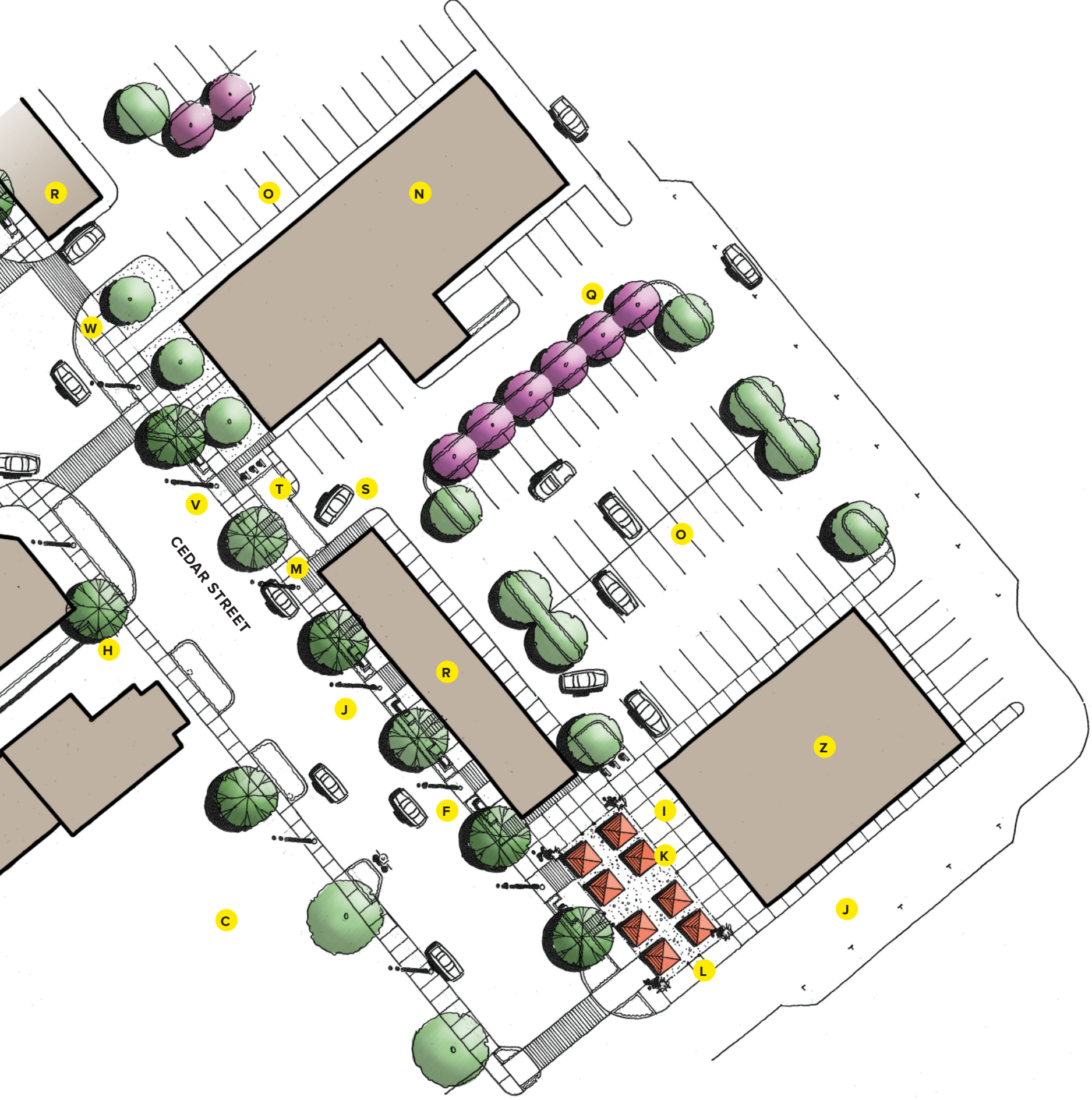
The Farmer's Market Node is recommended to be developed to incorporate the following design features, which are shown on the *Farmer's Market Node Plan*.

Figure 4B:
Farmer's Market Node Urban Design Plan

Plan view of proposed streetscape and design of Cedar Street near the Farmer's Market Node redevelopment site.

A. Access to post office
B. New parking lot
C. Residential
D. Low masonry wall to screen parking
E. Deciduous accent tree
F. Mixed-Use Building with Arcade
G. Office
H. Street tree
I. Concrete paving
J. Parallel parking
K. Multi-use area w/ decorative paving/ ornamental fencing
L. Decorative pier with seasonal plantings
M. Decorative paving
N. Farmers Market
O. New parking lot layout
P. Deciduous canopy tree
Q. Deciduous flowering tree
R. New mixed-use building
S. Close existing drive
T. New planting area
U. Bike rack
V. Street Light
W. Planting area
X. Small plaza w/ feature
Y. Crosswalk
Z. Fusion Dance

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4.3 Streetscape Palette

Each individual streetscape element contributes to the overall identity of Cedar Street. Collectively they help to improve the aesthetics and function of the corridor to establish a comprehensive design theme that focuses on pedestrian safety and circulation. The elements that make up the streetscape design palette include;

- Parking
- Curb Bump Outs
- Curbed Planters
- Crosswalks
- Bus Stops
- Bike Lanes
- Medians

Parking

Parking is an essential component in promoting commercial, economic, and social development. Seven-foot wide parallel parking located on both sides of the street buffers pedestrians from the three travel lanes. Adjacent to the parking, a 24-inch clear zone is proposed to allow for safe entry and exit from parked vehicles and ensure adequate distance for car doors to open without damaging the proposed landscape or car doors.

Curb Bump Outs

Bump outs are concentrated at street intersections to provide an area for pedestrians to pause prior to crossing the street. Bump outs are used at intersections to shorten the distance a pedestrian must travel to cross the street. Bump outs are introduced and are proposed to have planting areas where feasible to enhance the aesthetics of the streetscape.

Curbed Planters

Curb planters allow for plantings along the streetscape. The curbed planters are constructed of broom finished concrete and are 4 inches tall by 8 inches wide. The curbed planters elevate the plantings above the sidewalk to increase the depth of the planting medium and decrease the possibility of damage from de-icing products used in the winter months on the adjacent sidewalks.

Crosswalks

Crosswalks are located along Cedar Street for safe pedestrian access. Crosswalks become an important element in the streetscape environment by physically and visually linking opposite sides of the street. Audible crossing signals should be implemented to facilitate the safe crossing for people with visual limitations.

Each bus stop will have a shelter to protect patrons from inclement weather. Adequate space adjacent to the shelter will be provided to ensure patrons are not forced to wait in unsafe positions without interrupting pedestrians traversing the streetscape.

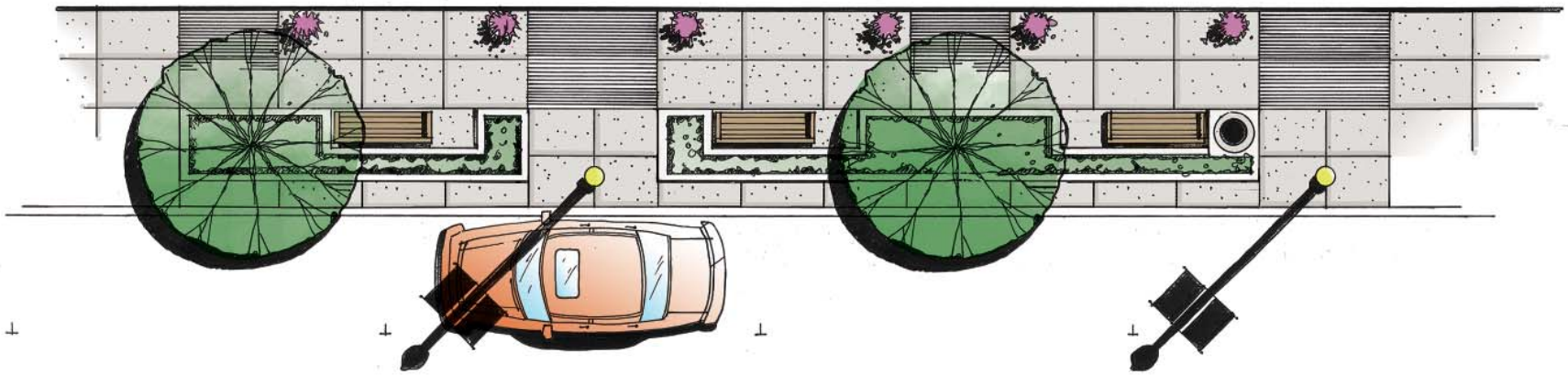
a On Street Parking
On street parking helps buffer pedestrians from vehicular traffic

b Bump Outs
Bump outs are used to shorten the distance needed for a pedestrian to cross the street and to make pedestrians more visible to motorists

c Planter Boxes
Curbed planter boxes provide space for landscaping along the street and also buffer the sidewalk from the vehicular traffic

d Crosswalks
Pedestrian crossing signs and prominent markings alert vehicle drivers to the location of crosswalks

Typical Streetscape



Streetscape Cross Section

Bike Lanes and Marked Shared Lanes

Conventional bike lanes and marked shared lanes are incorporated in the vehicular lane adjacent to the parallel parking and promote transportation alternatives, recreation, and environmental awareness. Bike lanes achieve a shared streetscape experience between sidewalk, parking lanes, and travel lanes.

Shared Use Paths and Trails

Shared use paths are recommended to improve bike connectivity and the pedestrian experience in the Commercial Boulevard area on Cedar north of Fay Street and between Dallas and Holbrook. While both sides are preferred, the east side should be prioritized. A trail connection is recommended on the east side of Cedar south of Holbrook in the Commercial Parkway area.

Medians

Median plantings should be used where feasible to enhance visual characteristics of corridors and boulevards. Low maintenance, native drought tolerant species are encouraged. Incorporating rain gardens and bioswales is also encouraged to help manage storm water runoff.

Lighting

Pedestrian-scale lighting is recommended along sidewalks, shared used paths and trails. Lighting will use the existing pedestrian fixture previously selected by the Township. Existing cobra lights on Cedar north of Aurelius and south of Dallas can be enhanced with a pedestrian fixture, or replaced with pedestrian-scale fixtures. When feasible, vehicle-scale fixtures are recommended to be moved to medians.

Utilities

Utilities are recommended to be buried along Cedar Street to reduce visual clutter and create space for landscaping. The utility corridor on the east side of Cedar between Keller and Veterans Drive is the highest priority for underground utilities, as a rear-alley circulation drive would have a benefit to businesses in this area.

a Bike Lane
Enough space should be provided to bikes away from the parked cars to avoid being struck by open car doors

b Marked Shared Lanes
Marked Shared lanes or “sharrows” can be used to indicate the preferred space for a bicycle to operate on the roadway, especially for streets that are too narrow to install a bike lane

c Trails
Trails provide long-distance and regional opportunities for biking and walking

d Median Islands
A mid-block crossing median island allows pedestrians and bicyclists the ability to cross only one direction of traffic at a time

e Pedestrian-Scale Lighting Fixture
The existing Delhi Township standard lighting fixture can be used along the Cedar corridor

f Utility Poles
Utility poles along Cedar Street are recommended to be buried


a


b


c


STATE
LAW
STOP
FOR
WITHIN
CROSSWALK
d


BUS
STOP
HOLT
PL
e


McDonald's
f

4.4 Landscape Palette

Plants make positive contributions to the economy, the aesthetics of the streetscape, and to the safety of the area. Selection of plant material must consider plant performance in the urban environment, and visibility of adjacent merchant signage. Plants must be durable and withstand seasonal urban conditions such as drying winds, salt, and snow.

Trees planted along the street at even intervals provide continuity of the streetscape, human scale and shade. Trees also contribute form, color, and texture along the streetscape while encouraging decreased vehicular traffic and increased awareness of pedestrians.

Shrubs and ground cover plantings are planted in visual harmony with the street trees and enhance the identity of the streetscape.

The plant recommendations include the following:

- Inkberry Shrub
- Princeton Elm
- Liriope Ground Cover
- Skyline Honey Locust
- Myrtle Ground Cover

Soil and Drainage

Proper planting soils in the streetscape is important for successful plant growth as well as drainage.

Planting soils that contain a blended mixture of a sandy-loam topsoil, sand and compost is essential for the proper establishment of plant material. Balanced commercial fertilizers are also necessary to ensure the health and vigor of the plantings.

Shredded hardwood mulch or peat moss should be installed at the time of planting to help maintain soil moisture.

Supplementing the planting beds with a perforated drainage system should also be considered to prevent standing water and saturation of the plant materials.

