SECOND REVISED
DRAFT GENERIC ENVIRONMENTAL IMPACT STATEMENT

FOR THE

WESTWOOD NEIGHBORHOOD
October 2015

Westwood
A Traditional Neighborhood
in the heart of Amherst.

Project Site located at
772 North Forest Road, and 385 and 391 Maple Road
Town of Amherst, Erie County, New York

APPENDIX IV
Revised DGEIS Submission Reports, Studies & Public Correspondence

LEAD AGENCY:

TOWN OF AMHERST TOWN BOARD
5583 Main Street
Williamsville, New York 14221
Mr. Eric W. Gillert, AICP, Planning Director
Telephone: (716) 631-7051

PREPARED BY:

MENSCH
Capital Partners, LLC

MENSCH CAPITAL PARTNERS, LLC – PROJECT SPONSOR
5477 Main Street
Williamsville, New York 14221
Mr. Andrew J. Shaevel – (716) 580-3133
Mr. Brad A. Packard, AICP - (716) 631-8000
Mr. Sean W. Hopkins, Esq. – (716) 510-4338

Westwood

Westwood Neighborhood

772 North Forest Road, Williamsville, New York 14221

Clubhouse and Golf Course Assessment
August 2014

Prepared for:

New York State Office of Parks Recreation, and Historic Preservation

-Division of Buildings, Structures & Districts-

MENSCH Capital Partners, LLC

Mensch Capital Partners, LLC
5477 Main Street
Williamsville, NY 14221
Phone: 716.362.7880

Westwood

A Traditional Neighborhood
in the heart of Amherst.

August 19, 2014

Nancy Herter, Historic Preservation Program Analyst, Archaeology
New York State Office of Parks, Recreation and Historic Preservation
Division for Historic Preservation
P.O. Box 189
Waterford, NY 12188-0189

Re: SEQRA Type I Action Review- Buildings & Structures Review
Project Name: Westwood Neighborhood
Project Site: 772 North Forest Road, 385 & 391 Maple Road (Town of Amherst, Erie County)
Applicant/Project Sponsor: Mensch Capital Partners, LLC
OPRHP File #12PR04942

Dear Ms. Herter:

Thank you for providing a response letter to our request for comments concerning the proposed Westwood Neighborhood mixed use project ("Westwood") located within the Town of Amherst, Erie County. As noted within your letter dated June 10, 2014, you have previously received the Phase 1A and Phase 1B Cultural Resource Investigation Reports as prepared by Robert Dean of Heritage Preservation & Interpretation Inc. ("HPI") for the Westwood Project Site.

We are currently coordinating with HPI to have further Phase II Site Evaluation work performed at the project site in the late summer and fall of this year. Upon completion of that work and preparation of a full Phase II Site Evaluation Report by HPI, we will forward a copy of the Report to you for your review and consideration.

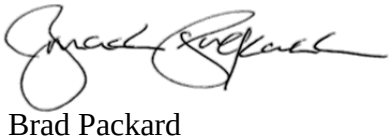
Attached to your response letter was a request for additional information from the Buildings, Structures and Districts Division of the New York State Office of Parks, Recreation and Historic Preservation. In an effort to provide a complete evaluation and opinion regarding the potential historic significance of the existing Westwood Country Club Golf Course and Clubhouse, the Division of Buildings, Structures and Districts has requested additional information concerning the history, construction and current condition of the facilities. Please find attached the following exhibits intended to provide the necessary information as per its request:

- Exhibit "A": Project Site and History Description;
- Exhibit "B": Project Site and Clubhouse Photographs; and
- Exhibit "C": Town of Amherst Historic Preservation Commission Site Assessment as per the Updated Local Reconnaissance Level Survey of Historic Resources

In terms of our current plans regarding future use of the Clubhouse structure, as stated within the previously provided Rezoning Application and Draft Generic Environmental Impact Statement ("DGEIS") for the Westwood Neighborhood Project, it is the Project Sponsor's intention to maintain the original historic Clubhouse structure and incorporate the facility into the mixed use redevelopment project plan for the Project Site. The Project Sponsor recognizes the cultural and potential historic value of the original clubhouse structure and is proposing a project layout that would result in the original clubhouse structure becoming a focal point for the proposed mixed use redevelopment project.

Please review the attached documents and advise if additional information is needed by the Buildings, Structures and Districts Division to complete its review. Thank you for your time concerning this matter and please feel free to contact me with any further questions or concerns.

Sincerely,



Brad Packard
Project Manager
Cell: 716.907.0746
Email: bpackard@ciminelli.com

Enc.

cc: Robert T. Englert, Program Analyst, NYSOPRHP [w/enclosures]
Andrew J. Shaevel, Managing Partner, Mensch Capital Partners, LLC
Sean Hopkins, Esq., Hopkins & Sorgi PLLC

EXHIBIT “A”

Project Site & History Description

EXHIBIT "A"

Project Site and History Description

A. Project Site Description:

The 170-acre Westwood Project Site is located at 772 North Forest Road, 385 Maple Road and 391 Maple Road in the south-central portion of the Town of Amherst, Erie County, New York ("Project Site"). The Project Site is bounded by Sheridan Drive (State Route 324) on the south; Maple Road (County Road 192) on the north; North Forest Road (County Road 294), Ellicott Creek, and the Audubon Par 3 Golf Course on the east; and Frankhauser Road and Fairways Boulevard on the west (refer to Figure A-1, General Project Location Map, located at the end of this Exhibit). The Project Site is situated approximately 0.25 mile east of Interstate 290 and approximately one mile south of the State University of New York (SUNY) at Buffalo North Campus ("UB North Campus"). Ellicott Creek crosses the south eastern boundary of the Project Site.

The Project Site is currently operated as the Westwood Country Club ("WCC" or "Club"), a private, members-only club that includes an 18-hole golf course, swimming pool and clubhouse. The original clubhouse banquet facilities, kitchen and locker rooms were built in 1928. Access to the Project Site is currently via a private driveway that connects to North Forest Road. This existing driveway extends to the entrance of the clubhouse and the existing parking spaces.

B. Westwood Country Club History:

The Project Site has been occupied by the WCC since 1945. However, the use of the Project Site as a private golf course dates to 1919, when the Willowdale Golf Club was

organized; the club began operations in 1921, when a 9-hole golf course opened on the site. The existing WCC clubhouse, built in a Tudor style, was constructed by Willowdale and opened in 1928.

After the golf club membership was adversely affected by the stock market crash of 1929 and the subsequent Great Depression, the Willowdale joined with another Jewish men's club in Buffalo (the Montefiore Club) to create the Wilmont Town and Country Club. However, this arrangement failed, and by the early 1930s, the Westwood property was opened as the Blossom Heath Country Club and was later used as a casino. In conjunction with the Forest Road Corporation (which owned the land), the WCC was re-established as a private golf and social club in 1945. For a brief narrative describing the historic transition of the Westwood site ownership, please refer to Figure A-2, Summary of Historic Map Data, located at the end of this Exhibit.

In 2011, the Project Sponsor acquired the Project Site from the equity members of the Forest Road Corporation. The equity members of Forest Road Corporation decided to sell the Project Site based on the fact the country club was no longer financially viable and the membership was only 350 members at the time of the sale. The WCC currently includes an 18-hole golf course, pool, tennis courts, and clubhouse. Although a privately-owned, members-only (non-equity) club, the WCC includes a restaurant in the clubhouse open to the public.

C. Golf Course History

Prior to being established as the 18-hole Westwood Country Club in 1945, the original club and course was founded as The Willowdale club, a 9-hole course, in 1921 [refer to Figure A-3, Willowdale Club Aerial (1927), located at the end of this Exhibit]. Anecdotal history,

Westwood Club records, and all golf trade sources surveyed credit William Edward Harries (1886-1972) with designing and overseeing construction of the original Willowdale Club golf course in 1921.[1] Furthermore, original design plans for the initial 9-hole golf course are currently on display within the Westwood men's locker room and clearly establish the firm of Harries & Hall Landscape Architects as the course designer within the plan title block (please refer to Figure A-4, Willowdale Club Golf Course Design Plan, located at the end of this Exhibit). The work was performed in association with the firm that Harries was partner of, that is, Harries & Hall of Toronto and Buffalo, originally founded in Toronto circa 1911 (the Buffalo office being established in 1916).[2] Harries was a well-known Landscape Architect whose work influenced and was responsible for many of the public works in New York, Canada, and England. One such example of a public course designed by Harries is the Town of Amherst Audubon Golf Course, originally opened in 1942 and located directly across Maple Road from the WCC.[3] A native of Buffalo, NY, Harries obtained a Bachelor of Science in Agriculture from Cornell University (1904-1908), where he studied Landscape Architecture. Mr. Harries partnered with college associates to create a very successful architectural firm that eventually had offices in both Toronto and Buffalo.[4]

The majority of historical records note Geoffrey Cornish (1914-2012) as having provided renovation design work to the Westwood Country Club. Cornish's biography identifies that he

[1] Golf Digest Magazine Online. http://courses.golfdigest.com/l/25759/Westwood-Country-Club-Westwood.
[2] "Forgotten landscape architectural firm of Harries, Hall and Kruse of Toronto and Buffalo.." The Free Library. 1999 Wilfrid Laurier University 25 Jul. 2014 http://www.thefreelibrary.com/Forgotten+landscape+architectural+firm+of+Harries%2c+Hall+and+Kruse+of...-a030235619
[3] Golf Link Online. http://www.golflink.com/golf-courses/course.aspx?course=766845.
[4] "Course Designer: Mr. William E. Harries." Oneonta Country Club. 2013. http://www.oneontacountryclub.org/course-design/.

had provided design oversight in the addition of a number of lakes to the Westwood course in 1959 as well as some minor green modification work.[5] Cornish was a golf course architect, author, and a fellow of the American Society of Golf Course Architects, he designed over 200 courses, including 9-hole additions, around the world.[6]

D. <u>Westwood Clubhouse History</u>:

The original structure of the current Westwood Clubhouse was designed by Louis Greenstein (1886-1972) in 1921 as commissioned by the owner at the time, Willowdale Country Club (Please refer to figure A-5, Louis Greenstein- Willowdale Clubhouse Construction Bid Listing, located at the end of this Exhibit). The original building was limited to a 2 story structure approximately 4,800 sq. ft. in size (48'x101') and was opened for use in 1928. Due to financial hardship associated with the stock market crash of 1929, the Willowdale Club combined with the Montefiore Club, another Jewish men's club located in the City of Buffalo. Upon foreclosing on the current Westwood Country Club site and Clubhouse, the Willowdale club membership moved their records and belongings into the Montefiore Club. Unfortunately, the Montefiore Club was subject to a fire that resulted in the destruction of the building and its contents (Please refer to Figure A-6, Montefiore Club Fire Newspaper Article, located at the end of this Exhibit). It is believed that the building plans and legal records associated with construction of the Willowdale Clubhouse were lost in the fire.

In terms of the historical integrity of the current Westwood Clubhouse structure, much of the original building fabric has been significantly altered both on the exterior and interior over

[5] GolfClubAtlas.com. "Golf Course Architecture- "Wiilowdale (now Westwood CC)". http://www.golfclubatlas.com/forum/index.php/topic,55850.10/wap2.html

[6] "Geoffrey Cornish - golf course architect - golf courses built, articles, related information". www.worldgolf.com. Retrieved 2014-07-25.

the approximately 80 years since its original construction. Additions, alteration, and renovations to the structure beginning in the 1950's and continuing more recently within the last 20 years have resulted in a clubhouse that is substantially larger than the original structure at a total building area of approximately 33,891 sq. ft. (compared to the original approximately 4,800 sq. ft. structure). The additions were typically constructed to accommodate larger banquet halls and shower/locker room areas and these additions have greatly compromised the appearance of the original clubhouse structure. An analysis of the Clubhouse site aerial photographs spanning from 1926 to 2014 clearly depicts the level of additions and alterations that have occurred over time (Please refer to Figure A-7, Historical Clubhouse Aerial Comparison, located at the end of this Exhibit).

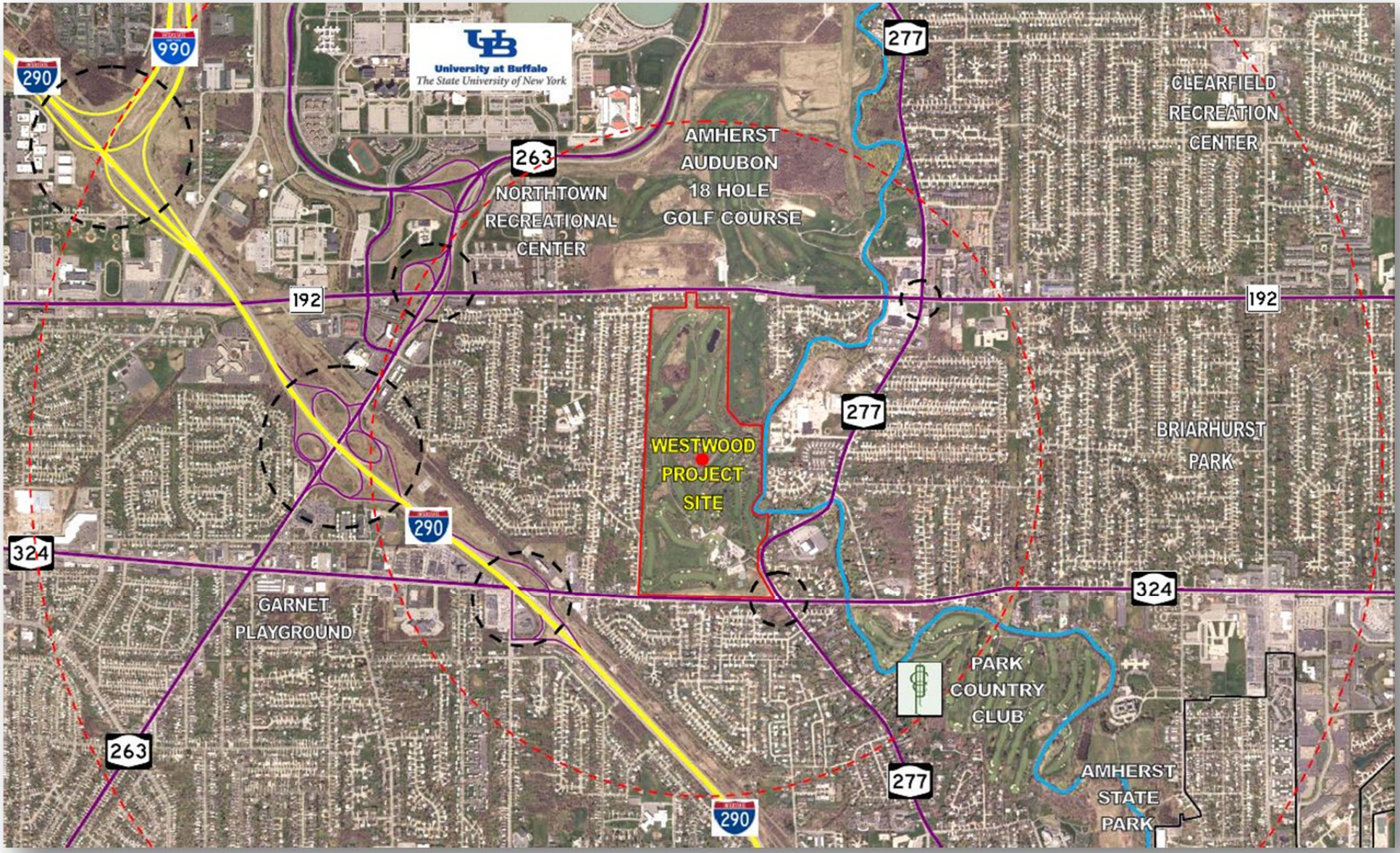


Figure A-1 General Project Location

Summary of Historic Map Data, Westwood Country Club Locality

1854 Samuel Geil: First indication of roadways and there are several residences within the project area. Neither of the current major east-west roadways (Maple Road and Sheridan Drive) exist. The roads across the southern part of the project area continue to be shown on maps and aerials up to 1938.

1866: Roads shown in 1854 remain and there are two residences present: "G. Gretsinger" and "D. Cole". The latter residence shows continuity with the 1854 listing. The "Christman" residence, north of those along the roadways is now attributed to "J. Covey".

1880: Roads in the southern part of the property are still present but their shapes have changed somewhat. One residence is still shown along the north side of the road and is attributed to "G. Gretsinger" showing continuity with the 1866 map. A portion of the property to the north of the roadway is labeled as the "Kibler Estate" and may include one or more structure symbols in the area where the "Covey" residence had been drawn. There do not appear to be any structures in the area where the Christman/Covey residence had been shown.

1900/1901: The roads in the southern part of the property conform to the arrangement shown on the 1880 map. Only two structure symbols are present along the north side of the road and appear to be in the same locations as residences previously attributed to "G. Gretsinger" and "D. Cole"

1909/1915: The majority of the area is attributed to "G. Gretzinger"(sic). Two residential structures are shown in the general locations where these have been previously plotted. This map provides additional detail indicating that the western structure had an associated barn or similar outbuilding on the south side of the road. The eastern structure is associated with two structures to the northwest.

1927: Aerial photos show the roadways that have been present since the late-19th century. They also show that construction of the country club has been started. Sheridan Drive, on the south edge of the project area, has been constructed or is in the process of being constructed. A rectangular vegetation zone is evident in the northwest quarter of the property. That general area, apparently a wooded section, is still evident on current maps and aerial photographs.

1948: The roadways that had been evident in the southern part of the property since 1866 are no longer represented. A newer roadway off North Forest Road accesses the country club buildings and the area is identified as the "Wilmot Country Club". The small wooded zone in the northwest is still apparent. There is an apparent structure symbol in the southwest quarter of this map. It seems rather outsized for symbols used for residential locations. There is no structure shown on the 1951 aerial photograph in this general area. For that reason it was thought that the symbol might have been added to the particular map that was scanned. However, other digital versions of the map do show the structure symbol.

1951: The country club locale shows more clearly and does not appear to have significantly expanded beyond its 1927 limits. The 19th century roadways in the south are more clearly defined but are probably only used as private accesses with the exception of the portion on the east representing the country club entrance.

The expansion of the country club golf course to its current extent occurred prior to 1994. Aerial photographs from 1994, 2002, 2005, and 2011 show the minimal changes to the area.

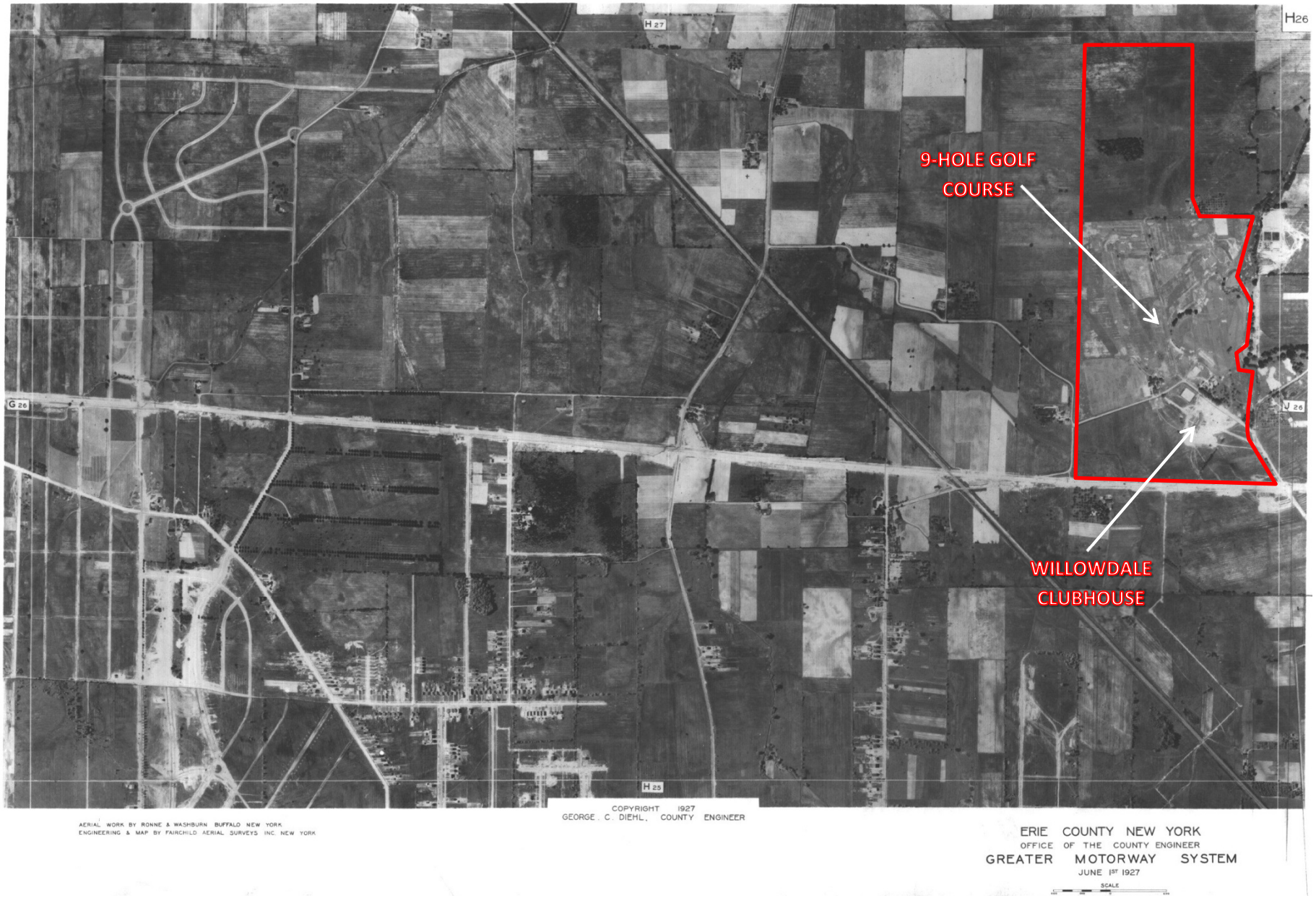


Figure A-3 Willowdale Club Aerial (1927)

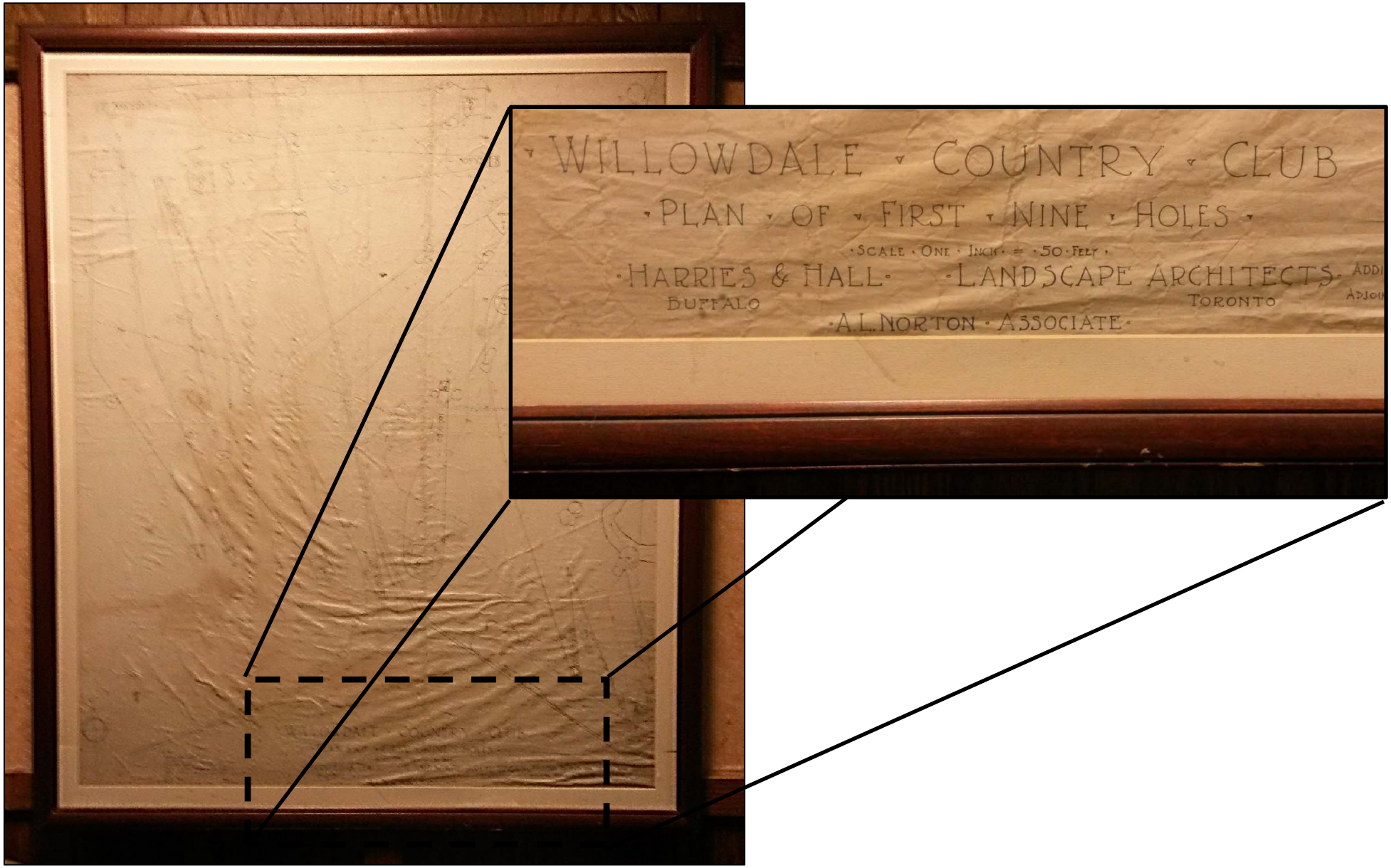


Figure A-4 Willowdale Club Golf Course Design Plan

YONKERS, N. Y.

Apt. Houses: 3 sty. 34x57. 105 Poch Hill av. Priv. plans. Owner & Bldr. P. A. Sarubbi, 3 Oak pl. Brk. Fdns.

Res. (2, 2 fam. ea.): Ea. $18,000. 2½ sty. 25x44. Jerome & Yonkers av. Archt. Wm. Heapy, 288 Hawthorne av. Owner & Bldr. Diehl Constr. Co., Mansion av. Frame. Excav.

***Res.:** $18,000. 2 sty. 21x48. Radford st. Archt. J. W. Kirst, 221 McLean av. Owner & Bldr. P. H. McGrath, 33 Purser pl. Brk. Owner taking bids on subs.

Contracts Awarded.

***Stores** (5): $20,000. 1 sty. 80x80. S. B'way & Ludlow st., Yonkers. Archt. Seelig & Finkelstein, 44 Court st., Brooklyn, N. Y., & care owner. Owner Merchants Holding Corp., J. A. Dilliard, pres., 44 Court st., Brooklyn. Gen. contr. let to James E. Dolten, 67 Radford st., Yonkers. Excav. (Note contr.).

New Rochelle, N. Y.—Office Bldg.: 3 sty. 50x100. Huguenot st., New Rochelle. Archt. Geo. B. Post & Sons, 101 Park av., N. Y. C. Owner Professional Office Corp., Dr. C. C. Guilon, 175 Center av., New Rochelle. Brk. & limestone. Archt. will take bids on gen. contr. abt. April. Drawing plans.

ALBANY, N. Y.

Bldg. (State Agricultural; add. radiation to 4th flr., htg. wk.): State & Lodge st., State Archt. Lewis F. Pilcher, Capitol, on gen. & sep. contrs. abt. March 1st. Drawing plans.

***Brewery** (alt.): Sharpsburg, Pa. Consult. Engr. Julius Schultz, 1370 Main st., Buffalo. Owner Pt. Pitt Brewing Co., Wm. Saul, Pres., Charpsburg. Drawing plans. Owner will take bids in abt. 1 month.

***Club House** (new bldg.): 2 sty. 45x101. Williamsville, N. Y. Archt. Louis Greenstein, Prudential bldg., Buffalo. Landscape Archt. Hall & Harris, 110 Franklin st., Buffalo. Owner Willow Dale Country Club, Eugene Warner, chrm. bldg. comm., 312 Prudential bldg., Buffalo. Frame & wide shingles. Drawing plans. Archt. will take bids on gen. contr. abt. March. 1st. (Note project.)

***Factory** (add.): $2,500,000. 1 sty. 240x25. River rd. Priv. plans. Owner & Bldr. Wickwire, Spencer Steel Corp., River rd. Steel. Drawing plans.

***Plant** (packing, add.): $20,000. Altoona, Pa. Archt. & Engr. Abpac Engr. Co., 663 William st., Buffalo. Owner United Home Dressed Meat Co., Frank Enders, Altoona. Plans drawn.

***Res.:** $30,000. 2½ sty. Cleveland av., nr. Delaware av. Archt. E. B. Green & Son, 75 Niagara st. Owner Geo. F. Plimpton, 50-2 Swan st. Frame. Archt. will soon ask for new bids on gen. contr. Plans drawn.

Res. & Garage: $15,000. 1½ sty. 28x56. 25 Hedley av. Archt. Geo. Dietel, 706 Humboldt Parkway. Owner Henry M. Heubusch, 30 Krettner st. Frame & brk. veneer. Archt. will take bids abt. Feb. 10. Drawing plans.

cuse. Archt. M. E. Granger, Gurney bldg., Syracuse. Owner U. S. Hoffman Machine Co., 715 Fayette st., Syracuse. Gen. contr., man. & carp. let to Dawson Bros., Union bldg., Syracuse. Rfg. to U. S. Gypsum Co., 1170 Broadway, N. Y. C. Fdns. completed.

SCHENECTADY, N. Y.

***Theater, Stores & Offices:** $400,000. 1 & 2 sty. State st., Schenectady. Archt. J. W. Morrow, care owner. Assoc. Archt. Thos. W. Lamb, 644 8th av., N. Y. C. Owner F. F. Proctor, Fred E. Proctor, pres., 1564 B'way, N. Y. C. Brk. & terra cotta. Archt. will take bids on gen. contr. abt. March 15th. Drawing plans. (Note archt.)

POUGHKEEPSIE, N. Y.

***Chapel & Vault:** Wappingers Falls, N. Y. Archt. W. J. Beardsley, 49 Market st., Poughkeepsie. Owner Wappingers Falls Cemetery Ass'n, Inc., Rolan F. Bogle, South av., Wappingers Falls. Stone. Drawing plans.

Hotel (add.): $50,000. Archt. Du Bois Carpenter, 47 Market st. Owner Hotel Windor, King & Rosen, at site. Brk. Drawing plans.

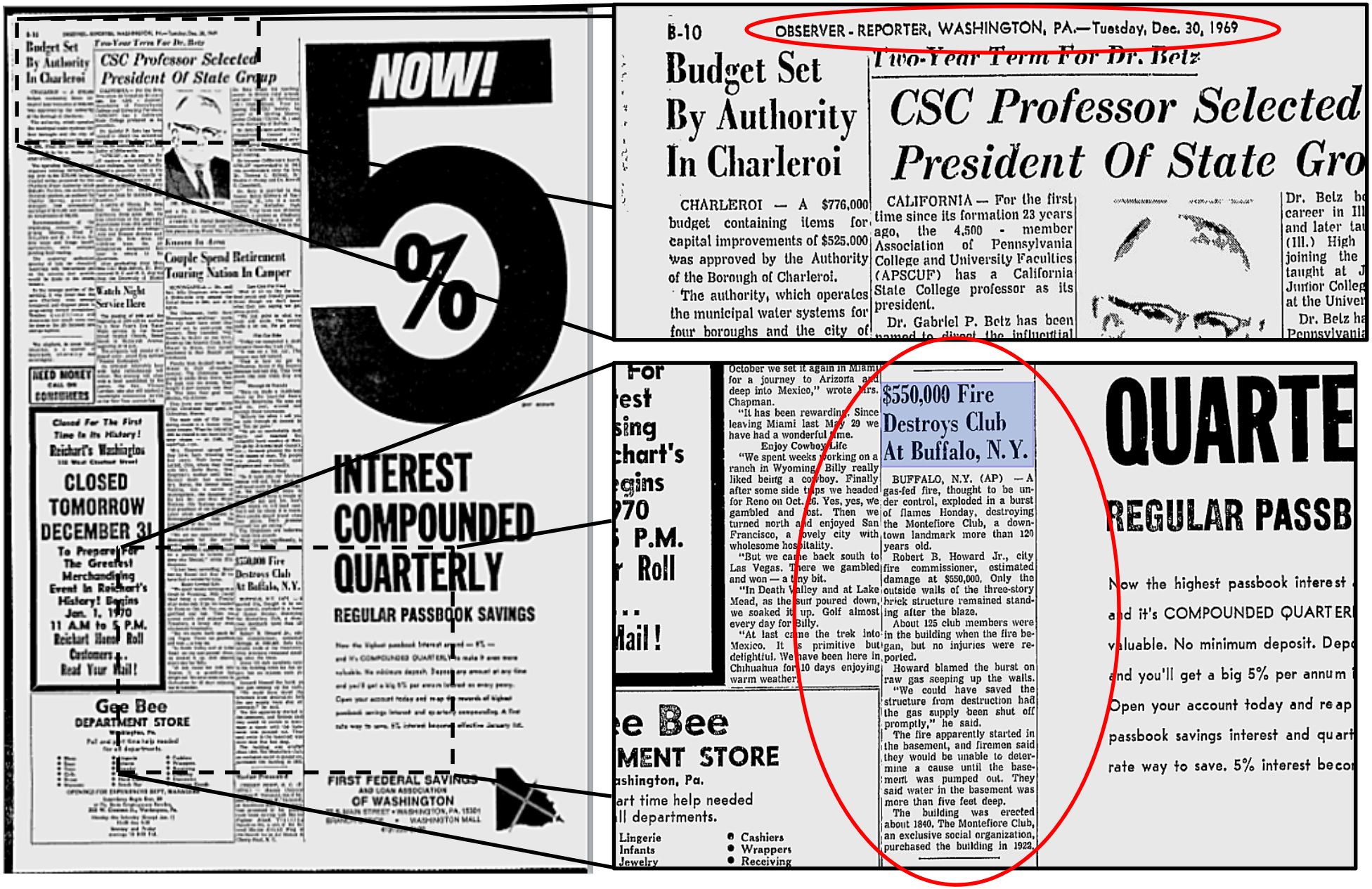
School (high): $70,000. Yorktown Heights, N. Y. Archt. W. J. Beardsley, 49 Market st., Poughkeepsie. Owner B. of E., Yorkstown Heights. Brk. Drawing plans.

Contracts Awarded.

Club House (fire repairs): Priv. plans. Owner Portchester Country Club, John S.

Source: "Building and Construction News Section." *American Contractor, Business Journal of Construction* 1 Jan. 1921. Web: http://books.google.com/books?id=OjVYAAAAYAAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

Figure A-5 Louis Greenstein- Willowdale Clubhouse Construction Bid Listing



B-10 OBSERVER - REPORTER, WASHINGTON, PA.—Tuesday, Dec. 30, 1969

Budget Set By Authority In Charleroi

CHARLEROI — A $776,000 budget containing items for capital improvements of $525,000 was approved by the Authority of the Borough of Charleroi.

The authority, which operates the municipal water systems for four boroughs and the city of

Two-Year Term For Dr. Belz

CSC Professor Selected President Of State Gro

CALIFORNIA — For the first time since its formation 23 years ago, the 4,500 - member Association of Pennsylvania College and University Faculties (APSCUF) has a California State College professor as its president.

Dr. Gabriel P. Belz has been

Dr. Belz h career in Ill and later ta (Ill.) High joining the taught at J Junior Colleg at the Univer

Dr. Belz ha Pennsylvania

NOW! 5% INTEREST COMPOUNDED QUARTERLY

REGULAR PASSBOOK SAVINGS

Now the highest passbook interest and it's COMPOUNDED QUARTERLY. No minimum deposit. Deposit any amount at any time and you'll get a big 5% per annum. Open your account today and reap the rewards of highest passbook savings interest and quarterly compounding. A fine rate way to save. 5% interest becomes effective January 1st.

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Washington, Pa.

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Infants
Jewelry

- Cashiers
- Wrappers
- Receiving

Couple Spend Retirement Touring Nation In Camper

Watch Night Service Here

Known In Area

$550,000 Fire Destroys Club At Buffalo, N.Y.

October we set it again in Miami for a journey to Arizona and deep into Mexico," wrote Mrs. Chapman.

"It has been rewarding. Since leaving Miami last May 29 we have had a wonderful time.

Enjoy Cowboy Life

"We spent weeks working on a ranch in Wyoming. Billy really liked being a cowboy. Finally after some side trips we headed for Reno on Oct. 26. Yes, yes, we gambled and lost. Then we turned north and enjoyed San Francisco, a lovely city with wholesome hospitality.

"But we came back south to Las Vegas. There we gambled and won — a tiny bit.

"In Death Valley and at Lake Mead, as the sun poured down, we soaked it up. Golf almost every day for Billy.

"At last came the trek into Mexico. It is primitive but delightful. We have been here in Chihuahua for 10 days enjoying warm weather.

$550,000 Fire Destroys Club At Buffalo, N.Y.

BUFFALO, N.Y. (AP) — A gas-fed fire, thought to be under control, exploded in a burst of flames Monday, destroying the Montefiore Club, a downtown landmark more than 120 years old.

Robert B. Howard Jr., city fire commissioner, estimated damage at $550,000. Only the outside walls of the three-story brick structure remained standing after the blaze.

About 125 club members were in the building when the fire began, but no injuries were reported.

Howard blamed the burst on raw gas seeping up the walls.

"We could have saved the structure from destruction had the gas supply been shut off promptly," he said.

The fire apparently started in the basement, and firemen said they would be unable to determine a cause until the basement was pumped out. They said water in the basement was more than five feet deep.

The building was erected about 1840. The Montefiore Club, an exclusive social organization, purchased the building in 1922.

Observer-Reporter Newspaper (Washington, Pennsylvania- 1969)

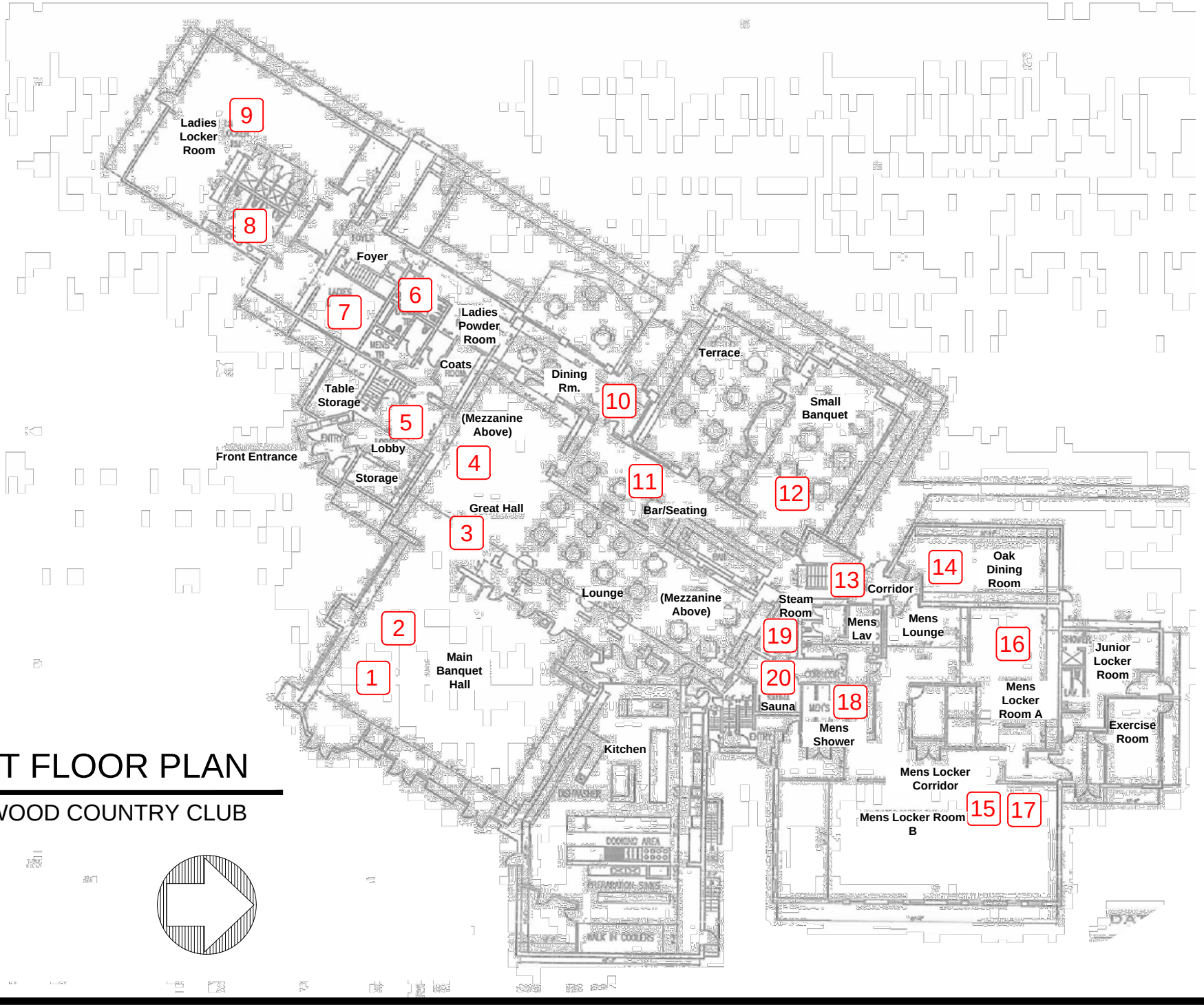
Figure A-6 Montefiore Club Fire Newspaper Article

Erie County Historical Aerial Photos Archive

Figure A-7 Historical Clubhouse Aerial Comparison

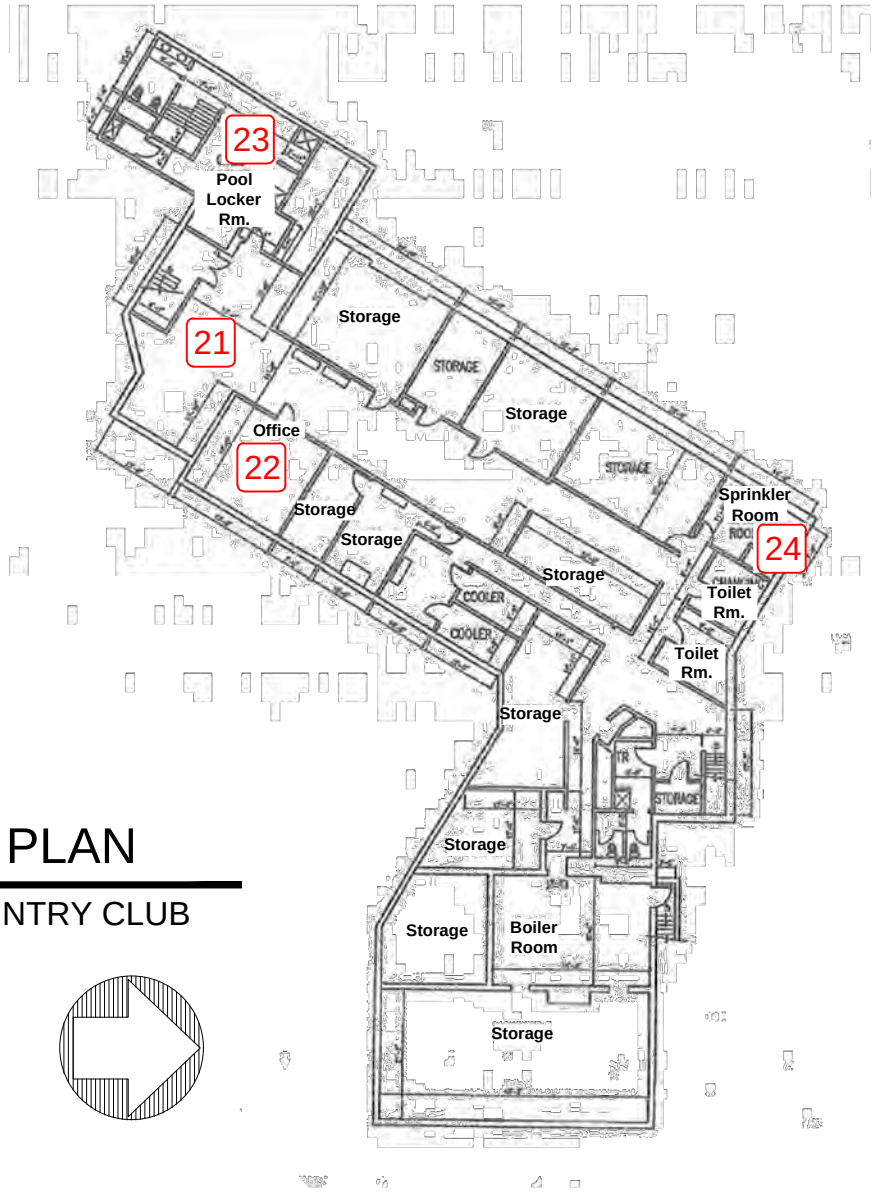
EXHIBIT "B"

Project Site & Clubhouse Photographs



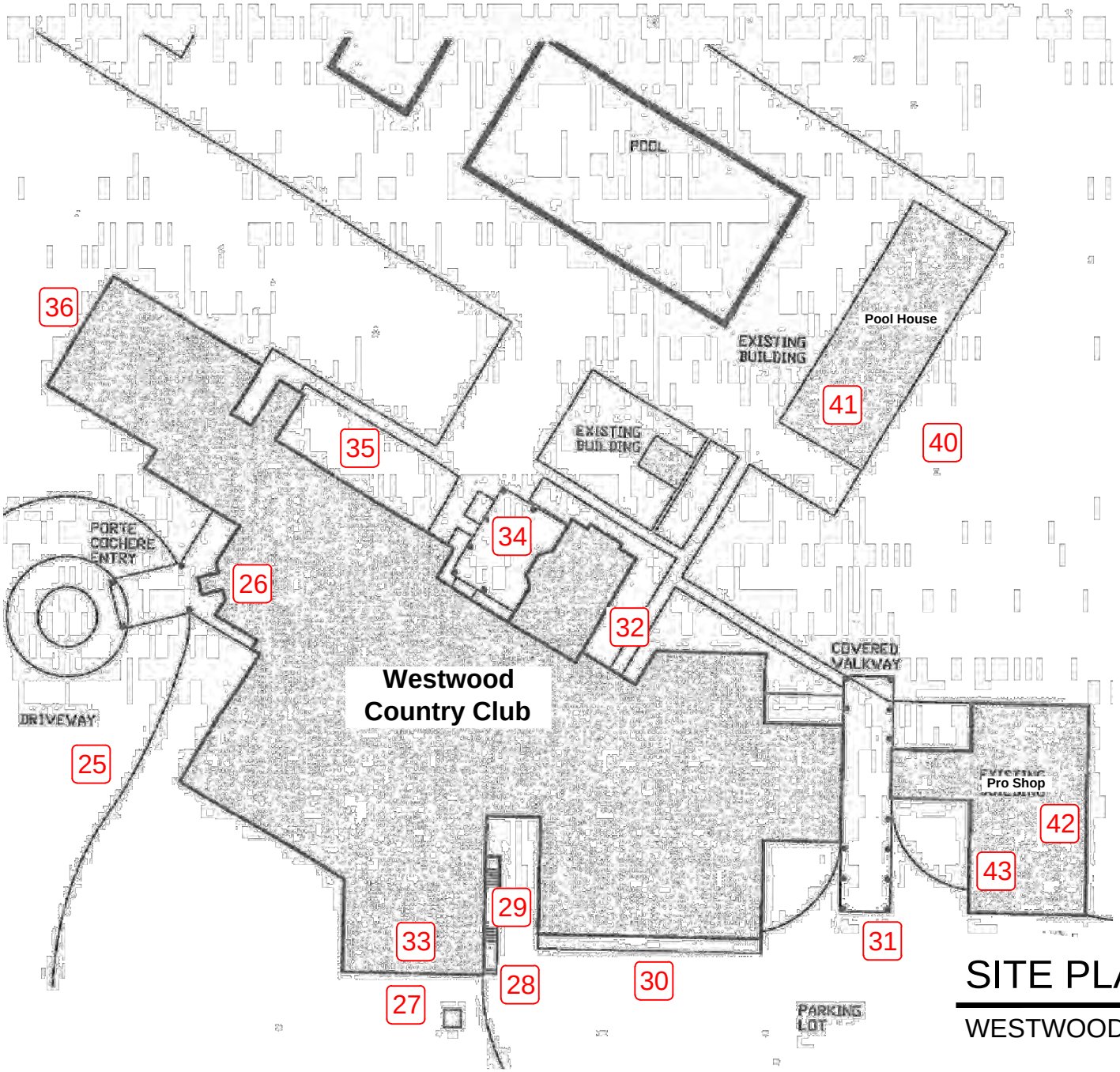
FIRST FLOOR PLAN

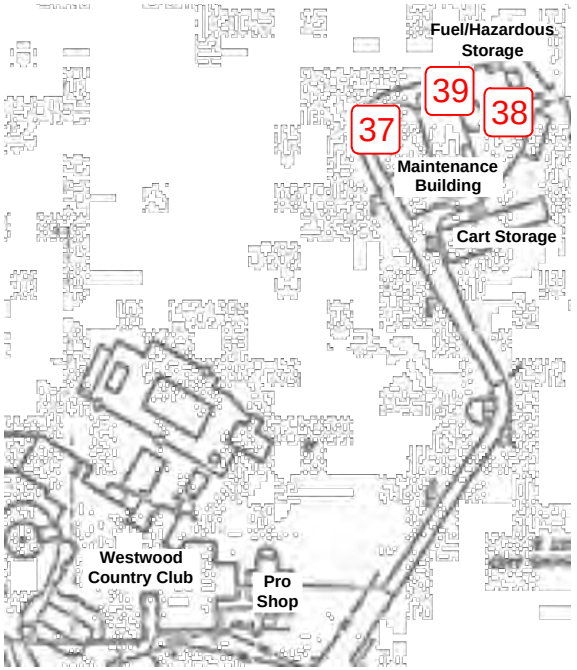
WESTWOOD COUNTRY CLUB



BASEMENT PLAN

WESTWOOD COUNTRY CLUB





SITE PLAN

WESTWOOD COUNTRY CLUB

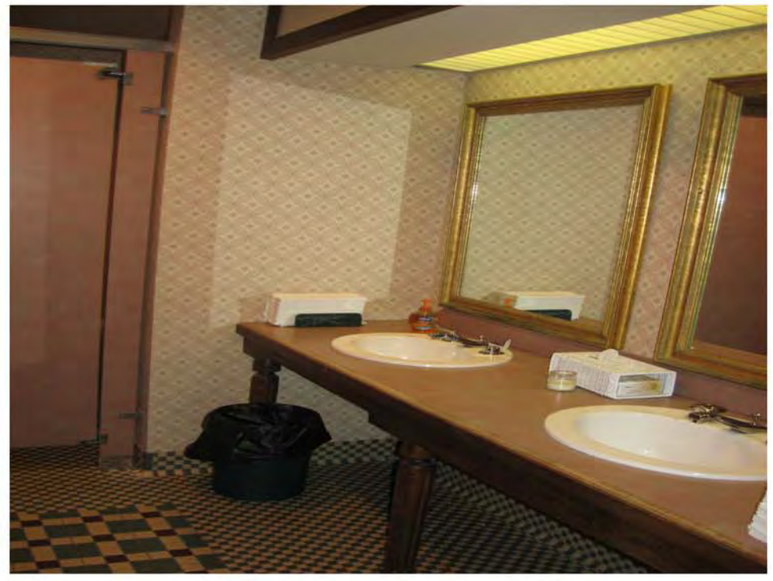
1 Main Banquet Hall

2 Main Banquet Hall

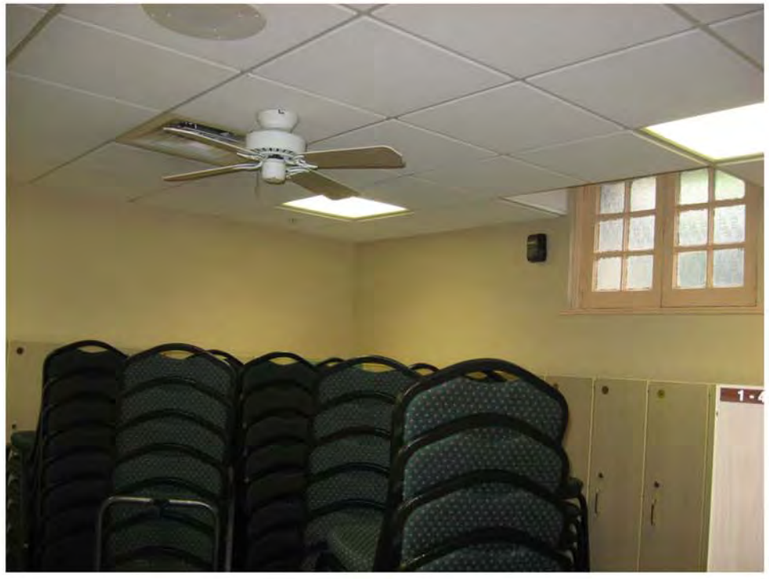
3 Great Hall

4 Great Hall

5 Front Entrance Lobby



6 Ladies Toilet Room



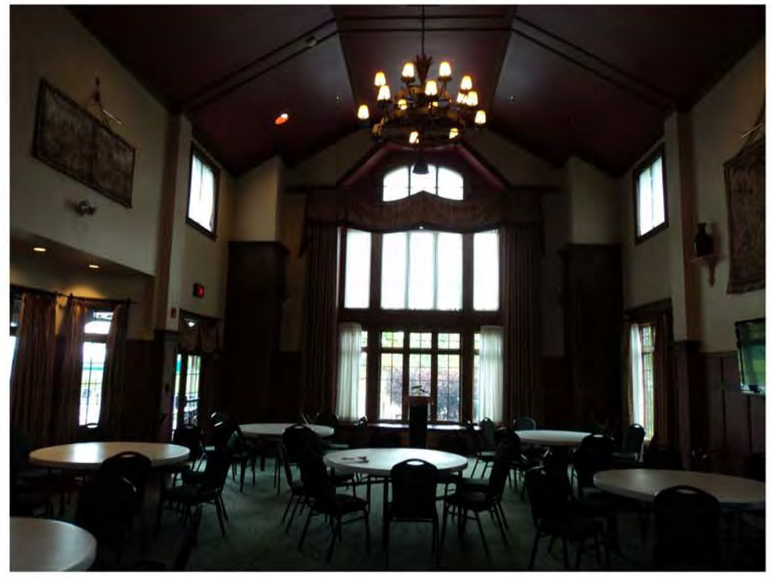
7 Ladies Locker Room

8 Ladies Locker Room

9 Ladies Locker Room

10 Dining Room

11 Bar/Seating/Walkway

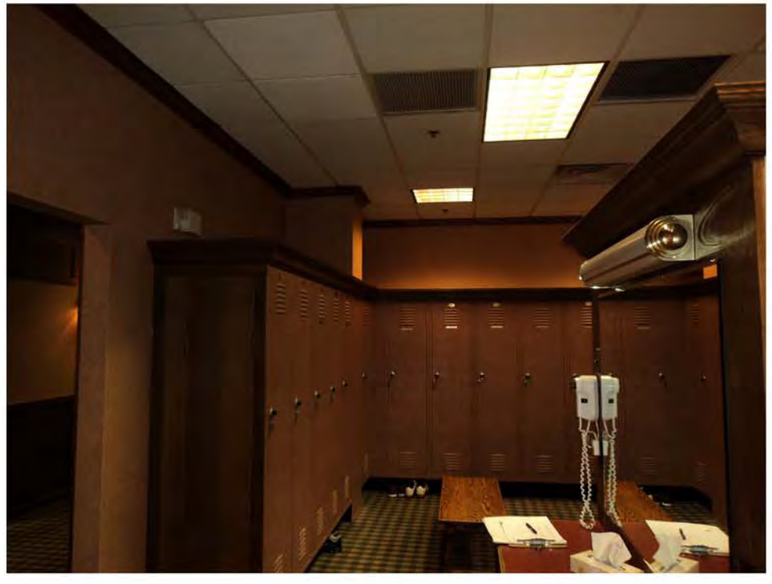


12 Banquet Room

13 Corridor from Bar/Seating Area

14 Oak Dining Room

15 Mens Locker Room



16 Mens Locker Room

17 Mens Locker Room

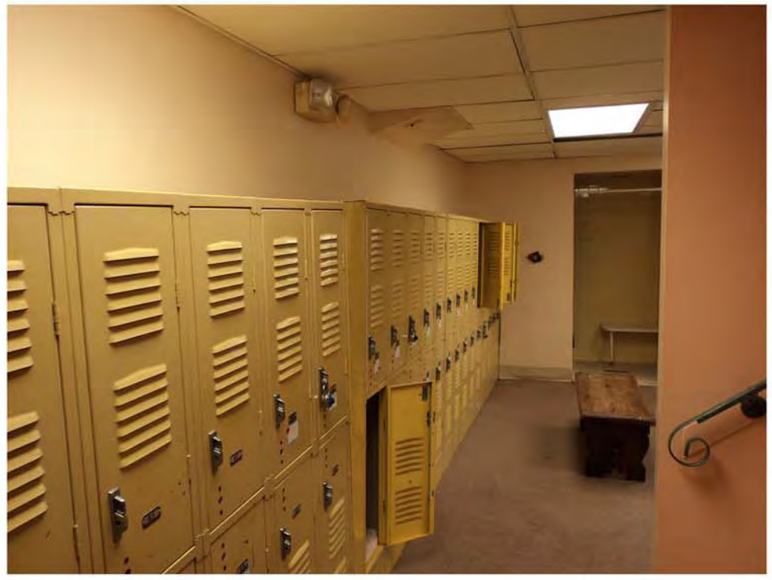
18 Mens Shower

19 Steam Room

20 Steam Room Entry Door

21 Basement Hallway

22 Basement Office



23 Basement - Womens Pool Lockers

24 Sprinkler Room

25 Front Entrance

26 Front Entrance Turret

27 Exterior Elevation (Kitchen/Mens Locker)

28 Exterior Elevation (Kitchen)

29 Exterior Elevation (Kitchen)

30 Exterior Elevation(Mens Locker)

31 Exterior Elevation

32 Entrance near Bar/Small Banquet Room

33 Exterior Elevation

34 Exterior Terrace

35 Exterior Elevation

36 Door exiting from Ladies Locker Rm.

37 Maintinance Building

38 Hazardous Storage

39 Fuel Storage

40 Pool House

41 Pool House Interior

42 Pro Shop

43 Pro Shop Bag Storage

EXHIBIT "C"

Town of Amherst Historic Preservation Commission Site Assessment as per the Updated Reconnaissance Level Survey of Historic Resources (August 2011)

EXHIBIT "C"

Town of Amherst Historic Preservation Commission Site Assessment as per the Updated Reconnaissance Level Survey of Historic Resources (August 2011)

A. Reconnaissance Level Survey Process and Description:

Beginning in 1997, The Town of Amherst and the Amherst Historic Preservation Commission utilized the services Bero Associates Architects to complete a *Reconnaissance Level Survey of Historic Resource*s ("Reconnaissance Survey") within the community. Additionally, in 1998, the Town utilized the services of Bero Associates Architects to complete an *Intensive Level Survey of Historic Resources*. The intent of both surveys was to identify and evaluate historic resources within the Town so they might be considered in future town planning and preservation planning.[1] Subsequently, in August of 2011, the services of KTA Preservation Specialist ("KTA") were utilized to develop an Updated Reconnaissance Level Survey of Historic Resources ("Updated Survey"). The Updated Survey was conducted as a joint effort between KTA and UB Archaeological Survey. The persons conducting the survey and involved in the historic research were all 36 CFR qualified.[2] The resumes of the principal investigators are included in Appendix 6 of the Updated Survey.[3]

The Updated Survey re-evaluates the properties included in the Reconnaissance Survey and documents their existing condition. The survey was limited to above-ground historic

[1] KTA Preservation Specialist. "Town of Amherst Updated Reconnaissance Level Survey of Historic Resources". *Town of Amherst Historic Preservation Commission*. Town of Amherst, August 2011. Web. 28 July 2014. < http://www.amherst.ny.us/pdf/committees/additional/historic/methodology.pdf>

[2] KTA Preservation Specialist. "Town of Amherst Updated Reconnaissance Level Survey of Historic Resources". Town of Amherst Historic Preservation Commission. Town of Amherst, August 2011. Web. 28 July 2014. < http://www.amherst.ny.us/pdf/committees/additional/historic/methodology.pdf>

[3] Copy of the Updated Survey can be downloaded from the following web page address: <http://www.amherst.ny.us/govt/committees/govt_committeeadditional.asp?board_code=Historic>

resources. The property selection criteria and guidelines used in the evaluation of properties as historic resources consider both the historic context and architectural fabric of properties. The selection criteria and guidelines were based on the local criteria for the designation of landmarks under the Town of Amherst's *Local Law Establishing Regulations for Historic Preservation*[4], and the National Register Criteria for Evaluation, which are contained in the National Park Service Publications: *National Register Bulletin, 15 Standards and Guidelines for Evaluation; Standards and Guidelines for Identification,* and *National Register Bulletin, 24, Guidelines for Local Surveys: A Basis for Preservation Planning*.[5]

A rating system was established to provide a basis of comparison for the relative merit of properties on a town-wide and regional context. The architectural significance – locally, regionally and nationally; the architectural integrity; the integrity of the setting or context, and the historic significance – locally, regionally and nationally were all considered when evaluating a property. It should be noted that a local resource might be given a higher rating despite a loss of integrity if the resource is rare and not well represented in the Town.

Each of the properties on the Annotated Lists (Appendix 1 and 2) within the Updated Survey has been assigned one of the following color codes:

- **BLUE-** Extremely high architectural and/or historic significance. These properties would likely also meet the criteria to be considered National Register eligible. A locally significant district. A resource that is rare and lacks individual distinction. All districts are considered Blue as are most farmsteads.

- **GREEN-** Above average architectural and/or historical significance. May have some alterations that compromise the integrity such as replacement windows. Would possibly

[4] The local law establishing regulations for Historic Preservation is located in Chapter 121 of the Code of the Town of Amherst is available online at the Town of Amherst website at http://www.amherst.ny.us

[5] KTA Preservation Specialist. "Town of Amherst Updated Reconnaissance Level Survey of Historic Resources". Town of Amherst Historic Preservation Commission. Town of Amherst, August 2011. Web. 28 July 2014

meet the criteria for to be considered National Register eligible.

- **YELLOW-** Moderate architectural and/or historical significance. Has been altered, but still retains sufficient historic fabric to convey historic meaning. Important local resources. Would likely not meet the criteria for to be considered National Register eligible.

The color ratings are further qualified by the following designations:

+ More significant than the average property within its color category.
- Less significant than the average property within its color category.

B. <u>Westwood Property and Clubhouse Evaluation</u>:

The evaluation of the Westwood Property and Clubhouse is included within Appendix 1 of the Updated Survey (refer to Figure C-1, Westwood Property & Clubhouse Evaluation, located at the end of this Exhibit). The Updated Survey identifies the reason for inclusion as "early 20th century social/recreational architecture in Tudor Revival style (social history)." The Westwood Property is further identified as a "Green" color code property, suggesting the property contains above average architectural and/or historical significance that *would possibly* meet the criteria for National Register consideration. It is important to note that the Description Section of the Update Survey only identifies changes that include the "replacement of some slate roof shingles with asphalt shingles and a large flat roof addition." The description section fails to identify the significant alterations that have been made to the original clubhouse structure as a result of substantial exterior additions and renovations that have taken place beyond the period of potential cultural/historical significance and that have not been consistent with the appearance and material utilized for the original clubhouse structure.

Name of Resource/Address	Photo Number	Area (ID Number)	Approx Date of Construction	Resource Type/Description	Reason for Inclusion	Potential Threats	Rarity of Resource	Color Code	USN/Determination I (individually eligible); N (not eligible); D (District); U (undetermined); blank (no determination) SHPO NR Listing Number	Documented in Intensive Level Survey, 1998
432 Mill Street	7-5	Area 7 (7BG5)	ca. 1860	2 1/2-story front gabled frame residence. Main street entrance with fanlight and sidelights at center of the north elevation. Segmental arch window crowns. Replacement windows and siding. New side porch addition. Contributing gable roof English barn north of house.	Example of 19th century vernacular residential architecture.	_	_	Green-	_	_
156 Mona Drive	5-152	Area 5 (5BG152)	ca. 1925	1 1/2-story side gable with intersecting front and entrance gables. Stone embellished entrance. Leaded lattice work casement windows. Some of the slate roof has been replaced.	Early 20th century Tudor Revival style residential architecture. Association with history of suburban development.	_	_	Green	_	_
8 Morton Drive	5-153	Area 5 (5BG153)	ca. 1927	2 1/2-story cross gable with intersecting entrance gable. Prominent chimney with detailed brickwork adjacent to entrance.	Early 20th century Tudor Revival style residential architecture. Association with history of suburban development.	_	_	Green	_	_
120 New Road	1-9	Area 1 (1BG9)	ca. 1881	2-story L-plan gable roof frame vernacular farmhouse with cement asbestos siding. The side-gabled wing has an added cross gable in front. Shed roof porch. Replacement windows with false muntins. Decorative trim at front gable non-historic. Porch rails look recently added. Contributing garage.	Late 19th century farm complex. Agricultural history, though context is lost. Vernacular farmhouse architecture.	_	Moderate threat: encroaching development	Green	2902.000159	_
155 New Road	1-10	Area 1 (1BGF10)	ca. 1935	Colonial Revival brick house with hip-on-gable roof. Contributing brick garage with hip-on-gable roof. Agricultural buildings associated with property have been demolished.	Significant as a pre-World War II era agricultural complex. Agriculture construction still occurring in this area of town, while suburban development in the southern area of town. Barn is currently used as a garage.	_	_	Green (F)	_	_
1025 New Road	2-28	Area 2 (2BB28)	ca. 1880	2-story L-plan cross-gable frame vernacular Italianate farmhouse with wood clapboard siding. Segmental arch window crowns. The roof porch in front of wing with turned posts and scroll work. 1 non-contributing frame shed. Rural setting.	Late 19th century vernacular Italianate residential (farmhouse) architecture.	House is deteriorated.	_	Blue	02902.000483	X
White Chapel Memorial Park 3210 Niagara Falls Blvd. (At Tonawanda Creek Rd.)	3-13	Area 3 (3SiB13-NRE)	1930	Non-denominational cemetery with picturesque landscape plan. Entrance has Neoclassical stone posts, a central stone arch, and cast iron fates.	May be significant as an example of funerary landscape design of the early 20th century. High quality of design at stone arch and gates. National Register Eligible District.	_	_	Blue	02902.000874/I	_
110 North Ellicott Creek Road	3-14	Area 3 (3BB14-NRE)	ca. 1855-60	Brick vernacular Italianate residence with 2-story front gable block and 1-story side gable wing. Stone foundation and water tables. The windows have been replaced. The main entrance has replacement units in the sidelights and elliptical arch transom. Concrete block porch deck in front of wing. Non-contributing frame garage.	Mid-19th century vernacular Italianate residential architecture of brick construction. Association with history of Vincent's Corners. National Register Eligible. The property was included in the Intensive Level Survey, 1998.	_	19th century brick residential construction is relatively rare in Amherst.	Blue	02902.000484/I	X
Former District No. 16 School (Present Amherst Youth Board-Ellicott Creek Youth Center) 154 North Ellicott Creek Road	3-15	Area 3 (3BB15-NRE)	ca. 1910-15	1-story with raised basement brick clad school building. Flat roof with parapet. Symmetrical center entrance façade with Georgian Revival inspired door surround. Blank end walls with decorative brickwork. Original 3/3 and 6/6 double-hung sash. Original front doors have been replaced. Asphalt parking lot in front; playground in back.	Early 20th century institutional architecture. Utilitarian design with Georgian revival entrance. Association with the history of public education in Amherst. National Register Eligible.	_	_	Blue	02902.000752/I	_
Westwood Country Club 772 North Forest Road (Corner of Sheridan Drive)	4-2	Area 4 (4BG2)	ca. 1920s	Tudor Revival style clubhouse with stucco clad walls and slate-shingled gable roof. Main entrance has a timber frame porte cochere with gable roof attached to a 2 1/2-story octagonal "tower" with decorative half-timbering. Changes include the replacement of some slate roof shingles with asphalt shingles, and a large flat roof addition.	Early 20th century social/recreational architecture in Tudor Revival style. Social history.	_	_	Green	_	_
The J. Getz House. 829 North Forest Road	4-3	Area 4 (4BB3-NRE)	ca. 1840s	2-story front gable brick vernacular residence with late 19th century hip roof porch at front featuring wood scrollwork. 6/6 double-hung sash with stone sills and lintels. One-story frame wing at side. Non-contributing garage.	Early to mid-19th century brick vernacular residential architecture. Greek Revival inspired massing and form. National Register Eligible.	_	19th century brick residential construction is relatively rare in Amherst.	Blue	02902.000257/I	X
The Stimm House. 895 North Forest Road (Part of the Chapel property)	4-4	Area 4 (4BB4-NRE)	1942	2-story flat roof International style residence with concrete block walls. Asymmetrical plan with broad roof overhang and cantilevered concrete balcony at 2nd story. Random stonework chimney. Windows grouped in bands of three. Contributing garage. 19th century raceway on property.	Outstanding example of WWII-era international style residential architecture. Possible significance for technology; early use of radiant heat.	_	International style is relatively rare	Blue +	02902.000485/I	X
954 North Forest Road	9-2	Area 9 (9BY2)	ca. 1890	2 1/2-story cross gabled frame Queen Anne style farmhouse clapboard and shingles have been replaced with synthetic siding. Warp around porch with Tuscan columns (balustrade is missing) and rock faced cast concrete block-foundation. Palladian windows in gable ends have been removed. Vinyl siding.	Late 19th century Queen Anne residential architecture.	_	Queen Anne's are rare in Amherst.	Yellow	02902.000486	X

Compilation of Properties previously identified in the Reconnaissance Level Survey, 1997 properties identified in current survey and listed in Appendix 2

Figure C-1 Westwood Property & Clubhouse Evaluation

Habitat Assessment
for

Westwood Neighborhood Project
722 North Forest Road

Town of Amherst
Erie County, New York

for

Mensch Capital Partners, LLC

EARTH DIMENSIONS, INC.

1091 Jamison Road • Elma New York 14059
(716) 655-1717 • Fax (716) 655-2915 • www.earthdimensions.com

October 30, 2014
EDI Project Code: W1I09c

REPORT SUMMARIZING
THE RESULTS OF A
HABITAT ASSESSMENT
OF

Westwood Neighborhood Project
722 North Forest Road

Prepared for Submission to

TOWN OF AMHERST TOWN BOARD
5583 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221

Prepared by

EARTH DIMENSIONS, INC.
1091 JAMISON ROAD
ELMA, NEW YORK 14059

for

MENSCH CAPITAL PARTNERS, LLC
5477 MAIN STREET
WILLIAMSVILLE, NEW YORK 14221

DATE PREPARED

October 30, 2014
Project Code: W1I09c

PROJECT INFORMATION

Project Name	Westwood Neighborhood Project
Street Address	772 North Forest Road, 385 & 391Maple Road
Town	Amherst
County	Erie
State	New York
Latitude/Longitude (NAD83)	42.98485° N, 78.77298° W
Investigation Area	171.1± Acres
USGS 7.5 Minute Topographical Map	Buffalo NE Quadrangle
Consultant	Earth Dimensions, Inc. 1091 Jamison Road Elma, New York 14059
Point of Contact	Thomas Somerville (716) 655-1717
Engineer	Nussbaumer & Clarke, Inc.
Property Owner	Forest Road Corp
Waterway	Ellicott Creek
Hydrologic Unit Code	04120104

ACKNOWLEDGMENTS

Mensch Capital Partners, LLC has retained Earth Dimensions Inc. (EDI) to complete a site vegetation, biological resource and wildlife assessment investigation for the Westwood Neighborhood Project site located in the Town of Amherst, County of Erie, State of New York. EDI would like to thank Copy Market, Inc. for providing the duplicating and binding services.

Duplicated onto recycled paper.

EXECUTIVE SUMMARY

Mensch Capital Partners, LLC has proposed the development of a mixed use project on the west side of North Forest Road, north of Sheridan Drive and south of Maple Road in the Town of Amherst, County of Erie, State of New York. The project has been given the name Westwood Neighborhood Project and is located on USGS 7.5 minute quadrangle map indexed as Buffalo NE /2002 DeLorme (Figure 1). Mensch Capital Partners, LLC has retained Earth Dimensions, Inc. ("EDI") to perform a biological resource and wildlife assessment evaluation of the Project Site in response to comments issued by the Town of Amherst Town Board and Planning Department based on its review of the initial version of Draft Generic Environmental Impact Statement ("DGEIS") prepared pursuant to the State Environmental Quality Review Act ("SEQRA").

The comment contained pertaining to potential adverse impacts to biological and wildlife resources contained in the Memorandum issued by the Town's Planning Department dated September 3, 2014 that formed the basis for the Town Board determining that the initial version of the DGEIS was not yet adequate for public review are reproduced below in italics as follows:

Biological Resources:

- DEC Freshwater Wetland BN-01 is 1/2 mile south of the site but not mentioned

- No discussion of unique specimen trees or vegetated areas, hardwood forest and type

- No mention of invasive vegetative species on site - their removal and/or only using native species in the future

- No mention of potential future people/vehicle/animal interactions as a result of the project

- No mention of where mammals tend to specifically exist on the site

Water Resources:

- Conjecture: "Westwood Park...will preserve and enhance the natural resource of the Creek, associated jurisdictional wetlands and adjacent riparian areas" (Section 5, pg 9). "The project will result in the preservation and enhancement of the Ellicott Creek corridor" (Section 5, pg 10).

A comprehensive review of relevant background sources of information pertaining to soils, hydrology and threatened & endangered species in the project area was conducted by EDI prior to conducting a field investigation at the Project Site. Sources of relevant information that were evaluated included the United States Geological Survey ("USGS"), Soil Conservation Service ("SCS"), National Wetland Inventory ("NWI"), NYSDEC Freshwater Wetland and USFWS Endangered Species maps. EDI applied methodology specified by the New York Natural Heritage Program and USFWS in performing threatened and endangered species habitat assessments within the Project Site.

Within the project area, EDI identified ten (10) ecological communities. These consisted of successional old field, successional shrubland, successional northern hardwood, mown lawn (including greens and fairways), mown lawn with trees, shallow emergent marsh, scrub-shrub swamp, hardwood swamp, open water and lower perennial stream communities. During the preliminary review, the U.S Fish and Wildlife Service website identified the Northern long-eared bat *(Myotis septentrionalis)* as potentially occurring on-site. The Northern long-eared bat is a species proposed to be listed as endangered in the State of New York. This listing is scheduled to become effective in April 2015. It is recommended that potential habitat and species be documented with the USFWS. The New York Natural Heritage Program ("NYNHP") did not identify any state protected species potentially occurring on-site.

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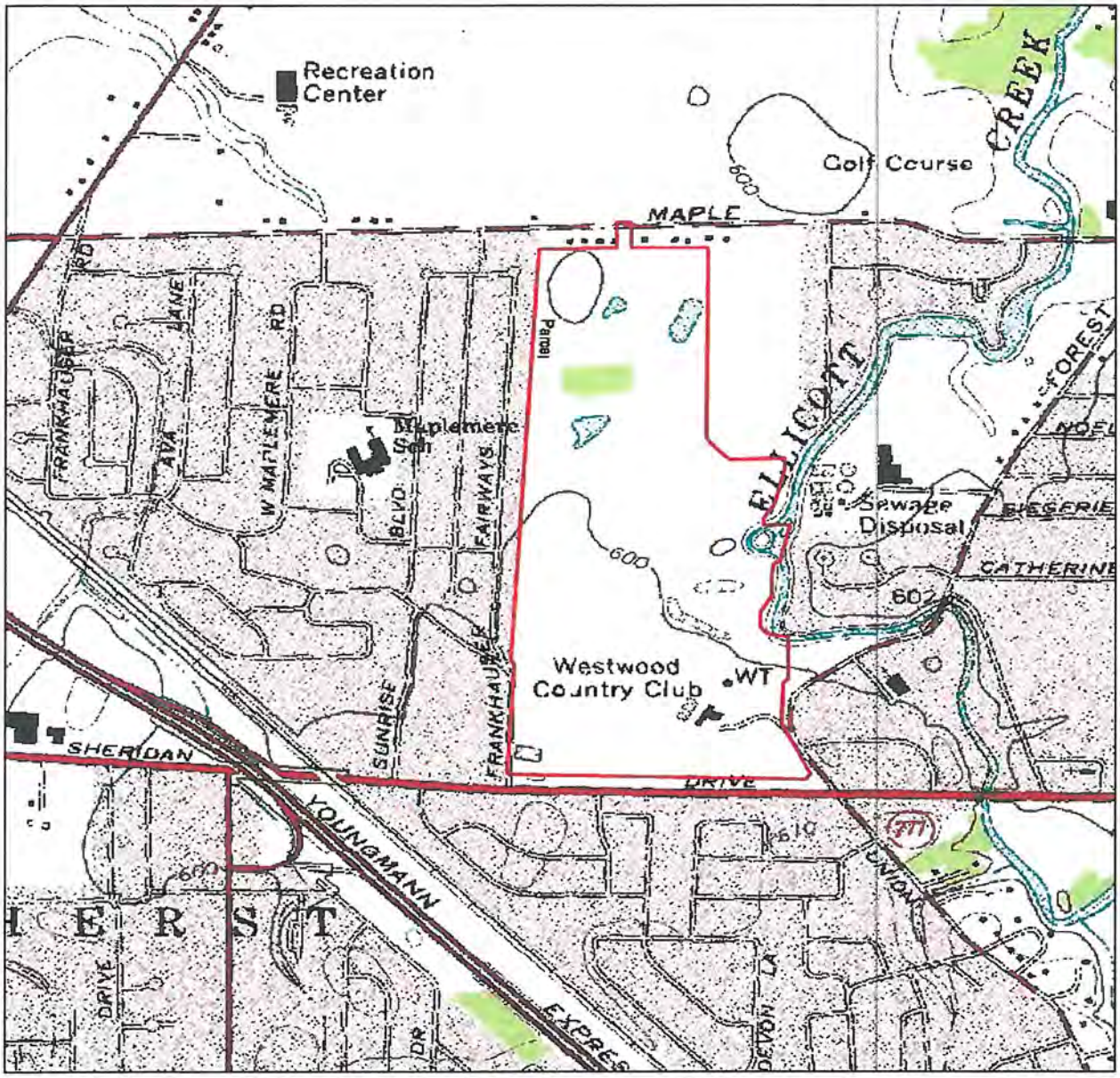


EARTH DIMENSIONS, INC.

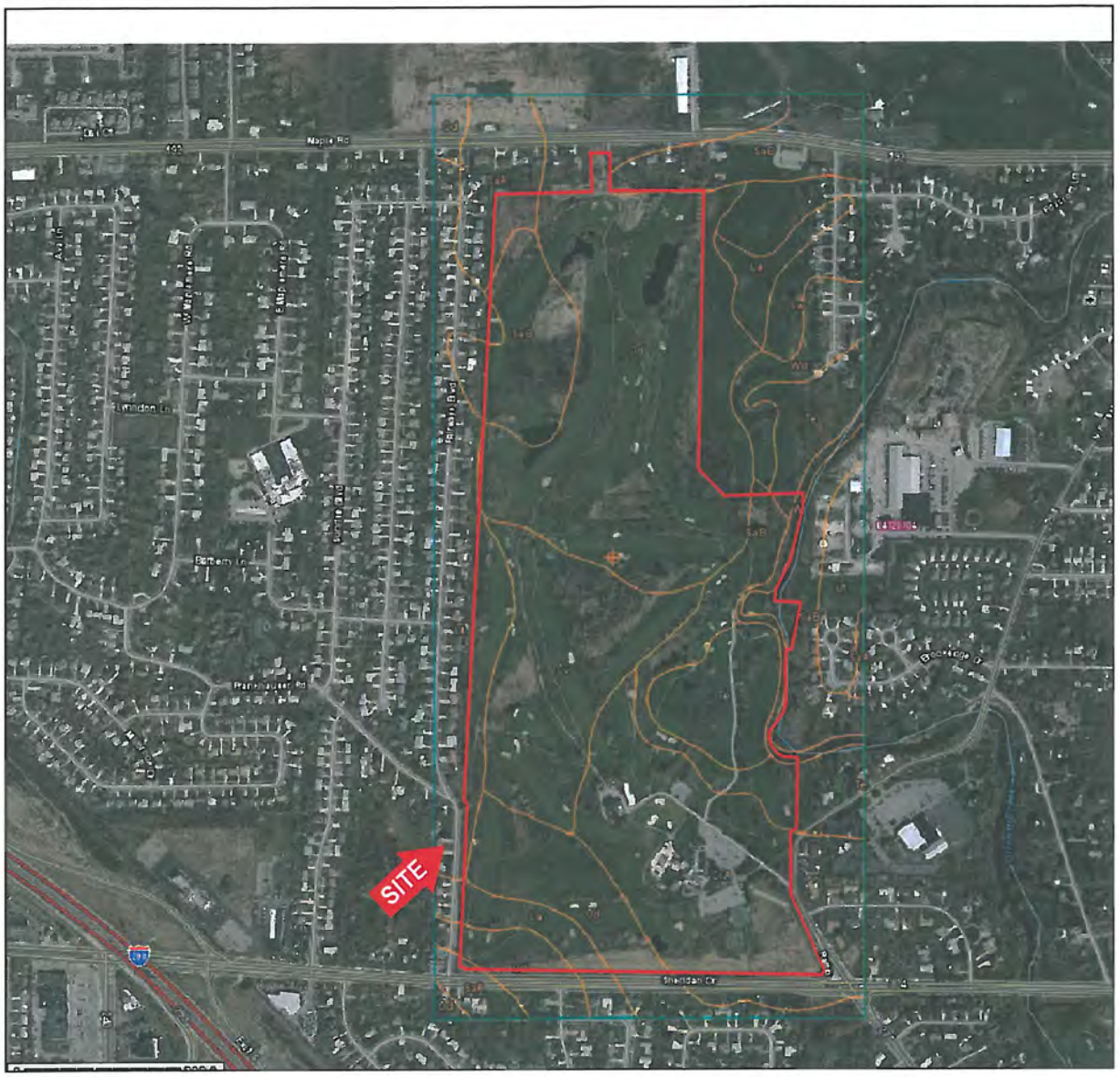
Figure 1: USGS 7.5 Minute Topographical Map
Buffalo NE Quadrangle/ 2002 DeLorme

Westwood Neighborhood Project
Town of Amherst, Erie County, New York

EARTH DIMENSIONS, INC.

Figure 2: National Wetlands Inventory Map
http://wetlandsfws.er.usgs.gov
Site visited 9/29/2014

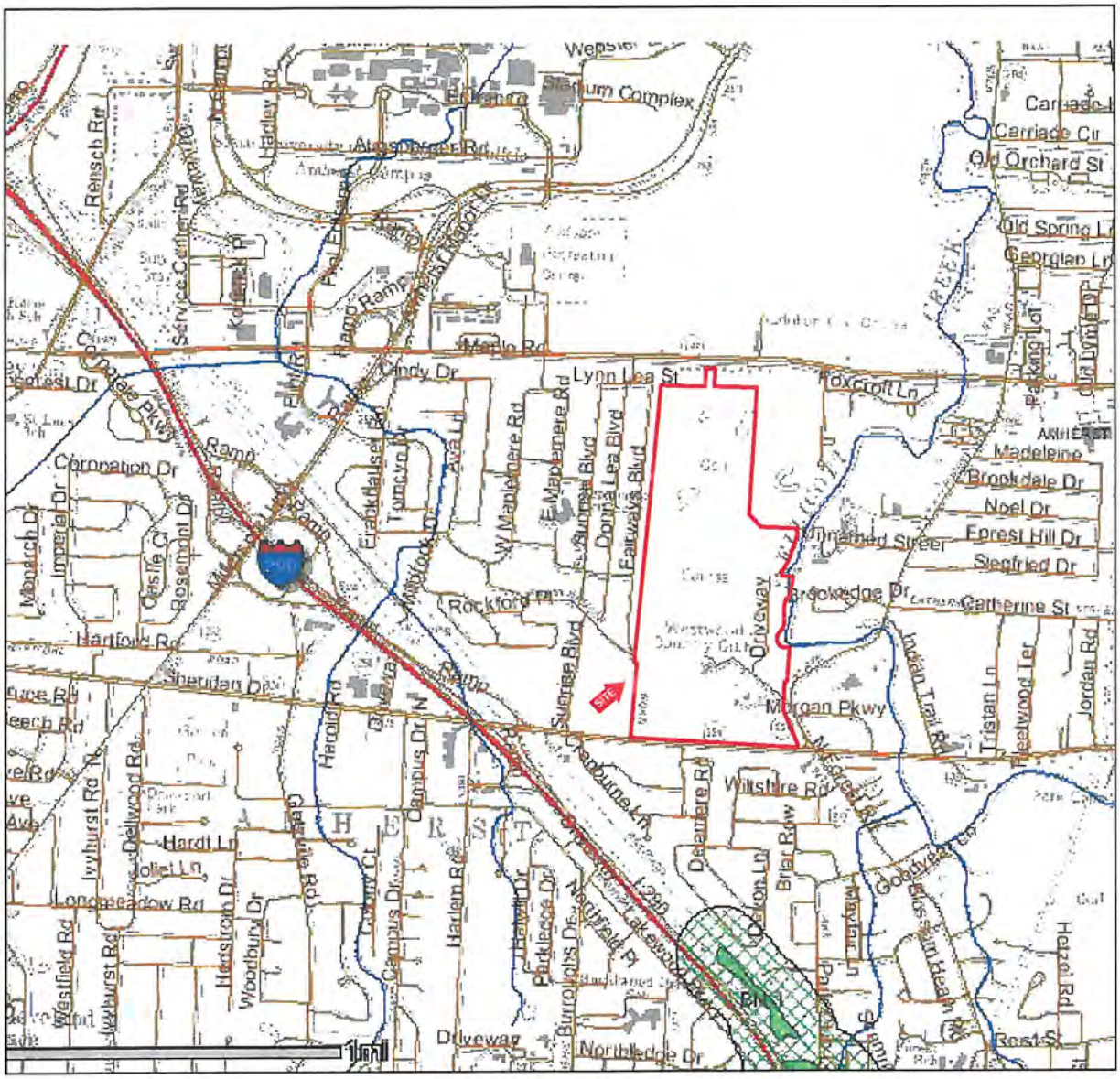
Westwood Neighborhood Project
Town of Amherst, Erie County, New York



EARTH DIMENSIONS, INC.

Figure 3: NRCS Erie County Soil Survey Map
http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx
Site visited 9/29/2014

Westwood Neighborhood Project
Town of Amherst, Erie County, New York



EARTH DIMENSIONS, INC.

Figure 4: NYSDEC Environmental Resource Mapper
http://www.dec.ny.gov/imsmaps/ERM/Viewer.htm
Site visited 9/28/2014

Westwood Neighborhood Project
Town of Amherst, Erie County, New York

INTRODUCTION

Mensch Capital Partners, LLC has proposed the development of a mixed use project on the west side of North Forest Road, north of Sheridan Drive and south of Maple Road in the Town of Amherst, County of Erie, State of New York. The Project Site is located on the property of the Westwood Country Club and Golf Course. Mensch Capital Partners, LLC has retained Earth Dimensions, Inc. ("EDI") to complete a site vegetation, biological resource and wildlife assessment investigation at the site in response to comments provided by the Town of Amherst during the Draft Generic Environmental Impact Statement (DGEIS) process.

Mensch Capital Partners is proposing a 171.1± acre mixed use project including mixed residential buildings, office space, hotel, senior living facility and open space. Access to the site is proposed from the north side of Sheridan Drive and the south side of Maple Road. During review of the DGEIS, Town of Amherst Planning Staff issued comments regarding site vegetation status, biological resources and potential wildlife population impacts.

USFWS identified the northern long-eared bat as potentially being present within the project area. The northern long-eared bat (*Myotis septentrionalis*) is a medium-sized bat about 3 to 3.7 inches in size with a wingspan of 9 to 10 inches. Its fur color can be medium to dark brown on the back and tawny to pale-brown on the underside. As its name suggests, this bat is distinguished by its long ears, particularly as compared to other bats in its genus, *Myotis*, which are actually bats noted for their small ears.

The purpose of this report is to present EDI's methods, results and conclusions relative to the comprehensive habitat assessment of the Westwood Neighborhood Project Site that has been conducted.

SITE DESCRIPTION

The Project Site is comprised of 171.1± acres of land with multiple access points and is outlined in Figure 1. Current site use is a golf course and country club. The site is bound to the south by Sheridan Drive, east by North Forest Road and Ellicott Creek, north by Maple Road and residential homes, and west by Frankhauser Road and residential homes. The natural topography of the Westwood Neighborhood Project is generally flat to gently sloping. The on-site communities consisted of successional old field, successional shrubland, successional northern hardwood, mown lawn (including greens and fairways), mown lawn with trees, shallow emergent marsh, shrub-swamp, hardwood swamp, open water and lower perennial stream communities. The vegetative communities of the investigation area are described according to *Ecological Communities of New York State* (Edinger et al. 2002).

Ellicott Creek borders a portion of the east property boundary. The riparian buffer along Ellicott Creek is minimal, due to adjacent development and associated land uses. Ellicott Creek flows northward along the property boundary, then flows northwesterly for approximately 8 miles before emptying into the Niagara River.

The National Wetland inventory ("NWI") map displays 3 wetlands identified as PUBHx (Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated) and 1 stream identified as R2UBH (Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded) within the investigation area. The field investigation confirmed the NWI descriptions, with the addition of one (1) PUBHx pond within the southern portion of the investigation area, two (2) shallow emergent marsh communities, one (1) shrub-swamp community and three (3) hardwood swamp communities. All of the identified wetlands and drainages were described in the Wetland Delineation Report prepared by Earth Dimensions, Inc on September 26, 2012.

The majority of the Project Site is an active golf course, with manicured lawn and asphalt paths. Several small woodlots and ponds are scattered throughout the course, as well as some areas that are not mowed on a yearly schedule. Much of the site is identified as mowed lawn (including greens and fairways) or mowed lawn with trees.

FIELD INVESTIGATION PROCEDURES

The site vegetation, biological resource and wildlife assessment was conducted by an Ecologist from EDI on September 26, 2014. During the investigation, all vegetative communities were thoroughly described, wildlife populations were assessed, invasive plant species were documented and quantified, Ellicott Creek corridor was described and potential threatened and endangered species habitats were assessed. The investigation area was studied for suitable habitat for the northern long-eared bat *(Myotis septentrionalis)*. The investigation also included the search for any unique specimen trees. Transects and foot surveys were used to investigate the 171.1± acre project area.

The timing of the field investigation was appropriate for all components of the requested assessment. Peak vegetative growth and flowering/seeding, peak mammal activity, and the endangered species survey were all within the timeframe.

EDI used USFWS protocol for the Northern long-eared bat survey. Surveys were conducted in order to find possible roost trees within the project area. Summer roost trees for the northern long-eared bat consists of cracks, crevices (snags), or exfoliating bark on trees with a 3 inch or greater diameter breast height ("DBH").

RESULTS & CONCLUSIONS

Earth Dimensions, Inc. ("EDI") has completed a site vegetation, biological resource and wildlife assessment at the proposed Westwood Neighborhood Project located in the Town of Amherst, County of Erie, State of New York. The purpose of the comprehensive analysis conducted by our firm is to provide more detailed descriptions addressing comments received by Mensch Capital Partners, LLC ("Project Sponsor") during the coordinated environmental review of the Project pursuant to SEQRA including comments issued by the Town Board based on its review of the initially submitted Draft Generic Environmental Impact Statement ("DGEIS"). Our firm's comprehensive review of the potential adverse impacts to biological and wildlife resources resulting from the project involved an analysis of the existing vegetative communities, wildlife populations and habitats, and invasive plant species in an effort to evaluate the anticipated potential impacts the Project will have on those natural resources.

As currently designed, the Project will result in unavoidable impacts to existing wildlife habitats, wetland areas, and site vegetation. However, the Project Sponsor has deliberately designed the layout of the mixed use project to avoid disturbance of the more mature northern hardwood vegetative communities on the Project Site. In addition, the project layout will sustain large areas of open space and natural vegetative communities totaling approximately 64 acres,which will be permanently protected by the recording of deed restrictions. The Project Sponsor's effort to preserve large areas of permanent open land will provide for permanent areas of suitable wildlife habitat including migratory bird nesting. Furthermore, the increase of wetland areas and open water resources in close proximity to the Ellicott Creek corridor combined with the filing of a deed restriction for the permanent protection of the portion of the project site along the Ellicott Creek corridor will help to preserve and enhance the creek corridor, which is the most significant natural feature of the Project Site.

The analysis conducted by our firm provides the Town of Amherst, the designated lead agency, and involved and interested agencies, with information to allow it to take a hard look at the identified potential adverse impacts to biological and wildlife resources resulting from the Project.

In conclusion, while the Project will result in permanent unavoidable impacts to the vegetation, wildlife, and habitats that exist on the Project Site, these impacts will not be significant and the measures being implemented to minimize impacts to these resources to the maximum extent practicable including permanent protection of evenly distributed open space areas, avoidance of disturbance to mature northern hardwood vegetative communities, and the net increase of open water wetland areas throughout the Project Site represent sufficient mitigation measures for the anticipated adverse impacts as identified and evaluated by our firm in this Report. The comments and EDI's findings are below:

Comment: ***No discussion of unique specimen trees or vegetated areas, hardwood forest and type.***

Response: The vegetative communities within the project area consist of successional old field, successional shrubland, successional northern hardwood, mown lawn (including greens and fairways), mown lawn with trees, shallow emergent marsh, shrub-swamp, hardwood swamp, open water and lower perennial stream communities. The following are community descriptions:

The successional old field community consisted of the following species: white ash (*Fraxinus americana*), green ash (*Fraxinus pennsylvanica*), pin oak (*Quercus palustris*), glossy buckthorn (*Frangula alnus*), bebb willow (*Salix bebbiana*), cockspur hawthorn (*Crataegus crus-galli*), gray dogwood (*Cornus racemosa*), silky dogwood (*Cornus amomum*), perennial rye (*Lolium perenne*), timothy (*Phleum pratense*), Kentucky bluegrass (*Poa pratensis*), Virginia strawberry (*Fragaria virginiana*), common selfheal (*Prunella vulgaris*), path rush (*Juncus tenuis*), winter bentgrass (*Agrostis hyemale*), Fuller's teasel (*Dipsacus fullonum*), white clover (*Trifolium repens*), Queen Anne's lace (*Daucus carota*), chicory (*Cichorium intybus*), New England aster (*Symphyotrichum novae-angliae*), Canada thistle (*Cirsium arvense*), spotted knapweed (*Centaurea stoebe*), early goldenrod (*Solidago juncae*), Canada goldenrod (*Solidago canadensis*), calico aster (*Symphyotrichum lateriflorum*), smooth white old field aster (*Symphyotrichum racemosum*), common milkeweed (*Asclepias syriaca*), tall blazing star (*Liatris aspera*), curly dock (*Rumex crispus*) and annual ragweed (*Ambrosia artemisiifolia*).

The successional shrubland community consisted of the following species: green ash (*Fraxinus pennsylvanica*), Norway spruce (*Picea abies*), black walnut (*Juglans nigra*), glossy buckthorn (*Frangula alnus*), gray dogwood (*Cornus racemosa*), apple (*Malus sp*), pin cherry (*Prunus pensylvanica*), eastern cottonwood (*Populus deltoides*), pin oak (*Quercus palustris*), silver maple (*Acer saccharinum*), red maple (*Acer rubrum*), catalpa (*Catalpa speciosa*), Canada goldenrod (*Solidago canadensis*), fox sedge (*Carex vulpinoidea*), Kentucky bluegrass (*Poa pratensis*), smooth white old field aster (*Symphyotrichum racemosum*), indian hemp (*Apocynum cannabinum*), and common milkweed (*Asclepias syriaca*).

The successional northern hardwood community consisted of the following species: northern red oak (*Quercus rubra*), northern white oak (*Quercus alba*), pin oak (*Quercus palustris*), American elm (*Ulmus americana*), red maple (*Acer rubrum*), sugar maple (*Acer saccharum*), bur oak (*Quercus macrocarpus*), green ash (*Fraxinus pennsylvanica*), quaking aspen (*Populus tremuloides*), eastern cottonwood (*Populus deltoides*), black cherry (*Prunus serotina*), black walnut (*Juglans nigra*), American basswood (*Tilia americana*), box elder (*Acer negundo*), common buckthorn (*Rhamnus cathartica*), hophornbeam (*Ostrya virginiana*), tatarian honeysuckle (*Lonicera tatarica*) and gray dogwood (*Cornus racemosa*).

The mown lawn with trees community consisted of the following species: silver maple (*Acer saccharinum*), corkscrew willow (*Salix matsudana*), weeping willow (*Salix babylonica*), black locust (*Rubinia pseudoacacia*), blue spruce (*Picea pungens*), American sycamore (*Platanus occidentalis*), red maple (*Acer rubrum*), pin oak (*Quercus palustris*), white clover (*Trifolium repens*), common dandelion (*Taraxacum officinale*), Kentucky blue grass (*Poa pratensis*) and perennial rye (*Lolium perenne*).

The shallow emergent marsh community of consisted of the following species: green ash (*Fraxinus pennsylvanica*), red-osier dogwood (*Cornus sericea*), red maple (*Acer rubrum*), calico aster (*Symphyotrichum lateriflorum*), creeping bentgrass (*Agrostis stolonifera*), flat-top goldenrod (*Euthamia graminifolia*), Canada cocklebur (*Xanthium*

strumarium), Pennsylvania smartweed (*Polygonum pennsylvanica*), paleyellow iris (*Iris pseudacorus*), devil's beggarticks (*Bidens frondosa*), reed canary grass (*Phalaris arundinacea*), purple loosestrife (*Lythrum salicaria*), common boneset (*Eupatorium perfoliatum*), spotted joe pye weed (*Eutrochium maculatum*), arrowleaf tearthumb (*Polygonum sagittatum*), broadleaf cattail (*Typha latifolia*), narrowleaf cattail (*Typha angustifolia*), rice cutgrass (*Leersia oryzoides*) and common threesquare (*Schoenoplectus pungens*).

The shrub-swamp community consisted of the following species: red maple (*Acer rubrum*), silver maple (*Acer saccharinum*), pin oak (*Quercus palustris*), bebb willow (*Salix bebbiana*), green ash (*Fraxinus pennsylvanica*), gray dogwood (*Cornus racemosa*), glossy buckthorn (*Frangula alnus*), New England aster (*Symphyotrichum novea-angliae*), path rush (*Juncus tenuis*), calico aster (*Symphyotrichum lateriflorum*), purple loosestrife (*Lythrum salicaria*), creeping bentgrass (*Agrostis stolonifera*), flat-top goldenrod (*Euthamia graminifolia*), woolgrass (*Scirpus cyperinus*), green bulrush (*Scirpus atrovirens*), soft rush (*Juncus effusus*), blunt broom sedge (*Carex tribuloides*) and Canada wildrye (*Elymus canadensis*).

The hardwood swamp community consisted of the following species: pin oak (*Quercus palustris*), bur oak (*Quercus macrocarpa*), green ash (*Fraxinus pennsylvanica*), red maple (*Acer rubrum*), silver maple (*Acer saccharinum*), eastern cottonwood (*Populus deltoides*), American elm (*Ulmus americana*), spicebush (*Lyndera benzoin*), glossy buckthorn (*Frangula alnus*), calico aster (*Symphyotrichum lateriflorum*), fowl mannagrass (*Glyceria striata*), broom sedge (*Carex scoparia*) and sweet woodreed (*Cinna arundinacea*).

No specific vegetative data was taken in the mown lawn, open water and lower perennial stream communities, however, communities were consistent with descriptions provided by Reschke.

The comment provided to Mensch Capital Partners, LLC specifically mentions unique specimen trees and hardwood forest types. There were no trees identified on site that are

characterized as unique due to size or species. Large northern red oak are present within the successional northern hardwood communities, however, are not larger than average growth. The hardwood forest type "successional northern hardwood" is the most common classification of a hardwood forest in western New York. Trees present within the "mown lawn with trees" community were also identified as average growth for the identified species. Therefore, no unique specimen trees or other unique vegetative communities were identified within the project area.

Comment: ***No mention of where animals tend to specifically exist on the site.***

Response: During the site investigation, twelve (12) species of mammals, reptiles and amphibians were identified. Those species included eastern gray squirrel (*Sciurus carolinensis*), eastern chipmunk (*Tamias striatus*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), white-tailed deer (*Odocoileus virginianus*), eastern garter snake (*Thamnophis sirtalis*), eastern painted turtle (*Chrysemys picta*), American bullfrog (*Lithobates catesbeianus*), green frog (*Rana clamitans*), northern leopard frog (*Lithobates pipiens*) and American toad (*Anaxyrus americanus*).

Mammals were identified by observing species individuals on site included eastern gray squirrel, eastern chipmunk and white-tailed deer. These species were all observed only within the successional northern hardwood and hardwood swamp communities, although they likely use the entire golf course when active golfing is not occurring. All other species were documented by sign (tracks, scat, etc) throughout the northern successional hardwood and hardwood swamp communities.

All reptile and amphibian species noted were identified by observing the species individual. The eastern painted turtle, American bullfrog and green frog were observed only within the open water and emergent marsh habitats. The northern leopard frog and American toad were observed in the shallow emergent marsh communities. These species would not be expected to travel outside of these communities. The species identified tend to exist in open water and wetland communities, rarely traveling in upland or open areas for extended periods of time. The wetland and open water communities identified within the project area provide isolated habitats for the identified species.

During the investigation, fourteen (14) species of bird were identified by sound and sight.

Bird species identified included: blue jay (*Cyanocitta cristata*), house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), Canada goose (*Branta canadensis*), American robin (*Turdus migratorius*), American goldfinch (*Spinus tristis*), white-breasted nuthatch (*Sitta carolinensis*), cooper's hawk (*Accipiter cooperii*), golden-crowned kinglet (*Regulus satrapa*), northern flicker (*Colaptes auratus*), American crow (*Corvus brachyrhynchos*), black-capped chickadee (*Poecile atricapillus*), great blue heron (*Ardea herodias*) and hairy woodpecker (*Picoides villosus*). The identified bird species were present throughout the site, in different habitats. Other species of birds can be expected to use the site knowing the specific habitats that are present. Waterfowl such as mallard and wood duck would be common during spring and late fall. The mallard would be found in the open water habitat while the wood duck would utilize the open water and hardwood swamp communities. Wood duck feed heavily on pin oak acorns, which was a dominant tree species in the hardwood swamp community. Raptors such as American kestrel and red-tailed hawk can also be expected on the site, primarily feeding within the successional old field communities. Summer breeding song birds such as yellow warbler, northern oriole, scarlet tanager, mourning dove, red-eyed vireo and others can be expected within the successional old field and successional northern hardwood communities.

Comment: ***No mention of invasive vegetative species on site - their removal and/or only using native species in the future.***

Response: During the investigation, many invasive plant species were identified. Species specifically noted and mapped were purple loosestrife, narrowleaf cattail, common buckthorn and glossy buckthorn. Species identified in lesser amounts that are not considered noxious, but are introduced, included reed canary grass, Tatarian honeysuckle, chicory, Canada thistle and spotted knapweed.

All of the successional northern hardwood and successional shrubland communities identified had scattered occurrences of glossy and common buckthorn. Glossy buckthorn is more common in the wetter areas with denser canopy cover, such as the forest sections. Common buckthorn is more common in the shrubland community. Treating and removing both species of buckthorn is straight forward. During the winter months (when the plant is dormant), a

combination of cutting the stem and herbicide application with stump oil is very effective. A follow up foliar (leaf) treatment is recommended for the 2 growing seasons following the initial treatment. Tatarian honeysuckle can be treated the same way as buckthorn species. Typically, these areas do not need to be replanted with native plants because there is already a canopy cover of desired species.

Purple loosestrife and narrowleaf cattail were identified in all shallow emergent marsh communities. The open water communities are surrounded by dense populations of narrowleaf cattail, with scattered purple loosestrife. It is likely that the hybrid cattail (*Typha x glauca*) is present on site due to scattered populations of the native broadleaf cattail. Removal of purple loosestrife and narrowleaf cattail is much less successful than buckthorn species. EDI recommends that invasive species be mowed during construction to prevent seed heads from maturing and potentially spreading fresh seed on areas of exposed soil. The newly developed areas will be seeded at the completion of final grading, which will help in preventing invasive species from growing. EDI also recommends that topsoil with invasive species present not be used during any aspect of development. Topsoil with invasive species should be removed from the site and clean topsoil should be used in its place. Aquatic plugs (sedges, arrowhead, iris, etc) can be used to revegetate the new topsoil Planting native trees that will eventually outgrow and choke out the purple loosestrife and narrowleaf cattail is another option, but the timeframe is not desirable. Any work such as this in a jurisdictional wetland requires a permit from the U.S. Army Corps of Engineers.

Invasive plant species found in successional old field and shrubland communities included reed canary grass, Tatarian honeysuckle, chicory, Canada thistle and spotted knapweed. These species can be managed with a mowing schedule. Brush-hogging the areas will prevent seeding from occurring, and native species can become more dominant. Tatarian honeysuckle can be treated with similar methods as buckthorn; a winter cutting and spraying schedule will prevent new sprouts in the spring. The remaining herbaceous species can be mown as previously suggested, or native shrub species can be planted to eventually out-compete the herbaceous species.

Comment: ***NYSDEC Freshwater Wetland BN-01 is 1/2 mile south of the site but not***

mentioned.

Response: NYSDEC Freshwater Wetland BN-01 is identified by NYSDEC as a 10.8 acre Class II invasive species/shallow emergent marsh community. The wetland is dominated by common reed (*Phragmites australis*) and other invasive plant species. The wetland is located between the abandoned Lehigh Valley Railroad and Interstate 290. Any proposed development within the project site will not negatively impact NYSDEC wetland BN-01 because historic water flow is to the northwest and does not intersect Ellicott Creek until approximately 2 miles north of the project area near the University of Buffalo North Campus. Therefore, water flow from within the investigation area cannot enter the NYSDEC wetland. The Lehigh Valley Railroad grade is elevated and prevents any overland water flow from the wetland to the northeast. NYSDEC Wetland BN-01 is part of a dendritic water pattern that is flowing north and northwest, ultimately ending at Ellicott Creek and then Tonawanda Creek.