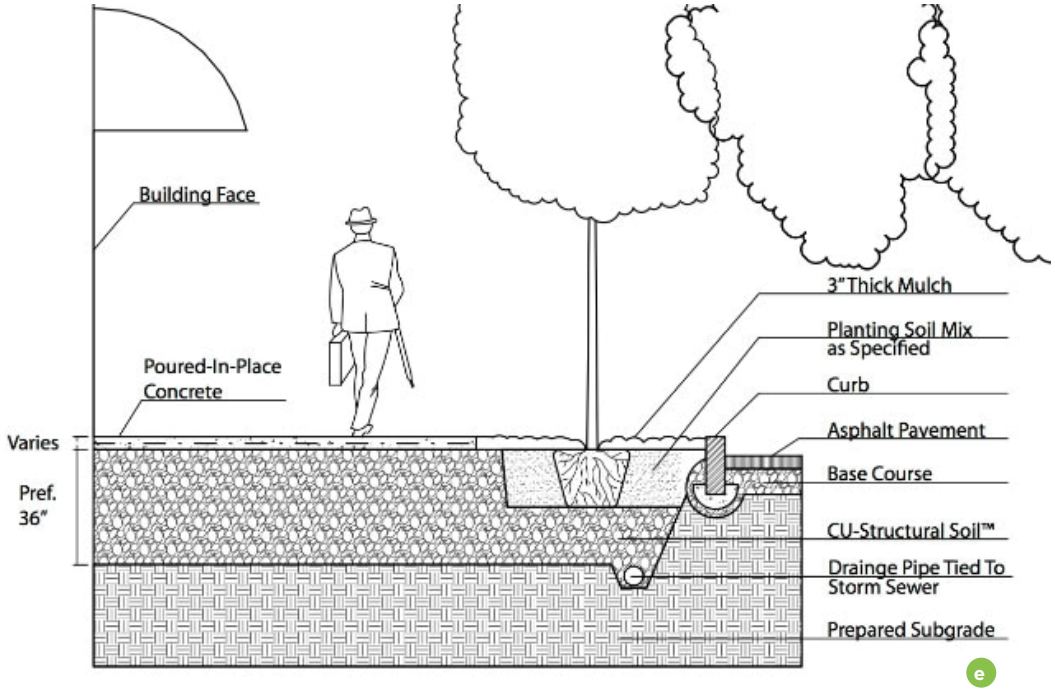
The drainage system will also leach salt and other unwanted chemicals from the soil. Sidewalk drainage is taken into consideration when designing the placement of curbed planters. Sidewalks are sloped so that water on the sidewalk can drain in between the planters to the street.

a **Inkberry**
Upright-rounded broadleaf evergreen shrub with glossy dark green leaves

b **Princeton Elm**
Vase shaped deciduous tree with a broad rounded crown and yellow fall color

c **Liriope**
Grass like perennial with clumps of strap-like, arching, glossy, dark green leaves and showy flowers with dense violet-purple flowers

d **Skyline Honey Locust**
Deciduous tree with pyramidal growth and dark green leaves that turn yellow in the fall



e

g **Ground Materials**
Composition of soils, concrete, and asphalt along the road to provide adequate soils for plants to grow, as well as adequate drainage

g **Myrtle**
Evergreen ground cover with smooth green leaves and lavender flowers in the spring that continue to flower intermittently though summer into fall

g **Soils**
Planter beds will provided with soils suitable for the plant materials selected

d

f

g

4.5 Hardscape Palette

The hardscape elements of the Cedar Streetscape will provide a unifying design theme. The materials recommended are durable, cost effective, and readily available to ensure the feasibility of long-term maintenance.

Hardscape recommendations include the following:

- Streetscape furniture
- Hardscape materials
- Maintenance

Streetscape Furniture

Site furnishings provide important amenities for pedestrians by adding functionality and vitality to the pedestrian realm. Site Furnishings include the following:

- Sorella Planters
- Plainwell Bench
- Plainwell Trash Receptacle
- Ring Bike Rack

These Streetscape palette elements will complement the existing Delhi Township standard streetlamp and are available for purchase form Michigan based Landscape Forms, Inc.

Contact Information:
Landscape Forms Inc.
431 Lawndale Ave.
Kalamazoo, MI 49048
Tel: 800.430.6209
www.landscapeforms.com

Hardscape Materials

Exposed Aggregate and Concrete Paving

The mixture of exposed aggregate and concrete paving reinforces the area as the downtown and central hub of activity, distinguishing it from other areas.

Detectable Warning Strips

Detectable warning surfaces are applied to ramps to indicate interference with the street. The finished detectable warning surfaces contrast the surrounding materials.

Maintenance

Maintenance is essential to the success of the streetscape. Maintenance and available budget must be considered when making material selections for the streetscape. Surface materials with low maintenance requirements and high durability must be selected when possible.

Maintenance may include regular attention to landscape materials such as pruning, removing, and replacement of plantings as needed, as well as regular care, fertilizing and replacement of irrigation systems.

Planter
Bench
Waste Receptacle
Bicycle Rack

a **Construction Materials**
Concrete and exposed aggregate help define the streetscape as characteristic of a downtown hub of activity

b **Warning Strips**
Detectable warning strips or truncated domes are an example of tactile paving and provide a delineation between the sidewalk and the street

c **Maintenance**
Because ongoing maintenance will be required to keep a functioning streetscape and landscape, materials with low maintenance requirements shall be used whenever possible


Spahr Ave
Don St
North
Richard St
Decamp Ave
Bond Ave
Woodworth Ave
Greenwood Ave
Veterans Dr
W Holt Rd
Sycamore St
Grove Ave
Dallas Ave
Hancock St
Holiday Dr
Monterey Dr
Manor Dr
Castle Dr
Lambeth Way
Miles Dr
Crampton Way
Lynn St
Lee St
Wilcox Rd
Tinkler Ct
Holbrook Dr
Turnbridge Dr
Stonehurst Ave
Doncaster Ave
Wanstead Dr
Santa Clara Dr
Archwood Dr
Willesdon Ave
Rexford Ave
Daylind Dr
Glenberry Dr
Eastlund Cir
Applecroft Dr
Sutherland Dr
Tartan Ln
Yarrow Dr
Bison Dr
Garden Gate Dr
Moose Dr
Gateway Dr
Wildflower Dr
Aurelius Rd
Hogsback Rd
Edgar Rd
Depot St
Delhi St
Hill St
Elliott St
Michael Ave
Summit St
Elm St
Maple St
Walnut St
Hall St
Jeanne St
Schoolcraft St
Auburn Ave
Adelpha Ave
Burton Ave
Phillips Ave
Cromwell St
Heatherton Dr
Pageant Way
Persimmon Path
Cottonwood Rd
Dogwood Dr
Sugar Bush Ln
Meadow Dr
Enfield Dr
Laurelwood Dr
Heather Haven Dr
Stonehaven Dr
Applecroft Dr
Thimbleberry Ln
Graythorn Ave
Hunnisette Dr
Tuscany Ln
Berkley Dr
Jacqueline Dr
Catalina Dr
Holbrook Dr
Daylily Dr
Yarrow Dr
Gateway Dr
Summer Ln
Wildflower Dr
Meadowlawn Dr
Park Ln
Courtridge Dr
Center St
Jones Rd
Cindy Belaire Ln
Manhattan Dr
Charlar Dr
Deer Run Ln
Orchard Ct
Whispering Hills Dr
Woodland Heart Dr

4.6
Identity Palette

Identity elements are recommended on Cedar Street to enhance identity and promote interaction and engagement between people and the streetscape environment. Interpretive signs can identify a district's name and entrances, announce important events, or display environmental information. Some identity features include gateways, signs, historical markers, installations, and banners.

Gateways

The Cedar Gateway will identify entrances to the downtown district and mark the beginning of the roadway conversion from four lanes to three lanes. The gateway design is a simple stone masonry base, evoking the Cedar “triangle”, with ¼ inch rusted steel letters affixed to the hypotenuse. The base should be oriented so that the angle aligns with the direction of the street—southeast to northwest – but the lettering can flip. The lettering should be placed to be prominently viewed from one direction. Landscape screens or buildings can be used as a back drop. The Cedar lettering can also be back-lit for night visibility.

- Kiosks and informational signs can be used proximate to gateway signs, can be attractive, useful street features. Kiosks can be used to display maps, bulletin boards, community announcements, and other important information.
- Installations of public art can be considered to enhance or replace the gateway elements.

The Township's existing “Welcome to Holt” signs should remain in place. The Cedar signs will complement rather than replace them.

Signs

Signs are an effective way to welcome, alert, inform and direct users, especially at transition points. The Michigan Manual of Uniform Traffic Control Devices (MUTCD) contains guidelines for sign use in the transportation network, including pedestrian and bicycle signs.

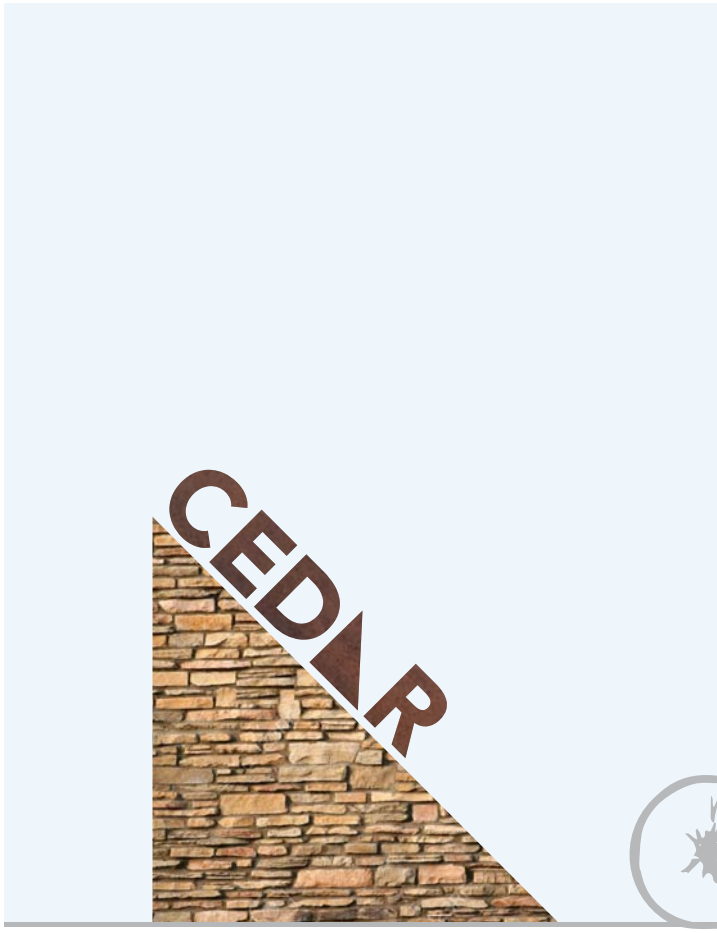
Sign branding for Cedar Street should be used to enhance the character of the corridor. Distinctive directional signs, monument signs and banners will provide user information and convey a sense of local identity.

- Sign stands can be used for temporary purposes or in permanent installations, such as district maps and informative displays.
- Cedar banners can be displayed on new poles or hang from existing lighting and utilities. Banners can be permanent district markers or rotated to note seasons or significant events.

Wayfinding Signage
A series of wayfinding signs should be used along Cedar Street to orient users and to provide an identity for the corridor

Realize Cedar Logo/Brand

The Cedar logo is recommended to be an established brand for the corridor. The use of this logo by local organizations, businesses, and residents is encouraged.



Gateway

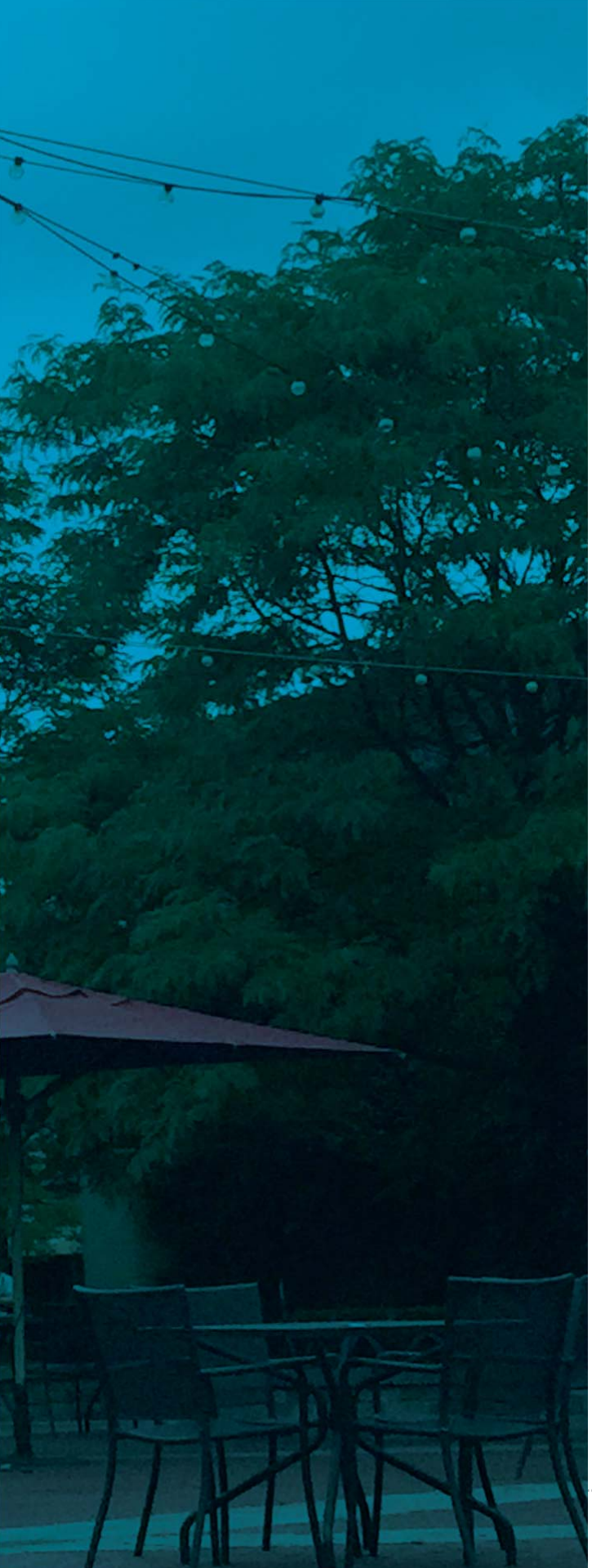
Cedar Street Branding
Variations of the Realize Cedar logo for use by organizations, businesses, and residents