Comment: ***"Westwood Park...will preserve and enhance the natural resource of the creek, associated jurisdictional wetlands and adjacent riparian areas." "The project will result in the preservation and enhancement of the Ellicott Creek corridor."***

Response: The Preliminary Conceptual Master Plan for the Westwood Neighborhood identifies several stormwater ponds adjacent to the existing Ellicott Creek corridor. The Plan also identifies the riparian area as being vegetated and without any development. It is EDI's professional opinion that the development of the Project Site consistent with the Preliminary Conceptual Master Plan will help to preserve and enhance the Ellicott Creek corridor, which is currently largely devoid of dense vegetation and riparian areas. The large stormwater pond will prevent excess sediment from entering the creek and storm water quantity measures be implemented per the NYSDEC's stringent standards..

Comment: ***No discussion of potential future people/vehicle/animal interactions as a result of the project.***

Response: As a result of the project, both negative and positive people/vehicle/wildlife interactions can be expected.

Negative interactions:

Although most of the existing hardwood swamp and successional northern hardwood habitats will be maintained, the development of the Project Site will result in some unavoidable habitat loss. This may cause the deer population to become more dependent on developed areas for food and shelter. Removal of any portions of the wooded areas will displace other small mammals including the gray squirrel, raccoon, opossum and skunk. These animals can interact with people when they are displaced and looking for food and shelter. The displacement can also cause an increase negative vehicle/animal interactions.

The successional old field and successional shrubland communities that are currently present within the site provide habitat for small mammals, as well as a food source for migratory birds. Removal of these habitats, along with the removal of the wooded areas, will reduce on-site habitat for migratory birds.

Positive interactions:

The Preliminary Conceptual Master Plan identifies approximately 64 acres (38%) of open space within the project area. This will enable displaced small mammals to repopulate, and even provide viewing by residents within the developed areas. If specific species of shrubs and trees are planted in the open space (nut and fruit bearing plants, native wildflowers), they will provide sufficient food for small mammal populations and may even decrease the number of negative interactions between people and animals.

The Preliminary Conceptual Master Plan identifies nine (9) small stormwater ponds, one (1) large stormwater pond and the restored riparian corridor of Ellicott Creek. These ponds will provide sufficient habitat for any displaced turtles and amphibians that currently exist within the site. The restored Ellicott Creek corridor will enhance stream quality, possibly providing recreational opportunities (fishing, wildlife viewing) for nearby residents. An increase in suitable aquatic habitat will likely occur with the proposed development plan.

Although negative interactions between animals and vehicles will be highest during the beginning of project development, it can be expected that as the displaced mammals find new suitable habitat, the negative interactions will decrease over time. During construction, displaced mammals will be actively looking for new habitat, possibly leading to more negative interactions

with vehicles. Once the project is completed, the permanent open space will provide stable habitat and food for mammals and should decrease the likelihood of negative vehicle interactions.

The opportunities for wildlife viewing will be increased within the development, specifically with birds and small mammals. Residents will likely attract migratory and resident birds with bird feeders and water baths.

Westwood Neighborhood Project

ATTACHMENT A

General Vegetation Maps

Attachment A - General Vegetation Map

Town of Amherst Erie County, New York

EARTH DIMENSIONS, INC.
Soil & Hydrogeologic Investigations • Wetland Delineations
1091 Jamison Road • Elma New York 14059
(716) 655-1717 • Fax (716) 655-2915 • www.earthdimensions.com

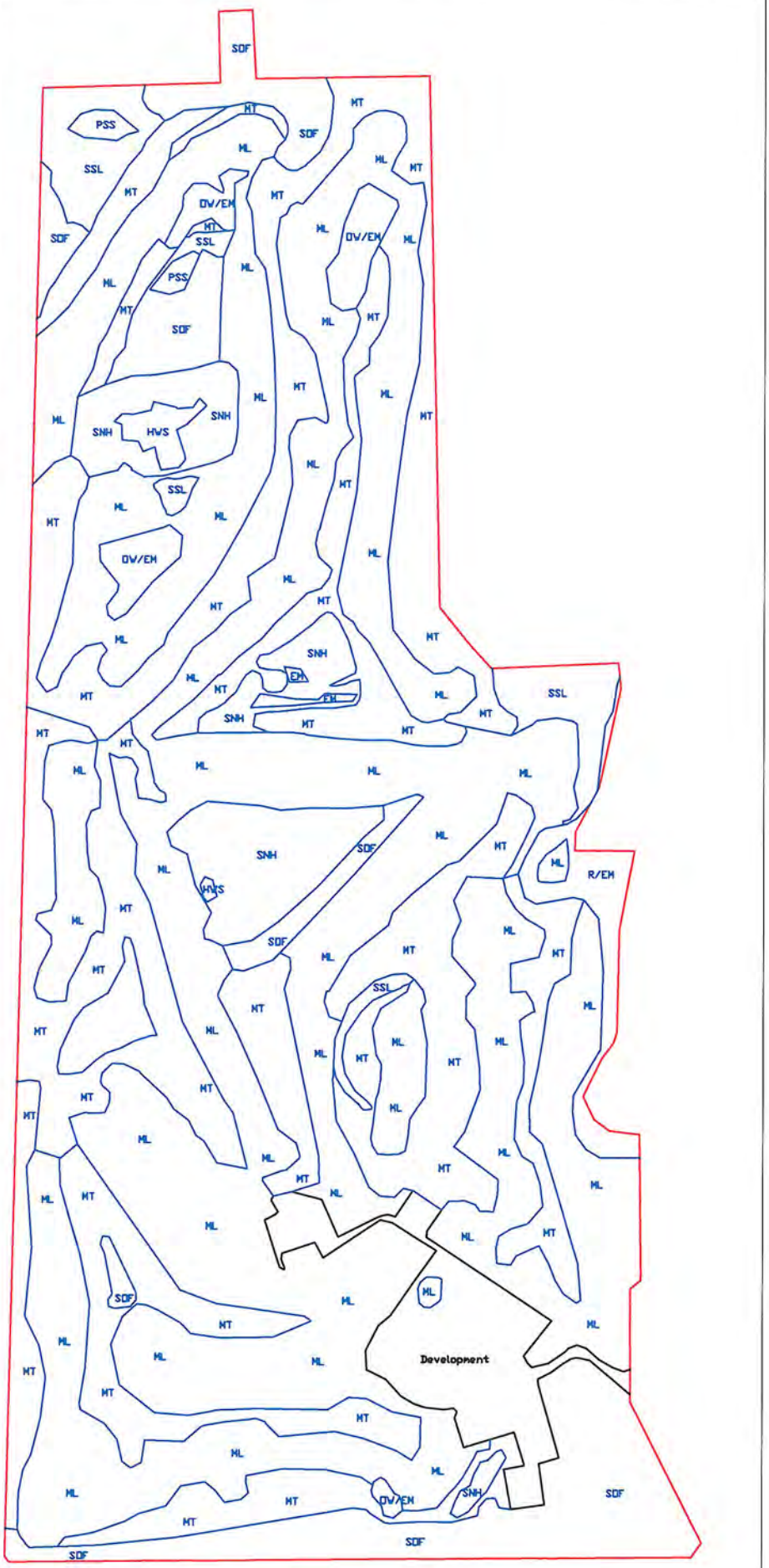
Scale:

Map Date: October 1, 2014/ TJS for EDI
Revised:

Base Map Provided By: GPSmap 62S

File Name: Attachment 1.dwg

EDI Project Code: W1I09c



Westwood Neighborhood

LEGEND

- Limits of Investigation
- Community Boundary
- SDF Successional Old Field
- SSL Successional Shrubland
- SNH Succ. Northern Hardwood
- MT Mown Lawn W/ Trees
- ML Mown Lawn
- EM Shallow Emergent Marsh
- PSS Shrub-swamp
- HWS Hardwood Swamp
- OW Open Water
- R Riverine

Attachment A: General Vegetation Map with aerial photo

Westwood Neighborhood Project
Town of Amherst, Erie County, New York

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Westwood Neighborhood Project

ATTACHMENT B

Aerial Photograph

Attachment B: Aerial Photograph
http://gis1.erie.gov/GC/ErieCountyNY/default.htm
Site visited 9/20/2014

Westwood Neighborhood Project
Town of Amherst, Erie County, New York

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ATTACHMENT C

Site Photographs & Location Map

Attachment C - Photo Location Map

Town of Amherst Erie County, New York

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Scale:

Map Date: October 1, 2014/ TJS for EDI
Revised:

Base Map Provided By: GPSmap 62S

File Name: Attachment 1.dwg

EDI Project Code: W1I09c

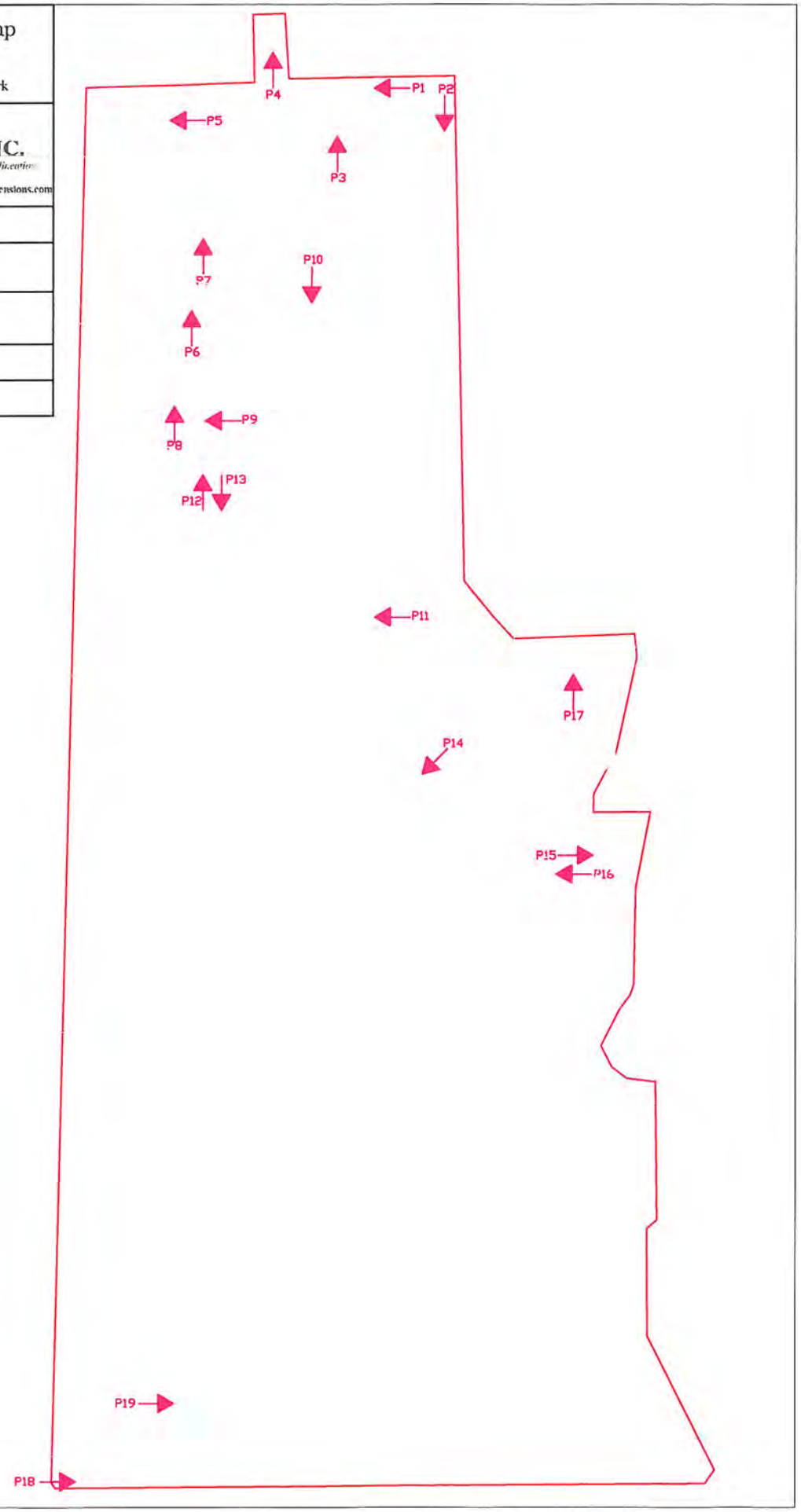

Photo 1: Facing west. Depicts the mown lawn community along the northern property boundary.

Photo 2: Facing south. Depicts the manicured lawn of the greens and fairways.

Photo 3: Facing north. Depicts the successional old field community in the north portion of the property.

Photo 4: Facing north. Depicts the successional old field community adjacent to Maple Road.

Photo 5: Facing west. Depicts the shrub-swamp community in the northwest portion of the site.

Photo 6: Facing north. Depicts a successional old field community.

Photo 7: Facing north. Depicts an open water and shallow emergent marsh community.

Photo 8: Facing north. Depicts a hardwood swamp community in the northern portion of the site.

Photo 9: Facing west. Depicts a large northern red oak within a successional northern hardwood community.

Photo 10: Facing south. Depicts the greens and fairways within the central portion of the site.

Photo 11: Facing west. Depicts varying habitats in the central portion of the investigation area.

Photo 12: Facing north. Depicts shrub-swamp and successional shrubland communities.

Photo 13: Facing south. Depicts an open water and shallow emergent marsh community.

Photo 14: Facing southwest. Depicts a successional old field community.

Photo 15: Facing east. Depicts a section of the lower perennial stream and associated wetlands.

Photo 16: Facing west. Depicts the shallow emergent marsh connected to Ellicott Creek.

Photo 17: Facing north. Depicts a shrubland community along the eastern property limits.

Photo 18: Facing east. Depicts an old field community along the southern property limits.

Photo 19: Facing east. Depicts a linear drainage feature in the southern portion of the site.

Photo 20: The most common mammal species within the investigation area; eastern grey squirrel.

Westwood Neighborhood Project

ATTACHMENT D

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Westwood Neighborhood Project

ATTACHMENT E

Investigation Personnel

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Report Preparation
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Westwood

A Traditional Neighborhood
in the heart of Amherst.

Phase 2 Environmental Site Assessment
Soil/Sediment Sampling Report

November 12, 2014

Prepared For:
Andrew J. Shaevel, Managing Partner
Mensch Capital Partners, LLC
5477 Main Street
Williamsville, NY 14221

Prepared By:

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November 12, 2014

Mensch Capital Partners, LLC
5477 Main Street
Williamsville, New York 14221

Care of:

Brad Packard
Project Manager
Ciminelli Real Estate Corporation
350 Essjay Road
Williamsville, NY 14221

Re: Soil/Sediment Sampling – Westwood Golf Course, Amherst, New York

Mr. Packard:

At the request of Mensch Capital Partners ("Mensch"), C&S Engineers, Inc. ("C&S") conducted soil and sediment sampling at the Westwood County Club ("Site") in Amherst New York.

I. PROJECT DESCRIPTION

Ciminelli Real Estate Corporation is assisting Mensch with the future redevelopment of the golf course. Future plans for the Westwood site included a mixed use neighborhood with residential and retail developments. As part of the review process for the proposed project, an Environmental Impact Statement has been prepared and is undergoing comment and review by several agencies. Subsequently, the Erie County Department of Health ("ECDOH") has recommended the implementation of a soil management plan at the site due to past and current use of pesticides and herbicides on site. Ciminelli has requested that C&S prepare a sampling plan to assess whether a soil management plan is necessary during the future development of the project.

In response to the ECDOH's concern, C&S completed a soil and sediment characterization program at the Site as described below.

II. SAMPLING METHODS

A total of fifteen soil samples were collected from the Site on September 29, 2014. Based on the results of that sampling, sediment samples were collected in a subsequent field visit. A soil and sediment sample log is provided as attached Table 1, and attached Figure 1 presents sampling locations.

The soil samples targeted the area surrounding the pesticide/herbicide-fertilizer storage facility behind the maintenance facility; fairways; greens; and areas adjacent to ponds or within drainage swales. Table 2-1 below summarizes the sampling locations.

Table 2-1: Soil Sample Collection

Sample ID	*Sample Date*	*Sample Location*	*Start Depth*	*End Depth (inches)*
12F-06	9/29/2014	Hole 12 Fairway	0	14
12G-02	9/29/2014	Hole 12 Green	0	14
15G-01	9/29/2014	Hole 15 Green	0	14
16F-06	9/29/2014	Hole 16 Fairway	0	14
2F-02	9/29/2014	Hole 2 Fairway	0	16
3F-03	9/29/2014	Hole 3 Fairway	0	16
4F-04	9/29/2014	Hole 4 Fairway	0	14
6G-04	9/29/2014	Hole 6 Green	0	5
9F-01	9/29/2014	Hole 9 Fairway	0	14
DF-01	9/29/2014	Swale West of 9 Hole	0	14
DF-02	9/29/2014	Adjacent to 3 Hole Pond	0	14
DF-03	9/29/2014	Adjacent to 15 Hole Pond	0	14
DF-04	9/29/2014	Swale South of Ox Bow	0	14
SA-01	9/29/2014	Storage Area	0	14
SA-02	9/29/2014	Storage Area	0	7

The soil samples were collected using a hand push soil probe. Samples were collected within the first 14 inches from the surface. The soil samples were collected by peeling back the turf to expose the underlying soil, with the exception of the samples collected from the greens. Sample 6G-04 was collected from the circular plugs of sod created by an aerating machine. The plugs were approximately 0.25" diameter and five to six inches long. The other samples from the greens were collected from the edge of the green using a hand push soil probe. The resulting soil samples were collected for pesticides, herbicides and arsenic using USEPA Methods 8081, 8151, and 6010, respectively.

The sediment samples were collected using a hand shovel. Sediment from the first 6 inches was collected and placed into jars for analysis of arsenic using USEPA Method 6010.

Sediment was collected from four ponds. Sediment samples were collected using a decontaminated shovel approximately 5 to 8 feet from the edge of the pond. From each pond, a discrete sample was collected from a location adjacent to a green, and composite sample was collected at the discharge point of the pond.

Sample pairs (one discrete and one composite) were also collected from Ellicott Creek. One pair (EC-01 and EC-02) was collected to characterize background sediment concentrations in Ellicott Creek at an upstream location. The other pair (DO-01 and DO-02) was collected from Ellicott Creek immediately downstream of the drainage outfall for the golf course. The ponds at the golf course drain into this single outlet that discharges into Ellicott Creek.

Table 2-2: Sediment Sample Collection

Sample ID	*Sample Date*	*Sample Location*	*Sample Type*	*Start Depth*	*End Depth (inches)*
15PD-01	10/23/2014	Hole 15 Pond	Discrete	0	3
15PD-02	10/23/2014	Hole 15 Pond	Composite	0	3
17PD-01	10/23/2014	Hole 17 Pond	Discrete	0	3
17PD-02	10/23/2014	Hole 17 Pond	Composite	0	3
3PD-01	10/23/2014	Hole 3 Pond	Discrete	0	3
3PD-02	10/23/2014	Hole 3 Pond	Composite	0	3
4PD-01	10/23/2014	Hole 4 Pond	Discrete	0	3
4PD-02	10/23/2014	Hole 4 Pond	Composite	0	3
DO-01	10/23/2014	Ellicott Creek (at Drainage Outfall)	Discrete	0	3
DO-02	10/23/2014	Ellicott Creek (at Drainage Outfall)	Composite	0	3
EC-01	10/23/2014	Ellicott Creek (Upstream)	Discrete	0	3
EC-02	10/23/2014	Ellicott Creek (Upstream)	Composite	0	3

III. SAMPLING RESULTS

Site soils generally consist of silty clay loam. Soil samples collected from greens contained trace amounts of fine sand. Sediment samples from ponds and drainage features consisted of 2 to 3 inches of black decomposing organic material followed by silty clay. Sediment samples from areas within Ellicott Creek (drainage outfall and upstream locations) consisted of coarse sand and gravel from the creek bottom and silty clay from the creek edge.

September 29, 2014 – Soil Sampling
The fifteen soil samples were analyzed for herbicides, pesticides and arsenic. Table 2 presents the analytical results, which are summarized below:

- No herbicides or pesticides were detected in the samples.
- Five of the fifteen soil samples contained concentrations that **exceeded Industrial Use SCO for arsenic**.
- Three samples were collected from greens, and arsenic in all three samples exceeded the New York State Department of Environmental Conservation ("NYSDEC") Industrial Use Soil Cleanup Objective ("SCO").
- The arsenic concentrations in the soil sample collected from the green located at Hole 12 was approximately four times higher (66 mg/kg) than the Industrial Use SCO (16 mg/kg).
- Of the six samples collected from fairways, one sample exceeded for arsenic (3F-03). The soil sample in the maintenance storage area exceeded arsenic for Industrial Use SCO.

October 15, 2014 – Sediment Sampling
The twelve sediment samples were analyzed for total arsenic. Table 2 presents the analytical results, which are summarized below:

- Arsenic was detected in all twelve sediment samples.
- All arsenic concentrations were below Unrestricted Use SCO and Protection of Ecological Resources.
- Using the NYSDEC's June 24, 2014 "Screening and Assessment of Contaminated Sediments Guidance," eleven of the concentrations are characterized as Class A, which is defined as sediments that present little to no potential for risk to aquatic life. One sample, the discrete sample collected from the pond on Hole 15, contained arsenic concentrations falling within the Class B classification, indicating that the additional information is needed to determine the potential risk to aquatic life.

IV. DISCUSSION AND CONCLUSIONS

Soil

Although pesticides and herbicides were not detected in on-site soils, the characterization program described above identified the presence of arsenic in on-site soils at concentrations above the NYSDEC Industrial Use SCO. The highest detected concentrations were identified in samples collected from greens, although samples collected from a fairway and from the pesticide/herbicide-fertilizer storage facility behind the maintenance facility also contained elevated arsenic concentrations.

Arsenic-containing ("arsenical") pesticides such as monosodium methane arsenate, lead arsenate, sodium arsenate and calcium arsenate were historically used for treating lawns and ornamental turf.[1] From the early 1900s to 1980s, these inorganic arsenical pesticides were widely used for commercial and agricultural applications, although most inorganic arsenical pesticides have been banned from use since that time. Considering that Westwood Country Club has been operating since 1921, it is likely that arsenical pesticides have been used at the Site in the past.

Of note, the highest concentrations of arsenic were identified in the samples collected from the greens, which is consistent with typical golf course maintenance practices. Golf greens are highly managed turfs that require consistent application of pesticides. It is likely that in the history of Westwood Country Club arsenical pesticides were used with applications targeting greens.

C&S obtained Westwood documentation of the pesticide use for the 2014 season. The pesticides currently used were checked using the EPA Pesticide Product Label System.[2] Based on the documentation provided, no arsenic containing pesticides are currently used.

Currently, the entire site is vegetated and the likelihood of exposure to arsenic contaminated soil is low. Arsenic in the soil is a concern if the soil is disturbed, creating exposure routes, or if the material is placed in other areas of the Site or moved off-site during redevelopment.

[1] EPA, "Arsenical Pesticides, Man, and the Environment," 1972.

[2] EPA Pesticide Product Label System: http://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1

Sediment

There were no exceedances of the Unrestricted Use Soil Cleanup Objective or Protection of Ecological Resources for arsenic in the sediments in ponds, the outflow to Ellicott Creek or the samples collected at upstream locations within Ellicott Creek. However, a sediment sample collected from one of the ponds contained an arsenic concentration falling within the NYSDEC's Class B sediment category, indicating that additional information is needed to evaluate the potential risk to aquatic life. The remaining sediment sample results fellow within the Class A range, indicating that the sediments that present little to no potential for risk to aquatic life. Additional studies may be necessary to adequately characterize the sediments in the pond proximal to Hole 15.

Thank you for the opportunity to work with you on this project. Should you have any questions regarding this proposal or require additional information, please feel free to contact me at (716) 847-1630.

Sincerely,

C&S ENGINEERS, INC

Mark Colmerauer
Regional Environmental Service Manager

cc: B. Packard, Ciminelli Real Estate Corporation

LEGEND

- SITE BOUNDARY

SOIL SAMPLING - SEPTEMBER 29, 2014

- SOIL SAMPLE LOCATION - ARSENIC CONCENTRATION BELOW UNRESTRICTED USE SCO
- SOIL SAMPLE LOCATION - ARSENIC CONCENTRATION ABOVE INDUSTRIAL USE SCO
- 15G-01 SOIL SAMPLE EXCEEDED NYSDEC SOIL CLEANUP OBJECTIVES FOR ARSENIC

SEDIMENT SAMPLING - OCTOBER 23, 2014

- SEDIMENT SAMPLE LOCATION FROM PONDS, ELLICOTT CREEK AND STORM WATER OUTFALL

200 100 0 200 400 Feet

			NYSDEC Soil Cleanup Objectives			
	Date	Matrix	Unrestricted	Residential / Restricted-Residential / Commercial & Industrial	Arsenic (mg/kg)	Location
12F-06	9/29/2014	SO	13	16	9.1	Hole 12 Fairway
12G-02	9/29/2014	SO	13	16	**66.3**	Hole 12 Green
15G-01	9/29/2014	SO	13	16	**23.6**	Hole 15 Green
16F-05	9/29/2014	SO	13	16	7.4	Hole 16 Fairway
2F-02	9/29/2014	SO	13	16	7.4	Hole 2 Fairway
3F-03	9/29/2014	SO	13	16	**18.2**	Hole 3 Fairway
4F-04	9/29/2014	SO	13	16	9.9	Hole 4 Fairway
6G-04	9/29/2014	SO	13	16	**26.8**	Hole 6 Green
9F-01	9/29/2014	SO	13	16	2.4	Hole 9 Fairway
DF-01	9/29/2014	SO	13	16	3.3	Swale West Of 9 Hole
DF-02	9/29/2014	SO	13	16	6.7	Ajacent To 3 Hole Pond
DF-03	9/29/2014	SO	13	16	4.6	Adjacent To 15 Hole Pond
DF-04	9/29/2014	SO	13	16	5.1	Swale South Of Ox Bow
SA-01	9/29/2014	SO	13	16	**16.4**	Storage Area
SA-02	9/29/2014	SO	13	16	2.2	Storage Area
15PD-01	10/23/2014	SD	13	16	11.3	Hole 15 Pond
15PD-02	10/23/2014	SD	13	16	5.0	Hole 15 Pond
17PD-01	10/23/2014	SD	13	16	2.3	Hole 17 Pond
17PD-02	10/23/2014	SD	13	16	2.1	Hole 17 Pond
3PD-01	10/23/2014	SD	13	16	3.5	Hole 3 Pond
3PD-02	10/23/2014	SD	13	16	5.3	Hole 3 Pond
4PD-01	10/23/2014	SD	13	16	4.4	Hole 4 Pond
4PD-02	10/23/2014	SD	13	16	8.3	Hole 4 Pond
DO-01	10/23/2014	SD	13	16	3.1	Drainage Outfall
DO-02	10/23/2014	SD	13	16	3.2	Drainage Outfall
EC-01	10/23/2014	SD	13	16	1.5	Ellicott Creek
EC-02	10/23/2014	SD	13	16	1.3	Ellicott Creek

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N

WESTWOOD COUNTY CLUB
SOIL INVESTIGATION

WILLIAMSVILLE, NEW YORK

MARK	DATE	DESCRIPTION

REVISIONS

PROJECT NO:	O63.001.001
DATE:	SEPT. 9, 2013
DRAWN BY:	C. MARTIN
DESIGNED BY:	C. MARTIN
CHECKED BY:	M. COLMERAUER

SOIL SAMPLING RESULTS

FIGURE 1

PHOTOGRAPHIC LOG

ATTACHMENT A

Exhibit:	Date:	Westwood Soil and Sediment Sampling
1	9/29/2014	

Description:

Sample location adjacent to above ground storage tanks.

Exhibit:	Date:	Westwood Soil and Sediment Sampling
2	9/29/2014	

Description:

Sample location adjacent to pesticide storage building.

PHOTOGRAPHIC LOG

ATTACHMENT A

Exhibit:	Date:	Westwood Soil and Sediment Sampling
3	9/29/2014	

Description:

Soil sample from Hole 9 fairway.

Exhibit:	Date:	Westwood Soil and Sediment Sampling
4	9/29/2014	

Description:

Cut section of fairway for soil sampling.

PHOTOGRAPHIC LOG

ATTACHMENT A

Exhibit:	Date:	Westwood Soil and Sediment Sampling
5	9/29/2014	

Description:

View of sample location from drainage feature. Drainage ditch between Hole 8 and Hole 9.

Exhibit:	Date:	Westwood Soil and Sediment Sampling
6	9/29/2014	

Description:

Soil sample location on Hole 12 fairway.

PHOTOGRAPHIC LOG

ATTACHMENT A

Exhibit:	Date:	Westwood Soil and Sediment Sampling
7	9/29/2014	

Description:

Soil sample location adjacent to Hole 3 pond.

Exhibit:	Date:	Westwood Soil and Sediment Sampling
8	9/29/2014	

Description:

Soil sample location adjacent to Hole 15 pond.

PHOTOGRAPHIC LOG

ATTACHMENT A

Exhibit:	Date:	Westwood Soil and Sediment Sampling
9	9/30/2014	

Description:

Soil sample location on Hole 15 green.

Exhibit:	Date:	Westwood Soil and Sediment Sampling
10	9/29/2014	

Description:

Soil sample location from drainage feature adjacent to Hole 10 and Hole 17. Drainage ditch to ox bow around Hole 17 green.

PHOTOGRAPHIC LOG

ATTACHMENT A

Exhibit:	Date:	Westwood Soil and Sediment Sampling
11	10/23/2014	

Description:

Sediment sample from Hole 3 pond adjacent to green.

Exhibit:	Date:	Westwood Soil and Sediment Sampling
12	10/23/2014	

Description:

Sediment sample location at drainage point on Hole 3 pond.

PHOTOGRAPHIC LOG

ATTACHMENT A

Exhibit:	Date:	Westwood Soil and Sediment Sampling
13	10/23/2014	

Description:

Sediment sample location adjacent to Hole 4 pond.

Exhibit:	Date:	Westwood Soil and Sediment Sampling
14	10/23/2014	

Description:

Sediment sample location at drainage point on Hole 4 pond.

141 Elm Street
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Table 1

Soil/Sediment Sample Log

Project Name: WESTWOOD COUNTRY CLUB SOIL/SEDIMENT SAMPLING

Location: AMHERST, NEW YORK

Client: MENSCH CAPITAL PARTNERS

Date: Monday, October 27, 2014 **Contractor:**

Sample ID	Sample Date	Collection Time	Analysis	Sample Location	Start Depth	End Depth	Depth Unit	COC No.	Description	Color	Remarks
12F-06	9/29/2014	12:00 PM	8151A, 8081B, 6010 - ARSENIC ONLY	12 HOLE FAIRWAY	0	14	INCH	480-68232	SILTY CLAY LOAM	DARK BROWN	MOIST
12G-02	9/29/2014	12:20 PM	8151A, 8081B, 6010 - ARSENIC ONLY	12 HOLE GREEN	0	14	INCH	480-68232	SILTY CLAY LOAM	DARK BROWN	MOIST; TRACE SAND
15G-01	9/29/2014	11:00 AM	8151A, 8081B, 6010 - ARSENIC ONLY	15 HOLE GREEN	0	14	INCH	480-68232	SILTY CLAY LOAM	DARK BROWN	TRACE SAND
16F-06	9/29/2014	11:40 AM	8151A, 8081B, 6010 - ARSENIC ONLY	16 HOLE FAIRWAY	0	14	INCH	480-68232	SILTY CLAY LOAM	BLACK/BROWN	WET
2F-02	9/29/2014	9:20 AM	8151A, 8081B, 6010 - ARSENIC ONLY	2 HOLE FAIRWAY	0	16	INCH	480-68232	SILTY CLAY LOAM	BROWN	DENSE SITY CLAY
3F-03	9/29/2014	9:50 AM	8151A, 8081B, 6010 - ARSENIC ONLY	3 HOLE FAIRWAY	0	16	INCH	480-68232	SILTY CLAY LOAM	BROWN	
4F-04	9/29/2014	10:30 AM	8151A, 8081B, 6010 - ARSENIC ONLY	4 HOLE FAIRWAY	0	14	INCH	480-68232	SILTY CLAY LOAM	DARK BROWN	WET
6G-04	9/29/2014	12:50 PM	8151A, 8081B, 6010 - ARSENIC ONLY	6 HOLE GREEN	0	5	INCH	480-68232	SILTY CLAY LOAM	DARK BROWN	TRACE SAND
9F-01	9/29/2014	8:30 AM	8151A, 8081B, 6010 - ARSENIC ONLY	9 HOLE FAIRWAY	0	14	INCH	480-68232	SILTY SAND	BROWN	MOIST; 50% SILT
DF-01	9/29/2014	9:00 AM	8151A, 8081B, 6010 - ARSENIC ONLY	SWALE WEST OF 9 HOLE	0	14	INCH	480-68232	SILT WITH ORGANIC MATERIAL	BLACK/BROWN	
DF-02	9/29/2014	10:10 AM	8151A, 8081B, 6010 - ARSENIC ONLY	AJACENT TO 3 HOLE POND	0	14	INCH	480-68232	SILTY CLAY LOAM	DARK BROWN	DENSE TAN SITY CLAY AT 10"-12"
DF-03	9/29/2014	11:20 AM	8151A, 8081B, 6010 - ARSENIC ONLY	ADJACENT TO 15 HOLE POND	0	14	INCH	480-68232	SILTY CLAY	BROWN	DRY 20% SILT
DF-04	9/29/2014	12:30 PM	8151A, 8081B, 6010 - ARSENIC ONLY	SWALE SOUTH OF OX BOW	0	14	INCH	480-68232	SILTY CLAY LOAM	DARK BROWN	DRY TRACE FINE SAND
SA-01	9/29/2014	7:30 AM	8151A, 8081B, 6010 - ARSENIC ONLY	STORAGE AREA	0	14	INCH	480-68232	SILTY CLAY LOAM	DARK BROWN	TRACE SILT ; 10%-20% CLAY
SA-02	9/29/2014	8:15 AM	8151A, 8081B, 6010 - ARSENIC ONLY	STORAGE AREA	0	7	INCH	480-68232	SILTY CLAY LOAM	DARK BROWN	TRACE SILT ; 10%-20% CLAY
15PD-01	10/23/2014	11:45 AM	6010 - ARSENIC ONLY	15 HOLE POND	0	3	INCH	480-69993	SILTY CLAY WITH ORGANIC MATERIAL	BLACK/BROWN	
15PD-02	10/23/2014	11:35 AM	6010 - ARSENIC ONLY	15 HOLE POND	0	3	INCH	480-69993	SILTY CLAY WITH ORGANIC MATERIAL	BLACK/BROWN	
17PD-01	10/23/2014	12:20 PM	6010 - ARSENIC ONLY	17 HOLE POND	0	3	INCH	480-69993	SILTY CLAY WITH ORGANIC MATERIAL	BLACK/BROWN	
17PD-02	10/23/2014	12:18 PM	6010 - ARSENIC ONLY	17 HOLE POND	0	3	INCH	480-69993	SILTY CLAY WITH ORGANIC MATERIAL	BLACK/BROWN	
3PD-01	10/23/2014	10:50 AM	6010 - ARSENIC ONLY	3 HOLE POND	0	3	INCH	480-69993	SILTY CLAY WITH ORGANIC MATERIAL	BLACK/BROWN	
3PD-02	10/23/2014	11:00 AM	6010 - ARSENIC ONLY	3 HOLE POND	0	3	INCH	480-69993	SILTY CLAY WITH ORGANIC MATERIAL	BLACK/BROWN	
4PD-01	10/23/2014	11:10 AM	6010 - ARSENIC ONLY	4 HOLE POND	0	3	INCH	480-69993	SILTY CLAY WITH ORGANIC MATERIAL	BLACK/BROWN	
4PD-02	10/23/2014	11:15 AM	6010 - ARSENIC ONLY	4 HOLE POND	0	3	INCH	480-69993	SILTY CLAY WITH ORGANIC MATERIAL	BLACK/BROWN	
DO-01	10/23/2014	12:10 PM	6010 - ARSENIC ONLY	DRAINAGE OUTFALL	0	3	INCH	480-69993	CORASE SAND AND SILTY CLAY	BROWN	
DO-02	10/23/2014	12:00 PM	6010 - ARSENIC ONLY	DRAINAGE OUTFALL	0	3	INCH	480-69993	CORASE SAND AND SILTY CLAY	BROWN	
EC-01	10/23/2014	12:38 PM	6010 - ARSENIC ONLY	ELLICOTT CREEK	0	3	INCH	480-69993	CORASE SAND AND SILTY CLAY	BROWN	
EC-02	10/23/2014	12:40 PM	6010 - ARSENIC ONLY	ELLICOTT CREEK	0	3	INCH	480-69993	CORASE SAND AND SILTY CLAY	BROWN	

TABLE 2: SOIL & SEDIMENT SAMPLING RESULTS
WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

Sample ID	Date	Matrix	NYSDEC Soil Cleanup Objectives: Unrestricted*	NYSDEC Soil Cleanup Objectives: Residential / Restricted-Residential / Commercial & Industrial*	Arsenic (mg/kg)	Location
12F-06	9/29/2014	SO	13	16	9.1	Hole 12 Fairway
12G-02	9/29/2014	SO	13	16	**66.3**	Hole 12 Green
15G-01	9/29/2014	SO	13	16	**23.6**	Hole 15 Green
16F-05	9/29/2014	SO	13	16	7.4	Hole 16 Fairway
2F-02	9/29/2014	SO	13	16	7.4	Hole 2 Fairway
3F-03	9/29/2014	SO	13	16	**18.2**	Hole 3 Fairway
4F-04	9/29/2014	SO	13	16	9.9	Hole 4 Fairway
6G-04	9/29/2014	SO	13	16	**26.8**	Hole 6 Green
9F-01	9/29/2014	SO	13	16	2.4	Hole 9 Fairway
DF-01	9/29/2014	SO	13	16	3.3	Swale West Of 9 Hole
DF-02	9/29/2014	SO	13	16	6.7	Ajacent To 3 Hole Pond
DF-03	9/29/2014	SO	13	16	4.6	Adjacent To 15 Hole Pond
DF-04	9/29/2014	SO	13	16	3.1	Swale South Of Ox Bow
SA-01	9/29/2014	SO	13	16	**16.4**	Storage Area
SA-02	9/29/2014	SO	13	16	2.2	Storage Area
15PD-01	10/23/2014	SD	13	16	11.3	Hole 15 Pond
15PD-02	10/23/2014	SD	13	16	5.0	Hole 15 Pond
17PD-01	10/23/2014	SD	13	16	2.3	Hole 17 Pond
17PD-02	10/23/2014	SD	13	16	2.1	Hole 17 Pond
3PD-01	10/23/2014	SD	13	16	3.5	Hole 3 Pond
3PD-02	10/23/2014	SD	13	16	5.3	Hole 3 Pond
4PD-01	10/23/2014	SD	13	16	4.4	Hole 4 Pond
4PD-02	10/23/2014	SD	13	16	8.3	Hole 4 Pond
DO-01	10/23/2014	SD	13	16	3.1	Drainage Outfall
DO-02	10/23/2014	SD	13	16	3.2	Drainage Outfall
EC-01	10/23/2014	SD	13	16	1.5	Ellicott Creek
EC-02	10/23/2014	SD	13	16	1.3	Ellicott Creek

Notes:

SO = Soil

SD = Sediment

* Unrestricted Use SCO and Protection of Ecological Resources SCO are both 13 mg/kg. Residential, Restricted Residential, Commercial and Industrial Use SCOs are all 16 mg/kg.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-68232-1
Client Project/Site: Westwood Country Club Amherst NY

For:
C&S Engineers, Inc.
141 Elm Street
Suite 100
Buffalo, New York 14203

Attn: Cody Martin

Joseph V. Giacomazza

Authorized for release by:
10/7/2014 11:20:56 AM
Joe Giacomazza, Project Management Assistant II
joe.giacomazza@testamericainc.com

Designee for

Judy Stone, Senior Project Manager
(484)685-0868
judy.stone@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-68232-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 480-68232-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-68232-1

Receipt
The samples were received on 9/29/2014 2:28 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 19.5º C.

Except:
COC lists 6G-04, bottles list 6G-03. Logged according to COC

GC Semi VOA
Method(s) 8151A: The continuing calibration verification (CCV) associated with batch 205868 recovered above the upper control limit for 2,4-D and Silvex(2,4,5-TP). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: (CCV 480-205868/2).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-68232-1

Client Sample ID: SA-01 — Lab Sample ID: 480-68232-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	16.4		2.4	0.49	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: SA-02 — Lab Sample ID: 480-68232-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.2	J	2.8	0.55	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 9F-01 — Lab Sample ID: 480-68232-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.4		2.3	0.45	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: DF-01 — Lab Sample ID: 480-68232-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.3		2.7	0.54	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 2F-02 — Lab Sample ID: 480-68232-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	7.4		2.7	0.54	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 3F-03 — Lab Sample ID: 480-68232-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	18.2		2.7	0.54	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: DF-02 — Lab Sample ID: 480-68232-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	6.7		2.8	0.57	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 4F-04 — Lab Sample ID: 480-68232-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	9.9		2.8	0.57	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 15G-01 — Lab Sample ID: 480-68232-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	23.6		2.4	0.48	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: DF-03 — Lab Sample ID: 480-68232-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	4.6		2.2	0.44	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 16F-05 — Lab Sample ID: 480-68232-11

This Detection Summary does not include radiochemical test results.

Client Sample ID: 16F-05 (Continued) — Lab Sample ID: 480-68232-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	7.4		2.7	0.55	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 12F-06 — Lab Sample ID: 480-68232-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	9.1		2.5	0.50	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 12G-02 — Lab Sample ID: 480-68232-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	66.3		2.3	0.46	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: DF-04 — Lab Sample ID: 480-68232-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.1		2.8	0.57	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 6G-04 — Lab Sample ID: 480-68232-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	26.8		3.1	0.62	mg/Kg	1	☼	6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: SA-01

Lab Sample ID: 480-68232-1

Date Collected: 09/29/14 07:30
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 83.1

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		8.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
4,4'-DDE	ND		8.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
4,4'-DDT	ND		8.1	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
Aldrin	ND		8.1	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
alpha-BHC	ND		8.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
alpha-Chlordane	ND		8.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
beta-BHC	ND		8.1	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
delta-BHC	ND		8.1	1.4	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
Dieldrin	ND		8.1	1.4	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
Endosulfan I	ND		8.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
Endosulfan II	ND		8.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
Endosulfan sulfate	ND		8.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
Endrin	ND		8.1	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
Endrin aldehyde	ND		8.1	1.2	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
Endrin ketone	ND		8.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
gamma-BHC (Lindane)	ND		8.1	1.4	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
gamma-Chlordane	ND		8.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
Heptachlor	ND		8.1	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
Heptachlor epoxide	ND		8.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
Methoxychlor	ND		8.1	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1
Toxaphene	ND		81	22	ug/Kg	☼	10/06/14 01:56	10/06/14 09:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*96*		*76 - 149*	*10/06/14 01:56*	*10/06/14 09:06*	*1*
DCB Decachlorobiphenyl	*101*		*76 - 149*	*10/06/14 01:56*	*10/06/14 09:06*	*1*
Tetrachloro-m-xylene	*93*		*72 - 136*	*10/06/14 01:56*	*10/06/14 09:06*	*1*
Tetrachloro-m-xylene	*87*		*72 - 136*	*10/06/14 01:56*	*10/06/14 09:06*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		20	6.3	ug/Kg	☼	10/01/14 07:44	10/03/14 14:42	1
Silvex (2,4,5-TP)	ND		20	7.0	ug/Kg	☼	10/01/14 07:44	10/03/14 14:42	1
2,4-D	ND		20	12	ug/Kg	☼	10/01/14 07:44	10/03/14 14:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*75*		*39 - 120*	*10/01/14 07:44*	*10/03/14 14:42*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	16.4		2.4	0.49	mg/Kg	☼	09/30/14 14:17	10/02/14 00:19	1

Client Sample ID: SA-02

Lab Sample ID: 480-68232-2

Date Collected: 09/29/14 08:15
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 76.0

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		8.8	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
4,4'-DDE	ND		8.8	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
4,4'-DDT	ND		8.8	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-68232-1

Client Sample ID: SA-02

Lab Sample ID: 480-68232-2
Date Collected: 09/29/14 08:15
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 76.0

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		8.8	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
alpha-BHC	ND		8.8	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
alpha-Chlordane	ND		8.8	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
beta-BHC	ND		8.8	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
delta-BHC	ND		8.8	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
Dieldrin	ND		8.8	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
Endosulfan I	ND		8.8	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
Endosulfan II	ND		8.8	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
Endosulfan sulfate	ND		8.8	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
Endrin	ND		8.8	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
Endrin aldehyde	ND		8.8	1.3	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
Endrin ketone	ND		8.8	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
gamma-BHC (Lindane)	ND		8.8	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
gamma-Chlordane	ND		8.8	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
Heptachlor	ND		8.8	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
Heptachlor epoxide	ND		8.8	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
Methoxychlor	ND		8.8	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1
Toxaphene	ND		88	24	ug/Kg	☼	10/06/14 01:56	10/06/14 09:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*100*		*76 - 149*	*10/06/14 01:56*	*10/06/14 09:17*	*1*
DCB Decachlorobiphenyl	*107*		*76 - 149*	*10/06/14 01:56*	*10/06/14 09:17*	*1*
Tetrachloro-m-xylene	*98*		*72 - 136*	*10/06/14 01:56*	*10/06/14 09:17*	*1*
Tetrachloro-m-xylene	*90*		*72 - 136*	*10/06/14 01:56*	*10/06/14 09:17*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		21	6.8	ug/Kg	☼	10/01/14 07:44	10/03/14 15:11	1
Silvex (2,4,5-TP)	ND		21	7.7	ug/Kg	☼	10/01/14 07:44	10/03/14 15:11	1
2,4-D	ND		21	13	ug/Kg	☼	10/01/14 07:44	10/03/14 15:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*78*		*39 - 120*	*10/01/14 07:44*	*10/03/14 15:11*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.2	J	2.8	0.55	mg/Kg	☼	09/30/14 14:17	10/02/14 00:22	1

Client Sample ID: 9F-01

Lab Sample ID: 480-68232-3
Date Collected: 09/29/14 08:30
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 86.9

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		7.7	1.5	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
4,4'-DDE	ND		7.7	1.5	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
4,4'-DDT	ND		7.7	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
Aldrin	ND		7.7	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
alpha-BHC	ND		7.7	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
alpha-Chlordane	ND		7.7	1.5	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
beta-BHC	ND		7.7	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1

Client Sample ID: 9F-01

Date Collected: 09/29/14 08:30
Date Received: 09/29/14 14:28

Lab Sample ID: 480-68232-3

Matrix: Solid
Percent Solids: 86.9

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
delta-BHC	ND		7.7	1.4	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
Dieldrin	ND		7.7	1.4	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
Endosulfan I	ND		7.7	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
Endosulfan II	ND		7.7	1.5	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
Endosulfan sulfate	ND		7.7	1.5	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
Endrin	ND		7.7	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
Endrin aldehyde	ND		7.7	1.2	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
Endrin ketone	ND		7.7	1.5	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
gamma-BHC (Lindane)	ND		7.7	1.4	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
gamma-Chlordane	ND		7.7	1.5	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
Heptachlor	ND		7.7	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
Heptachlor epoxide	ND		7.7	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
Methoxychlor	ND		7.7	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1
Toxaphene	ND		77	21	ug/Kg	☼	10/06/14 01:56	10/06/14 09:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*98*		*76 - 149*	*10/06/14 01:56*	*10/06/14 09:28*	*1*
DCB Decachlorobiphenyl	*103*		*76 - 149*	*10/06/14 01:56*	*10/06/14 09:28*	*1*
Tetrachloro-m-xylene	*95*		*72 - 136*	*10/06/14 01:56*	*10/06/14 09:28*	*1*
Tetrachloro-m-xylene	*89*		*72 - 136*	*10/06/14 01:56*	*10/06/14 09:28*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		19	6.1	ug/Kg	☼	10/01/14 07:44	10/03/14 15:41	1
Silvex (2,4,5-TP)	ND		19	6.8	ug/Kg	☼	10/01/14 07:44	10/03/14 15:41	1
2,4-D	ND		19	12	ug/Kg	☼	10/01/14 07:44	10/03/14 15:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*69*		*39 - 120*	*10/01/14 07:44*	*10/03/14 15:41*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.4		2.3	0.45	mg/Kg	☼	09/30/14 14:17	10/02/14 00:25	1

Client Sample ID: DF-01

Date Collected: 09/29/14 09:00
Date Received: 09/29/14 14:28

Lab Sample ID: 480-68232-4

Matrix: Solid
Percent Solids: 78.3

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		8.6	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
4,4'-DDE	ND		8.6	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
4,4'-DDT	ND		8.6	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
Aldrin	ND		8.6	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
alpha-BHC	ND		8.6	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
alpha-Chlordane	ND		8.6	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
beta-BHC	ND		8.6	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
delta-BHC	ND		8.6	1.5	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
Dieldrin	ND		8.6	1.5	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
Endosulfan I	ND		8.6	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
Endosulfan II	ND		8.6	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1

Client Sample ID: DF-01

Lab Sample ID: 480-68232-4
Date Collected: 09/29/14 09:00
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 78.3

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endosulfan sulfate	ND		8.6	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
Endrin	ND		8.6	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
Endrin aldehyde	ND		8.6	1.3	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
Endrin ketone	ND		8.6	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
gamma-BHC (Lindane)	ND		8.6	1.5	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
gamma-Chlordane	ND		8.6	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
Heptachlor	ND		8.6	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
Heptachlor epoxide	ND		8.6	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
Methoxychlor	ND		8.6	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1
Toxaphene	ND		86	23	ug/Kg	☼	10/06/14 01:56	10/06/14 09:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*102*		*76 - 149*	*10/06/14 01:56*	*10/06/14 09:40*	*1*
DCB Decachlorobiphenyl	*109*		*76 - 149*	*10/06/14 01:56*	*10/06/14 09:40*	*1*
Tetrachloro-m-xylene	*99*		*72 - 136*	*10/06/14 01:56*	*10/06/14 09:40*	*1*
Tetrachloro-m-xylene	*94*		*72 - 136*	*10/06/14 01:56*	*10/06/14 09:40*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		21	6.7	ug/Kg	☼	10/01/14 07:44	10/03/14 16:11	1
Silvex (2,4,5-TP)	ND		21	7.6	ug/Kg	☼	10/01/14 07:44	10/03/14 16:11	1
2,4-D	ND		21	13	ug/Kg	☼	10/01/14 07:44	10/03/14 16:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*77*		*39 - 120*	*10/01/14 07:44*	*10/03/14 16:11*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.3		2.7	0.54	mg/Kg	☼	09/30/14 14:17	10/02/14 00:27	1

Client Sample ID: 2F-02

Lab Sample ID: 480-68232-5
Date Collected: 09/29/14 09:30
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 74.4

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		9.0	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
4,4'-DDE	ND		9.0	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
4,4'-DDT	ND		9.0	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
Aldrin	ND		9.0	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
alpha-BHC	ND		9.0	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
alpha-Chlordane	ND		9.0	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
beta-BHC	ND		9.0	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
delta-BHC	ND		9.0	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
Dieldrin	ND		9.0	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
Endosulfan I	ND		9.0	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
Endosulfan II	ND		9.0	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
Endosulfan sulfate	ND		9.0	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
Endrin	ND		9.0	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
Endrin aldehyde	ND		9.0	1.3	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
Endrin ketone	ND		9.0	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1

Client Sample ID: 2F-02

Date Collected: 09/29/14 09:30
Date Received: 09/29/14 14:28

Lab Sample ID: 480-68232-5

Matrix: Solid
Percent Solids: 74.4

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		9.0	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
gamma-Chlordane	ND		9.0	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
Heptachlor	ND		9.0	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
Heptachlor epoxide	ND		9.0	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
Methoxychlor	ND		9.0	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1
Toxaphene	ND		90	24	ug/Kg	☼	10/06/14 01:56	10/06/14 09:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*104*		*76 - 149*	*10/06/14 01:56*	*10/06/14 09:51*	*1*
DCB Decachlorobiphenyl	*112*		*76 - 149*	*10/06/14 01:56*	*10/06/14 09:51*	*1*
Tetrachloro-m-xylene	*102*		*72 - 136*	*10/06/14 01:56*	*10/06/14 09:51*	*1*
Tetrachloro-m-xylene	*95*		*72 - 136*	*10/06/14 01:56*	*10/06/14 09:51*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		22	7.1	ug/Kg	☼	10/01/14 07:44	10/03/14 16:40	1
Silvex (2,4,5-TP)	ND		22	8.0	ug/Kg	☼	10/01/14 07:44	10/03/14 16:40	1
2,4-D	ND		22	14	ug/Kg	☼	10/01/14 07:44	10/03/14 16:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*82*		*39 - 120*	*10/01/14 07:44*	*10/03/14 16:40*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	7.4		2.7	0.54	mg/Kg	☼	09/30/14 14:17	10/02/14 00:30	1

Client Sample ID: 3F-03

Date Collected: 09/29/14 09:50
Date Received: 09/29/14 14:28

Lab Sample ID: 480-68232-6

Matrix: Solid
Percent Solids: 79.5

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		8.4	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
4,4'-DDE	ND		8.4	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
4,4'-DDT	ND		8.4	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
Aldrin	ND		8.4	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
alpha-BHC	ND		8.4	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
alpha-Chlordane	ND		8.4	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
beta-BHC	ND		8.4	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
delta-BHC	ND		8.4	1.5	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
Dieldrin	ND		8.4	1.5	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
Endosulfan I	ND		8.4	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
Endosulfan II	ND		8.4	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
Endosulfan sulfate	ND		8.4	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
Endrin	ND		8.4	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
Endrin aldehyde	ND		8.4	1.3	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
Endrin ketone	ND		8.4	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
gamma-BHC (Lindane)	ND		8.4	1.5	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
gamma-Chlordane	ND		8.4	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
Heptachlor	ND		8.4	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
Heptachlor epoxide	ND		8.4	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1

Client Sample ID: 3F-03

Date Collected: 09/29/14 09:50
Date Received: 09/29/14 14:28

Lab Sample ID: 480-68232-6
Matrix: Solid
Percent Solids: 79.5

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methoxychlor	ND		8.4	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1
Toxaphene	ND		84	23	ug/Kg	☼	10/06/14 01:56	10/06/14 10:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*108*		*76 - 149*	*10/06/14 01:56*	*10/06/14 10:03*	*1*
DCB Decachlorobiphenyl	*113*		*76 - 149*	*10/06/14 01:56*	*10/06/14 10:03*	*1*
Tetrachloro-m-xylene	*102*		*72 - 136*	*10/06/14 01:56*	*10/06/14 10:03*	*1*
Tetrachloro-m-xylene	*97*		*72 - 136*	*10/06/14 01:56*	*10/06/14 10:03*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		21	6.6	ug/Kg	☼	10/01/14 07:44	10/03/14 17:10	1
Silvex (2,4,5-TP)	ND		21	7.4	ug/Kg	☼	10/01/14 07:44	10/03/14 17:10	1
2,4-D	ND		21	13	ug/Kg	☼	10/01/14 07:44	10/03/14 17:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*84*		*39 - 120*	*10/01/14 07:44*	*10/03/14 17:10*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	18.2		2.7	0.54	mg/Kg	☼	09/30/14 14:17	10/02/14 00:33	1

Client Sample ID: DF-02

Date Collected: 09/29/14 10:10
Date Received: 09/29/14 14:28

Lab Sample ID: 480-68232-7
Matrix: Solid
Percent Solids: 69.0

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		9.7	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
4,4'-DDE	ND		9.7	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
4,4'-DDT	ND		9.7	2.3	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
Aldrin	ND		9.7	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
alpha-BHC	ND		9.7	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
alpha-Chlordane	ND		9.7	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
beta-BHC	ND		9.7	2.3	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
delta-BHC	ND		9.7	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
Dieldrin	ND		9.7	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
Endosulfan I	ND		9.7	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
Endosulfan II	ND		9.7	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
Endosulfan sulfate	ND		9.7	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
Endrin	ND		9.7	2.3	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
Endrin aldehyde	ND		9.7	1.4	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
Endrin ketone	ND		9.7	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
gamma-BHC (Lindane)	ND		9.7	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
gamma-Chlordane	ND		9.7	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
Heptachlor	ND		9.7	2.3	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
Heptachlor epoxide	ND		9.7	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
Methoxychlor	ND		9.7	2.3	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1
Toxaphene	ND		97	26	ug/Kg	☼	10/06/14 01:56	10/06/14 10:14	1

Client Sample ID: DF-02

Date Collected: 09/29/14 10:10
Date Received: 09/29/14 14:28

Lab Sample ID: 480-68232-7
Matrix: Solid
Percent Solids: 69.0

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	105		76 - 149	10/06/14 01:56	10/06/14 10:14	1
DCB Decachlorobiphenyl	112		76 - 149	10/06/14 01:56	10/06/14 10:14	1
Tetrachloro-m-xylene	102		72 - 136	10/06/14 01:56	10/06/14 10:14	1
Tetrachloro-m-xylene	96		72 - 136	10/06/14 01:56	10/06/14 10:14	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		24	7.5	ug/Kg	☼	10/01/14 07:44	10/03/14 18:09	1
Silvex (2,4,5-TP)	ND		24	8.5	ug/Kg	☼	10/01/14 07:44	10/03/14 18:09	1
2,4-D	ND		24	15	ug/Kg	☼	10/01/14 07:44	10/03/14 18:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	81		39 - 120	10/01/14 07:44	10/03/14 18:09	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.7		2.8	0.57	mg/Kg	☼	09/30/14 14:17	10/02/14 00:36	1

Client Sample ID: 4F-04

Date Collected: 09/29/14 10:30
Date Received: 09/29/14 14:28

Lab Sample ID: 480-68232-8
Matrix: Solid
Percent Solids: 76.0

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		8.8	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
4,4'-DDE	ND		8.8	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
4,4'-DDT	ND		8.8	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
Aldrin	ND		8.8	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
alpha-BHC	ND		8.8	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
alpha-Chlordane	ND		8.8	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
beta-BHC	ND		8.8	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
delta-BHC	ND		8.8	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
Dieldrin	ND		8.8	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
Endosulfan I	ND		8.8	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
Endosulfan II	ND		8.8	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
Endosulfan sulfate	ND		8.8	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
Endrin	ND		8.8	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
Endrin aldehyde	ND		8.8	1.3	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
Endrin ketone	ND		8.8	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
gamma-BHC (Lindane)	ND		8.8	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
gamma-Chlordane	ND		8.8	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
Heptachlor	ND		8.8	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
Heptachlor epoxide	ND		8.8	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
Methoxychlor	ND		8.8	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1
Toxaphene	ND		88	24	ug/Kg	☼	10/06/14 01:56	10/06/14 10:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	99		76 - 149	10/06/14 01:56	10/06/14 10:26	1
DCB Decachlorobiphenyl	107		76 - 149	10/06/14 01:56	10/06/14 10:26	1
Tetrachloro-m-xylene	95		72 - 136	10/06/14 01:56	10/06/14 10:26	1
Tetrachloro-m-xylene	108		72 - 136	10/06/14 01:56	10/06/14 10:26	1

Client Sample ID: 4F-04

Lab Sample ID: 480-68232-8
Date Collected: 09/29/14 10:30
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 76.0

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		22	7.0	ug/Kg	☼	10/01/14 07:44	10/03/14 18:39	1
Silvex (2,4,5-TP)	ND		22	7.8	ug/Kg	☼	10/01/14 07:44	10/03/14 18:39	1
2,4-D	ND		22	14	ug/Kg	☼	10/01/14 07:44	10/03/14 18:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*89*		*39 - 120*	*10/01/14 07:44*	*10/03/14 18:39*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	9.9		2.8	0.57	mg/Kg	☼	09/30/14 14:17	10/02/14 00:46	1

Client Sample ID: 15G-01

Lab Sample ID: 480-68232-9
Date Collected: 09/29/14 11:00
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 82.8

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		8.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
4,4'-DDE	ND		8.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
4,4'-DDT	ND		8.1	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
Aldrin	ND		8.1	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
alpha-BHC	ND		8.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
alpha-Chlordane	ND		8.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
beta-BHC	ND		8.1	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
delta-BHC	ND		8.1	1.4	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
Dieldrin	ND		8.1	1.4	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
Endosulfan I	ND		8.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
Endosulfan II	ND		8.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
Endosulfan sulfate	ND		8.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
Endrin	ND		8.1	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
Endrin aldehyde	ND		8.1	1.2	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
Endrin ketone	ND		8.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
gamma-BHC (Lindane)	ND		8.1	1.4	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
gamma-Chlordane	ND		8.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
Heptachlor	ND		8.1	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
Heptachlor epoxide	ND		8.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
Methoxychlor	ND		8.1	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1
Toxaphene	ND		81	22	ug/Kg	☼	10/06/14 01:56	10/06/14 10:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*104*		*76 - 149*	*10/06/14 01:56*	*10/06/14 10:37*	*1*
DCB Decachlorobiphenyl	*111*		*76 - 149*	*10/06/14 01:56*	*10/06/14 10:37*	*1*
Tetrachloro-m-xylene	*100*		*72 - 136*	*10/06/14 01:56*	*10/06/14 10:37*	*1*
Tetrachloro-m-xylene	*93*		*72 - 136*	*10/06/14 01:56*	*10/06/14 10:37*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		20	6.3	ug/Kg	☼	10/01/14 07:44	10/03/14 19:09	1
Silvex (2,4,5-TP)	ND		20	7.1	ug/Kg	☼	10/01/14 07:44	10/03/14 19:09	1
2,4-D	ND		20	12	ug/Kg	☼	10/01/14 07:44	10/03/14 19:09	1

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-68232-1

Client Sample ID: 15G-01

Lab Sample ID: 480-68232-9
Date Collected: 09/29/14 11:00
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 82.8

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	80		39 - 120	10/01/14 07:44	10/03/14 19:09	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	23.6		2.4	0.48	mg/Kg	☼	09/30/14 14:17	10/02/14 00:49	1

Client Sample ID: DF-03

Lab Sample ID: 480-68232-10
Date Collected: 09/29/14 11:20
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 83.4

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		8.0	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
4,4'-DDE	ND		8.0	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
4,4'-DDT	ND		8.0	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
Aldrin	ND		8.0	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
alpha-BHC	ND		8.0	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
alpha-Chlordane	ND		8.0	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
beta-BHC	ND		8.0	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
delta-BHC	ND		8.0	1.4	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
Dieldrin	ND		8.0	1.4	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
Endosulfan I	ND		8.0	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
Endosulfan II	ND		8.0	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
Endosulfan sulfate	ND		8.0	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
Endrin	ND		8.0	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
Endrin aldehyde	ND		8.0	1.2	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
Endrin ketone	ND		8.0	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
gamma-BHC (Lindane)	ND		8.0	1.4	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
gamma-Chlordane	ND		8.0	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
Heptachlor	ND		8.0	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
Heptachlor epoxide	ND		8.0	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
Methoxychlor	ND		8.0	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1
Toxaphene	ND		80	22	ug/Kg	☼	10/06/14 01:56	10/06/14 10:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	102		76 - 149	10/06/14 01:56	10/06/14 10:49	1
DCB Decachlorobiphenyl	109		76 - 149	10/06/14 01:56	10/06/14 10:49	1
Tetrachloro-m-xylene	99		72 - 136	10/06/14 01:56	10/06/14 10:49	1
Tetrachloro-m-xylene	91		72 - 136	10/06/14 01:56	10/06/14 10:49	1

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		20	6.3	ug/Kg	☼	10/01/14 07:44	10/03/14 19:38	1
Silvex (2,4,5-TP)	ND		20	7.1	ug/Kg	☼	10/01/14 07:44	10/03/14 19:38	1
2,4-D	ND		20	12	ug/Kg	☼	10/01/14 07:44	10/03/14 19:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	83		39 - 120	10/01/14 07:44	10/03/14 19:38	1

Client Sample ID: DF-03

Lab Sample ID: 480-68232-10
Date Collected: 09/29/14 11:20
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 83.4

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.6		2.2	0.44	mg/Kg	☼	09/30/14 14:17	10/02/14 00:52	1

Client Sample ID: 16F-05

Lab Sample ID: 480-68232-11
Date Collected: 09/29/14 11:40
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 73.6

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		9.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
4,4'-DDE	ND		9.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
4,4'-DDT	ND		9.1	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
Aldrin	ND		9.1	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
alpha-BHC	ND		9.1	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
alpha-Chlordane	ND		9.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
beta-BHC	ND		9.1	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
delta-BHC	ND		9.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
Dieldrin	ND		9.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
Endosulfan I	ND		9.1	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
Endosulfan II	ND		9.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
Endosulfan sulfate	ND		9.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
Endrin	ND		9.1	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
Endrin aldehyde	ND		9.1	1.4	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
Endrin ketone	ND		9.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
gamma-BHC (Lindane)	ND		9.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
gamma-Chlordane	ND		9.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
Heptachlor	ND		9.1	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
Heptachlor epoxide	ND		9.1	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
Methoxychlor	ND		9.1	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1
Toxaphene	ND		91	24	ug/Kg	☼	10/06/14 01:56	10/06/14 11:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*103*		*76 - 149*	*10/06/14 01:56*	*10/06/14 11:00*	*1*
DCB Decachlorobiphenyl	*111*		*76 - 149*	*10/06/14 01:56*	*10/06/14 11:00*	*1*
Tetrachloro-m-xylene	*100*		*72 - 136*	*10/06/14 01:56*	*10/06/14 11:00*	*1*
Tetrachloro-m-xylene	*101*		*72 - 136*	*10/06/14 01:56*	*10/06/14 11:00*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		23	7.2	ug/Kg	☼	10/01/14 07:44	10/03/14 20:08	1
Silvex (2,4,5-TP)	ND		23	8.1	ug/Kg	☼	10/01/14 07:44	10/03/14 20:08	1
2,4-D	ND		23	14	ug/Kg	☼	10/01/14 07:44	10/03/14 20:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*79*		*39 - 120*	*10/01/14 07:44*	*10/03/14 20:08*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	7.4		2.7	0.55	mg/Kg	☼	09/30/14 14:17	10/02/14 00:55	1

Client Sample ID: 12F-06

Date Collected: 09/29/14 12:00
Date Received: 09/29/14 14:28

Lab Sample ID: 480-68232-12

Matrix: Solid
Percent Solids: 73.5

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		9.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
4,4'-DDE	ND		9.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
4,4'-DDT	ND		9.1	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
Aldrin	ND		9.1	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
alpha-BHC	ND		9.1	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
alpha-Chlordane	ND		9.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
beta-BHC	ND		9.1	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
delta-BHC	ND		9.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
Dieldrin	ND		9.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
Endosulfan I	ND		9.1	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
Endosulfan II	ND		9.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
Endosulfan sulfate	ND		9.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
Endrin	ND		9.1	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
Endrin aldehyde	ND		9.1	1.4	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
Endrin ketone	ND		9.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
gamma-BHC (Lindane)	ND		9.1	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
gamma-Chlordane	ND		9.1	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
Heptachlor	ND		9.1	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
Heptachlor epoxide	ND		9.1	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
Methoxychlor	ND		9.1	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1
Toxaphene	ND		91	24	ug/Kg	☼	10/06/14 01:56	10/06/14 11:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*108*		*76 - 149*	*10/06/14 01:56*	*10/06/14 11:12*	*1*
DCB Decachlorobiphenyl	*110*		*76 - 149*	*10/06/14 01:56*	*10/06/14 11:12*	*1*
Tetrachloro-m-xylene	*98*		*72 - 136*	*10/06/14 01:56*	*10/06/14 11:12*	*1*
Tetrachloro-m-xylene	*96*		*72 - 136*	*10/06/14 01:56*	*10/06/14 11:12*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		23	7.2	ug/Kg	☼	10/01/14 07:44	10/03/14 20:38	1
Silvex (2,4,5-TP)	ND		23	8.1	ug/Kg	☼	10/01/14 07:44	10/03/14 20:38	1
2,4-D	ND		23	14	ug/Kg	☼	10/01/14 07:44	10/03/14 20:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*98*		*39 - 120*	*10/01/14 07:44*	*10/03/14 20:38*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	9.1		2.5	0.50	mg/Kg	☼	09/30/14 14:17	10/02/14 00:57	1

Client Sample ID: 12G-02

Date Collected: 09/29/14 12:20
Date Received: 09/29/14 14:28

Lab Sample ID: 480-68232-13

Matrix: Solid
Percent Solids: 79.8

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		8.4	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
4,4'-DDE	ND		8.4	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
4,4'-DDT	ND		8.4	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
Aldrin	ND		8.4	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1

Client Sample ID: 12G-02

Date Collected: 09/29/14 12:20
Date Received: 09/29/14 14:28

Lab Sample ID: 480-68232-13

Matrix: Solid
Percent Solids: 79.8

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
alpha-BHC	ND		8.4	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
alpha-Chlordane	ND		8.4	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
beta-BHC	ND		8.4	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
delta-BHC	ND		8.4	1.5	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
Dieldrin	ND		8.4	1.5	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
Endosulfan I	ND		8.4	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
Endosulfan II	ND		8.4	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
Endosulfan sulfate	ND		8.4	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
Endrin	ND		8.4	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
Endrin aldehyde	ND		8.4	1.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
Endrin ketone	ND		8.4	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
gamma-BHC (Lindane)	ND		8.4	1.5	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
gamma-Chlordane	ND		8.4	1.6	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
Heptachlor	ND		8.4	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
Heptachlor epoxide	ND		8.4	1.9	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
Methoxychlor	ND		8.4	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1
Toxaphene	ND		84	22	ug/Kg	☼	10/06/14 01:56	10/06/14 11:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*104*		*76 - 149*	*10/06/14 01:56*	*10/06/14 11:23*	*1*
DCB Decachlorobiphenyl	*111*		*76 - 149*	*10/06/14 01:56*	*10/06/14 11:23*	*1*
Tetrachloro-m-xylene	*99*		*72 - 136*	*10/06/14 01:56*	*10/06/14 11:23*	*1*
Tetrachloro-m-xylene	*91*		*72 - 136*	*10/06/14 01:56*	*10/06/14 11:23*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		21	6.7	ug/Kg	☼	10/01/14 07:44	10/03/14 21:07	1
Silvex (2,4,5-TP)	ND		21	7.5	ug/Kg	☼	10/01/14 07:44	10/03/14 21:07	1
2,4-D	ND		21	13	ug/Kg	☼	10/01/14 07:44	10/03/14 21:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*84*		*39 - 120*	*10/01/14 07:44*	*10/03/14 21:07*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	66.3		2.3	0.46	mg/Kg	☼	09/30/14 14:17	10/02/14 01:00	1

Client Sample ID: DF-04

Date Collected: 09/29/14 12:30
Date Received: 09/29/14 14:28

Lab Sample ID: 480-68232-14

Matrix: Solid
Percent Solids: 71.2

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		9.4	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
4,4'-DDE	ND		9.4	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
4,4'-DDT	ND		9.4	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
Aldrin	ND		9.4	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
alpha-BHC	ND		9.4	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
alpha-Chlordane	ND		9.4	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
beta-BHC	ND		9.4	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
delta-BHC	ND		9.4	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1

Client Sample ID: DF-04

Lab Sample ID: 480-68232-14
Date Collected: 09/29/14 12:30
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 71.2

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dieldrin	ND		9.4	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
Endosulfan I	ND		9.4	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
Endosulfan II	ND		9.4	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
Endosulfan sulfate	ND		9.4	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
Endrin	ND		9.4	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
Endrin aldehyde	ND		9.4	1.4	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
Endrin ketone	ND		9.4	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
gamma-BHC (Lindane)	ND		9.4	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
gamma-Chlordane	ND		9.4	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
Heptachlor	ND		9.4	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
Heptachlor epoxide	ND		9.4	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
Methoxychlor	ND		9.4	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1
Toxaphene	ND		94	25	ug/Kg	☼	10/06/14 01:56	10/06/14 11:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*113*		*76 - 149*	*10/06/14 01:56*	*10/06/14 11:35*	*1*
DCB Decachlorobiphenyl	*115*		*76 - 149*	*10/06/14 01:56*	*10/06/14 11:35*	*1*
Tetrachloro-m-xylene	*103*		*72 - 136*	*10/06/14 01:56*	*10/06/14 11:35*	*1*
Tetrachloro-m-xylene	*96*		*72 - 136*	*10/06/14 01:56*	*10/06/14 11:35*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		23	7.4	ug/Kg	☼	10/01/14 07:44	10/03/14 21:37	1
Silvex (2,4,5-TP)	ND		23	8.3	ug/Kg	☼	10/01/14 07:44	10/03/14 21:37	1
2,4-D	ND		23	15	ug/Kg	☼	10/01/14 07:44	10/03/14 21:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*83*		*39 - 120*	*10/01/14 07:44*	*10/03/14 21:37*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.1		2.8	0.57	mg/Kg	☼	09/30/14 14:17	10/02/14 01:03	1

Client Sample ID: 6G-04

Lab Sample ID: 480-68232-15
Date Collected: 09/29/14 12:50
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 71.2

Method: 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		9.4	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
4,4'-DDE	ND		9.4	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
4,4'-DDT	ND		9.4	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
Aldrin	ND		9.4	2.0	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
alpha-BHC	ND		9.4	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
alpha-Chlordane	ND		9.4	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
beta-BHC	ND		9.4	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
delta-BHC	ND		9.4	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
Dieldrin	ND		9.4	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
Endosulfan I	ND		9.4	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
Endosulfan II	ND		9.4	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
Endosulfan sulfate	ND		9.4	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1

Client Sample ID: 6G-04
Date Collected: 09/29/14 12:50
Date Received: 09/29/14 14:28

Lab Sample ID: 480-68232-15
Matrix: Solid
Percent Solids: 71.2

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endrin	ND		9.4	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
Endrin aldehyde	ND		9.4	1.4	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
Endrin ketone	ND		9.4	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
gamma-BHC (Lindane)	ND		9.4	1.7	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
gamma-Chlordane	ND		9.4	1.8	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
Heptachlor	ND		9.4	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
Heptachlor epoxide	ND		9.4	2.1	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
Methoxychlor	ND		9.4	2.2	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1
Toxaphene	ND		94	25	ug/Kg	☼	10/06/14 01:56	10/06/14 11:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*109*		*76 - 149*	*10/06/14 01:56*	*10/06/14 11:46*	*1*
DCB Decachlorobiphenyl	*114*		*76 - 149*	*10/06/14 01:56*	*10/06/14 11:46*	*1*
Tetrachloro-m-xylene	*103*		*72 - 136*	*10/06/14 01:56*	*10/06/14 11:46*	*1*
Tetrachloro-m-xylene	*97*		*72 - 136*	*10/06/14 01:56*	*10/06/14 11:46*	*1*

Method: 8151A - Herbicides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		23	7.3	ug/Kg	☼	10/01/14 07:44	10/03/14 22:07	1
Silvex (2,4,5-TP)	ND		23	8.2	ug/Kg	☼	10/01/14 07:44	10/03/14 22:07	1
2,4-D	ND		23	14	ug/Kg	☼	10/01/14 07:44	10/03/14 22:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*89*		*39 - 120*	*10/01/14 07:44*	*10/03/14 22:07*	*1*

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	26.8		3.1	0.62	mg/Kg	☼	09/30/14 14:17	10/02/14 01:05	1

Surrogate Summary

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-68232-1

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	DCB1 (76-149)	DCB2 (76-149)	TCX1 (72-136)	TCX2 (72-136)
480-68232-1	SA-01	96	101	93	87
480-68232-1 MS	SA-01	101	96	87	79
480-68232-1 MSD	SA-01	98	108	93	87
480-68232-2	SA-02	100	107	98	90
480-68232-3	9F-01	98	103	95	89
480-68232-4	DF-01	102	109	99	94
480-68232-5	2F-02	104	112	102	95
480-68232-6	3F-03	108	113	102	97
480-68232-7	DF-02	105	112	102	96
480-68232-8	4F-04	99	107	95	108
480-68232-9	15G-01	104	111	100	93
480-68232-10	DF-03	102	109	99	91
480-68232-11	16F-05	103	111	100	101
480-68232-12	12F-06	108	110	98	96
480-68232-13	12G-02	104	111	99	91
480-68232-14	DF-04	113	115	103	96
480-68232-15	6G-04	109	114	103	97
LCS 460-253877/2-A	Lab Control Sample	91	98	88	82
MB 460-253877/1-A	Method Blank	110	113	102	96

Surrogate Legend

DCB = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 8151A - Herbicides (GC)

Matrix: Solid

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	DCPA1 (39-120)
480-68232-1	SA-01	75
480-68232-2	SA-02	78
480-68232-3	9F-01	69
480-68232-3 MS	9F-01	75
480-68232-3 MSD	9F-01	83
480-68232-4	DF-01	77
480-68232-5	2F-02	82
480-68232-6	3F-03	84
480-68232-7	DF-02	81
480-68232-8	4F-04	89
480-68232-9	15G-01	80
480-68232-10	DF-03	83
480-68232-11	16F-05	79
480-68232-12	12F-06	98
480-68232-13	12G-02	84
480-68232-14	DF-04	83
480-68232-15	6G-04	89
LCS 480-205347/2-A	Lab Control Sample	78
MB 480-205347/1-A	Method Blank	79

Surrogate Summary

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-68232-1

Surrogate Legend

DCPA = 2,4-Dichlorophenylacetic acid

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 460-253877/1-A
Matrix: Solid
Analysis Batch: 253983

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 253877

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,4'-DDD	ND		6.7	1.3	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
4,4'-DDE	ND		6.7	1.3	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
4,4'-DDT	ND		6.7	1.6	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
Aldrin	ND		6.7	1.4	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
alpha-BHC	ND		6.7	1.5	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
alpha-Chlordane	ND		6.7	1.3	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
beta-BHC	ND		6.7	1.6	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
delta-BHC	ND		6.7	1.2	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
Dieldrin	ND		6.7	1.2	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
Endosulfan I	ND		6.7	1.5	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
Endosulfan II	ND		6.7	1.3	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
Endosulfan sulfate	ND		6.7	1.3	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
Endrin	ND		6.7	1.6	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
Endrin aldehyde	ND		6.7	1.0	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
Endrin ketone	ND		6.7	1.3	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
gamma-BHC (Lindane)	ND		6.7	1.2	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
gamma-Chlordane	ND		6.7	1.3	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
Heptachlor	ND		6.7	1.6	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
Heptachlor epoxide	ND		6.7	1.5	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
Methoxychlor	ND		6.7	1.6	ug/Kg		10/06/14 01:56	10/06/14 08:20	1
Toxaphene	ND		67	18	ug/Kg		10/06/14 01:56	10/06/14 08:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl	*110*		*76 - 149*	*10/06/14 01:56*	*10/06/14 08:20*	*1*
DCB Decachlorobiphenyl	*113*		*76 - 149*	*10/06/14 01:56*	*10/06/14 08:20*	*1*
Tetrachloro-m-xylene	*102*		*72 - 136*	*10/06/14 01:56*	*10/06/14 08:20*	*1*
Tetrachloro-m-xylene	*96*		*72 - 136*	*10/06/14 01:56*	*10/06/14 08:20*	*1*

Lab Sample ID: LCS 460-253877/2-A
Matrix: Solid
Analysis Batch: 253983

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 253877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	133	121		ug/Kg		91	50 - 131
4,4'-DDD	133	122		ug/Kg		91	50 - 131
4,4'-DDE	133	119		ug/Kg		89	49 - 130
4,4'-DDE	133	118		ug/Kg		89	49 - 130
4,4'-DDT	133	117		ug/Kg		88	48 - 132
4,4'-DDT	133	118		ug/Kg		88	48 - 132
Aldrin	133	114		ug/Kg		85	53 - 126
Aldrin	133	111		ug/Kg		83	53 - 126
alpha-BHC	133	118		ug/Kg		88	50 - 129
alpha-BHC	133	120		ug/Kg		90	50 - 129
alpha-Chlordane	133	110		ug/Kg		83	51 - 129
alpha-Chlordane	133	106		ug/Kg		80	51 - 129
beta-BHC	133	111		ug/Kg		83	51 - 131
beta-BHC	133	112		ug/Kg		84	51 - 131
delta-BHC	133	119		ug/Kg		90	40 - 130

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 460-253877/2-A
Matrix: Solid
Analysis Batch: 253983

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 253877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
delta-BHC	133	115		ug/Kg		86	40 - 130
Dieldrin	133	113		ug/Kg		85	48 - 126
Dieldrin	133	114		ug/Kg		86	48 - 126
Endosulfan I	133	112		ug/Kg		84	53 - 127
Endosulfan I	133	112		ug/Kg		84	53 - 127
Endosulfan II	133	108		ug/Kg		81	52 - 127
Endosulfan II	133	111		ug/Kg		83	52 - 127
Endosulfan sulfate	133	111		ug/Kg		83	52 - 124
Endosulfan sulfate	133	110		ug/Kg		83	52 - 124
Endrin	133	116		ug/Kg		87	48 - 126
Endrin	133	113		ug/Kg		85	48 - 126
Endrin aldehyde	133	117		ug/Kg		88	57 - 124
Endrin aldehyde	133	116		ug/Kg		87	57 - 124
Endrin ketone	133	115		ug/Kg		86	55 - 124
Endrin ketone	133	117		ug/Kg		88	55 - 124
gamma-BHC (Lindane)	133	122		ug/Kg		91	52 - 129
gamma-BHC (Lindane)	133	115		ug/Kg		86	52 - 129
gamma-Chlordane	133	109		ug/Kg		82	50 - 129
gamma-Chlordane	133	108		ug/Kg		81	50 - 129
Heptachlor	133	108		ug/Kg		81	52 - 128
Heptachlor	133	108		ug/Kg		81	52 - 128
Heptachlor epoxide	133	108		ug/Kg		81	53 - 122
Heptachlor epoxide	133	107		ug/Kg		80	53 - 122
Methoxychlor	133	111		ug/Kg		84	47 - 126
Methoxychlor	133	109		ug/Kg		82	47 - 126

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*91*		*76 - 149*
DCB Decachlorobiphenyl	*98*		*76 - 149*
Tetrachloro-m-xylene	*88*		*72 - 136*
Tetrachloro-m-xylene	*82*		*72 - 136*

Lab Sample ID: 480-68232-1 MS
Matrix: Solid
Analysis Batch: 253983

Client Sample ID: SA-01
Prep Type: Total/NA
Prep Batch: 253877

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
4,4'-DDD	ND		160	152		ug/Kg	☼	94	69 - 150
4,4'-DDD	ND		160	153		ug/Kg	☼	95	69 - 150
4,4'-DDE	ND		160	149		ug/Kg	☼	93	70 - 147
4,4'-DDE	ND		160	155		ug/Kg	☼	97	70 - 147
4,4'-DDT	ND		160	147		ug/Kg	☼	91	63 - 146
4,4'-DDT	ND		160	147		ug/Kg	☼	92	63 - 146
Aldrin	ND		160	142		ug/Kg	☼	89	69 - 138
Aldrin	ND		160	145		ug/Kg	☼	90	69 - 138
alpha-BHC	ND		160	148		ug/Kg	☼	92	68 - 133
alpha-BHC	ND		160	148		ug/Kg	☼	92	68 - 133
alpha-Chlordane	ND		160	138		ug/Kg	☼	86	66 - 138

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 480-68232-1 MS
Matrix: Solid
Analysis Batch: 253983

Client Sample ID: SA-01
Prep Type: Total/NA
Prep Batch: 253877

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
alpha-Chlordane	ND		160	138		ug/Kg	☼	86	66 - 138
beta-BHC	ND		160	139		ug/Kg	☼	86	67 - 137
beta-BHC	ND		160	137		ug/Kg	☼	85	67 - 137
delta-BHC	ND		160	149		ug/Kg	☼	93	65 - 141
delta-BHC	ND		160	145		ug/Kg	☼	90	65 - 141
Dieldrin	ND		160	142		ug/Kg	☼	89	63 - 129
Dieldrin	ND		160	147		ug/Kg	☼	92	63 - 129
Endosulfan I	ND		160	140		ug/Kg	☼	87	69 - 140
Endosulfan I	ND		160	144		ug/Kg	☼	90	69 - 140
Endosulfan II	ND		160	136		ug/Kg	☼	85	66 - 136
Endosulfan II	ND		160	139		ug/Kg	☼	87	66 - 136
Endosulfan sulfate	ND		160	138		ug/Kg	☼	86	65 - 137
Endosulfan sulfate	ND		160	139		ug/Kg	☼	87	65 - 137
Endrin	ND		160	145		ug/Kg	☼	90	67 - 142
Endrin	ND		160	142		ug/Kg	☼	89	67 - 142
Endrin aldehyde	ND		160	146		ug/Kg	☼	91	67 - 134
Endrin aldehyde	ND		160	145		ug/Kg	☼	90	67 - 134
Endrin ketone	ND		160	144		ug/Kg	☼	90	68 - 146
Endrin ketone	ND		160	147		ug/Kg	☼	92	68 - 146
gamma-BHC (Lindane)	ND		160	153		ug/Kg	☼	95	68 - 134
gamma-BHC (Lindane)	ND		160	145		ug/Kg	☼	90	68 - 134
gamma-Chlordane	ND		160	137		ug/Kg	☼	85	67 - 140
gamma-Chlordane	ND		160	141		ug/Kg	☼	88	67 - 140
Heptachlor	ND		160	136		ug/Kg	☼	85	67 - 136
Heptachlor	ND		160	138		ug/Kg	☼	86	67 - 136
Heptachlor epoxide	ND		160	136		ug/Kg	☼	85	68 - 136
Heptachlor epoxide	ND		160	139		ug/Kg	☼	87	68 - 136
Methoxychlor	ND		160	140		ug/Kg	☼	87	52 - 150
Methoxychlor	ND		160	137		ug/Kg	☼	85	52 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl	*101*		*76 - 149*
DCB Decachlorobiphenyl	*96*		*76 - 149*
Tetrachloro-m-xylene	*87*		*72 - 136*
Tetrachloro-m-xylene	*79*		*72 - 136*

Lab Sample ID: 480-68232-1 MSD
Matrix: Solid
Analysis Batch: 253983

Client Sample ID: SA-01
Prep Type: Total/NA
Prep Batch: 253877

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
4,4'-DDD	ND		160	156		ug/Kg	☼	98	69 - 150	3	30
4,4'-DDD	ND		160	156		ug/Kg	☼	97	69 - 150	3	30
4,4'-DDE	ND		160	154		ug/Kg	☼	96	70 - 147	3	30
4,4'-DDE	ND		160	154		ug/Kg	☼	96	70 - 147	0	30
4,4'-DDT	ND		160	151		ug/Kg	☼	94	63 - 146	2	30
4,4'-DDT	ND		160	149		ug/Kg	☼	93	63 - 146	2	30
Aldrin	ND		160	147		ug/Kg	☼	92	69 - 138	2	30

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 480-68232-1 MSD
Matrix: Solid
Analysis Batch: 253983

Client Sample ID: SA-01
Prep Type: Total/NA
Prep Batch: 253877

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aldrin	ND		160	146		ug/Kg	☼	91	69 - 138	3	30
alpha-BHC	ND		160	152		ug/Kg	☼	95	68 - 133	3	30
alpha-BHC	ND		160	154		ug/Kg	☼	96	68 - 133	4	30
alpha-Chlordane	ND		160	142		ug/Kg	☼	89	66 - 138	3	30
alpha-Chlordane	ND		160	137		ug/Kg	☼	86	66 - 138	0	30
beta-BHC	ND		160	141		ug/Kg	☼	88	67 - 137	3	30
beta-BHC	ND		160	141		ug/Kg	☼	88	67 - 137	2	30
delta-BHC	ND		160	154		ug/Kg	☼	97	65 - 141	4	30
delta-BHC	ND		160	146		ug/Kg	☼	92	65 - 141	1	30
Dieldrin	ND		160	147		ug/Kg	☼	92	63 - 129	3	30
Dieldrin	ND		160	148		ug/Kg	☼	92	63 - 129	0	30
Endosulfan I	ND		160	145		ug/Kg	☼	91	69 - 140	1	30
Endosulfan I	ND		160	144		ug/Kg	☼	90	69 - 140	3	30
Endosulfan II	ND		160	140		ug/Kg	☼	88	66 - 136	3	30
Endosulfan II	ND		160	142		ug/Kg	☼	89	66 - 136	2	30
Endosulfan sulfate	ND		160	143		ug/Kg	☼	89	65 - 137	3	30
Endosulfan sulfate	ND		160	144		ug/Kg	☼	90	65 - 137	3	30
Endrin	ND		160	149		ug/Kg	☼	93	67 - 142	3	30
Endrin	ND		160	143		ug/Kg	☼	90	67 - 142	1	30
Endrin aldehyde	ND		160	150		ug/Kg	☼	94	67 - 134	3	30
Endrin aldehyde	ND		160	147		ug/Kg	☼	92	67 - 134	2	30
Endrin ketone	ND		160	148		ug/Kg	☼	93	68 - 146	3	30
Endrin ketone	ND		160	156		ug/Kg	☼	98	68 - 146	6	30
gamma-BHC (Lindane)	ND		160	158		ug/Kg	☼	99	68 - 134	3	30
gamma-BHC (Lindane)	ND		160	148		ug/Kg	☼	93	68 - 134	2	30
gamma-Chlordane	ND		160	141		ug/Kg	☼	88	67 - 140	0	30
gamma-Chlordane	ND		160	139		ug/Kg	☼	87	67 - 140	2	30
Heptachlor	ND		160	139		ug/Kg	☼	87	67 - 136	1	30
Heptachlor	ND		160	138		ug/Kg	☼	86	67 - 136	2	30
Heptachlor epoxide	ND		160	140		ug/Kg	☼	87	68 - 136	0	30
Heptachlor epoxide	ND		160	139		ug/Kg	☼	87	68 - 136	2	30
Methoxychlor	ND		160	143		ug/Kg	☼	89	52 - 150	2	30
Methoxychlor	ND		160	140		ug/Kg	☼	87	52 - 150	2	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl	*98*		*76 - 149*
DCB Decachlorobiphenyl	*108*		*76 - 149*
Tetrachloro-m-xylene	*93*		*72 - 136*
Tetrachloro-m-xylene	*87*		*72 - 136*

Method: 8151A - Herbicides (GC)

Lab Sample ID: MB 480-205347/1-A
Matrix: Solid
Analysis Batch: 205868

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 205347

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2,4,5-T	ND		16	5.2	ug/Kg		10/01/14 07:44	10/03/14 12:43	1

Method: 8151A - Herbicides (GC) (Continued)

Lab Sample ID: MB 480-205347/1-A
Matrix: Solid
Analysis Batch: 205868

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 205347

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silvex (2,4,5-TP)	ND		16	5.9	ug/Kg		10/01/14 07:44	10/03/14 12:43	1
2,4-D	ND		16	10	ug/Kg		10/01/14 07:44	10/03/14 12:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*79*		*39 - 120*	*10/01/14 07:44*	*10/03/14 12:43*	*1*

Lab Sample ID: LCS 480-205347/2-A
Matrix: Solid
Analysis Batch: 205868

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 205347

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4,5-T	65.5	61.3		ug/Kg		94	42 - 127
Silvex (2,4,5-TP)	65.5	62.9		ug/Kg		96	42 - 149
2,4-D	65.5	50.9		ug/Kg		78	47 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*78*		*39 - 120*

Lab Sample ID: 480-68232-3 MS
Matrix: Solid
Analysis Batch: 205868

Client Sample ID: 9F-01
Prep Type: Total/NA
Prep Batch: 205347

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4,5-T	ND		76.0	61.3		ug/Kg	☼	81	16 - 135
Silvex (2,4,5-TP)	ND		76.0	61.5		ug/Kg	☼	81	32 - 125
2,4-D	ND		76.0	51.0		ug/Kg	☼	67	46 - 120

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*75*		*39 - 120*

Lab Sample ID: 480-68232-3 MSD
Matrix: Solid
Analysis Batch: 205868

Client Sample ID: 9F-01
Prep Type: Total/NA
Prep Batch: 205347

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2,4,5-T	ND		76.3	64.1		ug/Kg	☼	84	16 - 135	4	50
Silvex (2,4,5-TP)	ND		76.3	63.3		ug/Kg	☼	83	32 - 125	3	50
2,4-D	ND		76.3	52.5		ug/Kg	☼	69	46 - 120	3	50

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*83*		*39 - 120*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-205208/1-A
Matrix: Solid
Analysis Batch: 205658

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 205208

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.9	0.38	mg/Kg		09/30/14 14:17	10/01/14 23:42	1

Lab Sample ID: LCSSRM 480-205208/2-A
Matrix: Solid
Analysis Batch: 205658

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 205208

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	122	111.8		mg/Kg		91.7	70.0 - 145. 1

GC Semi VOA

Prep Batch: 205347

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-68232-1	SA-01	Total/NA	Solid	8151A	
480-68232-2	SA-02	Total/NA	Solid	8151A	
480-68232-3	9F-01	Total/NA	Solid	8151A	
480-68232-3 MS	9F-01	Total/NA	Solid	8151A	
480-68232-3 MSD	9F-01	Total/NA	Solid	8151A	
480-68232-4	DF-01	Total/NA	Solid	8151A	
480-68232-5	2F-02	Total/NA	Solid	8151A	
480-68232-6	3F-03	Total/NA	Solid	8151A	
480-68232-7	DF-02	Total/NA	Solid	8151A	
480-68232-8	4F-04	Total/NA	Solid	8151A	
480-68232-9	15G-01	Total/NA	Solid	8151A	
480-68232-10	DF-03	Total/NA	Solid	8151A	
480-68232-11	16F-05	Total/NA	Solid	8151A	
480-68232-12	12F-06	Total/NA	Solid	8151A	
480-68232-13	12G-02	Total/NA	Solid	8151A	
480-68232-14	DF-04	Total/NA	Solid	8151A	
480-68232-15	6G-04	Total/NA	Solid	8151A	
LCS 480-205347/2-A	Lab Control Sample	Total/NA	Solid	8151A	
MB 480-205347/1-A	Method Blank	Total/NA	Solid	8151A	

Analysis Batch: 205868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-68232-1	SA-01	Total/NA	Solid	8151A	205347
480-68232-2	SA-02	Total/NA	Solid	8151A	205347
480-68232-3	9F-01	Total/NA	Solid	8151A	205347
480-68232-3 MS	9F-01	Total/NA	Solid	8151A	205347
480-68232-3 MSD	9F-01	Total/NA	Solid	8151A	205347
480-68232-4	DF-01	Total/NA	Solid	8151A	205347
480-68232-5	2F-02	Total/NA	Solid	8151A	205347
480-68232-6	3F-03	Total/NA	Solid	8151A	205347
480-68232-7	DF-02	Total/NA	Solid	8151A	205347
480-68232-8	4F-04	Total/NA	Solid	8151A	205347
480-68232-9	15G-01	Total/NA	Solid	8151A	205347
480-68232-10	DF-03	Total/NA	Solid	8151A	205347
480-68232-11	16F-05	Total/NA	Solid	8151A	205347
480-68232-12	12F-06	Total/NA	Solid	8151A	205347
480-68232-13	12G-02	Total/NA	Solid	8151A	205347
480-68232-14	DF-04	Total/NA	Solid	8151A	205347
480-68232-15	6G-04	Total/NA	Solid	8151A	205347
LCS 480-205347/2-A	Lab Control Sample	Total/NA	Solid	8151A	205347
MB 480-205347/1-A	Method Blank	Total/NA	Solid	8151A	205347

Prep Batch: 253877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-68232-1	SA-01	Total/NA	Solid	3546	
480-68232-1 MS	SA-01	Total/NA	Solid	3546	
480-68232-1 MSD	SA-01	Total/NA	Solid	3546	
480-68232-2	SA-02	Total/NA	Solid	3546	
480-68232-3	9F-01	Total/NA	Solid	3546	
480-68232-4	DF-01	Total/NA	Solid	3546	
480-68232-5	2F-02	Total/NA	Solid	3546	

GC Semi VOA (Continued)

Prep Batch: 253877 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-68232-6	3F-03	Total/NA	Solid	3546	
480-68232-7	DF-02	Total/NA	Solid	3546	
480-68232-8	4F-04	Total/NA	Solid	3546	
480-68232-9	15G-01	Total/NA	Solid	3546	
480-68232-10	DF-03	Total/NA	Solid	3546	
480-68232-11	16F-05	Total/NA	Solid	3546	
480-68232-12	12F-06	Total/NA	Solid	3546	
480-68232-13	12G-02	Total/NA	Solid	3546	
480-68232-14	DF-04	Total/NA	Solid	3546	
480-68232-15	6G-04	Total/NA	Solid	3546	
LCS 460-253877/2-A	Lab Control Sample	Total/NA	Solid	3546	
MB 460-253877/1-A	Method Blank	Total/NA	Solid	3546	

Analysis Batch: 253983

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-68232-1	SA-01	Total/NA	Solid	8081B	253877
480-68232-1 MS	SA-01	Total/NA	Solid	8081B	253877
480-68232-1 MSD	SA-01	Total/NA	Solid	8081B	253877
480-68232-2	SA-02	Total/NA	Solid	8081B	253877
480-68232-3	9F-01	Total/NA	Solid	8081B	253877
480-68232-4	DF-01	Total/NA	Solid	8081B	253877
480-68232-5	2F-02	Total/NA	Solid	8081B	253877
480-68232-6	3F-03	Total/NA	Solid	8081B	253877
480-68232-7	DF-02	Total/NA	Solid	8081B	253877
480-68232-8	4F-04	Total/NA	Solid	8081B	253877
480-68232-9	15G-01	Total/NA	Solid	8081B	253877
480-68232-10	DF-03	Total/NA	Solid	8081B	253877
480-68232-11	16F-05	Total/NA	Solid	8081B	253877
480-68232-12	12F-06	Total/NA	Solid	8081B	253877
480-68232-13	12G-02	Total/NA	Solid	8081B	253877
480-68232-14	DF-04	Total/NA	Solid	8081B	253877
480-68232-15	6G-04	Total/NA	Solid	8081B	253877
LCS 460-253877/2-A	Lab Control Sample	Total/NA	Solid	8081B	253877
MB 460-253877/1-A	Method Blank	Total/NA	Solid	8081B	253877

Metals

Prep Batch: 205208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-68232-1	SA-01	Total/NA	Solid	3050B	
480-68232-2	SA-02	Total/NA	Solid	3050B	
480-68232-3	9F-01	Total/NA	Solid	3050B	
480-68232-4	DF-01	Total/NA	Solid	3050B	
480-68232-5	2F-02	Total/NA	Solid	3050B	
480-68232-6	3F-03	Total/NA	Solid	3050B	
480-68232-7	DF-02	Total/NA	Solid	3050B	
480-68232-8	4F-04	Total/NA	Solid	3050B	
480-68232-9	15G-01	Total/NA	Solid	3050B	
480-68232-10	DF-03	Total/NA	Solid	3050B	
480-68232-11	16F-05	Total/NA	Solid	3050B	

Metals (Continued)

Prep Batch: 205208 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-68232-12	12F-06	Total/NA	Solid	3050B	
480-68232-13	12G-02	Total/NA	Solid	3050B	
480-68232-14	DF-04	Total/NA	Solid	3050B	
480-68232-15	6G-04	Total/NA	Solid	3050B	
LCSSRM 480-205208/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 480-205208/1-A	Method Blank	Total/NA	Solid	3050B	

Analysis Batch: 205658

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-68232-1	SA-01	Total/NA	Solid	6010C	205208
480-68232-2	SA-02	Total/NA	Solid	6010C	205208
480-68232-3	9F-01	Total/NA	Solid	6010C	205208
480-68232-4	DF-01	Total/NA	Solid	6010C	205208
480-68232-5	2F-02	Total/NA	Solid	6010C	205208
480-68232-6	3F-03	Total/NA	Solid	6010C	205208
480-68232-7	DF-02	Total/NA	Solid	6010C	205208
480-68232-8	4F-04	Total/NA	Solid	6010C	205208
480-68232-9	15G-01	Total/NA	Solid	6010C	205208
480-68232-10	DF-03	Total/NA	Solid	6010C	205208
480-68232-11	16F-05	Total/NA	Solid	6010C	205208
480-68232-12	12F-06	Total/NA	Solid	6010C	205208
480-68232-13	12G-02	Total/NA	Solid	6010C	205208
480-68232-14	DF-04	Total/NA	Solid	6010C	205208
480-68232-15	6G-04	Total/NA	Solid	6010C	205208
LCSSRM 480-205208/2-A	Lab Control Sample	Total/NA	Solid	6010C	205208
MB 480-205208/1-A	Method Blank	Total/NA	Solid	6010C	205208

General Chemistry

Analysis Batch: 205054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-68232-1	SA-01	Total/NA	Solid	Moisture	
480-68232-2	SA-02	Total/NA	Solid	Moisture	
480-68232-3	9F-01	Total/NA	Solid	Moisture	
480-68232-4	DF-01	Total/NA	Solid	Moisture	
480-68232-5	2F-02	Total/NA	Solid	Moisture	
480-68232-6	3F-03	Total/NA	Solid	Moisture	
480-68232-7	DF-02	Total/NA	Solid	Moisture	
480-68232-8	4F-04	Total/NA	Solid	Moisture	
480-68232-9	15G-01	Total/NA	Solid	Moisture	
480-68232-10	DF-03	Total/NA	Solid	Moisture	
480-68232-11	16F-05	Total/NA	Solid	Moisture	
480-68232-12	12F-06	Total/NA	Solid	Moisture	
480-68232-13	12G-02	Total/NA	Solid	Moisture	
480-68232-14	DF-04	Total/NA	Solid	Moisture	
480-68232-15	6G-04	Total/NA	Solid	Moisture	

Lab Chronicle

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-68232-1

Client Sample ID: SA-01

Lab Sample ID: 480-68232-1

Date Collected: 09/29/14 07:30
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 83.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			253877	10/06/14 01:56	ARA	TAL EDI
Total/NA	Analysis	8081B		1	253983	10/06/14 09:06	SAK	TAL EDI
Total/NA	Prep	8151A			205347	10/01/14 07:44	CAM	TAL BUF
Total/NA	Analysis	8151A		1	205868	10/03/14 14:42	JRL	TAL BUF
Total/NA	Prep	3050B			205208	09/30/14 14:17	SLB	TAL BUF
Total/NA	Analysis	6010C		1	205658	10/02/14 00:19	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	205054	09/30/14 00:22	CMK	TAL BUF

Client Sample ID: SA-02

Lab Sample ID: 480-68232-2

Date Collected: 09/29/14 08:15
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 76.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			253877	10/06/14 01:56	ARA	TAL EDI
Total/NA	Analysis	8081B		1	253983	10/06/14 09:17	SAK	TAL EDI
Total/NA	Prep	8151A			205347	10/01/14 07:44	CAM	TAL BUF
Total/NA	Analysis	8151A		1	205868	10/03/14 15:11	JRL	TAL BUF
Total/NA	Prep	3050B			205208	09/30/14 14:17	SLB	TAL BUF
Total/NA	Analysis	6010C		1	205658	10/02/14 00:22	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	205054	09/30/14 00:22	CMK	TAL BUF

Client Sample ID: 9F-01

Lab Sample ID: 480-68232-3

Date Collected: 09/29/14 08:30
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 86.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			253877	10/06/14 01:56	ARA	TAL EDI
Total/NA	Analysis	8081B		1	253983	10/06/14 09:28	SAK	TAL EDI
Total/NA	Prep	8151A			205347	10/01/14 07:44	CAM	TAL BUF
Total/NA	Analysis	8151A		1	205868	10/03/14 15:41	JRL	TAL BUF
Total/NA	Prep	3050B			205208	09/30/14 14:17	SLB	TAL BUF
Total/NA	Analysis	6010C		1	205658	10/02/14 00:25	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	205054	09/30/14 00:22	CMK	TAL BUF

Client Sample ID: DF-01

Lab Sample ID: 480-68232-4

Date Collected: 09/29/14 09:00
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 78.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			253877	10/06/14 01:56	ARA	TAL EDI
Total/NA	Analysis	8081B		1	253983	10/06/14 09:40	SAK	TAL EDI
Total/NA	Prep	8151A			205347	10/01/14 07:44	CAM	TAL BUF
Total/NA	Analysis	8151A		1	205868	10/03/14 16:11	JRL	TAL BUF

Lab Chronicle

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-68232-1

Client Sample ID: DF-01

Lab Sample ID: 480-68232-4

Date Collected: 09/29/14 09:00
Date Received: 09/29/14 14:28

Matrix: Solid
Percent Solids: 78.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			205208	09/30/14 14:17	SLB	TAL BUF
Total/NA	Analysis	6010C		1	205658	10/02/14 00:27	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	205054	09/30/14 00:22	CMK	TAL BUF

Client Sample ID: 2F-02

Lab Sample ID: 480-68232-5

Date Collected: 09/29/14 09:30
Date Received: 09/29/14 14:28

Matrix: Solid
Percent Solids: 74.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			253877	10/06/14 01:56	ARA	TAL EDI
Total/NA	Analysis	8081B		1	253983	10/06/14 09:51	SAK	TAL EDI
Total/NA	Prep	8151A			205347	10/01/14 07:44	CAM	TAL BUF
Total/NA	Analysis	8151A		1	205868	10/03/14 16:40	JRL	TAL BUF
Total/NA	Prep	3050B			205208	09/30/14 14:17	SLB	TAL BUF
Total/NA	Analysis	6010C		1	205658	10/02/14 00:30	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	205054	09/30/14 00:22	CMK	TAL BUF

Client Sample ID: 3F-03

Lab Sample ID: 480-68232-6

Date Collected: 09/29/14 09:50
Date Received: 09/29/14 14:28

Matrix: Solid
Percent Solids: 79.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			253877	10/06/14 01:56	ARA	TAL EDI
Total/NA	Analysis	8081B		1	253983	10/06/14 10:03	SAK	TAL EDI
Total/NA	Prep	8151A			205347	10/01/14 07:44	CAM	TAL BUF
Total/NA	Analysis	8151A		1	205868	10/03/14 17:10	JRL	TAL BUF
Total/NA	Prep	3050B			205208	09/30/14 14:17	SLB	TAL BUF
Total/NA	Analysis	6010C		1	205658	10/02/14 00:33	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	205054	09/30/14 00:22	CMK	TAL BUF

Client Sample ID: DF-02

Lab Sample ID: 480-68232-7

Date Collected: 09/29/14 10:10
Date Received: 09/29/14 14:28

Matrix: Solid
Percent Solids: 69.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			253877	10/06/14 01:56	ARA	TAL EDI
Total/NA	Analysis	8081B		1	253983	10/06/14 10:14	SAK	TAL EDI
Total/NA	Prep	8151A			205347	10/01/14 07:44	CAM	TAL BUF
Total/NA	Analysis	8151A		1	205868	10/03/14 18:09	JRL	TAL BUF
Total/NA	Prep	3050B			205208	09/30/14 14:17	SLB	TAL BUF
Total/NA	Analysis	6010C		1	205658	10/02/14 00:36	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	205054	09/30/14 00:22	CMK	TAL BUF

Lab Chronicle

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-68232-1

Client Sample ID: 4F-04

Lab Sample ID: 480-68232-8

Date Collected: 09/29/14 10:30
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 76.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			253877	10/06/14 01:56	ARA	TAL EDI
Total/NA	Analysis	8081B		1	253983	10/06/14 10:26	SAK	TAL EDI
Total/NA	Prep	8151A			205347	10/01/14 07:44	CAM	TAL BUF
Total/NA	Analysis	8151A		1	205868	10/03/14 18:39	JRL	TAL BUF
Total/NA	Prep	3050B			205208	09/30/14 14:17	SLB	TAL BUF
Total/NA	Analysis	6010C		1	205658	10/02/14 00:46	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	205054	09/30/14 00:22	CMK	TAL BUF

Client Sample ID: 15G-01

Lab Sample ID: 480-68232-9

Date Collected: 09/29/14 11:00
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 82.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			253877	10/06/14 01:56	ARA	TAL EDI
Total/NA	Analysis	8081B		1	253983	10/06/14 10:37	SAK	TAL EDI
Total/NA	Prep	8151A			205347	10/01/14 07:44	CAM	TAL BUF
Total/NA	Analysis	8151A		1	205868	10/03/14 19:09	JRL	TAL BUF
Total/NA	Prep	3050B			205208	09/30/14 14:17	SLB	TAL BUF
Total/NA	Analysis	6010C		1	205658	10/02/14 00:49	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	205054	09/30/14 00:22	CMK	TAL BUF

Client Sample ID: DF-03

Lab Sample ID: 480-68232-10

Date Collected: 09/29/14 11:20
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 83.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			253877	10/06/14 01:56	ARA	TAL EDI
Total/NA	Analysis	8081B		1	253983	10/06/14 10:49	SAK	TAL EDI
Total/NA	Prep	8151A			205347	10/01/14 07:44	CAM	TAL BUF
Total/NA	Analysis	8151A		1	205868	10/03/14 19:38	JRL	TAL BUF
Total/NA	Prep	3050B			205208	09/30/14 14:17	SLB	TAL BUF
Total/NA	Analysis	6010C		1	205658	10/02/14 00:52	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	205054	09/30/14 00:22	CMK	TAL BUF

Client Sample ID: 16F-05

Lab Sample ID: 480-68232-11

Date Collected: 09/29/14 11:40
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 73.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			253877	10/06/14 01:56	ARA	TAL EDI
Total/NA	Analysis	8081B		1	253983	10/06/14 11:00	SAK	TAL EDI
Total/NA	Prep	8151A			205347	10/01/14 07:44	CAM	TAL BUF
Total/NA	Analysis	8151A		1	205868	10/03/14 20:08	JRL	TAL BUF

Lab Chronicle

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-68232-1

Client Sample ID: 16F-05

Lab Sample ID: 480-68232-11
Date Collected: 09/29/14 11:40
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 73.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			205208	09/30/14 14:17	SLB	TAL BUF
Total/NA	Analysis	6010C		1	205658	10/02/14 00:55	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	205054	09/30/14 00:22	CMK	TAL BUF

Client Sample ID: 12F-06

Lab Sample ID: 480-68232-12
Date Collected: 09/29/14 12:00
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 73.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			253877	10/06/14 01:56	ARA	TAL EDI
Total/NA	Analysis	8081B		1	253983	10/06/14 11:12	SAK	TAL EDI
Total/NA	Prep	8151A			205347	10/01/14 07:44	CAM	TAL BUF
Total/NA	Analysis	8151A		1	205868	10/03/14 20:38	JRL	TAL BUF
Total/NA	Prep	3050B			205208	09/30/14 14:17	SLB	TAL BUF
Total/NA	Analysis	6010C		1	205658	10/02/14 00:57	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	205054	09/30/14 00:22	CMK	TAL BUF

Client Sample ID: 12G-02

Lab Sample ID: 480-68232-13
Date Collected: 09/29/14 12:20
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 79.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			253877	10/06/14 01:56	ARA	TAL EDI
Total/NA	Analysis	8081B		1	253983	10/06/14 11:23	SAK	TAL EDI
Total/NA	Prep	8151A			205347	10/01/14 07:44	CAM	TAL BUF
Total/NA	Analysis	8151A		1	205868	10/03/14 21:07	JRL	TAL BUF
Total/NA	Prep	3050B			205208	09/30/14 14:17	SLB	TAL BUF
Total/NA	Analysis	6010C		1	205658	10/02/14 01:00	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	205054	09/30/14 00:22	CMK	TAL BUF

Client Sample ID: DF-04

Lab Sample ID: 480-68232-14
Date Collected: 09/29/14 12:30
Matrix: Solid
Date Received: 09/29/14 14:28
Percent Solids: 71.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			253877	10/06/14 01:56	ARA	TAL EDI
Total/NA	Analysis	8081B		1	253983	10/06/14 11:35	SAK	TAL EDI
Total/NA	Prep	8151A			205347	10/01/14 07:44	CAM	TAL BUF
Total/NA	Analysis	8151A		1	205868	10/03/14 21:37	JRL	TAL BUF
Total/NA	Prep	3050B			205208	09/30/14 14:17	SLB	TAL BUF
Total/NA	Analysis	6010C		1	205658	10/02/14 01:03	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	205054	09/30/14 00:22	CMK	TAL BUF

Lab Chronicle

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-68232-1

Client Sample ID: 6G-04
Date Collected: 09/29/14 12:50
Date Received: 09/29/14 14:28

Lab Sample ID: 480-68232-15
Matrix: Solid
Percent Solids: 71.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			253877	10/06/14 01:56	ARA	TAL EDI
Total/NA	Analysis	8081B		1	253983	10/06/14 11:46	SAK	TAL EDI
Total/NA	Prep	8151A			205347	10/01/14 07:44	CAM	TAL BUF
Total/NA	Analysis	8151A		1	205868	10/03/14 22:07	JRL	TAL BUF
Total/NA	Prep	3050B			205208	09/30/14 14:17	SLB	TAL BUF
Total/NA	Analysis	6010C		1	205658	10/02/14 01:05	AMH	TAL BUF
Total/NA	Analysis	Moisture		1	205054	09/30/14 00:22	CMK	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Certification Summary

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-68232-1

Laboratory: TestAmerica Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	10026	03-31-15

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Laboratory: TestAmerica Edison

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Connecticut	State Program	1	PH-0200	09-30-14 *
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	N/A	12-31-14
New Jersey	NELAP	2	12028	06-30-15
New York	NELAP	2	11452	03-31-15
Pennsylvania	NELAP	3	68-00522	02-28-15
Rhode Island	State Program	1	LAO00132	12-30-14
USDA	Federal		NJCA-003-08	04-04-17

* Certification renewal pending - certification considered valid.

Method Summary

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-68232-1

Method	Method Description	Protocol	Laboratory
8081B	Organochlorine Pesticides (GC)	SW846	TAL EDI
8151A	Herbicides (GC)	SW846	TAL BUF
6010C	Metals (ICP)	SW846	TAL BUF
Moisture	Percent Moisture	EPA	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-68232-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-68232-1	SA-01	Solid	09/29/14 07:30	09/29/14 14:28
480-68232-2	SA-02	Solid	09/29/14 08:15	09/29/14 14:28
480-68232-3	9F-01	Solid	09/29/14 08:30	09/29/14 14:28
480-68232-4	DF-01	Solid	09/29/14 09:00	09/29/14 14:28
480-68232-5	2F-02	Solid	09/29/14 09:30	09/29/14 14:28
480-68232-6	3F-03	Solid	09/29/14 09:50	09/29/14 14:28
480-68232-7	DF-02	Solid	09/29/14 10:10	09/29/14 14:28
480-68232-8	4F-04	Solid	09/29/14 10:30	09/29/14 14:28
480-68232-9	15G-01	Solid	09/29/14 11:00	09/29/14 14:28
480-68232-10	DF-03	Solid	09/29/14 11:20	09/29/14 14:28
480-68232-11	16F-05	Solid	09/29/14 11:40	09/29/14 14:28
480-68232-12	12F-06	Solid	09/29/14 12:00	09/29/14 14:28
480-68232-13	12G-02	Solid	09/29/14 12:20	09/29/14 14:28
480-68232-14	DF-04	Solid	09/29/14 12:30	09/29/14 14:28
480-68232-15	6G-04	Solid	09/29/14 12:50	09/29/14 14:28

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes☐ No☐

THE LEAI

480-68232 Chain of Custody

TAL-4124 (1007)

Client: CFS Engineers Inc	Project Manager: Cody Martin	Date: 9/29/14	Chain of Custody Number: 264816
Address: 141 Elm St Suite 100	Telephone Number (Area Code)/Fax Number: 716-955-3021	Lab Number:	Page 1 of 2
City: Buffalo State: NY Zip Code: 14203	Site Contact:	Lab Contact:	
Project Name and Location (State): Westwood	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Analysis (Attach list if more space is needed): 6010 Arsenic; 8151A 8081B

Special Instructions/ Conditions of Receipt: NYS EDD

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH
SA-01	9/29/14	7:30										
SA-02		8:15										
9F-01		8:30										
DF-01		9:00										
2F-02		9:30										
3F-03		9:50										
DF-02		10:10										
4F-04		10:30										
15G-01		11:00										
DF-03		11:20										
16F-05		11:40										
12F-06		12:00										

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required: ☐ 24 Hours ☐ 48 Hours ☒ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify):

1. Relinquished By: Cody A Martin	Date: 9/29/14	Time: 14:28	1. Received By:	Date: 9/29/14	Time: 1428
2. Relinquished By:	Date:	Time:	2. Received By:	Date:	Time:
3. Relinquished By:	Date:	Time:	3. Received By:	Date:	Time:

Comments: 9.5 #1

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes☐ No☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client: C&S Engineers	Project Manager: Cody Martin	Date: 9/29/14	Chain of Custody Number: 264815
Address: 14 Elm St	Telephone Number (Area Code)/Fax Number: 716-955-3021	Lab Number:	Page 2 of 2
City: Buffalo / State: NY / Zip Code: 14203	Site Contact:	Lab Contact:	
Project Name and Location (State): Westwood	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.:			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	8081B	8151A	Cold Analyte	Special Instructions/ Conditions of Receipt
126-02	9/29/14	12:20				X	X						X	X	X	NYS EDD
DF-04		12:30				X	X						X	X	X	
6G-04		12:50				X	X						X	X	X	

Analysis (Attach list if more space is needed)

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☒ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: Cody A Martin	9/29/14	14:20	1. Received By:	9/29/14	1428
2. Relinquished By:	Date	Time	2. Received By:	Date	Time
3. Relinquished By:	Date	Time	3. Received By:	Date	Time

Comments

19.5 #1

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

10/7/2014

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Stone, Judy L	Carrier Tracking No(s):	COC No: 480-20149.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: judy.stone@testamericainc.com		Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Analysis Requested		Job #: 480-68232-1
Address: 777 New Durham Road,	Due Date Requested: 10/6/2014			Preservation Codes:
City: Edison	TAT Requested (days):			A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2SO3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - ph 4-5 L - EDA Z - other (specify)
State, Zip: NJ, 08817				
Phone: 732-549-3900(Tel) 732-549-3679(Fax)	PO #:			Other:
Email:	WO #:			
Project Name: Westwood Country Club Amherst NY	Project #: 48010508			
Site:	SSOW#:			

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Wwater, Ssolid, Owaste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8081B/3546 TCL Pesticides - OLM04.2	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
SA-01 (480-68232-1)	9/29/14	07:30 Eastern		Solid			X	1	
SA-02 (480-68232-2)	9/29/14	08:15 Eastern		Solid			X	1	
9F-01 (480-68232-3)	9/29/14	08:30 Eastern		Solid			X	1	
DF-01 (480-68232-4)	9/29/14	09:00 Eastern		Solid			X	1	
2F-02 (480-68232-5)	9/29/14	09:30 Eastern		Solid			X	1	
3F-03 (480-68232-6)	9/29/14	09:50 Eastern		Solid			X	1	
DF-02 (480-68232-7)	9/29/14	10:10 Eastern		Solid			X	1	
4F-04 (480-68232-8)	9/29/14	10:30 Eastern		Solid			X	1	
15G-01 (480-68232-9)	9/29/14	11:00 Eastern		Solid			X	1	
DF-03 (480-68232-10)	9/29/14	11:20 Eastern		Solid			X	1	
16F-05 (480-68232-11)	9/29/14	11:40 Eastern		Solid			X	1	

480-68232 Chain of Custody

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by	Date/Time:	Company
Cameron Wallace	10-3-14 1700	TAB			
Relinquished by: Fedex	Date/Time: 10/4 ~~1035~~ 1035	Company	Received by: Hall 10/4	Date/Time: 1035 TA	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.: 316901,902	Cooler Temperature(s) °C and Other Remarks: 2.4/4.4 #5

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

10/7/2014

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Stone, Judy L	Carrier Tracking No(s):	COC No: 480-20149.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: judy.stone@testamericainc.com		Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		**Analysis Requested**		Job #: 480-68232-1
Address: 777 New Durham Road,	Due Date Requested: 10/6/2014			**Preservation Codes:**
City: Edison	TAT Requested (days):			A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
State, Zip: NJ, 08817				
Phone: 732-549-3900(Tel) 732-549-3679(Fax)	PO #:			Other:
Email:	WO #:			
Project Name: Westwood Country Club Amherst NY	Project #: 48010508			
Site:	SSOW#:			

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8081B/3546 TCL Pesticides - OLM04.2	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
12F-06 (480-68232-12)	9/29/14	12:00 Eastern		Solid			X	1	
12G-02 (480-68232-13)	9/29/14	12:20 Eastern		Solid			X	1	
DF-04 (480-68232-14)	9/29/14	12:30 Eastern		Solid			X	1	
6G-04 (480-68232-15)	9/29/14	12:50 Eastern		Solid			X	1	

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by: Cameron Wallace	Date/Time: 10-3-14 1700	Company TAB	Received by:	Date/Time:	Company
Relinquished by: Fedex	Date/Time: 10/4 1035	Company	Received by: [illegible] 1035	Date/Time: TA 10/4	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.: 316901, 902	Cooler Temperature(s) °C and Other Remarks: 2.4/4.4 #5

Login Sample Receipt Checklist

Client: C&S Engineers, Inc.

Job Number: 480-68232-1

Login Number: 68232
List Number: 1
Creator: Janish, Carl M

List Source: TestAmerica Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	False	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	No analyses checked off on first page.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	c+s
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: C&S Engineers, Inc.

Job Number: 480-68232-1

Login Number: 68232
List Number: 2
Creator: Hall, Alonzo

List Source: TestAmerica Edison
List Creation: 10/04/14 02:29 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	316901,902
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.4,3.0° C IR #5
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	No analysis requiring residual chlorine check assigned.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

TestAmerica Job ID: 480-69993-1
Client Project/Site: Westwood Country Club Amherst NY

For:
C&S Engineers, Inc.
141 Elm Street
Suite 100
Buffalo, New York 14203

Attn: Cody Martin

Joseph V. Giacomazza

Authorized for release by:
10/29/2014 5:27:03 PM
Joe Giacomazza, Project Management Assistant II
joe.giacomazza@testamericainc.com

Designee for

Judy Stone, Senior Project Manager
(484)685-0868
judy.stone@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-69993-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 480-69993-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-69993-1

Receipt
The samples were received on 10/23/2014 3:20 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.3° C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-69993-1

Client Sample ID: 3PD-01 — Lab Sample ID: 480-69993-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.5		2.8	0.56	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 3PD-02 — Lab Sample ID: 480-69993-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	5.3		2.4	0.48	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 4PD-01 — Lab Sample ID: 480-69993-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	4.4		2.9	0.59	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 4PD-02 — Lab Sample ID: 480-69993-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	8.3		5.0	1.0	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 15PD-01 — Lab Sample ID: 480-69993-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	11.3		4.3	0.87	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 15PD-02 — Lab Sample ID: 480-69993-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	5.0		3.0	0.60	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: DO-01 — Lab Sample ID: 480-69993-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.1		2.9	0.59	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: DO-02 — Lab Sample ID: 480-69993-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.2		2.7	0.54	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 17PD-01 — Lab Sample ID: 480-69993-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.3	J	3.6	0.72	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: 17PD-02 — Lab Sample ID: 480-69993-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.1	J	2.9	0.57	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: EC-01 — Lab Sample ID: 480-69993-11

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-69993-1

Client Sample ID: EC-01 (Continued)

Lab Sample ID: 480-69993-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.5	J	3.3	0.66	mg/Kg	1	☼	6010C	Total/NA

Client Sample ID: EC-02

Lab Sample ID: 480-69993-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.3	J	3.5	0.71	mg/Kg	1	☼	6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: 3PD-01 — **Lab Sample ID: 480-69993-1**
Date Collected: 10/23/14 10:50 — Matrix: Solid
Date Received: 10/23/14 15:20 — Percent Solids: 72.7

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.5		2.8	0.56	mg/Kg	☼	10/24/14 15:56	10/27/14 21:48	1

Client Sample ID: 3PD-02 — **Lab Sample ID: 480-69993-2**
Date Collected: 10/23/14 11:00 — Matrix: Solid
Date Received: 10/23/14 15:20 — Percent Solids: 76.6

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.3		2.4	0.48	mg/Kg	☼	10/24/14 15:56	10/27/14 22:11	1

Client Sample ID: 4PD-01 — **Lab Sample ID: 480-69993-3**
Date Collected: 10/23/14 11:10 — Matrix: Solid
Date Received: 10/23/14 15:20 — Percent Solids: 68.6

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.4		2.9	0.59	mg/Kg	☼	10/24/14 15:56	10/27/14 22:14	1

Client Sample ID: 4PD-02 — **Lab Sample ID: 480-69993-4**
Date Collected: 10/23/14 11:15 — Matrix: Solid
Date Received: 10/23/14 15:20 — Percent Solids: 37.5

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	8.3		5.0	1.0	mg/Kg	☼	10/24/14 15:56	10/27/14 22:17	1

Client Sample ID: 15PD-01 — **Lab Sample ID: 480-69993-5**
Date Collected: 10/23/14 11:45 — Matrix: Solid
Date Received: 10/23/14 15:20 — Percent Solids: 42.3

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	11.3		4.3	0.87	mg/Kg	☼	10/24/14 15:56	10/27/14 22:20	1

Client Sample ID: 15PD-02 — **Lab Sample ID: 480-69993-6**
Date Collected: 10/23/14 11:35 — Matrix: Solid
Date Received: 10/23/14 15:20 — Percent Solids: 67.2

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.0		3.0	0.60	mg/Kg	☼	10/24/14 15:56	10/27/14 22:22	1

Client Sample ID: DO-01 — **Lab Sample ID: 480-69993-7**
Date Collected: 10/23/14 12:10 — Matrix: Solid
Date Received: 10/23/14 15:20 — Percent Solids: 71.6

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.1		2.9	0.59	mg/Kg	☼	10/24/14 15:56	10/27/14 22:25	1

Client Sample Results

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-69993-1

Client Sample ID: DO-02

Lab Sample ID: 480-69993-8
Date Collected: 10/23/14 12:00
Matrix: Solid
Date Received: 10/23/14 15:20
Percent Solids: 68.9

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.2		2.7	0.54	mg/Kg	☼	10/24/14 15:56	10/27/14 22:28	1

Client Sample ID: 17PD-01

Lab Sample ID: 480-69993-9
Date Collected: 10/23/14 12:20
Matrix: Solid
Date Received: 10/23/14 15:20
Percent Solids: 58.4

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.3	J	3.6	0.72	mg/Kg	☼	10/24/14 15:56	10/27/14 22:39	1

Client Sample ID: 17PD-02

Lab Sample ID: 480-69993-10
Date Collected: 10/23/14 12:18
Matrix: Solid
Date Received: 10/23/14 15:20
Percent Solids: 66.7

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.1	J	2.9	0.57	mg/Kg	☼	10/24/14 15:56	10/27/14 22:42	1

Client Sample ID: EC-01

Lab Sample ID: 480-69993-11
Date Collected: 10/23/14 12:38
Matrix: Solid
Date Received: 10/23/14 15:20
Percent Solids: 62.0

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5	J	3.3	0.66	mg/Kg	☼	10/24/14 15:56	10/27/14 22:45	1

Client Sample ID: EC-02

Lab Sample ID: 480-69993-12
Date Collected: 10/23/14 12:40
Matrix: Solid
Date Received: 10/23/14 15:20
Percent Solids: 55.0

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.3	J	3.5	0.71	mg/Kg	☼	10/24/14 15:56	10/27/14 22:48	1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-209876/1-A
Matrix: Solid
Analysis Batch: 210426

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 209876

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.9	0.37	mg/Kg		10/24/14 15:56	10/27/14 21:43	1

Lab Sample ID: LCSSRM 480-209876/2-A
Matrix: Solid
Analysis Batch: 210426

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 209876

Analyte			Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic			120	116.2		mg/Kg		97.0	70.0 - 145.1		

Lab Sample ID: 480-69993-1 MS
Matrix: Solid
Analysis Batch: 210426

Client Sample ID: 3PD-01
Prep Type: Total/NA
Prep Batch: 209876

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic	3.5		50.6	52.15		mg/Kg	☼	96	75 - 125		

Lab Sample ID: 480-69993-1 MSD
Matrix: Solid
Analysis Batch: 210426

Client Sample ID: 3PD-01
Prep Type: Total/NA
Prep Batch: 209876

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	3.5		51.4	53.91		mg/Kg	☼	98	75 - 125	3	20

Metals

Prep Batch: 209876

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-69993-1	3PD-01	Total/NA	Solid	3050B	
480-69993-1 MS	3PD-01	Total/NA	Solid	3050B	
480-69993-1 MSD	3PD-01	Total/NA	Solid	3050B	
480-69993-2	3PD-02	Total/NA	Solid	3050B	
480-69993-3	4PD-01	Total/NA	Solid	3050B	
480-69993-4	4PD-02	Total/NA	Solid	3050B	
480-69993-5	15PD-01	Total/NA	Solid	3050B	
480-69993-6	15PD-02	Total/NA	Solid	3050B	
480-69993-7	DO-01	Total/NA	Solid	3050B	
480-69993-8	DO-02	Total/NA	Solid	3050B	
480-69993-9	17PD-01	Total/NA	Solid	3050B	
480-69993-10	17PD-02	Total/NA	Solid	3050B	
480-69993-11	EC-01	Total/NA	Solid	3050B	
480-69993-12	EC-02	Total/NA	Solid	3050B	
LCSSRM 480-209876/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 480-209876/1-A	Method Blank	Total/NA	Solid	3050B	

Analysis Batch: 210426

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-69993-1	3PD-01	Total/NA	Solid	6010C	209876
480-69993-1 MS	3PD-01	Total/NA	Solid	6010C	209876
480-69993-1 MSD	3PD-01	Total/NA	Solid	6010C	209876
480-69993-2	3PD-02	Total/NA	Solid	6010C	209876
480-69993-3	4PD-01	Total/NA	Solid	6010C	209876
480-69993-4	4PD-02	Total/NA	Solid	6010C	209876
480-69993-5	15PD-01	Total/NA	Solid	6010C	209876
480-69993-6	15PD-02	Total/NA	Solid	6010C	209876
480-69993-7	DO-01	Total/NA	Solid	6010C	209876
480-69993-8	DO-02	Total/NA	Solid	6010C	209876
480-69993-9	17PD-01	Total/NA	Solid	6010C	209876
480-69993-10	17PD-02	Total/NA	Solid	6010C	209876
480-69993-11	EC-01	Total/NA	Solid	6010C	209876
480-69993-12	EC-02	Total/NA	Solid	6010C	209876
LCSSRM 480-209876/2-A	Lab Control Sample	Total/NA	Solid	6010C	209876
MB 480-209876/1-A	Method Blank	Total/NA	Solid	6010C	209876

General Chemistry

Analysis Batch: 209715

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-69993-1	3PD-01	Total/NA	Solid	Moisture	
480-69993-2	3PD-02	Total/NA	Solid	Moisture	
480-69993-3	4PD-01	Total/NA	Solid	Moisture	
480-69993-4	4PD-02	Total/NA	Solid	Moisture	
480-69993-5	15PD-01	Total/NA	Solid	Moisture	
480-69993-6	15PD-02	Total/NA	Solid	Moisture	
480-69993-7	DO-01	Total/NA	Solid	Moisture	
480-69993-8	DO-02	Total/NA	Solid	Moisture	
480-69993-9	17PD-01	Total/NA	Solid	Moisture	
480-69993-10	17PD-02	Total/NA	Solid	Moisture	

General Chemistry (Continued)

Analysis Batch: 209715 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-69993-11	EC-01	Total/NA	Solid	Moisture	
480-69993-12	EC-02	Total/NA	Solid	Moisture	

Lab Chronicle

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-69993-1

Client Sample ID: 3PD-01

Lab Sample ID: 480-69993-1
Date Collected: 10/23/14 10:50
Matrix: Solid
Date Received: 10/23/14 15:20
Percent Solids: 72.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			209876	10/24/14 15:56	TRP	TAL BUF
Total/NA	Analysis	6010C		1	210426	10/27/14 21:48	LMH	TAL BUF
Total/NA	Analysis	Moisture		1	209715	10/23/14 22:03	CW	TAL BUF

Client Sample ID: 3PD-02

Lab Sample ID: 480-69993-2
Date Collected: 10/23/14 11:00
Matrix: Solid
Date Received: 10/23/14 15:20
Percent Solids: 76.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			209876	10/24/14 15:56	TRP	TAL BUF
Total/NA	Analysis	6010C		1	210426	10/27/14 22:11	LMH	TAL BUF
Total/NA	Analysis	Moisture		1	209715	10/23/14 22:03	CW	TAL BUF

Client Sample ID: 4PD-01

Lab Sample ID: 480-69993-3
Date Collected: 10/23/14 11:10
Matrix: Solid
Date Received: 10/23/14 15:20
Percent Solids: 68.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			209876	10/24/14 15:56	TRP	TAL BUF
Total/NA	Analysis	6010C		1	210426	10/27/14 22:14	LMH	TAL BUF
Total/NA	Analysis	Moisture		1	209715	10/23/14 22:03	CW	TAL BUF

Client Sample ID: 4PD-02

Lab Sample ID: 480-69993-4
Date Collected: 10/23/14 11:15
Matrix: Solid
Date Received: 10/23/14 15:20
Percent Solids: 37.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			209876	10/24/14 15:56	TRP	TAL BUF
Total/NA	Analysis	6010C		1	210426	10/27/14 22:17	LMH	TAL BUF
Total/NA	Analysis	Moisture		1	209715	10/23/14 22:03	CW	TAL BUF

Client Sample ID: 15PD-01

Lab Sample ID: 480-69993-5
Date Collected: 10/23/14 11:45
Matrix: Solid
Date Received: 10/23/14 15:20
Percent Solids: 42.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			209876	10/24/14 15:56	TRP	TAL BUF
Total/NA	Analysis	6010C		1	210426	10/27/14 22:20	LMH	TAL BUF
Total/NA	Analysis	Moisture		1	209715	10/23/14 22:03	CW	TAL BUF

Lab Chronicle

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-69993-1

Client Sample ID: 15PD-02

Lab Sample ID: 480-69993-6

Date Collected: 10/23/14 11:35
Matrix: Solid
Date Received: 10/23/14 15:20
Percent Solids: 67.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			209876	10/24/14 15:56	TRP	TAL BUF
Total/NA	Analysis	6010C		1	210426	10/27/14 22:22	LMH	TAL BUF
Total/NA	Analysis	Moisture		1	209715	10/23/14 22:03	CW	TAL BUF

Client Sample ID: DO-01

Lab Sample ID: 480-69993-7

Date Collected: 10/23/14 12:10
Matrix: Solid
Date Received: 10/23/14 15:20
Percent Solids: 71.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			209876	10/24/14 15:56	TRP	TAL BUF
Total/NA	Analysis	6010C		1	210426	10/27/14 22:25	LMH	TAL BUF
Total/NA	Analysis	Moisture		1	209715	10/23/14 22:03	CW	TAL BUF

Client Sample ID: DO-02

Lab Sample ID: 480-69993-8

Date Collected: 10/23/14 12:00
Matrix: Solid
Date Received: 10/23/14 15:20
Percent Solids: 68.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			209876	10/24/14 15:56	TRP	TAL BUF
Total/NA	Analysis	6010C		1	210426	10/27/14 22:28	LMH	TAL BUF
Total/NA	Analysis	Moisture		1	209715	10/23/14 22:03	CW	TAL BUF

Client Sample ID: 17PD-01

Lab Sample ID: 480-69993-9

Date Collected: 10/23/14 12:20
Matrix: Solid
Date Received: 10/23/14 15:20
Percent Solids: 58.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			209876	10/24/14 15:56	TRP	TAL BUF
Total/NA	Analysis	6010C		1	210426	10/27/14 22:39	LMH	TAL BUF
Total/NA	Analysis	Moisture		1	209715	10/23/14 22:03	CW	TAL BUF

Client Sample ID: 17PD-02

Lab Sample ID: 480-69993-10

Date Collected: 10/23/14 12:18
Matrix: Solid
Date Received: 10/23/14 15:20
Percent Solids: 66.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			209876	10/24/14 15:56	TRP	TAL BUF
Total/NA	Analysis	6010C		1	210426	10/27/14 22:42	LMH	TAL BUF
Total/NA	Analysis	Moisture		1	209715	10/23/14 22:03	CW	TAL BUF

Lab Chronicle

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-69993-1

Client Sample ID: EC-01

Lab Sample ID: 480-69993-11

Date Collected: 10/23/14 12:38
Matrix: Solid
Date Received: 10/23/14 15:20
Percent Solids: 62.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			209876	10/24/14 15:56	TRP	TAL BUF
Total/NA	Analysis	6010C		1	210426	10/27/14 22:45	LMH	TAL BUF
Total/NA	Analysis	Moisture		1	209715	10/23/14 22:03	CW	TAL BUF

Client Sample ID: EC-02

Lab Sample ID: 480-69993-12

Date Collected: 10/23/14 12:40
Matrix: Solid
Date Received: 10/23/14 15:20
Percent Solids: 55.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			209876	10/24/14 15:56	TRP	TAL BUF
Total/NA	Analysis	6010C		1	210426	10/27/14 22:48	LMH	TAL BUF
Total/NA	Analysis	Moisture		1	209715	10/23/14 22:03	CW	TAL BUF

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Certification Summary

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-69993-1

Laboratory: TestAmerica Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	10026	03-31-15

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Method Summary

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-69993-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL BUF
Moisture	Percent Moisture	EPA	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

Sample Summary

Client: C&S Engineers, Inc.
Project/Site: Westwood Country Club Amherst NY

TestAmerica Job ID: 480-69993-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-69993-1	3PD-01	Solid	10/23/14 10:50	10/23/14 15:20
480-69993-2	3PD-02	Solid	10/23/14 11:00	10/23/14 15:20
480-69993-3	4PD-01	Solid	10/23/14 11:10	10/23/14 15:20
480-69993-4	4PD-02	Solid	10/23/14 11:15	10/23/14 15:20
480-69993-5	15PD-01	Solid	10/23/14 11:45	10/23/14 15:20
480-69993-6	15PD-02	Solid	10/23/14 11:35	10/23/14 15:20
480-69993-7	DO-01	Solid	10/23/14 12:10	10/23/14 15:20
480-69993-8	DO-02	Solid	10/23/14 12:00	10/23/14 15:20
480-69993-9	17PD-01	Solid	10/23/14 12:20	10/23/14 15:20
480-69993-10	17PD-02	Solid	10/23/14 12:18	10/23/14 15:20
480-69993-11	EC-01	Solid	10/23/14 12:38	10/23/14 15:20
480-69993-12	EC-02	Solid	10/23/14 12:40	10/23/14 15:20

Chain of Custody Record

Temperature on Receipt _____

Drinking Water? Yes☐ No☐

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client: C&S Engineers, Inc	Project Manager: Mark Colmerauer	Date: 10/23/14	Chain of Custody Number: 278465
Address: 141 Elm Street	Telephone Number (Area Code)/Fax Number: 716-955-3021	Lab Number:	Page 1 of 1
City: Buffalo / State: NY / Zip Code: 14203	Site Contact:	Lab Contact:	
Project Name and Location (State): Westwood	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.			

480-69993 Chain of Custody

Instructions/ns of Receipt

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/NaOH	6010 Arsenic
3PD-01	10/23/14	10:50			X		X						X
3PD-02		11:00											
4PD-01		11:10											
4PD-02		11:15											
15PD-01		11:45											
15PD-02		11:35											
DO-01		12:10											
DO-02		12:00											
17PD-01		12:20											
17PD-02		12:18											
EC-01		12:38											
EC-02		12:40											

6010 Arsenic Only

NYS EDD

Possible Hazard Identification
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☒ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	10/23/14	14:45	1. Received By	10/23/14	1445
2. Relinquished By	10/23/14	1520	2. Received By TA BH	10/23/14	1520
3. Relinquished By			3. Received By		

Comments

#2 4.3

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

10/29/2014

Login Sample Receipt Checklist

Client: C&S Engineers, Inc.

Job Number: 480-69993-1

Login Number: 69993
List Number: 1
Creator: Robison, Zachary J

List Source: TestAmerica Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	C&S
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

Westwood

A Traditional Neighborhood
in the heart of Amherst.

New York State Department of Environmental Conservation
Brownfield Cleanup Program

Brownfield Cleanup Program Application
Location
Westwood Country Club
772 North Forest Road (SBL #68.01-1-1)
Amherst, Erie County, New York

Please find contained herein the NYSDEC BCP Application applicable to the Westwood Country Club (Site ID #C915291), including the Supplemental and Supporting Information. To access the complete BCP Application to include all attachments, exhibits and appendices please note the following resources:

NYSDEC BCP Application Contact:
Michael Hinton, Project Manager
NYS Dept. of Environmental Conservation, Region 9
270 Michigan Avenue
Buffalo, NY 14203
Phone: 716.851.7201
Email: Michael.Hinton@dec.ny.gov

NYSDEC BCP Application Site ID #C915291 Document Repository:
Contact: Roseanne Butler-Smith, Director
Buffalo & Erie County Public Library
Williamsville Branch
5571 Main Street
Williamsville, NY 14221
Phone: 716.632.6176

Digital Copy of NYSDEC BCP Application Site ID #C915291 Available Online at:
www.westwoodamherst.com

Prepared By:

C&S COMPANIES®
www.cscos.com

Mark Colmerauer, Environmental Service Manager
141 Elm Street, Suite 100
Buffalo, NY 14203
Office Phone: 716.847.1630
Fax: 716.847.1454

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
BROWNFIELD CLEANUP PROGRAM (BCP)
ECL ARTICLE 27 / TITLE 14

08/2013

DEPARTMENT USE ONLY
BCP SITE #:

Section I. Requestor Information

NAME Mensch Capital Partners, LLC

ADDRESS 350 Essjay Road, Suite 304

CITY/TOWN Williamsville ZIP CODE 14221

PHONE 716-631-8000 FAX 716-631-8034 E-MAIL andrew.shaevel@bobalew.com

Is the requestor authorized to conduct business in New York State (NYS)? ☑ Yes ☐ No

-If the requestor is a Corporation, LLC, LLP or other entity requiring authorization from the NYS Department of State to conduct business in NYS, the requestor's name must appear, exactly as given above, in the NYS Department of State's Corporation & Business Entity Database. A print-out of entity information from the database must be submitted to DEC with the application, to document that the applicant is authorized to do business in NYS.

-Individuals that will be certifying BCP documents, as well as their employers, meet the requirements of Section 1.5 of DER-10: Technical Guidance for Site Investigation and Remediation and New York State Education Law. **Documents that are not properly certified will not be approved under the BCP.** ☑ Yes ☐ No

NAME OF REQUESTOR'S REPRESENTATIVE Andrew Shaevel

ADDRESS 350 Essjay Road, Suite 304

CITY/TOWN Williamsville ZIP CODE 14221

PHONE 716-631-8000 FAX 716-631-8034 E-MAIL andrew.shaevel@bobalew.com

NAME OF REQUESTOR'S CONSULTANT C&S Engineers, Inc.

ADDRESS 141 Elm Street, Suite 100

CITY/TOWN Buffalo ZIP CODE 14203

PHONE 716-847-1630 FAX 716-847-1454 E-MAIL mcolmerauer@cscos.com

NAME OF REQUESTOR'S ATTORNEY The Slater Law Firm, PLLC

ADDRESS 26 Mississippi Street, Suite 400

CITY/TOWN Buffalo ZIP CODE 14203

PHONE 716-845-6760 FAX 716-845-6764 E-MAIL CSlater@CSlaterLaw.com

THE REQUESTOR MUST CERTIFY THAT HE/SHE IS EITHER A PARTICIPANT OR VOLUNTEER IN ACCORDANCE WITH ECL 27-1405 (1) BY CHECKING ONE OF THE BOXES BELOW:

☐ PARTICIPANT
A requestor who either 1) was the owner of the site at the time of the disposal of hazardous waste or discharge of petroleum or 2) is otherwise a person responsible for the contamination, unless the liability arises solely as a result of ownership, operation of, or involvement with the site subsequent to the disposal of hazardous waste or discharge of petroleum.

☑ VOLUNTEER
A requestor other than a participant, including a requestor whose liability arises solely as a result of ownership, operation of or involvement with the site subsequent to the disposal of hazardous waste or discharge of petroleum.

NOTE: By checking this box, the requestor certifies that he/she has exercised appropriate care with respect to the hazardous waste found at the facility by taking reasonable steps to: i) stop any continuing discharge; ii) prevent any threatened future release; and iii) prevent or limit human, environmental, or natural resource exposure to any previously released hazardous waste.

Requestor Relationship to Property (check one):

☐ Previous Owner ☑ Current Owner ☐ Potential /Future Purchaser ☐ Other_____

If requestor is not the site owner, requestor will have access to the property throughout the BCP project. ☐ Yes ☐ No
-Proof of site access must be submitted for non-owners

Section II. Property Information

Check here if this application is to request significant changes to property set forth in an existing BCA: ☐
Existing BCP site number: _____

PROPERTY NAME Westwood Country Club

ADDRESS/LOCATION 772 North Forest Road CITY/TOWN Williamsville ZIP CODE 14221

MUNICIPALITY(IF MORE THAN ONE, LIST ALL): Town of Amherst

COUNTY Erie SITE SIZE (ACRES) 170.542

LATITUDE (degrees/minutes/seconds) 42 ° 58 ‘ 55.311 “ LONGITUDE (degrees/minutes/seconds) -78 ° 46 ‘ 24.3048 “

HORIZONTAL COLLECTION METHOD: ☑ SURVEY ☐ GPS ☐ MAP HORIZONTAL REFERENCE DATUM:

COMPLETE TAX MAP INFORMATION FOR ALL TAX PARCELS INCLUDED WITHIN THE PROPERTY BOUNDARIES. ATTACH REQUIRED MAPS PER THE APPLICATION INSTRUCTIONS.

Parcel Address	Parcel No.	Section No.	Block No.	Lot No.	Acreage
772 North Forest Road, Williamsville NY 14221	1	68.01	1	1	170.542

1. Do the property boundaries correspond to tax map metes and bounds? ☑ Yes ☐ No
   If no, please attach a metes and bounds description of the property.
2. Is the required property map attached to the application? (application will not be processed without map) ☑ Yes ☐ No
3. Is the property part of a designated En-zone pursuant to Tax Law § 21(b)(6)? ☐ Yes ☑ No
   For more information please see Empire State Development’s website.
   If yes, identify area (name) _____
   Percentage of property in En-zone (check one): ☑ 0-49% ☐ 50-99% ☐ 100%
4. Is this application one of multiple applications for a large development project, where the development project spans more than 25 acres (see additional criteria in BCP application instructions)? If yes, identify name of properties in related BCP applications: _____ ☐ Yes ☑ No

5. Property Description Narrative:

See attached

6. List of Existing Easements (type here or attach information)

Easement Holder	Description
See attached	

7. List of Permits issued by the NYSDEC or USEPA Relating to the Proposed Site (type here or attach information)

Type	Issuing Agency	Description
Pesticide applicator	NYSDEC	Certifies application of pesticides on golf course

If any changes to Section II are required prior to application approval, a new page, initialed by each requestor, must be submitted.

Initials of each Requestor: _____ _____ _____ _____ _____ _____

Section III. Current Property Owner/Operator Information

OWNER'S NAME Mensch Capital Partners, LLC		
ADDRESS 350 Essjay Road, Suite 304		
CITY/TOWN Williamsville	ZIP CODE 14221	
PHONE 716-631-8000	FAX 716-631-8034	E-MAIL andrew.shaevel@bobalew.com
OPERATOR'S NAME Westwood Country Club		
ADDRESS 772 North Forest Road		
CITY/TOWN Williamsville	ZIP CODE 14221	
PHONE 716-632-3040	FAX 716-632-3044	E-MAIL golfstaff@westwoodcc.cc

Section IV. Requestor Eligibility Information (Please refer to ECL § 27-1407)

If answering "yes" to any of the following questions, please provide an explanation as an attachment.

1. Are any enforcement actions pending against the requestor regarding this site? ☐ Yes ☑ No
2. Is the requestor subject to an existing order relating to contamination at the site? ☐ Yes ☑ No
3. Is the requestor subject to an outstanding claim by the Spill Fund for this site? ☐ Yes ☑ No
4. Has the requestor been determined to have violated any provision of ECL Article 27? ☐ Yes ☑ No
5. Has the requestor previously been denied entry to the BCP? ☐ Yes ☑ No
6. Has the requestor been found in a civil proceeding to have committed a negligent or intentionally tortious act involving contaminants? ☐ Yes ☑ No
7. Has the requestor been convicted of a criminal offense that involves a violent felony, fraud, bribery, perjury, theft, or offense against public administration? ☐ Yes ☑ No
8. Has the requestor knowingly falsified or concealed material facts or knowingly submitted or made use of a false statement in a matter before the Department? ☐ Yes ☑ No
9. Is the requestor an individual or entity of the type set forth in ECL 27-1407.9(f) that committed an act or failed to act, and such act or failure to act could be the basis for denial of a BCP application? ☐ Yes ☑ No

Section V. Property Eligibility Information (Please refer to ECL § 27-1405)

1. Is the property, or was any portion of the property, listed on the National Priorities List? ☐ Yes ☑ No
   If yes, please provide relevant information as an attachment.
2. Is the property, or was any portion of the property, listed on the NYS Registry of Inactive Hazardous Waste Disposal Sites? ☐ Yes ☑ No
   If yes, please provide: Site #_____ Class # _____
3. Is the property subject to a permit under ECL Article 27, Title 9, other than an Interim Status facility? ☐ Yes ☑ No
   If yes, please provide: Permit type:_____ EPA ID Number:_____
   Date permit issued:_____ Permit expiration date:_____
4. Is the property subject to a cleanup order under navigation law Article 12 or ECL Article 17 Title 10? ☐ Yes ☑ No
   If yes, please provide: Order #_____
5. Is the property subject to a state or federal enforcement action related to hazardous waste or petroleum? ☐ Yes ☑ No
   If yes, please provide explanation as an attachment.

Section VI. Project Description

What stage is the project starting at? ☑ Investigation ☐ Remediation

Please attach a description of the project which includes the following components:

- Purpose and scope of the project
- Estimated project schedule

Section VII. Property's Environmental History

To the extent that existing information/studies/reports are available to the requestor, please attach the following:

1. Environmental Reports

A Phase I environmental site assessment report prepared in accordance with ASTM E 1527 (American Society for Testing and Materials: Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process), and all environmental reports related to contaminants on or emanating from the site.

If a final investigation report is included, indicate whether it meets the requirements of ECL Article 27-1415(2): ☐Yes ☑No

2. SAMPLING DATA: INDICATE KNOWN CONTAMINANTS AND THE MEDIA WHICH ARE KNOWN TO HAVE BEEN AFFECTED. LABORATORY REPORTS SHOULD BE REFERENCED AND COPIES INCLUDED.

Contaminant Category	Soil	Groundwater	Surface Water	Sediment	Soil Gas
Petroleum					
Chlorinated Solvents					
Other VOCs					
SVOCs					
Metals	xx				
Pesticides					
PCBs					
Other*					

*Please describe: Arsenic is present in site soils at elevated concentrations likely related to the historic application of pesticides on the golf course

3. SUSPECTED CONTAMINANTS: INDICATE SUSPECTED CONTAMINANTS AND THE MEDIA WHICH MAY HAVE BEEN AFFECTED. PROVIDE BASIS FOR ANSWER AS AN ATTACHMENT.

Contaminant Category	Soil	Groundwater	Surface Water	Sediment	Soil Gas
Petroleum					
Chlorinated Solvents					
Other VOCs					
SVOCs					
Metals					
Pesticides					
PCBs					
Other*					

*Please describe: _____

4. INDICATE KNOWN OR SUSPECTED SOURCES OF CONTAMINANTS (CHECK ALL THAT APPLY). PROVIDE BASIS FOR ANSWER AS AN ATTACHMENT.

☐Above Ground Pipeline or Tank ☐Lagoons or Ponds ☐Underground Pipeline or Tank ☐Surface Spill or Discharge
☐Routine Industrial Operations ☐Dumping or Burial of Wastes ☐Septic tank/lateral field ☐Adjacent Property
☐Drums or Storage Containers ☐Seepage Pit or Dry Well ☐Foundry Sand ☐Electroplating
☐Coal Gas Manufacture ☐Industrial Accident ☐Unknown

Other: Historic application of pesticides as part of routine golf course maintenance

5. INDICATE PAST LAND USES (CHECK ALL THAT APPLY):

☐Coal Gas Manufacturing ☐Manufacturing ☐Agricultural Co-op ☐Dry Cleaner ☐Salvage Yard ☐Bulk Plant
☐Pipeline ☐Service Station ☐Landfill ☐Tannery ☐Electroplating ☐Unknown

Other: Used as golf course since 1921

6. PROVIDE A LIST OF PREVIOUS PROPERTY OWNERS AND OPERATORS WITH NAMES, LAST KNOWN ADDRESSES AND TELEPHONE NUMBERS AS AN ATTACHMENT. DESCRIBE REQUESTOR'S RELATIONSHIP, IF ANY, TO EACH PREVIOUS OWNER AND OPERATOR. IF NO RELATIONSHIP, PUT "NONE".

Section VIII. Contact List Information

Please attach, at a minimum, the names and addresses of the following:

1. The chief executive officer and planning board chairperson of each county, city, town and village in which the property is located.
2. Residents, owners, and occupants of the property and properties adjacent to the property.
3. Local news media from which the community typically obtains information.
4. The public water supplier which services the area in which the property is located.
5. Any person who has requested to be placed on the contact list.
6. The administrator of any school or day care facility located on or near the property.
7. In cities with a population of one million or more, the local community board if the proposed site is located within such community board's boundaries (*note: per the 2010 census, New York City is the only city in NY with a population over one million).
8. The location of a document repository for the project (e.g., local library). In addition, attach a copy of a letter sent to the repository acknowledging that it agrees to act as the document repository for the property.

Section IX. Land Use Factors (Please refer to ECL § 27-1415(3))

1. Current Use: ☐Residential ☑Commercial ☐Industrial ☐Vacant ☑Recreational (check all that apply)
   Provide summary of business operations as an attachment.

2. Intended Use Post Remediation: ☑Unrestricted ☑Residential ☑Commercial ☐Industrial (check all that apply)
   Provide specifics as an attachment.

3. Do current historical and/or recent development patterns support the proposed use? (See #14 below re: discussion of area land uses)	☑Yes ☐No
4. Is the proposed use consistent with applicable zoning laws/maps?	☐Yes ☑No
5. Is the proposed use consistent with applicable comprehensive community master plans, local waterfront revitalization plans, designated Brownfield Opportunity Area plans, other adopted land use plans?	☑Yes ☐No
6. Are there any Environmental Justice Concerns? (See §27-1415(3)(p)).	☐Yes ☑No
7. Are there any federal or state land use designations relating to this site?	☐Yes ☑No
8. Do the population growth patterns and projections support the proposed use?	☑Yes ☐No
9. Is the property accessible to existing infrastructure?	☑Yes ☐No
10. Are there important cultural resources, including federal or state historic or heritage sites or Native American religious sites within ½ mile?	☐Yes ☑No
11. Are there important federal, state or local natural resources, including waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species within ½ mile?	☑Yes ☐No
12. Are there floodplains within ½ mile?	☑Yes ☐No
13. Are there any institutional controls currently applicable to the property?	☐Yes ☑No

14. Describe the proximity to real property currently used for residential use, and to urban, commercial, industrial, agricultural, and recreational areas in an attachment.

15. Describe the potential vulnerability of groundwater to contamination that might migrate from the property, including proximity to wellhead protection and groundwater recharge areas in an attachment.

16. Describe the geography and geology of the site in an attachment.

Section X. Statement of Certification and Signatures

(By requestor who is an individual)

If this application is approved, I acknowledge and agree to the general terms and conditions set forth in DER-32 *Brownfield Cleanup Program Applications and Agreements* and to execute a Brownfield Cleanup Agreement (BCA) within 60 days of the date of DEC's approval letter. I also agree that in the event of a conflict between the general terms and conditions of participation set forth in DER-32 and the terms contained in a site-specific BCA, the terms in the BCA shall control. I hereby affirm that information provided on this form and its attachments is true and complete to the best of my knowledge and belief. I am aware that any false statement made herein is punishable as a Class A misdemeanor pursuant to section 210.45 of the Penal Law.

Date: _____ Signature: _____ Print Name: _____

(By an requestor other than an individual)

I hereby affirm that I am Managing Partner (title) of Mensch Capital Partners, LLC (entity); that I am authorized by that entity to make this application; that this application was prepared by me or under my supervision and direction. If this application is approved, I acknowledge and agree to the general terms and conditions set forth in DER-32 *Brownfield Cleanup Program Applications and Agreements* and to execute a Brownfield Cleanup Agreement (BCA) within 60 days of the date of DEC's approval letter. I also agree that in the event of a conflict between the general terms and conditions of participation set forth in DER-32 and the terms contained in a site-specific BCA, the terms in the BCA shall control. I hereby affirm that information provided on this form and its attachments is true and complete to the best of my knowledge and belief. I am aware that any false statement made herein is punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Date: 11.13.14 Signature: _____ Print Name: Andrew J. Shaevel

SUBMITTAL INFORMATION:

Three (3) complete copies are required.

- **Two (2)** copies, one paper copy with original signatures and one electronic copy in Portable Document Format (PDF) on a CD, must be sent to:

  Chief, Site Control Section
  New York State Department of Environmental Conservation
  Division of Environmental Remediation
  625 Broadway
  Albany, NY 12233-7020

- **One (1)** paper copy must be sent to the DEC regional contact in the regional office covering the county in which the site is located. Please check our website for the address of our regional offices.

FOR DEPARTMENT USE ONLY

BCP SITE T&A CODE: _____ **LEAD OFFICE:** _____

UNANIMOUS WRITTEN RESOLUTION
OF ALL MEMBERS OF
MENSCH CAPITAL PARTNERS, LLC

NOVEMBER 13, 2014

The undersigned, being the holders of all of the units of **MENSCH CAPTIAL PARTNERS, LLC,** a New York limited liability company (the "Company"), hereby jointly consent to pass, enact, approve, and adopt the following resolutions without a meeting and direct that this Resolution be filed with the minutes of the Company:

RESOLVED, that Andrew J. Shaevel, Managing Partner of the Company, (an "Authorized Person") be, and hereby is, authorized, directed, and empowered, acting alone, in the name or on behalf of the Company, to execute the Brownfield Cleanup Program ("BCP") Agreement, or any other documents or agreements necessary to enter and participate in the New York State Department of Environmental Conservation's Brownfield Cleanup Program (Environmental Conservation Law Article 27, Title 14) for property owned by the Company located at 772 North Forest Road, and 381 and 385 Maple Road, Amherst, New York; 14221 and be it further

RESOLVED, that the Authorized Person is hereby authorized, empowered and directed to take all such action on behalf of the Company as they may deem necessary, appropriate or advisable to carry out the intent and purposes of the foregoing resolutions; and be it further

RESOLVED, that any acts of any officer of the Company and of any persons designated and authorized to act by any such officer of the Company, which acts would have been authorized by the foregoing resolutions except that such acts were taken prior to the adoption of such resolutions, are hereby severally ratified, confirmed, approved and adopted as acts of the Company.

IN WITNESS WHEREOF, the undersigned have executed this Unanimous Written Consent of all Members of the Company as of the date first set forth above.

ESSJAY MENSCH PARTNERS, LLC

By:_____
Andrew J. Shaevel, Managing Partner

HAMISTER HOSPITALITY HOPEWELL, LLC

By:_____
Mark Hamister,

772 NORTH FOREST ACQUISITION, LLC

By:_____
Paul F. Ciminelli, Member

This consent may be executed in various counterpart copies, and by facsimile, each of which shall be deemed an original but all of which together shall constitute one and the same instrument.

UNANIMOUS WRITTEN RESOLUTION
OF ALL MEMBERS OF
MENSCH CAPITAL PARTNERS, LLC

NOVEMBER 13, 2014

The undersigned, being the holders of all of the units of **MENSCH CAPTIAL PARTNERS, LLC,** a New York limited liability company (the "Company"), hereby jointly consent to pass, enact, approve, and adopt the following resolutions without a meeting and direct that this Resolution be filed with the minutes of the Company:

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RESOLVED, that the Authorized Person is hereby authorized, empowered and directed to take all such action on behalf of the Company as they may deem necessary, appropriate or advisable to carry out the intent and purposes of the foregoing resolutions; and be it further

RESOLVED, that any acts of any officer of the Company and of any persons designated and authorized to act by any such officer of the Company, which acts would have been authorized by the foregoing resolutions except that such acts were taken prior to the adoption of such resolutions, are hereby severally ratified, confirmed, approved and adopted as acts of the Company.

IN WITNESS WHEREOF, the undersigned have executed this Unanimous Written Consent of all Members of the Company as of the date first set forth above.

ESSJAY MENSCH PARTNERS, LLC

By:_____
Andrew J. Shaevel, Managing Partner

HAMISTER HOSPITALITY HOPEWELL, LLC

By:_____
Daniel M. Hamister, Manager

772 NORTH FOREST ACQUISITION, LLC

By:_____
Paul Ciminelli,

This consent may be executed in various counterpart copies, and by facsimile, each of which shall be deemed an original but all of which together shall constitute one and the same instrument.

State of New York)
County of Erie) ss:

On the 13 day of November in the year 2014, before me, the undersigned, a Notary Public in and for the said state, personally appeared **Andrew J. Shaevel**, Managing Partner of the **Essjay Mensch Partners, LLC**, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Notary Public

KATHLEEN A. GUENTHER #01GU4675162
NOTARY PUBLIC, STATE OF NEW YORK
QUALIFIED IN ERIE COUNTY
My Commission Expires August 31, 2018

State of New York)
County of Erie) ss:

On the ___ day of November in the year 2014, before me, the undersigned, a Notary Public in and for the said state, personally appeared **Mark Hamister,** President of the **Hamister Hospitality Hopewell, LLC** personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Notary Public

State of New York)
County of Eric) ss:

On the 13th day of November in the year 2014, before me, the undersigned, a Notary Public in and for the said state, personally appeared **Paul F. Ciminelli**, Member of **772 North Forest Acquistion, LLC**, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that she executed the same in her capacity, and that by her signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Notary Public

KATHLEEN A. GUENTHER #01GU4675162
NOTARY PUBLIC, STATE OF NEW YORK
QUALIFIED IN ERIE COUNTY
My Commission Expires August 31, 2018

State of New York)
County of Erie) ss:

On the ___ day of November in the year 2014, before me, the undersigned, a Notary Public in and for the said state, personally appeared **Andrew J. Shaevel**, Managing Partner of the **Essjay Mensch Partners, LLC**, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public

State of New York)
County of Erie) ss:

On the 13th day of November in the year 2014, before me, the undersigned, a Notary Public in and for the said state, personally appeared **Daniel M. Hamister,** Manager of the **Hamister Hospitality Hopewell, LLC** personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

CHERYL A. GREEN
Notary Public, State of New York
Qualified in Erie County
My Commission Expires 9/25/2017

_____
Notary Public

State of New York)
County of Eric) ss:

On the ___ day of November in the year 2014, before me, the undersigned, a Notary Public in and for the said state, personally appeared **Paul Ciminelli**, President of **772 North Forest Acquisition, LLC**, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that she executed the same in her capacity, and that by her signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public

New York State Department of Environmental Conservation

BROWNFIELD CLEANUP PROGRAM

BROWNFIELD CLEANUP PROGRAM APPLICATION
SUPPLEMENTAL AND SUPPORTING INFORMATION

for

Westwood Country Club
772 North Forest Road (SBL #68.01-1-1)
Amherst, Erie County, New York

November 13, 2014

BCP APPLICATION – SUPPLEMENTAL AND SUPPORTING INFORMATION

WESTWOOD COUNTRY CLUB
772 NORTH FOREST ROAD, AMHERST, NEW YORK

BCP APPLICATION – ADDITIONAL INFORMATION

ATTACHMENTS

ACRONYM LIST

Acronym	**Description**
BCP Site	Area that includes 772 North Forest Road
En-zone	Environmental Zone
NYSDEC	New York State Department of Environmental Conservation
USEPA	United States Environmental Protection Agency
Town	Town of Amherst

BCP APPLICATION – SUPPLEMENTAL AND SUPPORTING INFORMATION

WESTWOOD COUNTRY CLUB
772 NORTH FOREST ROAD, AMHERST, NEW YORK

Project	Westwood Country Club
SCO	Soil Cleanup Objective
ESA	Environmental Site Assessment
UST	Underground Storage Tank
Comprehensive Plan	Town of Amherst Bicentennial Comprehensive Plan
EJ	Environmental Justice
ESD	Empire State Development
BOA	Brownfield Opportunity Area
LWRP	Local Waterfront Revitalization Program
FEMA	Federal Emergency Management Agency

This document and its attachments supplement the Brownfield Cleanup Program ("BCP") Application. The information is organized by the BCP Application sections. If no additional information is required, it is noted under its relevant section.

Section I - Requestor Information

The requestor is Mensch Capital Partners, LLC as noted.

Mensch Capital Partners, LLC
5477 Main Street
Williamsville, NY 14221
Andrew Shaevel
Andrew.shaevel@bobalew.com

New York State Department of State's Corporation & Business Entity Database printouts are located in Attachment 1.

Section II - Property Information

The Brownfield Cleanup Program Site is comprised of one parcel (772 North Forest Road: SBL #68.01-1-1) as noted in the form. Attachment 2 depicts the Brownfield Cleanup Program Site ("BCP Site") on a USGS 7.5 minute quadrangle map.

1. Tax Map Boundaries

The final boundaries of the property are shown in Attachment 3.

2. Property Base Map

A map showing the proposed BCP Site on a digital aerial ortho-photograph is included in Attachment 4. Attachment 5 contains and depicts parcel lines, tax map parcel numbers and owner information for adjacent parcels, a 1,000-foot radius and land use for the entire area.

3. En-Zone

Designation of En-Zones is limited to Eligible 2000 Census Tracts with a poverty rate of at least 20% according to the 2000 Census and an unemployment rate of at least 125% of the New York State average, or a poverty rate of at least double the rate for the county in which the tract is located. The BCP site is within US Census Tract 91.09. According to the Empire State Development website Erie County Census Tract 91.09 is not a designated Environmental Zone ("En-Zone"), based on 2000 Census data, in which tax credits are enhanced.

4. Multiple Applications

The proposed project is a stand-alone project and is not the subject of multiple applications.

5. Property Description

Additional property description is provided in Sections VI, VII and IX.

6. Easements

The following easements were noted on the ALTA survey (included as Attachment 3):

1. Easement to the Town of Amherst recorded in Liber 200 of Deeds at page 400 does not affect subject premises: the easement lies in Lot 60 North of Ellicott Creek.
2. Easement to the Town Board of the Town of Amherst recorded in Liber 8285 of Deeds at page 167 does affect subject premises and is shown on the ALTA survey.
3. Easement to The New York Telephone Company recorded in Liber 10274 of Deeds at page 842 does affect subject premises and is shown on the ALTA survey.
4. Easement to the National Fuel Gas Distribution Corporation recorded in Liber 10305 of Deeds at page 758 does affect subject premises and is shown on the ALTA survey.
5. Easement to the National Fuel Gas Distribution Corporation recorded in Liber 10305 of Deeds at page 759 does affect subject premises and is shown on the ALTA survey.
6. Easement to The New York Telephone Company recorded in Liber 7088 of Deeds at page 665 does affect subject premises and is shown on the ALTA survey.
7. Temporary easement to the Town of Amherst recorded in Liber 9251 of Deeds at page 101 released no later than the 31 of June, 1984 and does not affect subject premises.
8. Easement to The New York Telephone Company recorded in Liber 9843 of Deeds at page 147 does affect subject premises and is shown on the ALTA survey.
9. Easement to the Erie County Water Authority recorded in Liber 7759 of Deeds at page 585 does affect subject premises and is shown on the ALTA survey.

7. Past or Present Permits from New York State Department of Environmental Conservation ("NYSDEC") or United States Environmental Protection Agency ("USEPA")

The golf course has the necessary NYSDEC certifications for applying pesticides. Attachment 6 contains the permits and the 2013 annual application report.

Section III - Current Property Owner/Operator Information

The BCP Site is comprised of one tax parcel as indicated by Erie County on-line mapping website. The parcel includes 772 North Forest Road (SBL #68.01-1-1).

Parcel owner names and information are provided below:

Mensch Capital Partners, LLC
5477 Main Street
Williamsville, NY 14221
Phone: (716) 362-7880
Fax: (716) 580-3137
E-mail: Andrew.shaevel@bobalew.com

Section IV - Requestor Eligibility Information (ECL §27-1407)

No additional information is required.

Section V - Property Eligibility Information (ECL §27-1405)

The BCP Site is not subject to an Order.

Section VI – Project Description

Mensch Capital Partners, LLC, owners of the Westwood Country Club property on Sheridan Drive at North Forest Road in Amherst, has developed an innovative conceptual master plan to create Westwood, a new traditional neighborhood in the heart of Amherst that will feature great public spaces, a variety of residences and a neighborhood center that are all complementary to the surrounding community and the entire Town of Amherst.

The stated project mission is for Westwood to be a walkable, sustainable, and comfortable traditional neighborhood rooted in the planning goals and objectives of the Town's Comprehensive Plan, compatible with surrounding neighborhoods and an asset to the entire Town of Amherst.

The BCP Site has been subject of a recent investigation which demonstrated that the property has been affected by the past site uses and may be a candidate for inclusion into the BCP. The results of the recent site investigation are discussed Section VII.

Project Information

The 170-acre Site is located at 772 North Forest Road, 385 Maple Road and 391 Maple Road in the south-central portion of the Town of Amherst, Erie County, New York. The Site is bounded by Sheridan Drive (State Route 324) on the south; Maple Road (County Road 192) on the north; North Forest Road (County Road 294), Ellicott Creek, and the Audubon Par 3 Golf Course on the east; and Frankhauser Road and Fairways Boulevard on the west.

The Site is currently an active private golf course, although market forces have severely impacted the course's long-term viability.

The Site was first developed as a golf course in 1921 and has remained in use since that time. Structures on the property include six main buildings, several sheds, a swimming pool and tennis courts associated with the Westwood Country Club golf course.

Purpose and Scope

The proposed clean-up will include soil remediation activities to allow the construction of a mixed use development that will comprise the entire 170.54 acres of the BCP Site.

The conceptual master plan for Westwood (shown in Attachment 11) includes:

- Patio Homes – 108 patio homes adjacent to Audubon Par 3 Golf Course
- Townhouses – 90 condo/townhouses with access to public green space and recreation features
- Single Family Homes – 46 single family lots with direct access to the park, lake, public green space and recreation features
- Senior Living – 200 assisted living and 100 independent senior units with access to open green space, recreation features, in close proximity to the mixed-use urban core
- Parks, Lakes and Ponds – 64 acres of public green and open space, pedestrian and bike trails, and Westwood Lake access, representing approximately 38 percent of the site
- Apartments – 56 rental apartments and town houses
- Banquet Facility – new event green space and banquet facilities utilizing existing club house

- Neighborhood Center – 280 units of residential living over neighborhood retail and restaurants; 37 lakeside apartments or townhouses; 200,000 square feet of professional office space (six buildings); shared parking and new public gathering spaces

Estimated Project Schedule

The schedule for the BCP process anticipated to be followed for the remediation of the BCP Site is outlined below:

Anticipated Date	Milestone
November 13, 2014	Brownfield Credit Program Application Submission
January 30, 2014	Remedial Investigation Work Plan Submittal
January 31, 2015	BCP Acceptance
February 15, 2015	BCA Signed
March 15, 2015	Remedial Investigation Work Plan Approved
March 25, 2015	Remedial Investigation
April 15, 2015	Remedial Measures Work Plan Submittal
May 15, 2015	Remedial Investigation Report and Remedial Work Plan Approval
June 1, 2015	Remedial Work
September 15, 2015	SMP/Final Engineering Report Submittals
October 1, 2015	Decision Document
November 1, 2015	SMP and FER Approvals
December 2015	Certificate of Completion

Section VII - Property's Environmental History

1. Environmental Reports

Preliminary environmental information currently exists for the Site. The following summarizes the 2012 Phase I ESA and a limited soil characterization program completed in 2014. The associated documents are attached in Attachment 7.

February 27, 2012 – Quality Inspection Services/Applus RTD Phase I ESA Report
The Phase I ESA for the BCP Site did not identify recognized environmental conditions (RECs).

November 2014 – Surface Soil and Sediment Characterization
C&S conducted a sampling program to characterize surface soil and sediment at the BCP Site. The characterization program consisted of the sampling and analysis of 15 surface soil samples and 12 sediment samples at the Site. The surface soil samples were analyzed for pesticides, herbicides, and arsenic using USEPA Methods 8082, 8151, and 6010, respectively. The sediment samples were analyzed for arsenic using EPA Method 6010.

Analytical sample results from these investigations are summarized in Section 2 Sampling Data.

2. Sampling Data

A total of 15 surface soil and 12 sediment samples were collected from the Site in 2014. The soil samples were analyzed for pesticides, herbicides, and arsenic, while the sediment samples were analyzed only for arsenic.

The surface soil samples did not contain detectable concentrations of pesticides and herbicides. However, concentrations of arsenic ranged from 2.2 to 66.3 mg/kg. The detected arsenic concentrations in five of the surface soil samples were above the NYSDEC's least stringent Soil Cleanup Objective (SCO) for Industrial Use, suggesting that some level of cleanup and/or management of impacted soils will be required prior to redevelopment of the Site. The samples with concentrations contravening the SCOs were located in various portions of the Site, rather than in a limited number of discrete locations.

The sediment sampling results ranged from 1.3 to 11.3 mg/kg. These concentrations are below the NYSDEC Unrestricted Use SCO. Using the NYSDEC's June 24, 2014 "Screening and Assessment of Contaminated Sediments Guidance," eleven of the concentrations are characterized as Class A, which is defined as sediments that present little to no potential for risk to aquatic life. One sample, collected from the pond on Hole 15, contained arsenic concentrations falling within the Class B classification, indicating that the additional information is needed to determine the potential risk to aquatic life.

Known contaminants include arsenic associated with pesticide use at the Site during routine golf course maintenance operations across the BCP Site. ***NYSDEC Industrial Use SCOs were exceeded in 5 of the 15 surface soil sampling locations, and one sediment sample fell within the Class B category.***

The location of the soil and sediment samples and relative exceedance level is shown in Attachment 7. In addition, tables of known contamination for soil are located in Attachment 8. The following is a brief summary of the contaminants on-site.

Soil Contaminants:

Attachment 8 contains a summary of contaminants at the Site, and a summary of soil analytical results by contaminant class from the 2014 sampling is provided as follows:

Pesticides – Soils

No pesticides were detected.

Herbicides – Soils

No herbicides were detected.

Metals

Arsenic: Five (5) detections above Industrial Use SCO.

Sediment Contaminants:

A summary of sediment analytical results class from the 2014 sampling is provided as follows:

Metals

Arsenic: No detections above Unrestricted Use SCO and one detection within the Class B category range.

3. Suspected Contaminants and Media

No additional contaminants, beyond the known contaminants discussed in Section 2 Sampling Data are suspected to exist at the Site.

4. Known or Suspected Sources of Contamination

It is believed that the sources arsenic contamination in the soil and sediment are related to the application of arsenic-based pesticides at the BCP Site, which has occurred on the Site since 1921.

5. Past Land Uses

The BCP Site was reportedly first developed in 1921, and the use of the Site since that time has included golf course, country club, and associated operations. Prior to 1921, land use was agricultural or residential.

Adjacent Usage:

Surrounding properties were historically developed for, and remain, generally residential in nature.

Summary of Potential Sources of Environmental Impairment

A Phase I Environmental Site Assessment (ESA) completed for the Site in 2012 did not identify environmental concerns associated with spills, petroleum and hazardous material storage facilities, remediation sites, or other such issues.

However, due to the historical usage of the Site as a golf course, concerns associated with pesticides applied during routine golf course maintenance operations at the Site exist.

7. List of Previous Owners and Operators

Previous Owners

A title search and a summary of previous Site owners are provided in Attachment 9. It should be understood that none of the previous owners have a legal relationship with the Requestor.

Previous Operators

Name	Address	Phone Number	From	To	Relationship to Applicant
Willowdale Golf Club	772 North Forest Rd, Williamsville, NY 14221	Not applicable	1919	Circa 1929	None
Wilmont Town and Country Club	772 North Forest Rd, Williamsville, NY 14221	Not applicable	Circa 1929	Early 1930s	None
Blossom Health Country Club	772 North Forest Rd, Williamsville, NY 14221	Not applicable	Early 1930s	1945	None
Westwood Country Club	772 North Forest Rd, Williamsville, NY 14221	(716) 632-3040	1945	Current	None

Note – List of Previous Operators was obtained from the DGEIS.

Section VIII - Contact List

1. Local Government – Town of Amherst

Erie County Executive:
Mark Poloncarz
Edward A. Rath County Office Building
95 Franklin Street, 6th Floor
Buffalo, NY 14202
(716) 858-6000
http://www2.erie.gov/exec/index.php?q=email-mark

Chief Executive Officer – Town of Amherst Supervisor:
Dr. Barry A. Weinstein
Amherst Municipal Building
5583 Main Street
Williamsville, New York 14221
(716) 631-7032
bweinstein@amherst.ny.us

Planning Board Chairman:
Jonathan O'Rourke, Chairman
Town of Amherst Planning Board
Amherst Municipal Building
5583 Main Street
Williamsville, New York 14221
(716) 631-7051

Zoning Board of Appeals:
J. Matthew Plunkett, Chairman
Town of Amherst Zoning Board of Appeals
Amherst Municipal Building
5583 Main Street
Williamsville, New York 14221
(716) 631-7080

2. Residents, Owners and Occupants of Property and Property Adjacent to Site:

Adjacent land owners are presented in the map and summarized in the table in Attachment 4.

3. Local Media:

Local Newspaper:

Buffalo News
1 News Plaza
Buffalo NY 14240
(716) 849-3434
http://www.buffalonews.com/classifieds/

Amherst Bee
5564 Main Street
Williamsville, NY 14221
(716) 632-4700
http://www.amherstbee.com/

Local Television:

WGRZ – TV Channel 2
259 Delaware Avenue
Buffalo, NY 14202
(716) 849-2200
http://www.wgrz.com/news/default.aspx

WIVB – TV Channel 4
2077 Elmwood Avenue
Buffalo, NY 14207
(716) 874-4410
http://www.wivb.com/subindex/news

WKBW – TV Channel 7
7 Broadcast Plaza
Buffalo, NY 14202
(716) 840-7777
http://www.wkbw.com/

Radio:

WBEN 930 AM Radio
500 Corporate Parkway
Amherst, NY 14226
(716) 843-0600
http://www.wben.com

WBFO 88.7 FM Radio
3435 Main Street
Buffalo, NY 14214
(716) 829-6000
http://www.wbfo.org/

Websites:

Town of Amherst website:
http://www.amherst.ny.us/default.asp

4. Local Water Supplier:

Erie County Water Authority
295 Main Street
Room 350
Buffalo, NY 14203
(716) 849-8444

5. Persons Requesting to be Placed on Contact List:

To Be Completed as Necessary

6. School and Day Care Facilities:

There are no schools or day care facilities located on the Brownfield cleanup site. Schools and daycare facilities in the vicinity of the Brownfield cleanup site include:

Schools:

Mrs. Ann Laudisio, Principal
Maplemere School
236 E. Maplemere Road (approximately 0.25 miles to the west)
Amherst, NY 14221
Phone: (716) 250-1550

Dr. Charles Galluzzo, Principal
Maple West Elementary School
851 Maple Road (approximately 0.7 miles to the east)
Williamsville, NY 14221
(716) 626-8840

Mr. Keith Wing, Principal
Forest Elementary School
250 N. Forest Road (approximately 0.9 miles to the southeast)
Williamsville, NY 14221
Phone: (716) 626-9800

Daniel R. Lewis, Principal
Smallwood Drive Elementary
300 Smallwood Drive (approximately 0.6 miles to the south)
Amherst, NY 14226
Phone: 716-362-2100

Chris Lauricella, Head of School
The Park School of Buffalo
4625 Harlem Road (approximately 0.6 miles to the southwest)
Buffalo, NY 14226
Phone: 716-839-1242

Satish K. Tripathi, President
State University at Buffalo, North Campus
Augspurger Road (approximately 0.7 miles to the northwest)
(716) 645-2000

Christine Ellington-Rowe, Executive Director
SUNY University at Buffalo Child Care Center
100 St Rita's Lane (approximately 0.8 miles to the northwest)
Buffalo, NY 14260
(716) 645-6509

7. Document Repositories:

The document repository identified below has been established to provide the public with convenient access to important project documents. Copies of letter proposed to be sent to the document repositories acknowledging they agree to act as a document repository are provided in Attachment 10.

Buffalo & Erie County Public Library
Williamsville Branch
5571 Main St.
Williamsville, NY 14221
716-632-6176
Attn: Roseanne Butler-Smith, Director
http://buffalolib.org/content/library-locations/area-libraries?lib=Williamsville+Branch

Sunday:	Closed
Monday:	10:00 AM - 02:00 PM
Tuesday:	04:00 PM - 08:00 PM
Wednesday:	10:00 AM - 02:00 PM
Thursday:	01:00 PM - 08:00 PM
Friday:	Closed
Saturday:	10:00 AM - 02:00 PM

Section IX - Land Use Factors

1. Current Uses: Summary of Business Operations

The BCP Site consists of one parcel currently used as a golf course and country club. Structures on the property include six main buildings, several sheds, a swimming pool and tennis courts associated with the Westwood Country Club golf course.

2. Intended Use – Post Remediation

The Requestors intend to create a mixed use neighborhood during the implementation of the project. The Conceptual Master Plan, included in Attachment 11, shows that components of the mixed use project will be oriented around the new approximately five-acre lake including the original Westwood Country Club ("WCC") clubhouse (which will be preserved) and a traditional neighborhood center. The proposed mixed use project will feature a variety of residential uses as follows: single-family residences, patio homes, townhomes and upscale apartments and will also feature a mix of commercial uses including shops, restaurants, businesses and offices, a four story hotel, and senior living developments (assisted and independent living including rental town homes and independent living senior apartments).

3. Current, Historical and/or Recent Development Patterns

The proposed Project is consistent with current land use patterns. The mixed use development will be located within a primarily residential area of similar density to that proposed for the project. Additionally, the project is planned as a traditional mixed use neighborhood with pedestrian friendly design combined with smart growth initiatives that will provide a walkable, sustainable, comfortable living community, and was specifically designed as such so as to conform to the consistent with the adopted Town of Amherst Bicentennial Comprehensive Plan ("Comprehensive Plan").

4. Consistency with Zoning

The property is currently zoned as "RC," which designates the Site as Recreation Conservation District.

In an effort to ensure that sufficient space will be reserved for open space and recreational opportunities, the Requestor will sustain a buffer area along the boundary of the Site that will remain zoned RC. The buffer area will be integrated into a broader open space and trail network that will be coordinated with site landscaping. However, zoning changes will be necessary to support the planned development. While not consistent with current zoning, the planned development is consistent with the Town of Amherst Comprehensive Plan.

The proposed zoning changes include:

- In order to implement the proposed mixed use project in a manner consistent with the Conceptual Master Plan, amendments to the zoning classification of portions of the Site will be necessary. Accordingly, the Mensch Capital Partners LLC proposes to amend 145.08 acres of the Site that is currently zoned Recreation Conservation District ("RC") to Traditional Neighborhood Development District ("TND"). The TND zoning is being sought to accommodate the proposed residential components, the neighborhood center and office park component of the mixed use project. The TND zoning classification is a Special Purpose District

that provides for new development and redevelopment of fully integrated, mixed use, pedestrian-oriented neighborhoods that encourage walkability and minimize traffic congestion, sprawl and infrastructure costs through specific performance standards and design regulations.

- The Project includes a four-story hotel to be located at the core of the Neighborhood Center and the portion of the mixed use project consisting of the hotel and immediately adjacent parking is proposed to be rezoned to General Business District ("GB"). The GB zoning classification is intended to provide community centers, within existing and proposed mixed use activity centers, for the location of commercial uses which serve a larger market area than a neighborhood center.

- The Senior Development components of the mixed use project, featuring both assisted and independent living senior housing, is proposed to be rezoned to Multifamily Residential District Seven ("MFR-7"). The MFR-7 zoning classification is intended to provide areas within the Town for high-density development of adult care facilities, such as senior citizen housing, nursing homes, intermediate care facilities, and single-family detached dwellings not on individual lots.

5. Consistency with Plans

The planned project is consistent with the Town of Amherst's current Comprehensive Plan. The Town initiated the preparation of a comprehensive plan in September of 2000 and the plan was adopted by the Town Board in January of 2007 and as was most recently amended in 2011. The Town of Amherst Bicentennial Comprehensive Plan ("Comprehensive Plan") is the official document that serves as a guide to the long-range physical development of the community. The Comprehensive Plan is organized into a series of elements that cover community functions such as Land Use, Transportation and Infrastructure. Each element describes a set of goals, objectives and policies that are designed to achieve that aspect of the Vision Statement. The following is a brief summary of the Project's conformance with the Comprehensive Plan.

- **Vision Statement**: The Vision Statement identifies three fundamental attributes that will sustain the exceptional quality of life for local residents.
    - Livability is identified as one of three fundamental attributes. The Comprehensive Plan identifies a range of lifestyle options within pedestrian friendly mixed use development patterns as a critical component of providing a livable neighborhood. The Project proposal responds to this desire through providing a mixed use development with a traditional neighborhood center featuring single family, rental, condominium and senior housing options.
    - Community Character is also identified as a fundamental attribute defined by the protection of open space and natural scenic resources, respect for history and heritage and support of visual character through enhanced landscaping measures and the protection of woodlands. The Project responds to this principle by including features for publicly accessible recreational amenities for the Town's residents, preserving and enhancing 64 acres of permanent open space areas and incorporating the original WCC Clubhouse as a historic resource and focal point of the mixed use redevelopment project.
    - Shared Direction is also identified in the Vision Statement as a fundamental attribute and includes intergovernmental cooperation, diversified economies providing a strong tax base and coordination with the University at Buffalo and other educational institutions. The Project is consistent with this goal by providing a mixed use project that includes a diversified commercial component including neighborhood business and office, medical

and professional office parks, and senior care facilities that will enhance the Town's strong tax base.

- **Plan Goals, Objectives and Policies:** Section 3-1 of the Comprehensive Plan expresses the need to expand provisions and incentives for mixed use development in designated activity centers. The Plan describes an Activity Center as an area that provides a focus for surrounding neighborhoods while promoting the Town's land use objectives such as compact, pedestrian-friendly development. By definition, such activity centers are higher in density and incorporate a wider range of uses than the lower density, predominantly residential areas surrounding them. The Conceptual Land Use Plan looks to integrate the development of mixed use Activity Centers in two contexts: 1.) within established centers of community activity; and 2.) in appropriate locations where centers of community activity currently do not exist. The Site provides a unique and exciting opportunity to establish an Activity Center that is currently surrounded by predominantly residential areas that will provide a mixed use, compact, and pedestrian friendly traditional neighborhood center for both existing and new residents.

- **Redevelopment and Revitalization of Underutilized, Obsolete, and Vacant Properties for Economically Viable Uses:** Section 3-9 of the Comprehensive Plan acknowledges that as the Town matures and market conditions evolve, some developed properties may no longer be economically viable as a result of changing economic conditions. The Comprehensive Plan recognizes that existing public and semi-public land uses, such as schools, churches, golf courses and other recreational facilities, may require revitalization in the event that their continued operation becomes difficult due to changing demographic, economic, or social trends. According to Section 3-9 of the Comprehensive Plan, the redevelopment of these areas is identified as requiring careful master planning that maintains the essential character of the site while accommodating significant changes in use and density. The Requestor has engaged in very thorough review of the existing site and potential options for redevelopment given the difficulty of continuing operation of the WCC site as a golf course and country club.

- **Open Space Preservation:** Figure 4 of the Comprehensive Plan identifies the Site as a "private recreation area" and speaks to encouraging opportunities which provide for the expansion of public open spaces and recreational trail connections. Section 3-14 of the Comprehensive Plan encourages conservation development with incentives for the dedication of open space in private developments. The Requestor has intentionally designed the Project to provide major open space opportunities that will be available to the public for recreational purposes. In addition, the Project provides an opportunity to both connect and expand existing trail networks within the community. The Project directly accommodates the open space preservation intent of the Comprehensive Plan by converting an existing private recreational resource into a mixed use project that includes approximately 64 acres of permanent open space including an approximately 23-acre new park area that will be publicly accessible. The permanent open space area will be protected via the recording a deed restriction at the Erie County Clerk's Office.

- **Neighborhood Center Development:** Section 3.3 of the Comprehensive Plan provides the Conceptual Land Use Plan and describes in detail the various components and intent of the Conceptual Land Use Plan. Within this section of the Plan, a Neighborhood Center is defined as the smallest scale center, providing convenience shopping for the day-to-day needs of residents in the immediate neighborhood. The Comprehensive Plan suggests developing Neighborhood Centers at the intersections of neighborhood collector streets with arterial streets. These centers should promote good pedestrian and bicycle access to the neighborhood they serve and minimize

traffic impacts on local streets. Where possible, these centers should be located in conjunction with neighborhood-scale civic uses, parks, and public spaces. The Comprehensive Plan suggests placing these centers approximately one mile apart. The Project incorporates all of these design principles per the Comprehensive Plan including limited traffic impacts to local streets (no direct roadways to existing residential neighborhoods are being proposed), incorporating public and civic uses, locating near arterial streets and being sited more than one mile from any existing Neighborhood Center in the community.

- **Traffic Congestion Management:** Section 6-6 of the Comprehensive Plan acknowledges that the community should "Accept a certain level of traffic congestion as a 'given' and expand investments in alternative transportation modes and compact, mixed use development patterns." The Project provides an opportunity to both better manage existing traffic congestion and expand investment in alternative transportation modes through compact, mixed use development patterns. The Project includes the construction of a new north-south public right of way between Sheridan Drive (State Road 324) and Maple Road (County Road 192) which will help to alleviate existing peak hour traffic congestion along adjacent north-south public right of ways, most notably North Forest Road (County Road 294). Additionally, the Project will manage potential traffic impacts through utilizing a mixed use development pattern that takes advantage of multi-use and pass-by vehicular trips within the neighborhood.

- **Diversity of Housing Types:** Section 8-2 of the Comprehensive Plan promotes the development of a variety of housing types within the Town of Amherst community. The Plan states the following, "The Town should encourage the proportional development of diverse housing types and price levels, including single-family detached (at a variety of lot sizes), townhouse, condominiums, apartments, and housing as part of mixed use developments." The Project provides for every one of the housing types stated within the Comprehensive Plan and additionally offers a purpose built environment for both assisted care and independent living senior housing.

- **The University Focal Planning Area:** The Site is located within the University at Buffalo North Campus Focal Planning Area as per the Comprehensive Plan. The key planning issues considered for this area are focused around the impacts of the ongoing expansion of the UB North Campus student population, need for coordination between the Town and University on campus growth/edge issues, and the potential for research/economic development spin-off from University activities. Section 10.3.2 of the Comprehensive Plan provides a Concept Plan and Strategies for new development and redevelopment of areas within the University Focal Planning Area. Specifically, the Comprehensive Plan includes the following strategy, "Enhance physical connections to the University from surrounding neighborhoods by establishing a linkage or linkages across Ellicott Creek from North Forest Road." The Project provides an opportunity for a linkage in the trail connection for the adjacent neighborhoods through the Site and north toward the UB North Campus.

6. Environmental Justice

Criteria for Environmental Justice ("EJ") determination were derived from the USEPA standards for environmental justice areas. These criteria are:

- At least one-half of the study area is of minority status;
- At least one-half of the study area is of low-income status;

- The percentage of minority status is at least 10 percentage points higher than for the entire county in which the population is located; and
- The percentage of low-income status is at least 10 percentage points higher than for the entire county in which the population is located.

The study area defined as US Census Tract 91.09 does not qualify as an EJ area, therefore, there are no EJ concerns.

7. Federal or State Designations

The BCP Site is not located within:

- An Empire State Development (ESD) Environmental Zone (En-zone)
- The boundary of an approved Local Waterfront Revitalization Program ("LWRP") or Coastal Zone Management Area
- A Historic District listed on the National or State registers of historic places

8. Population Projections

As described in the Town of Amherst Comprehensive Plan, Town's population was 116,510 and is predicted to grow to a total of 127,264 to 138,839 by 2020. The proposed Project supports this anticipated growth through the creation of additional housing via the creation of a mixed use development that conforms to the Town's vision for future development.

9. Accessibility to Infrastructure

Utilities available at the proposed BCP Site include: public water (Erie County Water Authority), public sewage collection and stormwater collection (Town of Amherst Engineering Department Sewer Maintenance Division), electric service (National Grid), and natural gas (National Fuel Gas Company). Electric and gas services may require extensions or upgrades which will be engineered to meet specific facility demands. The BCP Site is located along existing public highways and has direct access to Sheridan Drive, North Forest Road, and Maple Road.

10. Cultural Resources within ½ mile

There are no cultural resources located within one-half mile of the Site.

11. Federal, State or Local Natural Resources

On-Site Natural Resources

There are no federal or state designated waterways, or wildlife refuges on the BCP Site.

Wetlands on the BCP Site include:

Wetland ID	Wetland/Stream Type	Acreage
Wetland 1	Hardwood Swamp (PFO)	0.309±
Wetland 2	Scrub-Shrub Marsh (PSS)	0.229±
Wetland 3	Open Water (OW)	0.601±
Wetland 4	Open Water (OW)	1.02±
Wetland 5	Hardwood Swamp (PFO)	0.660±
Wetland 6	Open Water (OW)	0.915±
Wetland 7	Emergent Marsh (PEM)	0.052±
Wetland 8	Emergent Marsh (PEM)	0.173±
Wetland 9	Open Water (OW)	0.160±
Wetland 10	Hardwood Swamp (PFO)	0.058±
Wetland 11	Riverine	3.24±
Total Wetland Area		7.417±

As described in Earth Dimension, Inc.'s September 26, 2014 Wetland Delineation Report (Attachment 13), Wetland 11 (Ellicott Creek) is a traditionally navigable waterway and is regulated by the USACE. In addition, the creek is a NYSDEC Class B stream regulated under Article 15 of the New York State Conservation Law.

Nearby Natural Resources

Federal or state designated waterways, wetlands, or critical habitats of endangered or threatened species within a ½ mile from the BCP Site include:

State Designated Waterways

The Site is not located within ½ mile of a State Designated Waterway. However, the Site lies within the Tonawanda Creek Watershed, a major tributary watershed to the Niagara River / Lake Erie Watershed. Tonawanda Creek, a State Designated Waterway, forms the Town's northern boundary with Niagara County and flows to the west and drains large portions of the Town. Portions of Tonawanda Creek have been historically channelized as part of the Erie Canal.

Ellicott Creek, which extends along portions of the eastern boundary of the Site, is the largest tributary of Tonawanda Creek and flows northwest through the Town. Ellicott Creek discharges into a channelized section of Tonawanda Creek, near where Tonawanda Creek flows into the Niagara River.

Wetlands

Wetlands within a ½ mile from the BCP Site include:

Wetland ID	Wetland/Stream Type	Acreage	Jurisdictional Determination	Comment
PFO1B	Freshwater Forest/Shurb Wetland	23.69	USFWS	Adjacent
PFO1/SS1E	Freshwater Forest/Shurb Wetland	4.40	USFWS	Adjacent
PUBHx	Freshwater Pond	0.85	USFWS	Adjacent
PSS1/EM1B	Freshwater Forest/Shurb Wetland	7.14	USFWS	Adjacent
R2UBH	Riverine	83.04	USFWS	Ellicott Creek
PUBF	Freshwater Pond	1.22	USFWS	Adjacent
PUBHx	Freshwater Pond	0.64	USFWS	On-Site
PUBHx	Freshwater Pond	1.15	USFWS	On-Site
PUBHx	Freshwater Pond	0.98	USFWS	On-Site

Critical Habitat

Based on a review of the New York Natural Heritage Program database, no fish or wildlife species listed by the NYSDEC or the U.S. Fish and Wildlife Service as threatened, endangered, or special concern are known to occur in the immediate vicinity of the Site. Further, there are no state or locally designated Critical Environmental Areas in the Town of Amherst.

The nearest significant natural area is the 270-acre Great Baehre Swamp Wildlife Management Area ("WMA"), which straddles Hopkins Road (County Route 87) and is located adjacent to the Town park named by the Town in recognition of Army Staff Sgt. William R. "Billy" Wilson III. This WMA is managed by the NYSDEC for day use recreational activities (e.g., biking, hiking and wildlife observation). This area is located approximately 2.4 miles northeast of the Site.

12. Floodplains within ½ mile

Certain areas within the eastern portion of the Project site lie within the 100- and 500-year floodplains of Ellicott Creek, as designated by the Federal Emergency Management Agency ("FEMA"). Portions of the Site, as well as some properties within ½ mile of the Site, are located within Zones AE and Z, as depicted on FEMA's Flood Insurance Rate Map, Community-Panel Numbers 3602660009E and 3602660012E Map, as Revised October 16, 1992. Attachment 12 contains a floodplain map.

The areas of Zone X include areas determined to be outside the 500-year plain as well as those areas of the 500-year flood; areas of 100-year flood with average depths of less than one foot or with drainage areas less than one square mile; and areas protected by levees from 100-year flood.

The Zone AE areas include areas in which the base flood elevation is determined and floodway areas in Zone AE. Zone AE covers high flood risk areas with mandatory flood insurance purchase requirements are necessary.

Prior to the implementation of flood control improvements described below, Ellicott Creek had a history of flooding. According to the USACE, the March 1960 flood, which affected approximately 3,220 acres in Amherst, is considered the flood of record.

According to FEMA, the area most prone to flooding along Ellicott Creek in the Town is the downstream portion of the creek located between Maple Road and Niagara Falls Boulevard. For more than a century, federal, state and local governments have implemented flood control mitigation measures to prevent or minimize flood damage in the Town. For example, in 1932, the Town improved the Ellicott Creek channel upstream of the Village of Williamsville and, in the late 1950s, the USACE cleared a six-mile portion of Ellicott Creek between Sheridan Drive and Sweet Home Road. Further, in 1965, Erie County completed construction of a diversion channel in Ellicott Creek Park in the Town of Tonawanda (from Ellicott Creek to Tonawanda Creek), which was constructed to reduce the potential for flooding within the Town.

13. Institutional Controls

There are no deed restrictions in place that will prohibit the redevelopment or future use of the BCP Site.

14. Adjacent Land Uses

Attachment 4 depicts the land use surrounding the BCP Site within 1,000 feet. Land use in the project area is characterized as primarily residential to the east, south, and west and recreational (Amherst Town Park) to the north. A church and the Town Highway Department garages are located to the east of the Site, and a gasoline filling station is located near the southwest corner of the Site. Land uses were obtained on-line from the Erie County GIS website: http://gis1.erie.gov/GC/ErieCountyNY/default.htm.

15. Groundwater Vulnerability

Based on a review of NYSDEC data, the Site is not underlain by any mapped principal or primary aquifers. Groundwater at and in the vicinity of the Site is not used for public drinking water supply.

Groundwater was investigated as part of a geotechnical evaluation of the Site. As part of its geotechnical analysis, three groundwater observation wells were installed. Results indicate that the water table is present at 17 to 22 feet beneath the surface, although perched water is present in the upper soils, in some instances within a few feet of the surface.

Groundwater will not be used for drinking supply or process supply. Therefore, groundwater vulnerability is low.

16. Site Geography and Geology

The Project Site is located within the Erie-Ontario Lake Plain physiographic province of New York. This physiographic region has little relief and is characteristic of an abandoned lakebed. The region includes three plains (Ontario, Huron, and Erie), which are separated by the east-west trending Niagara, Portage and Onondaga escarpments. The Town of Amherst is located in the Salina Lowland of the east-west trending Huron plain and is bounded by the Onondaga and Niagara escarpments, which are comprised of more resistant rock. No unique landforms or geological formations exist on or in the vicinity of the Site.

Topography on the Site averages approximately 600 feet above sea level. In general, the topography gradually drops approximately 10 to 13 feet in elevation from south to north across the Site. Overall, the topography of the Site is relatively level, with the exception of previous modifications resulting from the construction, operation, and maintenance of the existing private golf course, including golf tees, fairways, hazards, greens, ponds and cart paths. In addition, Ellicott Creek meanders along portions of the eastern boundary of the Site. The natural topography in the vicinity of the Site also has been influenced by previous development of sites adjacent to and in the vicinity of the Site, including residential neighborhoods to the east and west of the Site, the UB North Campus, and the Audubon Recreation Center and Golf Courses (Par 3 and 18-hole) to the north and northeast of the Site.

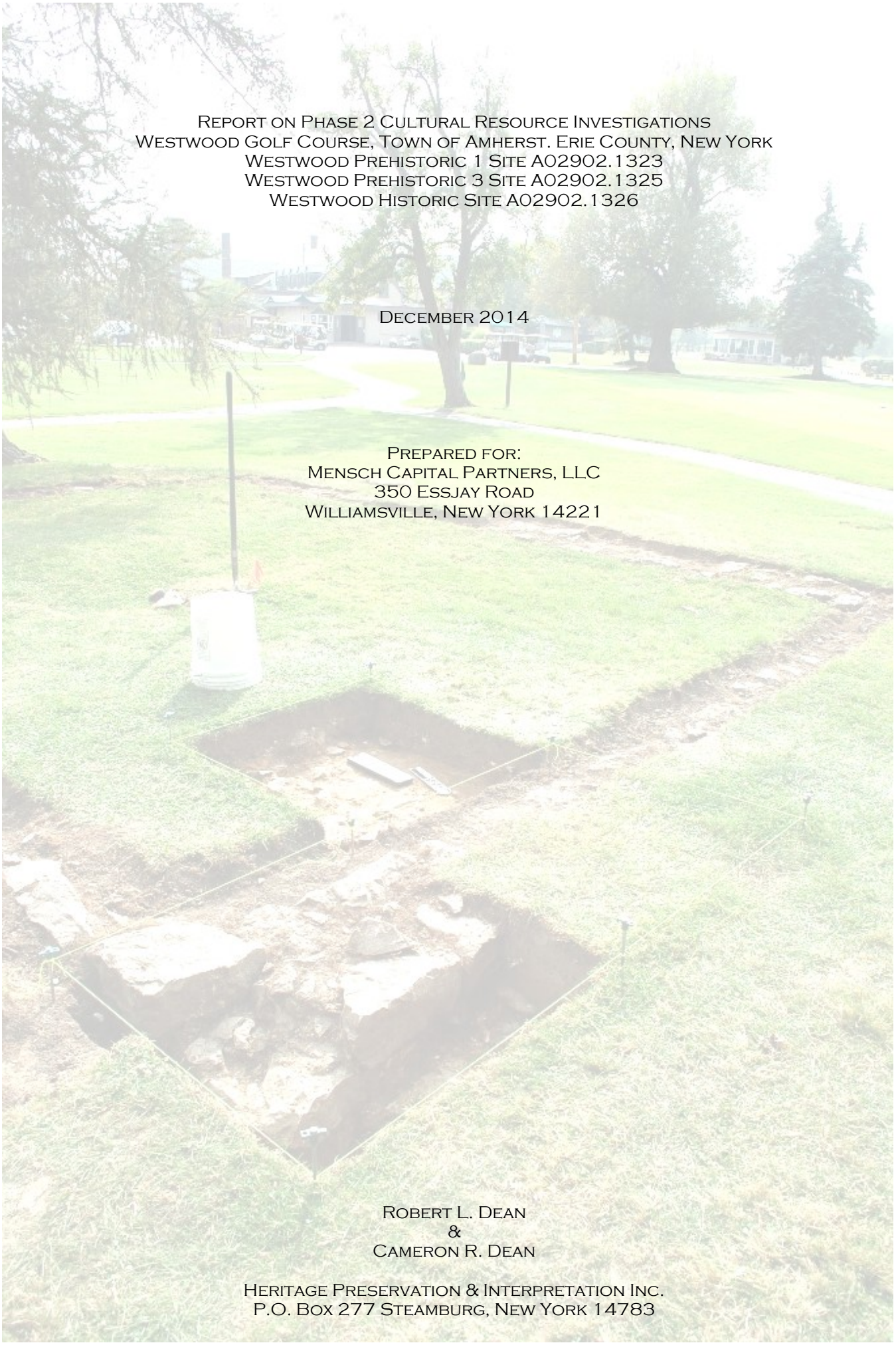
The Soil Survey of Erie County (U.S. Department of Agriculture, Soil Conservation Service www.websoilsurvey.nrcs.usda.gov) identifies soils on the Site as including: Claverack loamy fine sand, Cosad loamy fine sand, Lakemont silt loam, Odessa silt loam, Schoharie silt loam, Teel silt loam, and Urban land-Odessa complex series, with Odessa, Claverack and Cosad being the predominate soil types. Of these types, only Lakemont is considered hydric soil, although hydric inclusions are possible in Cosad, Odessa, and Teel soils series. These soil types on the Project Site are described as follows:

- The Claverack series consists of very deep, moderately well drained soils formed in sandy deposits that overlie clayey lacustrine sediments. They are nearly level to sloping soils in shallow deltas on lake plains.
- The Cosad series consists of very deep somewhat poorly drained soils formed in sandy deposits that overlie clayey lacustrine sediments. They are nearly level soils on lake plains.
- The Lakemont series consists of deep, poorly drained and very poorly drained soils of lake plains. They are nearly level soils formed in very slowly permeable reddish colored clayey lacustrine sediments.
- The Odessa series consists of very deep, somewhat poorly drained soils formed in clayey lacustrine deposits. These soils are in moderately low areas on lake plains.
- The Schoharie series consists of very deep, moderately well drained soils formed in clayey lacustrine sediments. They are on glacial lake plains and uplands mantled with lake sediments.
- The Teel series consists of very deep, moderately well drained soils on floodplains. They formed in nearly level silty alluvial deposits.
- The Urban Land-Odessa complex consists of nearly level areas of urban land and somewhat poorly drained Odessa soils. This complex is on relatively flat landscapes in the City of Buffalo and surrounding metropolitan area, including the Town of Amherst.

The results of the soil borings conducted during the geotechnical evaluation were consistent with the mapped soils information. Specifically, the soil borings encountered native soils consist of glacial till deposited silty clay, clayey silt, silt and silty or clayey sand soils overlying the shale bedrock. In most cases, the soil borings indicated the presence of surface topsoil and man-placed fill or disturbed

indigenous soils above native soils, and this is consistent with topographic modifications associated with golf course construction.

Bedrock in the vicinity of the Site consists generally of gray, medium hard, sound, thinly bedded to bedded shale rock of the Camillus shale formation, with occasional partings, seams and layers of gypsum. The depth to bedrock on the Site ranges from approximately 13.5 to 62.5 feet as evidenced by refusal in 30 soil borings conducted in connection with the geotechnical analysis of the Site.



Report on Phase 2 Cultural Resource Investigations
Westwood Golf Course, Town of Amherst. Erie County, New York
Westwood Prehistoric 1 Site A02902.1323
Westwood Prehistoric 3 Site A02902.1325
Westwood Historic Site A02902.1326

December 2014

Prepared for:
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Introduction

This report provides summary information on Phase 2 cultural resource investigations conducted for a proposed development at the Westwood Golf Course in the Town of Amherst. Erie County, New York. The investigations were conducted on three sites that were identified by a Phase 1a/b investigation[1] in 2013: two were prehistoric/pre-contact and one was historic. Because of the amount of previous disturbance known to have occurred at the golf course the Phase 1 investigation had tested only areas expected to have been less disturbed as that were located on positions deemed more sensitive for past activities/occupations to have been located. The areas selected for testing were determined after reviews of historic maps, aerial photos and locations of recorded archaeological sites.

The field work for the Phase 2 investigations was conducted by Robert L. Dean and Cameron R. Dean. Field work was carried out over a period of twenty-four days between September 23, 2014 and November 10, 2014.

This report is preliminary in nature and more descriptive than analytic. Processing the artifacts recovered during the investigation required more time than had been expected. The need to quickly report the results of the Phase 2 testing left little room for detailed analyses to be completed. Nevertheless it is believed that the current summary provides sufficient information detailing the work completed and will allow project review personnel to assess the recommendations that have been made.

1. Dean, Robert L and Cameron R. Dean.
   2013a. Phase 1A Cultural Resource Investigation: Westwood Country Club, HPI Inc.
   2013b. Phase 1B Cultural Resource Investigation: Westwood Country Club. HPI Inc.

Figure 1: Site Location Map
Westwood Prehistoric 1 and 3
Westwood Historic Site

This figure taken from the Phase 1B report

Westwood Prehistoric 1 Site (OPRHP 2902.01323)

This site was located along the south bank of a former channel of Ellicott Creek. It was initially thought to extend approximately forty-five meters west of a pump house situated on the east side of the 18th Fairway. Phase 1 testing recovered twenty-seven pieces of chert debitage (flakes and shatter) from three shovel tests (STPs 8.1, 8.2, 8.3).

The initial Phase 2 testing consisted of the excavation of additional shovel tests. The tests were arrayed on a five meter grid whose zero point was the approximate location of Phase 1 Shovel Test 8.1 which was relocated by use of a handheld GPS device. The shovel tests were intended to provide information on the site's extent, to identify differences in artifact frequency/density, and to determine the level of previous disturbance in this locale. Thirty-eight shovel tests were excavated during the Phase 2 testing (Figure 2). These tests did show that a wide disparity in artifact density existed across the site. They also showed that the area was much more disturbed than had been noted during the Phase 1 investigation. Soil profiles were, as expected, somewhat more uniform between those tests located within the fairway.

Two 1m x 1m test excavation units were also excavated. These tests were done to obtain a larger sample of artifacts and to continue in the attempt to identify subsurface features and/or diagnostic artifacts that could provide information about site function and date(s) of occupation. Test units were placed near shovel tests where very high artifact frequencies had been recorded. Soil was removed by apparent natural levels and, as was the case with shovel tests, was sifted through ¼-inch mesh hardware cloth screens.

None of the shovel tests or test excavation units produced artifacts diagnostic of a specific archaeologically defined culture. All of the pre-contact artifacts recovered could be attributed to the manufacture and/or maintenance of stone tools. Almost the entire artifact assemblage consisted of chert debitage—flakes and core fragments or shatter. One apparent distinction in this assemblage is the seeming low percentage of core/shatter pieces relative to flakes. The only non-chert artifact recovered was a rough stone piece identified as a bi-pitted hammers stone. Some historic/modern material was present in both Test 1 and 2 but was a very minor component.

The distribution of artifacts suggests that the construction of the golf course impacted the original site area. At least that is the easiest explanation for peak artifact densities on east and west sides of the 18th Fairway. The position of the material along the bank of an extinct meander of Ellicott Creek seems fitting as does the apparent pronounced decline in artifacts as one moves south and away from the former creek bank. The site itself can still only be classified as a lithic scatter since there were no subsurface features

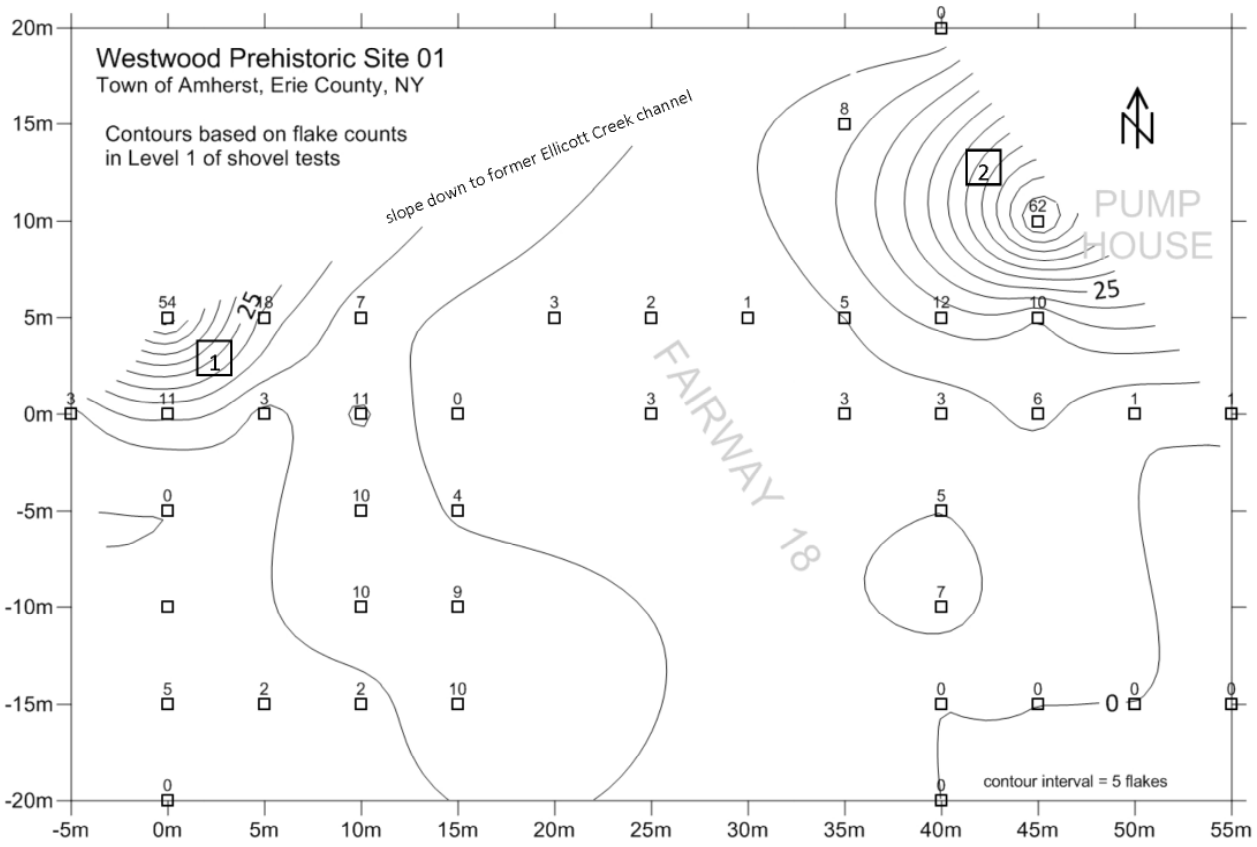
identified to indicate any more than a very ephemeral occupation. It is possible that a closer examination of the artifact assemblage will identify pieces that may have been subjected to heating. That could indirectly point to the existence of features that did not survive the agricultural and recreational activities across the site.