REALIZE CEDAR
DELHI CHARTER TOWNSHIP · MICHIGAN

REALIZE CEDAR
DELHI CHARTER TOWNSHIP · MICHIGAN

Monument Directional Banner


CREPES
COFFEE
TEAS

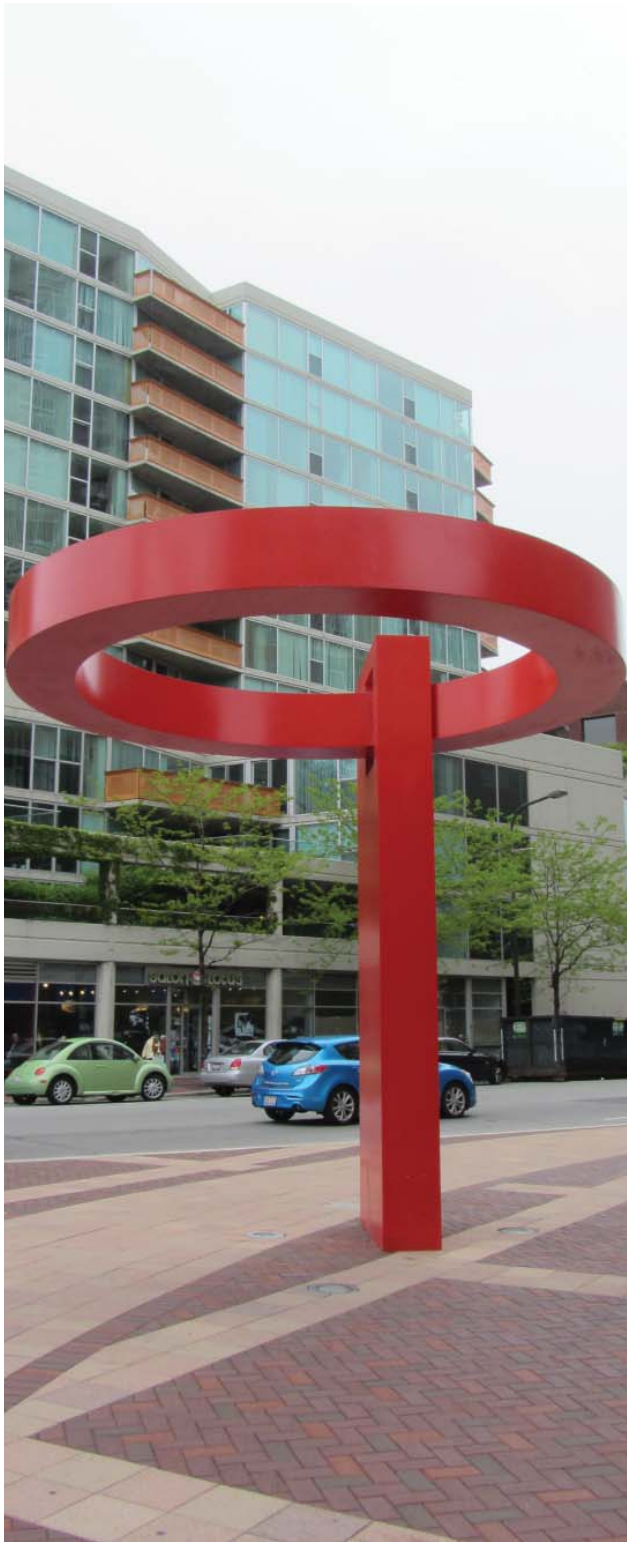


4.7 Public Art

Art installations along Cedar Street are encouraged in the Farmer's Market node and Downtown node areas, as well as at gateway and typology transition locations. Sculptures and murals can greatly accentuate the transportation network and improve the value of a place. Art can be effective traffic calming and can be substituted for gateway signs and wayfinding signs to reduce sign clutter. These features should be carefully placed so that they improve the walkability and bikeability of the roadway without creating hazardous obstacles or distracting drivers.

Public Art (Examples)

Public art can be used to bring attention to a specific place, give a unique character to the corridor, and promote community pride



Sculpture
Evanston, IL

Catenary Lighting
Northville, MI

Wall Mosaic
Chicago, IL

Wall Art
Chicago, IL

Boulevard Art
Chicago, IL

Tribute Art
Royal Oak, MI

Median Sculpture
Detroit, MI

Wall Mural
Ann Arbor, MI

4.8 Design Framework

The following table describes the recommended application of the Design Framework in accordance with the Street Typology Map.

Table 4A: Design Framework Application Guidance

Street Typologies	Streetscape Palette	Landscape Palette	Hardscape Palette	Identity Palette	Public Art
Core Street	R	R	R	R	R
Cottage Retail Street	E	R	E	P	D
Community Avenue	E	E	P	P	D
Commercial Boulevard	E	E	P	P	E
Commercial Parkway	E	E	D	P	E
Transition Elements					
Node	R	R	R	R	R
Gateway	D	P	E	R	R
Transition	D	P	E	E	E

R = Required
E = Encouraged
P = Permitted
D = Discouraged

North Cedar Existing

The Design Framework, when applied will provide unifying aesthetic to the Delhi Township portion of Cedar Street, from Willoughby on the north to College on the south. These enhancements will help define Delhi Township's borders and encourage quality development.

While the streetscape is recommended to be installed in and around the Community Core area, which include the Farmers Market and the Downtown Node, identity features, landscaping, shared use paths, driveway consolidation, medians are recommended to be considered along the entire corridor. As is illustrated in the adjacent perspective view rendering of the Taco Bell located on Cedar just north of Commerce Drive.

Example Monument Sign (Right)
North Cedar Perspective View (Below)

AUGUST 4, 2016

McKenna ASSOCIATES

BOOK 1: **CORRIDOR CONTEXT**

BOOK 2: **DEVELOPMENT FRAMEWORK**

BOOK 3: **CONNECTIVITY FRAMEWORK**

BOOK 4: **DESIGN FRAMEWORK**

REALIZECEDAR.COM

DELHI CHARTER TOWNSHIP
MINUTES OF THE PLANNING COMMISSION HELD ON AUGUST 8, 2016

The Delhi Charter Township Planning Commission held a regular meeting on Monday, August 8, 2016 in the Multipurpose Room at the Community Services Center, 2074 Aurelius Road, Holt, Michigan. Commissioner Lincoln called the meeting to order at 6:30 p.m.

PLEDGE OF ALLEGIANCE

ROLL CALL

Members Present: Kimberly Berry-Smokoski, Rita Craig, Michael Goodall, Jon Harmon, Don Leaf, Matthew Lincoln, Ken O'Hara, Tonia Olson, Betsy Zietlow

Members Absent: None

Others Present: Tracy Miller, Director of Community Development
Noelle Tobias, Building Secretary

AMENDMENTS TO THE AGENDA: None

APPROVAL OF THE July 25, 2016 PLANNING COMMISSION MINUTES

Goodall moved and Olson seconded to approve the July 25, 2016 meeting minutes.

A Voice Poll was recorded as follows: All Ayes

Absent: None

MOTION CARRIED

PUBLIC COMMENT (Non-Agenda Items): None

FINAL SITE PLAN APPROVAL, SP16-002, WILLOUGHBY ESTATES, PLANNED DEVELOPMENT, 33-25-05-11-451-002 & 11-452-006

Ms. Miller presented the staff report for the Planned Development (PD) for Willoughby Estates, LLC. The Planned Development was approved by the Township Board on May 17, 2016. The final site plan has been reviewed and approved by the reviewing agencies. This plan complies with the applicable conditions of the PD approval and all other provisions of the Zoning Ordinance.

Mr. Scott Wieland, the applicant for this project, was present.

Discussion: Olson, O'Hara, and Lincoln had some questions. Mr. Wieland addressed these questions.

Olson moved, seconded by Craig to approve the Final Site Plan (Received date of 8/3/16) submitted by Willoughby Estates LLC for the development of Willoughby Estates (Parcel Numbers 33-25-05-11-451-002 & 33-25-05-11-452-006) based on meeting the Zoning Ordinance requirements for Site Plan Review, conforming to the approved PD3 for this project and pursuant to Section 3.3 of the Zoning Ordinance.

A Roll Call Vote was recorded as follows:
Ayes: Berry-Smokoski, Craig, Goodall, Harmon, Leaf, Lincoln, O'Hara, Olson
Nays: None
Absent: None
Abstain: Zietlow

MOTION CARRIED

REALIZE CEDAR PLAN

Ms. Miller provided background on the Realize Cedar planning process. The Planning Commission (PC) recommended to the Township Board that McKenna & Associates be retained for the purpose of completing the Cedar Street Revisioning Plan back in fall of 2015. Ms. Miller stated that McKenna's approach to the project included the use of a steering committee to develop the initial draft plan, which has been completed.

Ms. Miller stated that there were three focus group meetings conducted as a part of the public information gathering process. The first aimed at obtaining feedback from senior citizens, the second was for residents of Cedar Street and the third was for Cedar Street business owners. The feedback received was helpful in developing the plan. Ms. Miller stated that there were also several "pop up" meetings conducted which were used to further gather data and vet ideas that were being considered for inclusion in the plan. It is estimated that over two thousand residents were reached using this approach.

Ms. Miller stated that one of the questions that came up frequently was with regards to the plan's recommended reconfiguration of Cedar Street. Specifically, the plan recommends changing from a four lane profile to a three lane profile. Residents have questioned the impact that this would have on traffic flows between Holt Road and Aurelius Road where the recommendation would be implemented. Ms. Miller shared the results of the analysis conducted by HRC which reveals that the change will result in better traffic flows and shorter wait times at the intersections.

Discussion: The Planning Commissioners asked some questions about the plan. Ms. Miller, Paul Lippins and Jamie Burton addressed the questions.

Public Comment: Amanda Miller, 4285 Veterans Drive, Holt, stated that she was concerned about the cut through traffic and the fact that there are no sidewalks in the Veterans Drive area neighborhood. Ms. Miller is also concerned with the manner in which the current commercial occupants maintain the back of their buildings, parallel parking on the street and that she feels the Veteran's Drive/Coolridge triangle is not maintained. She also stated that she believes the current parking lots are ugly. She believed that the Township should have reached out specifically to her and her neighbors prior to putting any plan together for Realize Cedar.

Les Bentley, 4330 Keller Road, Holt, provided information about his military background and then stated that he has only been informed about the project through the Holt Community Matters Facebook page. He questioned the recommendation to shift the Cedar Street and Keller Road intersection and voiced his opinion that houses would need to be removed. He would like to meet individually with someone to get more details regarding this plan. Ms. Miller clarified that no homes would be removed to shift the intersection and stated that she would be happy to meet with him and would follow up with him to arrange a time.

Eunice Kosloski, 2020 Coolridge Road, Holt, stated that she was concerned about the focus groups and wondered why the Veterans area was not approached directly as part of one of these focus groups. Ms. Kosloski heard about the Realizes Cedar plan when she was attending Music in the Park. She has two children and is worried about new strangers coming into the area as a result of any future development. She stated that she does not want there to be more people in her neighborhood. Ms. Kosloski stated that she is concerned about construction and about the hours future businesses will be open. She stated that she already finds the Crystal Bar objectionable. She asked where trucks will be located during the construction process and stated that noise and pollution will affect her children and all children in the area.

Mike Hamilton, 4541 Sycamore, Holt, stated that he likes this plan and feels that it is the best solution that he has seen. He is concerned with the on-street parking and suggests moving any future buildings back farther from the street to accommodate parking whenever possible. Mr. Hamilton stated that he is not concerned with the bus accommodations in the plan but does not like the crossing islands proposed. He went on to say that he thinks that this plan is pretty good and supports it in general.

Olson moved, seconded by O'Hara to approve Planning Commission Resolution #PC2016-01 which recommends that the Township Board begin the public review period and distribution of the master plan sub-area plan and amendment document entitled "Realize Cedar: Urban Design Framework"

A Roll Call Vote was recorded as follows:

Ayes:	Berry-Smokoski, Craig, Goodall, Harmon, Leaf, Lincoln, O'Hara, Olson, Zietlow
Nays:	None
Absent:	None
Abstain:	None

MOTION CARRIED

GENERAL DISCUSSION AND UPDATES

There was general discussion about Planning Commission matters. .

ADJOURNMENT

Meeting adjourned at approximately 8:20 p.m.

Date: _____

_____
Kimberly Berry-Smokoski, Secretary

/nt

DELHI CHARTER TOWNSHIP

PLANNING COMMISSION RESOLUTION # PC2016-01

RESOLUTION TO RECOMMEND THE PUBLIC REVIEW PERIOD FOR THE MASTER PLAN DOCUMENT ENTITLED "REALIZE CEDAR: URBAN DESIGN FRAMEWORK"

At a Regular Meeting of the Planning Commission, of the Charter Township of Delhi, Ingham County, Michigan, held at the Community Services Center, 2074 Aurelius Road, Holt, Michigan on Monday, the 8th day of August, 2016, at 6:30 p.m.

PRESENT: Kimberly Berry-Smokoski, Rita Craig, Michael Goodall, Jon Harmon, Don Leaf, Matthew Lincoln, Ken O'Hara, Tonia Olson, Betsy Zietlow

ABSENT: None

The following Resolution was offered by Olson and supported by O'Hara.

WHEREAS, the Township recognizes the importance of Cedar Street as a key corridor for the commerce and vitality of the community; and

WHEREAS, the Township has undergone a planning process for the future of Cedar Street; and

WHEREAS, the Township has engaged members of the public throughout the entire planning process in order to determine how the community desires to see Cedar Street function in the future and to learn what concerns people have about Cedar Street; and

WHEREAS, the Township has used the information from multiple public engagement activities, as well as information from other professionals and public agencies, to advance the planning process and develop the Document; and

WHEREAS, the Township should now begin the public review period and distribute the Realize Cedar Plan, an amendment to the Delhi Charter Township Master Plan, to the public and to neighboring jurisdictions following the same process for review and approval;

NOW, THEREFORE, BE IT RESOLVED that the Planning Commission, in accordance with the Michigan Planning Enabling Act of 2006, as amended, recommends the Township Board authorize the 63-day public review period and cause the distribution of the Realize Cedar Plan to neighboring jurisdictions and planning agencies at the meeting on the 16th day of August, 2016.

AYES: Berry-Smokoski, Craig, Goodall, Harmon, Leaf, Lincoln, O'Hara, Olson

NAYS: None

ABSENT: None

The foregoing Resolution declared adopted on the date written above.

Kimberly Berry-Smokoski

Planning Commission Secretary

STATE OF MICHIGAN)

) ss

COUNTY OF INGHAM)

I, the undersigned, the duly qualified Secretary of the Charter Township of Delhi, Ingham County, Michigan, Planning Commission DO HEREBY CERTIFY that the foregoing is a true and complete copy of the proceedings taken by the Planning Commission at a regular meeting held on the 8th day of August, 2016.

IN WITNESS WHEREOF, I have affixed my official signature this 8th day of Aug, 2016.

Kimberly Berry-Smokoski

Planning Commission Secretary

Jeff and Karen Blohm
2412 Anchor Ct.
Holt, Michigan

Attn: Delhi Township Planning Committee

Dear committee members,

We are writing to you today in strong support of the restructuring of the Cedar Street corridor in Holt.

Since arriving from metro Detroit nearly thirty years ago, we have become huge fans of Delhi Township and the people who are dedicated to its success. We have marveled at the progress made in the last decade, and look forward to even more growth in the decade ahead.