The Westwood Prehistoric Site 1 was an area where lithic reduction/processing—the manufacture and maintenance of chipped stone tools—occurred. The current level of analysis has only roughly categorized the items recovered and it is possible that more detailed inspection may discover some items that could be classified as utilized. That would suggest additional activities in this area and use-wear analysis might provide information on the types of material being operated on.

While it is not impossible that the observed distribution of artifacts represents the actual locations of deposition, it does seem rather improbable. Specifically, although the scatter of material extends across and along the 18th Fairway and follows the edge of the extinct creek meander, it is hard to believe that the very high frequency tests occur precisely at either edge of that fairway. The probability that this distribution of material derives from earthmoving activities during the golf course development seems high.

This site is not considered eligible for inclusion on the National or State Registers of Historic Places. It has been subject to a significant degree of prior disturbance and additional investigation seems unlikely to contribute to a better understanding of local or regional prehistory. No further work on this site is recommended.

Figure 2: Westwood Prehistoric Site 1
Distribution of shovel tests with chert flake frequency contoured.



Larger squares indicate locations of Test Units 1 and 2.
Test Unit 1 produced 139 pieces of chert debitage.
Test Unit 2 produced 195 pieces of chert debitage.

Table 1: Westwood Prehistoric Site 1, Artifact Inventory

East	North	flakes	shatter	rough stone	all prehistoric	historic		Notes
5	0	3	0	0	3	0		
10	0	11	1	0	12	0		
25	0	3	0	0	3	0		
35	0	3	0	0	3	0		alt 2 flakes, 1 shatter
40	0	3	2	0	5	1		plastic wrap n.c.
45	0	6	1	1	8	0		bi-pitted hammer
50	0	1	2	0	3	0		
55	0	1	0	0	1	0		
0	5	54	1	0	55	0		
5	5	18	0	0	18	1		redware
10	5	7	0	0	7	0		
20	5	3	0	0	3	0		
25	5	2	0	0	2	0		
30	5	1	0	0	1	5		redware
35	5	5	1	0	6	0		or core frag
40	5	12	0	0	12	0		
45	5	10	0	0	10	1		rusted item
45	10	62	0	0	62	0		plus 2 rocks?
40	20	0	1	0	1	0		
10	-5	10	0	0	10	1		redware
15	-5	4	0	0	4	3		2 redware, 1 glass
40	-5	5	0	0	5	0		
0	-10		0	0	0	1		whiteware
10	-10	10	0	0	10	0		
15	-10	9	0	0	9	1		rusted item
40	-10	7	1	0	8	0		core frag really
0	-15	5	0	0	5	1		rusted item
5	-15	2	0	0	2	6		1 whiteware, 3 glass, 2 unidentified
10	-15	2	0	0	2	0		
15	-15	10	1	0	11	0		
0	0	11	0	0	11	0		Phase 1 STP 8.1
-5	0	3	0	0	3	0		Phase 1 STP 8.2
35	15	8	0	0	8	0		Phase 1 STP 8.3
		291	11	1	303	21		

Table 1 continued

STPs that follow (shaded) were devoid of artifacts.

East	North	flakes	shatter	rough stone	all prehistoric	historic		Notes
0	-5	0	0	0	0	0		0
0	-20	0	0	0	0	0		0
15	0	0	0	0	0	0		0
40	-15	0	0	0	0	0		0
45	-15	0	0	0	0	0		0
50	-15	0	0	0	0	0		0
55	-15	0	0	0	0	0		0
40	-20	0	0	0	0	0		broken chert pebble
All STPs		291	11	1	303	21		
Test 1		137	2	0	139	16		ceramics & plastic
Test 2		185	10	0	195	0		
		613	43	1	657	37		

Total STPs				
Positive	30		Phase 2	
Negative	8		Phase 2	
	38			
	3		Phase 1	
	41		Total	

Table 2: Summary of Phase 2 Shovel Test Stratigraphy, Westwood Prehistoric 1 Site
Town of Amherst, Erie County, New York

E(+)W(-)	N(+)S(-)	Level	Top	Base	Soil Description	Artifacts
0	-5	1	0	29	fine silt loam, grass & tree roots	redware nail flake/shatter (19cm)
		2	29	50	fine silt clay, very dry; pale OGM	none
0	-10	1	0	27	fine silt loam, dense tree roots; 10YR 3/3-4/3	whiteware
			27	41	very compact silt or silt loam; pale OGM	none
0	-15	1	0	28	fine silt loam, grass roots & small tree roots; 10 YR 3/3-4/3	5 chert flakes rusted item
			28	36	compact silt or silt loam; pale OGM	none
			36+		OGM clay, most is orange	none
0	-20	1	0	26	silt loam, grass & small tree roots; 10YR 3/3	plastic wrap n.c.
		2	26	38	compact silt loam; 10YR 5/6 w/ oxidation stains	none
15	0	1	0	27	damp silt, many small roots, heavy & sticky, some small sandstones	none
		2	27	38	very stiff clay; OGM	none
25	0	1	0	23/27	dense gray clay on west, rest is clay silt & some gray clay; 10YR 3/3	3 chert flakes
		2	23/27+		dense clay, some seepage; OGM	none
35	0	1	0	24	damp clay silt, heavy	2 chert flakes 1 chert shatter
		2	24	39	yellow brown clay w/darker probable drainage feature on the west	none
40	0	1	0	28	clay silt, grass & small tree roots; 10YR 3/3	3 chert flakes 2 chert shatter plastic wrap n.c.
		2	28+		dense clay; OGM	none
45	0	1	0	30	clay silt, dense roots; 10YR 3/3	bi-pitted hammerstone 1 chert shatter 6 chert flakes
		2	30	41	stiff, tough clay; OGM	none
5	0	1	0	28	clay silt, several large tree roots; 10YR 3/3	3 chert flakes
		2	28	35	dense clay; dark OGM	none
10	0	1	0	30	clay silt, many small roots; 10YR 3/3	11 chert flakes 1 chert shatter
		2	30	37	clay; dark OGM	none
0	5	1	0	26	silt loam, small roots; 10YR 3/3	4 chert flakes 1 chert shatter
		2	26+		large root on north, dense clay; OGM	none

Table 2—continued

E(+)W(-)	N(+)S(-)	Level	Top	Base	Soil Description	Artifacts
5	5	1	0	27	silt loam, small roots; 10YR 3/3	18 chert flakes
						large redware rim
		2	27+		dense clay, some roots; dark OGM	none
10	5	1	0	28	silt loam, small roots; 10YR 3/3	plastic wrap n.c.
						7 chert flakes to 21cm
		2	28+		clay; light OGM	none
15	5				not dug, buried line	
50	0	1	0	36	wet silt loam, dense roots; 10YR 3/3	2 chert shatter
						1 chert flake
		2	36+		wet gravel & silt clay, seepage; OGM	none
55	0	1	0	30	silt loam, dense roots; 10YR 3/2-3/3	plastic wrap n.c.
						1 chert flake
		2	30	41	dense silty clay, a few stone frags; OGM	none
45	5	1	0	30	sticky, damp silt loam, small roots; 10YR 4/3-4/4	10 chert flakes
		2	30+		wet dense clay; OGM	rusted item
45	10	1	0	29	damp, sticky clay silt w/small roots; 10YR 4/3	2 chert flakes
			29+		dense clay; OGM	none
15	5				not dug, buried line	
20	5	1	0	31	clay silt, more clayey w/depth; 10YR 3/3	3 chert flakes
		2	31+		dense clay; OGM	none
25	5	1	0	31	clay silt; 10YR 3/3	2 chert flakes
			31+		dense clay; OGM	none
30	5	1	0	23	silt/clay mix, much clay; 10YR 3/3	1 chert flake
						5 redware
		2	23+		dense clay; OGM	none
35	5	1	0	30	silt clay, more clay w/depth; 10YR 3/3	5 chert flakes
						1 chert shatter
		2	30+		dense clay, a bit wet; gray brown	none
40	5	1	0	30	damp to wet clay silt, small roots; 10YR 3/3	12 chert flakes
		2	30+		dense clay; OGM	none
40	-5	1	0	30	damp to wet clay silt, small roots; 10YR 3/3	5 chert flakes
		2	30+		dense clay; OGM	none
40	-10	1	0	29	damp to wet clay silt, small roots; 10YR 3/3	7 chert flakes
						1 chert core fragment
		2	29+		clay; OGM	none
40	-15	1	0	15	encounter fill for buried line, abandon	none
45	-15	1	0	32	clay silt, dense small roots; 10YR 3/3	none
		2	32+		dense clay; OGM	none

Table 2—continued

E(+)W(-)	N(+)S(-)	Level	Top	Base	Soil Description	Artifacts
50	-15	1	0	30	wet silt clay, small roots; 10YR 3/3	none
		2	30+		dense clay; OGM	none
55	-15	1	0	28	silt clay, some larger roots; 10YR 3/3	none
		2	28+		dense clay; OGM	none
40	20	1	0	28	silt/clay mix; 10YR 3/3-4/3	chert pebble
		2	28+		dense clay; brown	none
5	-15	1	0	27	dry, very rooty, lightly sandy silt, some gravel; 10YR 4/3	2 chert flakes 3 clear glass 1 whiteware
		2a	27	57	west side only: brown, loamy, old burrow?	none
		2b	27	60	lightly sandy loam, small oxidation stains in 10YR 5/6	none
10	-15	1	0	26	dry, very rooty silt loam 10YR 3/3	2 chert flakes
		2	26	44	fine sandy silt loam pale OGM	none
15	-15	1	0	31	dry to damp silt loam, small roots; 10YR 3/3	10 chert flakes 1 chert core fragment
		2	31	42	fine sandy silt; light OGM	none
15	-10	1	0	28	damp silt loam; 10YR 3/3-4/3	9 chert flakes rusted item
		2	28	36	dense clay; OGM	none
15	-5	1	0	30	clay silt, small roots; 10YR 3/3	4 chert flakes 2 redware 1 glass
		2	30+		dense clay; OGM	none
10	-10	1	0	27/30	silt loam, small roots; 10YR 3/3	10 chert flakes
		2	27/30	38	dense silty clay; OGM	none
10	-5	1	0	23	clay silt, dense small roots; 10YR 3/3	10 chert flakes redware
		2	23	34	dense clay; OGM	none

OGM = orange/gray mottled

n.c. = not collected

Photograph 1: Westwood Prehistoric 1 Site, Test Excavation Unit 1

Photograph 2: Westwood Prehistoric Site 1
Floor of Test Excavation Unit 2
All clay, mixed in spots.

Photograph 3: Westwood Prehistoric Site 1, Test Excavation Unit 2
Note thin layer in east wall which consisted of some recent gravel-like fill.
The same type material had been noted as fill around a buried line.

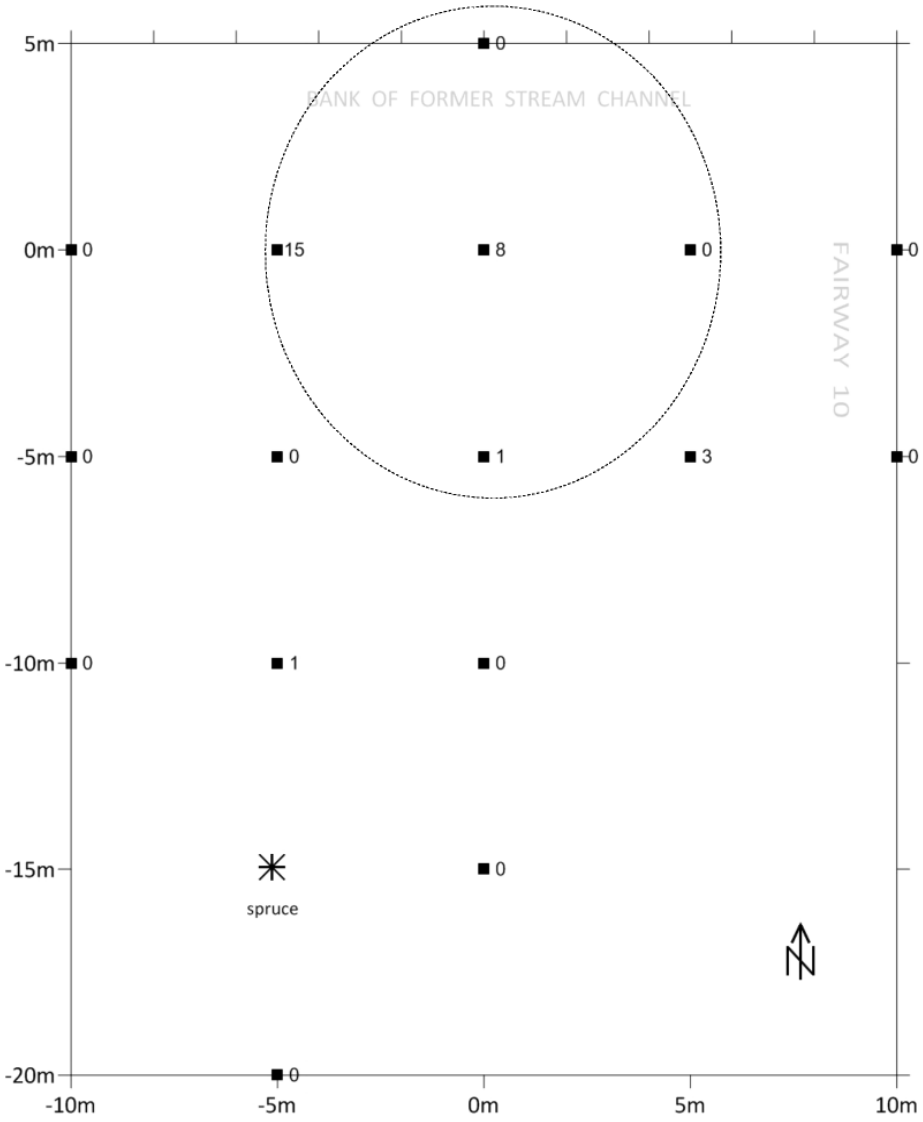
Westwood Pre-Contact Site 3 (A02902.01325)

This site was located through Phase 1 shovel testing along the southern side of an extinct meander of Ellicott Creek. An initial shovel in this area (STP8.19) produced seven chert flakes and a single piece of chert shatter. Four supplemental shovel tests we excavated around that find spot and were located 5m distant in the cardinal directions. Two of the supplemental tests were positive for additional prehistoric artifacts—15 chert flakes in the test done to the west and a single chert flake/shatter to the south. The occurrence of multiple items in several tests, which is not all that common a situation in many Phase 1 survey, suggested that this area was worthy of additional examination. The fact that the Phase 1 investigation was conducted in the winter however, presented several problems including assessing details of the landscape, identifying root masses and observing nearby soil drainage Also, there was some reluctance to test to the area to the north, within the 10th fairway, which would be part of an active golf course again in the spring. The primary reason was the uncertainty of the degree to which the land would, or would not, recover after being tested.

Phase 2 investigations first used a handheld GPS unit, checked against compass bearings and taped measurements that had been recorded during Phase 1, to identify test 8.19. That test was designated as the 0/0 point for Phase 2 testing. Shovel tests were then excavated on a 5m grid in an attempt to determine site limits, the density of artifacts across the site, and attempt to expose any subsurface features that might be present. Only eleven shovel tests were excavated before it was decided that additional work was not warranted. Two of the additional shovel tests produced additional prehistoric materials, again chert debitage, and contributed only an additional four items to the collection. Rather than pursue further closer interval testing the decision was made to end testing at this site and to put additional effort into examination of the other two sites.

The site remains classified as a discrete lithic scatter but due to the lack of diagnostic artifacts cannot be placed within any archaeologically defined culture. If reasonably undisturbed it represents an extremely short term activity area. The site is not eligible for inclusion on the National or State Registers of Historic Places. Not additional investigation is considered necessary or warranted.

Figure 3: Distribution of Shovel Tests at Westwood Prehistoric Site 3
Town of Amherst, Erie County, New York



Small black squares are shovel test locations and the numbers on the right side are the total pieces of chert debitage recovered from each test. All finds were in Level 1 soils. 0/0 Test was located 14.97m from a mature maple on a magnetic bearing of 105°. Dashed circle indicates area of Phase 1 testing.

Table 3: Summary of Phase 1 & 2 Shovel Test Stratigraphy, Westwood Prehistoric 3 Site
Town of Amherst, Erie County, New York

	E(+)W(-)	N(+)S(-)	Level	Top	Base	Soil Description	Artifacts
0	0	0	1	0	28	Ph1 8:19; lightly sandy silt loam, roots; 10YR 4/3	7 chert flakes 1 chert shatter
			2	28	42	sandy silt w/some areas of clay; OGM	none
1	0	5	1	0	27	damp sticky silt, dense grass roots; light brown	none
			2	27	40	clay silt, not compact; dark OGM	none
2	5	0	1	0	27	silt or clay silt, grass; brown	none
			2	27	37	compact silt clay; dark OGM w/dark inclusions	none
3	-5	0	1	0	30	wet, sticky silt or clay silt, dense grass roots; brown; flakes from ca. 25cm to subsoi interface	15 chert flakes
			2	30	57	silt to silt clay, not compact; OGM	none
4	0	-5	1	0	27	silt or clay silt, grass roots, a few small tree roots; brown	1 chert flake/shatter
Phase 1			2	27	40	silt clay, easy to dig; OGM	none
	Phase 1 above Phase 2 below						
Phase 2	0	-10	1	0	29	stiff clay silt, small roots, 1 large stone; 10YR 4/3-4/4	none
			2	29	41	sandy silt clay; OGM	none
6	0	-15	1	0	29	clay silt; 10YR 4/3	none
			2	29	41	clay silt; OGM	none
7	10	0	1	0	28	compact, somewhat blocky clay silt; 10YR 3/3-4/3	none
			2	28	40	very compact silt clay, sandy or gritty in spots; pale OGM	none
8	10	-5	1	0	24	clay silt; 10YR 4/3	clear glass pane
			2	24	34	compact silt clay, sandy spots; OGM	none
9	5	-5	1	0	28	silt or silt clay, small roots, damp; 10YR 3/3	none
			2	28	41	compact silt clay; OGM, dark inclusions	none
10	-5	-5	1	0	29	silt, small roots; 10YR 3/3	small chert flake 2 larger flakes
			2	29	45	clay silt; OGM, darl inclusions	none
11	-5	-10	1	0	33	silt, damp, sticky; 10YR 4/3	chert flake
			2	33	47	compact silt clay; OGM	none
12	-5	-20	1	0	25	silt or sil loam; 10YR 4/3	golf ball core fragment
			2	25	38	compact silty clay; OGM	none
13	0	-10	1	0	22	compact silt or silt loam, large roots, too dense to dig through, abandon at 22cm; 10YR 4/3	none
14	-10	-5	1	0	30	compact silt/silt loam, roots; 10YR 4/3	none
			2	30	40	compact clay silt; OGM	none
15	-10	-10	1	0	27	silt loam, many small roots; 10YR 4/3	none
			2	27	33	silt clay, gritty spots, dark inclusions; OGM	none

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Westwood Historic Site (A02902.01326)

The Westwood Historic site was first identified by the presence of a remnant field stone foundation located immediately to the east of the 10th Tee. Shovel tests along the south bank of an extinct meander of Ellicott Creek, marking the northern edge of this site, produced a variety of historic items during the Phase 1 investigation. Because the Phase 1 investigation was conducted in the winter, and the foundation was an obvious site, it was recommended for testing in a Phase 2 program.

The site is bounded on the north by the previously noted bank of an extinct meander of Ellicott Creek and is otherwise circumscribed by asphalt covered golf cart paths. An electronic metal detector was used in an effort to determine if there was a distinct limit to the scatter of historic materials surrounding the foundation. The detector produced signals indicating the presence of ferrous metals across the entire area described by the cart paths and beyond. Some were identifiable as probable nail, wire or other similar items based on a distinctive tone produced by the detector. However, the signals were often faint and generally blended in with similar nearby tones. Experience suggested the signals indicated that small pieces of rusted metal were broadly scattered.

In speaking with several grounds keepers it was determined that the foundation had been more pronounced in the past and while no extensive filling/grading had been done, some had occurred. The addition of some fill soils, or possible light grading, was apparently very limited. Any such activity was an effort to smooth the terrain and permit easier transit for mowers. It was also reported that a burn pile had been present on or nearby some portion of the foundation. It was not determined precisely how the burn area was formed or what period(s) of its use was/were represented. There was also some reporting of possible excavation of portions of the foundation zone but no specific locations or time frames were established.

Shovel Testing

A series of shovel tests was excavated on a five meter grid to obtain a preliminary view of the distribution of artifacts across the site. The zero point for the grid was the approximate location of Phase 1 shovel test 8.4 as determined by a handheld GPS. Ultimately, fifteen tests were excavated and these produced a wide assortment of historic materials as well as a corner- notched chert projectile point. The shovel test grid alignment was based on the locations of the Phase 1 tests. This resulted in grid north oriented approximately

The shovel tests did indicate that historic artifacts were scattered across the area. Although material was well removed from the stone foundation it was decidedly less abundant as the distance away from the foundation increased. Figures 5 through 19 show how various artifact types were dispersed across the site as indicated in the shovel tests.

Photograph 4: View of the foundation at the Westwood Historic site.
Looking northeasterly.

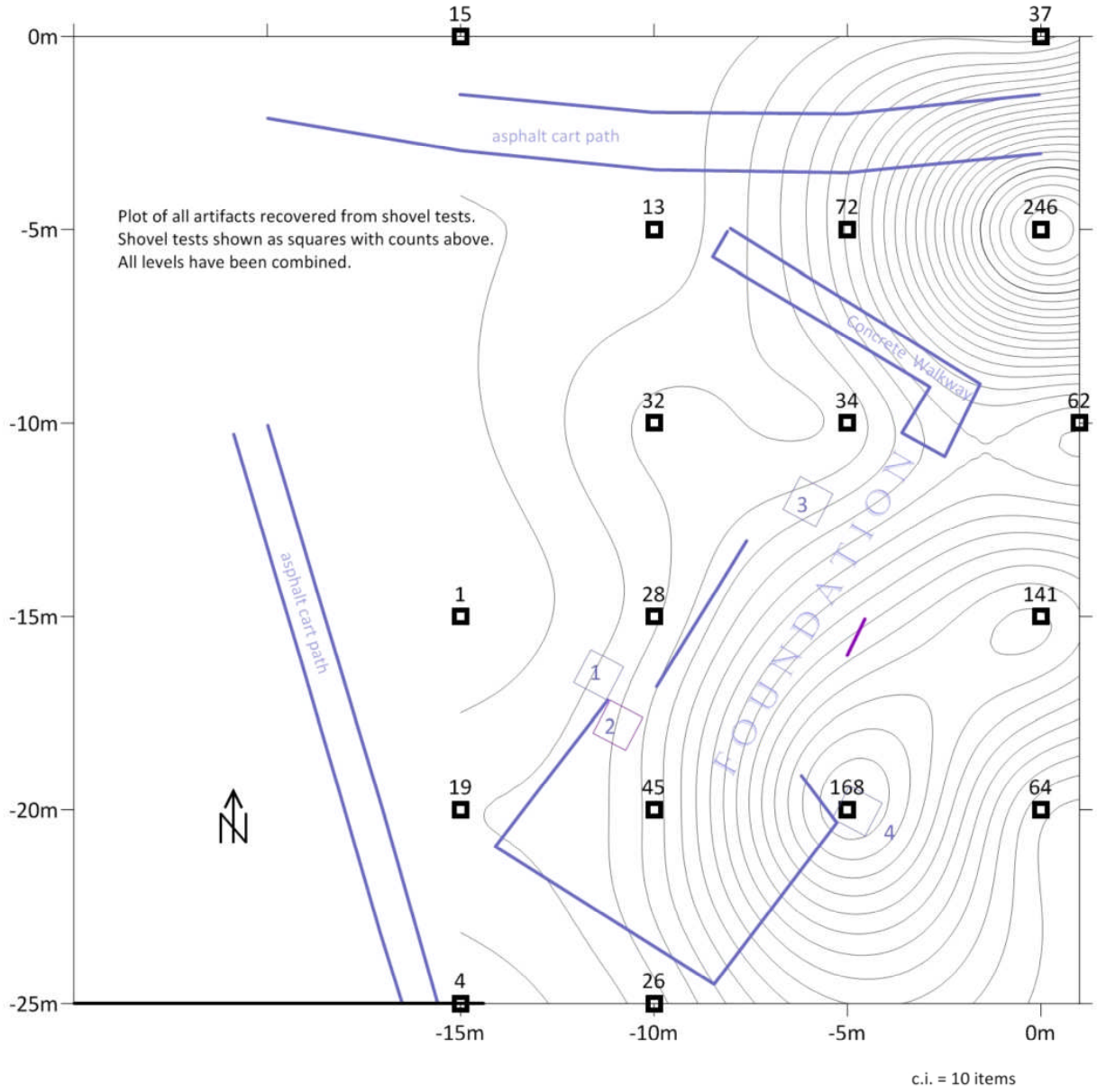


Figure 5: Distribution of All Artifacts Recovered from Shovel Tests
Westwood Historic Site

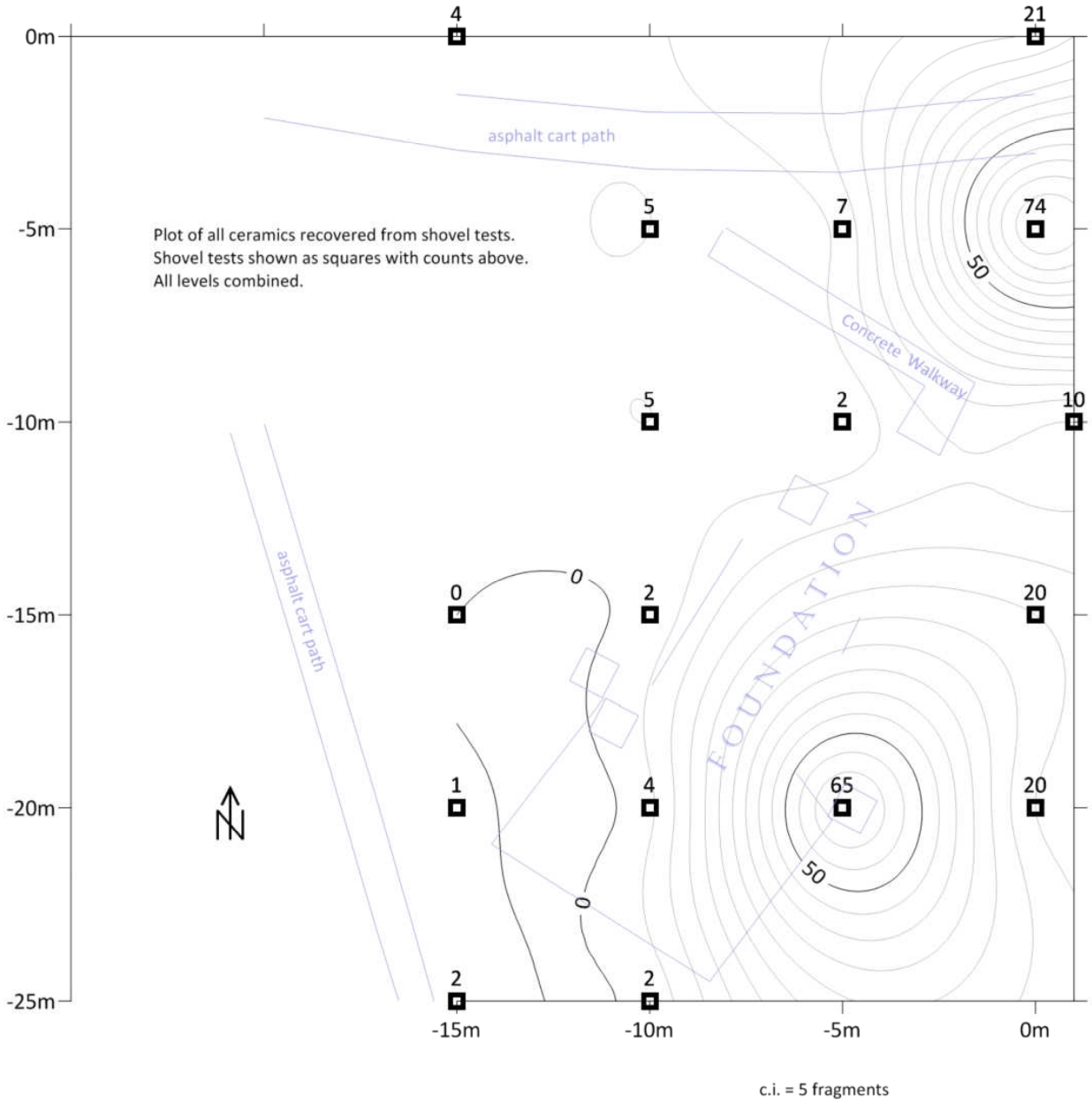


Figure 6: Distribution of All Ceramic Artifacts Recovered from Shovel Tests
Westwood Historic Site

Figure 7: Distribution of Artifacts Recovered from Shovel Tests
A. Ceramics, Undecorated Whiteware B. Decorated Whiteware

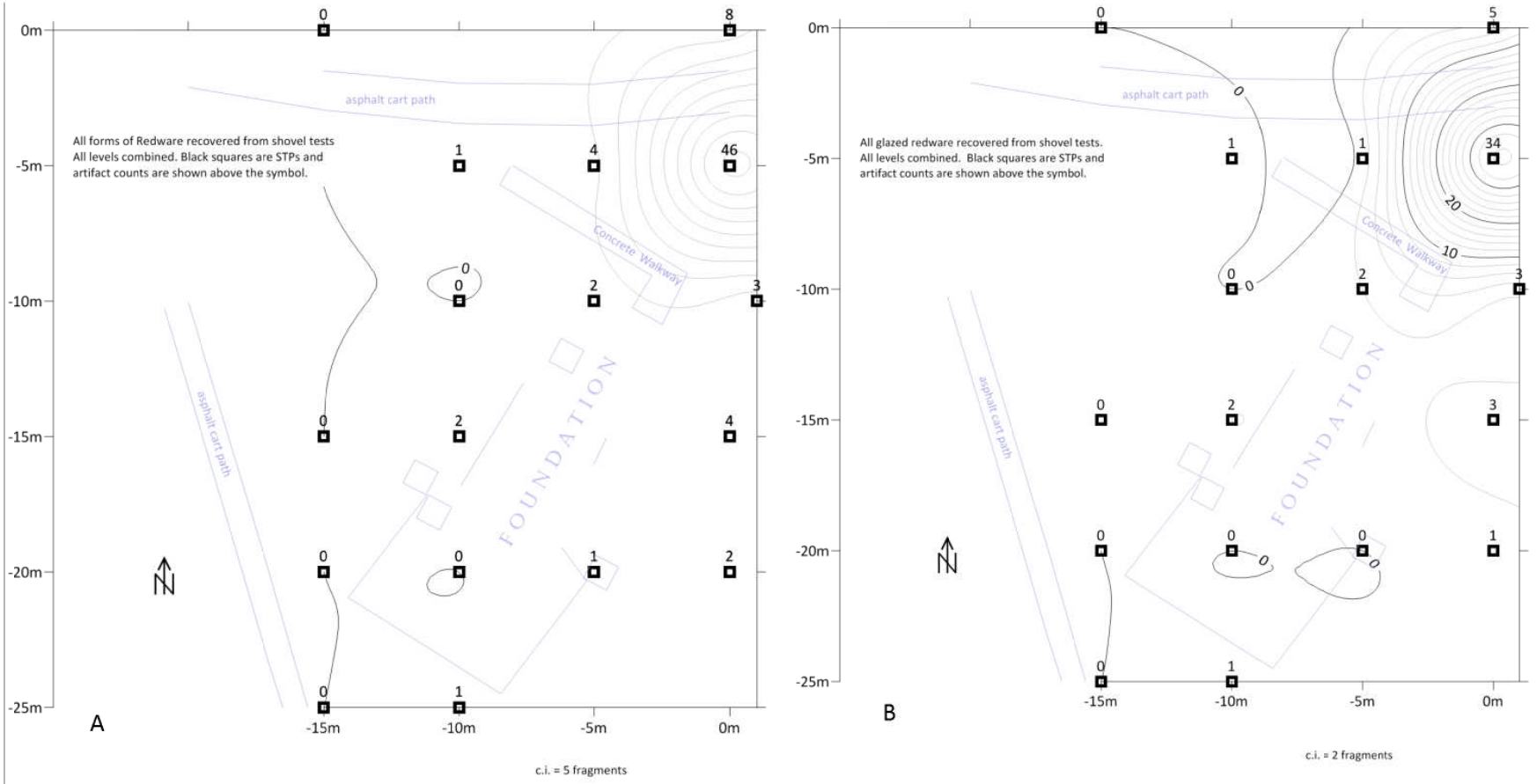


Figure 8: Distribution of Artifacts Recovered from Shovel Tests
A. Redware, All Forms except brick B. Glazed Redware

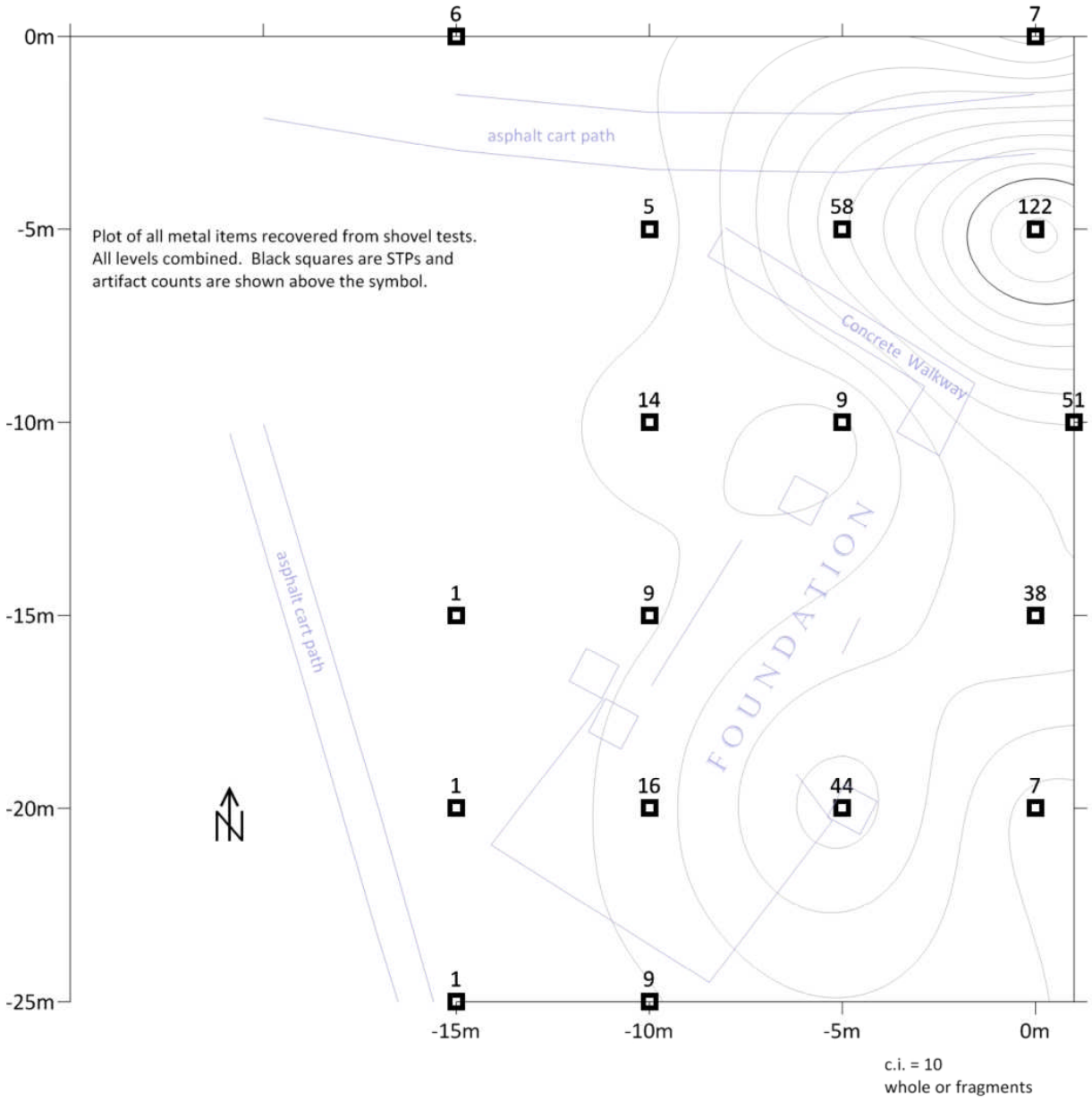


Figure 9: Distribution of All Metal Artifacts Recovered from Shovel Tests
Westwood Historic Site

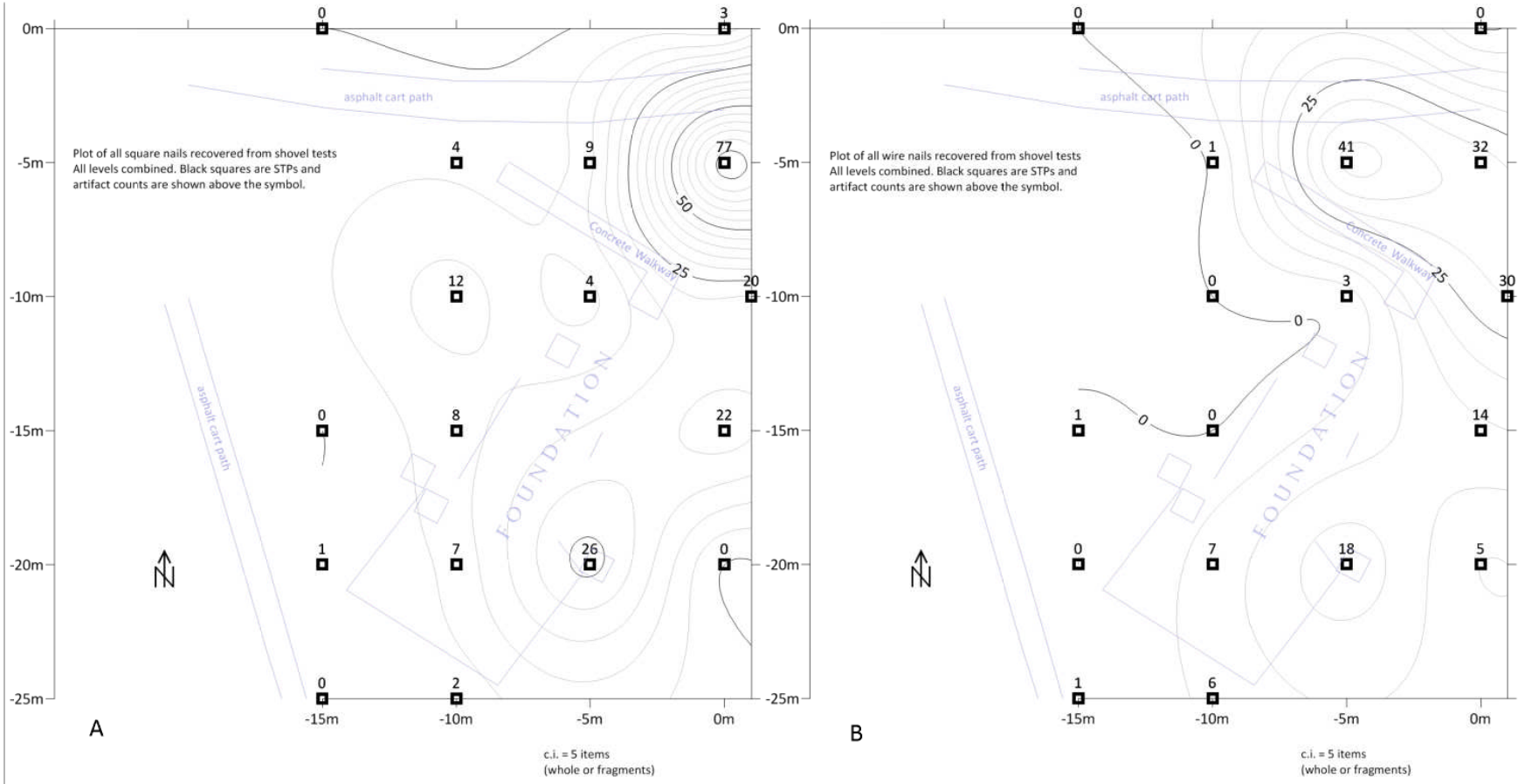


Figure 10: Distribution of Metal Artifacts Recovered from Shovel Tests
A. Metal, Square Nails B. Metal, Wire Nails

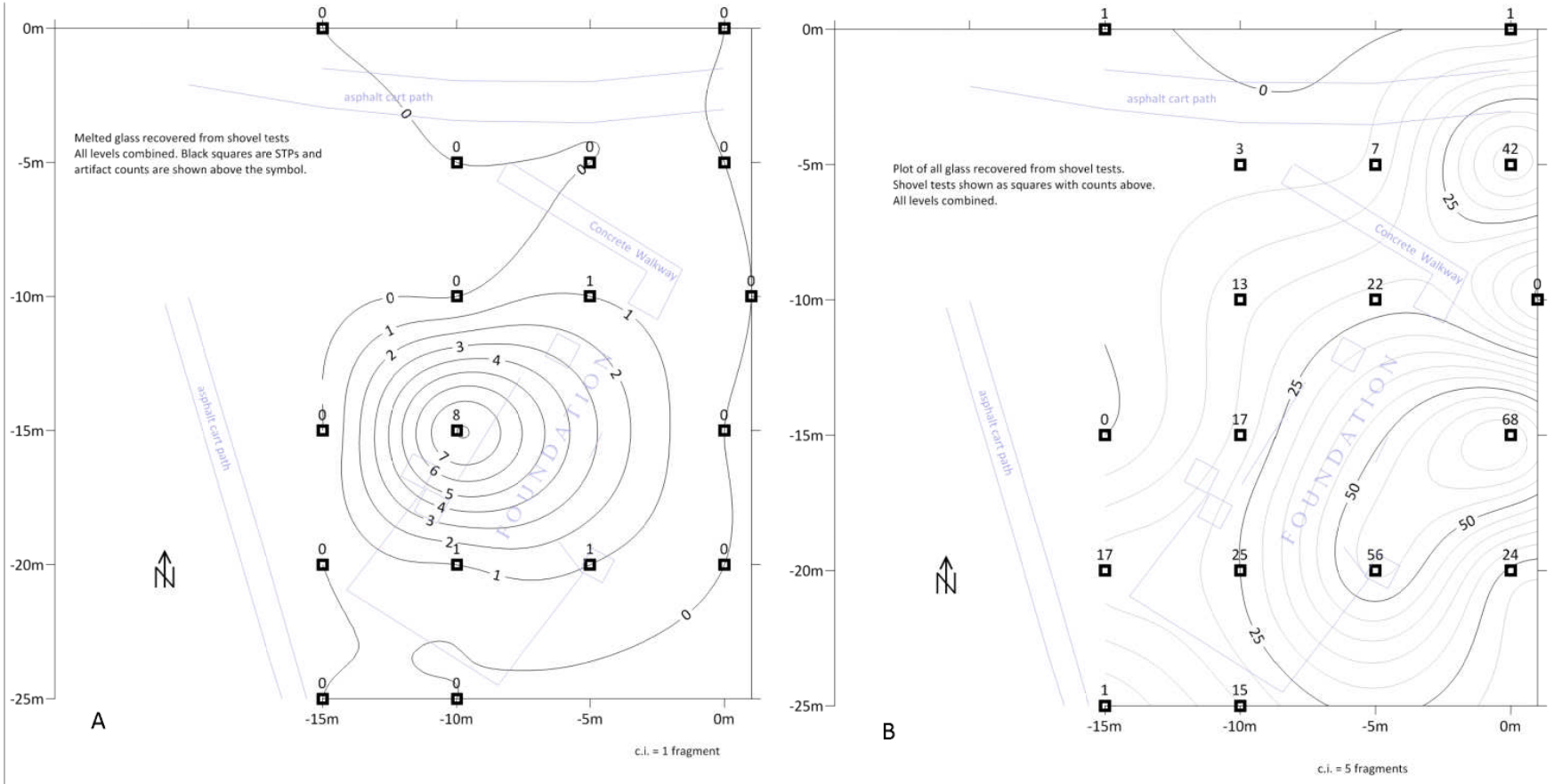


Figure 11: Distribution of Glass Artifacts Recovered from Shovel Tests
A. Glass, Melted/Burned B. All Glass Artifacts

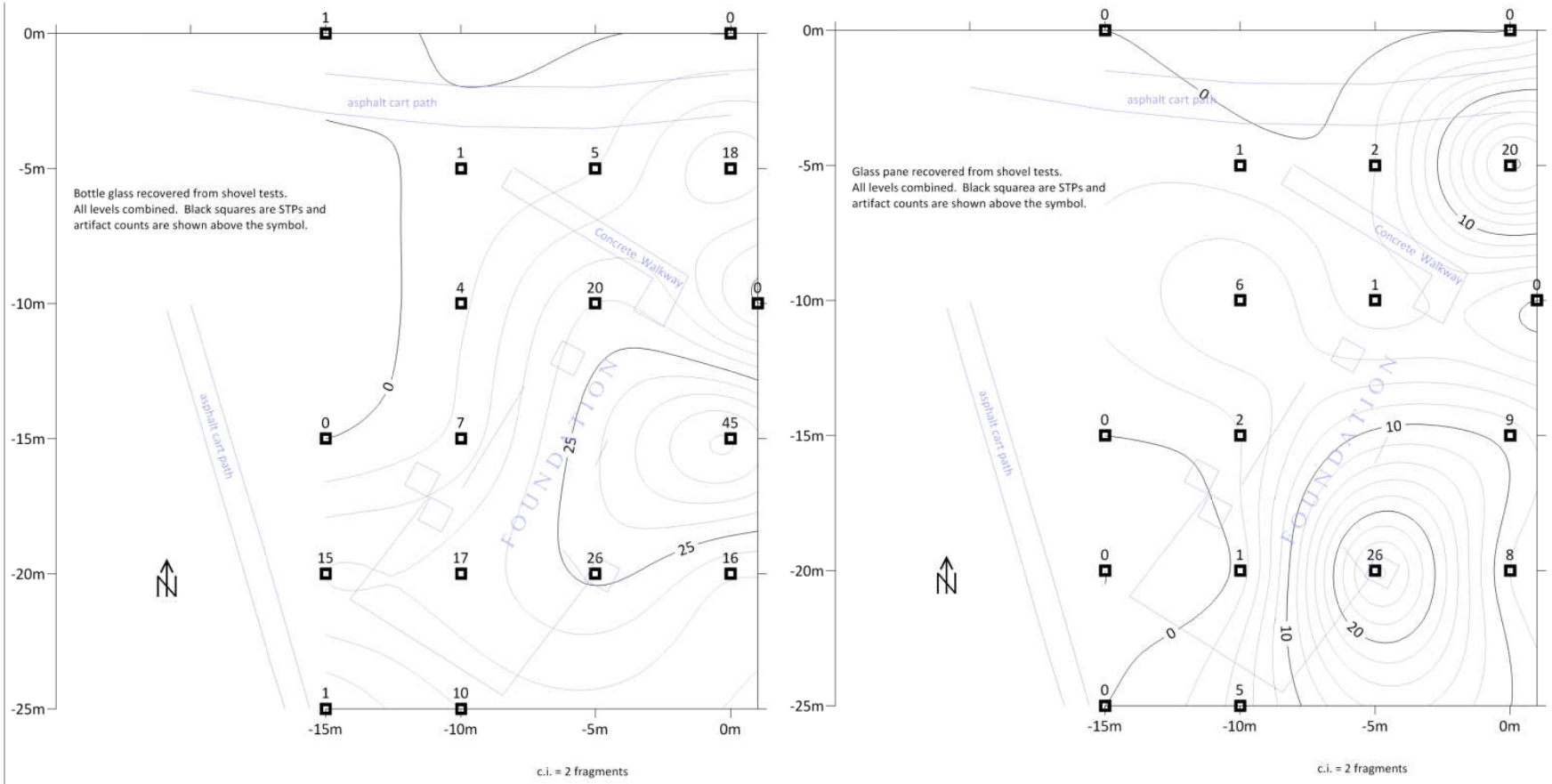


Figure 12: Distribution of Some Glass Artifacts Recovered from Shovel Tests
A. Glass, Bottle Fragments B. Glass, "Pane"

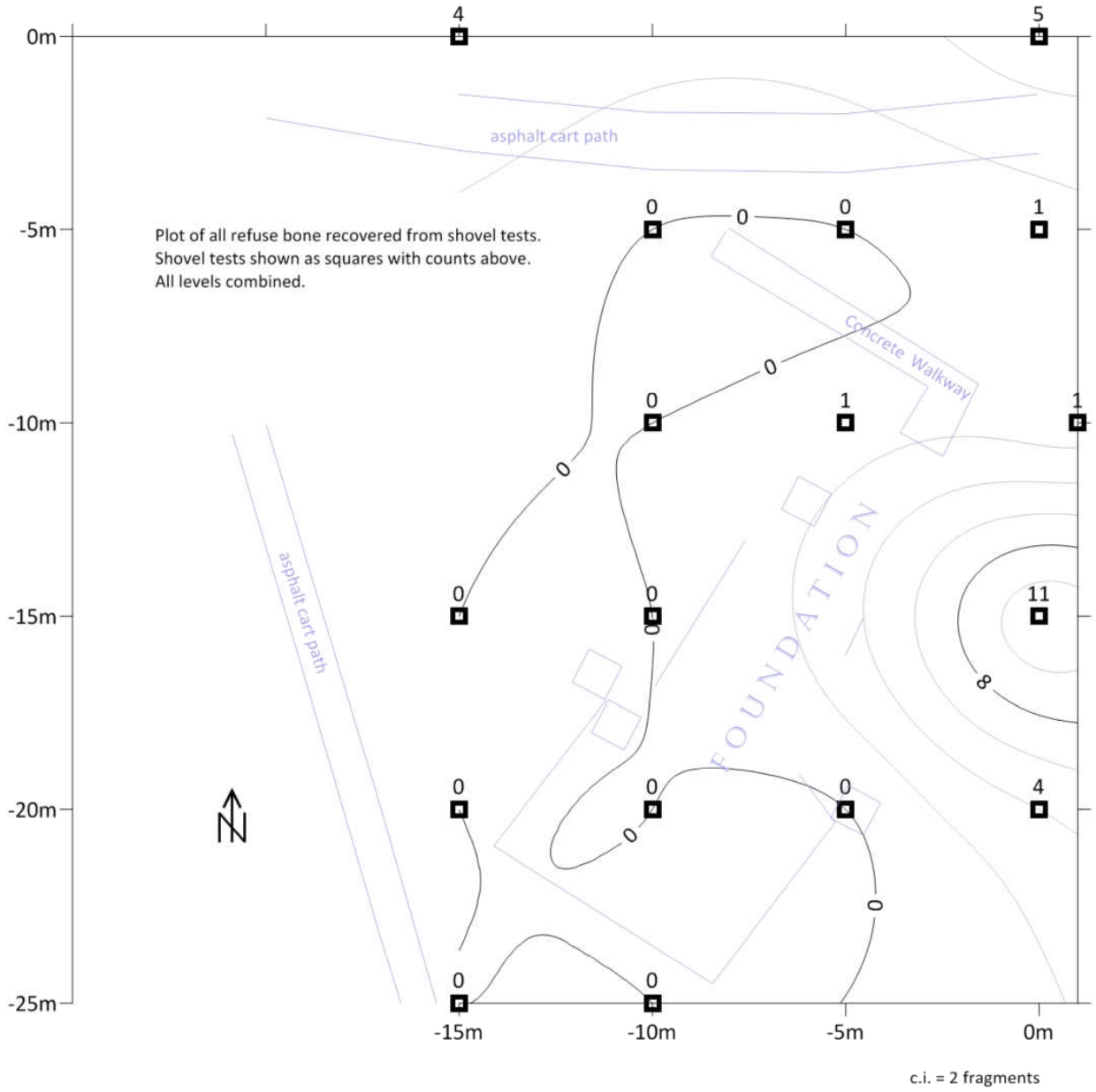
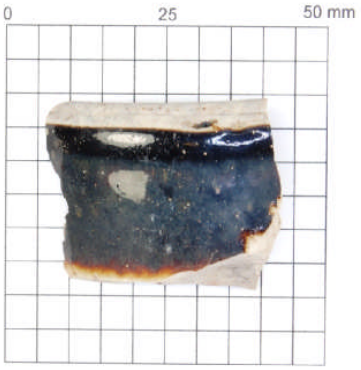
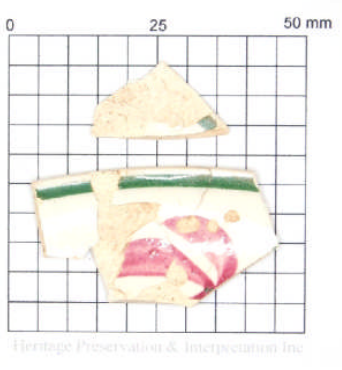


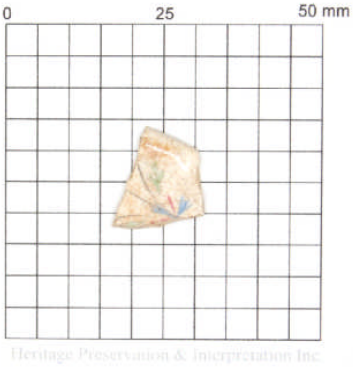
Figure 13: Distribution of Refuse Bone Recovered from Shovel Tests
Westwood Historic Site



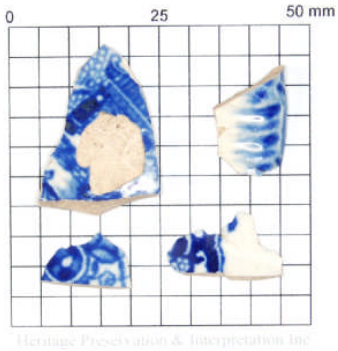
STP 20S 00W Level 1
stoneware



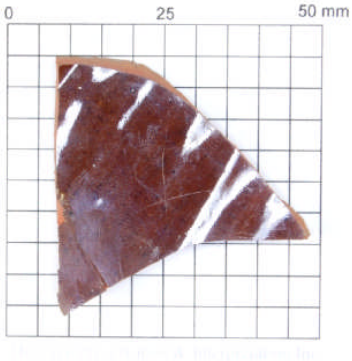
STP 20S 10W Level 1
painted whiteware



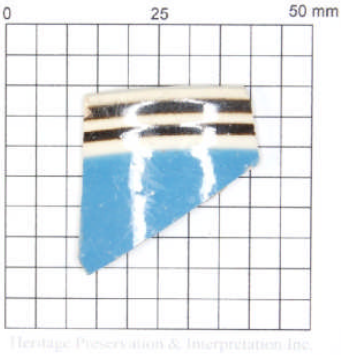
STP 10S 1E Level 1
decorated whiteware



STP 20S 05W Level 1
decorated whiteware,
blue edgeware

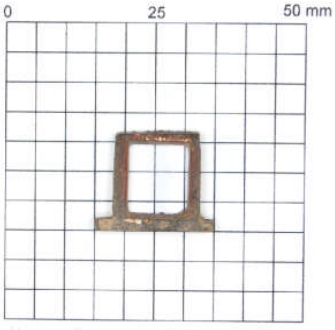


STP 25S 10W Level 1
glazed redware

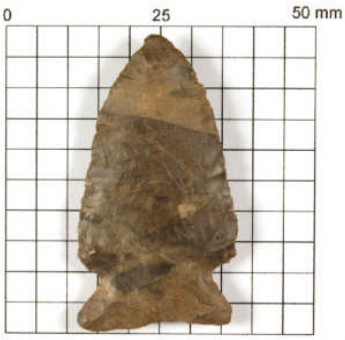


STP 20S 05W Level 3
whiteware

STP 20S 10W Level 1
ceramic insulator



STP 25S 10W Level 1
metal



STP 15S 00W
corner-notched chert
projectile point

Photograph 5: Assorted artifacts recovered from shovel tests
Westwood Historic Site

Table 4: Summary of Shovel Test Stratigraphy, Westwood Historic Site

E(+)W(-)	N(+)S(-)	Level	Top	Base	Soil Description	Artifacts
-15	-15	1	0	19	fill, pea gravel & larger with sand/silt; 10YR 3/2-4/2	none
		2	19	24	coal ash & cinder; grays	none
		3	24	47	compact sand/silt, small roots, large stone at base; 10YR 5/3-5/4	nail/spike glazed redware
-15	-20	1	0	48	lightly sandy silt, very little gravel; 10YR 4/2	clear glass brick nail/spike
		2	48	61	very fine compact silt; 10YR 6/4	none
-15	-25	1	0	23	sandy silt, some asphalt; 10YR 3/3	glass redware/brick asphalt
		2	23	47	very fine silty sand; pale OGM	none
-10	-25	1	0	26	compact and somewhat blocky silt, small roots; 10YR3/3-3/2	glass glazed redware brick plastic wrap
		2	26	47	very compact silt w/varied sized pieces of mortar	mortar
		3	47	54	compact silt sand mix, some flecks of charcoal; OGM	none
		4	54	64	very compact silty sand; light OGM	none
-10	-20	1	0	34	compact lightly sandy silt; 10YR 3/3 large stone in center from 24 to 33cm	mortar whiteware glass
		2	34	?	very compact silt & some clay; some areas of OGM and some light to pale yellow brown	none
-10	-15	1	0	26	compact silt, small roots; 10YR 3/3	large square nail brick glass (melted) nail
		2	26	55	compact fine silt w/some zones of gray clay; highly mottled yellow brown & brown & gray	none
-10	-10	1	0	25	very gravelly silt; 10YR 3/3	glass cement/concrete bits nails .32 S&W cartridge case whiteware, brick
		2	25	38	very compact gray clay, blocky	nail

Table 4 - continued

E(+)W(-)	N(+)S(-)	Level	Top	Base	Soil Description	Artifacts
-10	-5	1	0	22	silt, small roots, crumbly & quite gravelly; 10YR 3/3	whiteware nails glass kaolin pipe stem fragment glass (decorative) stoneware glazed redware
		2	22	44	compact silt/sand mix	large iron bar at interface
-5	-10	1	0	17	silt, small roots; 10YR 3/2	glass nails redware (handle) .22 case (U on base) note *
		2	17+		stone on north and south side of test, below these is a dense gray clay	none
-5	-5	1	0	18	dry silt, some gravel, small roots; 10YR 3/3	nails brick whiteware rivets screw glass mortar glazed redware
		2	18	37	note: may be a continuation of L1, made the distinction because of the relative density of brick and ceramics	stoneware brick yellow earthenware nail refuse bone
		3	37+		fine somewhat sandy silt; 10YR 7/4	none
0	-5	1	0	28	dry silt, some roots; 10YR 3/2	nails whiteware redware yellow earthenware plastic wrap stoneware glass (some burned) coal assorted metal
		2	28	52	lightly sandy silt; 10YR 5/4-6/4	porcelain nail

Table 4 - continued

E(+)W(-)	N(+)S(-)	Level	Top	Base	Soil Description	Artifacts
0	-20	1	0	40	lightly sandy silt loam; 10YR 3/3-3/2 a few blobs of red clay, 1 stone in NW - iron pipe trending NE/SW @32cm on East side, distinct cut that probably is associated with a pipe that crosses the foundation	metal rod plastic drinking straw glass, clear pane glass, clear bottle glass, green bottle mortar stoneware nail coal ash/cinder refuse bone
		2	40	52	silt loam; OGM	none
-5	-20	1	0	18	sandy silt loam, 10YR 3/2 at ca 13cm there are stones and mortar that appear to be a continuation of the larger foundation	nails glass, clear pane
		2	18	32	mix of OGM clay and some L1 soil	nails glass mortar
		3	32	50	lightly compacted silt loam; ca. 10YR 3/3 This level extends lower than, and appears to be beneath, the mortar bed assumed to be the base of the larger foundation section. abandon test due to stones, need to open a larger test (TU 4 here)	glass nails whiteware kaolin pipe stem fragment
0	-15	1	0	28	silt loam, lilac roots; 10YR 3/2	square nail redware roofing nail whiteware refuse bone Brewerton c.n. projectile point
		2	28	37	silt loam; 10YR 4/6 but may just be a mottled mix of L1 and L3	glass, clear pane refuse bone
		3	37	47	very compact silt; yellow brown	none
1	-10	1	0	24	silt loam & grass roots; 10YR 3/2	glass, clear pane nails plastic wrap stoneware whiteware refuse bone metal buckle
		2	24	37	clay & silt clay w/some small stone fragments; 10YR 4/6	none
		3	37	51	compact silt; OGM becomes pale w/depth	none

Table 5: Summary of Phase 2 Shovel Test Stratigraphy,
Westwood Historic 1 Site
Town of Amherst, Erie County, New York

E(+)W(-)	N(+)S(-)	Level	Top	Base	Level	brick	ceramic, black glaze	redware, plain	redware, glazed	redware, dark red, glazed	redware, glazed, dark brown	redware, glazed, light brown	redware, glazed, black	redware/brick	ceramic, unclassified	whiteware, undecorated	whiteware, blue print	whiteware, floral print	whiteware, black print	whiteware, burned, black print	whiteware, red print	yellow earthenware	stoneware, glazed	stoneware, glazed, black	stoneware?, textured	insulator	kaolin pipe stem	nail, wire	nail, square	nail/spike, square	screw	rivet	metal pipe	wire	metal	metal disc	metal, rusted, triangular	metal, rusted, flat	metal, rusted	faucet/valve handle	metal rod	spoon	brass cartridge	buckle	glass, irredescent	glass, pane, clear	glass, pane, aqua	glass, purple/pink tint	glass, smaal fragments, clear	glass, melted	glass, bottle, clear	glass, bottle, aqua	bottle, dark green	glass, bottle, blue	glass, bottle, olive	glass,container, decorative, clear	refuse bone	plastic	slag	coal, coal ash, cinder	mortar	asphalt	concrete	chert flake	chert biface	shell	unidentified	plastic drinking straw	Totals
-15	-15	1	0	19	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-15	-15	2	19	24	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-15	-15	3	24	47	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
-15	-20	1	0	48	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
-15	-20	2	48	61	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-15	-25	1	0	23	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
-15	-25	2	23	47	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-10	-25	1	0	26	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	6	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4	6	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
-10	-25	2	26	47	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-10	-25	3	47	54	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-10	-25	4	54	64	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-10	-20	1	0	34	1	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	7	7	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	11	6	6	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45
-10	-20	2	34	?	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-10	-15	1	0	26	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	7	0	0	0	8	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28
-10	-15	2	26	55	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-10	-10	1	0	25	1	0	0	0	0	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	11	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	4	0	0	3	0	3	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31
-10	-10	2	25	38	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
-10	-5	1	0	22	1	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	1	0	0	1	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	13
-10	-5	2	22	44	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-5	-10	1	0	17	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	4	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	20	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	34
-5	-10	2	17+		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-5	-5	1	0	18	1	0	1	2	1	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	41	9	0	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-5	-5	2	18	37	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-5	-5	3	37+		3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	-5	1	0	28	1	0	1	0	10	4	10	8	0	9	0	17	3	1	0	1	0	1	1	0	0	0	1	32	68	1	0	0	0	0	0	0	1	1	2	0	0	0	0	0	3	13	0	0	0	0	9	8	1	0	0	1	1	0	1	1	0	0	0	0	0	0	3	0	213
0	-5	2	28	52	1A	0	0	2	1	0	0	0	1	0	0	2	0	0	1	0	0	0	0	0	0	0	0	31	9	0	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	64
0	-20	1	0	40	1	0	0	1	0	0	0	1	0	0	3	10	1	0	1	0	0	1	2	0	0	0	0	5	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	13	0	0	0	3	1	0	0	4	0	4	0	0	0	0	0	0	0	0	0	8	1	64
0	-20	2	40	52	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-5	-20	1	0	18	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	5	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	29
-5	-20	2	18	32	2	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	5	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
-5	-20	3	32	50	3	0	0	1	0	0	0	0	0	0	0	57	1	0	0	0	0	1	0	0	0	0	1	8	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	19	0	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	117
0	-15	1	0	28	1	0	0	1	2	0	1	0	0	0	0	13	0	0	1	0	1	1	0	0	0	0	0	10	22	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	18	0	14	0	2	2	0	0	0	0	6	0	0	0	0	0	0	1	1	1	1	0	99
0	-15	2	28	37	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	13	0	0	0	0	1	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	24
0	-15	3	37	47	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	18
1	-10	1	0	24	1	0	0	0	1	1	0	1	0	0	0	5	0	1	0	0	0	0	0	1	0	0	0	30	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	62
1	-10	2	24	37	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	-10	3	37	51	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
						3	**1**	**5**	**16**	**5**	**11**	**14**	**1**	**9**	**5**	**115**	**5**	**4**	**3**	**1**	**1**	**4**	**3**	**2**	**1**	**0**	**3**	**149**	**183**	**4**	**2**	**6**	**1**	**1**	**1**	**1**	**1**	**1**	**3**	**1**	**1**	**0**	**2**	**1**	**6**	**135**	**45**	**6**	**19**	**11**	**35**	**33**	**3**	**1**	**7**	**2**	**18**	**0**	**1**	**1**	**2**	**0**	**0**	**1**	**1**	**1**	**15**	**1**	914

Test Excavation Units

Test units 1 and 2 were located to obtain views of part of the foundation and to determine if there was a builder's trench associated. Excavation of these tests was also aimed at obtaining a sample of artifacts which could be compared to determine if a significant difference existed between items recovered inside vs outside the foundation. The foundation itself was originally thought to be divided into two separate segments: a larger rectangle on the southwest, and a more narrow rectangle on the northeast. The northeastern portion also surrounded a depression that was interpreted as a former cellar.

Test Unit 1

This test was placed in an area along the foundation at the point where the apparent two segments intersected and was located at the northwest corner of the foundation's southwest segment. It was laid out to cover the foundation and its exterior. One aim of this placement was to expose a face of the foundation and determine its depth and composition.

Level 1/sod level: Some disturbance was expected to be encountered and that proved to be the case here where a short segment of PVC pipes was encountered whose base lay at 13cm below surface (Photograph ??). This level was a a very dry and somewhat crumbly silt with a color of very dark grayish brown (10YR 3/2) to dark brown (10YR 3/3). The level contained small fragments of rust, some glass (pane and bottle fragments), ceramics (redware and whiteware), nails and nail fragments (both round and square forms), refuse bone, some coal cinder, and an item identified as a probable toy brooch. The level extended to approximately 16cm below surface.

Below that there was little change in soil color or texture ???? or does it just go into L2 which remains

At ca. 31cm encountered a piece of bone that had been decorated with some rough checkering. Excavation of the item ultimately expose the item and revealed it to be a bone handled knife (Photographs ??). The blade was evident was primarily rust and rust fragments. The knife was photographed and removed leaving a relatively large amount of soil attached underneath in an attempt to keep the artifact intact. The style is similar to other utilitarian pieces noted in the 18th and 19th centuries but no specific date has been attributed to this artifact at present. In this same lower level the only other artifact of note recovered was a large fragment of redware.

Photograph 6: Westwood Historic Site
Test Unit 1, PVC Pipe Segment at 13cm below surface.
Looking southwest

Photograph 7: Westwood Historic Site, Test 1
Bone handled knife against the east wall of the test unit.

Photograph 8: Westwood Historic Site, Test 1
Closer view of bone handled knife.

Test Unit 2

This test was a 1m x 1m unit located south of Test Unit 1.

Level 1A was the designation given to the sod zone and the upper soil zone that extended to ca. 16cm below surface, It was a very dry, silty soil with dense grass roots. As it was being excavated it appeared to be producing a relatively high count of artifacts (primarily glass and iron nails) and most were thought to have been from the base of the level.

Level 1B was the zone immediately below Level 1A and may simply have been a continuation of that level, hence the designation. The principal difference between the two levels was the density of artifacts recovered. Both levels were identified as dark brown (10YR 3/3) and Level 1B differed only in containing a quantity of pea gravel. High counts of glass and nails were evident in this level as a portion of a coil spring was also recovered.

Level 2's surface was an extremely compact zone with some gravel. Some areas, especially in the southwest, were very orange and appeared to be rust stains but also might mark fired earth zones. In the opposite corner to the northeast there was abroad area of apparent old mortar/cement with a few larger stones. In addition to the larger stones there were variably sized stone fragments scattered across the unit. A small cluster of refuse bone was noted in the northeast corner as well as a fragment of red sponge– or spatter-ware ceramics.

Photograph 9: Westwood Historic Site, Test Unit 2 (far unit)
Showing relationship between Tests 1 and 2. Looking south.

Photograph 10: Westwood Historic Site, Test Unit 2.
Floor of unit at base of Level 1

Photograph 11: Westwood Historic Site, Test Unit 2.
Floor of unit at base of Level 2

Photograph 12: Westwood Historic Site, Test Unit 2.
Floor of unit at base of Level 1

Photograph 13: Westwood Historic Site, Test Unit 2.
Floor of unit at base of Level 5

Photograph 14: Westwood Historic Site, Test Unit 2.
Limit of Excavation

Photograph 15: Westwood Historic Site, Test Unit 2. North wall.

Photograph 16: Westwood Historic Site, Test Unit 2. South Wall.

Test Unit 3

This tests was placed to expose a portion of the presumed cellar and a segment of collapsed foundation near a presumed entryway. Level 1 soil was similar to that noted elsewhere and consisted of a silt with dense grass roots. It differed from other locations in that a relatively large quantity of clay was also present. The color was again a dark brown (10YR 3/3). Stones and stone fragments, brick and brick fragments were evident immediately and their presence was known from difficulties in setting the unit corner pins. The quantity of these fragments was considerably greater than in other tests and excavation was somewhat slower than elsewhere due to the need to maintain a level of documentation of progress.

Artifacts recovered included an assortment of artifacts similar to those recovered elsewhere and glass fragments, ceramics, and nails constituted the majority of items. Other artifacts types were noted and included several that were not identified elsewhere. Among these were several spoons, one of which had a purposefully circular shaped handle. A piece of ceramic recovered in Level 3 was marked "Nippon Hand Painted". This is an extremely useful time marker since the dates for that specific label ran from ca. 1891 to 1921. Other ceramics in this test and elsewhere suggested manufacture in the second half of the nineteenth century up to the early twentieth century.

Larger stones from an apparent wall segment (uncertain as to whether these were intact or fallen/ pushed in) were exposed in the east and north. This test, unlike others, contained several whole and fragmented bricks. At a depth of ca. 20cm below surface the question of disturbance to that point was answered by the recovery of a modern candy bar wrapper (Baby Ruth XXX). There was still the possibility that there were undisturbed deposits below this level. However, as additional bricks were exposed it was considered somewhat suspect that there were still open spaces between many of them. Bricks were removed in an attempt to reach and expose another soil zone, however, at ca. 73cm below datum a golf ball was encountered. The whole bricks removed measured 7 ½ to 7 ¾ inches long, 3 ½ to 4 inches wide and were consistently 2 ¼ inches thick.

Excavation was continued to a depth of approximately 98cm below surface at which point the quantity and orientation of brick prevented any further progress without significantly expanding the test area. Considering the substantial level of disturbance noted to this point it was not considered feasible to pursue that action and excavation was abandoned.

Photograph 17: Westwood Historic Site, Test Unit 3
Jumble of stone and brick throughout the test.

Photograph 18: Westwood Historic Site, Test Unit 3.
Unit at point when abandoned.
Deepest point ca. 98cm below surface.

Test Unit 4

This test was opened to investigate a wall segment identified in the shovel test at 5W20S. That test had been located along a low berm that was inline with the southwestern part of the foundation. The test had revealed additional portions of the stone foundation. The shovel test also suggested that the foundation might rest atop a zone of earlier historic material. However, due to the limited space in the shovel test and the depth of the lower deposits, a broader area needed to be opened. Test 4 was placed atop STP 5W20S (Photograph ??) and initially only the northern half was excavated since our interest was in a better look at the deposits along and possibly beneath that feature. Ultimately, It was necessary to excavate the entire unit to have room to examine the wall and soil levels.

As was the case in Test Unit 1 at least the western portion of the wall appeared to have been set into a simple, and not especially thick, bed of mortar. The blocks on the eastern side of the test may have been set on bare soil. This remains unclear. Unlike Test Unit 1 the wall segment exposed was only one course deep.

Level 1 represented the sod and uppermost soil level and was very much the same as noted elsewhere on the site: a dark brown (10YR 3/3) silt to clay silt. Artifacts recovered included primarily ceramics, nails and nail fragments and both pane and bottle glass. One of the pieces of bottle glass appeared to be a fragment of a crown cap bottle. The level extended approximately 12cm to 14cm below surface.

Level 2 was a continuation of some Level 1 soils mixed with some stiff gray clay. The level extended ca. 31cm to 35cm below surface and contained an abundance of nails and only a small quantity of ceramic and glass fragments.

Level 3 should probably have been identified as two separate zones The surface of the level was identified primarily by the presence of dark brown silt and the lack of any of the gray clay areas noted in Level 2. On the east side of the unit there was a zone of very dark gray brown, almost black, silty soil. It was thought this might represent the original ground surface but that was never adequately determined. The level contained some large pieces of whiteware as well as an assortment of glass pane, nails, brick fragments, and the neck/lip zone of a bottle that would have had a cork stopper. Some refuse bone was also present. Among the whiteware fragments were pieces of several items that had a floral design and which extended to ca. 56cm below surface. This level contained a concentration of crushed material in the northwest corner of the unit (Photograph ??)

Level 4 was defined by dark yellowish brown (10YR 4/4) somewhat lighter textured silt zone beginning ca. 46/47cm below surface. There were some flecks of charcoal noted but the level was generally devoid of artifacts. A single nail was recorded for the level and though some very small fragments of whiteware were noted these were not more than specks. The excavation of this test was terminated at the base of this level at ca. 61cm below surface.

Photograph 19: View of Test Unit 4 in relation to foundation

Photograph 20: View of Test Unit 4 and STP 5W20S

Photograph 21:
Westwood Historic Site
Test Unit 4, North Wall

Photograph 22:
Westwood Historic Site
Test Unit 4, South Wall

Photograph 23:
Westwood Historic Site
Test Unit 4, East Wall

Photograph 24:
Westwood Historic Site
Test Unit 4, West Wall

Photograph 25:
Westwood Historic Site
Test Unit 4, Detail Northwest Corner

Photograph 26:
Westwood Historic Site
Test Unit 4, North Wall

Table 6: Artifact Inventory, Test Excavation Units. Westwood Historic Site

		TU1 Sod	TU1 L1	TU1 L1B	TU1 31cm	TU2 Sod	TU2 L1	TU 2 L1B	TU2 L2 Surface	TU2 L2	TU2 L3	TU2 L4	TU2 L5	TU3 L1	TU3 L2	TU3 L2W	TU3 L2W clay	TU3 55cm+	TU3 L5	TU3 90-98cm	TU4 L1	TU4 L2	TU4 L2N	TU4 L2S	TU4 L3	TU4 L3N	TU4 L3S	TU4 48cm	TOTALS
CERRAMICS	brick	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
	ceramic, black glaze	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	redware, plain	0	1	0	0	0	0	2	0	0	1	0	0	0	0	1	0	0	0	0	4	0	0	0	1	0	0	0	10
	redware, glazed	1	0	1	1	14	0	0	**2**	6	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	6	0	35
	redware, dark red, glazed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	redware, glazed, dark brown	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	redware, glazed, light brown	1	0	1	0	0	0	0	0	5	0	0	0	0	1	0	0	0	0	0	2	0	0	0	1	3	1	0	15
	redware, glazed, black	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	redware/brick	0	0	4	0	3	1	0	0	8	0	0	0	5	9	0	0	0	0	0	0	1	0	3	0	13	5	0	52
	ceramic, unclassified	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	whiteware, undecorated	3	0	10	0	0	2	7	0	2	13	0	0	1	4	1	0	0	1	0	5	11	4	15	18	56	147	0	300
	whiteware, blue print	0	0	2	0	0	0	0	0	0	1	0	0	0	2	2	0	0	0	0	0	0	1	0	2	9	5	0	24
	whiteware, floral print	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	19	6	0	32
	whiteware, black print	5	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	15
	whiteware, burned, black print	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
	whiteware, red print	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	4
	yellow earthenware	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	15	9	0	30
	stoneware, glazed	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	2	0	0	0	6

	Table 6 - continued	TU1 Sod	TU1 L1	TU1 L1B	TU1 31cm	TU2 Sod	TU2 L1	TU 2 L1B	TU2 L2 Surface	TU2 L2	TU2 L3	TU2 L4	TU2 L5	TU3 L1	TU3 L2	TU3 L2W	TU3 L2W clay	TU3 55cm+	TU3 L5	TU3 90-98cm	TU4 L1	TU4 L2	TU4 L2N	TU4 L2S	TU4 L3	TU4 L3N	TU4 L3S	TU4 48cm	TOTALS
CERAMICS	stoneware, glazed, black	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	5
	stoneware?, textured	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	insulator	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	kaolin pipe stem	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
METAL	knife w/checkered bone handle	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	nail, wire	0	9	8	0	0	14	82	0	19	0	0	0	40	23	27	0	42	0	0	8	37	16	15	0	15	20	0	375
	nail, square	0	18	2	0	0	12	24	0	18	4	0	0	19	20	8	0	14	0	0	24	21	14	28	1	13	32	1	273
	nail/spike, square	0	0	0	0	0	0	2	0	0	7	0	0	0	3	1	0	1	0	0	0	0	0	2	0	1	0	0	17
	screw	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	rivet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	metal pipe	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	wire	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	metal	1	0	0	0	0	0	0	0	0	0	0	0	1	2	1	0	1	0	0	0	0	0	0	0	0	0	0	6
	metal disc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	metal, rusted, triangular	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	metal, rusted, flat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	metal, rusted	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	2	0	4	0	0	9
	faucet/valve handle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
	metal rod	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	spoon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	brass cartridge	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	buckle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GLASS	glass, irredescent	0	0	0	0	0	0	0	0	0	0	0	0	0		1	0	0	0	0	0	0	0	0	0	0	0	2	0	3
	glass, pane, clear	0	9	0	0	0	9	23	0	20	13	3	2	48	42	14	0	0	1	0	8	0	9	33	0	154	78	0	466
	glass, pane, aqua	0	2	0	0	0	33	52	0	0	7	0	0	0	0	0	0	2	0	0	35	8	0	0	3	48	79	0	269
	glass, purple/pink tint	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	glass, small fragments, clear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Table 6 - continued	TU1 Sod	TU1 L1	TU1 L1B	TU1 31cm	TU2 Sod	TU2 L1	TU 2 L1B	TU2 L2 Surface	TU2 L2	TU2 L3	TU2 L4	TU2 L5	TU3 L1	TU3 L2	TU3 L2W	TU3 L2W clay	TU3 55cm+	TU3 L5	TU3 90-98cm	TU4 L1	TU4 L2	TU4 L2N	TU4 L2S	TU4 L3	TU4 L3N	TU4 L3S	TU4 48cm	TOTALS
GLASS	glass, melted/burned	0	0	1	0	0	7	5	0	5	0	0	0	16	16	14	0	1	0	0	2	18	14	5	0	0	3	0	107
	glass, bottle, clear	0	13	0	0	0	7	7	0	1	0	0	0	9	17	1	0	15	0	0	10	6	11	17	4	60	31	0	209
	glass, bottle, aqua	1	31	0	0	0	2	1	0	0	1	0	0	3	5	0	0	3	0	0	5	10	0	0	11	0	6	0	79
	bottle, dark green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	glass, bottle, blue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	glass, bottle, olive	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0	5
	glass,container, decorative, clear	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
ASSORTED	refuse bone	0	4	6	0	0	1	8	0	10	7	0	0	3	3	1	0	2	0	0	0	1	1	1	2	7	17	0	74
	plastic	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
	slag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	coal, coal ash, cinder	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3
	mortar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	asphalt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	concrete	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	chert flake/shatter	0	0	0	0	0	0	0	0	0	2	0	0	7	0	0	0	0	0	0	6	1	2	0	0	0	0	0	18
	chert biface	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
	shell	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	unidentified	0	0	2	0	0	1	2	0	0	1	0	0	6	6	3	0	0	0	0	21	0	2	0	0	0	6	0	50
	plastic drinking straw	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TYPES NOT IN STPs	toy brooch?	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	metal washer	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	spring or coil of wire	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	whiteware, touch of green dec	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	glass button, white, 4 holes	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	chain link, broken	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	whiteware, burned	0	0	0	0	0	0	0	0	0	0	0	0	6	0	2	0	5	0	1	0	1	0	6	0	0	0	0	21

	Table 6 - continued	TU1 Sod	TU1 L1	TU1 L1B	TU1 31cm	TU2 Sod	TU2 L1	TU 2 L1B	TU2 L2 Surface	TU2 L2	TU2 L3	TU2 L4	TU2 L5	TU3 L1	TU3 L2	TU3 L2W	TU3 L2W clay	TU3 55cm+	TU3 L5	TU3 90-98cm	TU4 L1	TU4 L2	TU4 L2N	TU4 L2S	TU4 L3	TU4 L3N	TU4 L3S	TU4 48cm	TOTALS
TYPES NOT IN STPs	whiteware, brown print	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2
	whiteware, gray print	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	whiteware, mug handle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	metal spoon, bowl only	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	glass, bottle neck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	metal spoon, handle bent 90	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	metal spoon, handle formed, circular	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	metal strip, boot buckle latch?	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	metal, non-ferrous, handle?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	bottle glass, base, rose tint?	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	bottle glass, brown	0	0	0	0	0	0	0	0	0	0	0	0	0	19	4	0	0	0	0	0	0	0	0	0	0	1	0	24
	bottle glass, brown, melted	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	2	0	0	0	0	0	0	0	0	0	0	5
	bottle glass, irridescent	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8
	porcelain? "Nippon Hand Painted"	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	plastic/Styrofoam	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
	foil	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Baby Ruth wrapper	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Golf ball	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1

	Table 6 - continued	TU1 Sod	TU1 L1	TU1 L1B	TU1 31cm	TU2 Sod	TU2 L1	TU 2 L1B	TU2 L2 Surface	TU2 L2	TU2 L3	TU2 L4	TU2 L5	TU3 L1	TU3 L2	TU3 L2W	TU3 L2W clay	TU3 55cm+	TU3 L5	TU3 90-98cm	TU4 L1	TU4 L2	TU4 L2N	TU4 L2S	TU4 L3	TU4 L3N	TU4 L3S	TU4 48cm	TOTALS
TYPES NOT IN STPs	slate shingle fragment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
	burned, corroded US cent	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	shotshell base	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	metal hook, rusted	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
	TOTALS	13	92	39	2	17	91	221	3	102	61	3	2	167	180	87	1	95	6	2	136	117	77	128	47	437	474	1	

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Summary and Recommendations

Three site located in 2013 during a Phase 1 field survey at the Westwood Golf Course were subject to additional archaeological testing. Two of the sites had been identified as areas of prehistoric/pre-contact activity: Westwood Prehistoric/Pre-Contact 1 (A02902.1323) and Westwood Prehistoric/Pre-Contact 3 (A02902.1325). One site, Westwood Historic, (A02902.1326) was the location of a stone foundation remnant and was estimated to have been occupied in the period between the late-19th century up through the first quarter of the 20th century.

The Westwood Prehistoric 3 site lay on the south side of an extinct meander of Ellicott Creek and Phase 1 tests produced chert waste flakes and shatter. These items are indicative of the processing of raw materials, in this case stone, for the production of chipped stone tools. No artifacts diagnostic of a specific archaeologically defined culture were recovered during Phase 1 tests. Phase 2 testing consisted of the excavation of additional shovel test which continued the five meter grid begun during the Phase 1 program. Only an additional eleven tests were excavated at this site before it became apparent that the site was a very discrete locus of activity. Additionally, it apparently was a simple matter of luck that several of the Phase 1 shovel tests contained multiple artifacts. Only two tests excavated during the Phase 2 program produced additional prehistoric artifacts and these items were waste flakes.

Based on the results of the limited shovel testing it was determined that additional effort in this locale would not be merited. It was considered more useful to focus on the other sites being investigated. It is recommended that any activity proposed in the area of the Westwood Prehistoric 3 site be allowed to proceed. No further archaeological investigation of this site is necessary and none is recommended.

The Westwood Prehistoric 1 site was also located on the bank of an extinct meander of Ellicott Creek. It was, however, site at a much higher elevation and atop a steep bank of the former channel. Initial Phase 2 investigations entailed excavation of additional shovel tests on a five meter grid though the grid was not completely filled out. The results of that testing showed a somewhat broad scatter of cultural material but the frequency of artifacts per test was highly variable. Tests with high the highest artifact counts were located along the edge of the former creek bank and on the east and west side of the 18th Fairway. A few tests with multiple artifacts did trend to the south along the west side of the fairway. Almost all of the material recovered consisted of chert waste flakes and shatter. The single exception was a bi-pitted hammer stone which can also be attributed to the general category of lithic reduction (tool manufacture). Two 1m x 1m test excavation units were placed in areas where very high artifact counts were observed—the top of the former creek bank and on the east and west side of the 18th Fairway. The test on the west produced one hundred thirty-nine pieces of chert debitage from Level 1 soil. No cultural features were identified at the subsoil surface. The test on the east side of the fairway produced one hundred ninety-five artifacts which

were again limited to chert debitage. None of the shovel tests of test excavation units recovered any artifacts diagnostic of a specific archaeologically defined culture.

Level 1 soil in the western test unit was considered rather shallow but there were no indications of fill. The soil in the eastern test was somewhat disturbed, rather loose in spots and did contain some gravel like material which had been noted elsewhere as fill around buried utility lines. The general site area was more disturbed by golf course construction than had originally been thought. Irrigation lines ran along the center of the fairway and some small electrical lines ran across it. The distribution of artifacts also strongly suggested a greater level of landscaping had occurred than originally suspected. It is not impossible that these numbers could represent values from the original deposition of the artifacts but given the nature of the development here it seems unlikely.

Given the lack of diagnostics, buried features, and the level of previous disturbance no additional investigation is recommended for this site. Any development proposed for this portion of the project area should be allowed to proceed.

The Westwood Historic site was situated immediately to the east of the 10th Tee and its limits were roughly described by asphalt golf cart paths that surrounded it. The stone foundation was made of field stones, some of which had probably been lightly dressed. This site also lay atop the south bank of an extinct meander of Ellicott Creek. In addition to the northeast-southwest trending foundation there was an L-shaped walkway on the north constructed of poured concrete slabs. A principal goal of the testing was to identify the range of activities represented by artifacts at the foundation and then be able to determine if the location represented a domestic, farming, commercial or industrial structure.

Initial investigation was conducted though the excavation of shovel tests in an effort to obtain some basic information on artifact distribution and to determine if subsurface features existed outside the foundation. The shovel tests noted that artifacts were spread over a wide area but were concentrated in and nearby the foundation.

The foundation limits had been delineated by clearing the sod from areas where stone was not already exposed. The foundation trended northeast-southwest and appeared to consist of two major sections. On the southwest was a rectangle ca. 5.75 x 7m (18.8 x 22.9ft) and on the northeast was a rectangle ca. 4.5 x 8.75m (14.7 x 28.7 ft). The northeastern segment contained a depression suggestive of a former cellar hole.

Four 1m x 1m test units were excavated to obtain views of the foundation and to gather information about relative artifact frequency and artifact types in areas inside vs. adjacent and outside the foundation. The initial two tests were located kitty-corner to one another and straddled the north wall of the foundation near the southwestern section. These tests showed that there was a difference in soil

stratigraphy and artifact counts between areas interior and exterior to the foundation. One test also showed that the foundation remnant was limited to two courses of stone which had been laid in a bed of mortar. The base of the foundation would not have extended below the frost line.

One test was located along the northern segment of the foundation and had been intended to explore the edge of the presumed cellar hole and confirm that the presumed cellar feature existed. That test proved to be severely disturbed and contained numerous bricks, brick fragments and stones. Some of the stones present were large and appeared to be additional sections of a wall segment. The stones were thought to be possible extensions of the broader southwestern foundation but given the disturbance in that test it was possible that these were upper courses of stone that had been dumped here. The test was abandoned after reaching a depth of nearly one meter below the ground surface where continuation was blocked by the density of brick encountered. Indications of disturbance were evidenced by the recovery of a candy bar wrapper and a golf ball. Many of the artifacts recovered from this test were similar in type and apparent age to those seen in other tests. However, given the level of disturbance and its apparently recent date, it is difficult to state with certainty that the materials recovered actually come form the foundation or its immediate environs.

The final test excavation unit was placed on the south side of the foundation zone along a low berm that extended northeast from the southern segment. The test was basically an expansion of shovel tests 5W20S which had exposed a wall segment and shown that the southwest segment of the foundation was apparently not a standalone feature. Additionally, the shovel test seemed to indicate that the soil level below the foundation contained historic artifacts. This strongly suggested that at least a portion of the existing foundation represented a separate episode of construction. The test unit did not completely clarify the situation. A portion of the wall exposed had a basal level of mortar beneath which there were historic artifacts—severely crushed and fragmented pieces of glass and ceramics as well as some metal items. However, there was a lack of consistency in the location of the mortar bed and the density of artifacts in levels below. Detailed analysis of the artifact assemblage has not yet been completed. This might determine if those items recovered in the lower levels of this test can be identified as of earlier dates of manufacture than artifacts located elsewhere. It is also uncertain whether sufficiently fine detail in time depth can be established from artifacts recovered and the nature of broad time spans for the manufacture of many of the ceramic types located at the site.

While the Westwood Historic site is not considered eligible for the National Register of Historic Places it is worthy of some additional investigation. More detailed mapping of the foundation area is necessary as well as additional test unit excavation. Tests should be directed at determining whether or not the foundation segments represent a single complex structural unit or if multiple periods of construction can be identified. The alternative, given the small area involved, would be to avoid construction in this locale.

Westwood

A Traditional Neighborhood
in the heart of Amherst.

Sanitary Sewer Flow Capacity Study
Summary Review Report

December 1, 2014

Prepared For:

Brad Packard, AICP, Director of Development & Planning
Ciminelli Real Estate Corporation
350 Essjay Road
Williamsville, NY 14221

Prepared By:

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TECsmith

water and wastewater monitoring specialists *www.tecsmithinc.com*

Sanitary Sewer Flow Capacity Study

Table of Contents

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Sanitary Sewer Flow Capacity Study

SECTION I. Summary Review

Figure A- Node 1, Sheridan Drive 36" Sewer
Figure B- Node 2, Chestnut Ridge 60" Sewer

TECsmith

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-687-1418
Fax: 716-655-3369

Date: December 1, 2014

SANITARY SEWER FLOW CAPACITY STUDY – Summary Review

Prepared For:

Brad Packard , AICP
Director of Development &Planning
Ciminelli Real Estate Corporation
350 Essjay Road
Williamsvile, NY 14221

Project Name: Westwood Project- Downstream Sanitary Sewer Flow Monitoring

Flow Monitoring Period: October 9, 2014 to November 6, 2014

Rain Events (> 0.5-inches) Monitored: October 17, 2014 (0.74)

Number of Monitoring Nodes: Five (3) downstream manholes

Node Locations and Descriptions:

- NODE 1 …. 4180 Sheridan Dr. (36")
- NODE 2 …. Chestnut Ridge (60")

Summary Conclusion:

Based on the data presented in this report, specifically the flow depth measurements recorded (see graphs below):

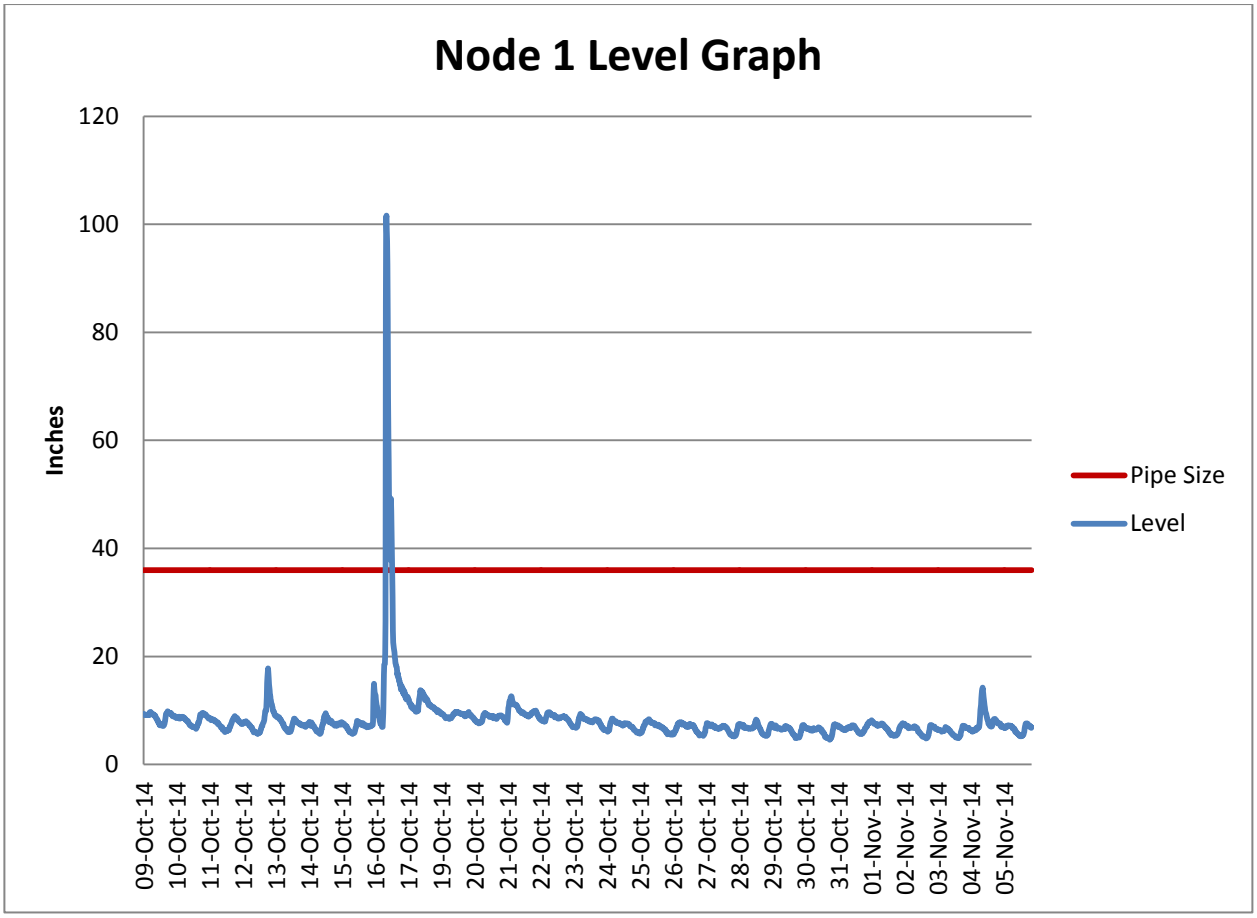
- One time did the flow depth exceed pipe diameter at any of the downstream monitoring points during the rain events monitored.
- At no time during the monitoring period did the flow at any point slow or stall which would have caused a backup or flooding at the manhole.

TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-687-1418
Fax: 716-655-3369

Depth of Flow Capacity Summary:

Depth of flow capacity is based on diameter of pipe. See graphs below.

- One time during the monitoring period did depth of flow exceed pipe diameter at NODE 1.



TECSMITH, Inc.
PO Box 383
Elma, New York 14059-0383
Tel: 716-687-1418
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- One time during the monitoring period did depth of flow exceed pipe diameter at NODE 2.

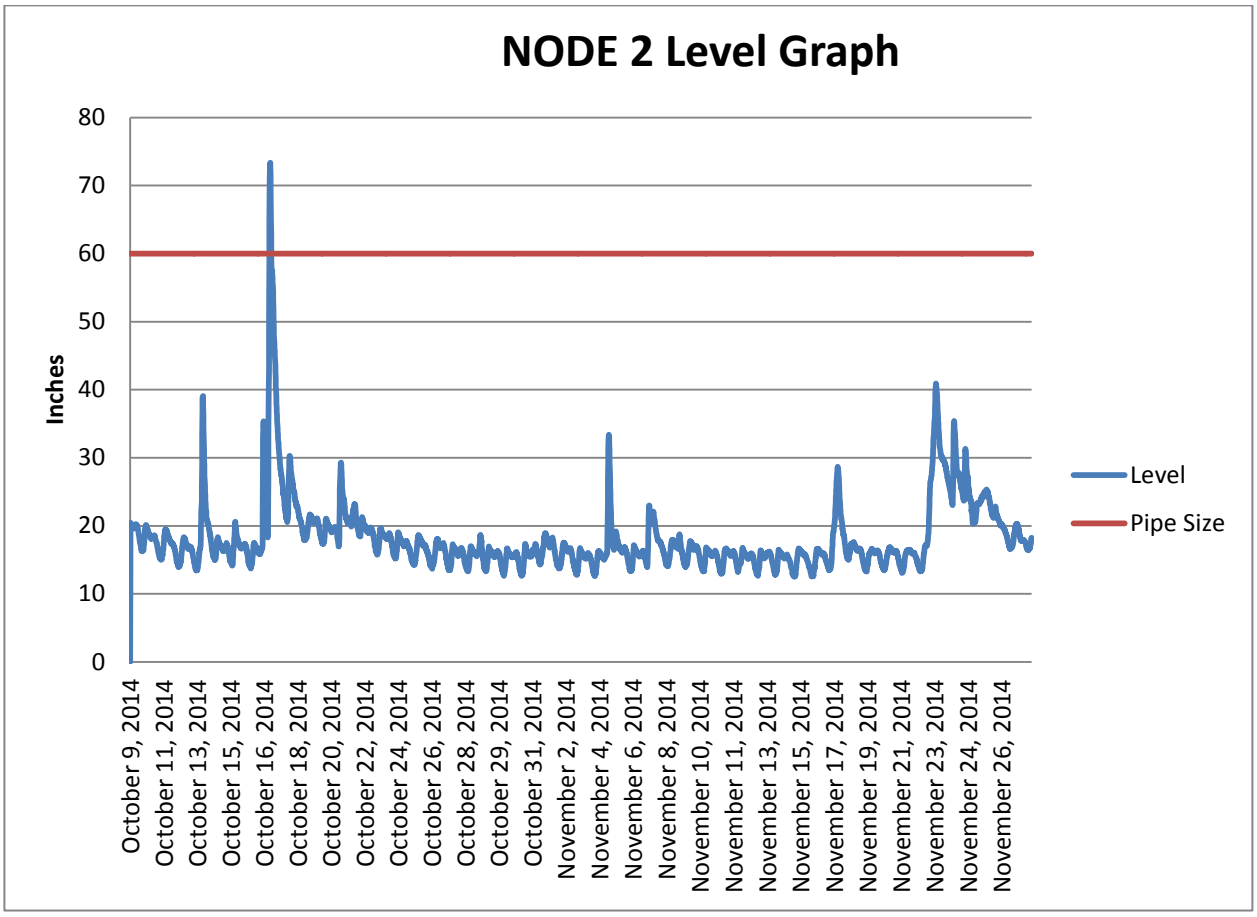

FIGURE A- NODE 1
Sheridan Drive
36" Sewer

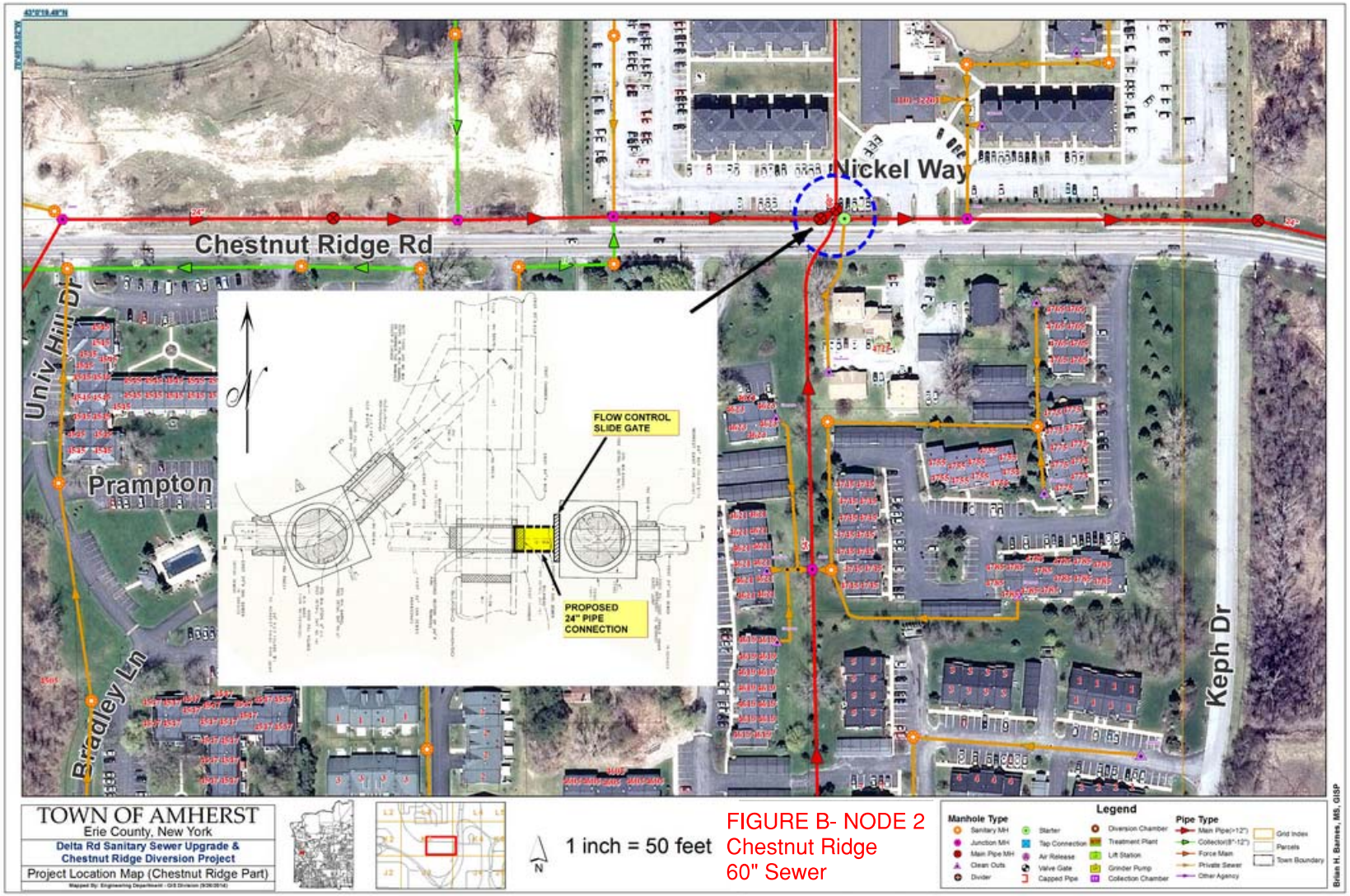

FIGURE B- NODE 2
Chestnut Ridge
60" Sewer

Sanitary Sewer Flow Capacity Study

SECTION II. Monitoring Flow Summary Table

Date	NODE 1			NODE 2			Rain
	4180 Sheridan Dr. (36")			Chestnut Ridge (60")			
	FLOW (GAL x 1000)	PEAK FLOW (MGD)	PEAK LEVEL (IN)	FLOW (GAL x 1000)	PEAK FLOW (MDG)	PEAK LEVEL (IN)	(inches)
10/09/14	1131.897	3.406	9.708	4796.819	11.931	20.463	0
10/10/14	2538.978	3.222	9.844	9433.790	11.612	20.138	0
10/11/14	2252.150	3.073	9.555	9069.942	11.668	19.520	0
10/12/14	2025.475	2.812	8.973	8763.148	11.318	18.318	0
10/13/14	2935.461	8.410	17.784	13272.707	38.816	39.069	0.34
10/14/14	2025.917	2.706	8.470	9918.837	12.067	18.351	0
10/15/14	2116.233	3.405	9.474	9658.432	13.262	20.613	0.07
10/16/14	2297.677	6.364	14.937	11049.750	32.334	35.374	0.05
10/17/14	9702.877	23.524	101.616	34942.969	66.600	73.333	0.74
10/18/14	4642.693	6.747	13.747	17360.666	27.292	30.304	0.13
10/19/14	3200.809	3.763	9.752	11328.887	13.425	21.680	0
10/20/14	2807.290	3.433	9.530	10076.116	12.052	21.082	0.04
10/21/14	3505.873	5.266	12.613	13521.714	24.273	29.280	0.14
10/22/14	2785.904	3.371	9.673	11244.236	13.957	23.089	0
10/23/14	2380.840	3.100	9.375	9916.421	11.631	19.667	0
10/24/14	2064.858	2.887	8.509	9401.581	11.232	19.059	0
10/25/14	1933.406	2.731	8.370	9251.297	11.693	18.664	0
10/26/14	1793.092	2.444	7.816	8940.210	10.992	18.068	0
10/27/14	1715.555	2.268	7.657	8893.974	11.215	17.294	0
10/28/14	1731.914	2.645	8.311	9004.178	12.128	18.627	0.1
10/29/14	1640.790	2.214	7.519	9003.400	10.935	17.220	0
10/30/14	1522.911	2.151	7.288	8645.175	10.885	16.714	0
10/31/14	1570.347	2.197	7.432	8769.182	11.636	17.360	0.1
11/01/14	1869.962	2.465	8.210	9905.480	12.320	18.961	0.07
11/02/14	1650.583	2.311	7.620	9327.934	11.526	17.556	0
11/03/14	1481.579	2.153	7.330	8779.735	10.897	16.748	0
11/04/14	1643.617	5.739	13.069	8872.967	22.154	26.810	0.27
11/05/14	2519.637	6.638	14.217	12782.760	32.626	33.392	0
11/06/14	874.855	2.203	7.608	9093.837	11.131	17.176	0.02
---	---	---	---	---	---	---	2.07

Note: Rain data from: http://www.nws.noaa.gov/climate/index.php?wfo=buf

Sanitary Sewer Flow Capacity Study

SECTION III. Field Sheets

FLOW METER RECORD
Field Check / Data Download

SITE DATA

SITE	4180 Sheridan Dr.	**I.D.**	1	**JOB NO.**	CIM001
METER MODEL	910	**SERIAL NO**	UAH		
DATE	11/6/14	**TIME**	12:55 pm	**CREW**	KK PG

	INITIAL READINGS		*ACTUAL MSMTS*		*FINAL READINGS*	
LEVEL	16.546	**INCHES**		**INCHES**		**INCHES**
FLOW	9.97	**MGD**				**MGD**
TOTAL	251	**GAL X1000**				**GAL X1000**
VEL	3.46	**FT/sec.**		**FT/sec.**		**FT/sec.**
SIGNAL	38	**%**				**%**
BATTERY	5.4	**VDC**				**VDC**

WORK COMPLETED:

Downloaded data, checked level, Removed meter

EQUIPMENT REMOVED:	**METER MODEL**		**METER S/N**	
	PROBE MODEL		**PROBE S/N**	
	PROBE MODEL		**PROBE S/N**	

NOTES:

FLOW METER RECORD
Field Check / Data Download

SITE DATA

SITE	4180 Sheridan Dr	**I.D.**	1	**JOB NO.**	CIM001
METER MODEL	910	**SERIAL NO**	UAH		
DATE	10/17/14	**TIME**	9:56 am	**CREW**	KK RS

	INITIAL READINGS		ACTUAL MSMTS		FINAL READINGS	
LEVEL	49.861	**INCHES**		**INCHES**	48.406	**INCHES**
FLOW	19.14	**MGD**			19.31	**MGD**
TOTAL	-1609394807	**GAL X1000**			0	**GAL X1000**
VEL	4.16	**FT/sec.**		**FT/sec.**	4.46	**FT/sec.**
SIGNAL	100	**%**			100	**%**
BATTERY	5.2	**VDC**			5.3	**VDC**

WORK COMPLETED:

Downloaded data, checked level, totalizer was reading negative, so was reset

EQUIPMENT REMOVED:	**METER MODEL**		**METER S/N**	
	PROBE MODEL		**PROBE S/N**	
	PROBE MODEL		**PROBE S/N**	

NOTES:

FLOW METER RECORD
Field Check / Data Download

SITE DATA

SITE	4180 Sheridan Dr	**I.D.**	1	**JOB NO.**	CIM001
METER MODEL	910	**SERIAL NO**	UAH		
DATE	10/22/14	**TIME**	2:16 pm	**CREW**	KK RS

	INITIAL READINGS		*ACTUAL MSMTS*		*FINAL READINGS*	
LEVEL	8.809	**INCHES**		**INCHES**	8.993	**INCHES**
FLOW	2.80	**MGD**			2.70	**MGD**
TOTAL	20941	**GAL X1000**			20950	**GAL X1000**
VEL	3.20	**FT/sec.**		**FT/sec.**	3.23	**FT/sec.**
SIGNAL	100	**%**			100	**%**
BATTERY	5.2	**VDC**			5.2	**VDC**

WORK COMPLETED:

Downloaded data, checked level

EQUIPMENT REMOVED:	**METER MODEL**		**METER S/N**	
	PROBE MODEL		**PROBE S/N**	
	PROBE MODEL		**PROBE S/N**	

NOTES:

FLOW METER RECORD
Field Check / Data Download

SITE DATA

SITE	Chestnut Ridge	**I.D.**	2	**JOB NO.**	CIM001
METER MODEL	910	**SERIAL NO**	PIZ		
DATE	10/22/14	**TIME**	1:25 pm	**CREW**	KK RS

	INITIAL READINGS		*ACTUAL MSMTS*		*FINAL READINGS*	
LEVEL	20.103	**INCHES**		**INCHES**	19.954	**INCHES**
FLOW	11.57	**MGD**			11.72	**MGD**
TOTAL	169	**GAL X1000**			169	**GAL X1000**
VEL	3.16	**FT/sec.**		**FT/sec.**	3.10	**FT/sec.**
SIGNAL	35	**%**			35	**%**
BATTERY	5.4	**VDC**			5.4	**VDC**

WORK COMPLETED:

Downloaded data, checked level,

EQUIPMENT REMOVED:	**METER MODEL**		**METER S/N**	
	PROBE MODEL		**PROBE S/N**	
	PROBE MODEL		**PROBE S/N**	

NOTES:

FLOW METER RECORD
Field Check / Data Download

SITE DATA

SITE	4180 Sheridan Dr	**I.D.**	1	**JOB NO.**	CIM001
METER MODEL	910	**SERIAL NO**	UAH		
DATE	10/31/14	**TIME**	11:39 am	**CREW**	KK

	INITIAL READINGS		*ACTUAL MSMTS*		*FINAL READINGS*	
LEVEL	6.966	**INCHES**	7.25	**INCHES**	7.208	**INCHES**
FLOW	1.79	**MGD**			1.84	**MGD**
TOTAL	37503	**GAL X1000**			37503	**GAL X1000**
VEL	2.97	**FT/sec.**		**FT/sec.**	2.95	**FT/sec.**
SIGNAL	100	**%**			100	**%**
BATTERY	5.3	**VDC**			5.3	**VDC**

WORK COMPLETED:

Downloaded data, checked level

EQUIPMENT REMOVED:	**METER MODEL**		**METER S/N**	
	PROBE MODEL		**PROBE S/N**	
	PROBE MODEL		**PROBE S/N**	

NOTES:

FLOW METER RECORD
Field Check / Data Download

SITE DATA

SITE	Chestnut Ridge	**I.D.**	2	**JOB NO.**	CIM001
METER MODEL	910	**SERIAL NO**	PIZ		
DATE	10/31/14	**TIME**	11:52 am	**CREW**	KK PG

	INITIAL READINGS		ACTUAL MSMTS		FINAL READINGS	
LEVEL	16.546	**INCHES**	16.25	**INCHES**	16.448	**INCHES**
FLOW	9.97	**MGD**			9.93	**MGD**
TOTAL	251	**GAL X1000**			251	**GAL X1000**
VEL	3.46	**FT/sec.**		**FT/sec.**	3.47	**FT/sec.**
SIGNAL	38	**%**			39	**%**
BATTERY	5.4	**VDC**			5.3	**VDC**

WORK COMPLETED:

Downloaded data, checked level,

EQUIPMENT REMOVED:	**METER MODEL**		**METER S/N**	
	PROBE MODEL		**PROBE S/N**	
	PROBE MODEL		**PROBE S/N**	

NOTES:

FLOW METER RECORD
Installation / Calibration

SITE DATA

SITE	4180 Sheridan Dr.	**I.D.**	001	**JOB NO.**	CIM001
METER MODEL	910	**METER S/N**	UAH	**PROBE(S) S/N**	TEC 11
DATE	10/9/14	**TIME**	3:17 am	**CREW**	PG KK
RIM TO INV	>20	**PIPE SIZE**	36 Inches	**PROBE LOC.**	Upstream

	INITIAL READINGS		ACTUAL MSMTS		FINAL READINGS	
LEVEL	9.284	**INCHES**	9.25	**INCHES**	9.211	**INCHES**
FLOW	3.14	**MGD**			3.13	**MGD**
TOTAL	11	**GAL X 1000**			11	**GAL X 1000**
VEL	3.41	**FT/sec.**		**FT/sec.**	3.30	**FT/sec.**
SIGNAL	100	**%**			100	**%**
BATTERY	5.3	**VDC**			5.1	**VDC**

BUCKET CALIBRATION

ACTUAL	0.00	**METER**	0.00

WORK COMPLETED:

Installed 910 with sub AV in 36 inch upstream pipe

NOTES:

FLOW METER RECORD
Installation / Calibration

SITE DATA

SITE	Chestnut Ridge	**I.D.**	002	**JOB NO.**	CIM001
METER MODEL	910	**METER S/N**	PIZ	**PROBE(S) S/N**	43
DATE	10/9/14	**TIME**	2:22 pm	**CREW**	PG KK
RIM TO INV	>20	**PIPE SIZE**	60 Inches	**PROBE LOC.**	Downstream

	INITIAL READINGS		ACTUAL MSMTS		FINAL READINGS	
LEVEL	20.304	**INCHES**	20.375	**INCHES**	20.318	**INCHES**
FLOW	11.55	**MGD**			11.87	**MGD**
TOTAL	0	**GAL X 1000000**			0	**GAL X 1000000**
VEL	3.13	**FT/sec.**		**FT/sec.**	3.07	**FT/sec.**
SIGNAL	36	**%**			34	**%**
BATTERY	5.4	**VDC**			5.4	**VDC**

BUCKET CALIBRATION

ACTUAL	0.00	**METER**	0.00

WORK COMPLETED:

Installed 910 with sub AV in 60 inch downstream pipe

NOTES:

FLOW METER RECORD
Field Check / Data Download

SITE DATA

SITE	Chestnut Ridge	**I.D.**	2	**JOB NO.**	CIM001
METER MODEL	910	**SERIAL NO**	PIZ		
DATE	11/28/14	**TIME**	9:33 am	**CREW**	KK JS

	INITIAL READINGS		ACTUAL MSMTS		FINAL READINGS	
LEVEL	18.717	**INCHES**	16.25	**INCHES**		**INCHES**
FLOW	11.39	**MGD**				**MGD**
TOTAL	566	**GAL X1000**				**GAL X1000**
VEL	3.31	**FT/sec.**		**FT/sec.**		**FT/sec.**
SIGNAL	31	**%**				**%**
BATTERY	5.2	**VDC**				**VDC**

WORK COMPLETED:

Downloaded data, checked level, removed from manhole

EQUIPMENT REMOVED:	**METER MODEL**		**METER S/N**	
	PROBE MODEL		**PROBE S/N**	
	PROBE MODEL		**PROBE S/N**	

NOTES:

PCE

UPDATED PRELIMINARY DRAINAGE ANALYSIS REPORT

FOR

WESTWOOD MIXED USE NEIGHBORHOOD PROJECT

772 NORTH FOREST ROAD

TOWN OF AMHERST, ERIE COUNTY, NEW YORK

REVISED JANUARY 24, 2015

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PCE PROJECT NO. 1402

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1.0 INTRODUCTION:

Mensch Capital Partners, LLC ("Project Sponsor") is proposing to develop a 174.94 +/- acre site located at 772 North Forest Road in the Town of Amherst, Erie County, New York (See Figure 1). The 174.94± acre site is the former location of the privately owned and operated Westwood Country Club and Golf Course, which permanently closed on December 31, 2014. The project site is bounded by Maple Road to the north, Frankhauser Road to the west, Sheridan Drive to the south and North Forest Road, Ellicott Creek and the Audubon Par 3 Golf Course to the east. The proposed mixed use neighborhood consists of Westwood Commons (Office, Residential, Hotel, Event Space, Neighborhood Business and the existing Clubhouse) and Westwood Residential (Single Family Residential, Patio Homes, Townhomes and Senior Living) (See Figure 2).