Like many, we believe the Cedar Street corridor is an integral part of that future. We envision a Cedar Street that acts as part of our community, rather than just a pass-through to other destinations. We imagine a street that helps local merchants build their businesses by continually attracting new customers comfortable with their surroundings and easy access.

Currently, a walk down the Cedar street sidewalk is a noisy, scary affair – especially if you've got kids in tow! A more pedestrian-friendly corridor, for both bikers and walkers, will help keep families safe, attract new residents and encourage more businesses to make Delhi their home.

Thank you for the work you have done on this issue, and thank you for helping to build a better Delhi Township for all of us.

Warm regards,

Jeffrey & Karen Blohm

7-31-16

Tracy Miller
Director of Community Development

Dear Ms. Miller,

Recently I heard a conversation about quieting traffic along the Ceder Corridor. I wanted to let you know that I was interested and excited to hear that Delhi was considering a left turn lane/bike lane set up.

I have lived in Delhi Township since 1968 and on Walnut Street since 1977. I try to shop Holt first and attempt to do my business by bike when possible.

I hope that there is serious consideration to put this bike lane/ left turn lane in practice. Traffic on Cedar Street is out of control in terms of speed and noise.

I would like to be able to access the business's along Ceder Street in a safer manner without having to use my car.

Thank you for your consideration.

Robin Malatinsky
1892 Walnut Street
Holt
517-927-7733

DELHI CHARTER TOWNSHIP
DOWNTOWN DEVELOPMENT AUTHORITY
2045 NORTH CEDAR STREET, SUITE 2
TELEPHONE (517) 699-3866
FACSIMILE (517) 699-3878
www.delhidda.com

MEMORANDUM

To: Delhi Charter Township
Planning Commission

From: C. Howard Haas
Executive Director

Re: Cedar Street Revisioning

I would like to take this opportunity to urge you to support the findings put forth by the Cedar Street Revisioning Study Committee. For 20+ years, I have had the pleasure of being a member or Director of the Delhi Township DDA. As you know, the DDA's mission is to assist in economic development within its delineated district. The Cedar Street corridor is as near to being a "downtown" as exists in Holt. As I am sure you are aware, the DDA has been purchasing and rehabilitating blighted and contaminated property on this corridor for many years. As part of that effort, we have brought a number of successful developer/owners here to evaluate investing. To date, we have only been marginally successful in obtaining new businesses. The developers have told us the reasons for their lack of interest ranged from population and family income levels to a lack of an identifiable downtown area. Our continuing population growth, reputation for excellent schools, number of fine parks and great trail systems leave only one major objection remaining: a downtown. The traffic quieting effect proposed by the study on a portion of Cedar Street will be recognized as the creation of a livable, walkable, bike-friendly downtown which the investors seek and our citizens can safely live in and shop.

Thank you for your consideration and involvement in our community.

HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915

HUBBELL, ROTH & CLARK, INC.
OFFICE: 2101 Aurelius Road, Suite 2A | Holt, MI 48842
PHONE: 517.694.7760
WEBSITE: www.hrc-engr.com | EMAIL: info@hrc-engr.com

August 4, 2016

Delhi Charter Township
2074 Aurelius Road
Holt, Michigan 48842

Attn: Tracy LC Miller, Director
Department of Community Development

Re: Cedar Street Traffic Analysis HRC Job No. 20150384

Dear Ms. Miller:

At your request, Hubbell, Roth & Clark, Inc. (HRC) has prepared a traffic analysis to determine potential impacts of converting Cedar Street from Aurelius Road to Holt Road from 4 lanes to 3 lanes in downtown Holt. The traffic analysis is intended for inclusion in the planning report being prepared by McKenna Associates.

To complete the traffic analysis, HRC undertook the following tasks:

- Collect turning movement counts during AM and PM Peak hours (7:00 -9:00 AM and 2:00 – 6:00 PM) at the following intersections:
  - Cedar Street and Aurelius Road and Keller Road
  - Cedar Street and Holt Road
- Project future traffic volumes
- Conduct a capacity analysis for the intersections during AM and PM peak hours using Synchro 9 Software and the techniques outlined in the Transportation Research Board Highway Capacity Manual
- Prepare a letter report with our findings and recommendations

Executive Summary

A capacity analysis was conducted for the two signalized intersections during the AM and PM peak hours for four scenarios:

1. Existing traffic volumes and existing 4 lane road
2. Existing traffic volumes and 3-lane road
3. Future traffic volumes and existing 3-lane road
4. Future traffic volumes and 3-lane road

Table 1 summarizes the levels of service for each scenario evaluated.

Table 1: Summary Intersection Level of Service Comparison

Intersection	Existing 4 Lane		Existing 3 Lane		Future 4 Lane		Future 3 Lane	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
AM Peak								
Cedar Street and Aurelius Road	45.6	D	31.7	C	48.2	D	29.9	C
Holt Road and Cedar Street	30.5	C	29.1	C	34.4	C	27.8	C
PM Peak								
Cedar Street and Aurelius Road	40.1	D	29.6	C	45.2	D	33.4	C
Holt Road and Cedar Street	47.5	D	25.3	C	55.0	E	31.6	C

The traffic analysis has demonstrated that converting Cedar Street from 4 lanes to 3 lanes will not adversely impact traffic operations. The 3 lane scenario allows for more efficient operation of the traffic signals, the center left turn lane allows northwest and southeast Cedar traffic to travel at the same time, not separate times as in the 4 lane scenario. The 3 lane scenario and associated signal timings will improve the level of service at the two intersections.

The improvements will require realignment of Keller Road away from the intersection of Cedar Street and Aurelius Road. Keller Road should be realigned to the south so that it intersects Cedar Street at 90 degrees. Keller Road should be stop controlled.

Data Collection

HRC collected turning movement counts at the two intersections on Thursday, May 12, 2016. At the Cedar/Aurelius/Keller intersection, the AM peak hour is 7:45 – 8:45 AM and the PM peak hour is 5:00 – 6:00 PM. At the Cedar/Holt intersection, the AM Peak hour 7:30 – 8:30 AM and the PM peak hour is 4:45 – 5:45 PM. **Attachment A** provides the peak hour turning movement counts for each intersection.

When road conversions are proposed, it is typical to analyze the impact on current traffic volumes as well as well as future traffic volumes. HRC projected future traffic volumes to 2026. Based on recommendation from Tri-County Regional Planning Commission, an annual growth rate of 0.8% was applied over 10 years and resulted in an increase of 8% over 2016 volumes.

The analysis was completed with Keller Road realigned to the south. Keller Road would intersect with Cedar at a stop controlled intersection perpendicular to Cedar.

Intersection Capacity Analysis

HRC created a road network using Synchro 9 software and the Highway Capacity Manual (HCM) procedures for analysis. **Attachment B** contains Synchro reports for the analysis.

Signalized Intersections

For signalized intersections, the HCM defines level of service in terms of control delay. Delay may be measured in the field, or it may be estimated. Delay is a complex measure, and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the volume to capacity ratio for the lane group or approach in question. **Table 2** indicates the control delay criteria used for determining level of service (LOS) for signalized intersections.

Table 2: Level of Service Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (Seconds)
A	<10
B	>10 to ≤ 20
C	>20 to ≤ 35
D	>35 to ≤ 55
E	>55 to ≤ 80
F	>80

Level of Service A describes operations with very low control delay up to 10.0 sec per vehicle. This occurs when progression is exceptionally favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level of Service B describes operations with control delay in the range of 10.1 to 20.0 sec per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for Level of Service A, causing higher levels of average delay.

Level of Service C describes operations with control delay in the range of 20.1 to 35.0 sec per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

Level of Service D describes operations with control delay in the range of 35.1 to 55.0 sec per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

Level of Service E describes operations with control delay in the range of 55.1 to 80.0 sec per vehicle. This is considered to be above the limit of acceptable delay for an urban roadway in the study area. These high delay values generally indicate poor progression, long cycle lengths, and high volume to capacity ratios. Individual cycle failures are frequent occurrences.

Level of Service F describes operations with control delay in excess of 80.1 sec per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over saturation, i.e.,

when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume to capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

A capacity analysis was conducted for the two signalized intersections during the AM and PM peak hours for four scenarios:

5. Existing traffic volumes and existing 4 lane road
6. Existing traffic volumes and 3-lane road
7. Future traffic volumes and existing 3-lane road
8. Future traffic volumes and 3-lane road

Table 3 provides the results of the AM and PM peak hour capacity analysis for the intersection of Cedar Street and Aurelius Road by scenario and movement. The Synchro results show an acceptable level of service for all scenarios and movements.

Table 3: Cedar Street and Aurelius Road Level of Service Comparison

Approach/Lane		Existing 4 Lane		Existing 3 Lane		Future 4 Lane		Future 3 Lane	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
AM Peak (7:45 AM - 8:45 AM)									
NB Aurelius	**LT**	46.5	D	30.3	C	52.9	D	38.4	D
	TH	45.5	D	30.0	C	51.4	D	38.0	D
SB Aurelius	**LT**	40.7	D	37.4	D	37.7	D	38.6	D
	TH	42.1	D	40.6	D	39.8	D	40.3	D
SEB Cedar	**LT**			18.2	B			16.7	B
	TH	41.1	D	22.6	C	50.6	D	20.8	C
	RT	33.9	C	17.2	B	34.5	C	16.0	B
NWB Cedar	**LT**			17.4	B			15.8	B
	TH	53.1	D	43.6	D	50.5	D	32.8	C
PM Peak (5:00 PM - 6:00 PM)									
NB Aurelius	**LT**	42.0	D	32.5	C	49.4	D	48.2	D
	TH	40.3	D	24.1	C	48.8	D	32.8	C
SB Aurelius	**LT**	35.7	D	33.7	C	41.2	D	43.0	D
	TH	38.4	D	35.5	D	45.5	D	47.9	D
SEB Cedar	**LT**			18.8	B			19.0	B
	TH	41.9	D	22.6	C	44.5	D	23.2	C
	RT	34.0	C	18.4	B	37.4	D	19.2	B
NWB Cedar	**LT**			18.0	B			18.5	B
	TH	42.4	D	40.2	D	47.7	D	39.2	D

The signal timing plan at this intersection provides a separate phase for each approach for the 4-lane scenarios. For the three lane scenarios, southeast bound (SEB) and northwest bound (NWB) Cedar traffic share a phase and left turns are permitted. The signal timing was optimized for all scenarios. A proposed layout for the three lane geometry is shown in **Figure 1**.

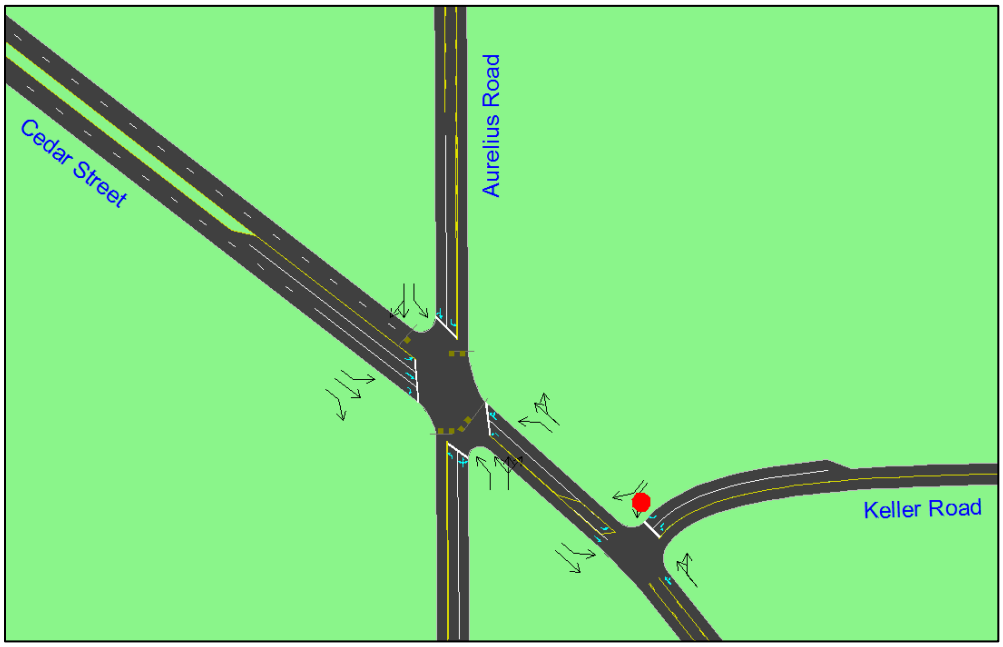


Figure 1. Proposed Three Lane Geometry on Cedar Street South of Aurelius Road

Table 4 provides the results of the AM and PM capacity analysis at the intersection of Cedar Street and Holt Road by scenario and movement. The Synchro results show an acceptable level of service in the AM peak hour. In the PM peak hour, the WB and NWB through movements are currently experiencing a LOS E, which is not acceptable. In the future with the existing geometry, the delay will increase.

Table 4: Holt Road and Cedar Street Level of Service Comparison

Approach/Lane		Existing 4 Lane		Existing 3 Lane		Future 4 Lane		Future 3 Lane	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
AM Peak (7:45 AM - 8:45 AM)									
EB Holt	**LT**	19.2	B	17.6	B	20.3	C	15.4	B
	TH	32.3	C	46.6	D	38.5	D	44.5	D
	RT	18.5	B	20.6	C	19.5	B	19.2	B
WB Holt	**LT**	31.3	C	22.5	C	32.5	C	20.1	C
	TH	24.9	C	24.3	C	28.6	C	22.9	C
	RT	21.2	C	20.7	C	23.7	C	19.4	B
SEB Cedar	**LT**			18.2	B			18.0	B
	TH	35.4	D	25.2	C	38.5	D	24.5	C
NWB Cedar	**LT**			17.8	B			17.6	B
	TH	35.4	D	24.5	C	39.2	D	23.7	C
	RT			20.4	C			19.5	B
PM Peak (5:00 PM - 6:00 PM)									
EB Holt	**LT**	31.8	C	18.8	B	33.3	C	20.8	C
	TH	40.6	D	26.0	C	42.2	D	28.3	C
	RT	31.4	C	31.1	C	31.3	C	21.9	C
WB Holt	**LT**	28.8	C	18.2	B	29.9	C	18.3	B
	TH	56.3	E	34.8	C	66.7	E	36.3	D
	RT	30.3	C	21.1	C	30.2	C	20.8	C
SEB Cedar	**LT**			18.9	B			25.5	C
	TH	40.2	D	24.7	C	41.6	D	31.7	C
NWB Cedar	**LT**			19.1	B			32.1	C
	TH	58.8	E	27.0	C	74.6	E	42.9	D
	RT			17.5	B			21.6	C

Key: Highlighted cells have unacceptable levels of service (E or F)

The signal timing plan for this intersection provides a separate phase for SEB and NEB Cedar movements while EB and WB Holt movements share a through phase. It should be noted that the WB left-turns have a leading left turn phase and the EB left-turns have a lagging left turn phase. For the three lane scenarios, SEB/NWB and EB/WB are protected-permissive left-turn phases. The signal timing was optimized for all scenarios. A proposed layout for the three lane geometry is shown in **Figure 2**.

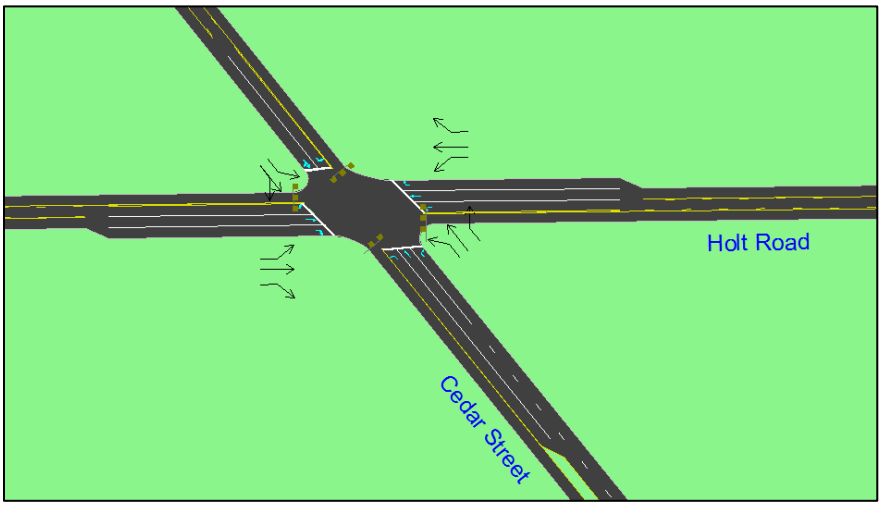


Figure 2. Proposed Three Lane Geometry on Cedar Street North of Holt Road

Findings and Recommendation

The traffic analysis has demonstrated that converting Cedar Street from 4 lanes to 3 lanes will not adversely impact traffic operations. The 3 lane scenario allows for more efficient operation of the traffic signals, the center left turn lane allows northwest and southeast Cedar traffic to travel at the same time, not separate times as in the 4 lane scenario. The 3 lane scenario and associated signal timings will improve the level of service at the two intersections.

The improvements will require realignment of Keller Road away from the intersection of Cedar Street and Aurelius Road. Keller Road should be realigned to the south so that it intersects Cedar Street at 90 degrees. Keller Road should be stop controlled.

If you have any questions or require any additional information, please contact the undersigned.

Very truly yours,

HUBBELL, ROTH & CLARK, INC.

Colleen Hill-Stramsak, P.E., PTOE
Associate

CH-S/cob/bjl

Attachment A – Turning Movement Counts
Attachment B – Synchro Reports

pc: McKenna Associates; Paul Lippens
HRC; Jamie Burton, Chuck Hart, File

HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915

Attachment A: Turning Movement Counts

Hubbell, Roth & Clark, Inc.

555 Hulet Drive
Bloomfield Hills, Michigan, 48303
(248) 454-6300

Job Number: 20150384
Date: 5/12/2016
Location: Cedar Street and Holt Road
Counted by: KMK

File Name : Holt_Cedar
Site Code : 20150384
Start Date : 5/12/2016
Page No : 1

Groups Printed- Unshifted - Bank 1

	HOLT Eastbound					HOLT Westbound					CEDAR Northbound					CEDAR Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	12	80	20	0	112	15	67	17	0	99	11	37	23	1	72	11	41	6	0	58	341
07:15 AM	14	113	10	0	137	20	65	26	0	111	15	38	26	0	79	16	52	8	0	76	403
07:30 AM	17	114	18	0	149	18	38	30	0	86	10	62	28	0	100	21	64	4	0	89	424
07:45 AM	14	126	33	2	175	21	62	32	1	116	16	65	17	0	98	8	68	5	4	85	474
Total	57	433	81	2	573	74	232	105	1	412	52	202	94	1	349	56	225	23	4	308	1642
08:00 AM	6	87	14	0	107	28	48	20	0	96	12	44	22	0	78	24	41	5	0	70	351
08:15 AM	12	103	19	1	135	20	85	21	0	126	13	47	30	0	90	25	44	8	2	79	430
08:30 AM	14	98	16	0	128	20	40	29	0	89	4	58	27	0	89	13	37	9	3	62	368
08:45 AM	9	49	19	0	77	12	25	21	0	58	18	56	11	0	85	19	38	7	3	67	287
Total	41	337	68	1	447	80	198	91	0	369	47	205	90	0	342	81	160	29	8	278	1436
*** BREAK ***																					
02:00 PM	7	44	21	0	72	14	43	22	4	83	33	57	20	0	110	17	65	4	3	89	354
02:15 PM	10	44	17	1	72	11	78	26	1	116	19	66	13	0	98	34	63	8	0	105	391
02:30 PM	9	69	19	0	97	19	55	31	0	105	25	90	14	1	130	26	62	8	1	97	429
02:45 PM	19	93	24	7	143	22	65	24	2	113	16	68	16	3	103	22	59	10	3	94	453
Total	45	250	81	8	384	66	241	103	7	417	93	281	63	4	441	99	249	30	7	385	1627
03:00 PM	11	68	25	6	110	11	75	32	0	118	21	70	22	5	118	20	57	19	9	105	451
03:15 PM	13	80	23	2	118	21	67	38	3	129	23	56	22	2	103	31	80	10	0	121	471
03:30 PM	12	82	23	6	123	21	97	31	1	150	28	51	29	0	108	32	57	16	5	110	491
03:45 PM	21	93	23	8	145	25	109	24	1	159	18	59	20	0	97	23	69	25	3	120	521
Total	57	323	94	22	496	78	348	125	5	556	90	236	93	7	426	106	263	70	17	456	1934
04:00 PM	9	70	25	0	104	29	89	22	2	142	26	95	36	0	157	13	58	7	1	79	482
04:15 PM	17	73	20	2	112	30	108	19	0	157	27	78	19	0	124	23	70	18	1	112	505
04:30 PM	21	92	20	1	134	17	92	21	0	130	31	61	20	0	112	29	72	4	0	105	481
04:45 PM	14	81	26	1	122	36	104	25	0	165	31	56	13	0	100	36	55	8	0	99	486
Total	61	316	91	4	472	112	393	87	2	594	115	290	88	0	493	101	255	37	2	395	1954
05:00 PM	14	61	25	2	102	24	90	28	0	142	44	107	25	1	177	28	76	10	0	114	535
05:15 PM	25	68	15	0	108	34	113	24	0	171	49	118	21	0	188	24	71	12	1	108	575
05:30 PM	15	80	23	1	119	26	114	27	0	167	37	58	14	0	109	29	67	19	0	115	510
05:45 PM	7	60	17	0	84	26	98	34	0	158	24	67	24	0	115	17	70	10	0	97	454
Total	61	269	80	3	413	110	415	113	0	638	154	350	84	1	589	98	284	51	1	434	2074
Grand Total	322	1928	495	40	2785	520	1827	624	15	2986	551	1564	512	13	2640	541	1436	240	39	2256	10667
Apprch %	11.6	69.2	17.8	1.4		17.4	61.2	20.9	0.5		20.9	59.2	19.4	0.5		24	63.7	10.6	1.7		
Total %	3	18.1	4.6	0.4	26.1	4.9	17.1	5.8	0.1	28	5.2	14.7	4.8	0.1	24.7	5.1	13.5	2.2	0.4	21.1	

Hubbell, Roth & Clark, Inc.

555 Hulet Drive
Bloomfield Hills, Michigan, 48303
(248) 454-6300

Job Number: 20150384
Date: 5/12/2016
Location: Cedar Street and Holt Road
Counted by: KMK

File Name : Holt_Cedar
Site Code : 20150384
Start Date : 5/12/2016
Page No : 2

Groups Printed- Unshifted - Bank 1

	HOLT Eastbound					HOLT Westbound					CEDAR Northbound					CEDAR Southbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Unshifted	306	1842	478	40	2666	497	1731	608	15	2851	532	1517	492	13	2554	514	1407	236	39	2196	10267
% Unshifted	95	95.5	96.6	100	95.7	95.6	94.7	97.4	100	95.5	96.6	97	96.1	100	96.7	95	98	98.3	100	97.3	96.3
Bank 1	16	86	17	0	119	23	96	16	0	135	19	47	20	0	86	27	29	4	0	60	400
% Bank 1	5	4.5	3.4	0	4.3	4.4	5.3	2.6	0	4.5	3.4	3	3.9	0	3.3	5	2	1.7	0	2.7	3.7

	HOLT Eastbound					HOLT Westbound					CEDAR Northbound					CEDAR Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	17	114	18	0	149	18	38	30	0	86	10	62	28	0	100	21	64	4	0	89	424
07:45 AM	14	126	33	2	175	21	62	32	1	116	16	65	17	0	98	8	68	5	4	85	474
08:00 AM	6	87	14	0	107	28	48	20	0	96	12	44	22	0	78	24	41	5	0	70	351
08:15 AM	12	103	19	1	135	20	85	21	0	126	13	47	30	0	90	25	44	8	2	79	430
Total Volume	49	430	84	3	566	87	233	103	1	424	51	218	97	0	366	78	217	22	6	323	1679
% App. Total	8.7	76	14.8	0.5		20.5	55	24.3	0.2		13.9	59.6	26.5	0		24.1	67.2	6.8	1.9		
PHF	.721	.853	.636	.375	.809	.777	.685	.805	.250	.841	.797	.838	.808	.000	.915	.780	.798	.688	.375	.907	.886
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	14	81	26	1	122	36	104	25	0	165	31	56	13	0	100	36	55	8	0	99	486
05:00 PM	14	61	25	2	102	24	90	28	0	142	44	107	25	1	177	28	76	10	0	114	535
05:15 PM	25	68	15	0	108	34	113	24	0	171	49	118	21	0	188	24	71	12	1	108	575
05:30 PM	15	80	23	1	119	26	114	27	0	167	37	58	14	0	109	29	67	19	0	115	510
Total Volume	68	290	89	4	451	120	421	104	0	645	161	339	73	1	574	117	269	49	1	436	2106
% App. Total	15.1	64.3	19.7	0.9		18.6	65.3	16.1	0		28	59.1	12.7	0.2		26.8	61.7	11.2	0.2		
PHF	.680	.895	.856	.500	.924	.833	.923	.929	.000	.943	.821	.718	.730	.250	.763	.813	.885	.645	.250	.948	.916

Hubbell, Roth & Clark, Inc.

555 Hulet Drive
Bloomfield Hills, Michigan, 48303
(248) 454-6300

Job Number: 20150384
Date: 5/12/2016
Location: Cedar Street and Aurelius Road
Counted by: HRC

File Name : Cedar_Aurelius
Site Code : 20150384
Start Date : 5/12/2016
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks - Bicycles on Crosswalk - Pedestrians

	Cedar Southeastbound					Cedar Northwestbound					Aurelius Northbound					Aurelius Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	56	67	0	123	5	74	2	0	81	89	8	2	0	99	6	17	2	0	25	328
07:15 AM	1	61	56	3	121	8	85	8	0	101	102	28	0	3	133	6	23	0	0	29	384
07:30 AM	2	76	40	0	118	3	109	4	0	116	93	20	1	0	114	13	12	3	1	29	377
07:45 AM	2	91	48	0	141	6	116	6	0	128	70	12	1	0	83	18	17	7	0	42	394
Total	5	284	211	3	503	22	384	20	0	426	354	68	4	3	429	43	69	12	1	125	1483
08:00 AM	2	82	42	0	126	7	90	5	1	103	68	15	2	0	85	8	20	5	2	35	349
08:15 AM	1	117	63	0	181	5	115	9	1	130	75	16	3	1	95	12	23	1	2	38	444
08:30 AM	7	68	47	0	122	7	163	7	0	177	113	24	7	0	144	6	11	4	0	21	464
08:45 AM	8	60	44	1	113	4	90	7	0	101	84	27	4	0	115	9	18	4	0	31	360
Total	18	327	196	1	542	23	458	28	2	511	340	82	16	1	439	35	72	14	4	125	1617
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Hubbell, Roth & Clark, Inc.