The purpose of this updated Preliminary Drainage Report is to identify and evaluate the preliminary stormwater impacts as part of the environmental review of the proposed project pursuant to the State Environmental Quality Review Act ("SEQRA") including the Draft Generic Environmental Impact Statement ("DGEIS") prepared on behalf of the Project Sponsor. The information and calculations in the Report provides the Town Board and involved agencies with the information to enable a hard look at identified potential drainage impacts.

The analysis in this Report specifically analyzes the pre-development and post-development conditions and associated storm water management storage volume requirements for the proposed redevelopment project under the 1-year, 10-year and 100-year, 24 hour storms. Additionally, this analysis also specifically analyzes the 10-year, 6 hour storm pre-development conditions and the 25-year, 6 hour storm post-development conditions in accordance with Town of Amherst storm drainage policy as requested in the Memorandum issued by Thomas C. Ketchum, P.E., Interim Town Engineer dated August 26, 2014.

This preliminary drainage analysis includes delineation of both pre-development and post-development drainage areas and performing hydrologic calculations for the 1-year, 10-year, 25-year (6 hour, post-development only) and 100-year, 24 hour storm events in accordance with United States Environmental Protection Agency ("EPA") and New York State Department of Environmental Conservation ("NYSDEC") Stormwater Regulatory Requirements as well as the storm drainage policy requirements of the Town of Amherst.

2.0 ANALYSIS METHODOLOGY:

This analysis was performed utilizing HydroCad Stormwater Modeling System Version 10.00-11. HydroCad utilizes hydrology techniques developed by the Soil Conservation Service ("SCS") and specifically techniques and procedures derived from Technical Release 20 ("TR-20") "Computer Program for Project Formulation Hydrology" and Technical Release 55 ("TR-55") "Urban Hydrology for Small Watersheds".

The 174.94± acre total hydrologic area was delineated down into smaller Drainage Areas ("DA's") for modeling and analysis. The DA boundaries, times of concentration paths and

lengths were determined from topographic information with a 2' contour interval. Aerial mapping was utilized to determine land use (to determine runoff curve numbers ("CN's") and the site soils were determined from the USDA Web Soil Survey.

3.0 PRE-DEVELOPMENT DRAINAGE ANALYSIS:

3.1 Pre-Development Conditions:

The Project Site was used until very recently as the Westwood Country Club and Golf Course. The golf course exhibits the characteristics common to golf courses in Western New York with a series of interconnected manmade small ponds and swales. The topography of the project site varies and is generally flat with some isolated areas of moderate slope. The site primarily slopes to the east and northeast towards Ellicott Creek.

The eastern portion of the project site is located within the 100-year floodplain of Ellicott Creek. The 100-year base flood elevation of Ellicott Creek varies from 596' at the south end of the site to 594' at the north end of the site as shown on the Town of Amherst Federal Insurance Rate Map Community-Panel Numbers 360226-0012 and 360226-0009 both dated October 16, 1992.

The majority of the project site is hydrologically contained within the boundaries of the Project Site. The only off-site drainage areas flowing onto the Project Site consist of the rear yards of the adjacent properties on Frankhauser Road and the rear yards of the adjacent properties on Maple Road. No other significant off-site flows are known to impact the project site.

The site soils are all of Hydrologic Soil Group D. The soil types and associated acreages are as follows:

AREA	SOIL TYPE
74.57 Acres	Odessa (Od)
31.98 Acres	Schoharie (SaA) (SaB)
30.05 Acres	Claverack (CrA)
24.71 Acres	Cosad (Cv)
9.46 Acres	Teel (Te)
4.17 Acres	Lakemont (La)
174.94 Acres	**TOTAL**

3.2 Drainage Areas:

The pre-development Project Site consists of six (6) delineated Drainage Areas (DA's) numbered DA1 through DA6. A brief description of each is as follows:

DA-1

Consists of 21.26 acres and is located in the northern portion of the site. DA1 discharges primarily via sheet flow east towards the Audubon Par 3 Golf Course at Outlet 1.

DA-2

Consists of 55.16 acres and is located in the northeastern portion of the site. DA2 discharges primarily via sheet flow east towards the Audubon Par 3 Golf Course at Outlet 2.

DA-3

Consists of 22.32 acres and is located in the eastern center portion of the site. DA3 discharges primarily via sheet flow east directly towards Ellicott Creek at Outlet 3.

DA-4

Consists of 15.33 acres and is located in the southwestern portion of the site. DA4 discharges primarily via sheet flow west towards Frankhauser Road at Outlet 4.

DA-5

Consists of 14.36 acres and is located in southern portion of the site. DA5 discharges west primarily via sheet flow towards Frankhauser Road at Outlet 5.

DA-6

Consists of 46.51 acres and is located in the south eastern portion of the site. DA6 discharges east primarily via sheet flow directly towards Ellicott Creek at Outlet 6.

See Figure 3 – Existing Conditions Analysis Map for delineation of pre-development drainage areas.

3.3 *Analysis Results (Pre-Development):*

Each drainage area as described was analyzed for the 1, 10 and 100-year storm events under pre-development conditions to determine peak discharges. The results of the analyses are listed in the table below.

DRAINAGE AREA	1 YEAR	10 YEAR	*10-YEAR	100 YEAR
	(CFS)	(CFS)	(CFS)	(CFS)
DA1	8.45	24.20	17.33	40.80
DA2	17.72	51.08	37.83	86.29
DA3	9.63	27.56	18.85	46.44
DA4	5.69	16.33	12.02	27.61
DA5	3.97	11.44	8.48	19.35
DA6	20.52	54.44	41.42	89.32

*10-YEAR 6 HOUR STORM (PER TOWN OF AMHERST DRAINAGE POLICY)

Under existing (pre-development) conditions sheet flow runoff from DA1 and DA2 currently provides the Audubon Golf Course with substantial stormwater flow. DA3 and DA6 discharge directly into Ellicott Creek primarily via sheet flow. DA4 and DA5 discharge via sheet flow towards Frankhauser Road. All pre-development flows are ultimately conveyed by various means to Ellicott Creek. There are three primary discharge areas under existing conditions. Stormwater sheet flow discharges to the Audubon Par 3 Golf Course, towards Frankhauser Road and directly to Ellicott Creek. Further modeling was performed to determine the maximum discharge to each of these three (3) areas. The contributing drainage area hydrographs were combined to calculate the pre-development discharges ("CFS") to each of these areas and are summarized as follows:

	Offsite Sheet Flow	1-Year	10-Year	*10-Year	100-Year
	Towards				
DA1 & DA2	Audubon Par 3 Golf Course	25.25	72.63	55.16	122.73
DA3 & DA6	Frankhauser Road	29.68	80.61	60.27	133.46
DA4 & DA5	Ellicott Creek	8.98	25.97	20.5	43.94
TOTAL		***63.91***	***179.21***	***135.93***	***300.13***

*10-YEAR 6 HOUR STORM (PER TOWN OF AMHERST DRAINAGE POLICY)

The total 1-year, 10-year and 100-year discharge values represent the maximum discharges allowable from the Project Site under developed conditions for these specific storm events. These maximum values are also used to determine stormwater storage volume requirements under developed conditions. The methodology and determination of maximum discharges for these specific storm events are in compliance with the NYSDEC General Permit for Stormwater Discharges from Construction Activity (GP-0-15-002) and the New York State Stormwater Design Manual. The New York State Stormwater Management Design Manual provides engineers with information on how to size, design, select and locate stormwater management practices at a development site to comply with State stormwater performance standards. This Stormwater Management Design Manual is a key component of the Phase II State Pollution Elimination System ("SPDES") general permit for stormwater runoff from construction activities. A complete copy of the Stormwater Management Design Manual is available on the NYSDEC's website.

The 10-year pre developed condition discharge value also represents the maximum allowable discharge allowable under the 25-year post developed condition event per the Town of Amherst drainage policy as cited in the Memorandum issued by Thomas C. Ketchum, P.E., Interim Town Engineer dated August 26, 2014.

4.0 POST-DEVELOPMENT DRAINAGE ANALYSIS:

4.1 Post-Development Conditions:

The proposed mixed use neighborhood consists of Westwood Commons (Office, Residential, Hotel, Event Space, Neighborhood Business and the existing Clubhouse) and Westwood Residential (Single Family Residential, Patio Homes, Townhomes and Senior Living). The layout of the proposed redevelopment project is depicted on the Conceptual Master Plan provided at Figure 2.

The topography of the Project Site will be altered as a result of the development of the proposed mixed use neighborhood. The placement of earthen fill within the 100-year floodplain of Ellicott Creek along the eastern portion of the project is proposed. There is no fill proposed to be within the regulatory floodway of Ellicott Creek. The placement of earthen fill within the 100-year floodplain of Ellicott Creek will ultimately require a Letter of Map Revision Based on Fill ("LOMR-F") to be obtained from the Federal Emergency Management Agency ("FEMA"). The LOMR-F is a revision and modification to the effective Flood Insurance Rate Map ("FIRM") as the result of fill placement within the floodplain of Ellicott Creek. The LOMR-F process requires that a detailed hydraulic analysis prepared by a licensed engineer be completed and

submitted to FEMA for review and approval. The Town of Amherst Floodplain Administrator will also be required to review the detailed hydraulic analysis to be submitted to FEMA. The detailed hydraulic analysis will determine any base flood elevation impacts associated with filling in the 100-year floodplain areas and will also be used to analyze various fill options and establish limits of fill to mitigate any of these potential impacts.

The incorporation of fill into a portion of the 100-year floodplain will ultimately remove the filled portion(s) of the project site from the 100 year floodplain.

Stormwater flows that currently discharge towards Frankhauser Road will be conveyed to the east during the development of the proposed redevelopment project. The post-development analysis determined that existing DA4 and DA5 will be incorporated into a larger post-development drainage area and then conveyed to the east, ultimately to Ellicott Creek at a controlled rate per the applicable stringent stormwater quantity standards of both the NYSDEC and the Town of Amherst.

Stormwater management ponds and a lake have been incorporated into the Conceptual Master Plan for the mixed use neighborhood project in recognition of the fact that it will be necessary to provide on-site areas to detain stormwater runoff resulting from the alteration of the site topography and new impervious surfaces)e.g., roadway, driveways, parking spaces and roofs of buildings). These hydraulic structures will be designed to ensure compliance with applicable stringent stormwater quantity standards by providing stormwater storage to limit the discharge from the project site in its developed condition to the pre-development discharge rates, or less. The detailed design of the stormwater ponds, lake and associated hydraulic outfall structures will be thoroughly analyzed for the effects of the tailwater (1, 10, 25 and 100 year flood elevations) elevations of Ellicott Creek, although at this time the normal water surface elevations of the proposed stormwater management ponds and the lake are proposed to be higher than the 100 year base flood elevation of Ellicott Creek, and will therefore have no tailwater impact on the hydraulic outfall from the lake or ponds.

Based on the preliminary stormwater pump station analysis performed by C&S Companies a proposed stormwater pump station is required in PDA-1 due to the elevation difference of the three (3) proposed stormwater management ponds within PDA1 and the large proposed stormwater management lake. The proposed stormwater pump station will pump stormwater conveyed through the three (3) proposed stormwater management ponds to the stormwater management lake at a maximum discharge rate of 15 CFS. Therefore 15 CFS is the maximum design discharge used to preliminarily determine stormwater storage volumes required in PDA-1. Further details regarding the preliminary design of the stormwater pump station are included in the C&S Companies Stormwater Management Analysis dated December 19, 2014 which is included as Exhibit A to this Report.

This stormwater analysis is based on utilizing a stormwater pump station for PD1 based on the preliminary assessment of existing site topography, storage capacity

requirements and the flood elevations within Ellicott Creek. As the detailed stormwater management elements of the proposed project evolve and are further evaluated, analyzed and designed the Project Sponsor will evaluate avoidance of utilizing a stormwater pump station in favor of a traditional gravity stormwater management system design.

4.2 ***Drainage Areas:***

The post-development project site consists of four (4) delineated Post-development Drainage Areas (PDA's) numbered PDA-1 through PDA-4. A brief description of each is as follows:

PDA-1

Consists of 57.34 acres and is located in the northern portion of the site. There are three (3) stormwater management ponds located within PDA-1 which will provide the required stormwater detention. PDA-1 stormwater discharge will ultimately be conveyed via a stormwater pump station and associated force main to the large stormwater management lake and ultimately to Ellicott Creek.

PDA-2

Consists of 86.20 acres and consists of the majority of the southern portion of the project site. PDA-2 discharges east into a large stormwater management lake and ultimately to Ellicott Creek.

PDA-3

Consists of 20.54 acres and is located in the extreme southeastern portion of the site. PDA-3 discharges to a stormwater management pond and ultimately to Ellicott Creek.

PDA-4

Consists of 10.86 acres and is located immediately adjacent to Ellicott Creek. PDA-4 discharges directly to Ellicott Creek. There is no proposed development within PDA-4.

See Figure 4 – Proposed Conditions Analysis Map for delineation of post-development drainage areas.

4.3 ***Analysis Results (Post-Development):***

Each drainage area was analyzed for the 1, 10, 25 and 100-year storm events under post-development conditions to determine peak discharges. The results of the analyses are listed in the table below.

DRAINAGE AREA	1 YEAR	10 YEAR	*25 YEAR	100 YEAR
	(CFS)	(CFS)	(CFS)	(CFS)
PDA-1	42.30	90.02	92.38	135.46
PDA-2	73.63	148.29	153.23	218.13
PDA-3	15.54	34.93	35.06	53.74
PDA-4	6.62	18.60	15.82	31.13

*25-YEAR 6 HOUR STORM (PER TOWN OF AMHERST DRAINAGE POLICY)

The post-development stormwater discharge from PDA-1 will be conveyed to the large stormwater management lake via a stormwater pumping station and ultimately to

Ellicott Creek. The total discharge rate from the proposed stormwater pump station (by C&S Companies) is 15 CFS. Storage volumes within the three (3) stormwater ponds were calculated based on this discharge rate. No post-development stormwater discharge will be conveyed to the Audubon Par 3 Golf Course. A rear yard drainage system will be installed within the rear yards of the lots adjacent to the Audubon Par 3 Golf Course to further ensure that no post-development discharge is conveyed to the Audubon Par 3 Golf Course.

PDA-2 is proposed to be tributary to a large stormwater management lake. The outfall from this lake will discharge to Ellicott Creek.

PDA-3 will be contained and managed within a small stormwater management pond and ultimately discharge to Ellicott Creek.

PDA-4 will directly discharge to Ellicott Creek as it currently does under pre-development conditions.

Allowable discharges were determined for each PDA based on the pre-development analysis. The discharges were based on the allowable discharge rates (and pump station discharge rate by C&S Companies) and general outlet locations as determined under the pre-development analysis. Allowable discharges under the post-developed condition for each PDA are as follows:

	1-Year	10-Year	*25-Year	100-Year	NOTE
PDA-1	15	15	15	15	1
PDA-2	41.09	128.41	87.11	222.00	2
PDA-3	1.2	17.2	18.0	32.0	3
PDA-4	6.62	18.60	15.82	31.13	4
TOTAL	**63.91**	**179.21**	**135.93**	**300.13**	

*PER TOWN OF AMHERST DRAINAGE POLICY UNDER A 25 YEAR DEVELOPED CONDITIONS, 6 HOUR STORM THE MAXIMUM DISCHARGE IS THAT OF THE 10-YEAR, 6 HOUR EXISTING CONDITIONS STORM.

NOTES:

1. Based solely on the design discharge rate of the proposed stormwater pump station of 15 CFS. This stormwater discharge will be conveyed to the stormwater management lake via the stormwater pumping station and associated forcemain.
2. Remaining allowable balance after subtraction of PDA-1, PDA-3 and PDA-4.
3. Based solely on providing 1 acre-feet of storage (max) for each analyzed storm event.
4. Based on existing discharge. No change to this drainage area under developed conditions.

The post-development conditions analysis demonstrates that offsite discharge rates will be equal to, or less than, pre-development rates which ensures that the development of the mixed use neighborhood will not have any potentially significant off-site drainage impacts to Ellicott Creek.

4.4 *Storage Requirements:*

Additional modeling was performed under the post-development condition to estimate the volume of stormwater storage required for each PDA. The results are as follows:

	1-Year	10-Year	*25-Year	100-Year	NOTE
	(acre-feet)	(acre-feet)	(acre-feet)	(acre-feet)	
PDA-1	1.9	5.9	5.8	10.1	1
PDA-2	2.1	0.8	5.0	0.0	2
PDA-3	1.0	1.0	1.0	1.0	3
PDA-4	N/A	N/A	N/A	N/A	
TOTAL	**5.00**	**6.70**	**11.8**	**11.1**	

*PER TOWN OF AMHERST DRAINAGE POLICY UNDER A 25 YEAR, 6 HOUR DEVELOPED CONDITIONS STORM THE MAXIMUM DISCHARGE IS THAT OF THE 10-YEAR, 6 HOUR EXISTING CONDITIONS STORM.

NOTES:

1. **A storage volume of 10.0 acre-feet governs for PDA-1.** The largest storage volume of the storm events analyzed governs for each PDA. This analysis is based on three (3) stormwater management ponds in series and stormwater discharge being conveyed to the lake via a stormwater pump station at a total discharge rate of 15 CFS which is less than the predevelopment discharge rate. This controlled rate will then be conveyed through the lake to Ellicott Creek.
2. **A storage volume of 5.0 acre-feet governs for PDA-2.** The proposed lake provides this stormwater management storage volume required for PDA-2. The preliminary normal water elevation has been determined as part of the preliminary stormwater pump station analysis contained in Appendix E of this Report. This elevation is preliminarily determined to be above the 100-year base flood elevation (596) at the location of the lake.
3. **A storage volume of 1.0 acre-feet governs for PDA-3.** Based solely on providing 1 acre-feet of storage (max) for each analyzed storm event.

A minimum total storage volume for the proposed development of approximately 16.0 acre-feet is required. A minimum of 10 acre-feet of storage in PDA-1 upstream of the proposed stormwater pump station is required.

5.0 RECOMMENDATIONS AND CONCLUSIONS:

The purpose of this Preliminary Drainage Analysis was to identify and evaluate the preliminary stormwater management requirements as part of the coordinated environmental review of the proposed mixed use neighborhood pursuant to the State Environmental Quality Review Act ("SEQRA"). The drainage analysis conducted by our firm specifically analyzed the pre-development and post-development conditions and associated storm water management storage volume requirements for the proposed mixed use project under the 1-year, 10-year, 25-year and 100-year storm events.

The results of the analyses reveal that a minimum of approximately 16.0 acre feet (total) of stormwater storage is required for the proposed redevelopment project and allocated as tabulated in Section 4.4 above, based on the storm events analyzed. This project will be able to accommodate the required storage volumes on site based on the preliminary pond and lake design elevations contained within the C&S Companies Memo dated December 19, 2014 and the integrated stormwater management system will be fully designed and installed in accordance with all applicable regulations and stringent standards relative to stormwater management for the development of sites involving one acre or greater of land disturbance.

Detailed investigation and analysis will be required during final design to determine drainage conveyance patterns and capacities in PDA-1. The preliminary design decision is to incorporate a stormwater pump station to the north of the stormwater management lake located in PDA2 to convey stormwater flows. The preliminary design elements for the proposed stormwater pump station are described in the C&S Companies Memo. The stormwater storage requirements for PDA-1 and PDA-2 were calculated based on these preliminary pump station design elements.

Detailed designs of stormwater outfall structures were not included as part of this Preliminary Drainage Analysis. This level of detail will be provided during final detailed stormwater management design of the project and will be based on the 1, 10, 25 and 100 year flood elevations of Ellicott Creek at the various final hydrologic and hydraulic design points for the redevelopment project.

The flood elevation of Ellicott Creek, for the various design storm events will be a thoroughly analyzed design element during the final detailed stormwater management design for this redevelopment project.

The proposed redevelopment project will be designed and constructed in accordance with all applicable Town of Amherst, NYSDEC, and EPA requirements and in accordance with the New York State Stormwater Management Design Manual.

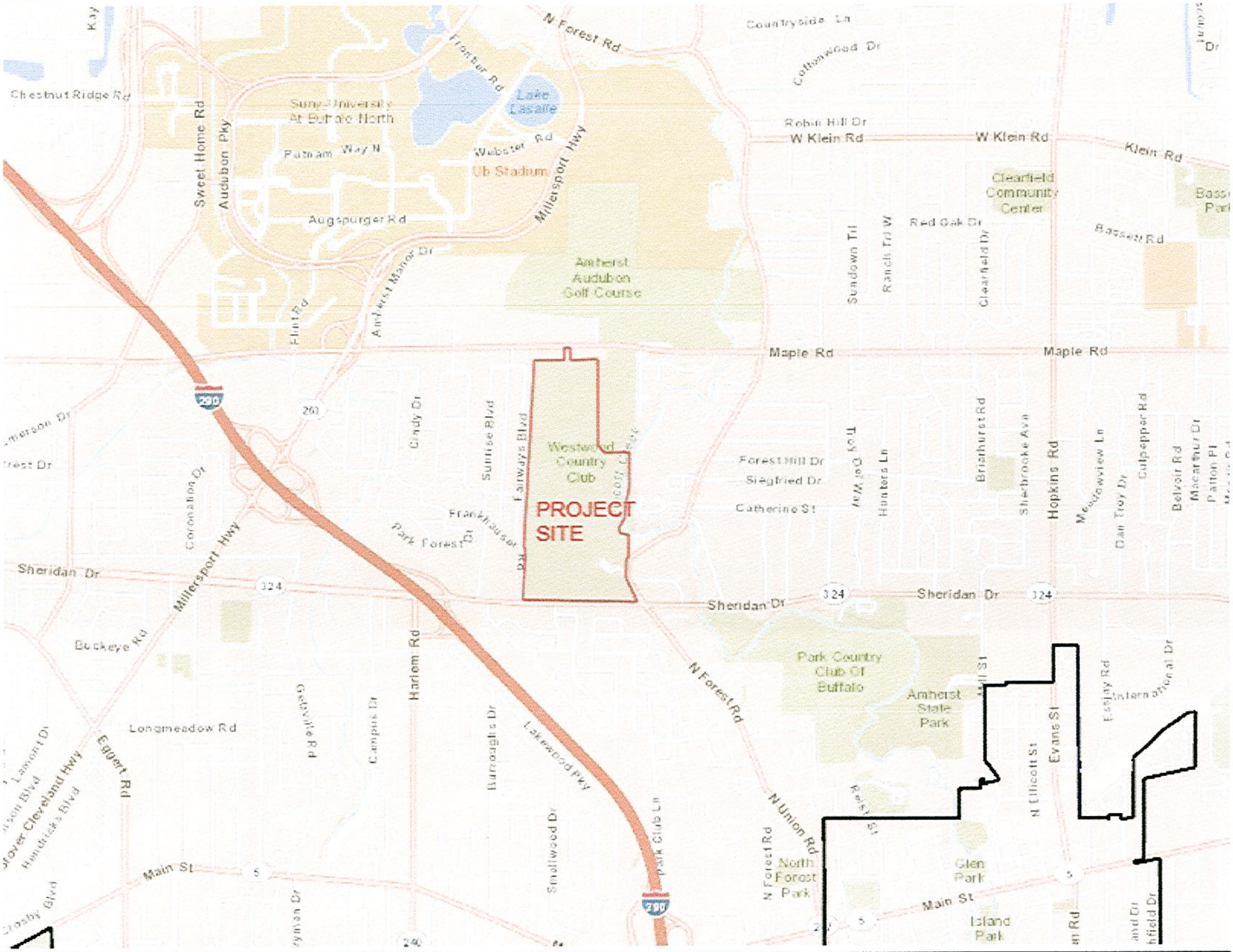
The Preliminary Drainage Analysis performed determined that adequate stormwater management features can and will be provided on the project site in its developed condition to adequately address the post-development standards relative to all stormwater management requirements and regulations.

6.0 TECHNICAL QUESTIONS

Technical questions concerning data presented herein and/or the methods utilized for this study should be addressed to:

Timothy M. Lavocat, P.E., CFM
Manager
Professional Civil Engineering, LLC
8150 Salt Road
Clarence Center, New York 14032
716-583-6875

FIGURE 1 - PROJECT LOCATION MAP



0 3,713.00 7,426.0Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
THIS MAP IS NOT TO BE USED FOR NAVIGATION

ERIE COUNTY
DEPARTMENT OF ENVIRONMENT & PLANNING
OFFICE OF GIS

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

Legend

☐ Municipal Boundaries

1: 44,556

FIGURE 2

LEGEND:

WESTWOOD COMMONS:

A.	OFFICE:	200,000 SQFT.
B.	RESIDENTIAL:	150,000 SQFT
C.	HOTEL:	130 KEYS
D.	MULTI-FAMILY OVER NEIGHBORHOOD BUS/OFF:	325 UNITS
E.	LAKE EDGE TOWNHOMES / MULTI-FAMILY:	37 UNITS
F.	RIVER'S EDGE MULTI-FAMILY APARTMENTS:	40 UNITS
G.	EVENT SPACE	
H.	EXISTING CLUBHOUSE	

WESTWOOD RESIDENTIAL:

I.	PATIO HOME LOTS:	108 UNITS
J.	LARGER LOTS - SINGLE FAMILY	52 UNITS
K	TOWNHOMES:	90 UNITS
L.	SENIOR LIVING FACILITY	ASSISTED LIVING 200 / INDEPENDENT 96

NOTES:

1. TOTAL PARKING COUNT IN THE WESTWOOD COMMONS AREA: 2,180 STALLS.
2. WESTWOOD PARKWAY WIDTH: 80 FT.
3. STANDARD ROADWAY WIDTH: 50 FT.

WESTWOOD

CONCEPTUAL MASTER PLAN

02/24/2014

AGREEMENT EXHIBIT "B"

MENSCH Capital Partners, LLC

GOODY CLANCY ARCHITECTURE PLANNING PRESERVATION

FONTANESE FOLTS AUBRECHT ERNST A PROFESSIONAL CORPORATION ARCHITECTS

Nussbaumer & Clarke, Inc. ENGINEERS AND SURVEYORS

FIGURE 3
EXISTING CONDITIONS ANALYSIS MAP

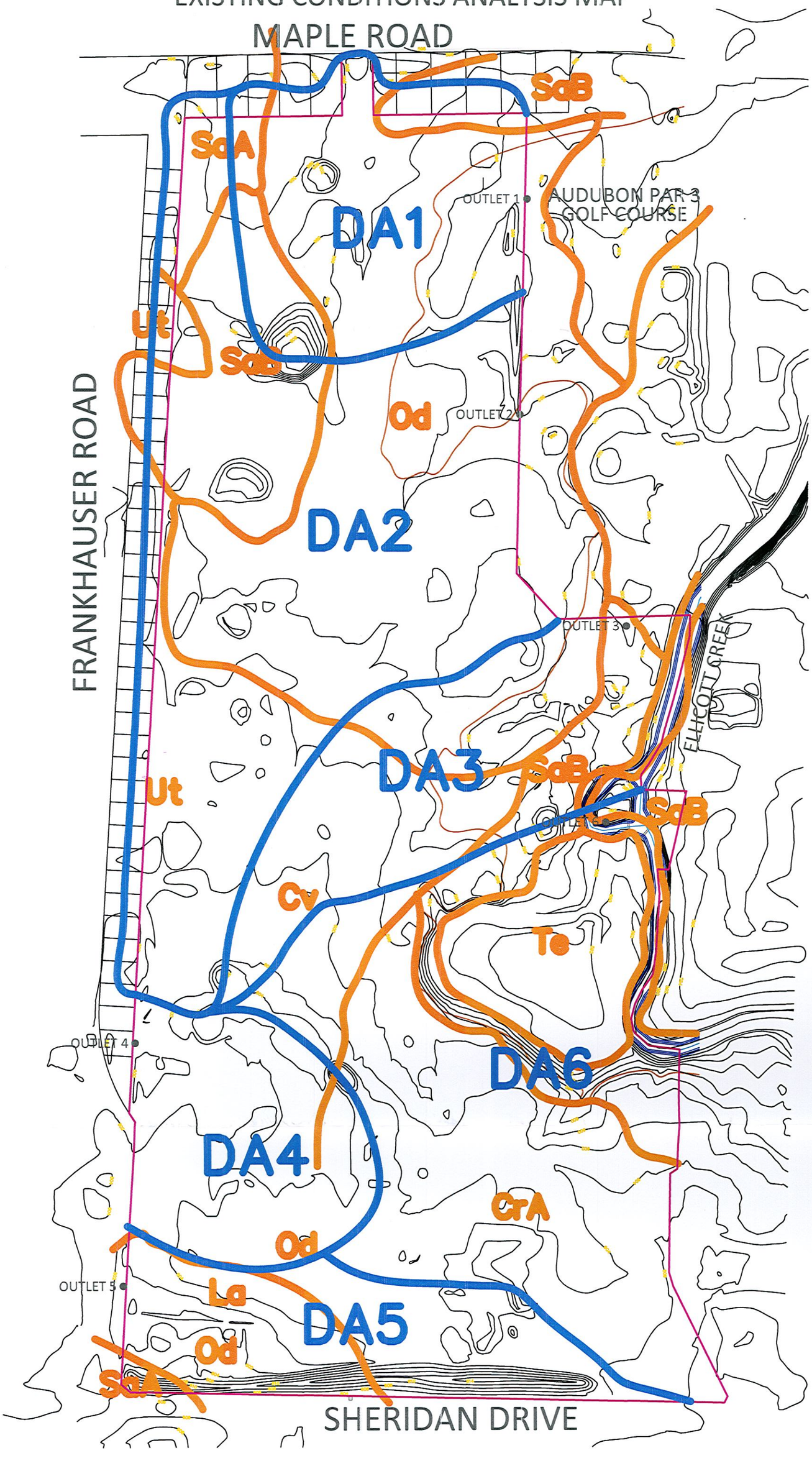
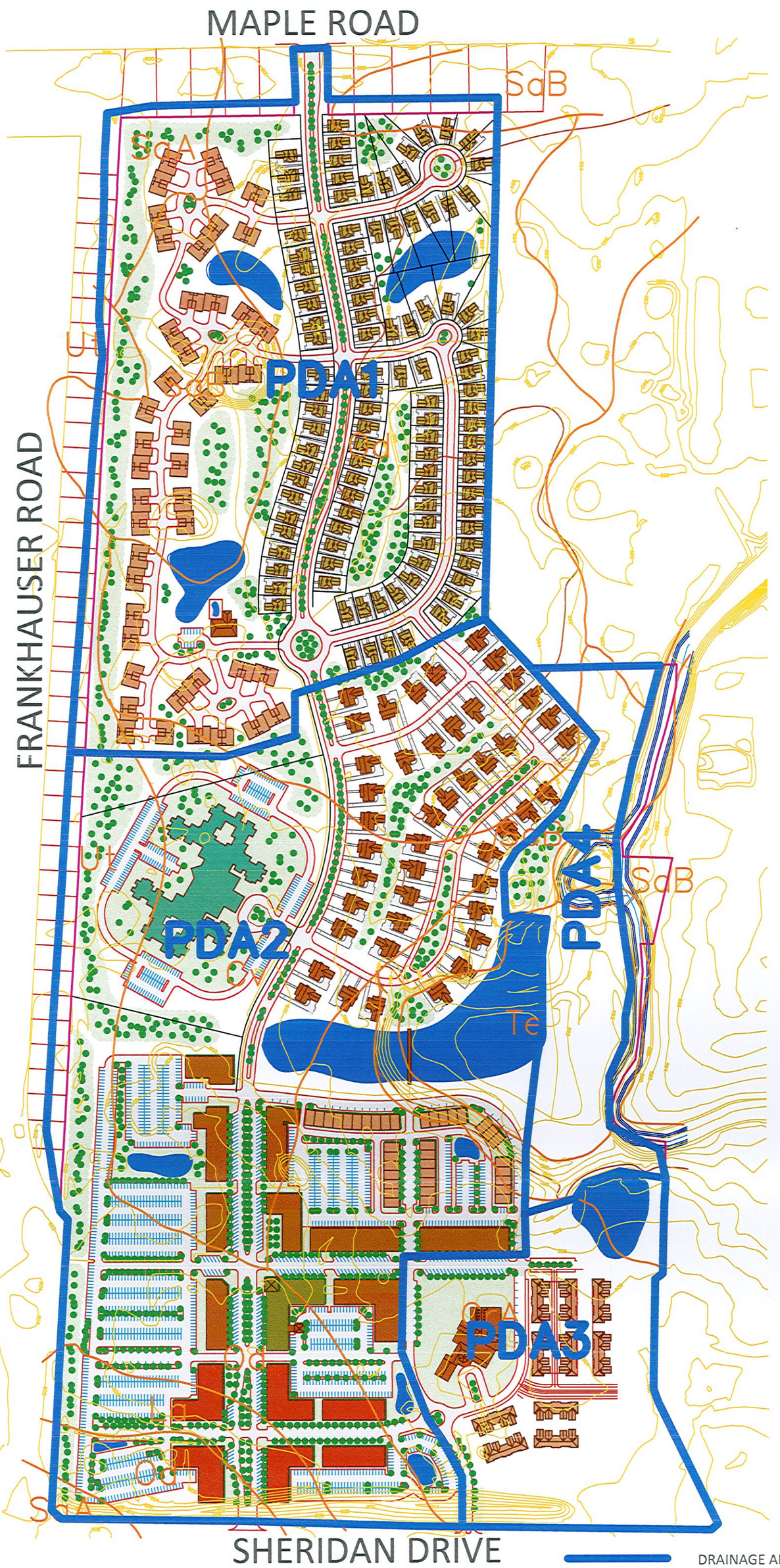
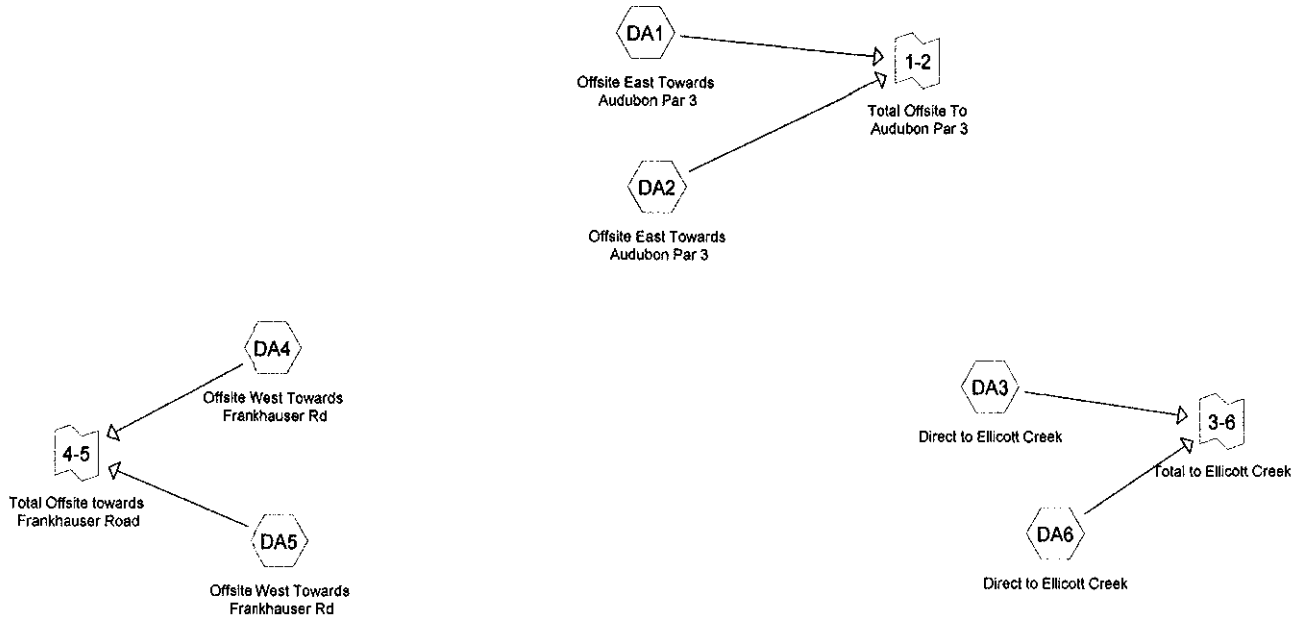


FIGURE 4
PROPOSED CONDITIONS ANALYSIS MAP



APPENDIX A

PRE-DEVELOPMENT CALCULATIONS



Subcat Reach Pond Link

Routing Diagram for Westwood PreDevelopment
Prepared by Professional Civil Engineering, L.L.C., Printed 3/23/2014
HydroCAD® 10.00-11 s/n 04270 © 2014 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
25.400	80	Claverack (CrA) - Open Space - Golf Course and Lawn, Good, HSG D (DA4, DA5, DA6)
4.650	98	Claverack (CrA) - Open Space - Imervious - Pavement and Roof, HSG D (DA6)
24.710	80	Cosad (Cv) - Open Space - Golf Course and Lawn, Good, HSG D (DA2, DA3, DA4, DA6)
4.170	80	Lakemont (La) - Open Space - Golf Course and Lawn, Good, HSG D (DA5)
65.190	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D (DA1, DA2, DA3, DA4, DA5, DA6)
4.360	80	Schoharie (SaA) - Open Space - Golf Course and Lawn, Good, HSG D (DA1, DA2, DA5)
27.620	80	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good, HSG D (DA1, DA2, DA3, DA6)
9.460	80	Teel (Te) - Open Space - Golf Course and Lawn, Good, HSG D (DA6)
9.380	80	Urban Odessa (Ut) - Open Space - Golf Course and Lawn, Good, HSG D (DA2)
174.940	80	TOTAL AREA

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
174.940	HSG D	DA1, DA2, DA3, DA4, DA5, DA6
0.000	Other	
174.940		TOTAL AREA

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover
0.000	0.000	0.000	25.400	0.000	25.400	Claverack (CrA) - Open Space - Golf Course and Lawn, Good
0.000	0.000	0.000	4.650	0.000	4.650	Claverack (CrA) - Open Space - Imervious - Pavement and Roof
0.000	0.000	0.000	24.710	0.000	24.710	Cosad (Cv) - Open Space - Golf Course and Lawn, Good
0.000	0.000	0.000	4.170	0.000	4.170	Lakemont (La) - Open Space - Golf Course and Lawn, Good
0.000	0.000	0.000	65.190	0.000	65.190	Odessa (Od) - Open Space - Golf Course and Lawn, Good
0.000	0.000	0.000	4.360	0.000	4.360	Schoharie (SaA) - Open Space - Golf Course and Lawn, Good
0.000	0.000	0.000	27.620	0.000	27.620	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good
0.000	0.000	0.000	9.460	0.000	9.460	Teel (Te) - Open Space - Golf Course and Lawn, Good
0.000	0.000	0.000	9.380	0.000	9.380	Urban Odessa (Ut) - Open Space - Golf Course and Lawn, Good
0.000	0.000	0.000	174.940	0.000	174.940	TOTAL AREA

Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA1: Offsite East Towards Audubon Par 3 Runoff Area=21.260 ac 0.00% Impervious Runoff Depth=0.62"
Flow Length=870' Tc=40.6 min CN=80 Runoff=8.45 cfs 1.106 af

Subcatchment DA2: Offsite East Towards Audubon Par 3 Runoff Area=55.160 ac 0.00% Impervious Runoff Depth=0.62"
Flow Length=2,475' Tc=54.1 min CN=80 Runoff=17.72 cfs 2.870 af

Subcatchment DA3: Direct to Ellicott Creek Runoff Area=22.320 ac 0.00% Impervious Runoff Depth=0.62"
Flow Length=1,755' Tc=36.1 min CN=80 Runoff=9.63 cfs 1.161 af

Subcatchment DA4: Offsite West Towards Frankhauser Rd Runoff Area=15.330 ac 0.00% Impervious Runoff Depth=0.62"
Flow Length=1,155' Tc=44.5 min CN=80 Runoff=5.69 cfs 0.798 af

Subcatchment DA5: Offsite West Towards Frankhauser Rd Runoff Area=14.360 ac 0.00% Impervious Runoff Depth=0.62"
Flow Length=1,755' Tc=66.2 min CN=80 Runoff=3.97 cfs 0.747 af

Subcatchment DA6: Direct to Ellicott Creek Runoff Area=46.510 ac 10.00% Impervious Runoff Depth=0.72"
Flow Length=2,220' Tc=44.6 min CN=82 Runoff=20.52 cfs 2.773 af

Link 1-2: Total Offsite To Audubon Par 3 Inflow=25.25 cfs 3.976 af
Primary=25.25 cfs 3.976 af

Link 3-6: Total to Ellicott Creek Inflow=29.68 cfs 3.934 af
Primary=29.68 cfs 3.934 af

Link 4-5: Total Offsite towards Frankhauser Road Inflow=8.98 cfs 1.545 af
Primary=8.98 cfs 1.545 af

Total Runoff Area = 174.940 ac Runoff Volume = 9.455 af Average Runoff Depth = 0.65"
97.34% Pervious = 170.290 ac 2.66% Impervious = 4.650 ac

Summary for Subcatchment DA1: Offsite East Towards Audubon Par 3

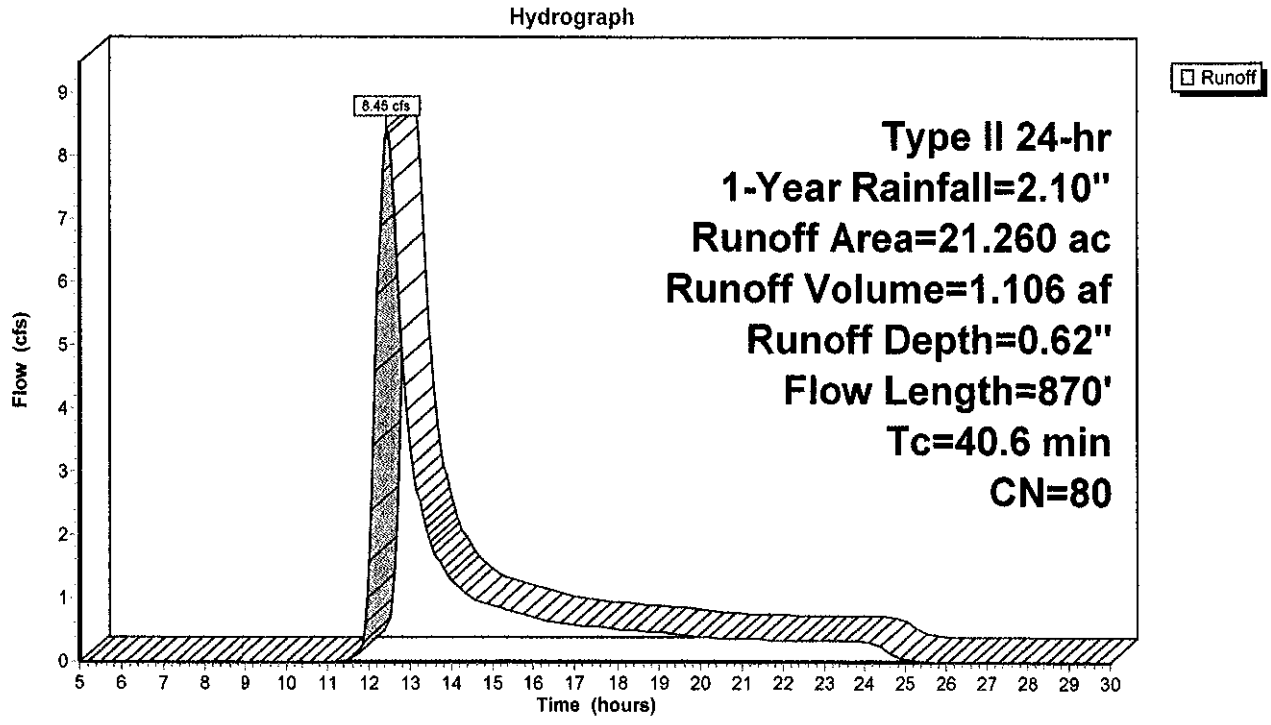
Runoff = 8.45 cfs @ 12.41 hrs, Volume= 1.106 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.10"

	Area (ac)	CN	Description
*	15.930	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.330	80	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good, HSG D
*	1.000	80	Schoharie (SaA) - Open Space - Golf Course and Lawn, Good, HSG D
	21.260	80	Weighted Average
	21.260		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	150	0.0047	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
13.2	720	0.0032	0.91		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
40.6	870	Total			

Subcatchment DA1: Offsite East Towards Audubon Par 3



Summary for Subcatchment DA2: Offsite East Towards Audubon Par 3

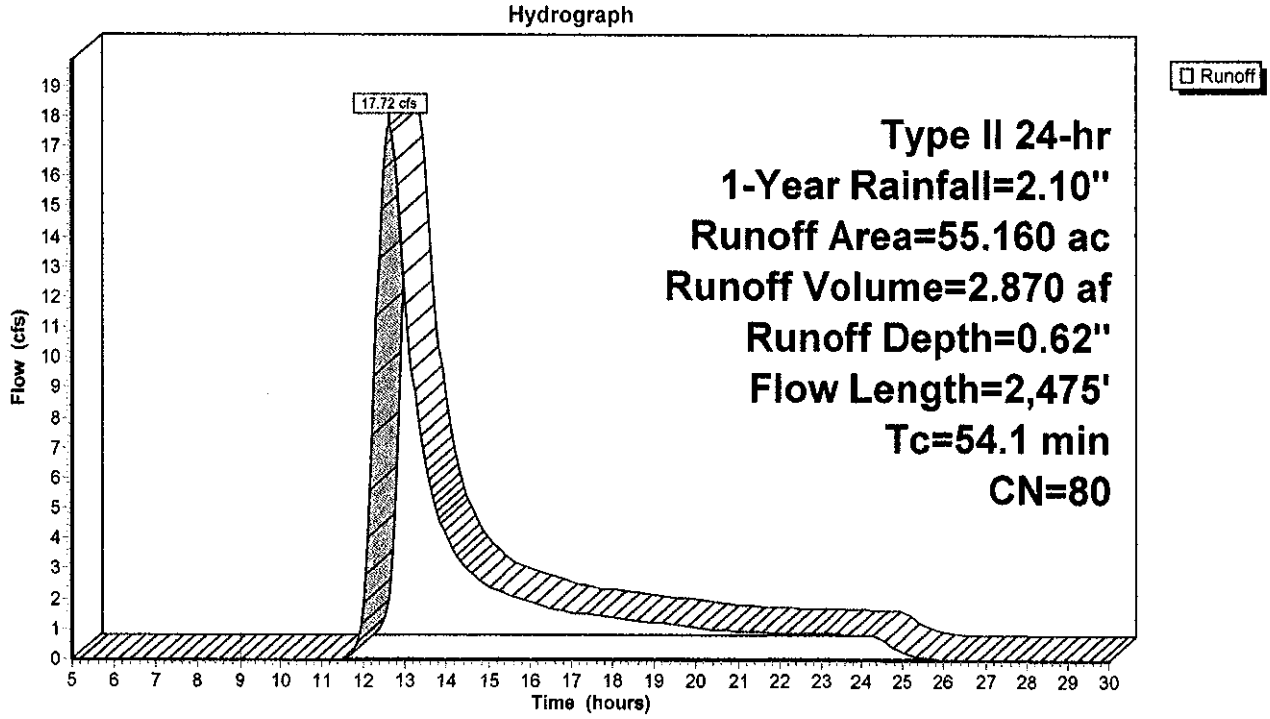
Runoff = 17.72 cfs @ 12.60 hrs, Volume= 2.870 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.10"

	Area (ac)	CN	Description
*	27.400	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	9.150	80	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good, HSG D
*	2.960	80	Schoharie (SaA) - Open Space - Golf Course and Lawn, Good, HSG D
*	9.380	80	Urban Odessa (Ut) - Open Space - Golf Course and Lawn, Good, HSG D
*	6.270	80	Cosad (Cv) - Open Space - Golf Course and Lawn, Good, HSG D
	55.160	80	Weighted Average
	55.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	150	0.0167	0.15		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
37.6	2,325	0.0041	1.03		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
54.1	2,475	Total			

Subcatchment DA2: Offsite East Towards Audubon Par 3



Summary for Subcatchment DA3: Direct to Ellicott Creek

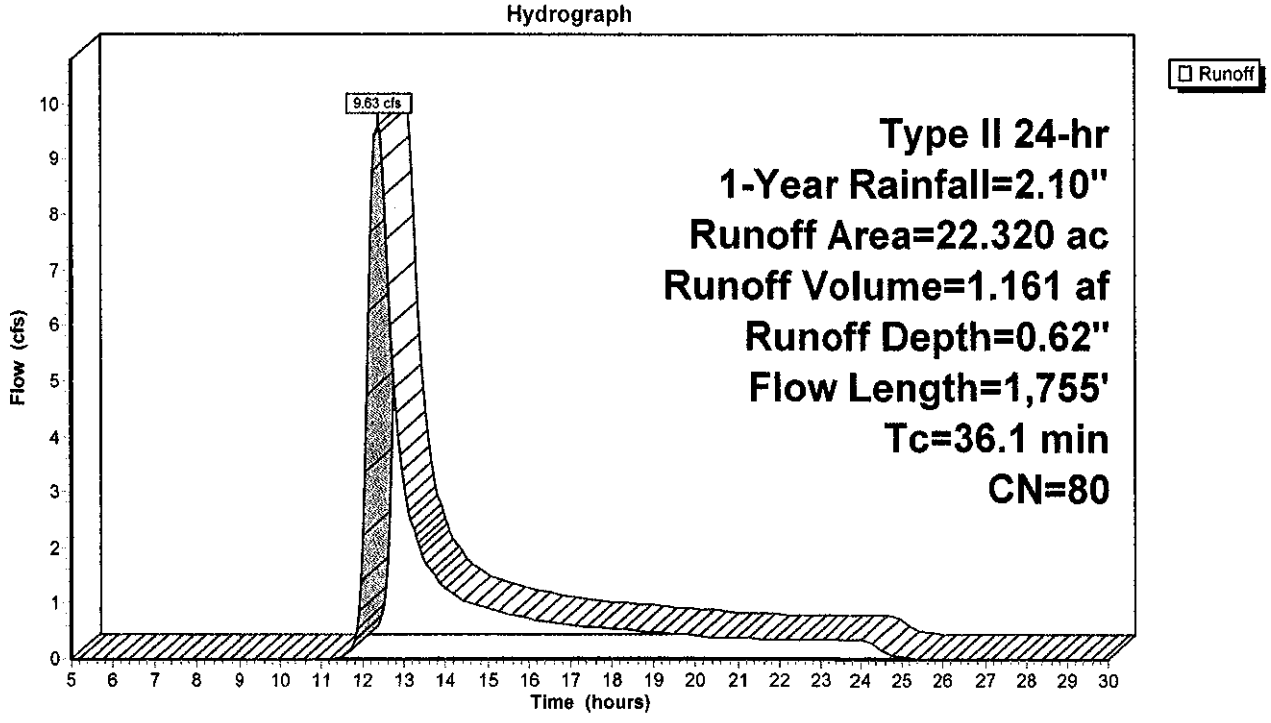
Runoff = 9.63 cfs @ 12.35 hrs, Volume= 1.161 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.10"

	Area (ac)	CN	Description
*	6.800	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	5.830	80	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good, HSG D
*	9.690	80	Cosad (Cv) - Open Space - Golf Course and Lawn, Good, HSG D
	22.320	80	Weighted Average
	22.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	150	0.0167	0.15		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
19.6	1,605	0.0072	1.37		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
36.1	1,755	Total			

Subcatchment DA3: Direct to Ellicott Creek



Summary for Subcatchment DA4: Offsite West Towards Frankhauser Rd

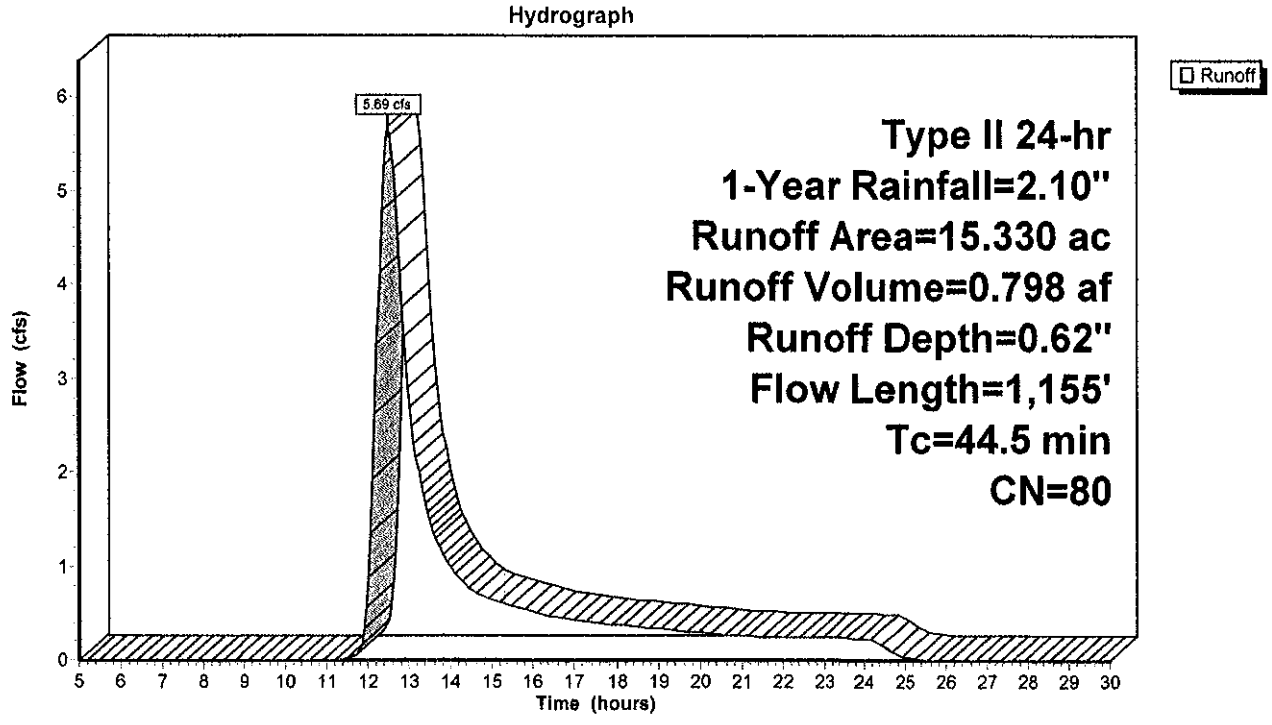
Runoff = 5.69 cfs @ 12.47 hrs, Volume= 0.798 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.10"

	Area (ac)	CN	Description
*	8.970	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	1.530	80	Claverack (CrA) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.830	80	Cosad (Cv) - Open Space - Golf Course and Lawn, Good, HSG D
	15.330	80	Weighted Average
	15.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	150	0.0047	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
17.1	1,005	0.0037	0.98		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
44.5	1,155	Total			

Subcatchment DA4: Offsite West Towards Frankhauser Rd



Summary for Subcatchment DA5: Offsite West Towards Frankhauser Rd

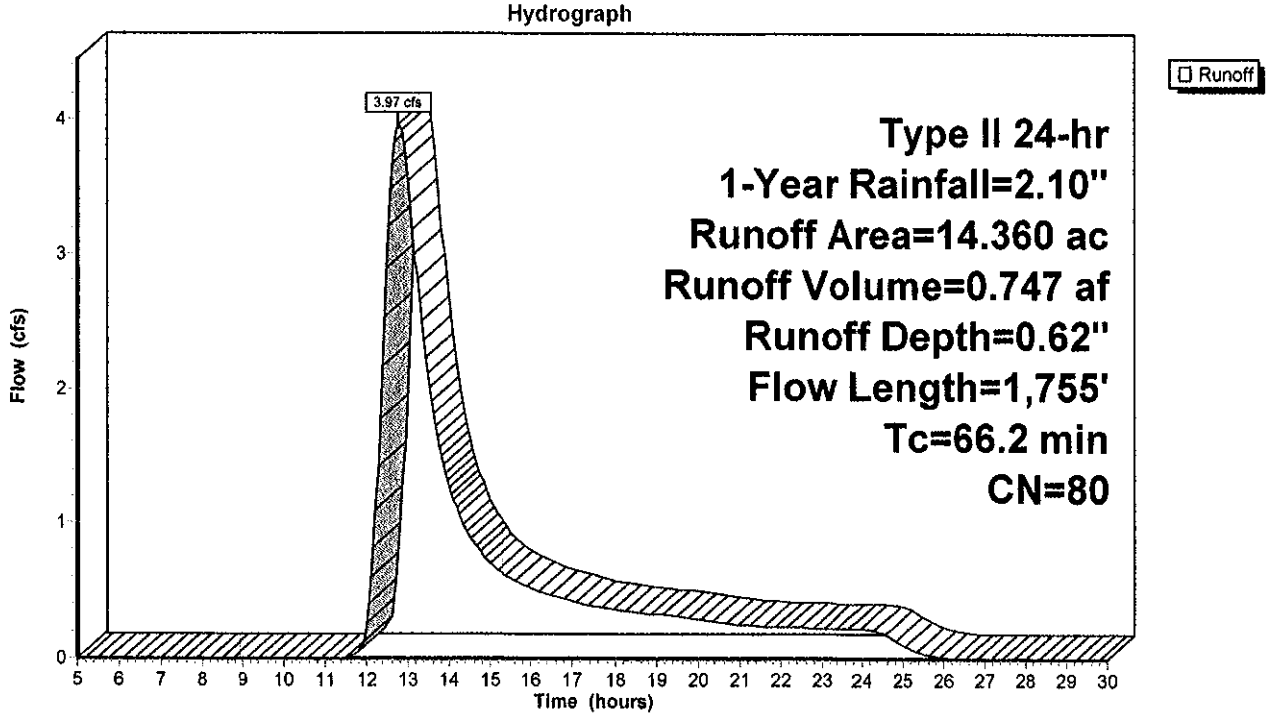
Runoff = 3.97 cfs @ 12.76 hrs, Volume= 0.747 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.10"

	Area (ac)	CN	Description
*	5.350	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	0.400	80	Schoharie (SaA) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.440	80	Claverack (CrA) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.170	80	Lakemont (La) - Open Space - Golf Course and Lawn, Good, HSG D
	14.360	80	Weighted Average
	14.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.5	150	0.0020	0.06		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
27.7	1,605	0.0036	0.97		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
66.2	1,755	Total			

Subcatchment DA5: Offsite West Towards Frankhauser Rd



Summary for Subcatchment DA6: Direct to Ellicott Creek

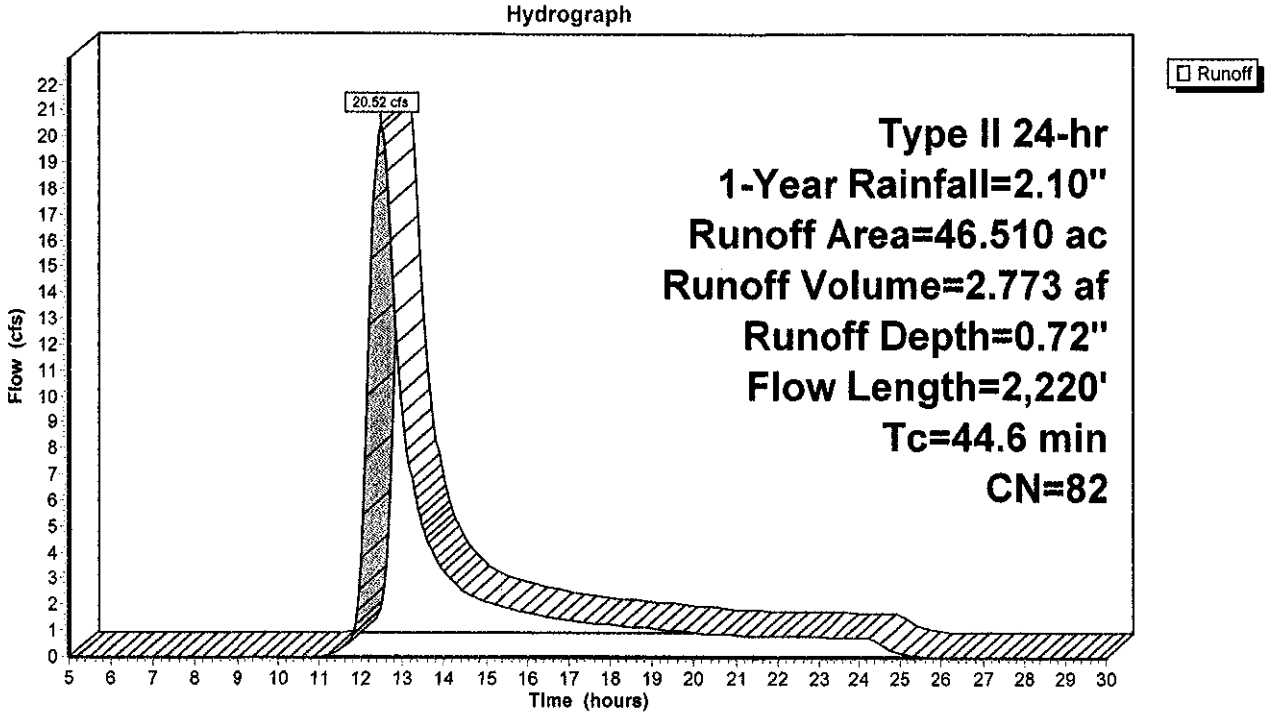
Runoff = 20.52 cfs @ 12.45 hrs, Volume= 2.773 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.10"

	Area (ac)	CN	Description
*	19.430	80	Claverack (CrA) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.650	98	Claverack (CrA) - Open Space - Imervious - Pavement and Roof, HSG D
*	0.740	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	8.310	80	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good, HSG D
*	9.460	80	Teel (Te) - Open Space - Golf Course and Lawn, Good, HSG D
*	3.920	80	Cosad (Cv) - Open Space - Golf Course and Lawn, Good, HSG D
	46.510	82	Weighted Average
	41.860		90.00% Pervious Area
	4.650		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.7	150	0.0140	0.14		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
12.7	885	0.0052	1.16		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
2.2	375	0.0320	2.88		Shallow Concentrated Flow, C-D Unpaved Kv= 16.1 fps
12.0	810	0.0049	1.13		Shallow Concentrated Flow, D-E Unpaved Kv= 16.1 fps
44.6	2,220	Total			

Subcatchment DA6: Direct to Ellicott Creek

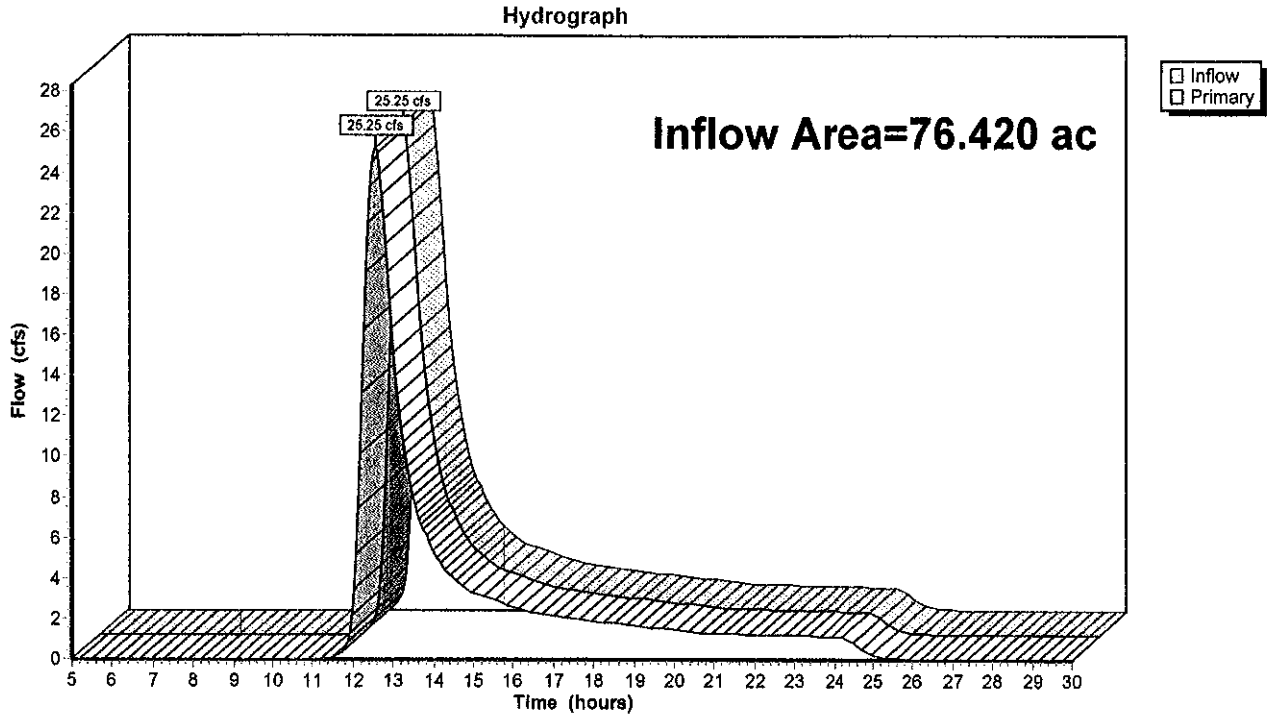


Summary for Link 1-2: Total Offsite To Audubon Par 3

Inflow Area = 76.420 ac, 0.00% Impervious, Inflow Depth = 0.62" for 1-Year event
Inflow = 25.25 cfs @ 12.53 hrs, Volume= 3.976 af
Primary = 25.25 cfs @ 12.53 hrs, Volume= 3.976 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Link 1-2: Total Offsite To Audubon Par 3

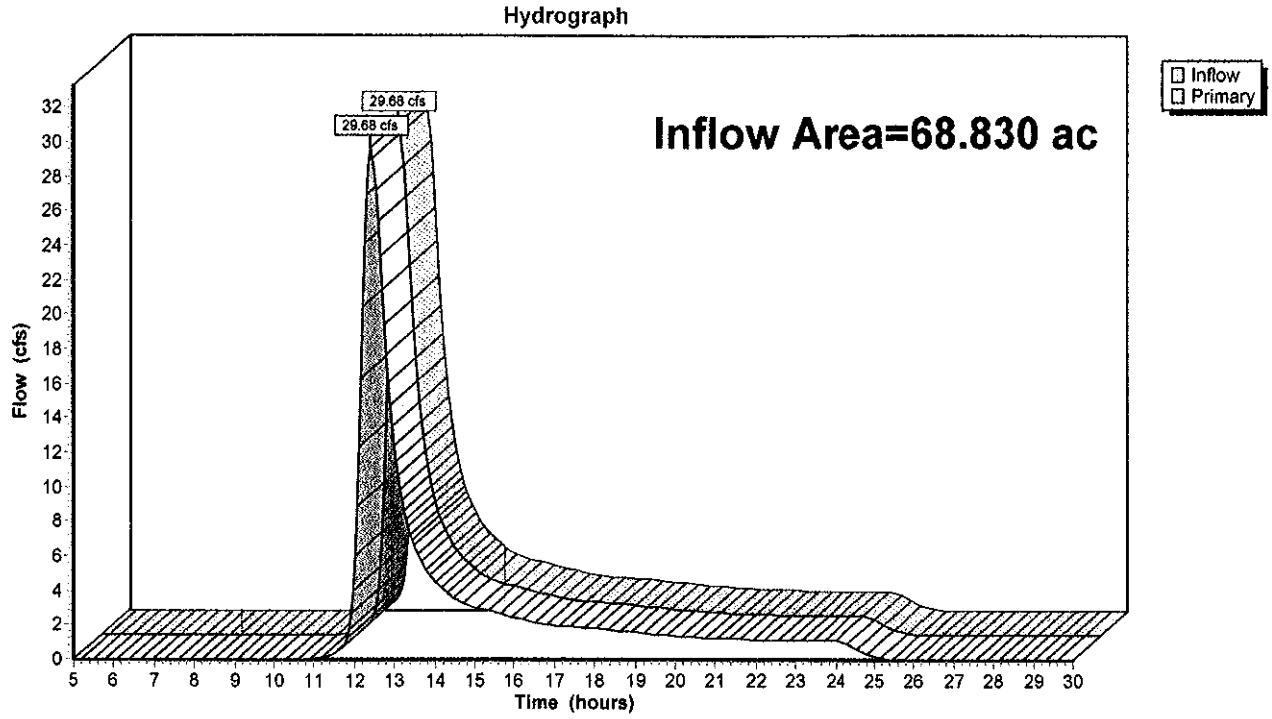


Summary for Link 3-6: Total to Ellicott Creek

Inflow Area = 68.830 ac, 6.76% Impervious, Inflow Depth = 0.69" for 1-Year event
Inflow = 29.68 cfs @ 12.42 hrs, Volume= 3.934 af
Primary = 29.68 cfs @ 12.42 hrs, Volume= 3.934 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Link 3-6: Total to Ellicott Creek

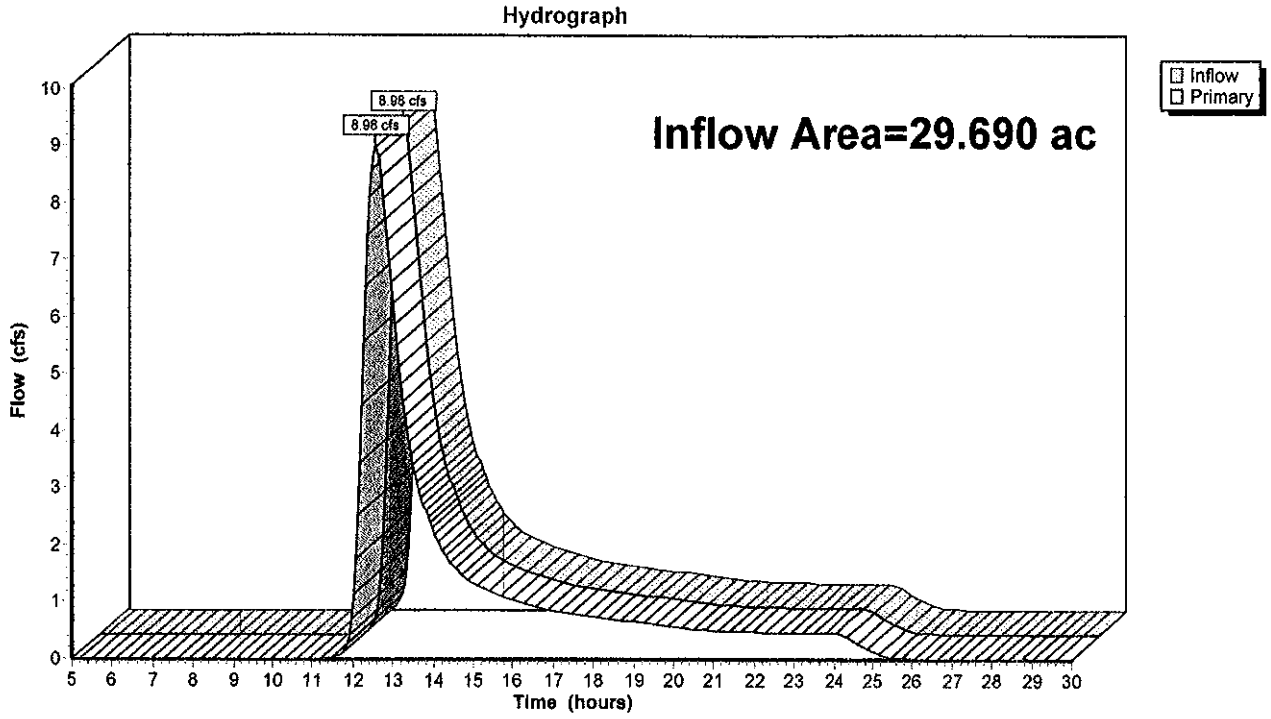


Summary for Link 4-5: Total Offsite towards Frankhauser Road

Inflow Area = 29.690 ac, 0.00% Impervious, Inflow Depth = 0.62" for 1-Year event
Inflow = 8.98 cfs @ 12.56 hrs, Volume= 1.545 af
Primary = 8.98 cfs @ 12.56 hrs, Volume= 1.545 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Link 4-5: Total Offsite towards Frankhauser Road



Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA1: Offsite East Towards Audubon Par 3 Runoff Area=21.260 ac 0.00% Impervious Runoff Depth=1.64"
Flow Length=870' Tc=40.6 min CN=80 Runoff=24.20 cfs 2.899 af

Subcatchment DA2: Offsite East Towards Audubon Par 3 Runoff Area=55.160 ac 0.00% Impervious Runoff Depth=1.64"
Flow Length=2,475' Tc=54.1 min CN=80 Runoff=51.08 cfs 7.522 af

Subcatchment DA3: Direct to Ellicott Creek Runoff Area=22.320 ac 0.00% Impervious Runoff Depth=1.64"
Flow Length=1,755' Tc=36.1 min CN=80 Runoff=27.56 cfs 3.044 af

Subcatchment DA4: Offsite West Towards Frankhauser Rd Runoff Area=15.330 ac 0.00% Impervious Runoff Depth=1.64"
Flow Length=1,155' Tc=44.5 min CN=80 Runoff=16.33 cfs 2.090 af

Subcatchment DA5: Offsite West Towards Frankhauser Rd Runoff Area=14.360 ac 0.00% Impervious Runoff Depth=1.64"
Flow Length=1,755' Tc=66.2 min CN=80 Runoff=11.44 cfs 1.958 af

Subcatchment DA6: Direct to Ellicott Creek Runoff Area=46.510 ac 10.00% Impervious Runoff Depth=1.78"
Flow Length=2,220' Tc=44.6 min CN=82 Runoff=54.44 cfs 6.909 af

Link 1-2: Total Offsite To Audubon Par 3 Inflow=72.63 cfs 10.421 af
Primary=72.63 cfs 10.421 af

Link 3-6: Total to Ellicott Creek Inflow=80.61 cfs 9.953 af
Primary=80.61 cfs 9.953 af

Link 4-5: Total Offsite towards Frankhauser Road Inflow=25.97 cfs 4.049 af
Primary=25.97 cfs 4.049 af

Total Runoff Area = 174.940 ac Runoff Volume = 24.422 af Average Runoff Depth = 1.68"
97.34% Pervious = 170.290 ac 2.66% Impervious = 4.650 ac

Summary for Subcatchment DA1: Offsite East Towards Audubon Par 3

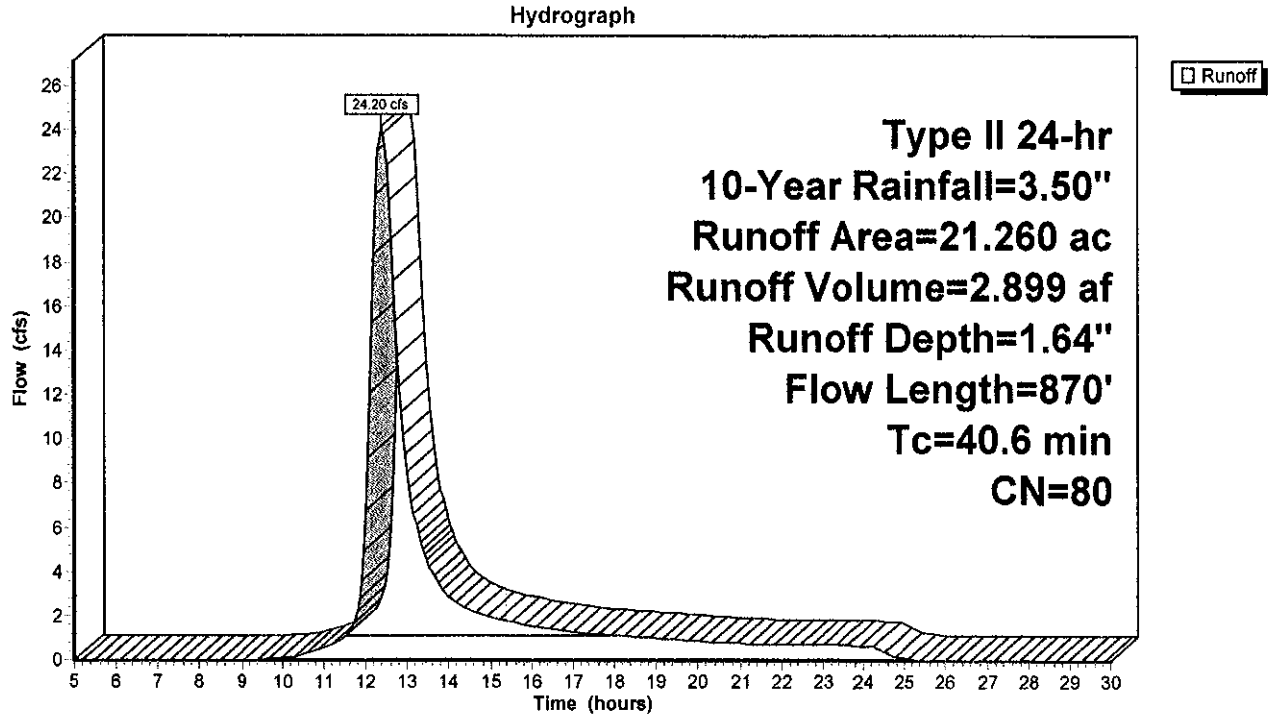
Runoff = 24.20 cfs @ 12.39 hrs, Volume= 2.899 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.50"

	Area (ac)	CN	Description
*	15.930	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.330	80	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good, HSG D
*	1.000	80	Schoharie (SaA) - Open Space - Golf Course and Lawn, Good, HSG D
	21.260	80	Weighted Average
	21.260		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	150	0.0047	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
13.2	720	0.0032	0.91		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
40.6	870	Total			

Subcatchment DA1: Offsite East Towards Audubon Par 3



Summary for Subcatchment DA2: Offsite East Towards Audubon Par 3

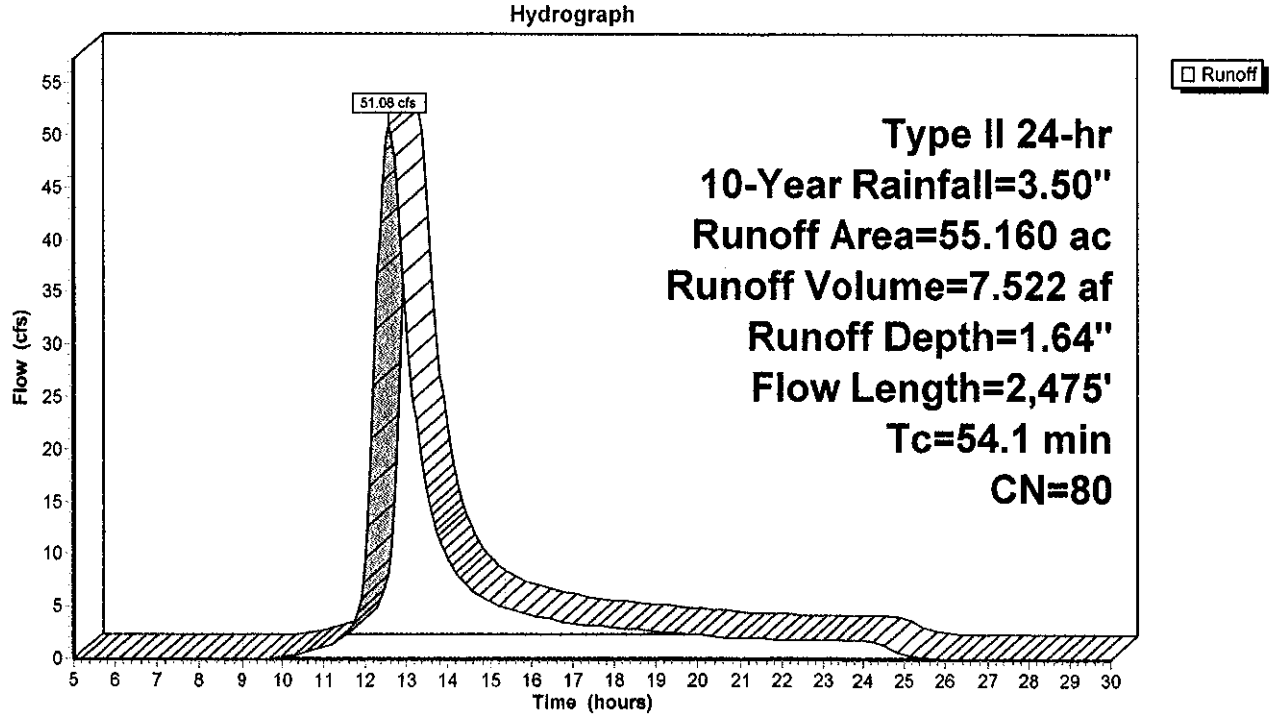
Runoff = 51.08 cfs @ 12.56 hrs, Volume= 7.522 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.50"

	Area (ac)	CN	Description
*	27.400	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	9.150	80	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good, HSG D
*	2.960	80	Schoharie (SaA) - Open Space - Golf Course and Lawn, Good, HSG D
*	9.380	80	Urban Odessa (Ut) - Open Space - Golf Course and Lawn, Good, HSG D
*	6.270	80	Cosad (Cv) - Open Space - Golf Course and Lawn, Good, HSG D
	55.160	80	Weighted Average
	55.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	150	0.0167	0.15		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
37.6	2,325	0.0041	1.03		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
54.1	2,475	Total			

Subcatchment DA2: Offsite East Towards Audubon Par 3



Summary for Subcatchment DA3: Direct to Ellicott Creek

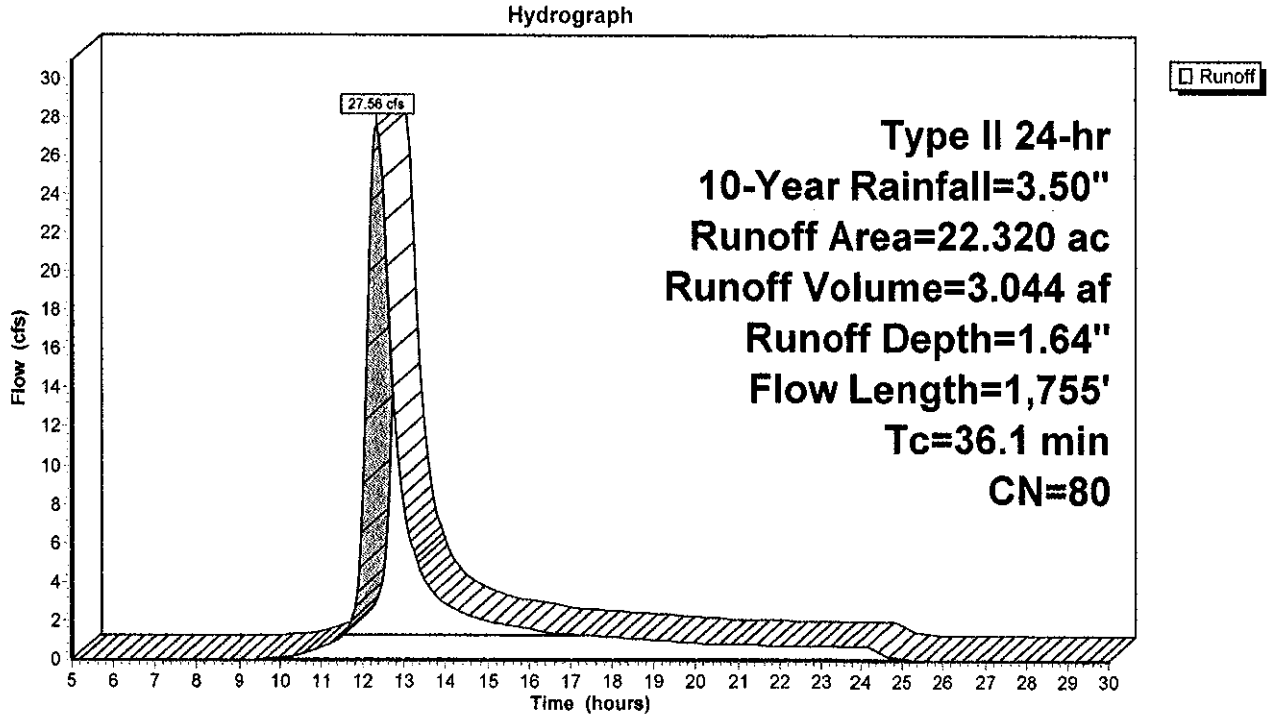
Runoff = 27.56 cfs @ 12.32 hrs, Volume= 3.044 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.50"

	Area (ac)	CN	Description
*	6.800	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	5.830	80	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good, HSG D
*	9.690	80	Cosad (Cv) - Open Space - Golf Course and Lawn, Good, HSG D
	22.320	80	Weighted Average
	22.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	150	0.0167	0.15		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
19.6	1,605	0.0072	1.37		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
36.1	1,755	Total			

Subcatchment DA3: Direct to Ellicott Creek



Summary for Subcatchment DA4: Offsite West Towards Frankhauser Rd

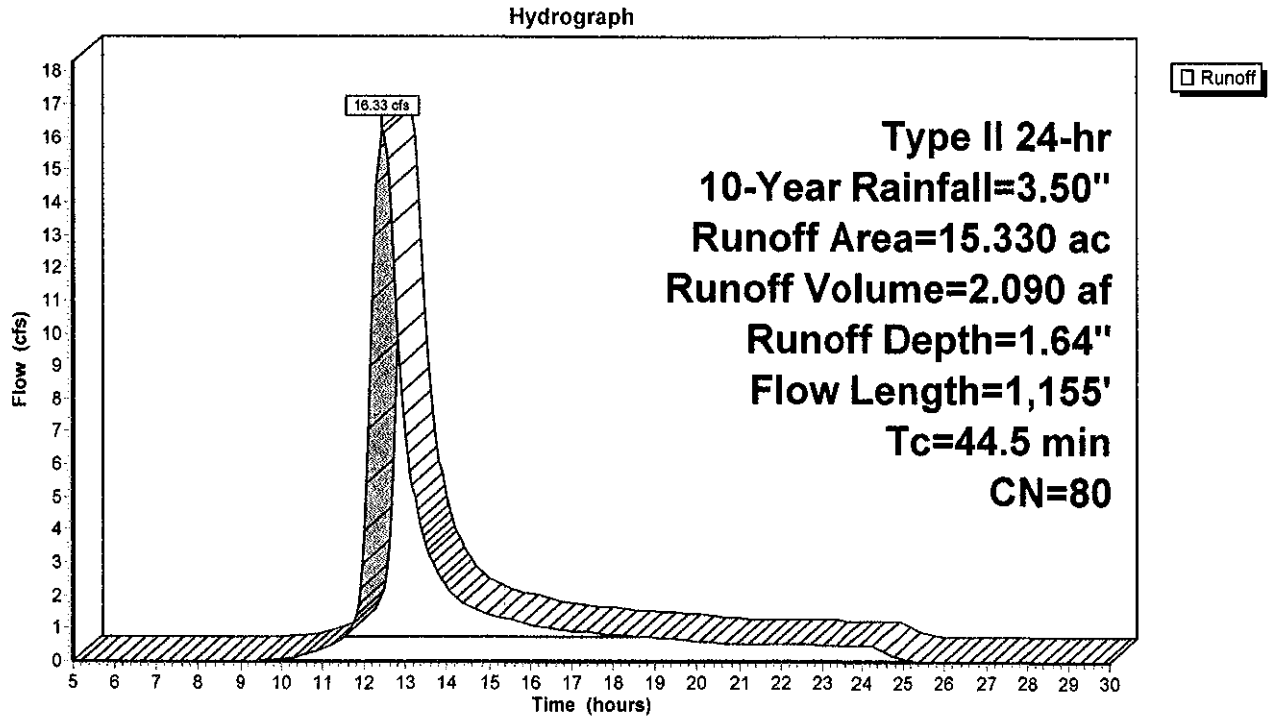
Runoff = 16.33 cfs @ 12.43 hrs, Volume= 2.090 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.50"

	Area (ac)	CN	Description
*	8.970	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	1.530	80	Claverack (CrA) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.830	80	Cosad (Cv) - Open Space - Golf Course and Lawn, Good, HSG D
	15.330	80	Weighted Average
	15.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	150	0.0047	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
17.1	1,005	0.0037	0.98		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
44.5	1,155	Total			

Subcatchment DA4: Offsite West Towards Frankhauser Rd



Summary for Subcatchment DA5: Offsite West Towards Frankhauser Rd

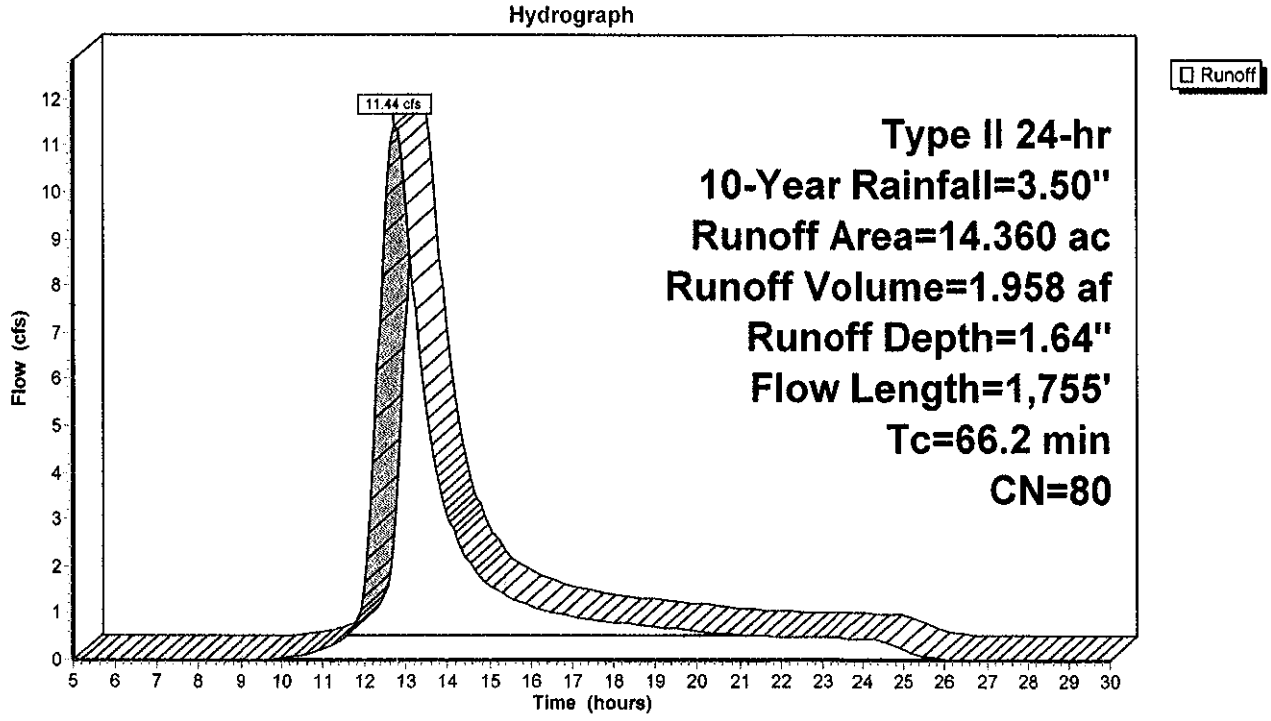
Runoff = 11.44 cfs @ 12.72 hrs, Volume= 1.958 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.50"

	Area (ac)	CN	Description
*	5.350	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	0.400	80	Schoharie (SaA) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.440	80	Claverack (CrA) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.170	80	Lakemont (La) - Open Space - Golf Course and Lawn, Good, HSG D
	14.360	80	Weighted Average
	14.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.5	150	0.0020	0.06		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
27.7	1,605	0.0036	0.97		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
66.2	1,755	Total			

Subcatchment DA5: Offsite West Towards Frankhauser Rd



Summary for Subcatchment DA6: Direct to Ellicott Creek

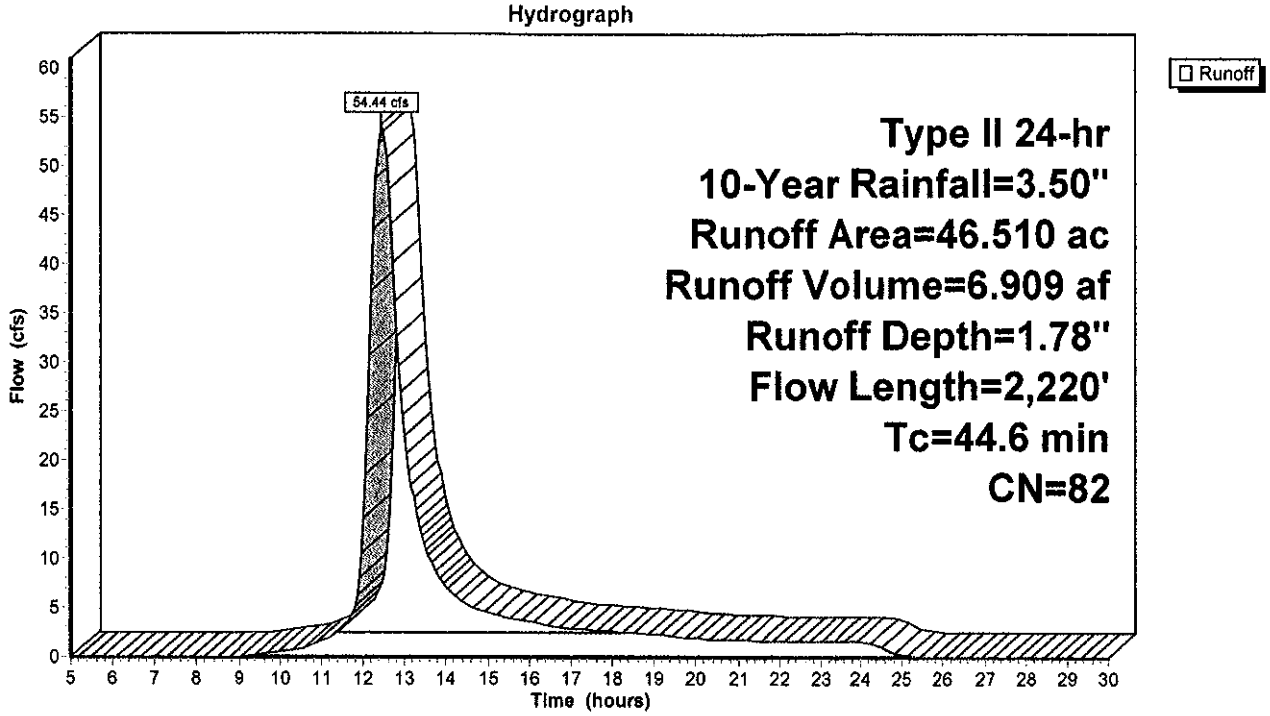
Runoff = 54.44 cfs @ 12.43 hrs, Volume= 6.909 af, Depth= 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.50"

	Area (ac)	CN	Description
*	19.430	80	Claverack (CrA) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.650	98	Claverack (CrA) - Open Space - Imervious - Pavement and Roof, HSG D
*	0.740	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	8.310	80	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good, HSG D
*	9.460	80	Teel (Te) - Open Space - Golf Course and Lawn, Good, HSG D
*	3.920	80	Cosad (Cv) - Open Space - Golf Course and Lawn, Good, HSG D
	46.510	82	Weighted Average
	41.860		90.00% Pervious Area
	4.650		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.7	150	0.0140	0.14		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
12.7	885	0.0052	1.16		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
2.2	375	0.0320	2.88		Shallow Concentrated Flow, C-D Unpaved Kv= 16.1 fps
12.0	810	0.0049	1.13		Shallow Concentrated Flow, D-E Unpaved Kv= 16.1 fps
44.6	2,220	Total			