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File Name : Cedar_Aurelius
Site Code : 20150384
Start Date : 5/12/2016
Page No : 2

Groups Printed- Lights - Mediums - Articulated Trucks - Bicycles on Crosswalk - Pedestrians

	Cedar Southeastbound					Cedar Northwestbound					Aurelius Northbound					Aurelius Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	3	98	66	0	167	4	110	10	0	124	56	10	3	3	72	6	19	1	0	26	389
02:15 PM	2	123	96	0	221	4	104	8	0	116	47	13	6	0	66	7	11	2	0	20	423
02:30 PM	4	101	102	0	207	4	122	10	2	138	66	18	5	0	89	4	18	3	0	25	459
02:45 PM	5	100	72	0	177	8	110	8	2	128	101	30	5	1	137	9	19	4	0	32	474
Total	14	422	336	0	772	20	446	36	4	506	270	71	19	4	364	26	67	10	0	103	1745
03:00 PM	3	104	85	0	192	10	111	13	0	134	59	25	5	2	91	6	20	3	0	29	446
03:15 PM	5	117	103	1	226	10	90	15	3	118	54	16	2	1	73	18	25	4	0	47	464
03:30 PM	4	114	81	1	200	4	125	9	1	139	70	29	5	3	107	10	21	6	0	37	483
03:45 PM	9	98	82	0	189	8	144	11	0	163	103	37	4	3	147	4	14	7	2	27	526
Total	21	433	351	2	807	32	470	48	4	554	286	107	16	9	418	38	80	20	2	140	1919
04:00 PM	7	101	74	1	183	7	128	16	0	151	64	19	5	0	88	11	20	2	0	33	455
04:15 PM	5	99	76	0	180	6	113	10	0	129	78	24	4	0	106	15	40	4	0	59	474
04:30 PM	8	89	76	0	173	5	117	7	1	130	81	34	6	0	121	10	22	2	1	35	459
04:45 PM	4	100	94	1	199	11	110	5	0	126	59	17	7	0	83	12	22	1	0	35	443
Total	24	389	320	2	735	29	468	38	1	536	282	94	22	0	398	48	104	9	1	162	1831
05:00 PM	2	93	79	0	174	8	119	15	0	142	70	35	11	0	116	6	26	3	2	37	469
05:15 PM	7	110	93	0	210	9	158	12	0	179	61	14	2	0	77	14	34	1	1	50	516
05:30 PM	2	112	103	0	217	8	118	8	0	134	82	23	4	1	110	10	19	4	0	33	494
05:45 PM	4	95	103	0	202	12	115	9	0	136	66	17	5	0	88	23	20	2	0	45	471
Total	15	410	378	0	803	37	510	44	0	591	279	89	22	1	391	53	99	10	3	165	1950
Grand Total	97	2265	1792	8	4162	163	2736	214	11	3124	1811	511	99	18	2439	243	491	75	11	820	10545
Apprch %	2.3	54.4	43.1	0.2		5.2	87.6	6.9	0.4		74.3	21	4.1	0.7		29.6	59.9	9.1	1.3		
Total %	0.9	21.5	17	0.1	39.5	1.5	25.9	2	0.1	29.6	17.2	4.8	0.9	0.2	23.1	2.3	4.7	0.7	0.1	7.8	
Lights	97	2211	1746	0	4054	160	2675	209	0	3044	1782	495	96	0	2373	239	483	72	0	794	10265
% Lights	100	97.6	97.4	0	97.4	98.2	97.8	97.7	0	97.4	98.4	96.9	97	0	97.3	98.4	98.4	96	0	96.8	97.3
Mediums	0	47	44	0	91	3	57	5	0	65	28	15	2	0	45	4	8	3	0	15	216
% Mediums	0	2.1	2.5	0	2.2	1.8	2.1	2.3	0	2.1	1.5	2.9	2	0	1.8	1.6	1.6	4	0	1.8	2
Articulated Trucks	0	7	2	0	9	0	4	0	0	4	1	1	1	0	3	0	0	0	0	0	16
% Articulated Trucks	0	0.3	0.1	0	0.2	0	0.1	0	0	0.1	0.1	0.2	1	0	0.1	0	0	0	0	0	0.2
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	4	4	7
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	16.7	0.1	0	0	0	36.4	0.5	0.1
Pedestrians	0	0	0	8	8	0	0	0	11	11	0	0	0	15	15	0	0	0	7	7	41
% Pedestrians	0	0	0	100	0.2	0	0	0	100	0.4	0	0	0	83.3	0.6	0	0	0	63.6	0.9	0.4

Hubbell, Roth & Clark, Inc.

555 Hulet Drive
Bloomfield Hills, Michigan, 48303
(248) 454-6300

Job Number: 20150384
Date: 5/12/2016
Location: Cedar Street and Aurelius Road
Counted by: HRC

File Name : Cedar_Aurelius
Site Code : 20150384
Start Date : 5/12/2016
Page No : 3

	Cedar Southeastbound					Cedar Northwestbound					Aurelius Northbound					Aurelius Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	2	91	48	0	141	6	116	6	0	128	70	12	1	0	83	18	17	7	0	42	394
08:00 AM	2	82	42	0	126	7	90	5	1	103	68	15	2	0	85	8	20	5	2	35	349
08:15 AM	1	117	63	0	181	5	115	9	1	130	75	16	3	1	95	12	23	1	2	38	444
08:30 AM	7	68	47	0	122	7	163	7	0	177	113	24	7	0	144	6	11	4	0	21	464
Total Volume	12	358	200	0	570	25	484	27	2	538	326	67	13	1	407	44	71	17	4	136	1651
% App. Total	2.1	62.8	35.1	0		4.6	90	5	0.4		80.1	16.5	3.2	0.2		32.4	52.2	12.5	2.9		
PHF	.429	.765	.794	.000	.787	.893	.742	.750	.500	.760	.721	.698	.464	.250	.707	.611	.772	.607	.500	.810	.890
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	2	93	79	0	174	8	119	15	0	142	70	35	11	0	116	6	26	3	2	37	469
05:15 PM	7	110	93	0	210	9	158	12	0	179	61	14	2	0	77	14	34	1	1	50	516
05:30 PM	2	112	103	0	217	8	118	8	0	134	82	23	4	1	110	10	19	4	0	33	494
05:45 PM	4	95	103	0	202	12	115	9	0	136	66	17	5	0	88	23	20	2	0	45	471
Total Volume	15	410	378	0	803	37	510	44	0	591	279	89	22	1	391	53	99	10	3	165	1950
% App. Total	1.9	51.1	47.1	0		6.3	86.3	7.4	0		71.4	22.8	5.6	0.3		32.1	60	6.1	1.8		
PHF	.536	.915	.917	.000	.925	.771	.807	.733	.000	.825	.851	.636	.500	.250	.843	.576	.728	.625	.375	.825	.945

HUBBELL, ROTH & CLARK, INC
CONSULTING ENGINEERS SINCE 1915

Attachment B: Synchro Reports

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	49	430	84	87	233	103	78	217	22	51	218	97
Future Volume (vph)	49	430	84	87	233	103	78	217	22	51	218	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8	5.8	5.8	5.8		5.7			5.7	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.95			0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98		1.00			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.99			0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.99			0.99	
Satd. Flow (prot)	1765	1863	1583	1770	1863	1555		3454			3356	
Flt Permitted	0.59	1.00	1.00	0.18	1.00	1.00		0.99			0.99	
Satd. Flow (perm)	1095	1863	1583	327	1863	1555		3454			3356	
Peak-hour factor, PHF	0.81	0.81	0.81	0.84	0.84	0.84	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	60	531	104	104	277	123	86	238	24	55	237	105
RTOR Reduction (vph)	0	0	67	0	0	85	0	6	0	0	37	0
Lane Group Flow (vph)	60	531	37	104	277	38	0	342	0	0	360	0
Confl. Peds. (#/hr)	6					6	1		3	3		1
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA		Split	NA	
Protected Phases	7	4		3	8		1	1		2	2	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	30.6	30.6	30.6	26.7	26.7	26.7		14.1			14.8	
Effective Green, g (s)	30.6	30.6	30.6	26.7	26.7	26.7		14.1			14.8	
Actuated g/C Ratio	0.35	0.35	0.35	0.31	0.31	0.31		0.16			0.17	
Clearance Time (s)	5.8	5.8	5.8	5.8	5.8	5.8		5.7			5.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	448	659	560	166	575	480		563			574	
v/s Ratio Prot	0.01	c0.29		0.03	c0.15			c0.10			c0.11	
v/s Ratio Perm	0.04		0.02	0.17		0.02						
v/c Ratio	0.13	0.81	0.07	0.63	0.48	0.08		0.61			0.63	
Uniform Delay, d1	19.1	25.2	18.4	24.1	24.2	21.1		33.6			33.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	
Incremental Delay, d2	0.1	7.1	0.0	7.2	0.6	0.1		1.9			2.1	
Delay (s)	19.2	32.3	18.5	31.3	24.9	21.2		35.4			35.4	
Level of Service	B	C	B	C	C	C		D			D	
Approach Delay (s)		29.1			25.3			35.4			35.4	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	86.4	Sum of lost time (s)	23.0
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	326	67	13	44	71	17	12	358	200	25	484	27
Future Volume (vph)	326	67	13	44	71	17	12	358	200	25	484	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			5.8	5.8		6.1	
Lane Util. Factor	0.95	0.95		1.00	1.00			0.95	1.00		0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.98		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	0.97			1.00	0.85		0.99	
Flt Protected	0.95	0.97		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1681	1700		1770	1809			3534	1547		3499	
Flt Permitted	0.95	0.97		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (perm)	1681	1700		1770	1809			3534	1547		3499	
Peak-hour factor, PHF	0.71	0.71	0.71	0.81	0.81	0.81	0.79	0.79	0.79	0.76	0.76	0.76
Adj. Flow (vph)	459	94	18	54	88	21	15	453	253	33	637	36
RTOR Reduction (vph)	0	2	0	0	8	0	0	0	202	0	3	0
Lane Group Flow (vph)	285	284	0	54	101	0	0	468	51	0	703	0
Confl. Peds. (#/hr)			2	2			4		1	1		4
Turn Type	Split	NA		Split	NA		Split	NA	Perm	Split	NA	
Protected Phases	3	3		4	4		2	2		1	1	
Permitted Phases									2			
Actuated Green, G (s)	21.9	21.9		11.8	11.8			20.3	20.3		22.0	
Effective Green, g (s)	21.9	21.9		11.8	11.8			20.3	20.3		22.0	
Actuated g/C Ratio	0.22	0.22		0.12	0.12			0.20	0.20		0.22	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.8	5.8		6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	368	372		209	213			718	314		770	
v/s Ratio Prot	c0.17	0.17		0.03	c0.06			c0.13			c0.20	
v/s Ratio Perm									0.03			
v/c Ratio	0.77	0.76		0.26	0.47			0.65	0.16		0.91	
Uniform Delay, d1	36.7	36.6		40.1	41.2			36.6	32.8		38.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	9.8	8.9		0.7	1.7			4.6	1.1		15.1	
Delay (s)	46.5	45.5		40.7	42.8			41.1	33.9		53.1	
Level of Service	D	D		D	D			D	C		D	
Approach Delay (s)		46.0			42.1			38.6			53.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	99.9	Sum of lost time (s)	23.9
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	49	430	84	87	233	103	78	217	22	51	218	97
Future Volume (vph)	49	430	84	87	233	103	78	217	22	51	218	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8	5.8	5.8	5.8	4.5	5.7		4.5	5.7	5.7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1765	1863	1583	1770	1863	1536	1769	1833		1767	1863	1549
Flt Permitted	0.48	1.00	1.00	0.15	1.00	1.00	0.54	1.00		0.51	1.00	1.00
Satd. Flow (perm)	895	1863	1583	279	1863	1536	1010	1833		942	1863	1549
Peak-hour factor, PHF	0.81	0.81	0.81	0.84	0.84	0.84	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	60	531	104	104	277	123	86	238	24	55	237	105
RTOR Reduction (vph)	0	0	71	0	0	84	0	4	0	0	0	71
Lane Group Flow (vph)	60	531	33	104	277	39	86	258	0	55	237	34
Confl. Peds. (#/hr)	6					6	1		3	3		1
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		2
Actuated Green, G (s)	32.0	26.7	26.7	32.0	26.7	26.7	31.5	27.4		31.5	27.4	27.4
Effective Green, g (s)	32.0	26.7	26.7	32.0	26.7	26.7	31.5	27.4		31.5	27.4	27.4
Actuated g/C Ratio	0.38	0.31	0.31	0.38	0.31	0.31	0.37	0.32		0.37	0.32	0.32
Clearance Time (s)	5.8	5.8	5.8	5.8	5.8	5.8	4.5	5.7		4.5	5.7	5.7
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	389	583	495	197	583	480	409	588		387	598	497
v/s Ratio Prot	0.01	c0.29		c0.03	0.15		c0.01	c0.14		0.01	0.13	
v/s Ratio Perm	0.05		0.02	0.16		0.03	0.07			0.05		0.02
v/c Ratio	0.15	0.91	0.07	0.53	0.48	0.08	0.21	0.44		0.14	0.40	0.07
Uniform Delay, d1	17.4	28.2	20.6	20.0	23.6	20.6	17.9	22.9		17.6	22.5	20.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	18.5	0.1	2.5	0.6	0.1	0.3	2.4		0.2	2.0	0.3
Delay (s)	17.6	46.6	20.6	22.5	24.3	20.7	18.2	25.2		17.8	24.5	20.4
Level of Service	B	D	C	C	C	C	B	C		B	C	C
Approach Delay (s)		40.2			23.0			23.5			22.5	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	85.3	Sum of lost time (s)	21.8
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	326	67	13	44	71	17	12	358	200	25	484	27
Future Volume (vph)	326	67	13	44	71	17	12	358	200	25	484	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		5.8	5.8	5.8	6.1	6.1	
Lane Util. Factor	0.95	0.95		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	0.97		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1699		1770	1809		1770	1863	1547	1768	1845	
Flt Permitted	0.95	0.97		0.95	1.00		0.12	1.00	1.00	0.33	1.00	
Satd. Flow (perm)	1681	1699		1770	1809		216	1863	1547	607	1845	
Peak-hour factor, PHF	0.71	0.71	0.71	0.81	0.81	0.81	0.79	0.79	0.79	0.76	0.76	0.76
Adj. Flow (vph)	459	94	18	54	88	21	15	453	253	33	637	36
RTOR Reduction (vph)	0	2	0	0	10	0	0	0	153	0	2	0
Lane Group Flow (vph)	285	284	0	54	99	0	15	453	100	33	671	0
Confl. Peds. (#/hr)			2	2			4		1	1		4
Turn Type	Split	NA		Split	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	2	2		6	6			4			8	
Permitted Phases							4		4	8		
Actuated Green, G (s)	26.2	26.2		8.8	8.8		34.5	34.5	34.5	34.2	34.2	
Effective Green, g (s)	26.2	26.2		8.8	8.8		34.5	34.5	34.5	34.2	34.2	
Actuated g/C Ratio	0.30	0.30		0.10	0.10		0.40	0.40	0.40	0.39	0.39	
Clearance Time (s)	6.0	6.0		6.0	6.0		5.8	5.8	5.8	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	504	509		178	182		85	736	611	237	722	
v/s Ratio Prot	c0.17	0.17		0.03	c0.05			0.24			c0.36	
v/s Ratio Perm							0.07		0.06	0.05		
v/c Ratio	0.57	0.56		0.30	0.54		0.18	0.62	0.16	0.14	0.93	
Uniform Delay, d1	25.8	25.7		36.4	37.3		17.2	21.1	17.1	17.1	25.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.5	4.4		1.0	3.3		1.0	1.5	0.1	0.3	18.2	
Delay (s)	30.3	30.0		37.4	40.6		18.2	22.6	17.2	17.4	43.6	
Level of Service	C	C		D	D		B	C	B	B	D	
Approach Delay (s)		30.2			39.6			20.6			42.4	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	31.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	87.3	Sum of lost time (s)	18.1
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	49	430	84	87	233	103	78	217	22	51	218	97
Future Volume (vph)	49	430	84	87	233	103	78	217	22	51	218	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8	5.8	5.8	5.8		5.7			5.7	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.95			0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98		1.00			0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.99			0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.99			0.99	
Satd. Flow (prot)	1765	1863	1583	1770	1863	1554		3454			3356	
Flt Permitted	0.58	1.00	1.00	0.19	1.00	1.00		0.99			0.99	
Satd. Flow (perm)	1072	1863	1583	347	1863	1554		3454			3356	
Peak-hour factor, PHF	0.81	0.81	0.81	0.84	0.84	0.84	0.91	0.91	0.91	0.92	0.92	0.92
Growth Factor (vph)	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%
Adj. Flow (vph)	65	573	112	112	300	132	93	258	26	60	256	114
RTOR Reduction (vph)	0	0	72	0	0	94	0	6	0	0	37	0
Lane Group Flow (vph)	65	573	40	112	300	38	0	371	0	0	393	0
Confl. Peds. (#/hr)	6					6	1		3	3		1
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA		Split	NA	
Protected Phases	7	4		3	8		1	1		2	2	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	32.7	32.7	32.7	26.7	26.7	26.7		15.1			15.6	
Effective Green, g (s)	32.7	32.7	32.7	26.7	26.7	26.7		15.1			15.6	
Actuated g/C Ratio	0.36	0.36	0.36	0.29	0.29	0.29		0.16			0.17	
Clearance Time (s)	5.8	5.8	5.8	5.8	5.8	5.8		5.7			5.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	467	665	565	181	543	452		569			571	
v/s Ratio Prot	0.02	c0.31		0.03	c0.16			c0.11			c0.12	
v/s Ratio Perm	0.03		0.03	0.14		0.02						
v/c Ratio	0.14	0.86	0.07	0.62	0.55	0.09		0.65			0.69	
Uniform Delay, d1	20.2	27.3	19.4	26.3	27.4	23.6		35.8			35.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	
Incremental Delay, d2	0.1	11.1	0.1	6.2	1.2	0.1		2.7			3.4	
Delay (s)	20.3	38.5	19.5	32.5	28.6	23.7		38.5			39.2	
Level of Service	C	D	B	C	C	C		D			D	
Approach Delay (s)		34.0			28.2			38.5			39.2	
Approach LOS		C			C			D			D	

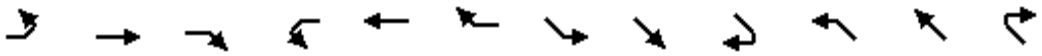
Intersection Summary			
HCM 2000 Control Delay	34.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	91.6	Sum of lost time (s)	23.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	326	67	13	44	71	17	12	358	200	25	484	27
Future Volume (vph)	326	67	13	44	71	17	12	358	200	25	484	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0			5.8	5.8		6.1	
Lane Util. Factor	0.95	0.95		1.00	1.00			0.95	1.00		0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.98		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	0.97			1.00	0.85		0.99	
Flt Protected	0.95	0.97		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1681	1699		1770	1808			3534	1547		3500	
Flt Permitted	0.95	0.97		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (perm)	1681	1699		1770	1808			3534	1547		3500	
Peak-hour factor, PHF	0.71	0.71	0.71	0.81	0.81	0.81	0.79	0.79	0.79	0.76	0.76	0.76
Growth Factor (vph)	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%
Adj. Flow (vph)	496	102	20	59	95	23	16	489	273	36	688	38
RTOR Reduction (vph)	0	2	0	0	10	0	0	0	226	0	4	0
Lane Group Flow (vph)	308	308	0	59	108	0	0	505	47	0	758	0
Confl. Peds. (#/hr)			2	2			4		1	1		4
Turn Type	Split	NA		Split	NA		Split	NA	Perm	Split	NA	
Protected Phases	3	3		4	4		2	2		1	1	
Permitted Phases									2			
Actuated Green, G (s)	20.0	20.0		11.5	11.5			15.9	15.9		21.9	
Effective Green, g (s)	20.0	20.0		11.5	11.5			15.9	15.9		21.9	
Actuated g/C Ratio	0.21	0.21		0.12	0.12			0.17	0.17		0.23	
Clearance Time (s)	6.0	6.0		6.0	6.0			5.8	5.8		6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	360	364		218	223			602	263		822	
v/s Ratio Prot	c0.18	0.18		0.03	c0.06			c0.14			c0.22	
v/s Ratio Perm									0.03			
v/c Ratio	0.86	0.85		0.27	0.49			0.84	0.18		0.92	
Uniform Delay, d1	35.2	35.1		37.0	38.1			37.4	33.1		34.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	17.7	16.3		0.7	1.7			13.2	1.5		15.7	
Delay (s)	52.9	51.4		37.7	39.8			50.6	34.5		50.5	
Level of Service	D	D		D	D			D	C		D	
Approach Delay (s)		52.1			39.1			44.9			50.5	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	48.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	93.2	Sum of lost time (s)	23.9
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	49	430	84	87	233	103	78	217	22	51	218	97
Future Volume (vph)	49	430	84	87	233	103	78	217	22	51	218	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1766	1863	1583	1770	1863	1536	1769	1833		1767	1863	1549
Flt Permitted	0.43	1.00	1.00	0.14	1.00	1.00	0.48	1.00		0.45	1.00	1.00
Satd. Flow (perm)	801	1863	1583	258	1863	1536	901	1833		830	1863	1549
Peak-hour factor, PHF	0.81	0.81	0.81	0.84	0.84	0.84	0.91	0.91	0.91	0.92	0.92	0.92
Growth Factor (vph)	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%
Adj. Flow (vph)	65	573	112	112	300	132	93	258	26	60	256	114
RTOR Reduction (vph)	0	0	74	0	0	87	0	4	0	0	0	75
Lane Group Flow (vph)	65	573	38	112	300	45	93	280	0	60	256	39
Confl. Peds. (#/hr)	6					6	1		3	3		1
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		2
Actuated Green, G (s)	32.4	27.1	27.1	32.4	27.1	27.1	31.3	27.2		31.3	27.2	27.2
Effective Green, g (s)	36.0	28.9	28.9	36.0	28.9	28.9	32.3	28.9		32.3	28.9	28.9
Actuated g/C Ratio	0.42	0.34	0.34	0.42	0.34	0.34	0.38	0.34		0.38	0.34	0.34
Clearance Time (s)	5.8	5.8	5.8	5.8	5.8	5.8	4.5	5.7		4.5	5.7	5.7
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	417	629	535	234	629	519	387	619		363	629	523
v/s Ratio Prot	0.01	c0.31		c0.04	0.16		c0.01	c0.15		0.01	0.14	
v/s Ratio Perm	0.05		0.02	0.16		0.03	0.08			0.05		0.02
v/c Ratio	0.16	0.91	0.07	0.48	0.48	0.09	0.24	0.45		0.17	0.41	0.07
Uniform Delay, d1	15.2	27.1	19.2	18.6	22.3	19.3	17.7	22.1		17.4	21.7	19.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	17.5	0.1	1.5	0.6	0.1	0.3	2.4		0.2	1.9	0.3
Delay (s)	15.4	44.5	19.2	20.1	22.9	19.4	18.0	24.5		17.6	23.7	19.5
Level of Service	B	D	B	C	C	B	B	C		B	C	B
Approach Delay (s)		38.2			21.5			22.9			21.7	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	85.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	326	67	13	44	71	17	12	358	200	25	484	27
Future Volume (vph)	326	67	13	44	71	17	12	358	200	25	484	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.95	0.95		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	0.97		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1698		1770	1808		1770	1863	1547	1770	1845	
Flt Permitted	0.95	0.97		0.95	1.00		0.11	1.00	1.00	0.31	1.00	
Satd. Flow (perm)	1681	1698		1770	1808		208	1863	1547	584	1845	
Peak-hour factor, PHF	0.71	0.71	0.71	0.81	0.81	0.81	0.79	0.79	0.79	0.76	0.76	0.76
Growth Factor (vph)	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%
Adj. Flow (vph)	496	102	20	59	95	23	16	489	273	36	688	38
RTOR Reduction (vph)	0	2	0	0	9	0	0	0	148	0	2	0
Lane Group Flow (vph)	308	308	0	59	109	0	16	489	125	36	724	0
Confl. Peds. (#/hr)			2	2			4		1	1		4
Turn Type	Split	NA		Split	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	2	2		6	6			4			8	
Permitted Phases							4		4	8		
Actuated Green, G (s)	26.0	26.0		12.0	12.0		43.8	43.8	43.8	43.5	43.5	
Effective Green, g (s)	28.0	28.0		14.0	14.0		45.6	45.6	45.6	45.6	45.6	
Actuated g/C Ratio	0.28	0.28		0.14	0.14		0.46	0.46	0.46	0.46	0.46	
Clearance Time (s)	6.0	6.0		6.0	6.0		5.8	5.8	5.8	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	472	477		248	254		95	852	708	267	844	
v/s Ratio Prot	c0.18	0.18		0.03	c0.06			0.26			c0.39	
v/s Ratio Perm							0.08		0.08	0.06		
v/c Ratio	0.65	0.65		0.24	0.43		0.17	0.57	0.18	0.13	0.86	
Uniform Delay, d1	31.5	31.4		38.1	39.2		15.9	19.9	15.9	15.6	24.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.9	6.6		0.5	1.2		0.8	0.9	0.1	0.2	8.6	
Delay (s)	38.4	38.0		38.6	40.3		16.7	20.8	16.0	15.8	32.8	
Level of Service	D	D		D	D		B	C	B	B	C	
Approach Delay (s)		38.2			39.7			19.0			32.0	
Approach LOS		D			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	99.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	68	290	89	120	421	104	117	269	49	161	339	73
Future Volume (vph)	68	290	89	120	421	104	117	269	49	161	339	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8	5.8	5.8	5.8		5.7			5.7	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.95			0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.99			0.99	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583		3422			3423	
Flt Permitted	0.16	1.00	1.00	0.32	1.00	1.00		0.99			0.99	
Satd. Flow (perm)	296	1863	1583	590	1863	1583		3422			3423	
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.95	0.95	0.95	0.76	0.76	0.76
Adj. Flow (vph)	74	315	97	128	448	111	123	283	52	212	446	96
RTOR Reduction (vph)	0	0	72	0	0	81	0	9	0	0	10	0
Lane Group Flow (vph)	74	315	25	128	448	30	0	449	0	0	744	0
Confl. Peds. (#/hr)									4	4		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA		Split	NA	
Protected Phases	7	4		3	8		1	1		2	2	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	34.2	28.6	28.6	37.4	30.2	30.2		26.4			26.4	
Effective Green, g (s)	34.2	28.6	28.6	37.4	30.2	30.2		26.4			26.4	
Actuated g/C Ratio	0.31	0.26	0.26	0.34	0.27	0.27		0.24			0.24	
Clearance Time (s)	5.8	5.8	5.8	5.8	5.8	5.8		5.7			5.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	164	477	405	273	504	428		809			809	
v/s Ratio Prot	0.02	0.17		c0.03	c0.24			c0.13			c0.22	
v/s Ratio Perm	0.12		0.02	0.13		0.02						
v/c Ratio	0.45	0.66	0.06	0.47	0.89	0.07		0.55			0.92	
Uniform Delay, d1	29.9	37.2	31.4	27.5	39.1	30.3		37.4			41.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	
Incremental Delay, d2	2.0	3.4	0.1	1.3	17.2	0.1		2.7			17.3	
Delay (s)	31.8	40.6	31.4	28.8	56.3	30.3		40.2			58.8	
Level of Service	C	D	C	C	E	C		D			E	
Approach Delay (s)		37.4			47.0			40.2			58.8	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	47.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	111.6	Sum of lost time (s)	23.0
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	279	89	22	53	99	10	15	410	378	37	510	44
Future Volume (vph)	279	89	22	53	99	10	15	410	378	37	510	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8		6.0	6.0			5.8	5.8		6.1	
Lane Util. Factor	0.95	0.95		1.00	1.00			0.95	1.00		0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.98		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	0.99			1.00	0.85		0.99	
Flt Protected	0.95	0.98		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1681	1703		1770	1837			3533	1547		3482	
Flt Permitted	0.95	0.98		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (perm)	1681	1703		1770	1837			3533	1547		3482	
Peak-hour factor, PHF	0.84	0.84	0.84	0.83	0.83	0.83	0.93	0.93	0.93	0.83	0.83	0.83
Adj. Flow (vph)	332	106	26	64	119	12	16	441	406	45	614	53
RTOR Reduction (vph)	0	5	0	0	3	0	0	0	334	0	6	0
Lane Group Flow (vph)	232	227	0	64	128	0	0	457	73	0	706	0
Confl. Peds. (#/hr)							3		1	1		3
Turn Type	Split	NA		Split	NA		Split	NA	Perm	Split	NA	
Protected Phases	3	3		4	4		2	2		1	1	
Permitted Phases									2			
Actuated Green, G (s)	17.1	17.1		11.8	11.8			16.0	16.0		21.0	
Effective Green, g (s)	17.1	17.1		11.8	11.8			16.0	16.0		21.0	
Actuated g/C Ratio	0.19	0.19		0.13	0.13			0.18	0.18		0.23	
Clearance Time (s)	5.8	5.8		6.0	6.0			5.8	5.8		6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	320	325		233	241			630	276		816	
v/s Ratio Prot	c0.14	0.13		0.04	c0.07			c0.13			c0.20	
v/s Ratio Perm									0.05			
v/c Ratio	0.72	0.70		0.27	0.53			0.73	0.26		0.87	
Uniform Delay, d1	34.0	33.8		35.0	36.3			34.7	31.7		32.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	7.9	6.4		0.6	2.1			7.1	2.3		9.5	
Delay (s)	42.0	40.3		35.7	38.4			41.9	34.0		42.4	
Level of Service	D	D		D	D			D	C		D	
Approach Delay (s)		41.1			37.5			38.2			42.4	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	89.6	Sum of lost time (s)	23.7
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	68	290	89	120	421	104	117	269	49	161	339	73
Future Volume (vph)	68	290	89	120	421	104	117	269	49	161	339	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1812		1768	1863	1583
Flt Permitted	0.20	1.00	1.00	0.38	1.00	1.00	0.29	1.00		0.37	1.00	1.00
Satd. Flow (perm)	367	1863	1583	707	1863	1583	538	1812		695	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.95	0.95	0.95	0.76	0.76	0.76
Adj. Flow (vph)	74	315	97	128	448	111	123	283	52	212	446	96
RTOR Reduction (vph)	0	0	68	0	0	77	0	7	0	0	0	61
Lane Group Flow (vph)	74	315	29	128	448	34	123	328	0	212	446	35
Confl. Peds. (#/hr)									4	4		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		2
Actuated Green, G (s)	29.2	23.8	23.8	29.2	23.8	23.8	32.3	28.1		35.1	29.5	29.5
Effective Green, g (s)	32.8	25.6	25.6	32.8	25.6	25.6	33.3	29.8		36.1	31.2	31.2