Subcatchment DA6: Direct to Ellicott Creek

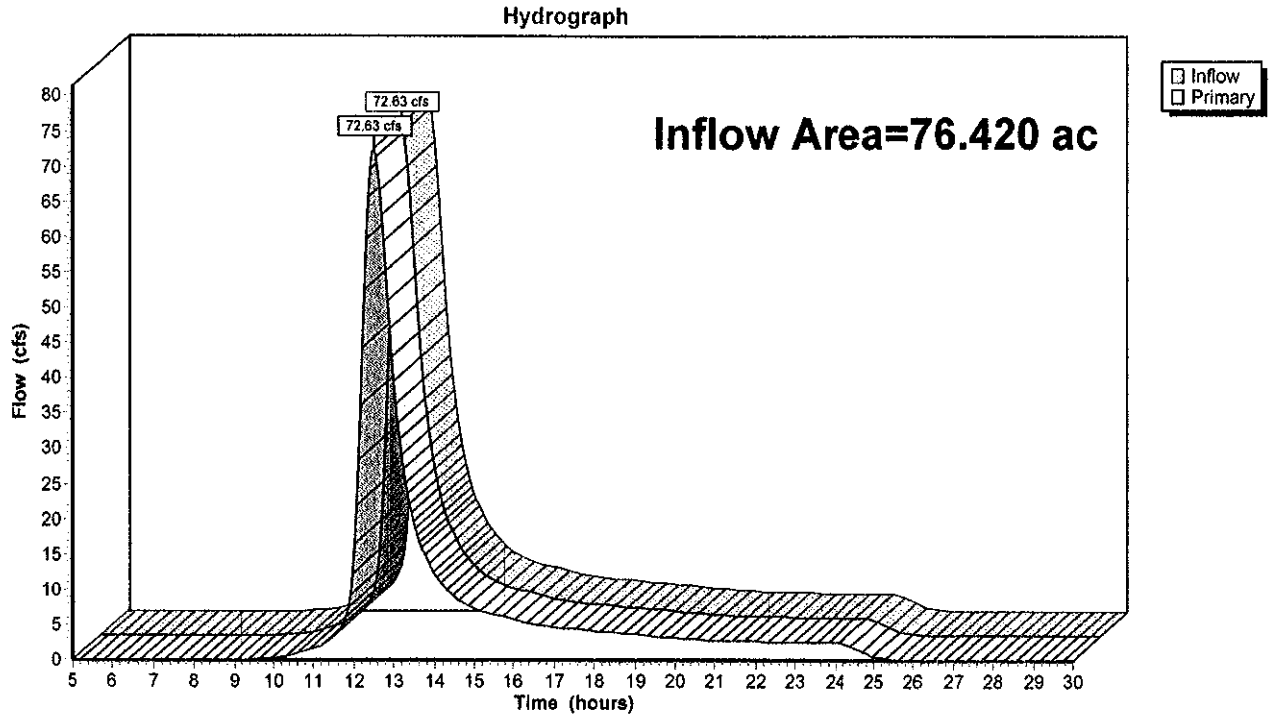


Summary for Link 1-2: Total Offsite To Audubon Par 3

Inflow Area = 76.420 ac, 0.00% Impervious, Inflow Depth = 1.64" for 10-Year event
Inflow = 72.63 cfs @ 12.50 hrs, Volume= 10.421 af
Primary = 72.63 cfs @ 12.50 hrs, Volume= 10.421 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Link 1-2: Total Offsite To Audubon Par 3

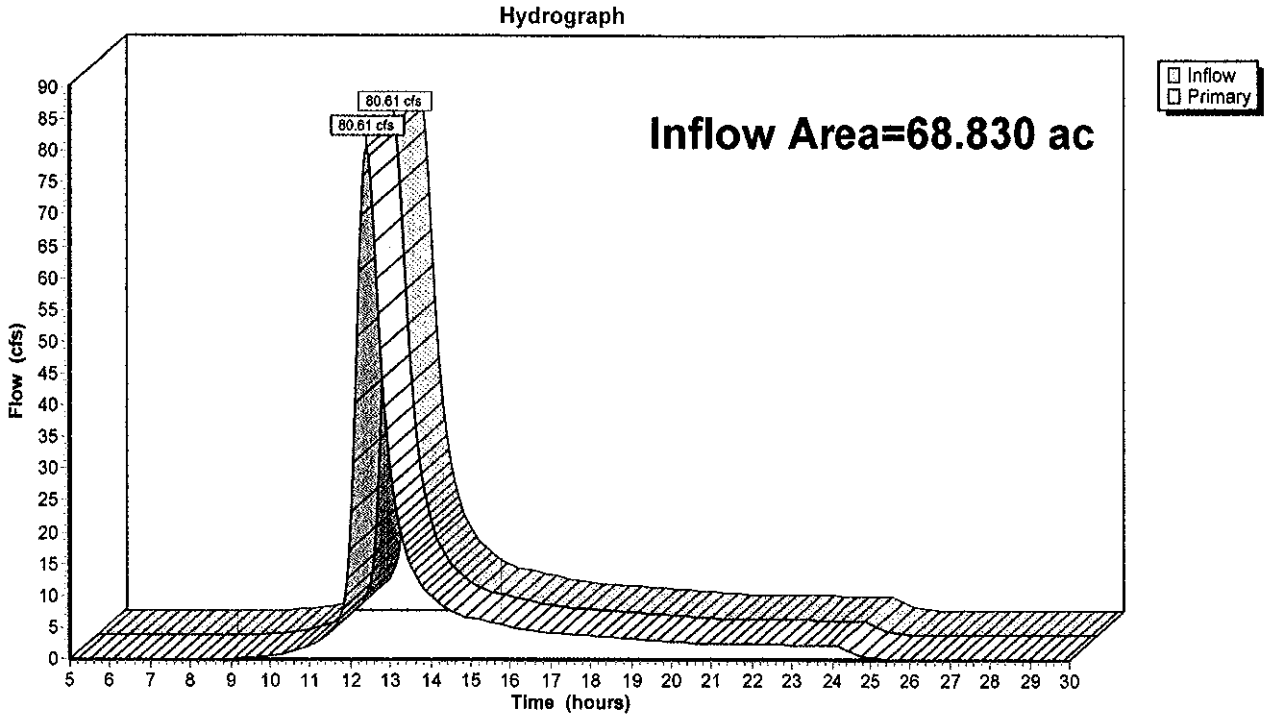


Summary for Link 3-6: Total to Ellicott Creek

Inflow Area = 68.830 ac, 6.76% Impervious, Inflow Depth = 1.74" for 10-Year event
Inflow = 80.61 cfs @ 12.39 hrs, Volume= 9.953 af
Primary = 80.61 cfs @ 12.39 hrs, Volume= 9.953 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Link 3-6: Total to Ellicott Creek

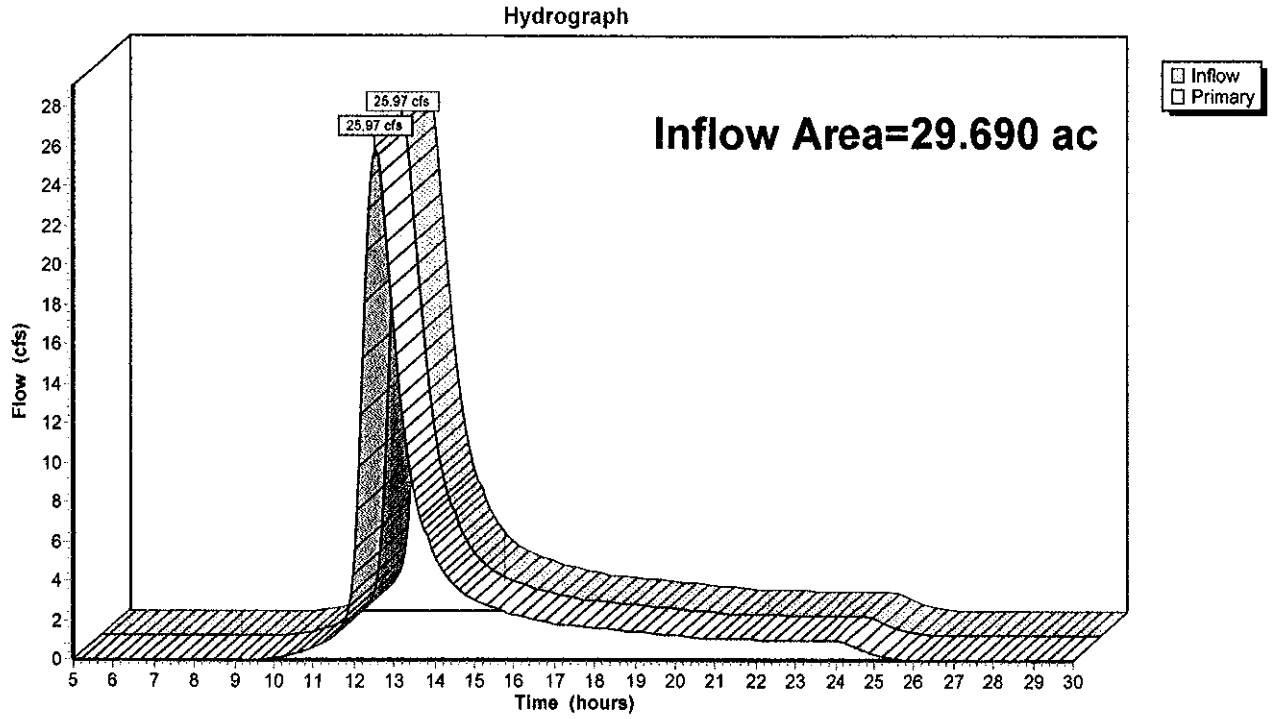


Summary for Link 4-5: Total Offsite towards Frankhauser Road

Inflow Area = 29.690 ac, 0.00% Impervious, Inflow Depth = 1.64" for 10-Year event
Inflow = 25.97 cfs @ 12.52 hrs, Volume= 4.049 af
Primary = 25.97 cfs @ 12.52 hrs, Volume= 4.049 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Link 4-5: Total Offsite towards Frankhauser Road



Time span=5.00-30.00 hrs, dt=0.05 hrs, 501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA1: Offsite East Towards Audubon Par 3 Runoff Area=21.260 ac 0.00% Impervious Runoff Depth=2.72"
Flow Length=870' Tc=40.6 min CN=80 Runoff=40.80 cfs 4.817 af

Subcatchment DA2: Offsite East Towards Audubon Par 3 Runoff Area=55.160 ac 0.00% Impervious Runoff Depth=2.72"
Flow Length=2,475' Tc=54.1 min CN=80 Runoff=86.29 cfs 12.499 af

Subcatchment DA3: Direct to Ellicott Creek Runoff Area=22.320 ac 0.00% Impervious Runoff Depth=2.72"
Flow Length=1,755' Tc=36.1 min CN=80 Runoff=46.44 cfs 5.058 af

Subcatchment DA4: Offsite West Towards Frankhauser Rd Runoff Area=15.330 ac 0.00% Impervious Runoff Depth=2.72"
Flow Length=1,155' Tc=44.5 min CN=80 Runoff=27.61 cfs 3.474 af

Subcatchment DA5: Offsite West Towards Frankhauser Rd Runoff Area=14.360 ac 0.00% Impervious Runoff Depth=2.72"
Flow Length=1,755' Tc=66.2 min CN=80 Runoff=19.35 cfs 3.254 af

Subcatchment DA6: Direct to Ellicott Creek Runoff Area=46.510 ac 10.00% Impervious Runoff Depth=2.90"
Flow Length=2,220' Tc=44.6 min CN=82 Runoff=89.32 cfs 11.243 af

Link 1-2: Total Offsite To Audubon Par 3 Inflow=122.73 cfs 17.316 af
Primary=122.73 cfs 17.316 af

Link 3-6: Total to Ellicott Creek Inflow=133.46 cfs 16.301 af
Primary=133.46 cfs 16.301 af

Link 4-5: Total Offsite towards Frankhauser Road Inflow=43.94 cfs 6.728 af
Primary=43.94 cfs 6.728 af

Total Runoff Area = 174.940 ac Runoff Volume = 40.344 af Average Runoff Depth = 2.77"
97.34% Pervious = 170.290 ac 2.66% Impervious = 4.650 ac

Summary for Subcatchment DA1: Offsite East Towards Audubon Par 3

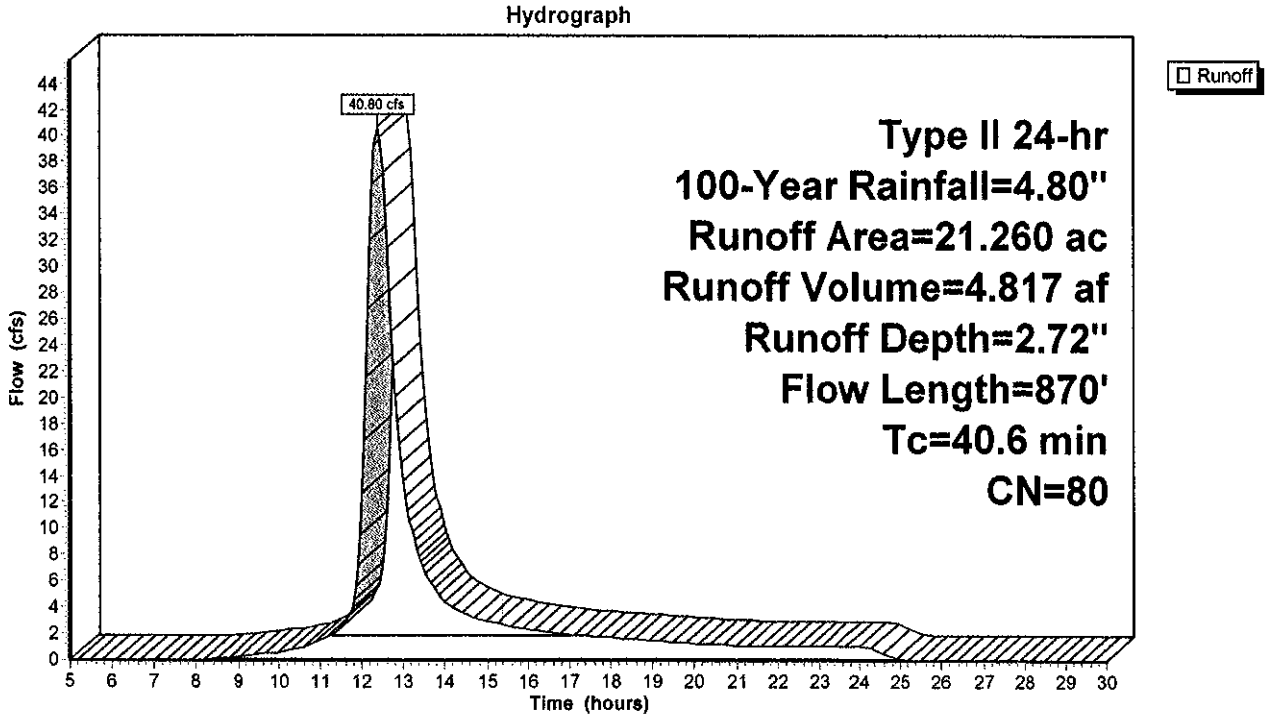
Runoff = 40.80 cfs @ 12.38 hrs, Volume= 4.817 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=4.80"

	Area (ac)	CN	Description
*	15.930	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.330	80	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good, HSG D
*	1.000	80	Schoharie (SaA) - Open Space - Golf Course and Lawn, Good, HSG D
	21.260	80	Weighted Average
	21.260		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	150	0.0047	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
13.2	720	0.0032	0.91		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
40.6	870	Total			

Subcatchment DA1: Offsite East Towards Audubon Par 3



Summary for Subcatchment DA2: Offsite East Towards Audubon Par 3

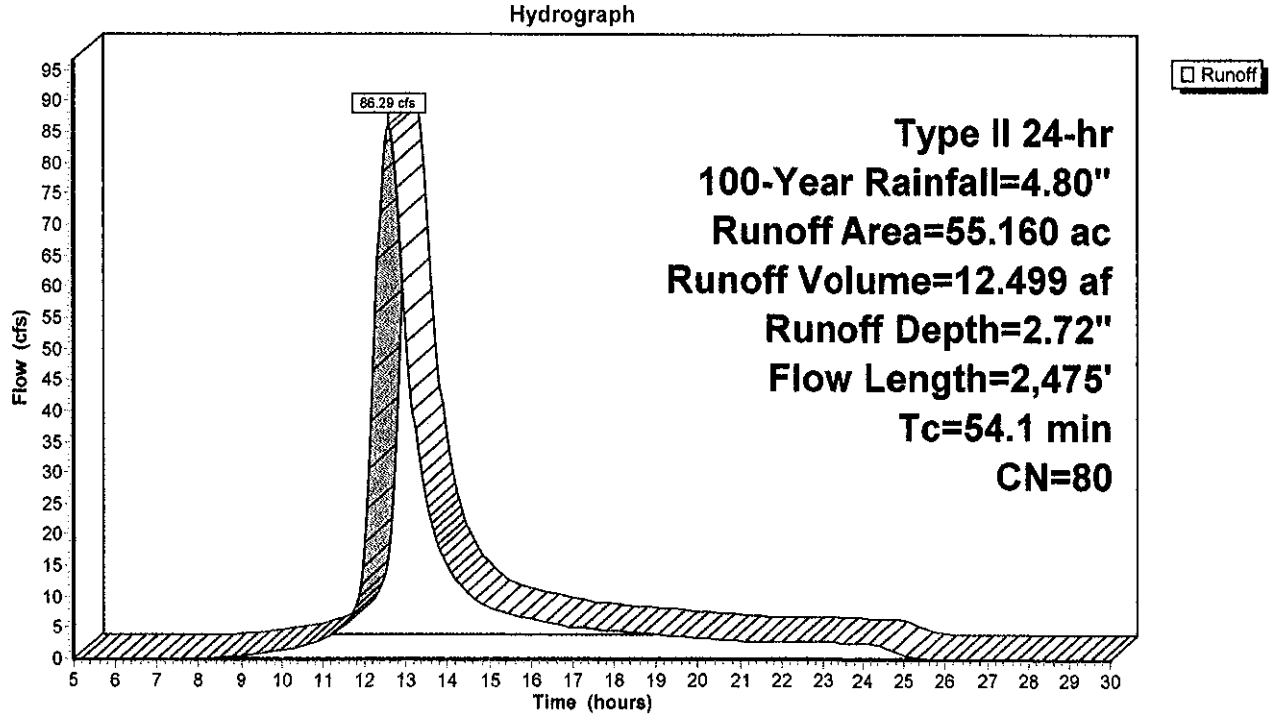
Runoff = 86.29 cfs @ 12.55 hrs, Volume= 12.499 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=4.80"

	Area (ac)	CN	Description
*	27.400	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	9.150	80	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good, HSG D
*	2.960	80	Schoharie (SaA) - Open Space - Golf Course and Lawn, Good, HSG D
*	9.380	80	Urban Odessa (Ut) - Open Space - Golf Course and Lawn, Good, HSG D
*	6.270	80	Cosad (Cv) - Open Space - Golf Course and Lawn, Good, HSG D
	55.160	80	Weighted Average
	55.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	150	0.0167	0.15		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
37.6	2,325	0.0041	1.03		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
54.1	2,475	Total			

Subcatchment DA2: Offsite East Towards Audubon Par 3



Summary for Subcatchment DA3: Direct to Ellicott Creek

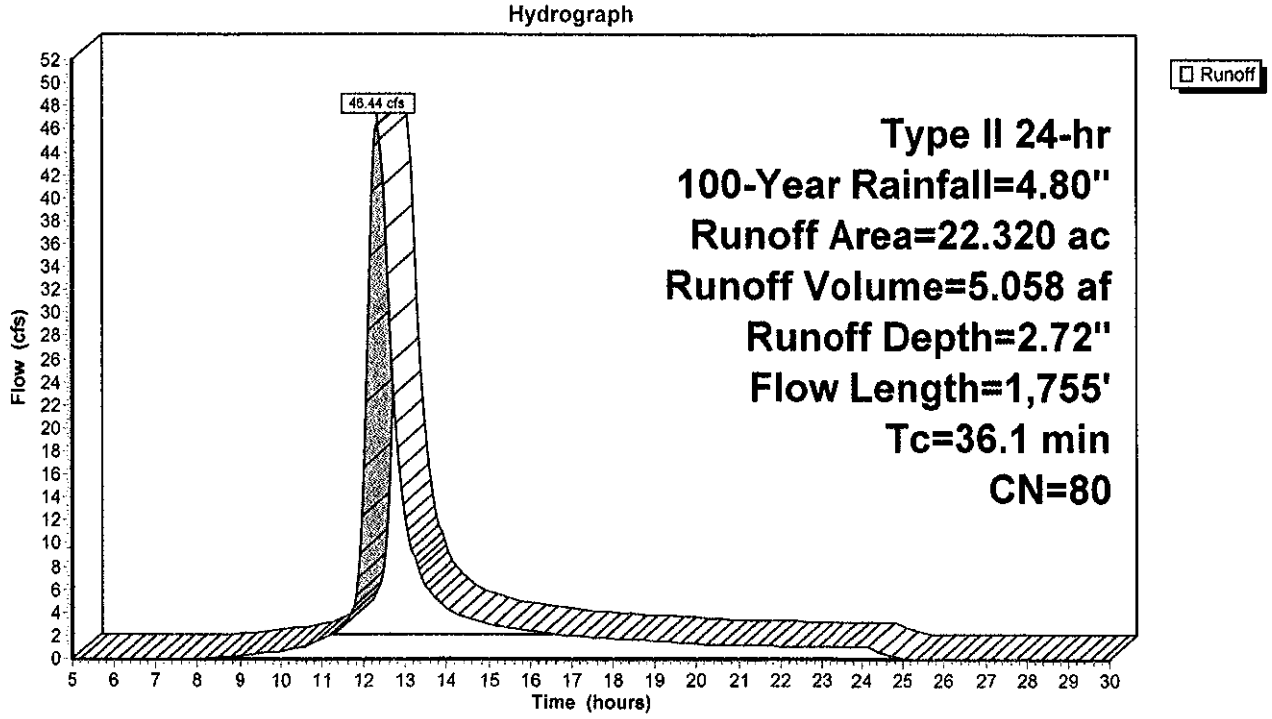
Runoff = 46.44 cfs @ 12.32 hrs, Volume= 5.058 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=4.80"

	Area (ac)	CN	Description
*	6.800	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	5.830	80	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good, HSG D
*	9.690	80	Cosad (Cv) - Open Space - Golf Course and Lawn, Good, HSG D
	22.320	80	Weighted Average
	22.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	150	0.0167	0.15		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
19.6	1,605	0.0072	1.37		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
36.1	1,755	Total			

Subcatchment DA3: Direct to Ellicott Creek



Summary for Subcatchment DA4: Offsite West Towards Frankhauser Rd

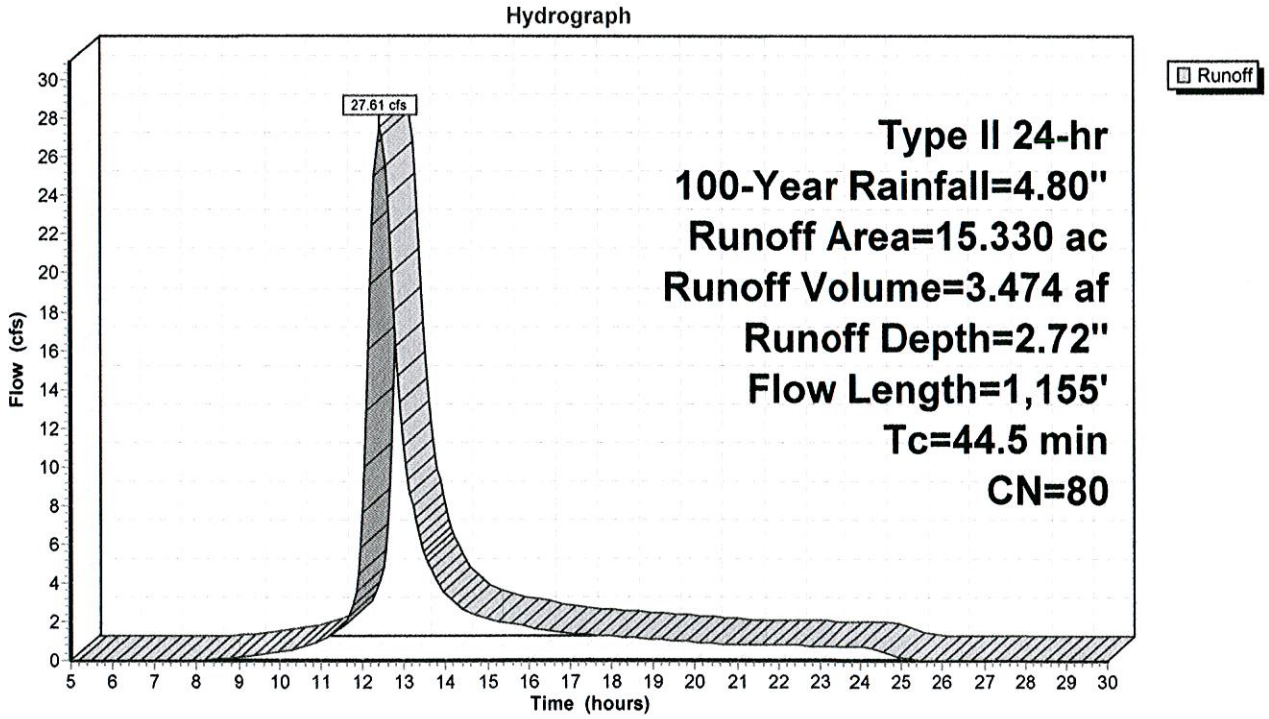
Runoff = 27.61 cfs @ 12.42 hrs, Volume= 3.474 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=4.80"

	Area (ac)	CN	Description
*	8.970	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	1.530	80	Claverack (CrA) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.830	80	Cosad (Cv) - Open Space - Golf Course and Lawn, Good, HSG D
	15.330	80	Weighted Average
	15.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	150	0.0047	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
17.1	1,005	0.0037	0.98		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
44.5	1,155	Total			

Subcatchment DA4: Offsite West Towards Frankhauser Rd



Summary for Subcatchment DA5: Offsite West Towards Frankhauser Rd

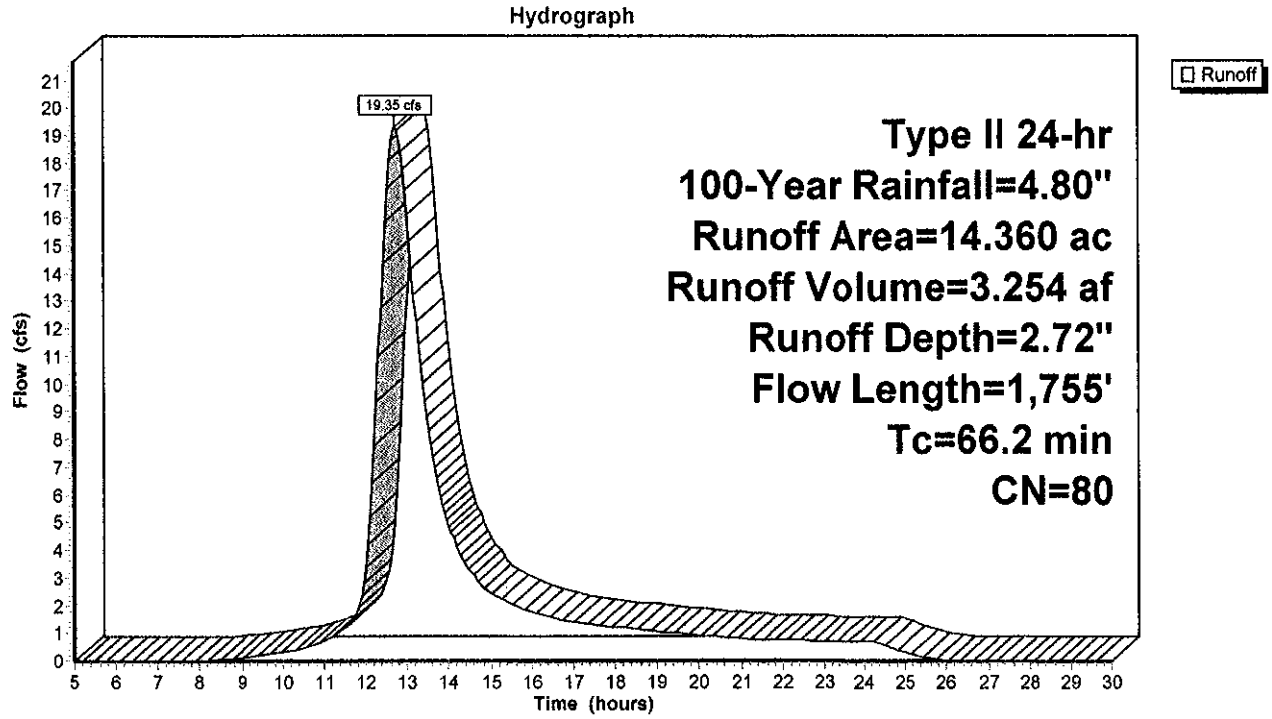
Runoff = 19.35 cfs @ 12.71 hrs, Volume= 3.254 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=4.80"

	Area (ac)	CN	Description
*	5.350	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	0.400	80	Schoharie (SaA) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.440	80	Claverack (CrA) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.170	80	Lakemont (La) - Open Space - Golf Course and Lawn, Good, HSG D
	14.360	80	Weighted Average
	14.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.5	150	0.0020	0.06		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
27.7	1,605	0.0036	0.97		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
66.2	1,755	Total			

Subcatchment DA5: Offsite West Towards Frankhauser Rd



Summary for Subcatchment DA6: Direct to Ellicott Creek

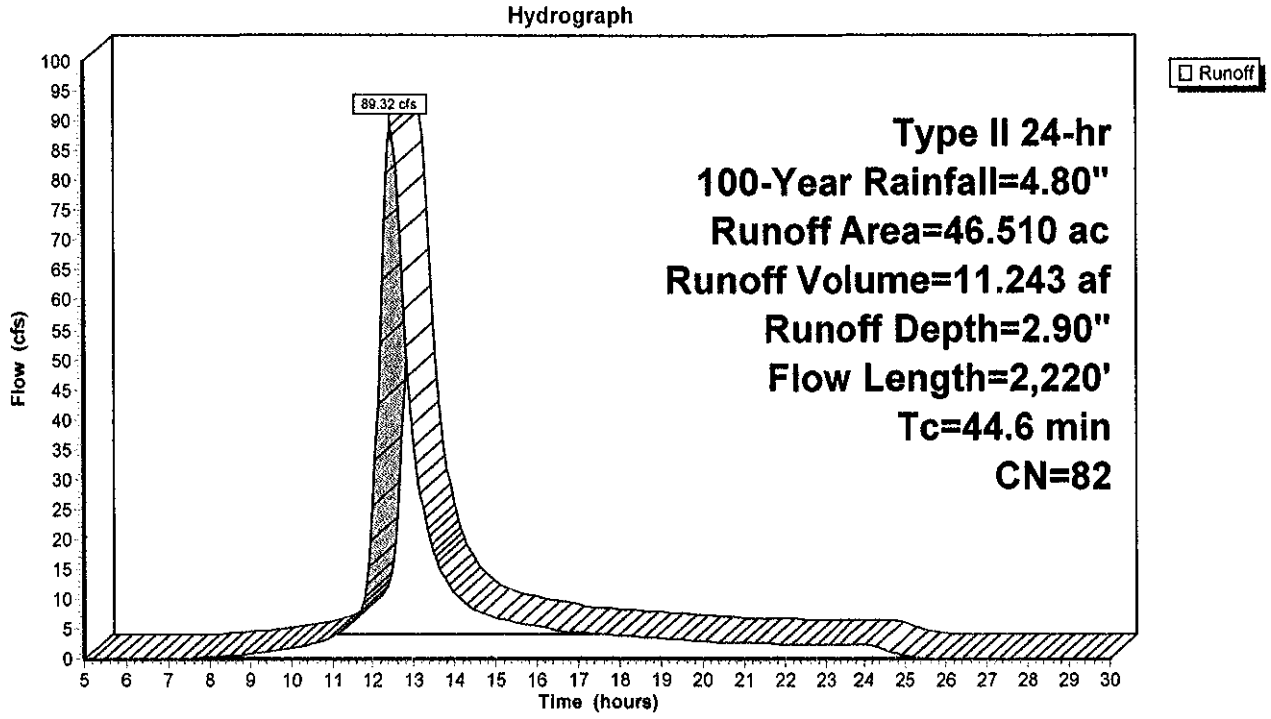
Runoff = 89.32 cfs @ 12.42 hrs, Volume= 11.243 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=4.80"

	Area (ac)	CN	Description
*	19.430	80	Claverack (CrA) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.650	98	Claverack (CrA) - Open Space - Imervious - Pavement and Roof, HSG D
*	0.740	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	8.310	80	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good, HSG D
*	9.460	80	Teel (Te) - Open Space - Golf Course and Lawn, Good, HSG D
*	3.920	80	Cosad (Cv) - Open Space - Golf Course and Lawn, Good, HSG D
	46.510	82	Weighted Average
	41.860		90.00% Pervious Area
	4.650		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.7	150	0.0140	0.14		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
12.7	885	0.0052	1.16		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
2.2	375	0.0320	2.88		Shallow Concentrated Flow, C-D Unpaved Kv= 16.1 fps
12.0	810	0.0049	1.13		Shallow Concentrated Flow, D-E Unpaved Kv= 16.1 fps
44.6	2,220	Total			

Subcatchment DA6: Direct to Ellicott Creek

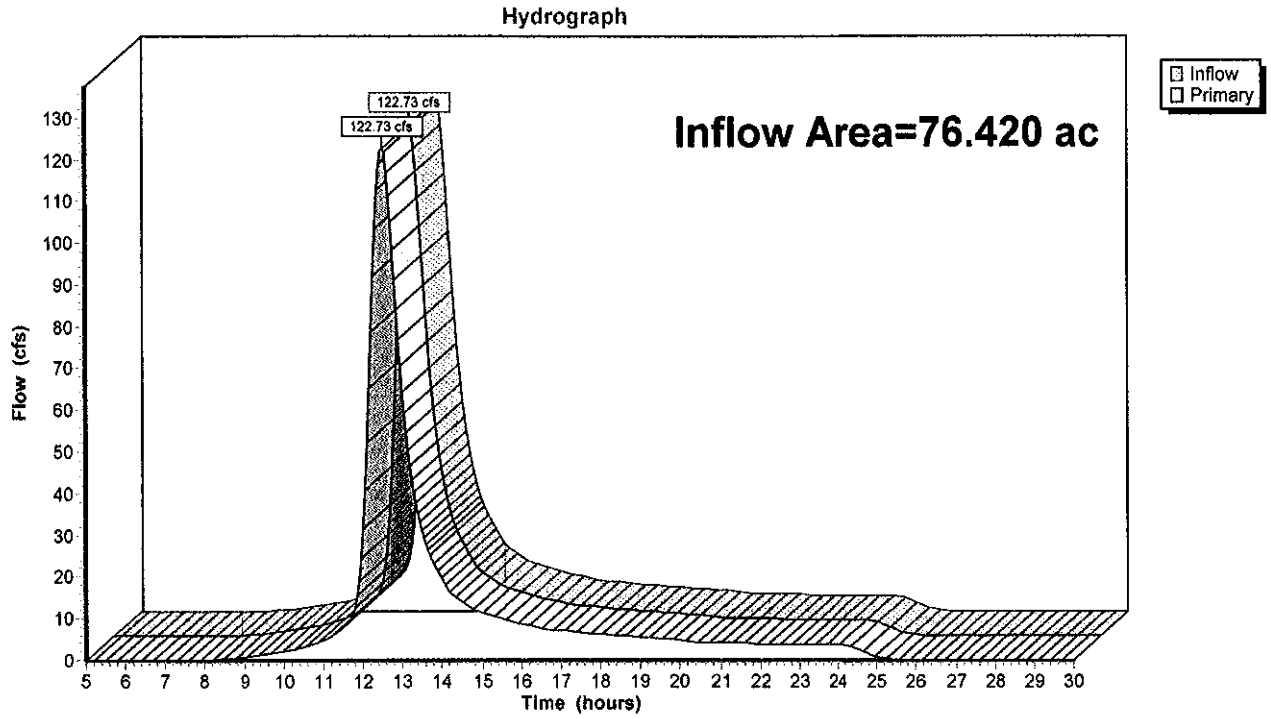


Summary for Link 1-2: Total Offsite To Audubon Par 3

Inflow Area = 76.420 ac, 0.00% Impervious, Inflow Depth = 2.72" for 100-Year event
Inflow = 122.73 cfs @ 12.48 hrs, Volume= 17.316 af
Primary = 122.73 cfs @ 12.48 hrs, Volume= 17.316 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Link 1-2: Total Offsite To Audubon Par 3

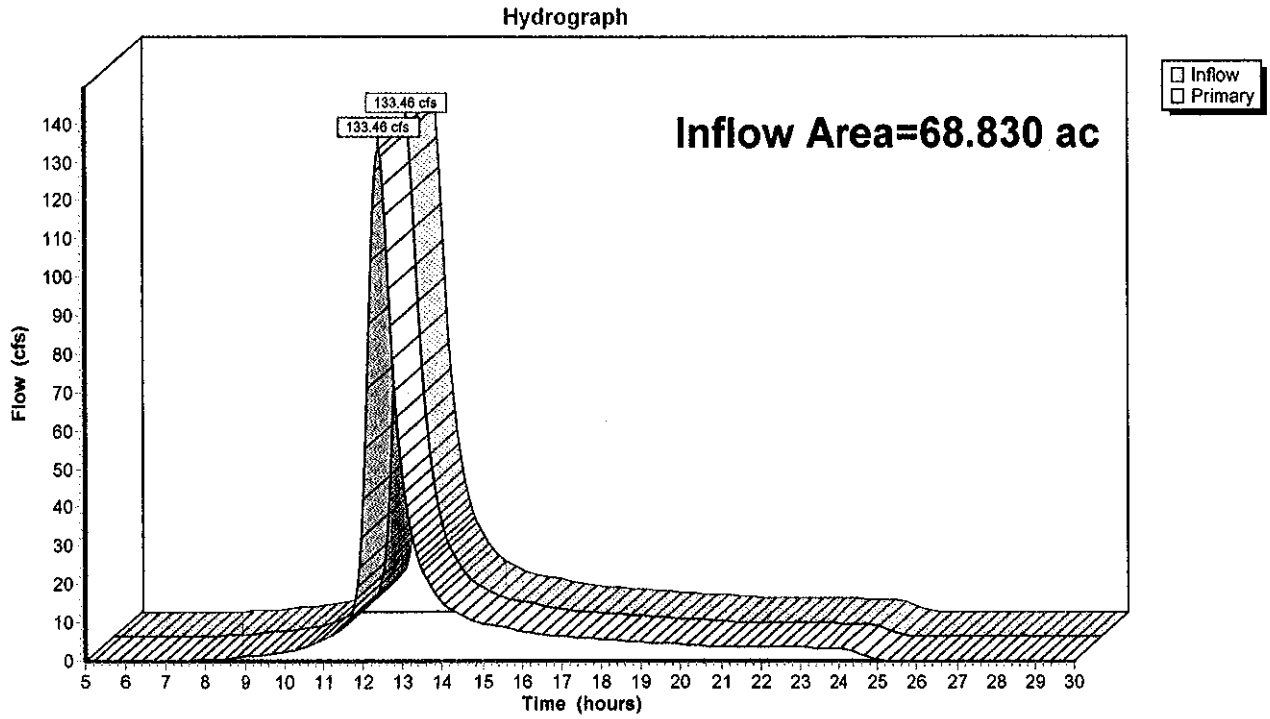


Summary for Link 3-6: Total to Ellicott Creek

Inflow Area = 68.830 ac, 6.76% Impervious, Inflow Depth = 2.84" for 100-Year event
Inflow = 133.46 cfs @ 12.38 hrs, Volume= 16.301 af
Primary = 133.46 cfs @ 12.38 hrs, Volume= 16.301 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Link 3-6: Total to Ellicott Creek

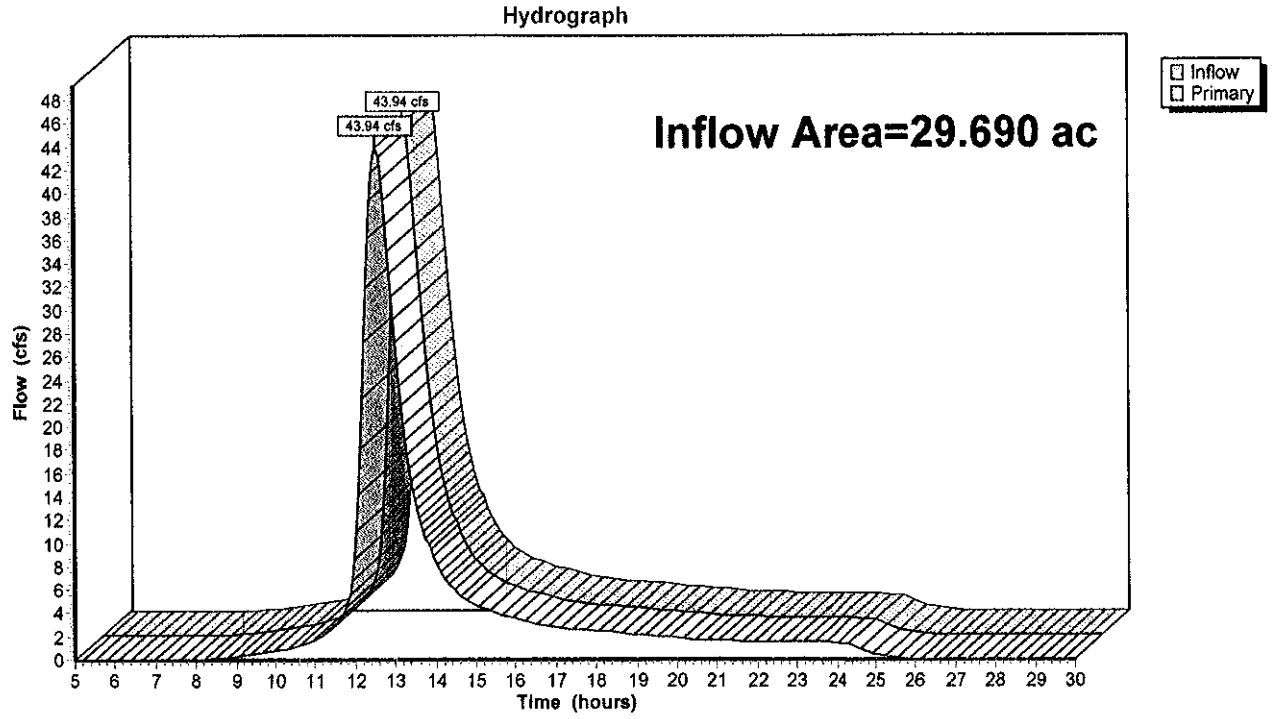


Summary for Link 4-5: Total Offsite towards Frankhauser Road

Inflow Area = 29.690 ac, 0.00% Impervious, Inflow Depth = 2.72" for 100-Year event
Inflow = 43.94 cfs @ 12.51 hrs, Volume= 6.728 af
Primary = 43.94 cfs @ 12.51 hrs, Volume= 6.728 af, Atten= 0%, Lag= 0.0 min

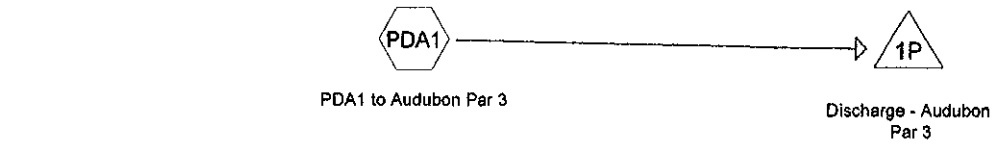
Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

Link 4-5: Total Offsite towards Frankhauser Road



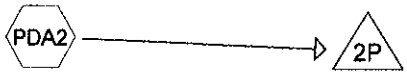
APPENDIX B

POST DEVELOPMENT CALCULATIONS



PDA1 to Audubon Par 3

Discharge - Audubon Par 3



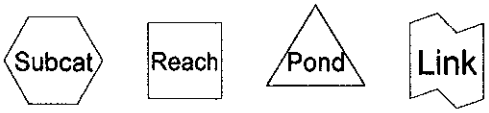
PDA2 to Lake

Lake - Discharge to Ellicott Creek

PDA3 to Pond and Ellicott Creek

Discharge to Ellicott Creek

Direct to Ellicott Creek



Routing Diagram for Westwood PostDevelopment
Prepared by Professional Civil Engineering, L.L.C., Printed 3/29/2014

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
29.500	86	1/3 acre lots, 30% Imp, Townhomes, HSG D (PDA1)
25.040	87	1/4 acre lots, 38% Imp, Single Family Residential, HSG D (PDA2)
27.840	92	1/8 acre lots, 65% Imp, Patio Homes, HSG D (PDA1)
10.860	80	>75% Grass cover, Good, HSG D (PDA4)
20.540	87	Multifamily, Existing Clubhouse, Open Space, 40% Imp, HSG D (PDA3)
16.410	87	Senior Housing, 40% Imp, HSG D (PDA2)
44.750	95	Urban commercial, 85% Imp, Commons, HSG D (PDA2)
174.940	89	TOTAL AREA

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
174.940	HSG D	PDA1, PDA2, PDA3, PDA4
0.000	Other	
174.940		TOTAL AREA

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subc Numl
0.000	0.000	0.000	29.500	0.000	29.500	1/3 acre lots, 30% imp, Townhomes	
0.000	0.000	0.000	25.040	0.000	25.040	1/4 acre lots, 38% imp, Single Family Residential	
0.000	0.000	0.000	27.840	0.000	27.840	1/8 acre lots, 65% imp, Patio Homes	
0.000	0.000	0.000	10.860	0.000	10.860	>75% Grass cover, Good	
0.000	0.000	0.000	20.540	0.000	20.540	Multifamily, Existing Clubhouse, Open Space, 40% Imp	
0.000	0.000	0.000	16.410	0.000	16.410	Senior Housing, 40% Imp	
0.000	0.000	0.000	44.750	0.000	44.750	Urban commercial, 85% Imp, Commons	
0.000	0.000	0.000	174.940	0.000	174.940	TOTAL AREA	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	PDA1	0.00	0.00	600.0	0.0040	0.013	12.0	0.0	0.0
2	PDA1	0.00	0.00	1,200.0	0.0030	0.013	18.0	0.0	0.0
3	PDA2	0.00	0.00	600.0	0.0040	0.013	12.0	0.0	0.0
4	PDA2	0.00	0.00	855.0	0.0020	0.013	24.0	0.0	0.0
5	PDA3	0.00	0.00	555.0	0.0040	0.013	12.0	0.0	0.0

Time span=5.00-36.00 hrs, dt=0.05 hrs, 621 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PDA1: PDA1 to Audubon Par 3 Runoff Area=57.340 ac 46.99% Impervious Runoff Depth=1.11"
Flow Length=2,475' Tc=44.0 min CN=89 Runoff=42.30 cfs 5.311 af

Subcatchment PDA2: PDA2 to Lake Runoff Area=86.200 ac 62.78% Impervious Runoff Depth=1.25"
Flow Length=2,155' Tc=42.7 min CN=91 Runoff=73.63 cfs 8.990 af

Subcatchment PDA3: PDA3 to Pond and Ellicott Creek Runoff Area=20.540 ac 40.00% Impervious Runoff Depth=0.98"
Flow Length=1,065' Tc=35.2 min CN=87 Runoff=15.54 cfs 1.685 af

Subcatchment PDA4: Direct to Ellicott Creek Runoff Area=10.860 ac 0.00% Impervious Runoff Depth=0.62"
Flow Length=960' Tc=21.8 min CN=80 Runoff=6.62 cfs 0.565 af

Total Runoff Area = 174.940 ac Runoff Volume = 16.551 af Average Runoff Depth = 1.14"
48.97% Pervious = 85.661 ac 51.03% Impervious = 89.279 ac

Summary for Subcatchment PDA1: PDA1 to Audubon Par 3

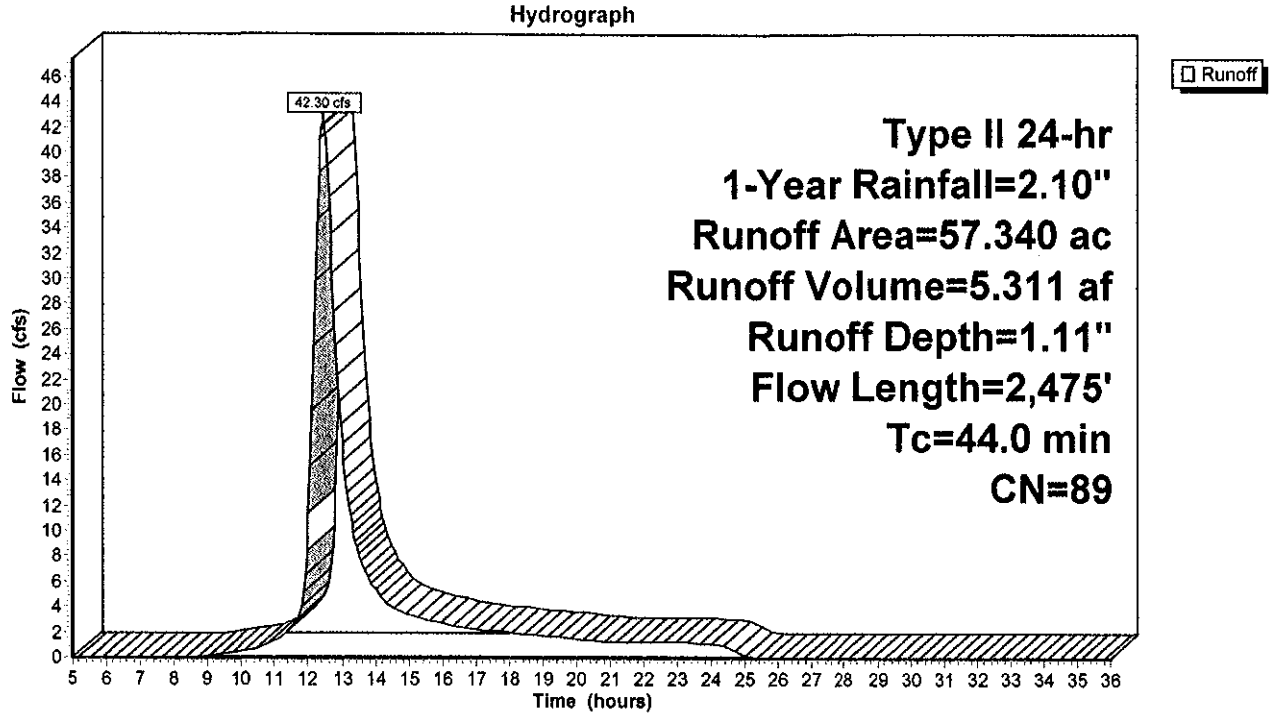
Runoff = 42.30 cfs @ 12.42 hrs, Volume= 5.311 af, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.10"

	Area (ac)	CN	Description
*	29.500	86	1/3 acre lots, 30% Imp, Townhomes, HSG D
*	27.840	92	1/8 acre lots, 65% Imp, Patio Homes, HSG D
	57.340	89	Weighted Average
	30.394		53.01% Pervious Area
	26.946		46.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.7	150	0.0050	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
7.7	525	0.0050	1.14		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
3.5	600	0.0040	2.87	2.25	Pipe Channel, Pipe to Pond and Main Storm Trunk 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
6.1	1,200	0.0030	3.26	5.75	Pipe Channel, Main Trunk to Pond and Outlet 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
44.0	2,475	Total			

Subcatchment PDA1: PDA1 to Audubon Par 3



Summary for Subcatchment PDA2: PDA2 to Lake

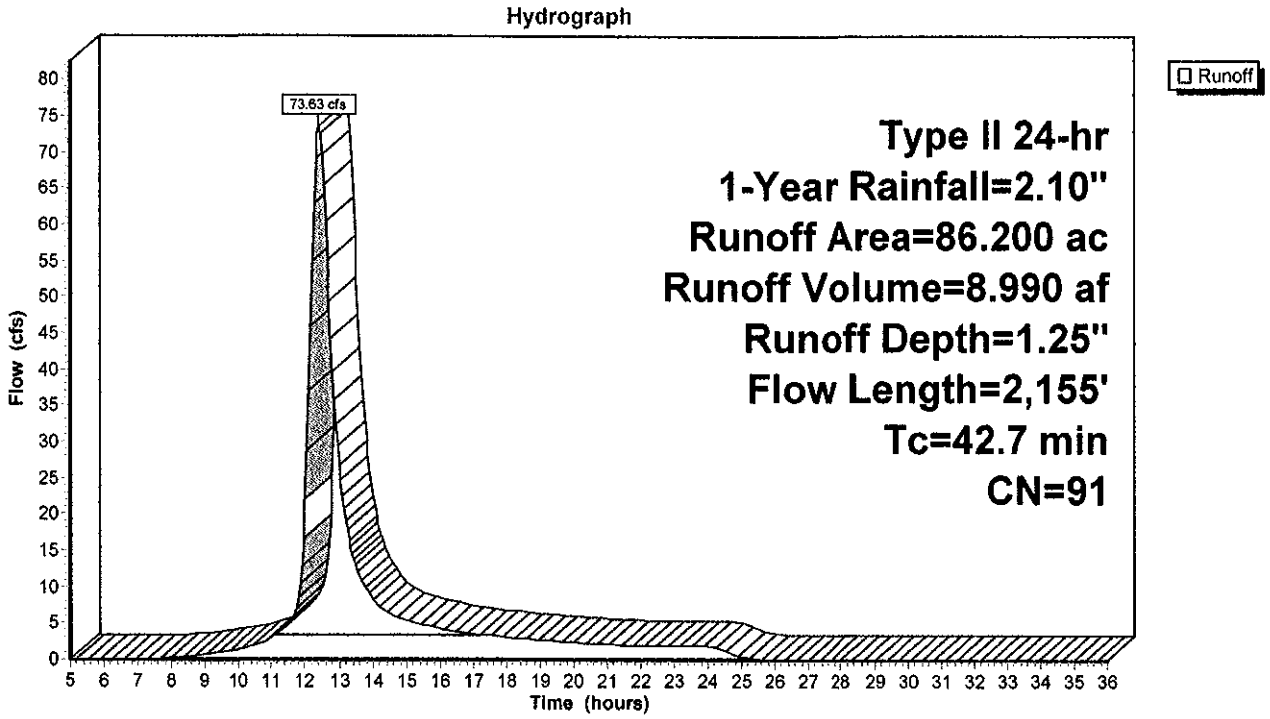
Runoff = 73.63 cfs @ 12.40 hrs, Volume= 8.990 af, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.10"

	Area (ac)	CN	Description
*	44.750	95	Urban commercial, 85% imp, Commons, HSG D
*	25.040	87	1/4 acre lots, 38% imp, Single Family Residential, HSG D
*	16.410	87	Senior Housing, 40% imp, HSG D
	86.200	91	Weighted Average
	32.083		37.22% Pervious Area
	54.117		62.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.7	150	0.0050	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
8.1	550	0.0050	1.14		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
3.5	600	0.0040	2.87	2.25	Pipe Channel, Pipe to Main Storm Trunk 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
4.4	855	0.0020	3.22	10.12	Pipe Channel, Main Storm Trunk to Lake 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
42.7	2,155	Total			

Subcatchment PDA2: PDA2 to Lake



Summary for Subcatchment PDA3: PDA3 to Pond and Ellicott Creek

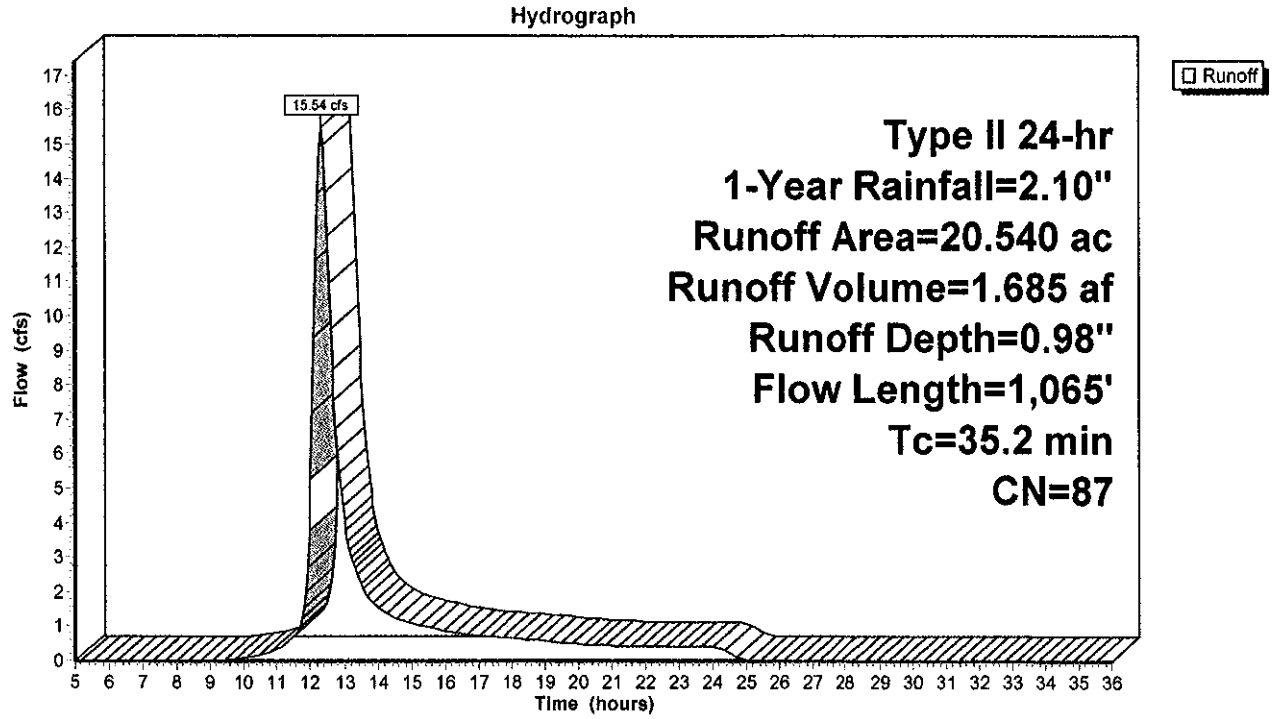
Runoff = 15.54 cfs @ 12.31 hrs, Volume= 1.685 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.10"

	Area (ac)	CN	Description
*	20.540	87	Multifamily, Existing Clubhouse, Open Space, 40% Imp, HSG D
	12.324		60.00% Pervious Area
	8.216		40.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.7	150	0.0050	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
5.3	360	0.0050	1.14		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
3.2	555	0.0040	2.87	2.25	Pipe Channel, Pipe to Pond 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
35.2	1,065	Total			

Subcatchment PDA3: PDA3 to Pond and Ellicott Creek



Summary for Subcatchment PDA4: Direct to Ellicott Creek

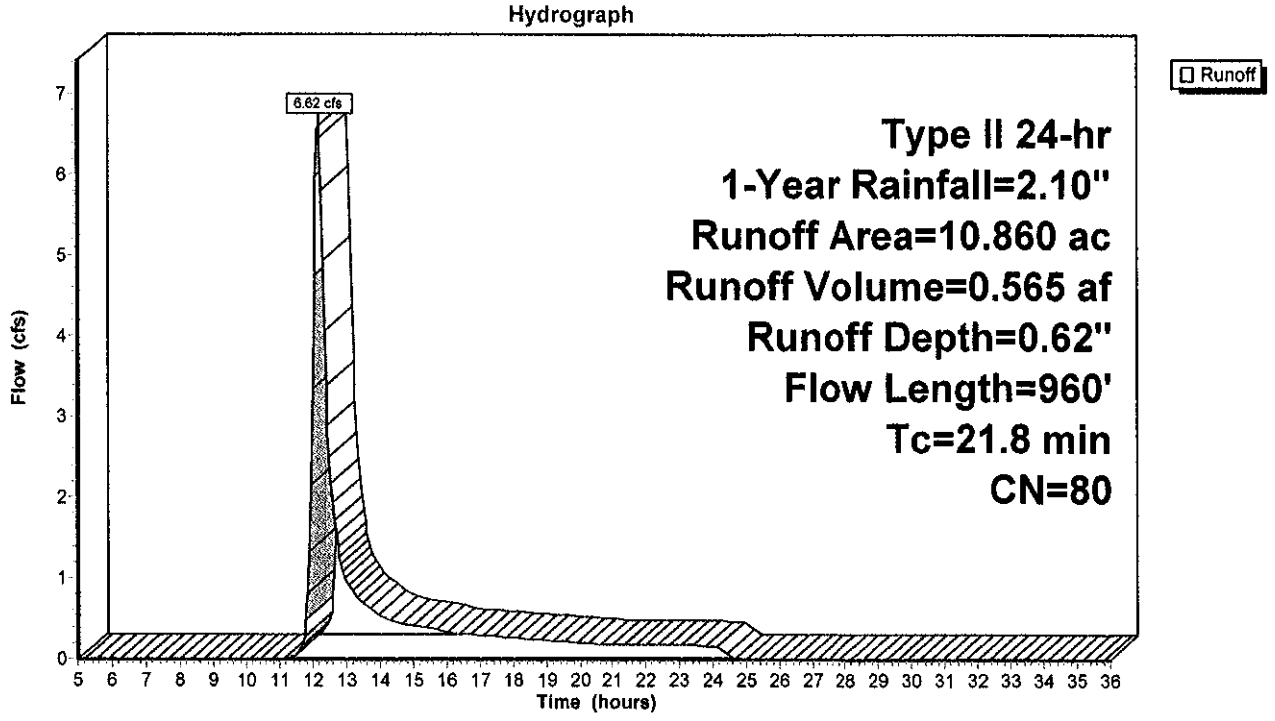
Runoff = 6.62 cfs @ 12.17 hrs, Volume= 0.565 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.10"

Area (ac)	CN	Description
10.860	80	>75% Grass cover, Good, HSG D
10.860		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	150	0.0600	0.25		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
11.9	810	0.0050	1.14		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
21.8	960	Total			

Subcatchment PDA4: Direct to Ellicott Creek



Time span=5.00-36.00 hrs, dt=0.05 hrs, 621 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PDA1: PDA1 to Audubon Par 3 Runoff Area=57.340 ac 46.99% Impervious Runoff Depth=2.36"
Flow Length=2,475' Tc=44.0 min CN=89 Runoff=90.02 cfs 11.263 af

Subcatchment PDA2: PDA2 to Lake Runoff Area=86.200 ac 62.78% Impervious Runoff Depth>2.54"
Flow Length=2,155' Tc=42.7 min CN=91 Runoff=148.29 cfs 18.254 af

Subcatchment PDA3: PDA3 to Pond and Ellicott Creek Runoff Area=20.540 ac 40.00% Impervious Runoff Depth=2.18"
Flow Length=1,065' Tc=35.2 min CN=87 Runoff=34.93 cfs 3.736 af

Subcatchment PDA4: Direct to Ellicott Creek Runoff Area=10.860 ac 0.00% Impervious Runoff Depth=1.64"
Flow Length=960' Tc=21.8 min CN=80 Runoff=18.60 cfs 1.481 af

Total Runoff Area = 174.940 ac Runoff Volume = 34.734 af Average Runoff Depth = 2.38"
48.97% Pervious = 85.661 ac 51.03% Impervious = 89.279 ac

Summary for Subcatchment PDA1: PDA1 to Audubon Par 3

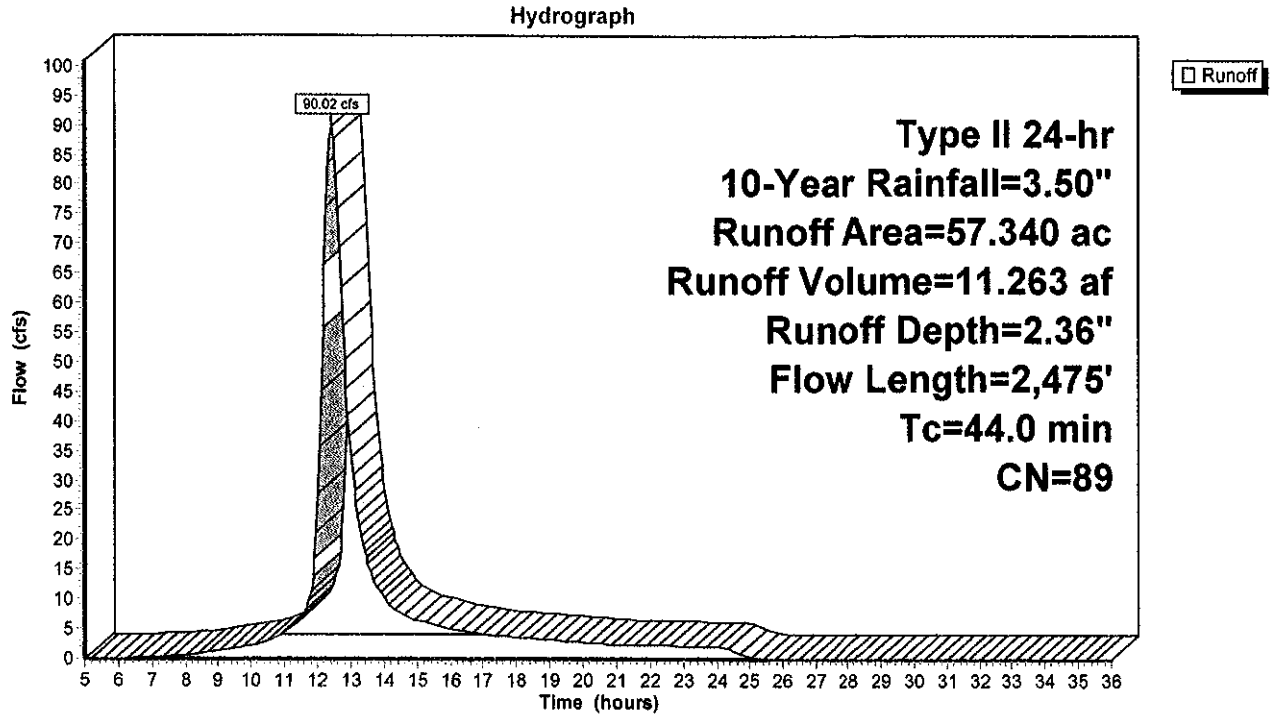
Runoff = 90.02 cfs @ 12.41 hrs, Volume= 11.263 af, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.50"

	Area (ac)	CN	Description
*	29.500	86	1/3 acre lots, 30% Imp, Townhomes, HSG D
*	27.840	92	1/8 acre lots, 65% Imp, Patio Homes, HSG D
	57.340	89	Weighted Average
	30.394		53.01% Pervious Area
	26.946		46.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.7	150	0.0050	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
7.7	525	0.0050	1.14		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
3.5	600	0.0040	2.87	2.25	Pipe Channel, Pipe to Pond and Main Storm Trunk 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
6.1	1,200	0.0030	3.26	5.75	Pipe Channel, Main Trunk to Pond and Outlet 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
44.0	2,475	Total			

Subcatchment PDA1: PDA1 to Audubon Par 3



Summary for Subcatchment PDA2: PDA2 to Lake

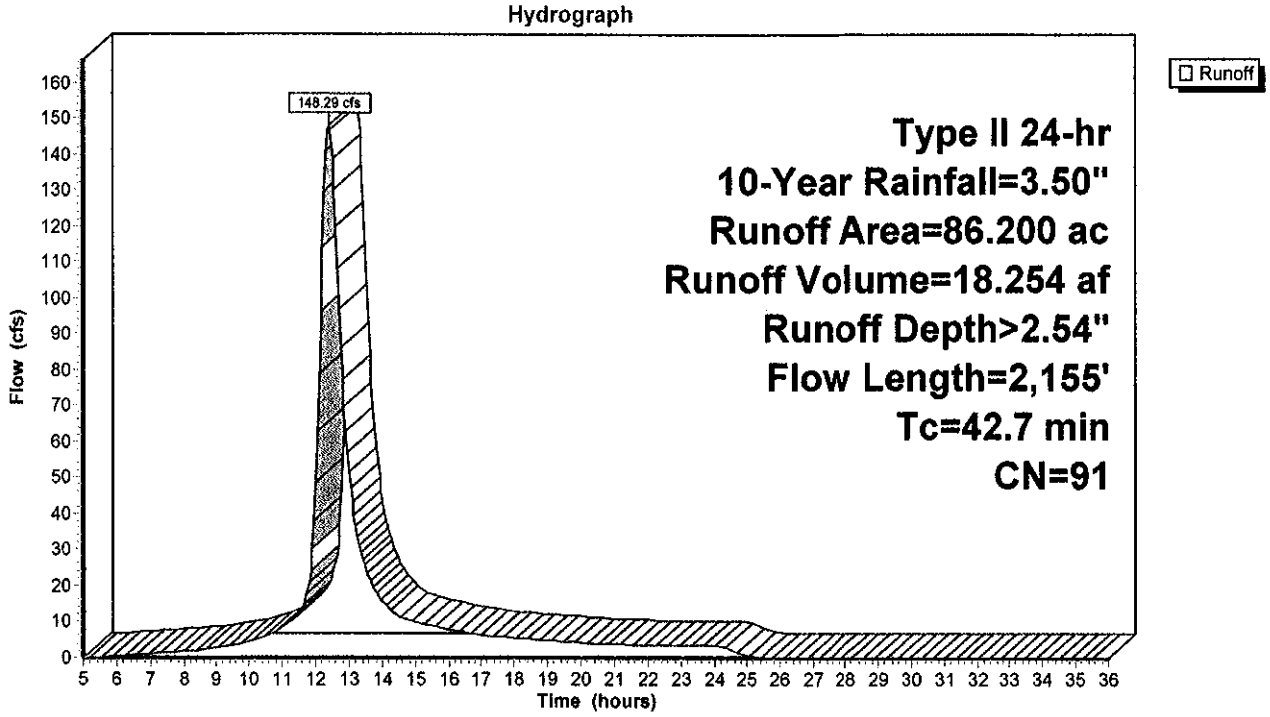
Runoff = 148.29 cfs @ 12.39 hrs, Volume= 18.254 af, Depth> 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.50"

	Area (ac)	CN	Description
*	44.750	95	Urban commercial, 85% Imp, Commons, HSG D
*	25.040	87	1/4 acre lots, 38% Imp, Single Family Residential, HSG D
*	16.410	87	Senior Housing, 40% Imp, HSG D
	86.200	91	Weighted Average
	32.083		37.22% Pervious Area
	54.117		62.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.7	150	0.0050	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
8.1	550	0.0050	1.14		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
3.5	600	0.0040	2.87	2.25	Pipe Channel, Pipe to Main Storm Trunk 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
4.4	855	0.0020	3.22	10.12	Pipe Channel, Main Storm Trunk to Lake 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
42.7	2,155	Total			

Subcatchment PDA2: PDA2 to Lake



Summary for Subcatchment PDA3: PDA3 to Pond and Ellicott Creek

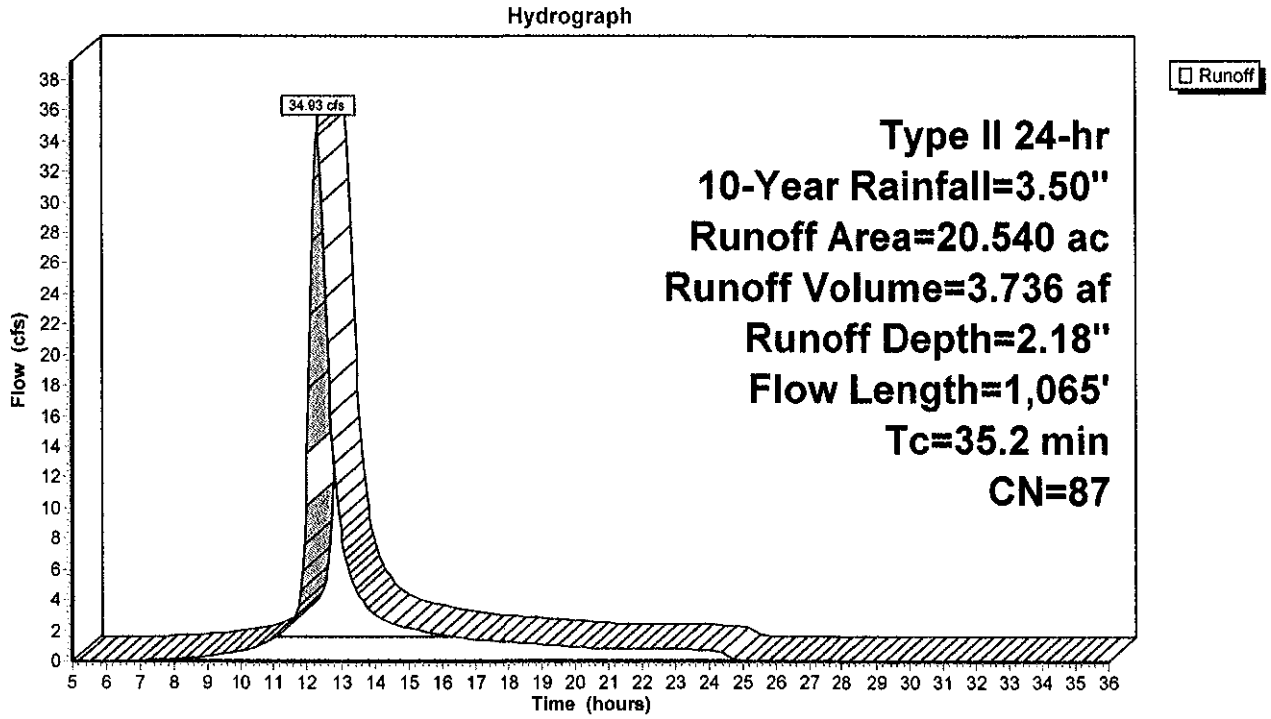
Runoff = 34.93 cfs @ 12.30 hrs, Volume= 3.736 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.50"

	Area (ac)	CN	Description
*	20.540	87	Multifamily, Existing Clubhouse, Open Space, 40% Imp, HSG D
	12.324		60.00% Pervious Area
	8.216		40.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.7	150	0.0050	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
5.3	360	0.0050	1.14		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
3.2	555	0.0040	2.87	2.25	Pipe Channel, Pipe to Pond 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
35.2	1,065	Total			

Subcatchment PDA3: PDA3 to Pond and Ellicott Creek



Summary for Subcatchment PDA4: Direct to Ellicott Creek

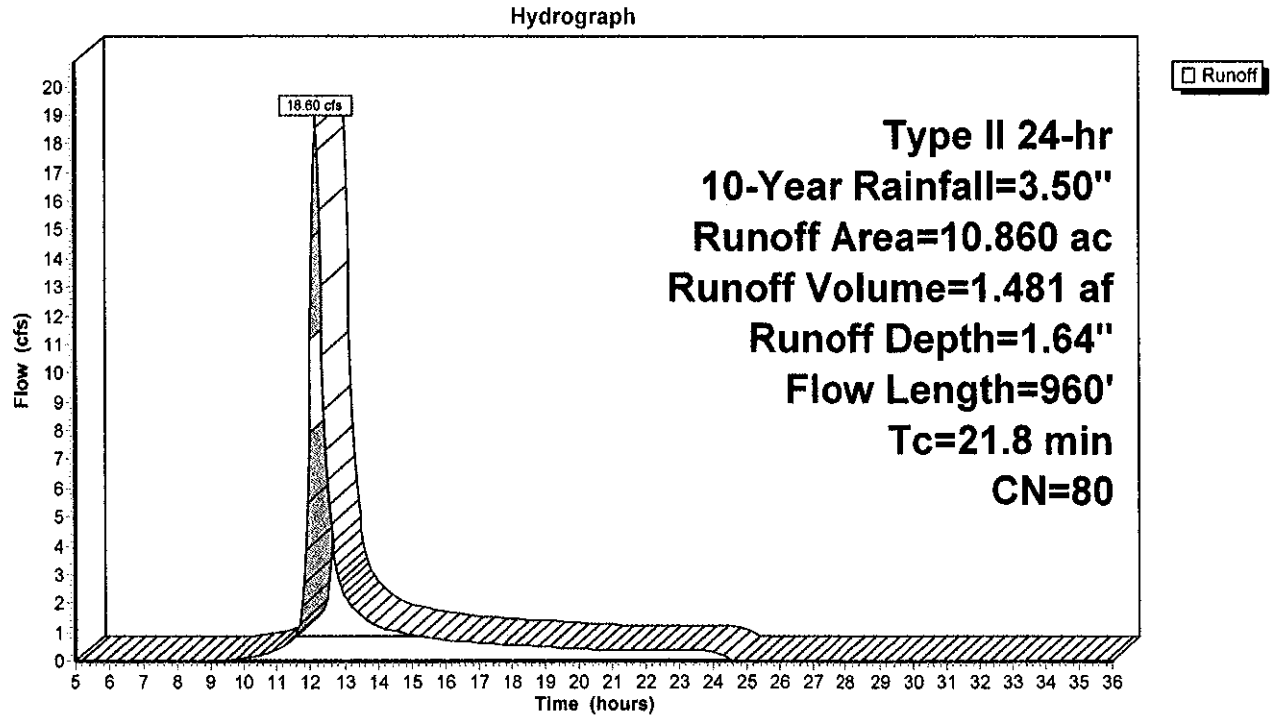
Runoff = 18.60 cfs @ 12.15 hrs, Volume= 1.481 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.50"

Area (ac)	CN	Description
10.860	80	>75% Grass cover, Good, HSG D
10.860		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	150	0.0600	0.25		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
11.9	810	0.0050	1.14		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
21.8	960	Total			

Subcatchment PDA4: Direct to Ellicott Creek



Time span=5.00-36.00 hrs, dt=0.05 hrs, 621 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment PDA1: PDA1 to Audubon Par 3 Runoff Area=57.340 ac 46.99% Impervious Runoff Depth>3.58"
Flow Length=2,475' Tc=44.0 min CN=89 Runoff=135.46 cfs 17.109 af

Subcatchment PDA2: PDA2 to Lake Runoff Area=86.200 ac 62.78% Impervious Runoff Depth>3.78"
Flow Length=2,155' Tc=42.7 min CN=91 Runoff=218.13 cfs 27.188 af

Subcatchment PDA3: PDA3 to Pond and Ellicott Creek Runoff Area=20.540 ac 40.00% Impervious Runoff Depth=3.38"
Flow Length=1,065' Tc=35.2 min CN=87 Runoff=53.74 cfs 5.784 af

Subcatchment PDA4: Direct to Ellicott Creek Runoff Area=10.860 ac 0.00% Impervious Runoff Depth=2.72"
Flow Length=960' Tc=21.8 min CN=80 Runoff=31.13 cfs 2.461 af

Total Runoff Area = 174.940 ac Runoff Volume = 52.542 af Average Runoff Depth = 3.60"
48.97% Pervious = 85.661 ac 51.03% Impervious = 89.279 ac

Summary for Subcatchment PDA1: PDA1 to Audubon Par 3

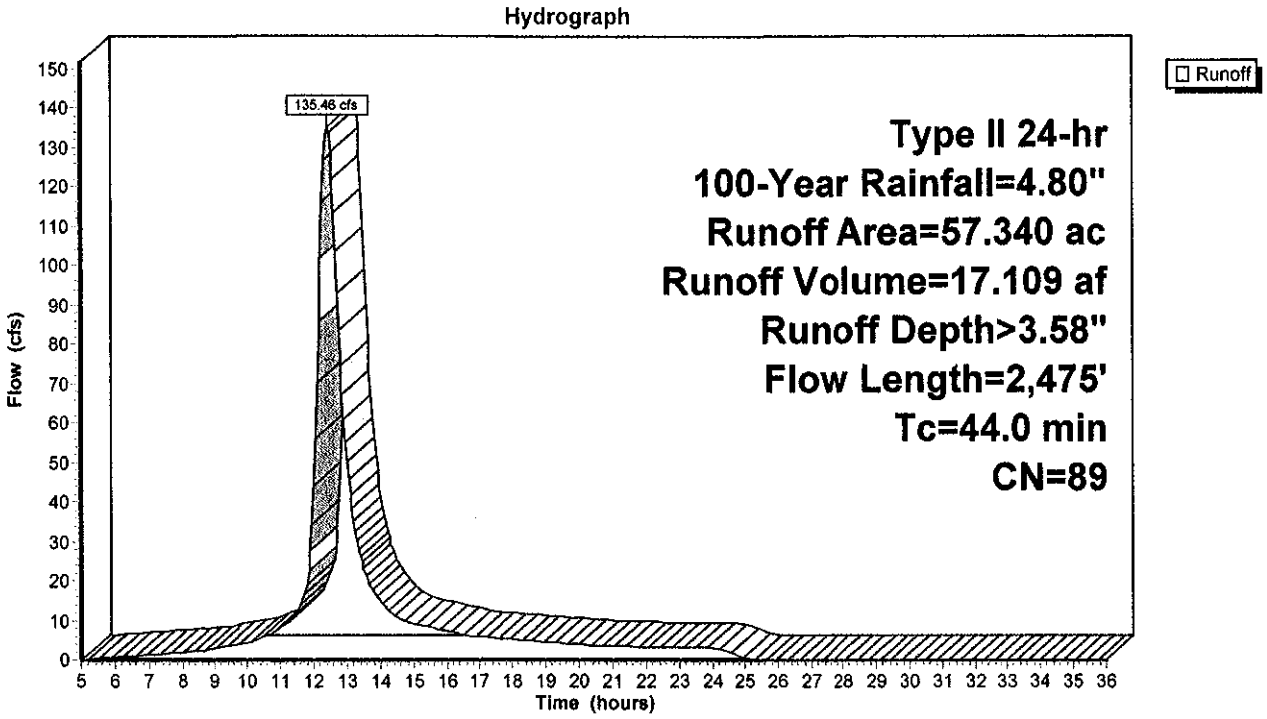
Runoff = 135.46 cfs @ 12.40 hrs, Volume= 17.109 af, Depth> 3.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=4.80"

	Area (ac)	CN	Description
*	29.500	86	1/3 acre lots, 30% Imp, Townhomes, HSG D
*	27.840	92	1/8 acre lots, 65% Imp, Patio Homes, HSG D
	57.340	89	Weighted Average
	30.394		53.01% Pervious Area
	26.946		46.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.7	150	0.0050	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
7.7	525	0.0050	1.14		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
3.5	600	0.0040	2.87	2.25	Pipe Channel, Pipe to Pond and Main Storm Trunk 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
6.1	1,200	0.0030	3.26	5.75	Pipe Channel, Main Trunk to Pond and Outlet 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
44.0	2,475	Total			

Subcatchment PDA1: PDA1 to Audubon Par 3



Summary for Subcatchment PDA2: PDA2 to Lake

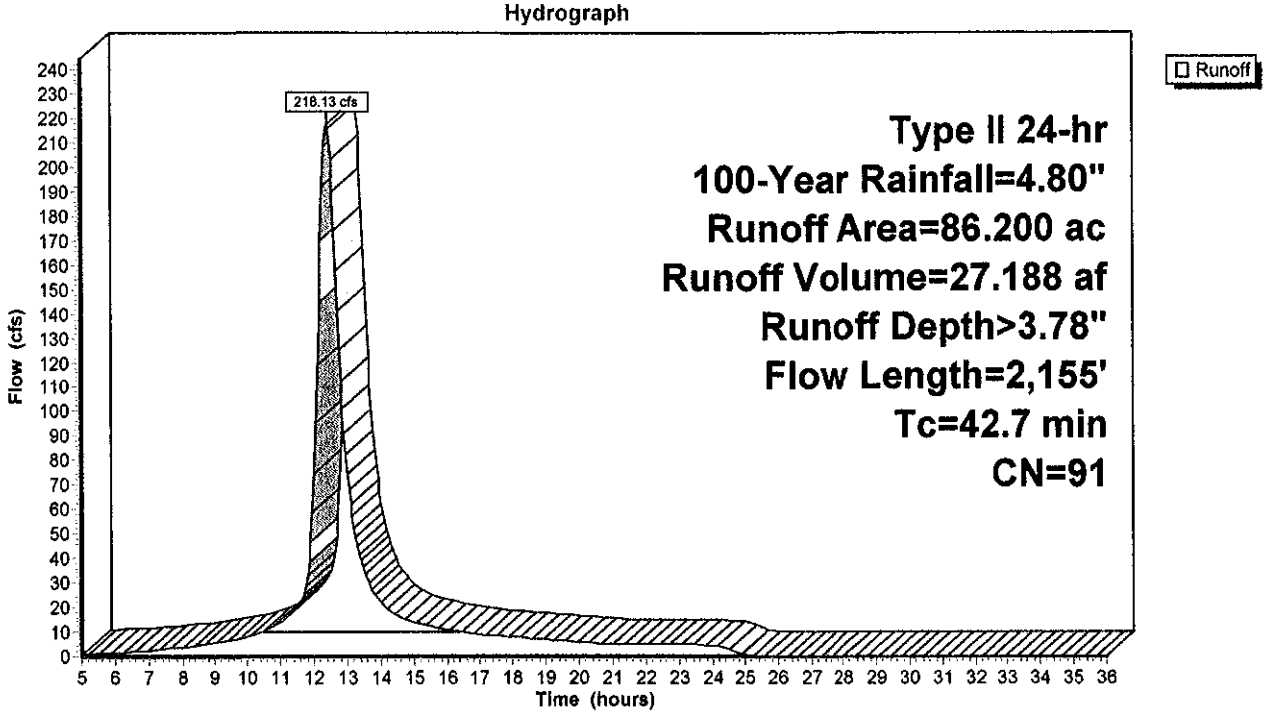
Runoff = 218.13 cfs @ 12.39 hrs, Volume= 27.188 af, Depth> 3.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=4.80"

	Area (ac)	CN	Description
*	44.750	95	Urban commercial, 85% Imp, Commons, HSG D
*	25.040	87	1/4 acre lots, 38% Imp, Single Family Residential, HSG D
*	16.410	87	Senior Housing, 40% Imp, HSG D
	86.200	91	Weighted Average
	32.083		37.22% Pervious Area
	54.117		62.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.7	150	0.0050	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
8.1	550	0.0050	1.14		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
3.5	600	0.0040	2.87	2.25	Pipe Channel, Pipe to Main Storm Trunk 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
4.4	855	0.0020	3.22	10.12	Pipe Channel, Main Storm Trunk to Lake 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
42.7	2,155	Total			

Subcatchment PDA2: PDA2 to Lake



Summary for Subcatchment PDA3: PDA3 to Pond and Ellicott Creek

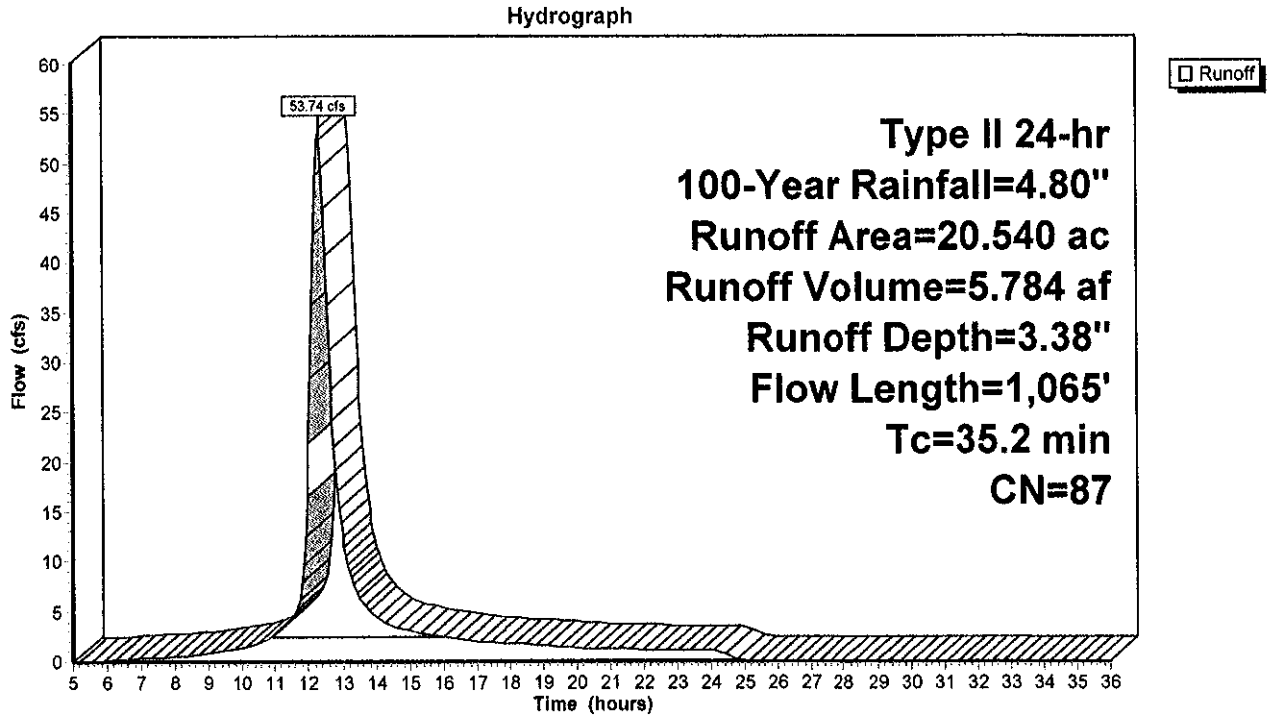
Runoff = 53.74 cfs @ 12.30 hrs, Volume= 5.784 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=4.80"

	Area (ac)	CN	Description
*	20.540	87	Multifamily, Existing Clubhouse, Open Space, 40% Imp, HSG D
	12.324		60.00% Pervious Area
	8.216		40.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.7	150	0.0050	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
5.3	360	0.0050	1.14		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
3.2	555	0.0040	2.87	2.25	Pipe Channel, Pipe to Pond 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
35.2	1,065	Total			

Subcatchment PDA3: PDA3 to Pond and Ellicott Creek



Summary for Subcatchment PDA4: Direct to Ellicott Creek

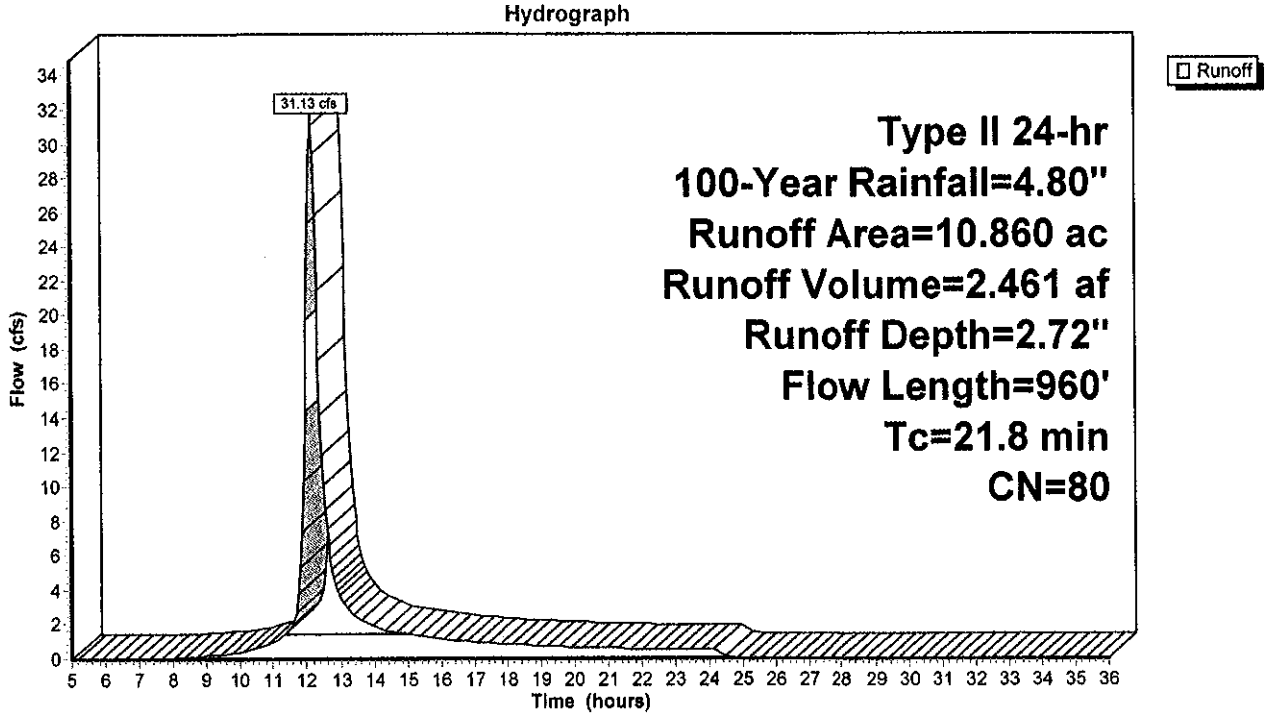
Runoff = 31.13 cfs @ 12.15 hrs, Volume= 2.461 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=4.80"

Area (ac)	CN	Description
10.860	80	>75% Grass cover, Good, HSG D
10.860		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	150	0.0600	0.25		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
11.9	810	0.0050	1.14		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
21.8	960	Total			

Subcatchment PDA4: Direct to Ellicott Creek

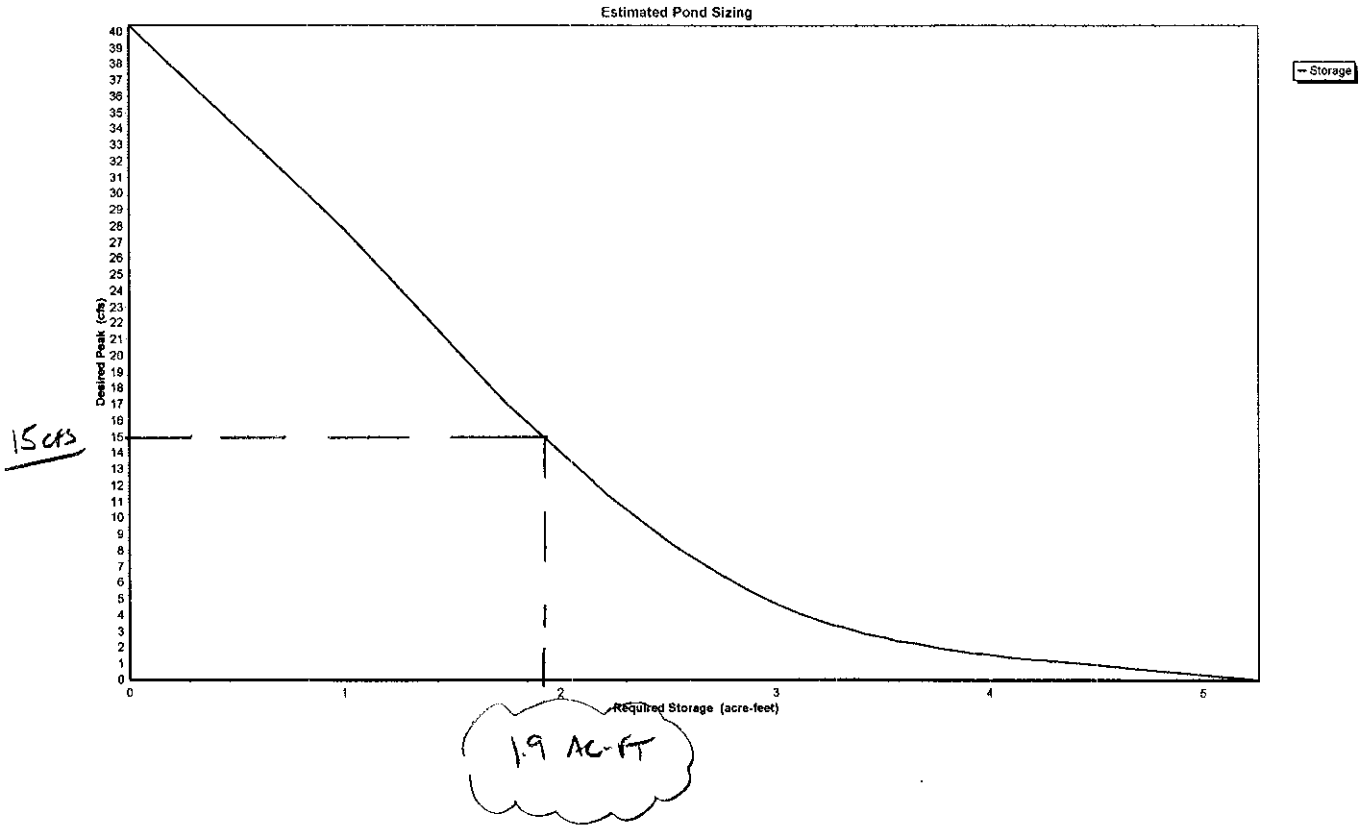


APPENDIX C

STORAGE REQUIREMENT ESTIMATES

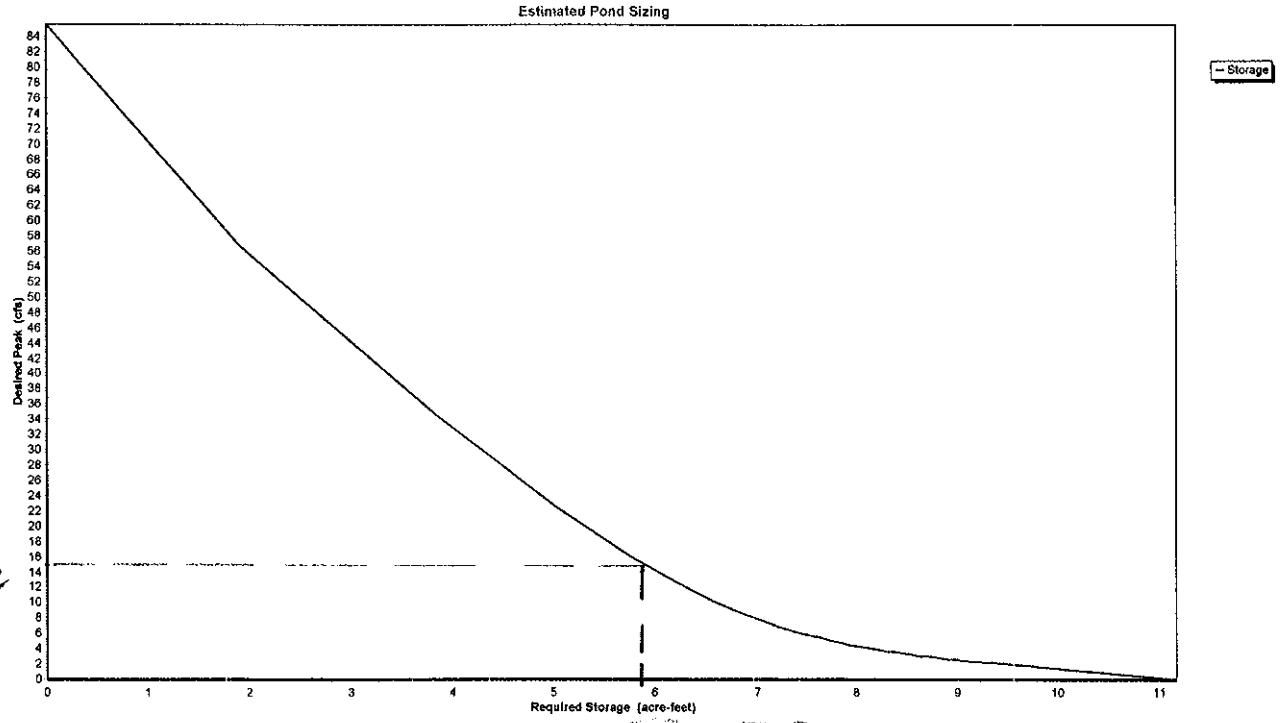
Pond 1P: Discharge - Towards Audubon Par 3 (Pump Station)

PDA-1 STORAGE REQUIRED - 1-YR STORM.