Actuated g/C Ratio	0.39	0.30	0.30	0.39	0.30	0.30	0.39	0.35		0.43	0.37	0.37
Clearance Time (s)	5.8	5.8	5.8	5.8	5.8	5.8	4.5	5.7		4.5	5.7	5.7
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	261	563	478	364	563	478	279	637		373	686	583
v/s Ratio Prot	0.02	0.17		c0.03	c0.24		0.02	0.18		c0.04	c0.24	
v/s Ratio Perm	0.09		0.02	0.11		0.02	0.15			0.20		0.02
v/c Ratio	0.28	0.56	0.06	0.35	0.80	0.07	0.44	0.51		0.57	0.65	0.06
Uniform Delay, d1	18.2	24.8	21.0	17.6	27.1	21.1	17.8	21.7		17.2	22.2	17.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	1.2	0.1	0.6	7.7	0.1	1.1	3.0		2.0	4.7	0.2
Delay (s)	18.8	26.0	21.1	18.2	34.8	21.1	18.9	24.7		19.1	27.0	17.5
Level of Service	B	C	C	B	C	C	B	C		B	C	B
Approach Delay (s)		23.9			29.5			23.1			23.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	84.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	279	89	22	53	99	10	15	410	378	37	510	44
Future Volume (vph)	279	89	22	53	99	10	15	410	378	37	510	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.95	0.95		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1681	1717		1770	1837		1770	1863	1547	1768	1837	
Flt Permitted	0.95	1.00		0.95	1.00		0.11	1.00	1.00	0.32	1.00	
Satd. Flow (perm)	1681	1717		1770	1837		207	1863	1547	588	1837	
Peak-hour factor, PHF	0.84	0.84	0.84	0.83	0.83	0.83	0.93	0.93	0.93	0.83	0.83	0.83
Adj. Flow (vph)	332	106	26	64	119	12	16	441	406	45	614	53
RTOR Reduction (vph)	0	8	0	0	4	0	0	0	244	0	3	0
Lane Group Flow (vph)	332	124	0	64	127	0	16	441	162	45	664	0
Confl. Peds. (#/hr)							3		1	1		3
Turn Type	Split	NA		Split	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	2	2		6	6			4			8	
Permitted Phases							4		4	8		
Actuated Green, G (s)	26.0	26.0		12.1	12.1		34.2	34.2	34.2	33.9	33.9	
Effective Green, g (s)	28.0	28.0		14.1	14.1		36.0	36.0	36.0	36.0	36.0	
Actuated g/C Ratio	0.31	0.31		0.16	0.16		0.40	0.40	0.40	0.40	0.40	
Clearance Time (s)	6.0	6.0		6.0	6.0		5.8	5.8	5.8	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	522	533		276	287		82	744	618	234	733	
v/s Ratio Prot	c0.20	0.07		0.04	c0.07			0.24			c0.36	
v/s Ratio Perm							0.08		0.10	0.08		
v/c Ratio	0.64	0.23		0.23	0.44		0.20	0.59	0.26	0.19	0.91	
Uniform Delay, d1	26.7	23.1		33.3	34.4		17.6	21.3	18.1	17.6	25.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.8	1.0		0.4	1.1		1.2	1.3	0.2	0.4	14.7	
Delay (s)	32.5	24.1		33.7	35.5		18.8	22.6	18.4	18.0	40.2	
Level of Service	C	C		C	D		B	C	B	B	D	
Approach Delay (s)		30.1			34.9			20.5			38.8	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	29.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	90.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	68	290	89	120	421	104	117	269	49	161	339	73
Future Volume (vph)	68	290	89	120	421	104	117	269	49	161	339	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8	5.8	5.8	5.8		5.7			5.7	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.95			0.95	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.98			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.99			0.99	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583		3422			3423	
Flt Permitted	0.14	1.00	1.00	0.28	1.00	1.00		0.99			0.99	
Satd. Flow (perm)	255	1863	1583	527	1863	1583		3422			3423	
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.95	0.95	0.95	0.76	0.76	0.76
Growth Factor (vph)	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%
Adj. Flow (vph)	80	340	104	138	484	119	133	306	56	229	482	104
RTOR Reduction (vph)	0	0	77	0	0	86	0	8	0	0	10	0
Lane Group Flow (vph)	80	340	27	138	484	33	0	487	0	0	805	0
Confl. Peds. (#/hr)									4	4		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Split	NA		Split	NA	
Protected Phases	7	4		3	8		1	1		2	2	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	34.8	29.2	29.2	38.0	30.8	30.8		26.4			26.4	
Effective Green, g (s)	34.8	29.2	29.2	38.0	30.8	30.8		26.4			26.4	
Actuated g/C Ratio	0.31	0.26	0.26	0.34	0.27	0.27		0.24			0.24	
Clearance Time (s)	5.8	5.8	5.8	5.8	5.8	5.8		5.7			5.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	154	484	411	258	511	434		805			805	
v/s Ratio Prot	0.03	0.18		c0.03	c0.26			c0.14			c0.24	
v/s Ratio Perm	0.13		0.02	0.15		0.02						
v/c Ratio	0.52	0.70	0.07	0.53	0.95	0.08		0.60			1.00	
Uniform Delay, d1	30.4	37.6	31.2	27.8	39.9	30.2		38.2			42.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00			1.00	
Incremental Delay, d2	2.9	4.6	0.1	2.1	26.8	0.1		3.4			31.7	
Delay (s)	33.3	42.2	31.3	29.9	66.7	30.2		41.6			74.6	
Level of Service	C	D	C	C	E	C		D			E	
Approach Delay (s)		38.7			54.0			41.6			74.6	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	55.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	112.2	Sum of lost time (s)	23.0
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	279	89	22	53	99	10	15	410	378	37	510	44
Future Volume (vph)	279	89	22	53	99	10	15	410	378	37	510	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8		6.0	6.0			5.8	5.8		6.1	
Lane Util. Factor	0.95	0.95		1.00	1.00			0.95	1.00		0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	0.98		1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.98		1.00	0.99			1.00	0.85		0.99	
Flt Protected	0.95	0.98		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1681	1703		1770	1837			3533	1547		3482	
Flt Permitted	0.95	0.98		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (perm)	1681	1703		1770	1837			3533	1547		3482	
Peak-hour factor, PHF	0.84	0.84	0.84	0.83	0.83	0.83	0.93	0.93	0.93	0.83	0.83	0.83
Growth Factor (vph)	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%
Adj. Flow (vph)	359	114	28	69	129	13	17	476	439	48	664	57
RTOR Reduction (vph)	0	4	0	0	3	0	0	0	352	0	5	0
Lane Group Flow (vph)	248	249	0	69	139	0	0	493	87	0	764	0
Confl. Peds. (#/hr)							3		1	1		3
Turn Type	Split	NA		Split	NA		Split	NA	Perm	Split	NA	
Protected Phases	3	3		4	4		2	2		1	1	
Permitted Phases									2			
Actuated Green, G (s)	19.9	19.9		13.4	13.4			20.3	20.3		25.6	
Effective Green, g (s)	19.9	19.9		13.4	13.4			20.3	20.3		25.6	
Actuated g/C Ratio	0.19	0.19		0.13	0.13			0.20	0.20		0.25	
Clearance Time (s)	5.8	5.8		6.0	6.0			5.8	5.8		6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	325	329		230	239			696	305		866	
v/s Ratio Prot	c0.15	0.15		0.04	c0.08			c0.14			c0.22	
v/s Ratio Perm									0.06			
v/c Ratio	0.76	0.76		0.30	0.58			0.71	0.28		0.88	
Uniform Delay, d1	39.3	39.2		40.5	42.1			38.5	35.1		37.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	10.2	9.5		0.7	3.4			6.0	2.3		10.5	
Delay (s)	49.4	48.8		41.2	45.5			44.5	37.4		47.7	
Level of Service	D	D		D	D			D	D		D	
Approach Delay (s)		49.1			44.1			41.2			47.7	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	102.9	Sum of lost time (s)	23.7
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	68	290	89	120	421	104	117	269	49	161	339	73
Future Volume (vph)	68	290	89	120	421	104	117	269	49	161	339	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.8	5.8	5.8	5.8	5.8	5.8	4.5	5.7		4.5	5.7	5.7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1812		1768	1863	1583
Flt Permitted	0.22	1.00	1.00	0.35	1.00	1.00	0.19	1.00		0.35	1.00	1.00
Satd. Flow (perm)	404	1863	1583	655	1863	1583	348	1812		652	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.95	0.95	0.95	0.76	0.76	0.76
Growth Factor (vph)	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%
Adj. Flow (vph)	80	340	104	138	484	119	133	306	56	229	482	104
RTOR Reduction (vph)	0	0	73	0	0	81	0	7	0	0	0	72
Lane Group Flow (vph)	80	340	31	138	484	38	133	355	0	229	482	32
Confl. Peds. (#/hr)									4	4		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases	4		4	8		8	6			2		2
Actuated Green, G (s)	31.3	25.8	25.8	34.7	27.5	27.5	32.0	26.5		32.0	26.5	26.5
Effective Green, g (s)	31.3	25.8	25.8	34.7	27.5	27.5	32.0	26.5		32.0	26.5	26.5
Actuated g/C Ratio	0.36	0.30	0.30	0.40	0.32	0.32	0.37	0.31		0.37	0.31	0.31
Clearance Time (s)	5.8	5.8	5.8	5.8	5.8	5.8	4.5	5.7		4.5	5.7	5.7
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	232	553	470	354	590	501	218	553		311	568	483
v/s Ratio Prot	0.02	0.18		c0.03	c0.26		0.04	0.20		c0.05	c0.26	
v/s Ratio Perm	0.10		0.02	0.12		0.02	0.19			0.22		0.02
v/c Ratio	0.34	0.61	0.07	0.39	0.82	0.08	0.61	0.64		0.74	0.85	0.07
Uniform Delay, d1	19.9	26.2	21.9	17.6	27.4	20.8	20.5	26.1		23.3	28.3	21.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.9	2.0	0.1	0.7	8.9	0.1	5.0	5.6		8.8	14.6	0.3
Delay (s)	20.8	28.3	21.9	18.3	36.3	20.8	25.5	31.7		32.1	42.9	21.6
Level of Service	C	C	C	B	D	C	C	C		C	D	C
Approach Delay (s)		25.9			30.5			30.0			37.1	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	31.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	86.8	Sum of lost time (s)	21.8
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Traffic Volume (vph)	279	89	22	53	99	10	15	410	378	37	510	44
Future Volume (vph)	279	89	22	53	99	10	15	410	378	37	510	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		5.8	5.8	5.8	6.1	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1808		1770	1837		1770	1863	1546	1768	1837	
Flt Permitted	0.95	1.00		0.95	1.00		0.11	1.00	1.00	0.33	1.00	
Satd. Flow (perm)	1770	1808		1770	1837		207	1863	1546	611	1837	
Peak-hour factor, PHF	0.84	0.84	0.84	0.83	0.83	0.83	0.93	0.93	0.93	0.83	0.83	0.83
Growth Factor (vph)	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%	108%
Adj. Flow (vph)	359	114	28	69	129	13	17	476	439	48	664	57
RTOR Reduction (vph)	0	7	0	0	3	0	0	0	245	0	2	0
Lane Group Flow (vph)	359	135	0	69	139	0	17	476	194	48	719	0
Confl. Peds. (#/hr)							3		1	1		3
Turn Type	Split	NA		Split	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	2	2		6	6			4			8	
Permitted Phases							4		4	8		
Actuated Green, G (s)	28.0	28.0		13.6	13.6		47.2	47.2	47.2	46.9	46.9	
Effective Green, g (s)	28.0	28.0		13.6	13.6		47.2	47.2	47.2	46.9	46.9	
Actuated g/C Ratio	0.26	0.26		0.13	0.13		0.44	0.44	0.44	0.44	0.44	
Clearance Time (s)	6.0	6.0		6.0	6.0		5.8	5.8	5.8	6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	464	474		225	234		91	824	684	268	808	
v/s Ratio Prot	c0.20	0.07		0.04	c0.08			0.26			c0.39	
v/s Ratio Perm							0.08		0.13	0.08		
v/c Ratio	0.77	0.28		0.31	0.59		0.19	0.58	0.28	0.18	0.89	
Uniform Delay, d1	36.4	31.3		42.2	43.9		18.0	22.2	18.9	18.1	27.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.9	1.5		0.8	4.0		1.0	1.0	0.2	0.3	11.7	
Delay (s)	48.2	32.8		43.0	47.9		19.0	23.2	19.2	18.5	39.2	
Level of Service	D	C		D	D		B	C	B	B	D	
Approach Delay (s)		43.9			46.3			21.2			37.9	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	33.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	106.6	Sum of lost time (s)	18.1
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group