Pond 1P: Discharge - Towards Audubon Par 3 (Pump Station)

PDA-1 STORAGE REQUIRED - 10-YR STORM

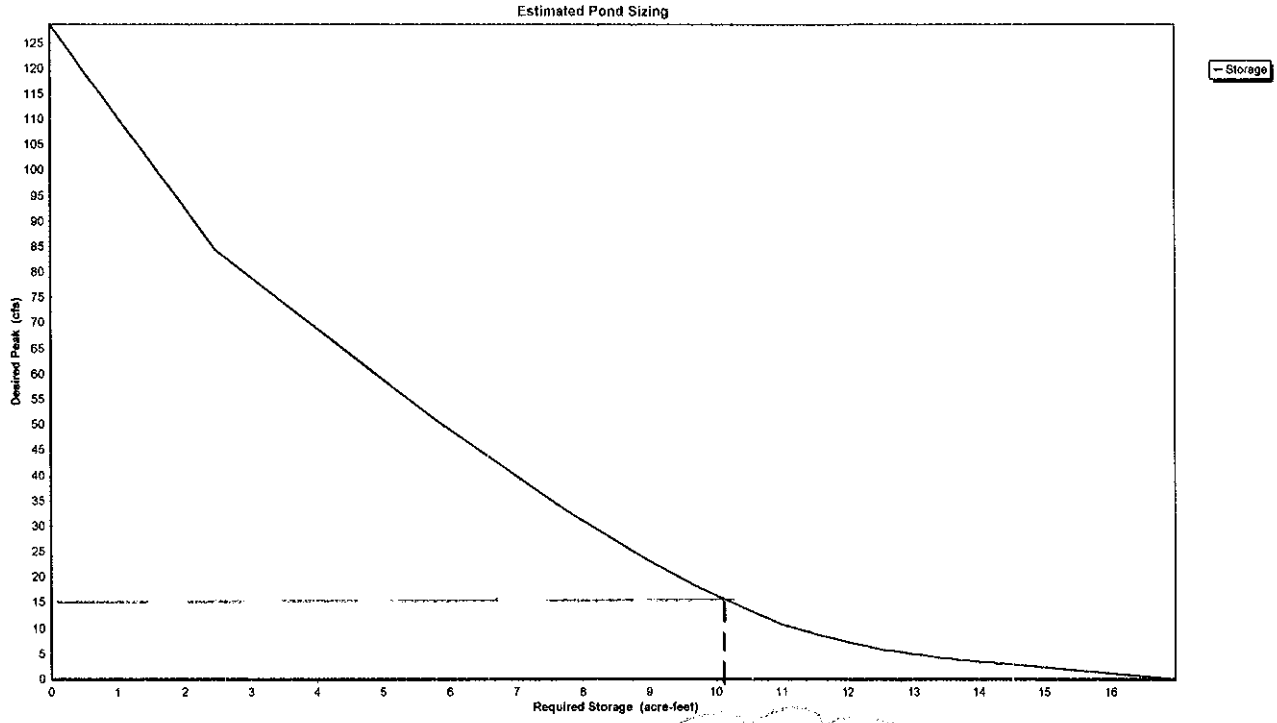


15 CFS

5.9 AC-FT

Pond 1P: Discharge - Towards Audubon Par 3 (Pump Station)

POA-1 STORAGE REQUIRED - 100-YR STORM

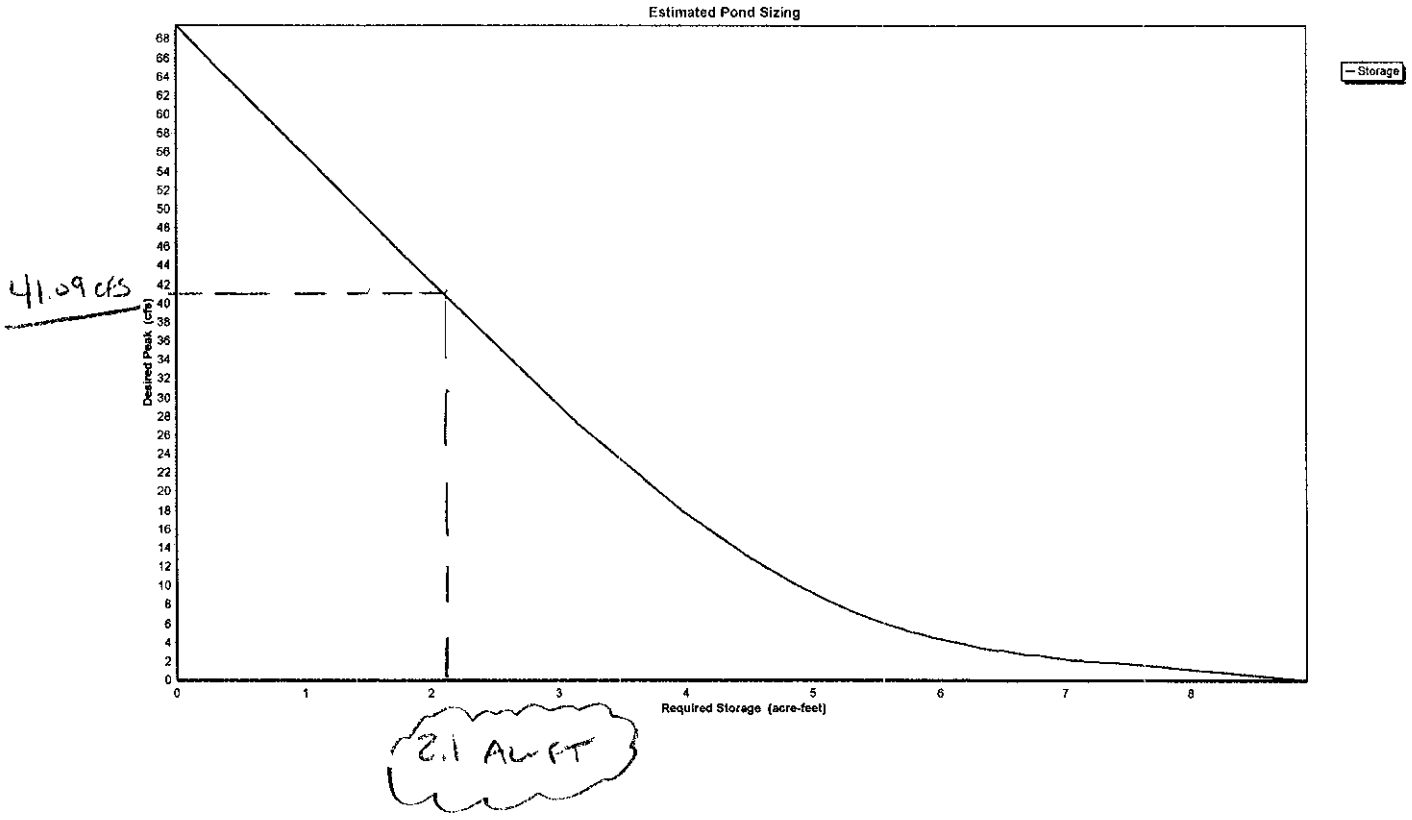


15 CFS

10.1 AC-FT

Pond 2P: Lake - Discharge to Elllcott Creek

PDA 2 - STORAGE REQUIRED 1-YR STORM

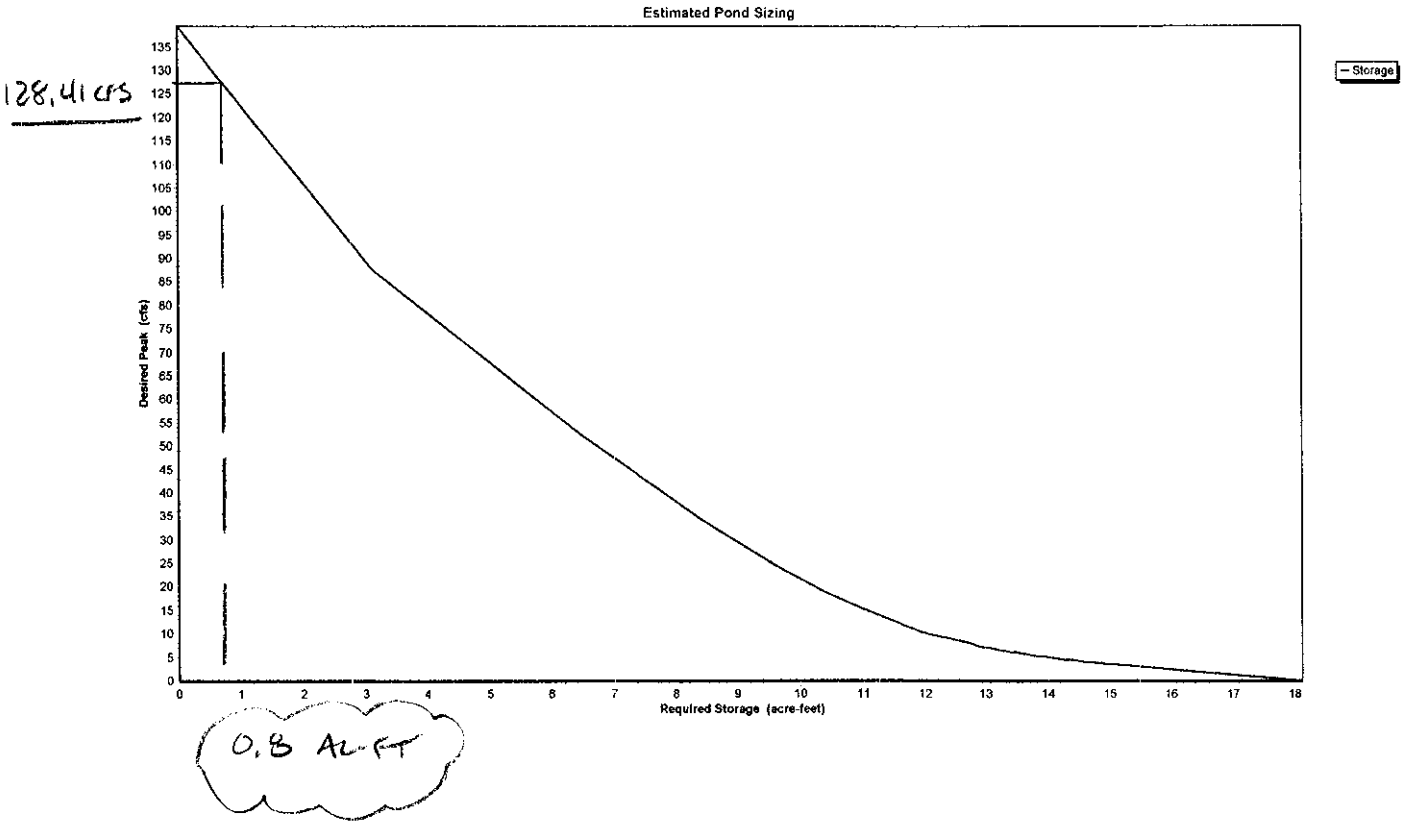


41.09 CFS

2.1 AC-FT

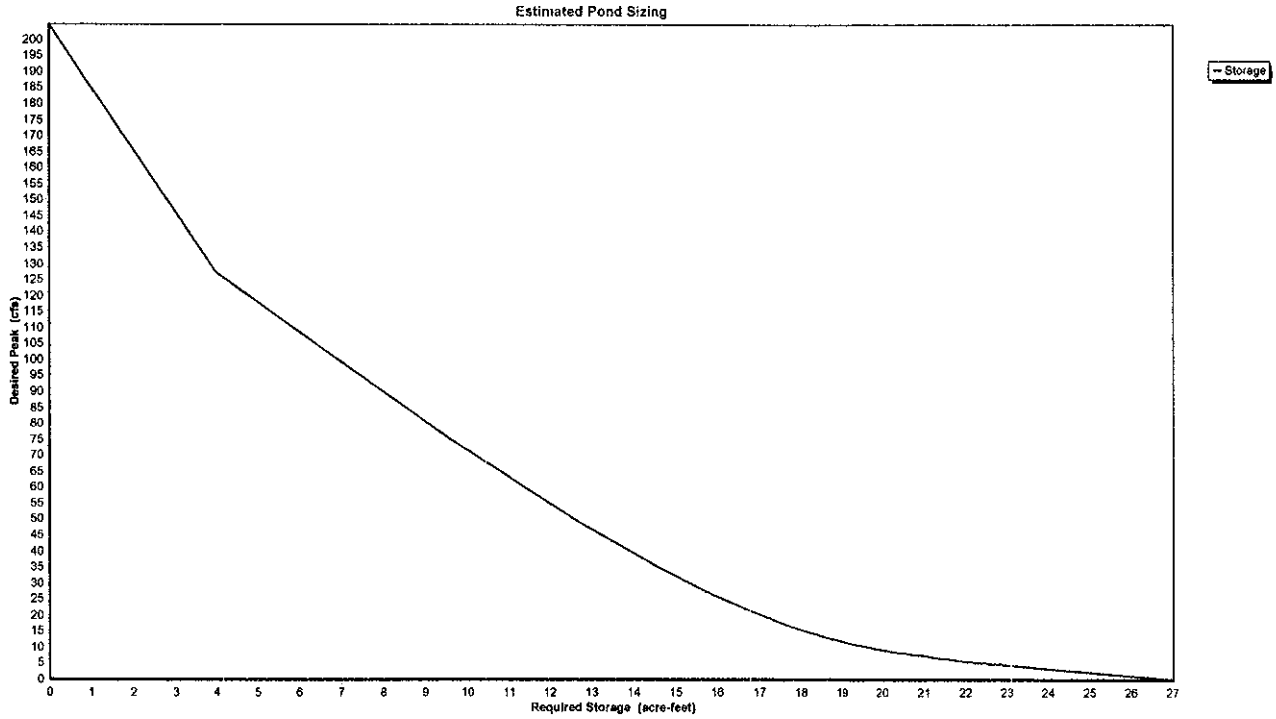
Pond 2P: Lake - Discharge to Ellicott Creek

PDA 2 STORAGE REQUIRED - 10 yr STORM



Pond 2P: Lake - Discharge to Ellicott Creek

POA 2 STORAGE REQUIRED - 100 YR STORM

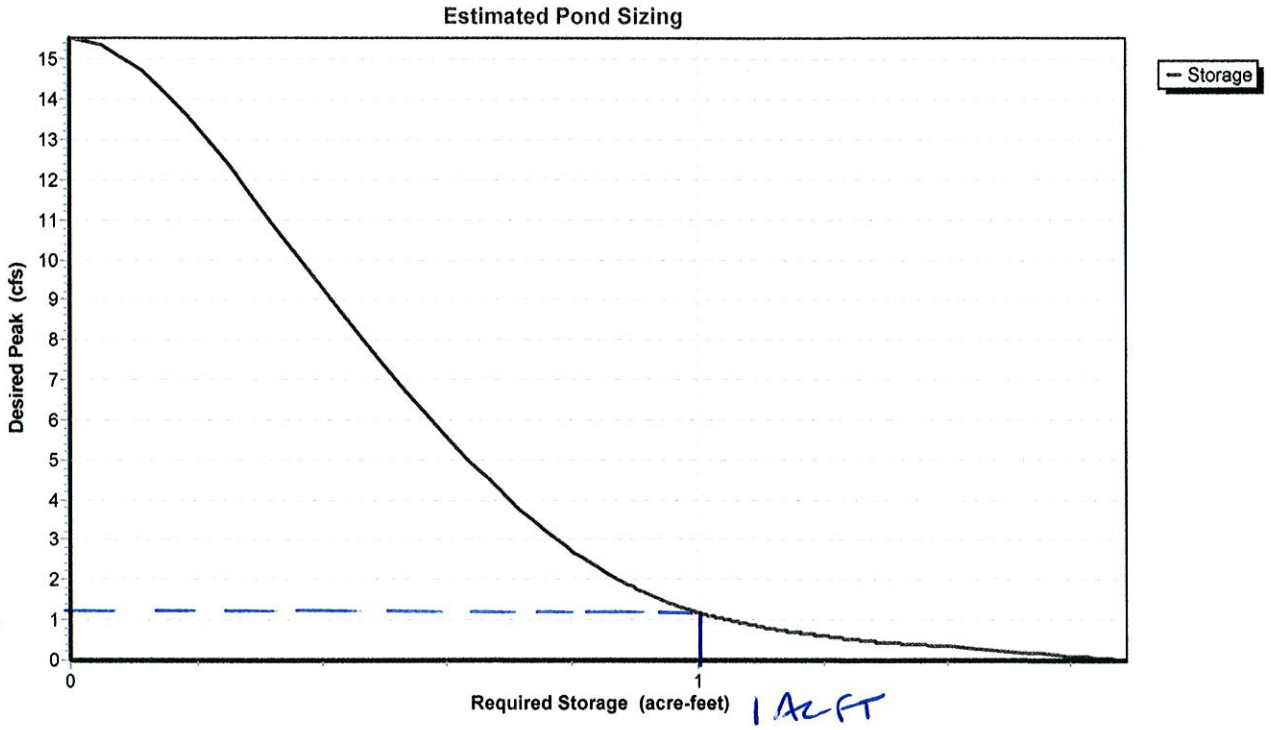


NONE - ALL STORAGE IN POA 1 FOR 100-YR STORM.

Pond 3P: Discharge to Ellicott Creek

POA 3 - 1-YR STORM

* MAXIMUM ALLOWABLE DISCHARGE RATE = 1.2 CFS
* BASED ON 1.0 AC-FT STORAGE



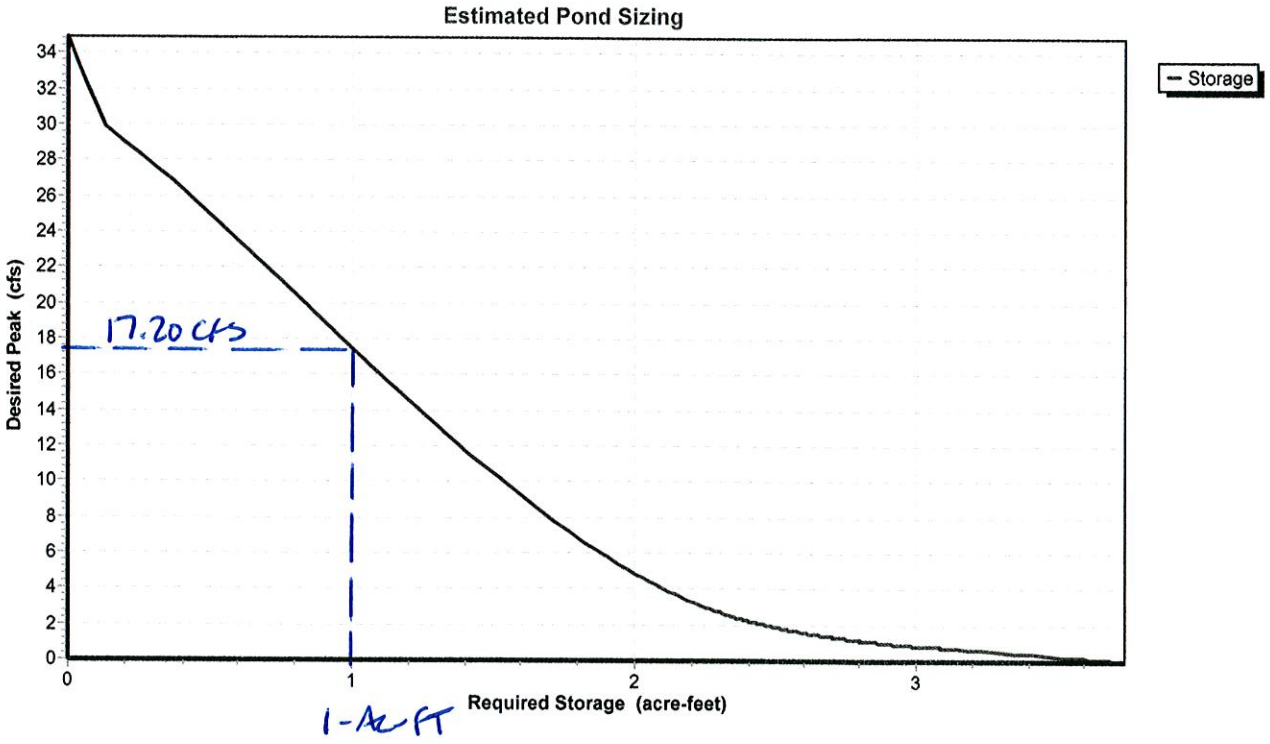
1 AC-FT OF STORAGE PROVIDED.

Pond 3P: Discharge to Ellicott Creek

PDA 3 - 10-YR STORM

* MAXIMUM ALLOWABLE DISCHARGE RATE = 17.20 CFS

* BASED ON 1.0 AC-FT OF STORAGE



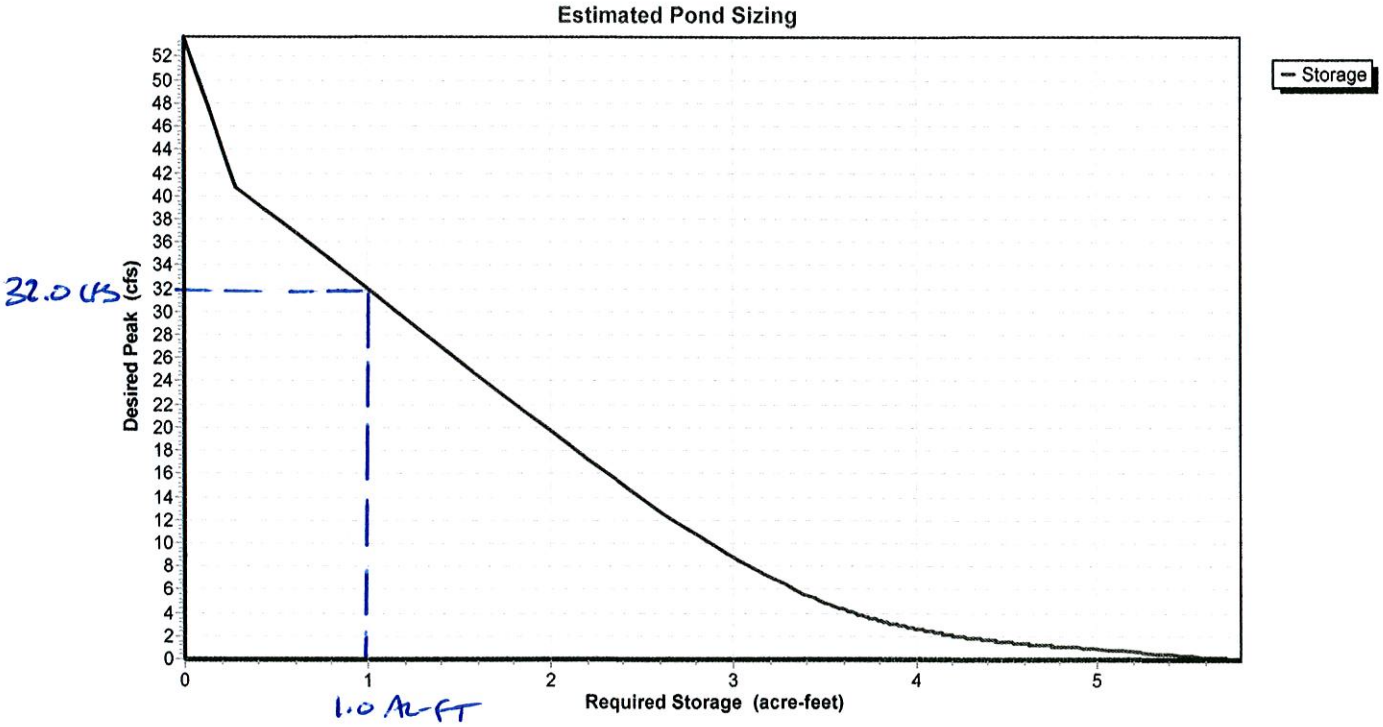
1 AC-FT OF STORAGE PROVIDED.

Pond 3P: Discharge to Ellicott Creek

PDA3 - 100-YR STORM

* MAXIMUM ALLOWABLE DISCHARGE RATE = 32.0 CFS

* BASED ON 1.0 AC-FT OF STORAGE



32.0 CFS

1.0 AC-FT

1.0 AC-FT OF STORAGE PROVIDED.

APPENDIX D

DRAINAGE ANALYSIS PER TOWN OF AMHERST STORM DRAINAGE POLICY

Summary for Subcatchment DA1: Offsite East Towards Audubon Par 3

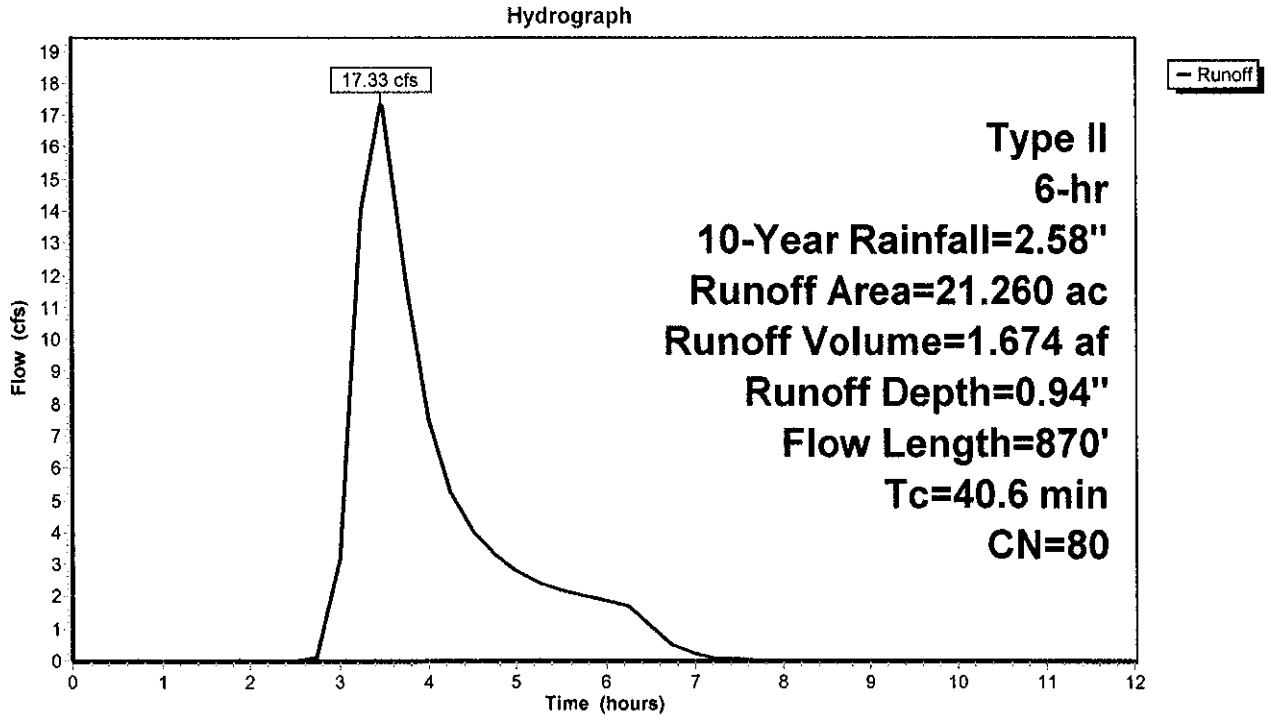
Runoff = 17.33 cfs @ 3.47 hrs, Volume= 1.674 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-12.00 hrs, dt= 0.25 hrs
Type II 6-hr 10-Year Rainfall=2.58"

	Area (ac)	CN	Description
*	15.930	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.330	80	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good, HSG D
*	1.000	80	Schoharie (SaA) - Open Space - Golf Course and Lawn, Good, HSG D
	21.260	80	Weighted Average
	21.260		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	150	0.0047	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
13.2	720	0.0032	0.91		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
40.6	870	Total			

Subcatchment DA1: Offsite East Towards Audubon Par 3



Summary for Subcatchment DA2: Offsite East Towards Audubon Par 3

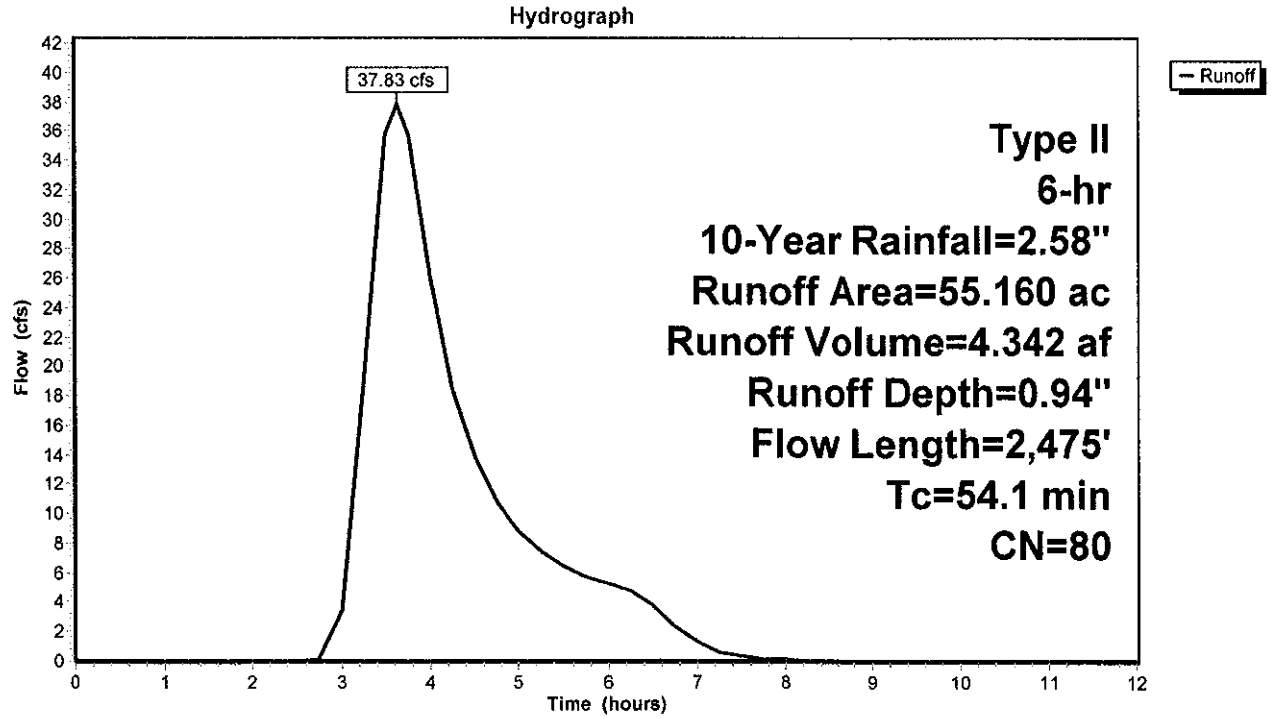
Runoff = 37.83 cfs @ 3.62 hrs, Volume= 4.342 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-12.00 hrs, dt= 0.25 hrs
Type II 6-hr 10-Year Rainfall=2.58"

	Area (ac)	CN	Description
*	27.400	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	9.150	80	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good, HSG D
*	2.960	80	Schoharie (SaA) - Open Space - Golf Course and Lawn, Good, HSG D
*	9.380	80	Urban Odessa (Ut) - Open Space - Golf Course and Lawn, Good, HSG D
*	6.270	80	Cosad (Cv) - Open Space - Golf Course and Lawn, Good, HSG D
	55.160	80	Weighted Average
	55.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	150	0.0167	0.15		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
37.6	2,325	0.0041	1.03		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
54.1	2,475	Total			

Subcatchment DA2: Offsite East Towards Audubon Par 3



Summary for Subcatchment DA3: Direct to Ellicott Creek

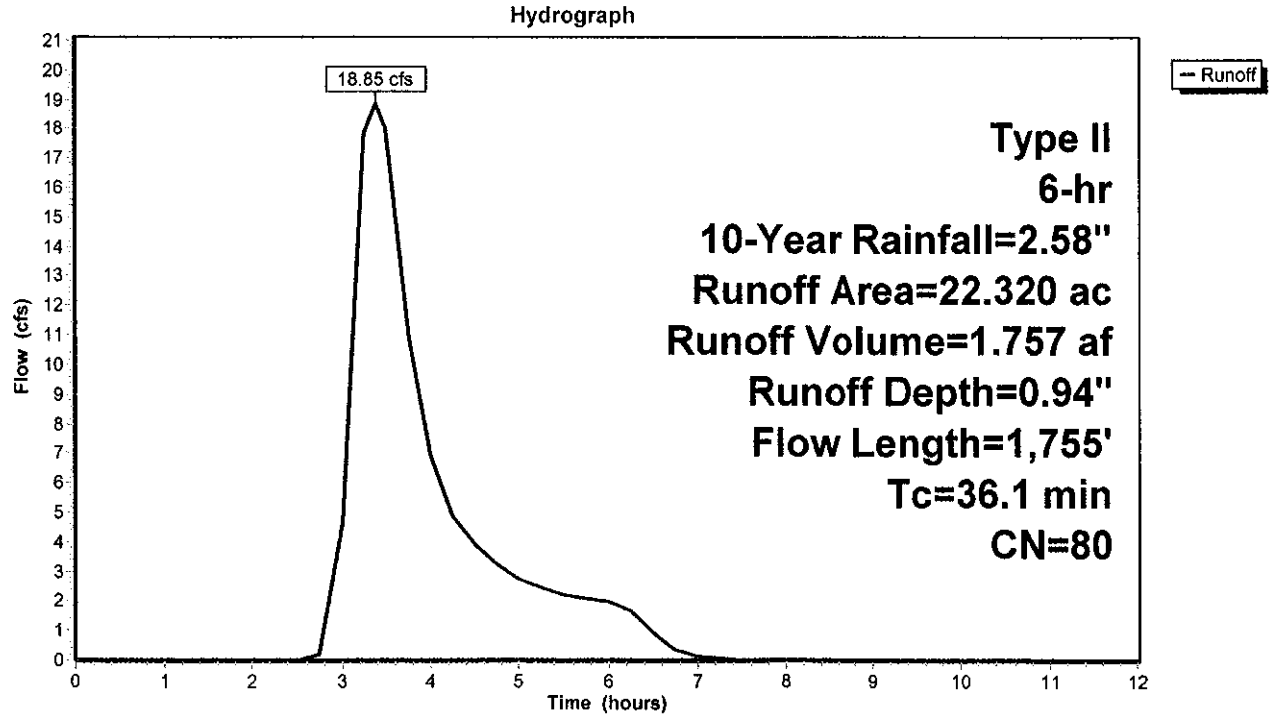
Runoff = 18.85 cfs @ 3.38 hrs, Volume= 1.757 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-12.00 hrs, dt= 0.25 hrs
Type II 6-hr 10-Year Rainfall=2.58"

	Area (ac)	CN	Description
*	6.800	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	5.830	80	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good, HSG D
*	9.690	80	Cosad (Cv) - Open Space - Golf Course and Lawn, Good, HSG D
	22.320	80	Weighted Average
	22.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	150	0.0167	0.15		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
19.6	1,605	0.0072	1.37		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
36.1	1,755	Total			

Subcatchment DA3: Direct to Ellicott Creek



Summary for Subcatchment DA4: Offsite West Towards Frankhauser Rd

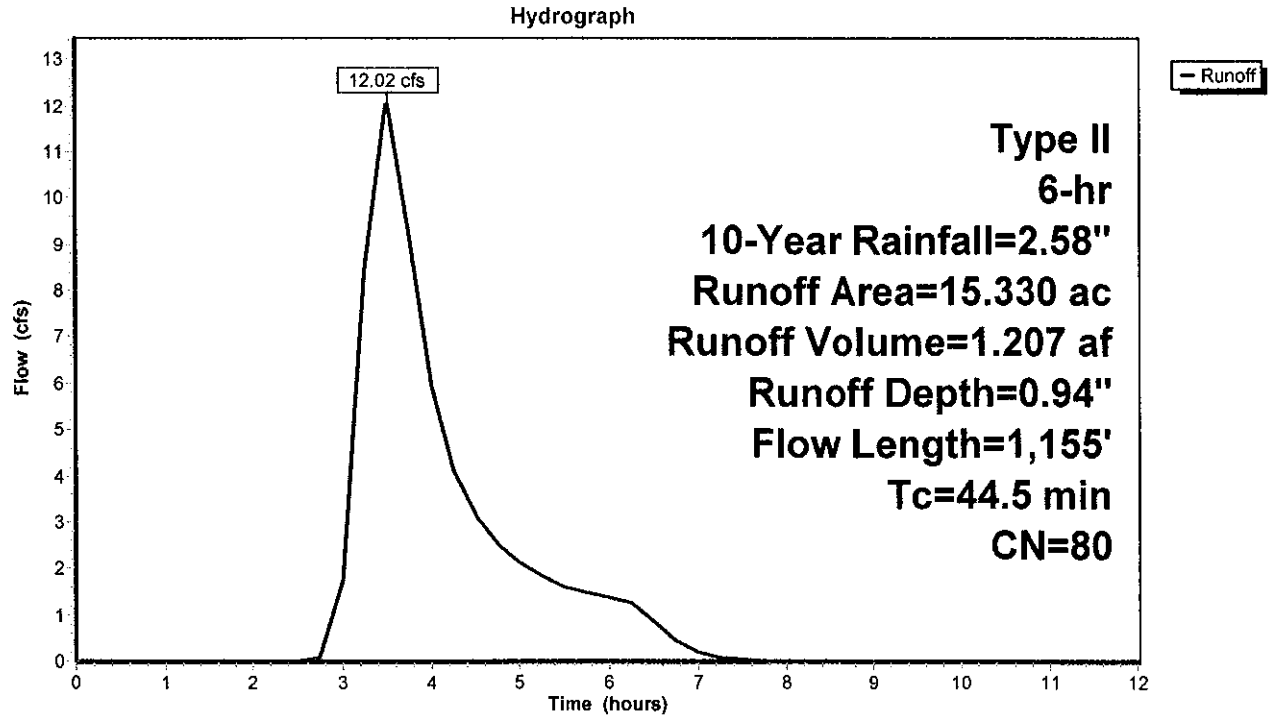
Runoff = 12.02 cfs @ 3.51 hrs, Volume= 1.207 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-12.00 hrs, dt= 0.25 hrs
Type II 6-hr 10-Year Rainfall=2.58"

	Area (ac)	CN	Description
*	8.970	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	1.530	80	Claverack (CrA) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.830	80	Cosad (Cv) - Open Space - Golf Course and Lawn, Good, HSG D
	15.330	80	Weighted Average
	15.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.4	150	0.0047	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
17.1	1,005	0.0037	0.98		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
44.5	1,155	Total			

Subcatchment DA4: Offsite West Towards Frankhauser Rd



Summary for Subcatchment DA5: Offsite West Towards Frankhauser Rd

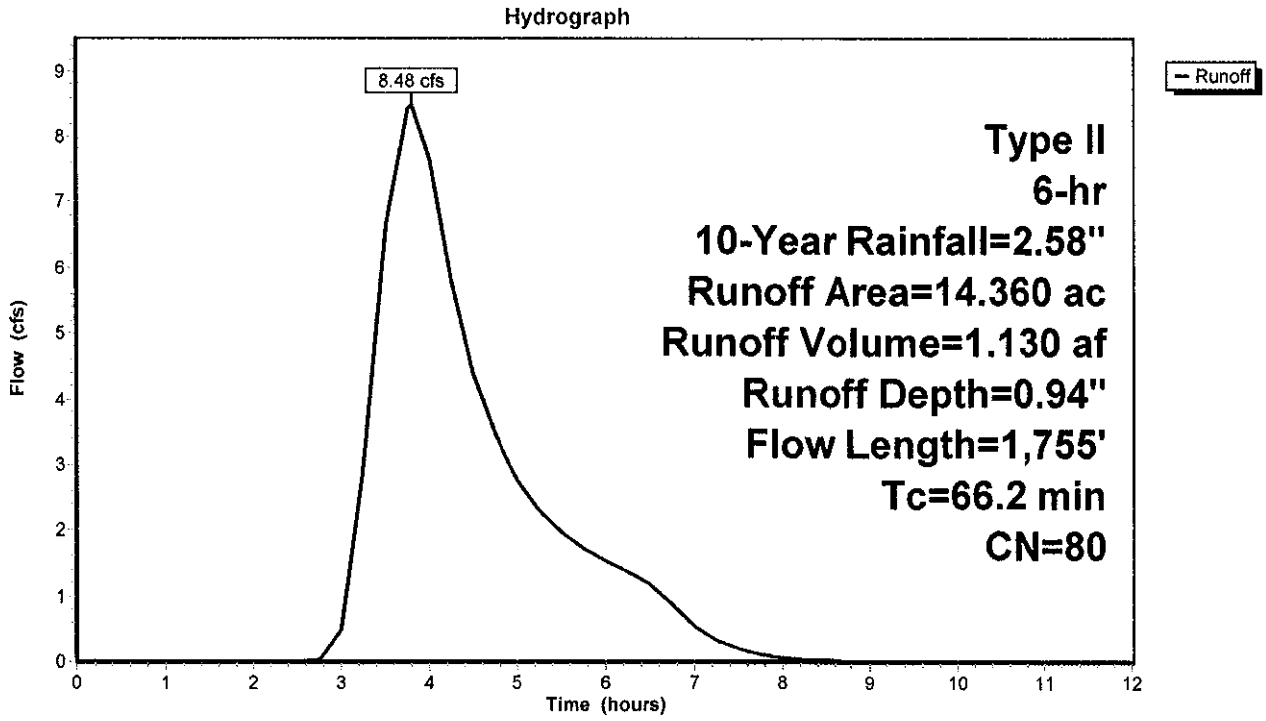
Runoff = 8.48 cfs @ 3.80 hrs, Volume= 1.130 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-12.00 hrs, dt= 0.25 hrs
Type II 6-hr 10-Year Rainfall=2.58"

	Area (ac)	CN	Description
*	5.350	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	0.400	80	Schoharie (SaA) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.440	80	Claverack (CrA) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.170	80	Lakemont (La) - Open Space - Golf Course and Lawn, Good, HSG D
	14.360	80	Weighted Average
	14.360		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.5	150	0.0020	0.06		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
27.7	1,605	0.0036	0.97		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
66.2	1,755	Total			

Subcatchment DA5: Offsite West Towards Frankhauser Rd



Summary for Subcatchment DA6: Direct to Ellicott Creek

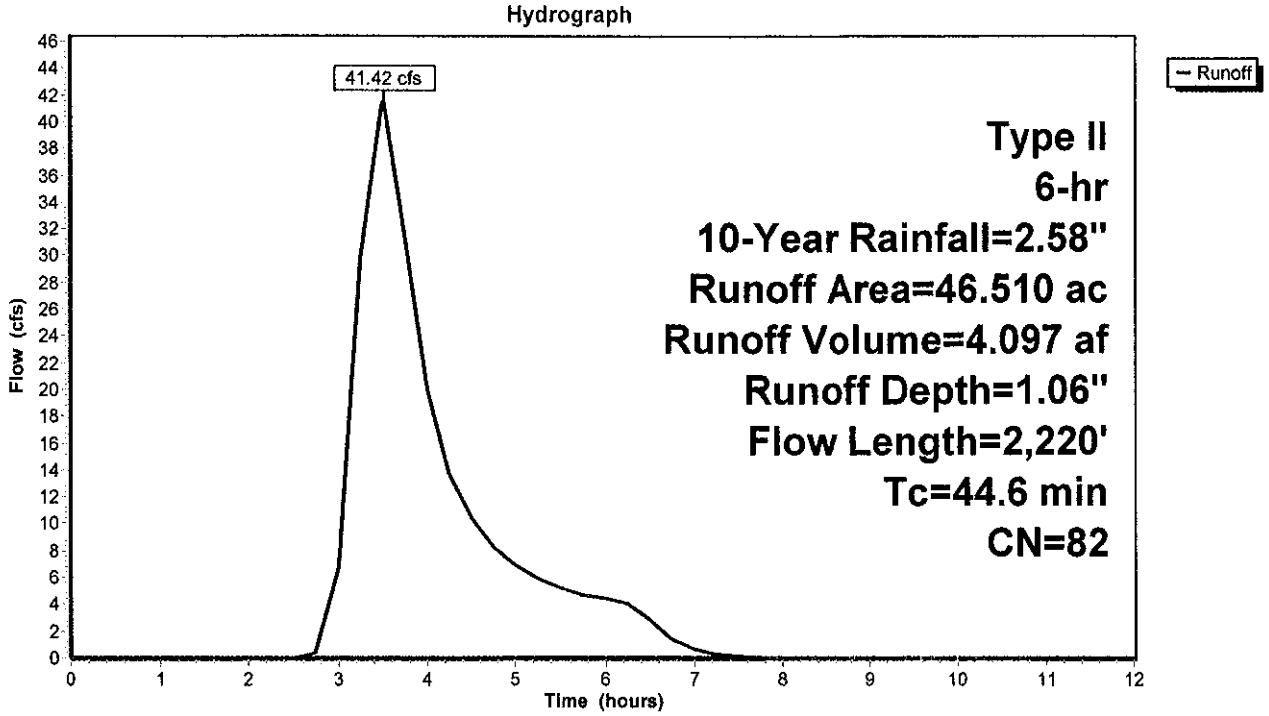
Runoff = 41.42 cfs @ 3.51 hrs, Volume= 4.097 af, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-12.00 hrs, dt= 0.25 hrs
Type II 6-hr 10-Year Rainfall=2.58"

	Area (ac)	CN	Description
*	19.430	80	Claverack (CrA) - Open Space - Golf Course and Lawn, Good, HSG D
*	4.650	98	Claverack (CrA) - Open Space - Imervious - Pavement and Roof, HSG D
*	0.740	80	Odessa (Od) - Open Space - Golf Course and Lawn, Good, HSG D
*	8.310	80	Schoharie (SaB) - Open Space - Golf Course and Lawn, Good, HSG D
*	9.460	80	Teel (Te) - Open Space - Golf Course and Lawn, Good, HSG D
*	3.920	80	Cosad (Cv) - Open Space - Golf Course and Lawn, Good, HSG D
	46.510	82	Weighted Average
	41.860		90.00% Pervious Area
	4.650		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.7	150	0.0140	0.14		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
12.7	885	0.0052	1.16		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
2.2	375	0.0320	2.88		Shallow Concentrated Flow, C-D Unpaved Kv= 16.1 fps
12.0	810	0.0049	1.13		Shallow Concentrated Flow, D-E Unpaved Kv= 16.1 fps
44.6	2,220	Total			

Subcatchment DA6: Direct to Ellicott Creek



Summary for Subcatchment PDA1: PDA1 towards Audubon Par 3 (Pump Station)

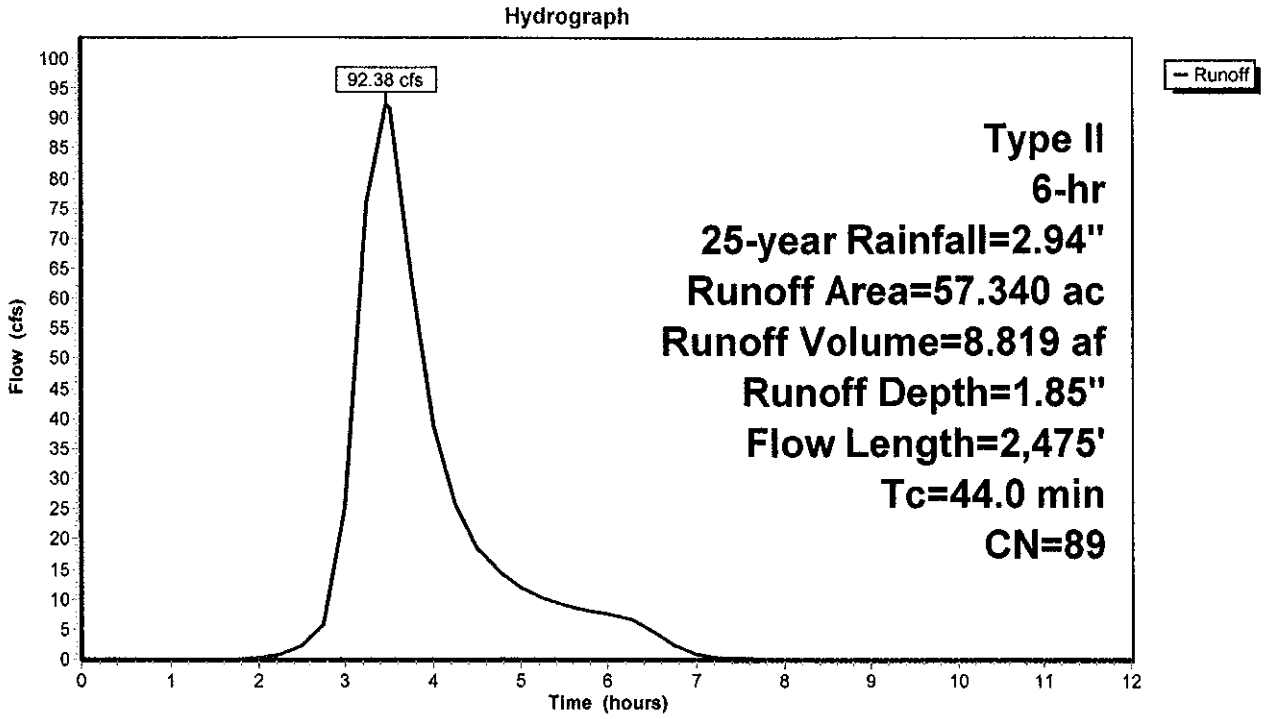
Runoff = 92.38 cfs @ 3.46 hrs, Volume= 8.819 af, Depth= 1.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-12.00 hrs, dt= 0.25 hrs
Type II 6-hr 25-year Rainfall=2.94"

	Area (ac)	CN	Description
*	29.500	86	1/3 acre lots, 30% Imp, Townhomes, HSG D
*	27.840	92	1/8 acre lots, 65% Imp, Patio Homes, HSG D
	57.340	89	Weighted Average
	30.394		53.01% Pervious Area
	26.946		46.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.7	150	0.0050	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
7.7	525	0.0050	1.14		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
3.5	600	0.0040	2.87	2.25	Pipe Channel, Pipe to Pond and Main Storm Trunk 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
6.1	1,200	0.0030	3.26	5.75	Pipe Channel, Main Trunk to Pond and Outlet 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
44.0	2,475	Total			

Subcatchment PDA1: PDA1 towards Audubon Par 3 (Pump Station)



Summary for Subcatchment PDA2: PDA2 to Lake

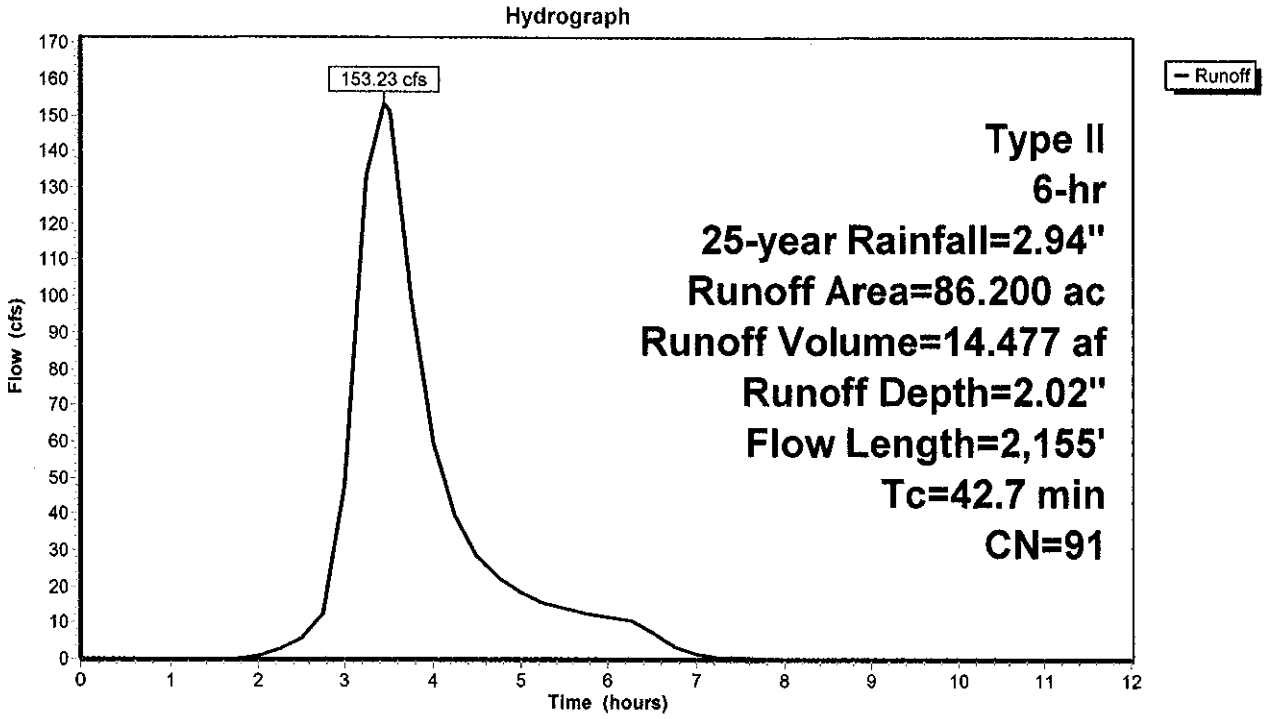
Runoff = 153.23 cfs @ 3.44 hrs, Volume= 14.477 af, Depth= 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-12.00 hrs, dt= 0.25 hrs
Type II 6-hr 25-year Rainfall=2.94"

	Area (ac)	CN	Description
*	44.750	95	Urban commercial, 85% Imp, Commons, HSG D
*	25.040	87	1/4 acre lots, 38% Imp, Single Family Residential, HSG D
*	16.410	87	Senior Housing, 40% Imp, HSG D
	86.200	91	Weighted Average
	32.083		37.22% Pervious Area
	54.117		62.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.7	150	0.0050	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
8.1	550	0.0050	1.14		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
3.5	600	0.0040	2.87	2.25	Pipe Channel, Pipe to Main Storm Trunk 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
4.4	855	0.0020	3.22	10.12	Pipe Channel, Main Storm Trunk to Lake 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
42.7	2,155	Total			

Subcatchment PDA2: PDA2 to Lake



Summary for Subcatchment PDA3: PDA3 to Pond and Ellicott Creek

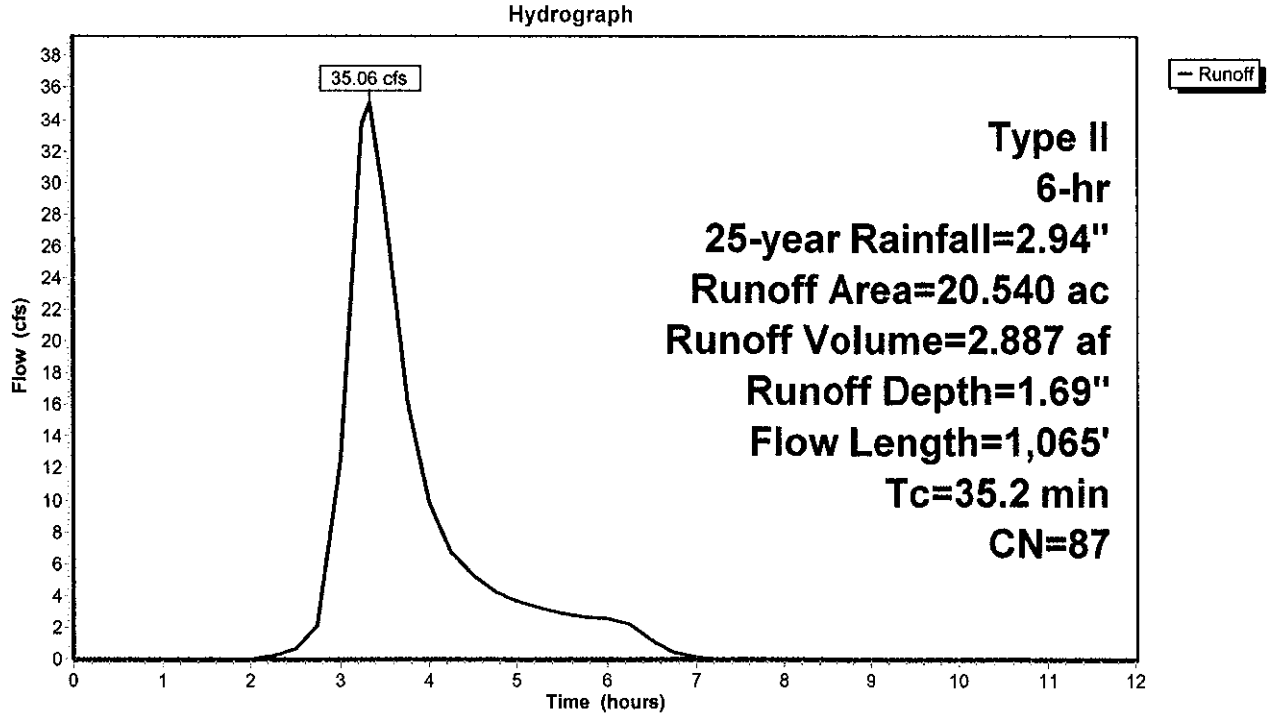
Runoff = 35.06 cfs @ 3.33 hrs, Volume= 2.887 af, Depth= 1.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-12.00 hrs, dt= 0.25 hrs
Type II 6-hr 25-year Rainfall=2.94"

	Area (ac)	CN	Description
*	20.540	87	Multifamily, Existing Clubhouse, Open Space, 40% Imp, HSG D
	12.324		60.00% Pervious Area
	8.216		40.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.7	150	0.0050	0.09		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
5.3	360	0.0050	1.14		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
3.2	555	0.0040	2.87	2.25	Pipe Channel, Pipe to Pond 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
35.2	1,065	Total			

Subcatchment PDA3: PDA3 to Pond and Ellicott Creek



Summary for Subcatchment PDA4: Direct to Ellicott Creek

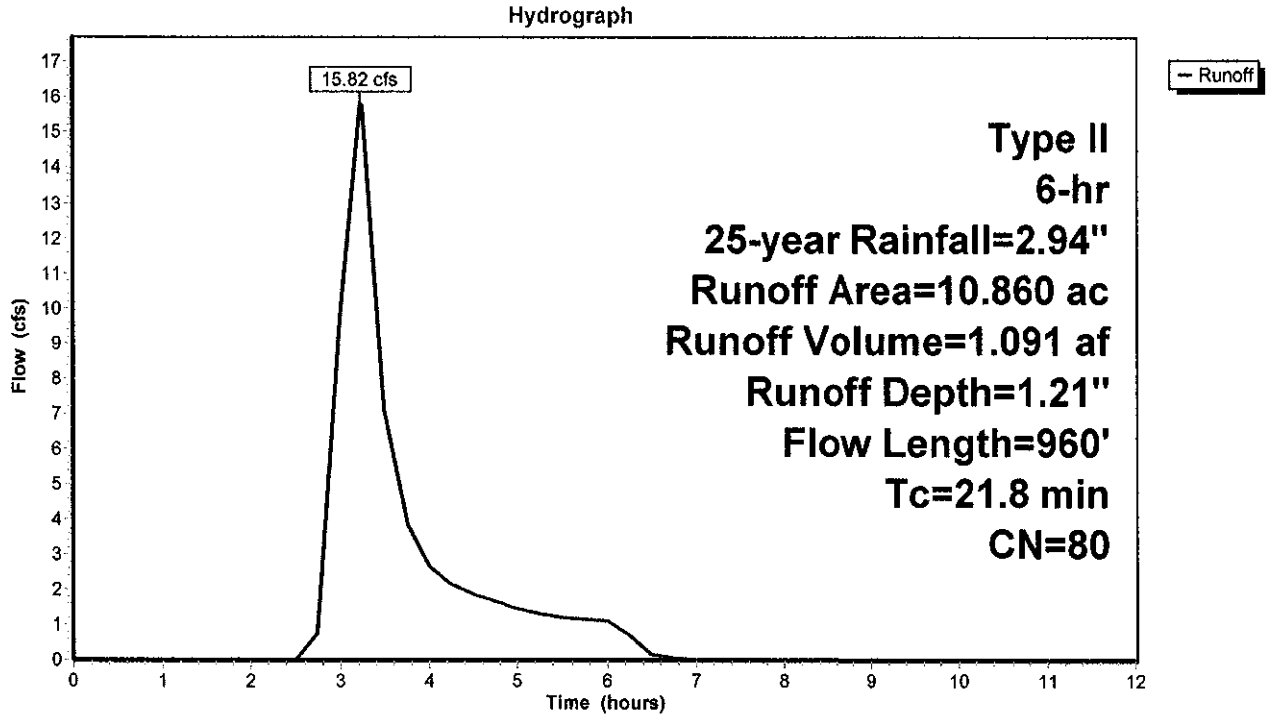
Runoff = 15.82 cfs @ 3.23 hrs, Volume= 1.091 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-12.00 hrs, dt= 0.25 hrs
Type II 6-hr 25-year Rainfall=2.94"

Area (ac)	CN	Description
10.860	80	>75% Grass cover, Good, HSG D
10.860		100.00% Pervious Area

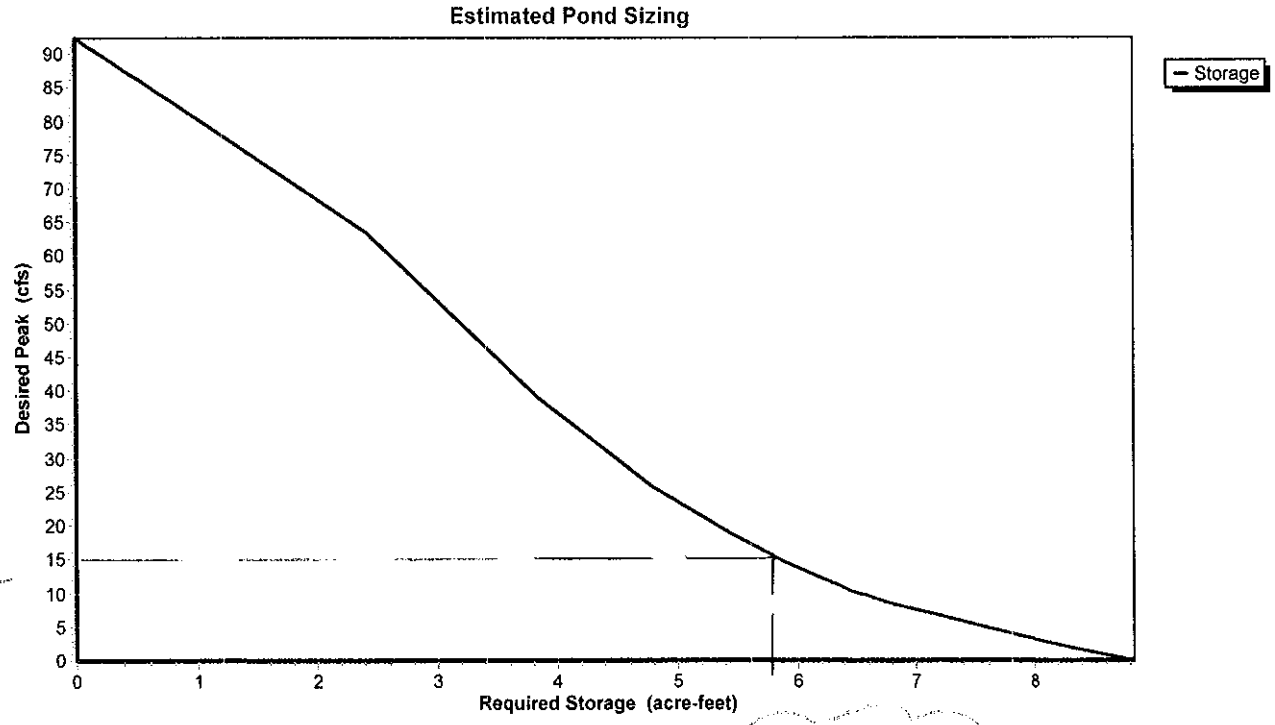
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	150	0.0600	0.25		Sheet Flow, A-B Grass: Short n= 0.150 P2= 2.50"
11.9	810	0.0050	1.14		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
21.8	960	Total			

Subcatchment PDA4: Direct to Ellicott Creek



Pond 1P: Discharge - Towards Audubon Par 3 (Pump Station)

PDA 1 STORAGE REQUIRED - 25 YR STORM

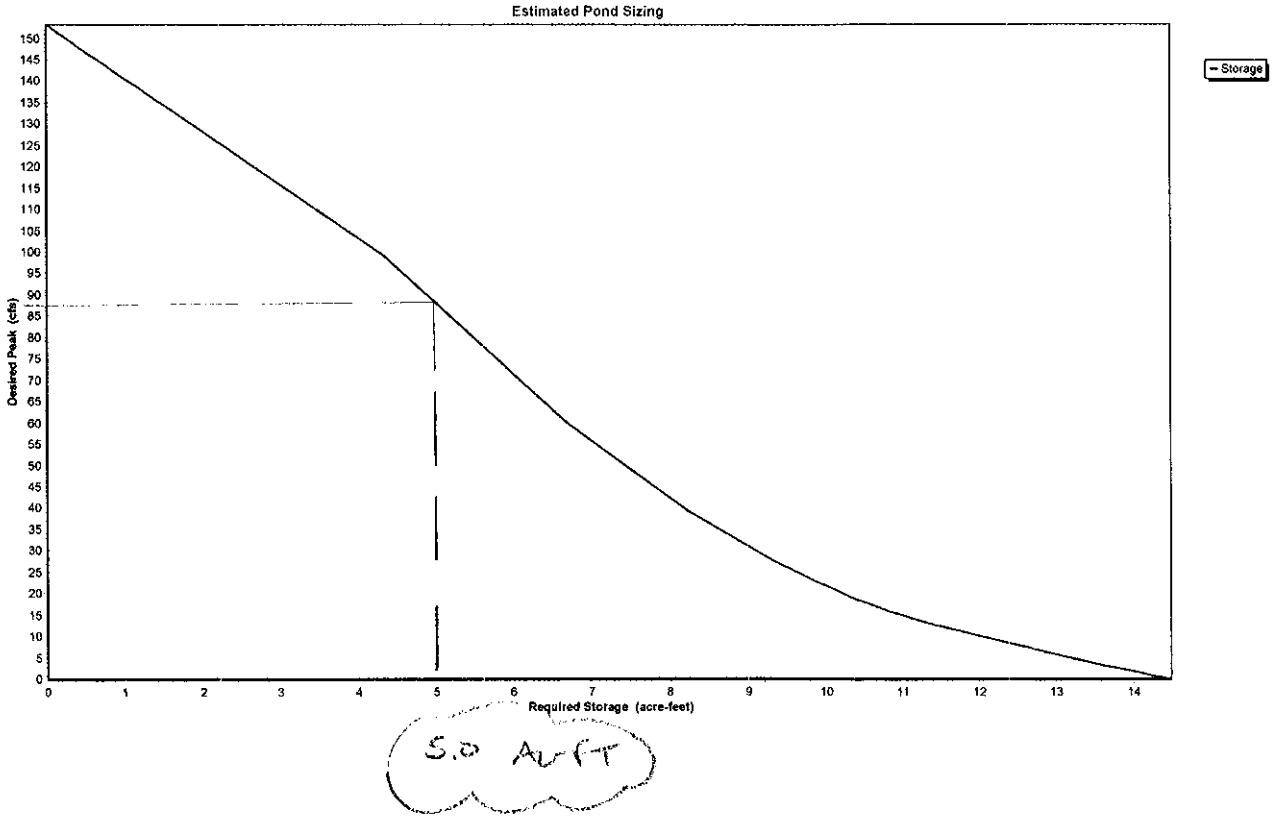


15cfs

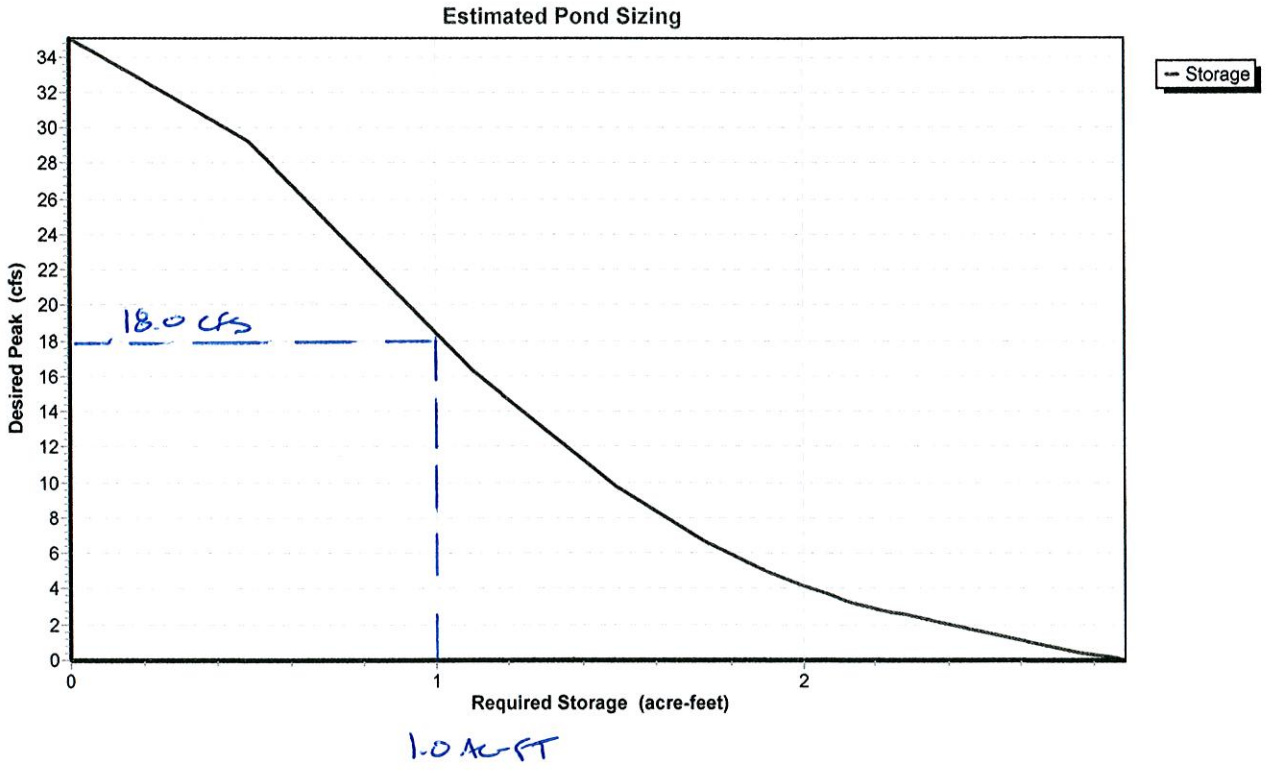
5.3 AC-FT

Pond 2P: Lake - Discharge to Ellicott Creek

POA 2 Storage Required - 25 yr Storm



Pond 3P: Discharge to Ellicott Creek



1.0 Ac-FT

EXHIBIT A

C&S COMPANIES STORMWATER MANAGEMENT ANALYSIS DATED DECEMBER 19, 2014

C&S Companies
141 Elm Street, Suite 100
Buffalo NY 14203
p: (716) 847-1630
f: (716) 847-1454
www.cscos.com

Memo

To: Brad Packard, AICP
Director of Development & Planning
Ciminelli Real Estate Corporation
Centerpointe Corporate Park
350 Essjay Road
Williamsville, NY 14221

From: Jason Utzig, P.E.

Date: December 19, 2014

Re: Westwood Project – Preliminary Engineering Design & Site Planning Services – Task 5 – Stormwater Management Planning

File: O76.003.001

The following is a supplement to the Preliminary Drainage Analysis Report for the Westwood Mixed Use Neighborhood Project, prepared by Professional Civil Engineering, L.L.C., dated May 19, 2014.

As mentioned in the Preliminary Drainage Analysis Report, post development stormwater discharge from the northernmost drainage area (identified as PDA1 in the Westwood PostDevelopment HydroCad report) will be conveyed to the stormwater management lake via a stormwater pumping station and ultimately to Ellicott Creek.

Due to the preliminary/conceptual nature of this task, detailed grading and utility plans were not prepared. We do however, have a general idea of the proposed elevations needed to be established in order to determine the elevations of the stormwater detention ponds, proposed stormwater discharge locations and/or the need for a stormwater pump station. To accomplish this, the Preliminary Conceptual Master Plan was overlaid with LIDAR topography, which includes 1-foot contour intervals. Additionally, the assumption was made that the proposed grades will generally follow the existing elevations.

The 3 detention ponds at the north end of the site are 7-foot deep (from a permanent water surface elevation of 590 to a top of bank elevation of 597). The proposed water surface elevation of the stormwater lake is 597.25. Due to the elevation difference between the 3 ponds and the stormwater lake, the 3 ponds

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cannot discharge by gravity to the lake. Therefore, a stormwater pump station will be needed.

A preliminary design of the stormwater pump station is included with this letter. The design parameters to start with were 10-feet of static head, 2,000 linear feet of forcemain and a total combined discharge rate of 15 cfs (6,732 gal/min) to discharge from the stormwater ponds to the stormwater lake. Given those parameters, a triplex submersible pump station (with two pumps running and a third pump as a backup) was selected. To obtain the approximately 6,800 gpm of discharge, each pump will be an 8" Fairbanks Morse solids handling submersible pump, 75 horsepower capacity, and capable of handling 3,400 gpm each. The pumps will discharge through a 16-inch diameter forcemain. Each pump will be on a guiderail system and all three pumps will be placed within a 9-foot diameter wet well (manhole) with an external valve vault. Note that as design progresses, the pumping system may be modified to reflect expanded or reconfigured ponds. The above is a preliminary design assessment.

It is intended that pump station ownership and operation will be accomplished through the establishment of a drainage district that will include all residents/owners within the project limits. A contract for the station's maintenance will be awarded to a ca local mechanical contractor.

As the project progresses from conceptual planning to design development, a more detailed design of the stormwater management system will ensue.

Traffic Impact Study

for the proposed

Westwood Mixed-Use Neighborhood

Town of Amherst
Erie County, New York

Project No. 33042

April 2014
Revised February 2015

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EXECUTIVE SUMMARY

OVERVIEW

The purpose of this updated Traffic Impact Study ("TIS") is to identify and evaluate the potential traffic impacts associated with the proposed Westwood mixed-use neighborhood in the Town of Amherst, New York. In an effort to define the potential traffic impacts, this analysis determines the extent of existing traffic conditions, projects background traffic flow and volumes including area growth, and projects changes in traffic flow on the roadway network in the study area associated with the proposed mixed-use neighborhood. This updated TIS also includes our firm's recommendations based on a comprehensive analysis of the potential traffic impacts associated with the proposed mixed-use neighborhood.

This updated TIS has been requested by Mensch Capital Partners, LLC ("Project Sponsor") in association with its submission of a revised Draft Generic Environmental Impact Statement ("DGEIS") which will include a comprehensive analysis of the potential environmental impacts of the proposed mixed-use neighborhood. This updated TIS includes an analysis of the potential traffic generation of the "alternatives" to the proposed mixed-use neighborhood. Additionally, a new Section XII of this updated TIS has also been included based on comments contained in a Memorandum issued by the Town of Amherst Planning Department dated September 3, 2014 based on its review of the originally submitted DGEIS on July 14, 2014. The results of the analysis of the "alternative" concept plans to be included in the revised DGEIS are included in the Appendices.

Until December 31, 2014, the approximately 170 acre project site was occupied by the Westwood Country Club, a private 18-hole golf course. The project site is bounded by: Maple Road to the north; the Audubon Par 3 Golf Course, Ellicott Creek, and North Forest Road to the east; Sheridan Drive to the south; and Frankhauser Road and Fairways Boulevard to the west. The proposed mixed-use neighborhood consists of the following land uses as depicted on the current Preliminary Conceptual Master Plan ("Preferred Plan") prepared by C&S Engineers, Inc.:

- Mixed-use Village Square
  - 115,000 SF commercial component
  - Apartments – 352 units
- Condominium Town Home Development – 84 units
- Patio Home Subdivision – 113 lots
- Single Family Home Subdivision – 47 lots
- Office Park (professional office space) – 200,000 SF
- Senior Living
  - Assisted Living – 200 beds
  - Independent Living Apartments – 96 units
- Rental Town Home Development – 93 units
- Hotel – 130 rooms
- Synagogue- 25,000 SF

Access to the proposed mixed-use neighborhood will be provided via a new north/south roadway, to be dedicated to the Town, connecting Maple Road and Sheridan Drive. The northerly access point will form a new "T" intersection at Maple Road. The southerly access will intersect Sheridan Drive on the north side directly opposite the existing Fenwick Road intersection on the south side of Sheridan Drive. A right-in/right-out/left-in only driveway was

considered along Sheridan Drive between Fenwick Road and North Forest Road. However, this access point has been removed from the updated Conceptual Master Plan based on input received from the New York State Department of Transportation ("NYSDOT").

Construction of the proposed mixed-use neighborhood is anticipated to reach full build-out in approximately 10 years and the build-out will occur over multiple phases. However, for purposes of this study, our firm's analysis takes into account the full redevelopment of the project site. Town of Amherst officials were contacted to discuss projects within the study area that are under construction and/or approved. There is a proposed 21 lot patio home project proposed by Elite Construction on several parcels located to the west of the project site at 4176-4188 Sheridan Drive. To account for normal increases in background traffic growth, including the aforementioned proposed patio home project, which has not been approved at this time, as well as any unforeseen developments in the project study area, a growth rate of 0.25% per year has been applied to the existing traffic volumes, based upon historical traffic growth derived from New York State Department of Transportation ("NYSDOT") and Greater Buffalo-Niagara GBNRTC traffic volume projections for the area, for the 10-year build-out period.

The operating characteristics of the site access roads and impacts to the adjacent roadway network are identified and mitigating measures, if any, are provided to minimize any capacity or safety concerns.

CONCLUSIONS & RECOMMENDATIONS

This updated Traffic Impact Study identifies and evaluates the potential traffic impacts resulting from full build-out of the proposed mixed-use neighborhood. This updated Traffic Impact Study provides the Amherst Town Board, in its capacity as the designated lead agency for the coordinated environmental review of the proposed mixed-use redevelopment project pursuant to SEQRA, along with involved and interested agencies including the NYSDOT and Erie County Department of Public Works ("ECDPW"), with information to allow a hard look to be taken at identified potential traffic impacts. Based upon the comprehensive analysis contained in this report, it is our firm's professional opinion that the results indicate that the proposed mixed-use neighborhood can be accommodated by the existing roadway network with the recommendations below being in place. The following sets forth our firm's conclusions and recommendations based upon the results of the comprehensive traffic analyses that have been conducted:

1. The proposed mixed-use neighborhood is expected to generate approximately 920 (896) new trips during the AM (PM) peak hours respectively.

2. A left-turn lane warrant investigation was conducted along Maple Road and Sheridan Drive at the proposed driveways. However, two-way left-turn facilities already exist at the location of the proposed access roads. The two-way left-turn lanes should be restriped to accommodate dedicated left-turn lanes entering the proposed driveway along Maple Road and the existing Sheridan Drive/Fenwick Road intersection.

3. A right-turn lane investigation was conducted along Maple Road and Sheridan Drive at the proposed driveway locations. While the future volumes satisfy the right-turn lane guidelines at the intersection of Maple Road and the proposed driveway under full development during the AM and PM peak hours, no improvement is recommended given the location of adjacent residential properties. Right-turn guidelines were satisfied

during both peak hours at the intersection of Sheridan Drive/Fenwick Road/Proposed Driveway. The right turn lane should provide 425' of storage space with a 75' taper.

4. Install a new traffic signal at the proposed public roadway on Sheridan Drive when the driveway is constructed. The new traffic signal should be coordinated with the existing traffic signal network along Sheridan Drive to the west of the project site.

5. Install a new traffic signal at the proposed public roadway connection on Maple Road when the new roadway is constructed.

6. The proposed new north south public roadway connecting Sheridan Drive and Maple Road should be designed to provide two lanes of exiting traffic and two lanes of entering traffic to both facilitate traffic movements and to achieve the desired alignment with the existing Fenwick Road. The throat length of the driveway should be designed to accommodate vehicle queues exiting the site and reduce vehicle blockages of internal circulation roadways; therefore a minimum uninterrupted throat length of 200' is recommended.

7. Internal sidewalks should form an inter-connected pedestrian network allowing users to actively walk amongst the various land use components to be included in the mixed-use neighborhood. Additionally, internal paved recreational paths should be designed and installed to encourage bicycle use.

8. The southern portion of the mixed-use neighborhood as depicted on the Conceptual Master Plan consists of the commercial and office components, higher density residential units, and the hotel component. This portion of the Project Site should incorporate bicycle parking and related facilities into the design. Such facilities should include bicycle racks and consideration should be given to including bicycle lockers, as well as providing shower and changing facilities within the proposed buildings.

9. Transportation demand management ("TDM") strategies should be considered and implemented, when practical, to reduce off-site vehicular trips.

10. Consideration should be given to reducing the number of parking spaces constructed on-site given the mixed-use nature of the proposed neighborhood, potential for non-vehicular trips, and the potential for shared parking between different categories of land uses with differing peak parking demands. The use of shared parking reduces the amount of impervious surfaces and prevent parking areas from having more parking spaces than needed to service a project with a mixture of land uses with differing peak parking demands.

I. INTRODUCTION

The purpose of this updated Traffic Impact Study ("TIS") is to identify and evaluate the potential traffic impacts associated with the proposed Westwood Country Club Development in the Town of Amherst, New York. The operating characteristics of the proposed access points and impacts to the adjacent roadway network are identified and evaluated.

This updated Traffic Impact Study has been requested by Mensch Capital Partners, LLC ("Project Sponsor") in association with its preparation of a revised Draft Generic Environmental Impact Statement ("DGEIS") which will include the consideration of alternative concept design plans for the Westwood project site. In an effort to thoroughly consider and properly analyze the potential traffic impacts associated with alternative concept design plans, a trip generation comparison is performed for the alternative design plans. The results of the analysis of the "alternative" concept plans to be included in the revised DGEIS are included in the Appendices.

In an effort to define traffic impacts, this analysis determines the extent of existing traffic conditions, projects background traffic flow including area growth, and projects changes in traffic flow due to the proposed development.

II. LOCATION

The project site is located between Maple Road and Sheridan Drive, west of North Forest Road and east of Fairways Boulevard in the Town of Amherst, Erie County, New York. The site location and study area are shown in **Figure 1** – Site Location and Study Area (all figures are included at the end of this report).

Until December 31, 2014, the approximately 170 acre project site was occupied by the Westwood Country Club, a private 18-hole golf course. The project site is bounded by: Maple Road to the north; the Audubon Par 3 Golf Course, Ellicott Creek, and North Forest Road to the east; Sheridan Drive to the south; and Frankhauser Road and Fairways Boulevard to the west. In order to ensure a comprehensive analysis of potential traffic impacts, a broad study area was selected consisting of the following 14 existing intersections:

1. Maple Road/Millersport Hwy SB
2. Maple Road/Millersport Hwy NB
3. Maple Road/S. Maplemere Road
4. Maple Road/Sandhurst Lane
5. Maple Road/Donna Lea Boulevard
6. Maple Road/N. Forest Road
7. Sheridan Drive/Mill Street
8. Sheridan Drive/N. Forest Road
9. Sheridan Drive/Fenwick Road
10. Sheridan Drive/Frankhauser Road
11. Sheridan Drive/I-290 WB
12. Sheridan Drive/Harlem Road
13. Harlem Road/I-290 EB
14. N. Forest Road/Existing Country Club Driveway

III. EXISTING HIGHWAY SYSTEM

A. Existing Transportation Facilities

The following is a description of the roadway network in the vicinity of the project site that was evaluated by our firm in connection with the preparation of this updated TIS. It is important to mention that the Annual Average Daily Traffic ("AADT") counts referenced below were obtained based upon the most recent traffic counts collected by the New York

State Department of Transportation ("NYSDOT") and Greater Buffalo-Niagara Regional Transportation Council ("GBNRTC"). All AADT data referenced below has been properly adjusted by the background growth rate to account for current conditions as is the standard methodology for professionally prepared traffic impact studies.

Maple Road (CR 192) is functionally classified as an urban principal arterial roadway under the jurisdiction of Erie County Department of Public Works ("ECDPW"). Within the study area, motorists travel east and west using two travel lanes in each direction, a center two-way left-turn lane ("2WLTL") and auxiliary turn lanes at the intersections with Millersport Highway, South Maplemere Road, and North Forest Road. Within the study area, AADT on Maple Road is approximately 21,913 vehicles per day ("vpd") according to the most recent traffic counts collected by the NYSDOT in 2010. The posted speed limit on Maple Road is 45 miles per hour ("MPH").

Sheridan Drive (NY 324) is functionally classified as an urban principal arterial roadway under the jurisdiction of the NYSDOT. Within the study area, motorists travel east and west using two travel lanes in each direction, a 2WLTL, and auxiliary turn lanes at the intersections with Harlem Road, I-290, Frankhauser Road, Fenwick Road, North Forest Road, and Mill Street. The AADT on Sheridan Drive is approximately 39,724 vpd according to the most recent traffic counts collected by NYSDOT in 2011. The posted speed limit is 45 MPH.

North Forest Road (CR 294) is functionally classified as a minor arterial roadway, under the jurisdiction of the ECDPW. Within the study area, motorists travel north and south using one travel lane in each direction with auxiliary turn lanes at the intersections of Maple Road and Sheridan Drive. The AADT on North Forest Road is approximately 13,550 vpd according to the most recent traffic counts collected by the GBNRTC in 2008. The posted speed limit is 30 MPH.

Harlem Road (NY 240) is functionally classified as an urban minor arterial roadway under the jurisdiction of the NYSDOT. Within the study area, motorists travel north and south using two travel lanes in each direction and auxiliary turn lanes at the intersections with Sheridan Drive and the I-290. The AADT on Harlem Road is approximately 11,003 vpd, according to the most recent traffic counts collected by NYSDOT in 2011. The posted speed limit is 35 MPH.

Existing AADT information was obtained from the NYSDOT Traffic Data Viewer, NYSDOT Traffic Data Report, and GBNRTC Highway Database. **Figure 2** illustrates the lane geometry at each of the study intersections and the AADT volumes on the study roadways.

B. ***Planned/Programmed Highway Improvements***

The NYSDOT and the ECDPW were contacted to determine if there are any planned/future highway improvements on the roadways within the project study area. There were no ECDPW projects identified within the study area. The NYSDOT has indicated there is an in-development plan for a regional arterial management system along Sheridan Drive. The NYSDOT project involves the coordination of the traffic signals along Sheridan Drive.

IV. EXISTING TRAFFIC CONDITIONS

A. Peak Intervals for Analysis

Given the functional characteristics of the mixture of land uses being proposed for the project site (residential; senior living; commercial/retail; office; and hotel), the peak hours selected for analysis are the weekday commuter AM and PM peaks. The combination of site traffic and adjacent through traffic produces the greatest demand during these time periods.

B. Existing Traffic Volume Data

Weekday AM (7:00-9:00 AM) and PM (4:00-6:00 PM) peak hour volumes were collected by SRF & Associates ("SRF") at the study area intersections listed in Section II above.

Turning movement count data was collected by SRF at the study intersections on varying dates including Wednesday, November 14th, 2012; Thursday, November 15th, 2012; Wednesday, September 11th, 2013; and Thursday, September 12th, 2013. All turning movement count data were collected on typical weekdays while local schools and colleges were in session. The traffic volumes were reviewed to confirm the accuracy and relative balance of the collective traffic counts. All traffic volumes were found to balance within the network within reasonable and expected variations and adjustments were made where necessary to derive 2013 Existing Conditions. The peak hour traffic periods generally occurred between 7:45-8:45 AM and 4:30-5:30 PM on weekdays at the study intersections.

The 2013 weekday AM and PM peak hour existing traffic volumes are reflected in **Figure 3**.

C. Field Observations

The study intersections were observed during both peak intervals to assess current traffic operations. Signal timing information was collected to determine peak hour phasing plans and phase durations during each interval.

D. Accident Investigation

An accident investigation was completed to assess the safety history at the fourteen existing study intersections. Accident data was compiled from March 2010 through February 2013. The data was obtained from NYSDOT.

A total of 165 accidents were documented at the 14 intersections during the investigation period (3 years). The severity of the 165 documented accidents is as follows:

- 82 – Reportable – Injury
- 61 – Reportable – Non Injury
- 22 – Non Reportable/Unknown

Accident rates were computed for the project study intersections and compared with the NYSDOT average accident rates for similar intersections, as summarized in the following table. Intersection rates are listed as accidents per million entering vehicles

("Acc/MEV").

TABLE 1: INTERSECTION ACCIDENT RATES

Intersection	Number of Accidents	Actual Project Rate Acc/MEV	NYSDOT Average Rate Acc/MEV
Maple Road/Maplemere Road	11	**0.43**	0.17
Maple Road/Sandhurst Lane	0	0.00	0.12
Maple Road/Donna Lea Boulevard	2	0.08	0.12
Maple Road/North Forest Road	43	**1.09**	0.17
North Forest Road/Westwood C.C. Driveway	1	0.07	0.13
Harlem Road/I-290 SB Off/on-ramp	5	**0.22**	0.13
Millersport Highway NB Off/on-ramp/Maple Road	1	0.04	0.13
Millersport Highway SB Off/on-ramp/Maple Road	0	0.00	0.13
Sheridan Drive/North Forest Road	31	**0.62**	0.17
Sheridan Drive/Fenwick Road	2	0.06	0.13
Sheridan Drive/Frankhauser Road	3	0.08	0.13
Sheridan Drive/Harlem Road	27	**0.66**	0.13
Sheridan Drive/I-290 Off/on-ramp	16	**0.38**	0.13
Sheridan Drive/Mill Street	23	**0.65**	0.13

As shown in **Table 1**, seven of the fourteen study intersections have accident rates higher than the state wide average accident rates for similar intersections. The intersection of Maple Road/North Forest Road has an accident rate that is substantially higher than the state average. The majority of accidents at this intersection are rear end and left turn accidents.

Due to the fact that the intersection accidents have rates that exceed state averages, further investigation was performed to identify higher incident areas and possible trends/causes of the accidents. The results of the investigation are discussed in the following section.

Maple Road/Maplemere Road:
A total of 11 accidents were documented during the investigation period (3 years). Rear end (5) and right angle (5) accidents accounted for the majority of the accidents at this location. Four of the right angle crashes occurred in the westbound direction. Three rear end accidents occurred in the eastbound direction with two occurring in the westbound direction. The remaining accident was categorized as other (1).

Maple Road/North Forest Road:
A total of 43 accidents were documented at this intersection. The calculated accident rate is over 6 times higher than the statewide average for other similar intersections. Rear end (14) and left turn (12) accidents accounted for the majority of the accidents at this location. The remaining accidents were categorized as other (5), right angle (4), fixed object (3), bicycle/pedestrian (2), overtaking (2), and right turn (1). Notable accident clusters – locations greater than three (3) identifiable consistent accident

patterns – at this location include:

- 6 left turn collisions (southbound)
- 4 rear end collisions (northbound)
- 3 rear end collisions (southbound)
- 3 rear end collisions (eastbound)
- 3 right angle collisions (southbound)

Harlem Road/I-290 SB Off/on-ramp:
A total of five accidents were documented at this intersection. Rear end (2) and left turn (2) accidents accounted for the majority of the accidents at this location. The remaining accident was categorized as right angle (1).

Sheridan Drive/North Forest Road:
A total of 31 accidents were documented at this intersection during the 3-year investigation period. The calculated accident rate is over 3.5 times higher than the statewide average for other similar intersections. Rear end (20) accidents accounted for the majority of the accidents. The remaining accidents were categorized as left turn (3), right turn (3), right angle (1), side-swipe (1), fixed object (1), bicycle/pedestrian (1), and other (1). Notable accident clusters at this location include:

- 8 rear end collisions (eastbound)
- 4 rear end collisions (southbound)
- 4 rear end collisions (westbound)
- 3 rear end collisions (unknown)

Sheridan Drive/Harlem Road:
A total of 27 accidents were documented at this intersection. The calculated accident rate is approximately 5 times higher than the statewide average for other similar intersections. Rear end (11) and left turn (11) accidents accounted for the majority of the accidents. The remaining accidents were categorized as right angle (3), overtaking (1), and fixed object (1). Notable accident clusters at this location include:

- 6 rear end collisions (eastbound)
- 3 rear end collisions (northbound)
- 6 left turn collisions (northbound)
- 5 left turn collisions (westbound)

Sheridan Drive/I-290 Off/on-ramp:
A total of 16 accidents were documented at this intersection. Rear end (5) accidents accounted for the majority of the accidents. The remaining accidents were categorized as left turn (3), right angle (3), overtaking (2), head on (1), side-swipe (1), and animal (1). Notable accident clusters at this location include:

- 4 rear end collisions (westbound)
- 3 right angle collisions (northbound)

Sheridan Drive/Mill Street:
A total of 16 accidents were documented at this intersection. The calculated accident rate is approximately 5 times higher than the statewide average for other similar intersections. Rear end (10) accidents accounted for the majority of the accidents.

The remaining accidents were categorized as right angle (8), left turn (2), fixed object (1), animal (1), and other (1). Notable accident clusters at this location include:

- 7 rear end collisions (eastbound)
- 4 right angle collisions (westbound)
- 3 right angle collisions (eastbound)

Most accidents were caused by either driver inattention, following too closely, or failure to yield to the right of way. Human error contributing factors were the most prevalent causes of the accidents.

Additional traffic from the proposed mixed-use neighborhood may increase the potential for collisions. Based upon the accident details at each intersection, there are identifiable patterns of rear-end collisions. These types of collisions are more common at traffic signals on high volume roadways. Recommended mitigation countermeasures may include optimizing the change intervals at the traffic signals (to increase the length of time between phase intervals) and/or signal coordination.

V. FUTURE AREA DEVELOPMENT AND LOCAL GROWTH

Construction of the proposed mixed-use neighborhood is anticipated to reach full build-out in approximately 10 years and the build-out will occur over multiple phases. However, for purposes of this study, our firm's analysis takes into account the full development of the project site. Town of Amherst officials were contacted to discuss projects within the study area that are under construction and/or approved. There is a proposed 21 lot patio home project proposed by Elite Construction on several parcels located to the west of the project site at 4176-4188 Sheridan Drive. To account for normal increases in background traffic growth, including the aforementioned patio home project, which has not been approved at this time, as well as any unforeseen developments in the project study area, a growth rate of 0.25% per year has been applied to the existing traffic volumes, based upon historical traffic growth derived from New York State Department of Transportation ("NYSDOT") and Greater Buffalo-Niagara GBNRTC traffic volume projections for the area, for the 10-year build-out period. The background traffic volumes are depicted in **Figure 4.**

VI. PROPOSED DEVELOPMENT

A. Description

Until December 31, 2014, the project site was occupied by the Westwood Country Club with an 18-hole golf course on approximately 170 acres. The proposed development consists of the following land uses as depicted on the current Conceptual Master Plan prepared by C&S Engineers, Inc.:

- Mixed-use Village Square
  - 115,000 SF commercial component
  - Apartments – 352 units
- Condominium Town Home Development – 84 units
- Patio Home Subdivision – 113 lots
- Single Family Home Subdivision – 47 lots

- Office Park (generally professional offices) – 200,000 SF
- Senior Living
  - Assisted Living – 200 beds
  - Independent Living Apartments – 96 units
- Rental Town Home Development – 93 units
- Hotel – 130 rooms
- Synagogue- 25,000 SF

Access to the proposed Westwood Country Club Development will be provided via a new north/south roadway that will be dedicated to the Town to become a new public roadway connecting Maple Road and Sheridan Drive. The northerly access point will form a new "T" intersection at Maple Road. The southerly access will intersect Sheridan Drive on the north side directly opposite the existing Fenwick Road intersection. A right-in/right-out/left-in only driveway was considered along Sheridan Drive between Fenwick Road and North Forest Road; however, this access point has been removed from the updated Conceptual Master Plan based on input received from the New York State Department of Transportation ("NYSDOT"). **Figure 5** illustrates the Preliminary Conceptual Master Plan ("Preferred Plan").

The project site has frontage along Maple Road and Sheridan Drive. Both roadways currently have pedestrian sidewalks on each side of the road. In addition, Route #49 of the Niagara Frontier Transportation Authority ("NFTA") metro-bus system operates along Sheridan Drive.

The proposed mixed-use neighborhood should take advantage of the existing pedestrian infrastructure system in place along Maple Road and Sheridan Drive. Internally, sidewalks should form an inter-connected network allowing users to actively walk amongst the various land uses. Additionally, internal circulation routes designed to encourage bicycle use are an amenity that can promote a more active lifestyle. The southern portion of the mixed-use redevelopment project as depicted on the Conceptual Master Plan consists of the commercial and office components, higher density residential units, and the hotel component should incorporate bicycle parking and related facilities into the design. Such facilities should include bicycle racks and consideration should be given to including bicycle lockers as well as providing shower and changing facilities within the proposed buildings. Bicycle signage along the main north/south internal roadway can be used to increase driver's awareness of bicyclists as well as encourage bicycle ridership. Implementing, to the extent practicable, pedestrian and bicycle design features into the proposed mixed-use neighborhood can encourage a healthy, active lifestyle encouraging reduced vehicle trips generated by the proposed mixed-use neighborhood.

B. ***Site Traffic Generation***

The next step in the evaluation is to determine the volume of traffic attributable to the mixed-use neighborhood as defined by vehicle trips entering and exiting the project site. Trip generation is an estimate of the number of trips generated by a specific building or land use. These trips represent the volume of traffic entering and exiting the development. The Trip Generation, 9th Edition is used as a reference for this information and is the accepted standard for determining the projected traffic volumes for a project. The trip rate for the peak hour of the generator may or may not coincide in time or volume with the trip rate for the peak hour of adjacent street traffic. Volumes generated during the peak hour of adjacent street traffic, in this case

the weekday AM and PM commuter peaks, represent a more critical volume when analyzing the capacity of the system, and as such those intervals will provide the basis of this analysis.

The volume of traffic generated by a site is dependent on the intended land use and size of the development. The volume of site-generated traffic has been estimated based on ITE rates, as shown in **Table II**. All trip generation calculations are included in the Appendix.

TABLE II: SITE GENERATED TRIPS

DESCRIPTION	SIZE/ UNITS	AM PEAK		PM PEAK	
		ENTER	EXIT	ENTER	EXIT
Single Family Residential	47 Units	11	32	33	20
Patio Homes	113 Units	22	67	74	43
Condominium Townhomes	84 Units	8	37	35	17
Rental Townhomes	93 Units	21	44	34	33
Apartments	352 Units	35	141	137	74
Assisted Living	200 Beds	18	10	19	25
Senior Housing	96 Units	6	13	14	11
Hotel	130 Rooms[1]	33	24	29	31
Professional Office	200,000 SF	275	37	51	247
Commercial/Retail	115,000 SF	105	65	316	342
Synagogue[2]	25,000 SF	0	0	20	22
Total Projected Driveway Trips		***534***	***470***	***762***	***865***

1. Average occupancy rate is 65%. Therefore, 85 occupied rooms were used as the variable for trip generation purposes. This is consistent with standard practice for determining vehicular trips projections for a hotel.
2. The traffic generation associated with this building is projected to be during off-peak hours. The planned synagogue is associated with Judaism, the primary weekly religious service (the "Shabbat") is held on Saturday mornings. There are a limited number of annual holidays that will generate larger attendance. The facility will be utilized to a lesser extent during other time periods; the primary traffic trip generation is Saturday mornings.

C. *Determination of Multi-use and Pass-by Trips*

Inherent in the trip generation estimate for the proposed development, is the "multi-use" traffic component of traffic entering and exiting the site. According to the Institute of Transportation Engineers, Trip Generation Handbook, 2001, "…a multi-use development is typically a single real-estate project that consists of two or more ITE land use classifications between which trips can be made without using the off-site road system. Because of the nature of these land uses, the trip-making characteristics are interrelated, and some trips are made among the on-site uses. This capture of trips internal to the site has the net effect of reducing vehicle trip generation between the overall development site and the external street system (compared to the total number of trips generated by comparable, standalone sites)." "In some multi-use developments, these internal trips can be made by walking or by vehicles entirely on internal pathways or internal roadways without using streets external to the site."

The ITE Trip Generation Handbook indicates internal capture rates for trips within a multi-use development to vary between office, residential, and retail uses during the AM and PM peak hours. Given the area in which the project site is located, the proposed office, residential, and retail components, and interconnection between internal adjacent components, multi-use (or multiple purpose) total volume trips will occur. Therefore it is estimated, based on methods in the ITE Trip Generation Handbook that an approximate 8% and 36% reduction in total trip generation for the site will occur during the AM and PM peak hours of analysis, respectively. This trip adjustment is calculated based upon ITE standards for multi-use trip reductions based on the varying uses and interconnections within the mixed-use neighborhood. This multi-use trip projection adjustment was applied to the total site generated trips and subtracted from the traffic entering and exiting the site for the AM and PM peak period.

In addition, for certain types of developments, the total number of trips generated is different from the amount of new traffic added to the adjacent highway network by the generator. Retail-oriented developments (such as convenience stores, gas stations, shopping centers, discount stores, restaurants, service stations, and supermarkets) often locate adjacent to busy streets in order to attract the motorists already passing the site on the adjacent street. These sites attract a portion of their trips from traffic passing the site. The "pass-by" traffic refers to the amount of existing traffic already on the roadway adjacent to the site that, as it "passes by" the site, will enter the site driveways to patronize the project site.

The combination of "multi-use" and "pass-by" trips has the net result of reducing the volume of new traffic that is added to the site driveways and/or adjacent roadways. In the case of the proposed mixed-use neighborhood, there will be both "multi-use" and "pass-by" trips associated with the new land uses on the site.

ITE data indicates that pass-by rates for shopping centers/retail uses can vary from 10% to as high as 80% during the PM peak hour, e.g. restaurants typically exhibit pass-by rates of 45% during the PM peak hour. Given the composition of the proposed land uses and location of the project site with frontage along both Sheridan Drive and Maple Road, a conservative pass-by rate of 37% was used during the PM peak hour. **Table III** shows the total site generated trips, multi-use trips, pass-by trips, driveway trips, and resulting primary trips that are added to the existing highway system for full development of the project.

TABLE III: SITE TRAFFIC VOLUMES & ADJUSTMENTS

DESCRIPTION	SIZE	AM PEAK		PM PEAK	
		ENTER	EXIT	ENTER	EXIT
Single Family Residential	47 Units	11	32	33	20
Patio Homes	113 Units	22	67	74	43
Condominium Townhomes	84 Units	8	37	35	17
Rental Townhomes	93 Units	21	44	34	33
Apartments	352 Units	35	141	137	74
Assisted Living	200 Beds	18	10	19	25
Senior Housing	96 Units	6	13	14	11
Hotel	130 Rooms[1]	33	24	29	31
Professional Office	200,000 SF	275	37	51	247
Commercial/Retail	115,000 SF	105	65	316	342
Synagogue[2]	25,000 SF	0	0	20	22
Sub-total		**534**	**470**	**762**	**865**
Multi-use Trips		*-42*	*-42*	*-274*	*-311*
Pass-by Trips		*0*	*0*	*-77*	*-69*
Total New Trips		**492**	**428**	**411**	**485**

1. Average occupancy rate is 65%. Therefore, 85 occupied rooms were used as the variable for trip generation purposes. This is consistent with standard practice for determining vehicular trips projections for a hotel.
2. The traffic generation associated with this building is projected to be during off-peak hours. The planned synagogue is associated with Judaism, the primary weekly religious service (the "Shabbat") is held on Saturday mornings. There are a limited number of annual holidays that will generate larger attendance. The facility will be utilized to a lesser extent during other time periods; the primary traffic trip generation is Saturday mornings.

D. *Site Traffic Distribution*

The cumulative effect of site traffic on the transportation network is dependent on the origins and destinations of that traffic and the location of the access drives serving the site.

The proposed arrival/departure distribution of traffic to be generated at this site is considered a function of several parameters, including the following:

- Employment centers;
- Existing highway network;
- Proximity and access to I-290;
- Population centers;
- Location of land uses on proposed site plan; and
- Existing traffic patterns, traffic conditions, and controls

Figures 6A (residential), 6B (hotel), and **6C (commercial/office)** show the anticipated trip distribution pattern percentages for full build-out of the proposed mixed-use neighborhood. **Figures 7A, 7B,** and **7C** show the resulting total site generated traffic as assigned to the study area intersections for the weekday AM and PM peak hour periods under full build-out conditions. **Figure 7D** shows the trips generated for all uses on one graphic.

VII. FULL DEVELOPMENT VOLUMES

The projected design hour traffic volumes were developed for the weekday AM and PM peak hours by combining the future background traffic conditions (Figure 4), and projected site generated volumes for full build-out of the proposed mixed-use neighborhood (Figures 7A-7C) in order to yield the total traffic conditions expected at full development. **Figure 8** illustrates the total weekday AM and PM peak hour volumes anticipated for the proposed development under full build-out conditions.

VIII. CAPACITY ANALYSIS

Capacity analysis is a technique used for determining a measure of effectiveness for a section of roadway and/or intersection based on the number of vehicles during a specific time period. The measure of effectiveness used for the capacity analysis is referred to as a Level of Service ("LOS"). Levels of Service are calculated to provide an indication of the amount of delay that a motorist experiences while traveling along a roadway or through an intersection. Since the most amount of delay to motorists usually occurs at intersections, capacity analysis focuses on intersections, as opposed to highway segments.

Six Levels of Service are defined for analysis purposes. They are assigned letter designations, from "A" to "F", with LOS "A" representing the best conditions and LOS "F" the worst. Suggested ranges of service capacity and an explanation of Levels of Service are included in the Appendix.

The standard procedure for capacity analysis of signalized and un-signalized intersections is outlined in the Highway Capacity Manual ("HCM 2010") published by the Transportation Research Board. Traffic analysis software, Synchro 7, which is based on procedures and methodologies contained in the HCM, was used to analyze operating conditions at study area intersections. The procedure yields a Level of Service based on the HCM 2010 as an indicator of how well intersections operate.

Existing and background operating conditions during the peak study periods are evaluated to determine a basis for comparison with the projected future conditions. The projected future traffic volumes generated by the proposed development were analyzed to assess the operations of the intersections in the study area. Capacity results for existing, background, and full development conditions are listed in **Table IV**. The discussion following the table summarizes capacity conditions. All capacity analysis calculations are included in the Appendices.

TABLE IV: CAPACITY ANALYSIS RESULTS

INTERSECTION	EXISTING		BACKGROUND		FULL DEVELOPMENT		FULL DEVELOPMENT W/ MITIGATION	
	AM	PM	AM	PM	AM	PM	AM	PM
Maple Road/Millersport Hwy SB (S)								
Eastbound Left – Maple Road	A(2.8)	A(5.1)	A(2.9)	A(5.4)	A(2.9)	A(5.8)		
Eastbound Thru – Maple Road	A(2.9)	A(5.5)	A(3.0)	A(5.8)	A(3.1)	A(6.2)		
Westbound Thru – Maple Road	A(3.2)	A(7.6)	A(5.2)	A(7.1)	A(5.8)	A(8.4)		
Westbound Right – Maple Road	A(0.3)	A(0.2)	A(0.3)	A(0.2)	A(0.3)	A(0.2)	N/A	
Southbound Left – Millersport Hwy SB	C(29.7)	C(26.0)	C(29.7)	C(25.5)	C(30.2)	C(25.2)		
Southbound Right – Millersport Hwy SB	B(11.4)	C(22.5)	B(11.4)	C(23.3)	B(11.3)	C(24.6)		
Overall LOS/Delay (sec/veh)	***A(3.5)***	***A(7.7)***	***A(4.4)***	***A(7.7)***	***A(4.7)***	***A(8.5)***		
Maple Road/Millersport Hwy NB (S)								
Eastbound Left – Maple Road	A(7.8)	C(31.8)	B(13.4)	D(37.4)	B(15.6)	D(52.4)		
Eastbound Thru – Maple Road	A(6.2)	B(11.0)	A(9.5)	B(10.6)	B(10.6)	B(11.2)		
Westbound Thru/Right – Maple Road	A(7.5)	B(14.3)	B(11.3)	B(14.5)	B(12.5)	B(15.2)	N/A	
Northbound Left – Millersport Hwy NB	C(27.9)	B(16.0)	B(19.6)	B(16.2)	B(18.7)	B(16.2)		
Northbound Thru/Right – Millersport Hwy NB	C(27.9)	D(37.4)	C(25.9)	D(41.4)	C(27.4)	D(44.4)		
Overall LOS/Delay (sec/veh)	***B(12.7)***	***B(18.3)***	***B(14.4)***	***B(19.2)***	***B(15.4)***	***C(20.6)***		
Maple Road/Maplemere Road (S)								
Eastbound Left – Maple Road	A(6.0)	A(6.5)	A(6.0)	A(6.6)	A(6.1)	A(6.8)		
Eastbound Thru/Right – Maple Road	A(6.4)	A(7.4)	A(6.4)	A(7.5)	A(6.5)	A(7.7)		
Westbound Left – Maple Road	A(5.3)	A(6.9)	A(5.4)	A(7.0)	A(5.4)	A(7.2)		
Westbound Thru/Right – Maple Road	A(6.5)	A(6.4)	A(6.6)	A(6.5)	A(6.7)	A(6.6)	N/A	
Northbound – Maplemere Road	B(15.5)	B(15.3)	B(15.7)	B(15.2)	B(16.6)	B(15.5)		
Southbound – Maplemere Road	B(13.7)	C(21.1)	B(14.1)	C(21.9)	B(14.9)	C(22.5)		
Overall LOS/Delay (sec/veh)	***A(7.1)***	***A(7.9)***	***A(7.2)***	***A(8.0)***	***A(7.3)***	***A(8.1)***		
Maple Road/Donna Lea Boulevard (U)								
Westbound Left – Maple Road	B(10.5)	C(15.3)	B(10.6)	C(15.8)	B(10.9)	C(16.6)	B(10.9)	C(16.6)
Northbound – Donna Lea Boulevard	C(14.9)	C(20.4)	C(15.0)	C(21.1)	C(15.3)	C(22.3)	B(14.5)	C(21.7)
Maple Road/Sandhurst Lane (U)								
Eastbound Left – Maple Road	B(10.6)	A(0.0)	B(10.7)	A(0.0)	B(11.3)	A(0.0)		
Westbound Left – Maple Road	B(10.4)	B(12.5)	B(10.5)	B(12.7)	B(11.1)	B(13.5)	N/A	
Northbound – Sandhurst Lane	C(20.4)	D(27.2)	C(21.0)	D(28.4)	C(23.7)	D(32.5)		
Southbound Audubon Golf Course	C(22.0)	A(0.0)	C(22.6)	A(0.0)	D(25.5)	A(0.0)		
Maple Road/North Forest Road (S)								
Eastbound Left – Maple Road	B(18.2)	C(22.2)	B(18.6)	C(23.2)	C(21.0)	C(29.6)		
Eastbound Thru – Maple Road	D(39.7)	D(44.9)	D(41.0)	D(46.7)	D(44.2)	D(52.1)		
Eastbound Right – Maple Road	A(5.3)	A(4.6)	A(5.2)	A(5.1)	A(5.2)	A(5.6)		
Westbound Left – Maple Road	D(39.7)	D(50.0)	D(43.8)	D(53.0)	D(48.9)	E(55.9)		
Westbound Thru – Maple Road	C(27.8)	C(31.7)	C(28.1)	C(32.1)	C(29.0)	C(33.6)		
Westbound Right – Maple Road	B(13.8)	B(16.4)	B(13.8)	B(16.5)	B(13.9)	B(16.7)		
Northbound Left – North Forest Road	D(39.8)	D(42.6)	D(43.5)	D(46.3)	D(49.8)	D(51.4)	N/A	
Northbound Thru – North Forest Road	D(42.1)	E(59.5)	D(42.7)	E(61.2)	D(43.8)	E(63.5)		
Northbound Right – North Forest Road	B(14.1)	B(19.5)	B(14.7)	C(20.1)	B(16.1)	C(21.1)		
Southbound Left – North Forest Road	C(27.8)	D(51.6)	C(28.6)	E(57.6)	C(29.8)	E(64.7)		
Southbound Thru - North Forest Road	D(51.3)	E(60.1)	D(53.2)	E(62.5)	E(56.0)	E(64.3)		
Southbound Right – North Forest Road	B(11.2)	A(9.1)	B(12.5)	B(10.3)	B(16.5)	B(13.1)		
Overall LOS/Delay (sec/veh)	***C(33.0)***	***D(39.9)***	***C(34.3)***	***D(41.5)***	***D(36.4)***	***D(44.5)***		

INTERSECTION	EXISTING		BACKGROUND		FULL DEVELOPMENT		FULL DEVELOPMENT W/ MITIGATION	
	AM	PM	AM	PM	AM	PM	AM	PM
Sheridan Drive/Mill Street (S)								
Eastbound Left – Sheridan Drive	C(27.2)	D(46.2)	C(27.4)	D(46.1)	C(28.7)	D(51.5)	C(30.0)	C(22.6)
Eastbound Thru/Right – Sheridan Drive	F(110.5)	F(*)	F(*)	F(*)	F(*)	F(*)	F(*)	D(38.3)
Westbound Left – Sheridan Drive	D(51.4)	D(43.8)	D(52.8)	D(45.9)	D(54.5)	D(45.9)	D(54.7)	E(60.2)
Westbound Thru/Right – Sheridan Drive	B(18.7)	D(50.5)	B(19.1)	D(53.6)	C(20.8)	E(63.0)	B(19.9)	C(20.9)
Northbound Left – Mill Street	C(34.0)	C(21.4)	C(34.1)	C(21.6)	C(34.5)	C(21.7)	D(39.0)	D(41.4)
Northbound Thru/Right – Mill Street	C(31.4)	C(22.5)	C(31.6)	C(22.7)	C(31.1)	C(22.7)	C(34.4)	D(40.6)
Southbound Left – Mill Street	D(43.2)	D(36.4)	D(43.4)	D(36.4)	D(43.3)	D(36.4)	D(47.1)	D(45.4)
Southbound Thru/Right – Mill Street	E(59.5)	C(34.2)	E(59.6)	C(34.3)	E(59.6)	C(34.1)	E(67.0)	D(42.5)
Overall LOS/Delay (sec/veh)	***E(65.7)***	***F(98.4)***	***E(72.4)***	***F(104.0)***	***F(86.4)***	***F(*)***	***E(77.8)***	***C(32.5)***
Sheridan Drive/North Forest Road (S)								
Eastbound Left – Sheridan Drive	C(20.1)	D(35.2)	C(21.0)	D(42.3)	C(25.3)	D(45.1)	N/A	D(47.7)
Eastbound Thru – Sheridan Drive	D(44.6)	D(47.5)	D(47.8)	D(50.8)	E(58.3)	E(63.5)		E(63.5)
Eastbound Right – Sheridan Drive	B(15.2)	B(16.1)	B(15.7)	B(16.7)	B(16.9)	B(18.3)		B(18.3)
Westbound Left – Sheridan Drive	D(54.6)	F(*)	E(57.2)	F(*)	E(58.5)	F(*)		F(*)
Westbound Thru/Right – Sheridan Drive	C(31.9)	D(38.6)	C(33.0)	D(40.4)	D(36.3)	D(45.0)		D(44.2)
Northbound Left – North Forest Road	D(39.9)	E(57.2)	D(40.8)	E(60.3)	D(45.8)	E(70.9)		E(70.9)
Northbound Thru – North Forest Road	D(42.5)	E(60.3)	D(42.7)	E(61.5)	D(42.3)	E(61.1)		E(61.1)
Northbound Right – North Forest Road	B(12.1)	B(12.3)	B(11.7)	B(12.6)	B(11.7)	B(12.8)		B(12.8)
Southbound Left – North Forest Road	C(27.5)	C(29.7)	C(27.5)	C(29.9)	C(27.4)	C(29.8)		C(29.8)
Southbound Thru - North Forest Road	E(58.3)	E(60.6)	E(58.6)	E(61.0)	E(59.5)	E(61.3)		E(61.3)
Southbound Right – North Forest Road	A(9.1)	A(9.0)	A(9.1)	A(8.9)	B(11.8)	A(8.9)		A(8.9)
Overall LOS/Delay (sec/veh)	***D(38.2)***	***D(51.6)***	***D(39.7)***	***D(54.5)***	***D(44.3)***	***E(59.6)***		***E(59.4)***
North Forest Road/ Country Club Driveway (U)								
Eastbound Left – Country Club Driveway	C(21.4)	E(37.8)	C(22.3)	E(41.5)	*REMOVED UNDER FULL DEVELOPMENT*			
Northbound – North Forest Road	A(0.3)	A(1.0)	A(0.3)	A(1.0)				
Sheridan Drive/Fenwick Road/ Proposed Driveway (U)					Unsignalized		Signalized	
Eastbound Left – Sheridan Drive	N/A		N/A		E(35.8)	D(30.7)	D(49.2)	D(54.1)
Eastbound Thru/Right – Sheridan Drive					N/A		A(5.5)	B(11.9)
Westbound Left – Sheridan Drive	B(14.8)	C(16.0)	C(15.3)	C(16.6)	C(15.1)	C(16.0)	B(13.8)	B(17.4)
Westbound Thru – Sheridan Drive	N/A		N/A		N/A		C(24.3)	C(31.3)
Westbound Right – Sheridan Drive							A(2.6)	A(2.9)
Northbound – Fenwick Road	D(30.7)	D(28.0)	D(32.3)	D(29.3)	F(*)	F(*)	C(33.1)	C(21.3)
Southbound Left – Proposed Driveway	N/A		N/A		F(*)	F(*)	N/A	
Southbound Left/Thru – Proposed Driveway					N/A		E(55.1)	D(49.7)
Southbound Right – Proposed Driveway					E(39.2)	F(69.9)	C(28.9)	C(27.6)
Overall LOS/Delay (sec/veh)					N/A		***B(17.9)***	***C(23.6)***
Sheridan Drive/Frankhauser Road (S)								
Eastbound Left – Sheridan Drive	A(2.3)	A(3.3)	A(2.3)	A(3.6)	A(3.0)	A(6.0)	A(3.0)	A(6.0)
Eastbound Thru – Sheridan Drive	A(5.6)	A(3.2)	A(5.9)	A(3.3)	A(7.5)	A(3.9)	A(7.5)	A(3.9)
Westbound Thru/Right – Sheridan Drive	A(3.2)	A(3.9)	A(3.3)	A(4.0)	A(3.8)	A(4.8)	A(1.5)	A(2.4)
Southbound Left – Frankhauser Road	E(60.9)	E(61.5)	E(60.9)	E(61.5)	E(60.9)	E(61.5)	E(60.9)	E(61.5)
Southbound Right – Frankhauser Road	B(19.2)	C(26.2)	B(19.2)	C(28.2)	C(26.6)	D(39.3)	C(26.6)	D(39.3)
Overall LOS/Delay (sec/veh)	***A(5.5)***	***A(4.8)***	***A(5.6)***	***A(5.0)***	***A(6.7)***	***A(5.7)***	***A(5.6)***	***A(4.5)***

INTERSECTION	EXISTING		BACKGROUND		FULL DEVELOPMENT		FULL DEVELOPMENT W/ MITIGATION	
	AM	PM	AM	PM	AM	PM	AM	PM
Sheridan Drive/I-290 WB (S)								
Eastbound Left – Sheridan Drive	C(32.2)	F(87.5)	C(34.2)	F(107.2)	D(41.6)	F(*)	D(41.6)	F(88.9)
Eastbound Thru – Sheridan Drive	A(7.7)	A(7.7)	A(7.9)	A(7.9)	A(8.7)	A(8.6)	A(8.7)	A(8.6)
Westbound Thru/Right – Sheridan Drive	B(13.4)	B(16.9)	B(14.3)	B(17.3)	B(17.0)	B(19.2)	B(15.7)	B(10.8)
Northbound Left – I-290 WB	E(64.4)	E(78.5)	E(64.3)	F(81.3)	E(63.3)	F(86.3)	E(63.3)	F(86.3)
Northbound Left/Thru/Right – I-290 WB	E(55.5)	D(46.7)	E(55.7)	D(48.5)	D(51.1)	E(56.5)	D(51.1)	E(56.5)
Northbound Right – I-290 WB	D(38.4)	D(40.1)	D(40.7)	D(43.3)	D(48.5)	D(52.7)	D(48.5)	D(52.7)
Overall LOS/Delay (sec/veh	***B(18.3)***	***C(28.0)***	***B(19.0)***	***C(30.4)***	***C(20.8)***	***C(33.1)***	***C(20.2)***	***C(27.0)***
Sheridan Drive/Harlem Road (S)								
Eastbound Thru – Sheridan Drive	C(21.0)	B(18.6)	C(21.3)	B(19.1)	C(22.7)	C(20.7)	C(22.7)	C(20.7)
Eastbound Right – Sheridan Drive	C(21.0)	A(10.0)	C(21.3)	B(10.2)	C(21.7)	B(11.0)	C(21.7)	B(11.0)
Westbound Left – Sheridan Drive	D(51.7)	D(42.5)	D(51.6)	D(42.4)	D(53.6)	D(40.6)	D(50.5)	D(39.0)
Westbound Thru – Sheridan Drive	A(4.3)	A(3.6)	A(4.4)	A(3.9)	A(4.7)	A(5.3)	A(6.8)	A(5.9)
Northbound Left – Harlem Road	D(50.1)	E(59.3)	D(50.4)	E(58.8)	D(50.4)	E(58.8)	D(50.4)	E(58.8)
Northbound Right – Harlem Road	C(27.3)	C(27.4)	C(28.4)	C(28.2)	C(33.0)	C(30.2)	C(33.0)	C(30.2)
Overall LOS/Delay (sec/veh)	***C(25.0)***	***C(20.7)***	***C(25.4)***	***C(21.0)***	***C(27.2)***	***C(22.2)***	***C(27.3)***	***C(22.2)***
Harlem Road/I-290 EB (S)								
Westbound Left – I-290 EB	C(34.2)	D(40.9)	D(35.1)	D(42.5)	D(41.1)	D(46.9)	N/A	
Westbound Right – I-290 EB	B(14.3)	B(10.8)	B(15.8)	B(11.4)	B(19.1)	B(12.9)		
Northbound Thru/Right – Harlem Road	C(30.2)	C(32.2)	C(31.1)	C(33.4)	D(35.1)	D(36.3)		
Southbound Left – Harlem Road	B(15.5)	C(30.1)	B(17.1)	C(33.2)	B(19.2)	D(38.5)		
Southbound Thru – Harlem Road	A(8.5)	A(8.0)	A(8.8)	A(8.2)	A(8.5)	A(8.0)		
Overall LOS/Delay (sec/veh)	***B(19.7)***	***C(23.9)***	***C(20.8)***	***C(25.2)***	***C(23.7)***	***C(27.7)***		
Maple Road/Proposed Driveway (U)					Unsignalized		Signalized	
Eastbound Right – Maple Road	N/A		N/A		N/A		B(11.9)	B(12.3)
Westbound Left – Maple Road					B(12.0)	B(14.8)	A(4.6)	A(5.4)
Westbound Thru – Maple Road					N/A		A(4.8)	A(4.3)
Northbound Left – Proposed Driveway					C(20.1)	D(26.8)	C(20.7)	C(21.6)
Northbound Right – Proposed Driveway					N/A		A(8.7)	B(12.8)
Overall LOS/Delay (sec/veh)							***A(8.6)***	***A(9.3)***

NOTES:
1. A(2.8) = Level of Service (Delay in seconds per vehicle)
2. (S) = Signalized; (U) = Unsignalized
3. N/A = Approach does not exist and/or was not analyzed during this condition
4. F(*) = Delay exceeds two minutes

Maple Road / Millersport Hwy SB

All approaches operate at level of service "C" or better during the AM and PM peak hours between existing, background, and full development conditions. No changes in level of service are expected as a result of the proposed development. The overall LOS remains at "A" during both peak hours under all conditions. No mitigation is warranted or recommended at this intersection.

Maple Road / Millersport Hwy NB

All approaches operate at LOS "D" or better during the AM and PM peak hours between existing and background conditions. The overall level of service during the PM peak hour is expected to decrease from "B" to "C" between background and full development conditions. No mitigation is warranted or recommended.

Maple Road / Maplemere Road
All approaches are expected to operate at LOS "C" or better between existing, background, and full development conditions. The overall level of service is projected to be "A" during all conditions under both peak hours. Therefore, no mitigation is warranted or recommended.

Maple Road / Donna Lea Boulevard
All approaches are expected to operate at level of service "C" or better between existing, background, and full development conditions. No mitigation is warranted or recommended at this intersection. Levels of service shown in the "Full Development with Mitigation" column of the table are a result of the recommended traffic signal at the proposed driveway along Maple Road.

Maple Road / Sandhurst Lane
All approaches operate at LOS "D" or better during both peak hours under all conditions. The southbound approach decreases from LOS "C" to "D" during the AM peak hour. The actual increases in delay associated with these changes in levels of service are small (less than 2.9 seconds per vehicle) and are characteristic of unsignalized side roads intersecting high volume arterials such as Maple Road. No mitigation is warranted or recommended.

Maple Road / North Forest Road
All approaches are expected to operate at LOS "E" or better during both peak hours. During the AM peak hour between background and full development conditions, the overall LOS is expected to decrease from "C" to "D"; however, the increase in delay is projected to be 2.1 seconds per vehicle. No mitigation is warranted or recommended.

Sheridan Drive / Mill Street
The eastbound through/right approach operates at level of service "F" during the AM and PM peak hours under existing, background, and full development conditions. Between background and full development conditions, the overall level of service during the AM peak hour is expected to decrease from "E" to "F". During the PM peak hour, the LOS is expected to remain "F". Signal timing adjustments to increase the green time given to the eastbound and westbound phases while decreasing the green time for the northbound and southbound phases improves the overall level of service during the AM peak hour from "F" to "E". Likewise, during the PM peak hour, the overall LOS will increase from "F" to "C". It should be noted that during the existing conditions, the intersection experiences eastbound queues extending to Park Country Club during both peak hours. Changes in signal timing will improve the queuing conditions and reduce delay for eastbound/westbound through vehicles.

Sheridan Drive / North Forest Road
The eastbound through movement LOS is projected to change from "D" to "E" during the AM and PM peak hours between background and full development conditions. The westbound left turn movement operates at LOS "F" during the PM peak hour under all conditions. Observations of existing conditions noted southbound queues extending beyond the existing Westwood Country Club driveway on North Forest Road (which will be closed in connection the mixed use neighborhood). Additionally, during the PM peak hour, westbound queues extend beyond Fleetwood Terrace. It is important to note that the proposed north/south roadway through the neighborhood may relieve traffic volumes along North Forest Road and at the intersections with Maple Road and Sheridan Drive by providing motorists with an alternate connection between Maple Road and Sheridan Drive. Minor signal timing adjustments to reduce the green time given to the eastbound left approach can offer a minor improvement in intersection delay during the PM peak hour. Projected traffic increases may be accommodated

by the existing actuated traffic signal. The southbound right-turn lane should be extended to create additional capacity for southbound right-turning traffic.

North Forest Road / Country Club Driveway

The eastbound exiting approach from Westwood Country Club currently operates at LOS "C" and "E" during the AM peak hours between existing and background conditions. This driveway is expected to be removed upon full development of the site.

Sheridan Drive / Fenwick Road / Proposed Driveway

Between existing and background conditions, all approaches operate at level of service "D" or better. Under full development conditions, the southbound approach exiting the proposed site is expected to operate at LOS "F" with delays greater than two minutes; with the exception of the southbound right during the AM peak hour operating at LOS "E". The eastbound left turn movement into the new site will operate at LOS "E" during both peak hours.

Recommended Mitigation

Based on the expected delays under full development conditions and a traffic signal warrant analysis, a three-colored traffic signal is recommended for this intersection. The traffic signal should be designed to provide a permitted/protected eastbound left-turn phase as well as a southbound right-turn overlap phase. Southbound left and through traffic should be phased as permitted/protected. In addition, a westbound right-turn only lane should be constructed on Sheridan Drive to provide storage space for vehicles entering the site. The lane should provide 425' of storage space with a 75' taper. The existing two-way left-turn lane should be restriped to provide a westbound left-turn only lane entering the site. 350' of storage space should be provided. In addition, this signal should be coordinated with other traffic signals to the west on Sheridan Drive.

Sheridan Drive / Frankhauser Road

All approaches operate at level of service "E" or better during both peak hours under existing, background, and full development conditions. The southbound right approach decreases from LOS "B" to "C" during the AM peak hour and "C" to "D" during the PM peak hour as a result of the development. As a result of the recommended signal at the proposed driveway along Sheridan Drive, the westbound through/right approach is projected to reduce in delay by less than 2.5 seconds.

Sheridan Drive / I-290 WB

The eastbound left turn movement is projected to decrease in LOS from "C" to "D" during the AM peak hour between background and full development conditions. During the PM peak hour between background and full development conditions for the northbound left/through/right approach, the LOS decreases from "D" to "E". Minor signal timing adjustments during the PM peak hour to increase green time given to the eastbound left turn movement decreases the projected delay for the eastbound left turn movement and westbound through/right approach. The 95th percentile vehicle queues (those that occur 95% of the time) for westbound I-290 traffic as a result of the proposed mixed-use redevelopment are projected to be no longer than 370 feet. The available storage length for the westbound ramp is 800 feet. Based on the available storage length, traffic on the ramp is not projected to impact mainline traffic on the I-290.

Sheridan Drive / Harlem Road

The overall level of service remains "C" during both peak hours between all conditions. All approaches operate at LOS "E" or better during both peak hours under full development conditions. Levels of service shown in the "Full Development with Mitigation" column of the

table are a result of signal timing changes at the adjacent ramp intersection and coordination of the two signals.

Harlem Road / I-290 EB
All approaches operate at level of service "D" or better during both peak hours between existing, background, and full development conditions. The southbound left approach is projected to decrease in level of service from "C" to "D" during the PM peak hour between background and full development conditions. No mitigation is warranted or recommended.

Maple Road / Proposed Driveway
The northbound driveway approach to Maple Road is expected to operate at level of service "C" during the AM peak hour and "D" during the PM peak hour under full development conditions. Meanwhile, the westbound left turn movement operates at LOS "B" during the AM and PM peak hours.

Recommended Mitigation
Based on the expected delays under full development conditions and a traffic signal warrant analysis, a three-colored traffic signal is recommended for this intersection. The traffic signal should be designed to provide a permitted/protected westbound left-turn phase as well as a northbound right-turn overlap phase. The existing two-way left-turn lane should be restriped to provide a westbound left-turn only lane entering the site.

It is important to mention that our firm's capacity analysis and the resulting LOS information as provided above was based on an analysis during AM and PM weekday travel periods. This is the appropriate methodology for preparing a capacity analysis for inclusion in a TIS. However, the resulting Levels of Service during peak travel periods are not reflective of conditions during the non-peak travel periods, which comprise a large portion of each day and also include weekends. It is always advisable to evaluate mitigation measures for peak travel periods but lower Levels of Service during weekday peak travel period do not mean that intersections of roadways are not properly designed or are not functioning properly. It would not be feasible for all intersections in a community, such as the Town of Amherst, to function at high rated Levels of Service during peak travel periods since this would result in excessive roadway infrastructure and would not be economically feasible for governmental agencies responsible for the expenditure of funds for roadways and their maintenance and repair.

IX. AUXILIARY TURN LANE WARRANT INVESTIGATION

Volume warrants for left-turn treatments on Maple Road and Sheridan Drive at the proposed access roads were evaluated using the Transportation Research Board's NCHRP Report 279, Intersection Channelization Design Guide, 1985. According to this Design Guide, provisions for left-turn lane facilities should be established where traffic volumes are high enough and safety considerations are sufficient to warrant the additional lane. This investigation analyzes warrants during the AM and PM peak hours. However, two-way left-turn facilities already exist at the location of the proposed access roads. Therefore, this study includes the existing lane geometry in the analysis.

Right-turn lane volume guidelines were also examined at the proposed intersections along Maple Road and Sheridan Drive. While the future volumes satisfy the right-turn lane guidelines at the intersection of Maple Road and the proposed driveway under full development during the AM and PM peak hours, no improvement is recommended given the location of adjacent residential

properties. Right-turn guidelines are satisfied during both peak hours at the intersection of Sheridan Drive/Fenwick Road/Proposed Driveway.

All supporting calculations are included in the Appendix of this report.

X. TRAFFIC SIGNAL WARRANT INVESTIGATION

A traffic signal warrant analysis was conducted at the proposed driveway on Maple Road and the intersection of Sheridan Drive/Fenwick Road/Proposed Driveway. The need for a traffic signal is determined by comprehensive investigation of existing and projected traffic conditions and physical characteristics at the location. The *Standard Specifications Update for the adoption of the National MUTCD ("FHWA") and the New York State Supplement* were reviewed to investigate the need for a traffic control signal at this location. There are nine (9) warrants and they are as follows:

Warrant 1	Eight-Hour vehicular volume
Warrant 2	Four-Hour vehicular volume
Warrant 3	Peak Hour
Warrant 4	Pedestrian Volume
Warrant 5	School Crossing
Warrant 6	Coordinated Signal System
Warrant 7	Crash Experience
Warrant 8	Roadway Network
Warrant 9	Intersection Near a Grade Crossing

Detailed signal warrant calculations are included in Appendix A2 of the Report. Prior to applying warrants, the MUTCD suggests consideration of the effects of right turn volumes on the minor street approach, and a reduction taken in the number of right turning vehicles, where appropriate. A certain number of right turn vehicles will execute a right turn on the red indication without actuating a traffic signal (if one were in place). For purposes of this analysis, it is projected that 25% of the right turning vehicles exiting the proposed driveways along Maple Road and Sheridan Drive would execute a right turn on red maneuver and should therefore be subtracted for the purposes of the warrant analysis. The posted speed limit on Maple Road and Sheridan Drive is 45 miles per hour and therefore, 70 percent thresholds in Table 4C-1, Figure 4C-2 and Figure 4C-4 is used as a basis for analysis.

Warrant 1 is subdivided into Condition A and Condition B. The Minimum Vehicular Volume, Condition A, is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal. The Interruption of Continuous Traffic, Condition B, is intended for application at locations where Condition A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street. These conditions are satisfied when, for each of any eight hours of an average day, anticipated volumes on the artery and side road are in excess of the minimum values presented in Tables 4C-1 in the MUTCD. Hourly traffic volumes along Maple Road and Sheridan Drive at the proposed access driveways were projected based on the hourly traffic distribution measured by NYSDOT along Maple Road in 2010 and Sheridan Drive in 2011. Hourly traffic volumes expected to exit the proposed driveways were projected based on the hourly distribution for a typical office facility (using local office park data) given the majority of estimated trips generated by the site are office-related. Based upon these calculations, Condition A is not met for all eight hours at the proposed driveway along Maple Road. Condition A is met for six of the eight hours

at the proposed driveway along Sheridan Drive. Condition B for Warrant 1 is satisfied for five of the eight hours at the proposed driveway along Maple Road, while it is satisfied for all eight hours at the proposed driveway along Sheridan Drive under full development conditions.

Warrant 2, the Four-Hour Vehicular Volume signal warrant conditions, are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal. This warrant stipulates that for any four hours of a day, minimum threshold volumes are met on the artery and side road. Based on the projected hourly traffic volumes on the proposed driveways, this warrant is met under full development conditions for both proposed driveways.

Warrant 3 is intended for application where minor street traffic suffers undue delay in entering or crossing the major street for one hour of the day. It stipulates that the warrant shall be applied in unusual cases (high-occupancy vehicle facilities) where a large number of vehicles discharge over a short period of time. Based on the current uses (office, retail, residential, hotel) at the proposed driveways along Maple Road and Sheridan Drive, this warrant is met in Figure 4C-4 under full development conditions.

Warrant 4 is met when pedestrians experience excessive delay in crossing the major street (Maple Road and Sheridan Drive) because the traffic volumes are so heavy. The intersections have infrequent pedestrian activity. This warrant is not met.

Warrant 5 is met when a sufficient number of gaps in traffic do not exist for certain size and frequency of school children to cross the major roadway. Based on the current conditions and low pedestrian activity, this warrant is not applicable at this location.

Warrant 6 is met when a traffic signal is needed to maintain progressive movement and vehicle platooning in a coordinated signal system. Based on the current signal system along Maple Road, this warrant is not met; however, it is met for Sheridan Drive.

Warrant 7 is met when the severity, frequency, and types of crashes are such that it is a condition susceptible to correction by a traffic signal. Accident data at the proposed Maple Road location and exiting Sheridan Drive/Fenwick Road resulted in two accidents during the three-year study period. Therefore, this warrant is not currently met.

Warrant 8 is met when a traffic signal might encourage concentration and organization of traffic flow on a roadway network. This warrant primarily focuses on two major intersecting roadways, which is not the case at the proposed driveways. Therefore, this warrant is not met.

Warrant 9 is applicable when an intersection is located near an at-grade rail crossing. This warrant is not applicable to the proposed driveway locations and therefore is not met.

Based on the traffic signal warrant investigation, the traffic signal warrants dealing solely with traffic volumes (Warrants 1-3) are met under full development conditions at the proposed driveway along Sheridan Drive. Warrants 2-3 are met for the proposed driveway along Maple Road. **Table VI** describes each warrant and the result of our firm's signal warrant investigation. Based upon the capacity analysis results and traffic signal warrant analysis, installation of a traffic signal is recommended at the proposed driveway along Maple Road and proposed driveway on Sheridan Drive.

TABLE V: TRAFFIC SIGNAL WARRANT SUMMARY

WARRANT #	DESCRIPTION	FULL BUILD CONDITONS	
		Maple Road/Proposed North Driveway	Sheridan Drive/Proposed South Driveway
1	*Eight-Hour vehicular volume*	NOT MET	MET
2	*Four-Hour vehicular volume*	MET	MET
3	*Peak Hour*	MET	MET
4	*Pedestrian Volume*	NOT MET	NOT MET
5	*School Crossing*	NOT MET	NOT MET
6	*Coordinated Signal System*	NOT MET	MET
7	*Crash Experience*	NOT MET	NOT MET
8	*Roadway Network*	NOT MET	NOT MET
9	*Intersection Near a Grade Crossing*	NOT MET	NOT MET

Discussions with the Project Sponsor indicated that the initial construction phases will include installing the north/south connector public roadway between Maple Road and Sheridan Drive. Additionally, it is anticipated the office and hotel component will be developed at first, followed by the retail component oriented towards the south of the site plan and residential development on the northern portion of the project site. Based on the expected delays under full development conditions and the results of the traffic signal warrant analysis, a three-colored traffic signal is recommended for both intersections. Therefore, it is recommended that the proposed driveway on Sheridan Drive be installed with a three-colored traffic signal. A protected/permitted eastbound left-turn phase is recommended given the volume of left-turns entering the site. The signal should be coordinated with the existing traffic signal network to the west along Sheridan Drive. Meanwhile, the proposed driveway on Maple Road should be installed with a three-color traffic signal. A protected/permitted westbound left-turn phase is recommended given the volume of left-turns entering the site.

Although traffic signal installation is recommended for the proposed access points on Maple Road and Sheridan Drive, a post-construction signal warrant analysis should be performed approximately six to twelve months after the new north/south connector public roadway is completed and dedicated to the Town of Amherst. The purpose of studying the proposed access locations after the roadway is open for public use is to determine at what point in the future of the proposed build-out of the mixed-use neighborhood a traffic signal should be installed. The proposed north/south public roadway at its connection to Sheridan Drive should be designed to provide two lanes of exiting traffic and two lanes of entering traffic to both facilitate traffic movements and to achieve the desired alignment with the existing Fenwick Road on the south side of Sheridan Drive. The throat length of the driveway should be designed to accommodate vehicle queues exiting the site and reduce vehicle blockages of internal circulation roadways. Therefore, a minimum uninterrupted throat length of 200 feet is recommended.

XI. TRANSPORTATION DEMAND MANAGEMENT RECOMMENDATIONS

Transportation Demand Management ("TDM"), if implemented strategically, can have a noticeable impact on reducing trips from a project. TDM is the application of strategies and policies to reduce Single Occupant Vehicle ("SOV") travel demand, or to redistribute this

demand in space or in time. By definition, TDM includes various strategies that produce a more efficient use of transportation resources and increase the efficiency of a transportation system.

TDM programs have many potential benefits. They can reduce the total number of vehicle miles traveled by promoting alternatives to driving alone. Fewer vehicle miles traveled results in less ozone pollution. TDM programs can be used by employers to reduce overhead costs, enhance productivity and reduce employee turnover. TDM programs can improve the use of public transit services, bikeways, sidewalks and carpool lanes by educating users about their travel options and coordinating trips between users with similar trip patterns. Implementing an effective TDM program can also reduce the required number of parking spaces for a project and/or eliminate the need to consider building costly multi-story parking structures. The following table summarizes some of the benefits that can be realized from an effective TDM program.

TABLE VI: BENEFITS OF TDM PROGRAMS

BENEFIT	DESCRIPTION
Congestion Reduction	Reduces traffic congestion delays and associated costs.
Road & Parking Savings	Reduces road and parking facility costs.
Consumer Savings	Helps consumers save money by reducing their need to own and operate motor vehicles.
Transport Choice	Improved travel options, particularly for non-drivers.
Road Safety	Reduced crash risk
Environmental Protection	Reduced air, noise and water pollution, wildlife crashes and other types of environmental damages.
Efficient Land Use	Supports strategic land use planning objectives, such as reduced sprawl, urban redevelopment and reduced habitat fragmentation.
Community Livability	Improved local environmental quality and community cohesion.
Economic development	Supports a community's economic objectives, such as increased productivity, employment, wealth, property values and tax revenues.
Physical Fitness and Health	Improved public fitness and health due to more physical activity, usually through increased daily walking and cycling.

The following TDM strategies are recommended for consideration in connection with the proposed mixed-use neighborhood:

1. **Transit Coordination** – Coordinating transit routes and marketing the Sheridan Route 49 bus line will boost ridership through increased awareness coupled with improved service.

2. **Route Expansion** – New expanded bus service through the Westwood project site provides an opportunity for greater mode choice resulting in trip and parking reductions.

3. **Bus Stop Amenities** – A clean, well-lit, informative bus stop with shelters and seating greatly improves the image of the transit serving an area. Station amenities make taking the bus a comfortable experience, while proper maintenance tells people that transit makes up an important part of the neighborhood. New bus stops should have the following elements:

    - A level concrete pad, unobstructed by street furniture, landscaping, or signage

- Reliable pedestrian access with clear sidewalks providing direct access to the bus loading area
- Clear sight lines allowing travelers to see around the stop and drivers to see around corners to make turns
- Adequate lighting
- Pedestrian amenities such as a bench and trash receptacle
- Route, schedule and information
- Bicycle rack

4. **Employer Carpooling** – carpooling can be encouraged by providing incentives and other services such as ridematching.

5. **Emergency Ride Home** – In case of a personal emergency during the day, transportation is provided at no cost to one's vehicle, residence, or other place such as childcare, doctor's office, etc.

6. **Preferential carpool/vanpool parking**

7. **Transportation Alternatives Information** – bus schedules and bike maps.

8. **Telecommuting and compressed work schedules** – employee vehicle trips are reduced by the percentage of employees that telecommute, or have a "free" day gained through a compressed schedule, on an average day

These programs must be coupled with improvements in transit service, pedestrian and bicycle accommodations.

XII. RESPONSES TO TRAFFIC RELATED COMMENTS OF THE TOWN OF AMHERST PLANNING DEPARMENT

As part of the coordinated environmental review of the original version of the DGEIS submitted on July 14, 2014, which included the Traffic Impact Study prepared by our firm dated April of 2014 that was included at Exhibit N of Volume III of the Appendices to the DGEIS, the Town of Amherst Planning Department ("Planning Department") issued a Memorandum on September 3, 2014 that contained comments to be included in the revised DGEIS. The purpose of this section of the updated TIS is to respond to the traffic related comments in the Planning Department's Memorandum. Section 4 of the Memorandum issued by the Planning Department on September 3, 2014 contained four transportation related comments that are each listed below in *italics* followed by our firm's responses.

- *Some traffic data is 2-3 years old and should be updated. The lack of current data could be misleading.*

  Response: The traffic count data that was used in the preparation of the original TIS dated July of 2014 and this updated TIS is valid. Traffic data that is three years old or less is acceptable for the purpose of evaluating the potential traffic impacts of a proposed project, and has always been deemed valid by both the NYSDOT and Erie County Department of Public Works ("ECDPW"); the agencies with jurisdiction over State and Erie County Highways. It should be noted that there is a difference between AADT data and intersection turning movement counts. The AADT data contained in Section III was obtained via NYSDOT and GBNRTC, and was not developed as a result

of turning movement count data collected for the proposed mixed-use neighborhood. The reasons why the traffic data is valid includes the fact that there have not been any new roadways or highways constructed in the study area within the past few years. It is very common for traffic count data for large projects requiring the preparation of an Environmental Impact Statement to not have been obtained from a time period that is contemporaneous with the time period in which such a project is reviewed. Given that such large projects are often reviewed over a lengthy period and require revisions to reports and studies, it would be not practical for updated traffic count information to be obtained on numerous occasions during the review process so that all traffic count information would be one year old or less that time the environmental review pursuant to SEQRA has ended with the issuance of a Findings Statement by the lead agency.

- *What assumptions were used to arrive at the multi-use trip reduction (11% and 29%)?*

  Response: The comment requests a description of our firm's basis for the multi-rip reduction rates used in the TIS. The multi-use trip reduction percentages used in our firm's comprehensive traffic analysis are based on accepted standards for evaluating mixed-use projects involving a mixture of land uses that are located on major roadways such as Sheridan Drive and Maple Road.

  Inherent in the trip generation estimate for a proposed mixed-use project involving different categories of land uses, is the "multi-use" traffic component of traffic entering and exiting a project site. The Institute of Transportation Engineers, Trip Generation Handbook, 2001 states,

  > "…a multi-use development is typically a single real-estate project that consists of two or more ITE land use classifications between which trips can be made without using the off-site road system. Because of the nature of these land uses, the trip-making characteristics are interrelated, and some trips are made among the on-site uses. This capture of trips internal to the site has the net effect of reducing vehicle trip generation between the overall development site and the external street system (compared to the total number of trips generated by comparable, standalone sites)." "In some multi-use developments, these internal trips can be made by walking or by vehicles entirely on internal pathways or internal roadways without using streets external to the site."

  The ITE Trip Generation Handbook indicates internal capture rates for trips within a multi-use development vary between office, residential, and retail uses during the AM and PM peak hours. Given the area in which the Project Site is located, the proposed office, residential, and retail components, and internal interconnections between the various land use categories, multi-use (or multiple purpose) total volume trips will occur. Therefore it is estimated, based on methods in the ITE Trip Generation Handbook that an approximate 8% and 36% reduction in total trip generation for the Project Site will occur during the AM and PM peak hours of analysis, respectively. The change in reduction percentages for both peak hours is a result of the mixture of land uses being proposed as depicted on the revised Preliminary Conceptual Master Plan. This trip adjustment is calculated based upon ITE standards for multi-use trip reductions based on the varying uses and interconnections within the mixed-use neighborhood. This multi-use trip projection adjustment was applied to the total site generated trips and subtracted from the traffic entering and exiting the site for the AM and PM peak period.

In addition, for certain types of projects and especially for mixed-use projects, the total number of trips generated is different from the amount of new traffic added to the adjacent highway network by the generator of the trips. Retail-oriented developments (such as convenience stores, gas stations, retail centers, discount stores, restaurants, and grocery stores) often locate adjacent to busy streets in order to attract the motorists already passing the site on the adjacent street. These sites attract a portion of their trips from traffic passing the site. The "pass-by" traffic refers to the amount of existing traffic already on the roadway adjacent to the site that, as it "passes by" the site, will enter the site driveways to patronize the project site.

The new public roadway that will connect Sheridan Drive and Maple Road will provide future users with very convenient internal access to the various on-site land uses. There is a well-recognized growing trend for both residential and commercial users to be highly interested in locating within mixed-use projects that provide a broad range of on-site amenities such as neighborhood businesses, office space, park areas and publicly accessible amenities, a mixture of residential land uses types, etc. and one of the reasons for this trend is that such project allows users to take advantage of on-site amenities without multiple stops and also by traveling on-site without by walking, bicycling, etc.

The combination of "multi-use" and "pass-by" trips has the net result of reducing the volume of new traffic that is added to the site driveways and/or adjacent roadways. In the case of the proposed mixed-use neighborhood, there will be both "multi-use" and "pass-by" trips associated with the various new land uses on the project site.

ITE data indicates that pass-by rates for shopping centers/retail uses can vary from 10% to as high as 80% during the PM peak hour (e.g. restaurants typically exhibit pass-by rates of 45% during the PM peak hour). Given the composition of the proposed land uses and location of the project site with frontage on both Sheridan Drive and Maple Road (both of which will consist of signalized intersections with the new north/south public roadway), a very conservative pass-by rate of 37% was used during the PM peak hour. In summary, it is our firm's professional opinion that the multi-use trip reduction rates of 8% and 36% are both conservative and appropriate.

- *Plan will result in 5 traffic signals between Harlem & N. Forest – more discussion needed of interconnecting / synchronizing.*

Response: The mixed-use neighborhood as depicted on the Conceptual Master Plan involves the installation of a new traffic signal at the intersection of the new internal north/south roadway connecting Sheridan Drive and Maple Road. The comprehensive traffic analysis completed by our firm indicated that the installation of a traffic signal at this location is an appropriate traffic related mitigation measure. The location of the roadway connection was selected so that it would align with Fenwick Drive. As a result of the proposed traffic signal at this intersection, there will be five traffic signals located on Sheridan Drive between Harlem Road and North Forest Road.

Our firm evaluated the coordination/synchronization of the proposed new traffic signal with the existing signals along Sheridan Drive between Harlem Road to North Forest Road. Currently, NYSDOT is advancing the Buffalo Niagara Regional Arterial Management System ("BNRAMS") traffic signal system coordination project for Sheridan Drive (NYS Rte 324) that includes the traffic signals recommended for coordination. Recent discussions with the Region 5 Traffic & Safety Division Traffic Operations

Engineer in charge of the proposed project indicated that if after review, NYSDOT deems a new signal is warranted and approved for installation, the new traffic signal will be coordinated with the existing Sheridan Drive signals. According to the Traffic Operations Engineer, it is customary procedure for NYSDOT to optimize the timing of a new traffic signal in with the coordination of the existing arterial signals. As part of this BNRAMS project, NYSDOT has scheduled new traffic data collection for the Spring of 2015. It is anticipated that NYSDOT, along with its traffic signal system consultants, will install, refine, and implement the new signal timings and coordination settings in 2015. The signals will be programmed to provide optimum traffic progression along Sheridan Drive. Our firm will work with NYSDOT once it has collected data to be used in connection with the traffic signal system coordination project for Sheridan Drive and the new signal will be designed to be consistent with any modifications to signal timing for the signalized intersections in the relevant segment of Sheridan Drive.

- *Discuss how transit can be integrated and accommodated within the development, not just along surrounding arterials*

  Response: As discussed above in Section XI of this updated TIS, Transportation Demand Management ("TDM") measures, if implemented strategically, can have a noticeable impact on reducing trips from a project. TDM is the application of strategies and policies to reduce Single Occupant Vehicle ("SOV") travel demand, or to redistribute this demand in space or in time. By definition, TDM includes various strategies that produce a more efficient use of transportation resources and increase the efficiency of a transportation system. One such area where TDM strategies can be beneficial is the coordination with the local transit agency - in this case, the Niagara Frontier Transportation Authority ("NFTA"). The Project Sponsor is proposing an integrated transit stop on the first floor of the proposed hotel, and we concur with this location since it will be at the center of more dense part of the mixed-use project with easy access to neighborhood businesses, restaurants, multi-family uses and publicly accessible amenities.

  Our firm has recommended the following transit-oriented TDM strategies for consideration in connection with the proposed mixed-use project depicted on the Conceptual Master Plan:

  1. **Transit Coordination** – Coordinating transit routes and marketing the Sheridan Route 49 bus line will boost ridership through increased awareness coupled with improved service.

  2. **Route Expansion** – New expanded bus service through the Westwood project site will provide an opportunity for greater mode choice resulting in trip and parking reductions.

  3. **Bus Stop Amenities** – A clean, well-lit, informative bus stop with shelters and seating greatly improves the image of the transit serving an area. Station amenities make taking the bus a comfortable experience, while proper maintenance tells people that transit makes up an important part of the neighborhood. New bus stops should have the following elements:

     - A level concrete pad, unobstructed by street furniture, landscaping, or signage

- Reliable pedestrian access with clear sidewalks providing direct access to the bus loading area
- Clear sight lines allowing travelers to see around the stop and drivers to see around corners to make turns
- Adequate lighting
- Pedestrian amenities such as a bench and trash receptacle
- Route, schedule and information
- Bicycle racks

The Project Sponsor has met with representatives of the NFTA and discussed the opportunity to extend the existing #49 Millard Suburban public bus route into the Project Site. The NFTA has confirmed that they are interested in working with the Town and Project Sponsor to incorporate measures that will promote public transportation, since providing convenient access to the project site and its amenities via public transportation will make the various land use components more successful and reduce traffic impacts and the demand for parking spaces. The previous TDM strategies outline a scope for continued discussions with NFTA on transit inclusion into the mixed-use project. The Project Sponsor will continue to coordinate with the NFTA on programming a transit stop within the neighborhood center portion of the project as the review and design process for the proposed mixed-use neighborhood moves forward.

XIII. ALTERNATIVE PLAN EVALUATION

Seven alternative concept plans were evaluated, in addition to the preferred Conceptual Master Plan, as part of our firm's analysis of potential traffic impacts. The alternative plans were evaluated to provide information to allow a comparison of the potential traffic impacts associated with the alternative layouts and the preferred Conceptual Master Plan in connection with the review of the revised DGEIS. This report uses the project layout as depicted on the Conceptual Master Plan as the basis for analysis. A comparison of the alternative concept plans and their related trip generation estimates are depicted in **Table VII**.

TABLE VII: TRIP GENERATION COMPARISON FOR ALTERNATIVE SITE PLANS

DESCRIPTION	AM PEAK		PM PEAK	
	ENTER	EXIT	ENTER	EXIT
Alternative Plan No. 1 Recreation Conservation ("RC") Plan	113	93	253	190
Alternative Plan No. 2 Community Facility ("CF") Plan	95	108	142	150
Alternative Plan No. 3 Residential Three ("R-3") Plan	60	180	188	111
Alternative Plan No. 4 Transitional Residential ("TND") Plan	432	488	703	712
Alternative Plan No. 5 General Business ("GB") Plan	272	297	994	961
Alternative Plan No. 6 Office Building ("OB") Plan	945	193	157	890
Alternative Plan No. 7 Alternative Access Plan	499	446	656	745
Preliminary Conceptual Master Plan	**534**	**470**	**762**	**865**

The following is a brief description of the potential traffic impacts and site planning considerations associated with each of the Alternative Concept Plans. Included is an evaluation of the traffic impacts compared against the Preferred Plan:

- **Alternative Plan No. 1- Recreation Conservation ("RC") Plan**
  Within the RC Plan, the Project Sponsor considered incorporating additional RC zoning district uses that would expand upon the previous recreational and civic utilization of the project site. These uses include indoor and outdoor recreational fields, a reformatted 9-hole golf course, and a place of worship. The existing Westwood Country Club clubhouse would remain and be utilized in connection with the 9-hole golf course. In terms of roadway improvements associated with Alternative Plan No. 1, a new private roadway would be constructed and connect at an unsignalized intersection at Maple Road, extending approximately 0.5 miles (2,640 feet) into the project site. Given the very low density associated with the RC Plan, this plan provides for reduced traffic impacts in terms of overall vehicle trip generation when compared to the Preferred Plan. Additionally, a greater proportion of the peak vehicle trip generation associated with this concept plan would occur during weekends; off-peak time periods of the surrounding roadway network. However, it is important to note that pursuant to Section 7-6-7(C) of the Town of Amherst Zoning Code, the maximum length of any private or public street cannot exceed 800 feet in length without a secondary means of access to a public roadway. Therefore, this Alternative Plan would require an area variance for a roadway with a length greater than 800 feet without a second means of access to a public roadway. Additionally, the development of the project site pursuant to the RC Plan would not provide for the construction of the proposed new north/south public roadway connecting Sheridan Drive and Maple Road. This public north/south roadway will be constructed in connection with the redevelopment of the project site as a mixed use neighborhood pursuant to the Preferred Plan. As such the RC Plan would not provide the opportunity to potentially reduce traffic volumes on North Forest Road during weekday peak travel periods.

- **Alternative Plan No. 2- Community Facility ("CF") Plan**
  The CF Alternative Plan includes various types of senior residential living units and a cemetery. In terms of total traffic impacts, since the ITE trip generation rate for senior living units during peak travel periods is low, as compared to most of other ITE land use categories, this development of the project site pursuant to the CF Plan would produce the least amount of traffic impacts when compared to the Preferred Plan and the other alternatives. Additionally, the cemetery would occupy a fairly sizeable area; however, it produces low traffic volumes during peak travel periods. This Alternative Plan would include the construction of a new north/south public roadway connecting Sheridan Drive and Maple Road. However, when considering total vehicle trip generation, it is highly unlikely that signalized intersection warrants would be met at either the intersection of the new roadway with Sheridan Drive or Maple Road. Therefore the CF Plan includes consideration for a connection to Frankhauser Road. This connection would provide the project residents with direct access to the signalized intersection at Sheridan Drive and Frankhauser Road in order to enter and exit the project site.

- **Alternative Plan No. 3- Residential Three ("R-3") Plan**
  In planning the R-3 Plan, the Project Sponsor considered the surrounding single family housing pattern and developed a plan that would expand upon the existing land uses surrounding a majority of the project site. The R-3 Plan consists of the development of the project site exclusively as a residential subdivision comprised of 320 lots for single-family homes. Considering the relatively low density associated with residential subdivision for single family housing, the development of the project site pursuant to the R-3 Plan would result in substantially less total vehicular trips compared to the Preferred Plan. As with the CF Plan, while the R-3 Plan would provide for a new north/south public roadway, it is unlikely that the signalized intersection warrants would be met given the total anticipated vehicle trip generation. Therefore, the R-3 plan also includes consideration for a connection to Frankhauser Road, providing project residents with direct access to the signalized intersection at Sheridan Drive and Frankhauser Road in order to enter and exit the project site. When considering impacts to adjacent intersections, it is preferable to develop sites with balanced entrance and exit trips during peak travel periods. By avoiding unbalanced entering and exiting trip generation, the development of a project site prevents a condition where specific functions, movements and turns at a given intersection are "overloaded" as the majority of total vehicle trips during peak travel periods are focused on either entering or exiting the site. As the R-3 Plan is based on a single land use (residential single family homes), the exit trip generation in the AM peak hour is three times that of the enter trip generation (typically associated with the morning commute to work) while the enter trip generation during the PM peak hour is nearly twice that of the exit trip generation (typically associated with the evening commute to home).

- **Alternative Plan No. 4- Transitional Residential ("TND") Plan**
  Within their Memorandum regarding the initial Draft Generic Environmental Impact Statement ("DGEIS"), the Town of Amherst Planning Department provided several comments for consideration and inclusion in the revised DGEIS. One request within the Memorandum concerned the creation of an additional Alternative Plan that would be focused around a lower density residential development model with a more transitional neighborhood scale commercial component. In response to this request, the Project Sponsor developed Alternative Plan No. 4, which is modeled off of the Preferred Plan, but expands the lower density single family housing components while reducing the commercial and office space portions. By reducing the concentration of anticipated

entrance vehicle trips in the morning through the reduction of the total office space, there is a decrease in the combined AM peak hour trip generation by approximately 8%, or 84 trips. Conversely, for the PM peak hour, the reduction of total office space lessens exit trips while the reduction of commercial space lowers entrance trips and results in a decrease in the combined PM peak hour trip generation by a factor of approximately 11%, or 170 trips. While this plan provides for less impact in terms of total vehicle trip generation and may lessen the load on capacity of existing intersections when compared to the Preferred Plan, it also results in fewer opportunities for shared parking and maximum efficiency within parking fields as a greater proportion of the overall project site is focused on residential development.

- **Alternative Plan No. 5- General Business ("GB") Plan**
  Alternative Plan No. 5 represents a mixed-use development approach but provides for a more focused retail and commercial components. Compared to the Preferred Plan with 115,000 square feet of neighborhood business and office space, the GB Plan includes approximately 435,000 square feet of general retail space structured as a typical plaza style shopping center. The retail component is balanced with a mixture of student and general multi-family housing. To support closer proximity to the University at Buffalo, the student housing has been positioned closest to Maple Road and would in all likelihood, result in the consideration of a student shuttle service to and from the UB North Campus. Conversely, to provide access to the highest capacity road network and maintain closest proximity to the I-290, the retail component is positioned along Sheridan Drive. While this GB Plan provides for fairly evenly balanced enter and exit trips during the AM and PM peak hours, given the retail component and multifamily housing, this plan is the highest vehicle trip generator during the PM peak hour, resulting in nearly 2,000 combined trips. This focused trip generation during the PM peak hour would necessitate consideration of roadway connections to North Forest Road and Frankhauser Road in an effort to maximize site access and trip distribution options during the weekday PM peak hour travel period. Additionally, the shopping center development approach leads to large parking fields that would likely be underutilized, except during short peak demand period for retail uses and does not support a shared parking environment to maximize the efficient use of impervious paved surfaces.

- **Alternative Plan No. 6- Office Building ("OB") Plan**
  Alternative Plan No. 6 consists of the development of the project site as a large office park. As with similar existing office parks, the project site would be oriented around the new north/south public roadway designed as a corporate parkway. In total, approximately 1.25 million square feet of office/research & development space would be provided. Considering the concentration of AM peak hour trips associated with the morning commute to work, this plan generates the largest volume of trips during the AM peak hour. This plan also provides the most disproportionate AM and PM peak hour trip generation in terms of entering and exiting conditions, with the AM peak hour having five times more trips entering the site than exiting and the PM peak hour having five times more trips exiting the site than entering. This condition is similar to the scenario presented in Alternative Plan No. 3, only on a much greater scale. Also similar to other alternative plans, the OB Plan total vehicle trip generation would warrant the need to consider roadway connections to North Forest Road and Frankhauser Road to maximize opportunities for access options and trip distribution during peak travel periods. Finally, the OB Plan provides for the most inefficient utilization of parking areas and impervious surfaces. The parking fields would be utilized heavily throughout the

typical weekday eight hour work day but would be utilized far less during the remaining 16 hours of the day and would be utilized very little during weekends and holidays.

- **Alternative Plan No. 7- Alternative Access Plan**
  The Alternative Access Plan is modeled exactly as the Preferred Plan except that roadway connections are also provided connecting to North Forest Road and Frankhauser Road. The intent of this effort was to analyze and directly compare both approaches, including connections to adjacent residential roadways and excluding connections to adjacent residential roadways. The capacity analysis results can be found in the Appendix. Based on the capacity analysis results for the Alternative Access Plan, there are improved level of service conditions and delays at the Sheridan Drive/Fenwick Road/Proposed Driveway intersection. Delays increase for the eastbound left and southbound right approaches at the Sheridan Drive/Frankhauser Road intersection during both peak hours. At the intersection of Sheridan Drive/North Forest Road, the southbound left approach is projected to decrease in level of service during the PM peak hour.

  Providing ingress and egress points onto Frankhauser Road and North Forest Road would offer the users of the site, and the public travelling through the site utilizing the proposed north/south public roadway, more options for accessibility. The additional access points helps to redistribute traffic volumes, lessening the potential impacts at the Preferred Plan's proposed access points. However, southbound queues along North Forest Road currently extend beyond the proposed connection point, as developed for the Alternative Access Plan, and would likely impact the ability for motorists to enter and exit the site at this point. Additionally, the access point onto Frankhauser Road could result in increased traffic volumes onto the residential-oriented streets adjacent the western side of the project site, which would not be reviewed favorably by existing residents.

XIV. CONCLUSIONS & RECOMMENDATIONS

This updated Traffic Impact Study identifies and evaluates the potential traffic impacts resulting from full build-out of the proposed mixed-use neighborhood. This updated Traffic Impact Study provides the Amherst Town Board, in its capacity as the designated lead agency for the coordinated environmental review of the proposed mixed-use redevelopment project pursuant to SEQRA, along with involved and interested agencies including the NYSDOT and Erie County Department of Public Works, with information to allow a hard look to be taken at identified potential traffic impacts. Based upon the comprehensive analysis contained in this report, it is our firm's professional opinion that the results indicate that the proposed mixed-use neighborhood can be accommodated by the existing roadway network with the recommendations below being in place. The following sets forth our firm's conclusions and recommendations based upon the results of the comprehensive traffic analyses that have been conducted:

1. The proposed mixed-use neighborhood is expected to generate approximately 920 (896) new trips during the AM (PM) peak hours respectively.

2. A left-turn lane warrant investigation was conducted along Maple Road and Sheridan Drive at the proposed driveways. However, two-way left-turn facilities already exist at the location of the proposed access roads. The two-way left-turn lanes should be

restriped to accommodate dedicated left-turn lanes entering the proposed driveway along Maple Road and the existing Sheridan Drive/Fenwick Road intersection.

3. A right-turn lane investigation was conducted along Maple Road and Sheridan Drive at the proposed driveway locations. While the future volumes satisfy the right-turn lane guidelines at the intersection of Maple Road and the proposed driveway under full development during the AM and PM peak hours, no improvement is recommended given the location of adjacent residential properties. Right-turn guidelines were satisfied during both peak hours at the intersection of Sheridan Drive/Fenwick Road/Proposed Driveway. The right turn lane should provide 425' of storage space with a 75' taper.

4. Install a new traffic signal at the proposed public roadway on Sheridan Drive when the driveway is constructed. The new traffic signal should be coordinated with the existing traffic signal network along Sheridan Drive to the west of the project site.

5. Install a new traffic signal at the proposed public roadway connection on Maple Road when the new roadway is constructed.

6. The proposed new north south public roadway connecting Sheridan Drive and Maple Road should be designed to provide two lanes of exiting traffic and two lanes of entering traffic to both facilitate traffic movements and to achieve the desired alignment with the existing Fenwick Road. The throat length of the driveway should be designed to accommodate vehicle queues exiting the site and reduce vehicle blockages of internal circulation roadways; therefore a minimum uninterrupted throat length of 200' is recommended.

7. Internal sidewalks should form an inter-connected pedestrian network allowing users to actively walk amongst the various land use components to be included in the mixed-use neighborhood. Additionally, internal paved recreational paths should be designed and installed to encourage bicycle use.

8. The southern portion of the mixed-use neighborhood as depicted on the Conceptual Master Plan consists of the commercial and office components, higher density residential units, and the hotel component. This portion of the Project Site should incorporate bicycle parking and related facilities into the design. Such facilities should include bicycle racks and consideration should be given to including bicycle lockers, as well as providing shower and changing facilities within the proposed buildings.

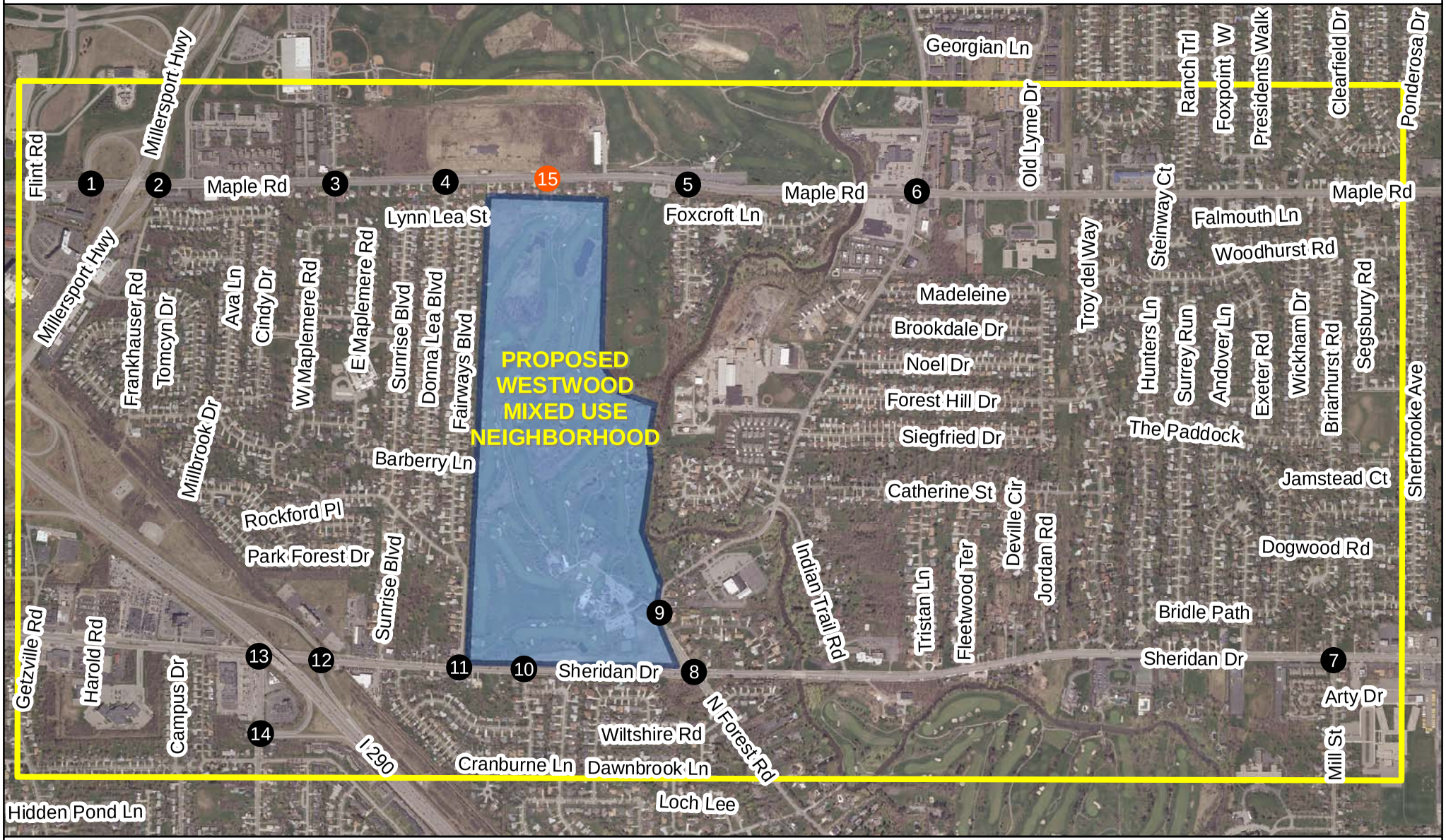
9. Transportation demand management ("TDM") strategies should be considered and implemented, when practical, to reduce off-site vehicular trips.

10. Consideration should be given to reducing the number of parking spaces constructed on-site given the mixed-use nature of the proposed neighborhood, potential for non-vehicular trips, and the potential for shared parking between different categories of land uses with differing peak parking demands. The use of shared parking reduces the amount of impervious surfaces and prevent parking areas from having more parking spaces than needed to service a project with a mixture of land uses with differing peak parking demands.

XV. FIGURES

Figures 1 through 8 are included on the following pages.

FIGURE 1 - SITE LOCATION AND STUDY AREA



Key

- Study Intersections
- Proposed Intersection
- Study Area
- Site Location

PROPOSED WESTWOOD MIXED USE NEIGHBORHOOD

TOWN OF AMHERST, NY

Feet

0 1,000 2,000 4,000

N

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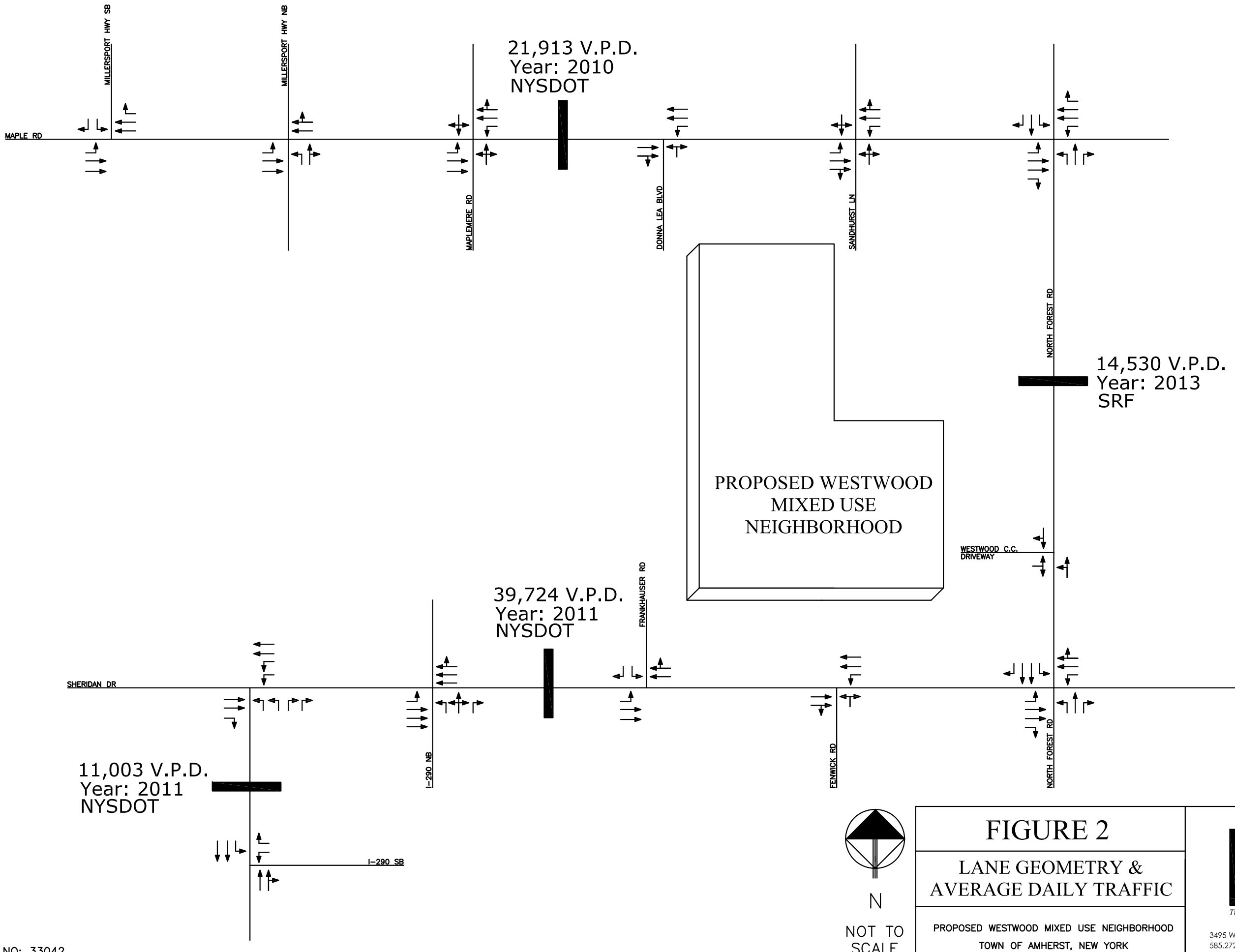

N

NOT TO SCALE

FIGURE 2

LANE GEOMETRY & AVERAGE DAILY TRAFFIC

PROPOSED WESTWOOD MIXED USE NEIGHBORHOOD

TOWN OF AMHERST, NEW YORK

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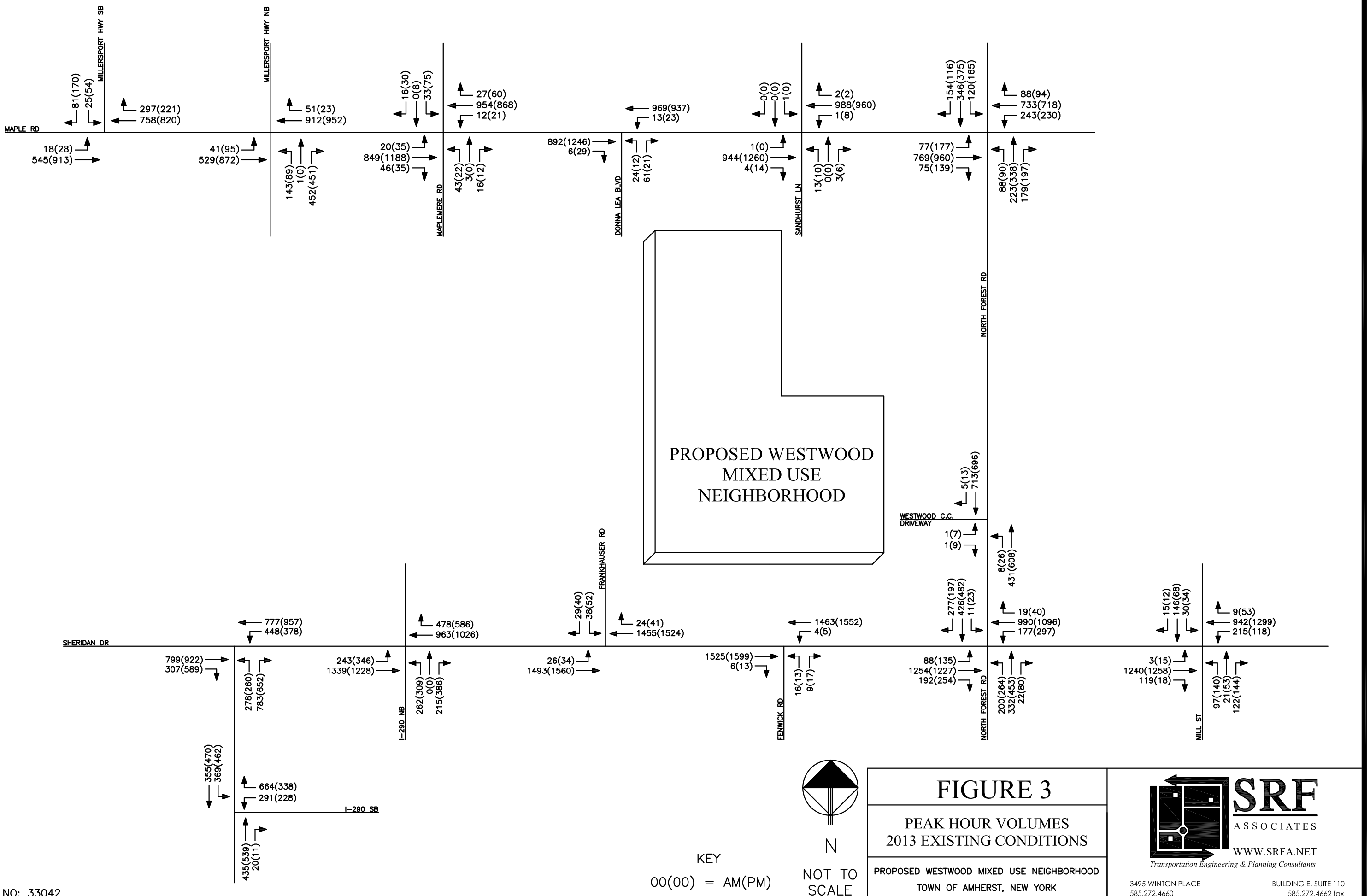

KEY

00(00) = AM(PM)

N

NOT TO SCALE

FIGURE 3

PEAK HOUR VOLUMES
2013 EXISTING CONDITIONS

PROPOSED WESTWOOD MIXED USE NEIGHBORHOOD
TOWN OF AMHERST, NEW YORK

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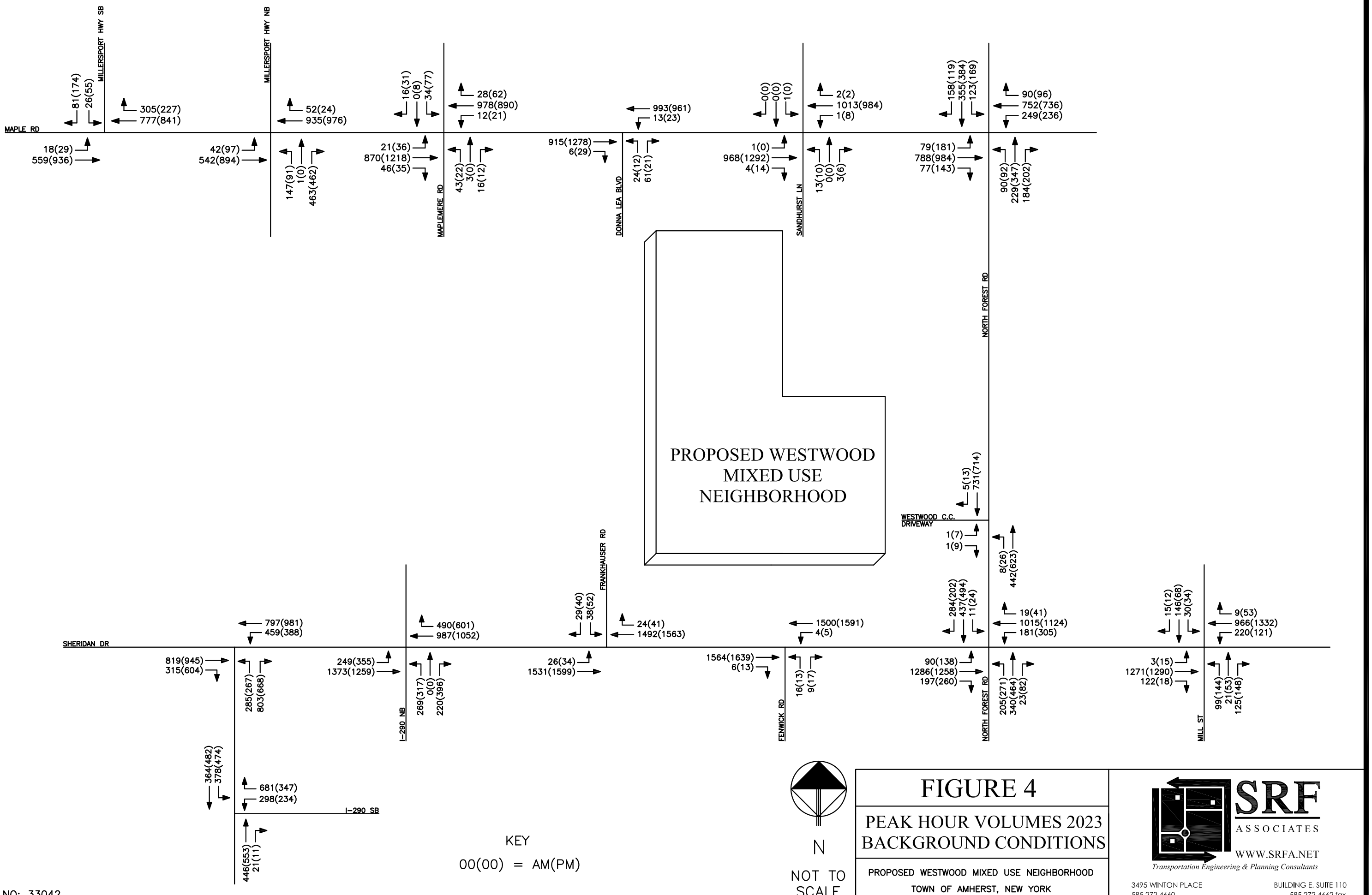

FIGURE 4

PEAK HOUR VOLUMES 2023 BACKGROUND CONDITIONS

PROPOSED WESTWOOD MIXED USE NEIGHBORHOOD

TOWN OF AMHERST, NEW YORK

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FIGURE 5 - CONCEPTUAL MASTER PLAN

LEGEND

WESTWOOD NEIGHBORHOOD CENTER	DESCRIPTION	PARKING
A OFFICE	200,000 S.F.	683 SPACES
B RESIDENTIAL	72 UNITS	145 SPACES
C HOTEL	130 ROOMS	75 SPACES
D MULTI FAMILY OVER NEIGHBORHOOD BUSINESS	280 MFU'S / 115,000 NBO	920 SPACES
E TOWNHOMES	37 UNITS	131 SPACES
F TOWNHOMES	56 UNITS	116 SPACES
G EVENT SPACE	1.2 ACRES	63 SPACES
H EXISTING CLUBHOUSE	N/A	105 SPACES
		2239 TOTAL
WESTWOOD RESIDENTIAL		
I PATIO HOME LOTS	113 UNITS	GARAGE
J LARGER LOTS - SINGLE FAMILY	47 UNITS	GARAGE
K TOWNHOMES	84 UNITS	GARAGE
L SENIOR LIVING FACILITY	ASSISTED LIVING 200 / INDENPENDENT 96	182 SPACES
ADDITIONAL USES		
M SYNAGOGUE	25,000 S.F.	184 SPACES

RESIDENTIAL BREAKDOWN

A1 - 13,000 S.F./STORY (2 STORY)
A2 - 13,000 S.F./STORY (2 STORY)
A3 - 17,440 S.F./STORY (2 STORY)
A4 - 17,440 S.F./STORY (2 STORY)
A5 - 19,600 S.F./STORY (2 STORY)
A6 - 19,600 S.F./STORY (2 STORY)
B1 - 21,500 S.F./STORY (2 STORY)
B2 - 12,400 S.F./STORY (2 STORY)
C - 25,370 S.F./STORY (4 STORY)
CH - 8,315 S.F./STORY (1 STORY)
D1 - 21,500 S.F./STORY (3 STORY)
D2 - 26,500 S.F./STORY (3 STORY)
D3 - 17,400 S.F./STORY (3 STORY)
D4 - 14,500 S.F./STORY (3 STORY)
D5 - 18,300 S.F./STORY (3 STORY)
D6 - 12,500 S.F./STORY (3 STORY)
D7 - 15,000 S.F./STORY (3 STORY)
E - 1,500 S.F./STORY (2 STORY)
F - 1,600 S.F./STORY (2 STORY)
L - 100,000 S.F./STORY (2 STORY)

KEY

ROW LINE
BUFFER LIMIT
PEDESTRIAN TRAILS
OPEN SPACE
FLOODWAY

NOTES

1. TOTAL PARKING COUNT IN THE WESTWOOD NEIGHBORHOOD CENTER: 2239 SPACES
2. WESTWOOD APRKWAY WIDTH: 80 FT.
3. STANDARD ROADWAY WIDTH: 50 FT

OPEN SPACE: 64 ACRES (38%)

ALTERNATIVE A
PRELIMINARY CONCEPTUAL MASTER PLAN

JANUARY, 2015 SCALE: 1" = 120'

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C&S Engineers, Inc.
141 Elm Street, Suite 100
Buffalo, New York 14203
Phone: 716-847-1630
Fax: 716-847-1454
www.cscos.com

MENSCH Capital Partners, LLC

Westwood
A Traditional Neighborhood in the heart of Amherst.

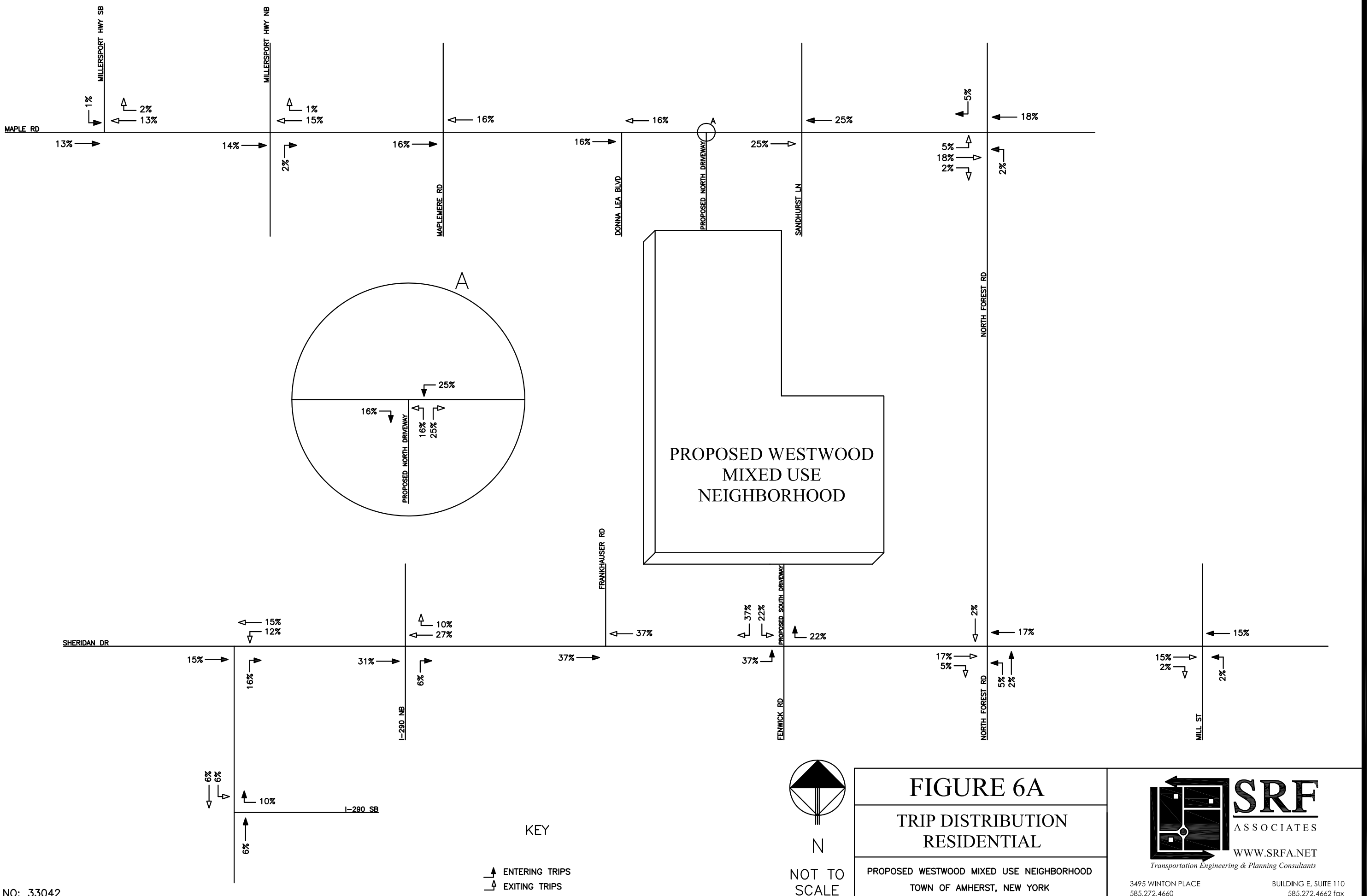

FIGURE 6A

TRIP DISTRIBUTION RESIDENTIAL

PROPOSED WESTWOOD MIXED USE NEIGHBORHOOD
TOWN OF AMHERST, NEW YORK

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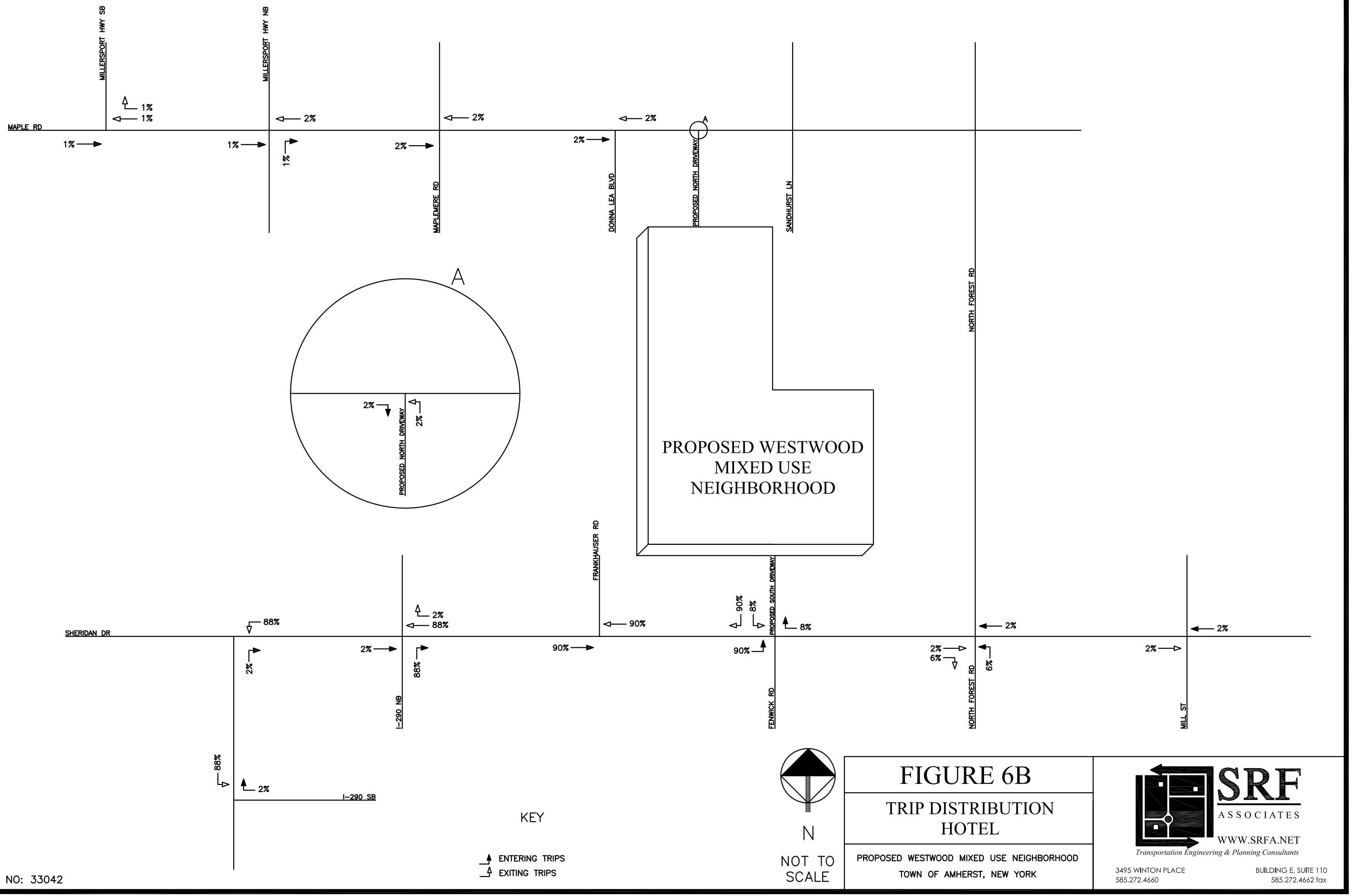

FIGURE 6B

TRIP DISTRIBUTION
HOTEL

PROPOSED WESTWOOD MIXED USE NEIGHBORHOOD
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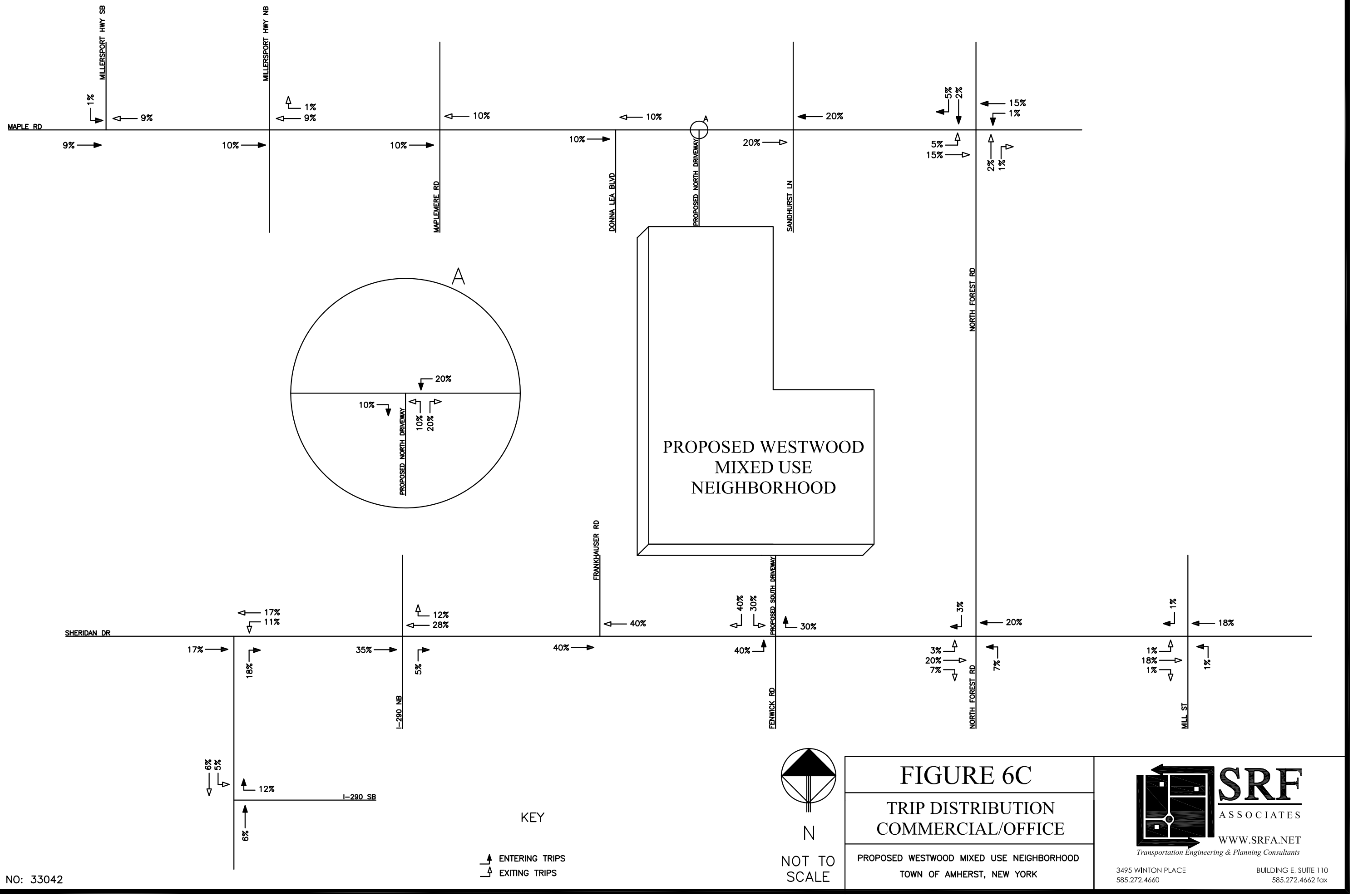

FIGURE 6C

TRIP DISTRIBUTION COMMERCIAL/OFFICE

PROPOSED WESTWOOD MIXED USE NEIGHBORHOOD
TOWN OF AMHERST, NEW YORK

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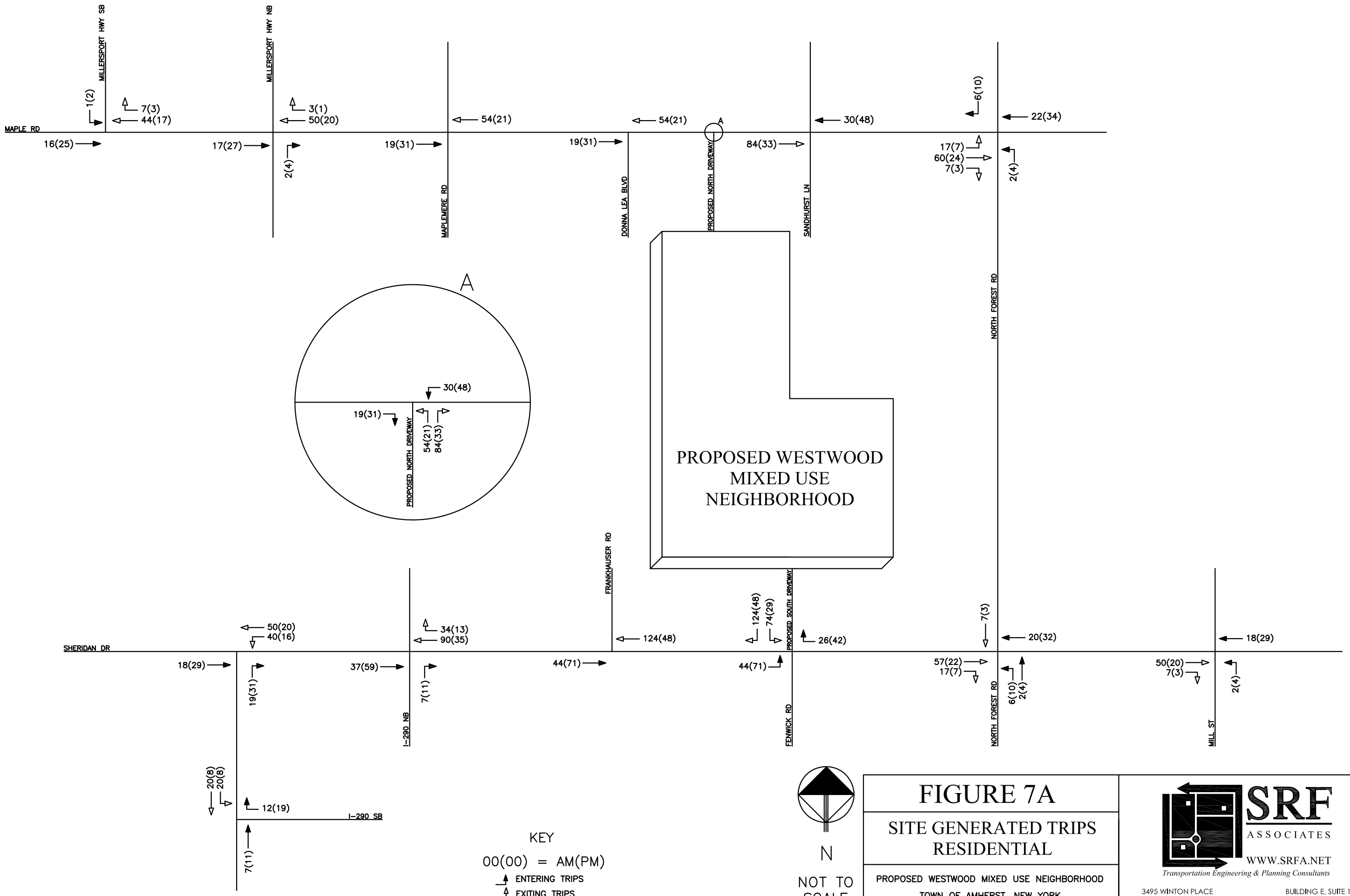

KEY

00(00) = AM(PM)

ENTERING TRIPS

EXITING TRIPS

N

NOT TO SCALE

FIGURE 7A

SITE GENERATED TRIPS RESIDENTIAL

PROPOSED WESTWOOD MIXED USE NEIGHBORHOOD

TOWN OF AMHERST, NEW YORK

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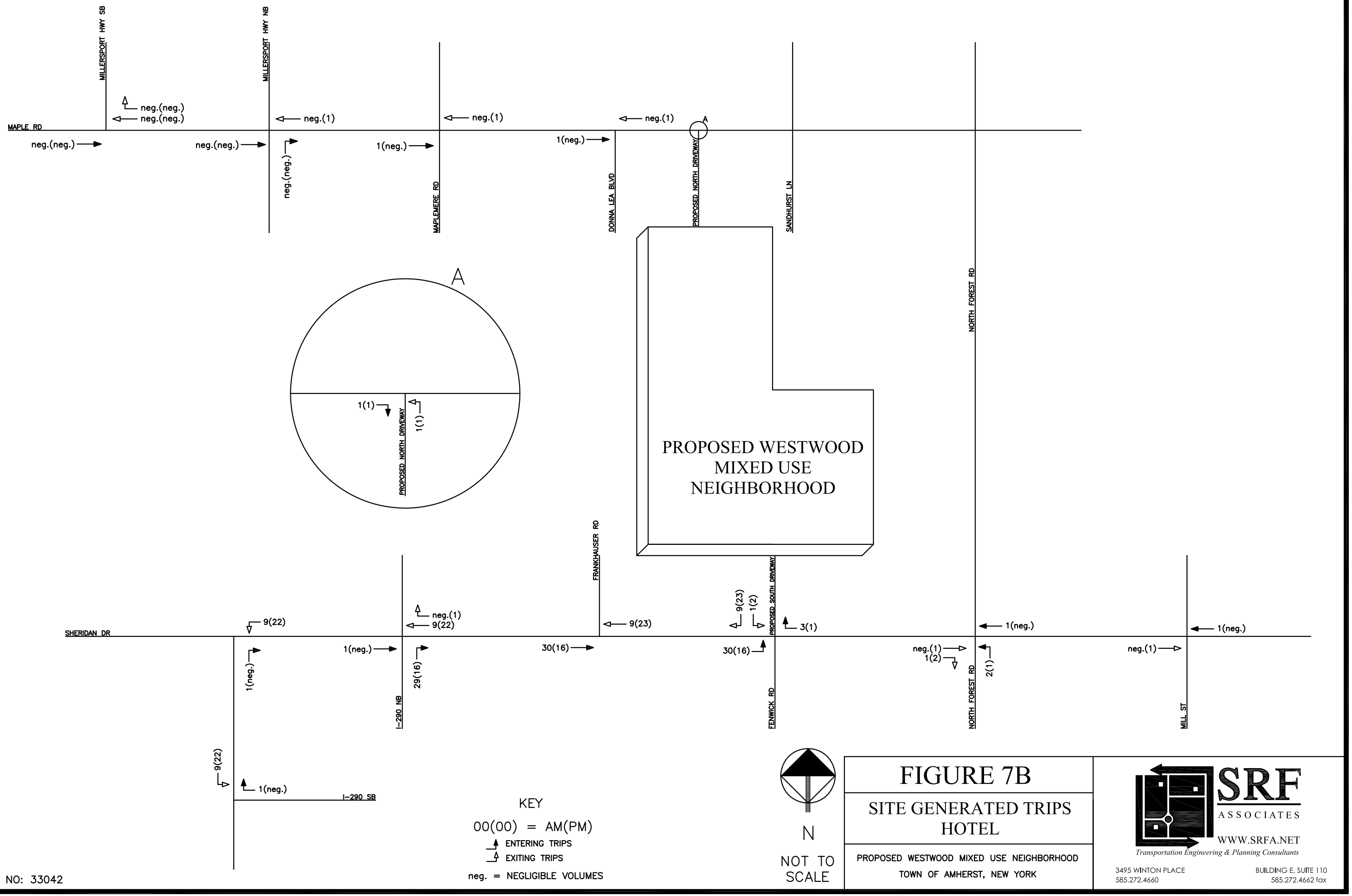

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00(00) = AM(PM)

ENTERING TRIPS

EXITING TRIPS

neg. = NEGLIGIBLE VOLUMES

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NOT TO SCALE

FIGURE 7B

SITE GENERATED TRIPS HOTEL

PROPOSED WESTWOOD MIXED USE NEIGHBORHOOD

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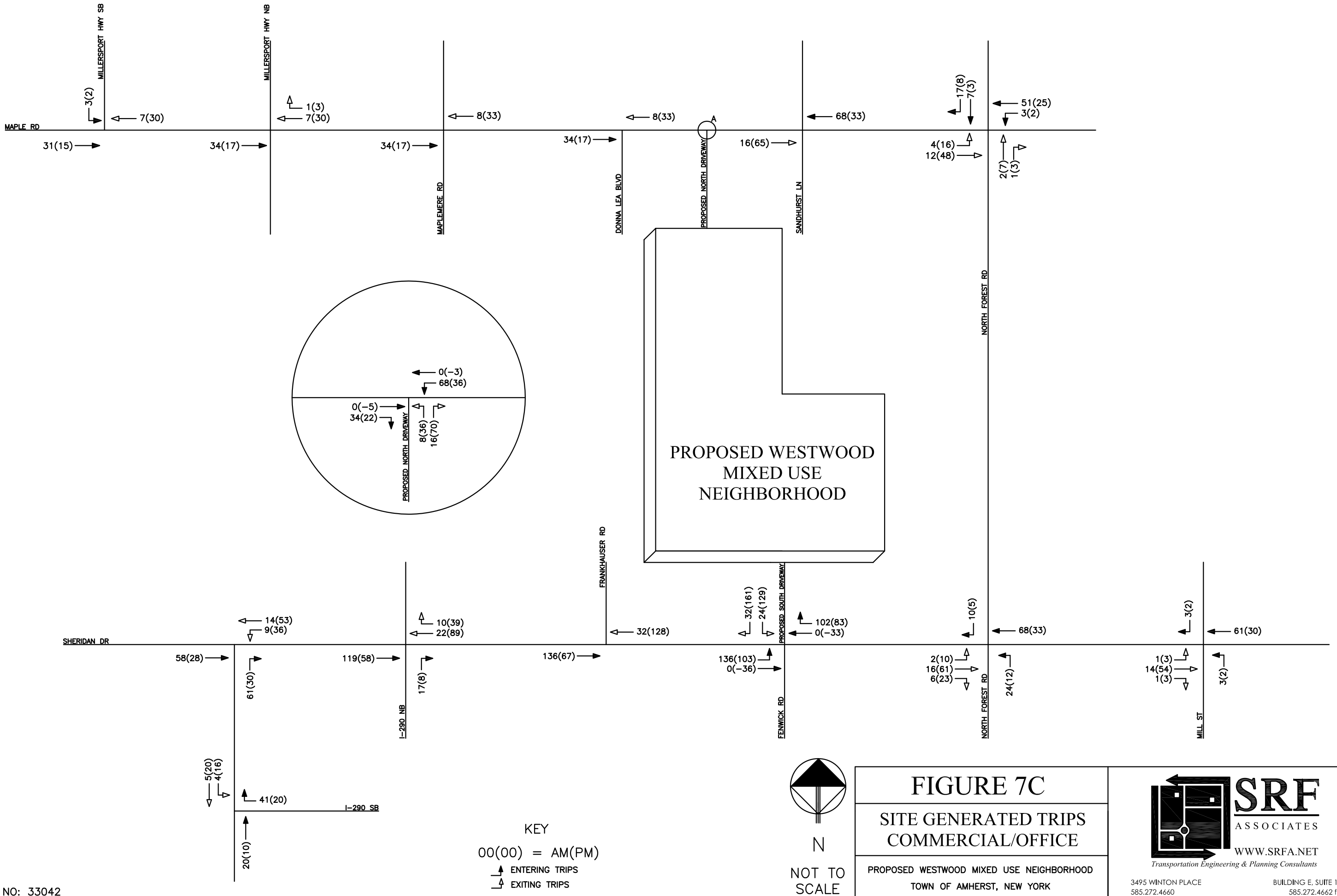

FIGURE 7C

SITE GENERATED TRIPS COMMERCIAL/OFFICE

PROPOSED WESTWOOD MIXED USE NEIGHBORHOOD
TOWN OF AMHERST, NEW YORK

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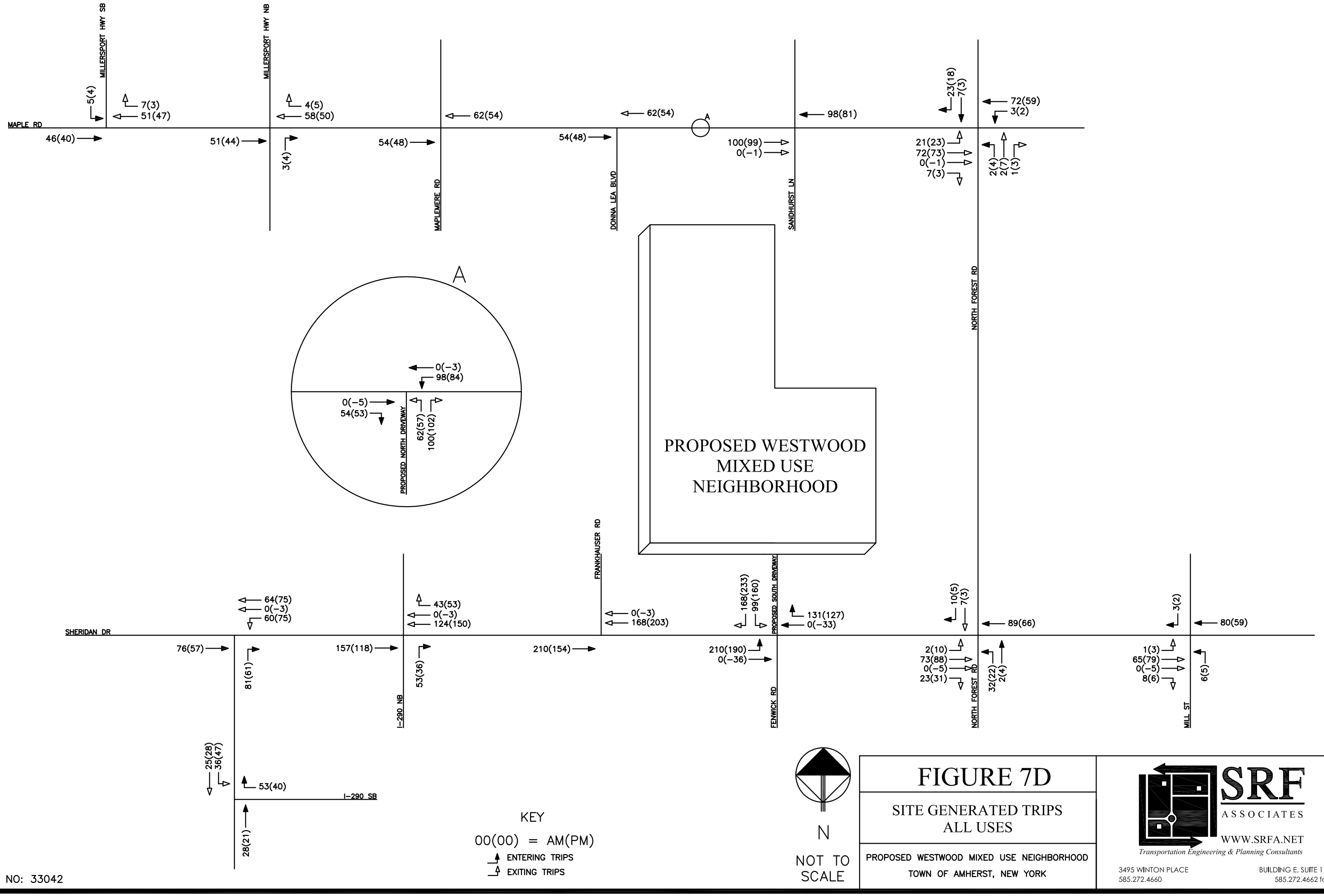

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ENTERING TRIPS

EXITING TRIPS

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NOT TO SCALE

FIGURE 7D

SITE GENERATED TRIPS
ALL USES

PROPOSED WESTWOOD MIXED USE NEIGHBORHOOD
TOWN OF AMHERST, NEW YORK

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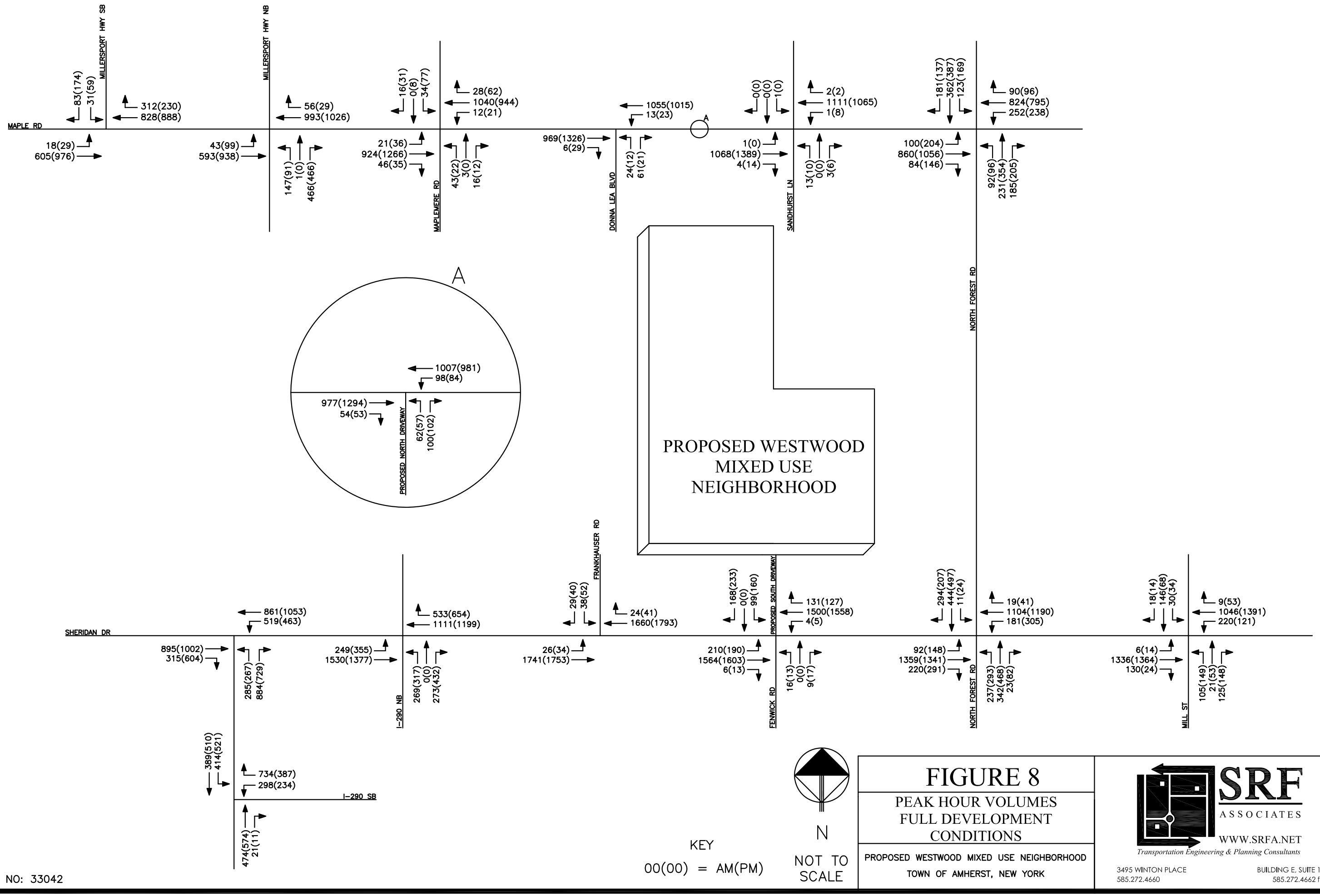

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FIGURE 8

PEAK HOUR VOLUMES FULL DEVELOPMENT CONDITIONS

PROPOSED WESTWOOD MIXED USE NEIGHBORHOOD

TOWN OF AMHERST, NEW YORK

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APPENDICES

A1

Collected Traffic Volume Data

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.DonnaLea.AM.Peak
Site Code : 22222222
Start Date : 9/12/2013
Page No : 1

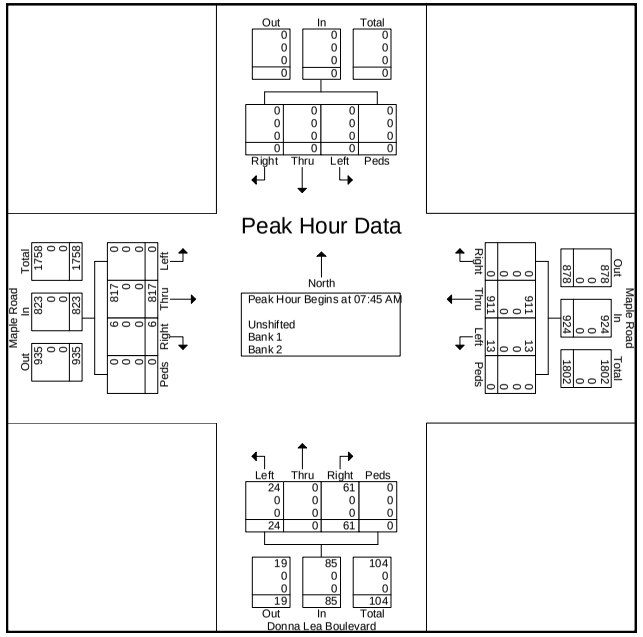
Groups Printed- Unshifted - Bank 1 - Bank 2

	Southbound				Maple Road Westbound				Donna Lea Boulevard Northbound				Maple Road Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	172	1	0	7	0	6	0	1	124	0	0	311
07:15 AM	0	0	0	0	0	199	2	0	4	0	1	0	2	187	0	0	395
07:30 AM	0	0	0	0	0	217	3	0	1	0	5	0	6	206	0	0	438
07:45 AM	0	0	0	0	0	251	6	0	10	0	5	0	2	257	0	0	531
Total	0	0	0	0	0	839	12	0	22	0	17	0	11	774	0	0	1675
08:00 AM	0	0	0	0	0	192	0	0	21	0	4	0	1	221	0	0	439
08:15 AM	0	0	0	0	0	207	2	0	18	0	10	0	2	133	0	0	372
08:30 AM	0	0	0	0	0	261	5	0	12	0	5	0	1	206	0	0	490
08:45 AM	0	0	0	0	0	204	11	0	7	0	11	0	3	159	0	0	395
Total	0	0	0	0	0	864	18	0	58	0	30	0	7	719	0	0	1696
Grand Total	0	0	0	0	0	1703	30	0	80	0	47	0	18	1493	0	0	3371
Apprch %	0	0	0	0	0	98.3	1.7	0	63	0	37	0	1.2	98.8	0	0	
Total %	0	0	0	0	0	50.5	0.9	0	2.4	0	1.4	0	0.5	44.3	0	0	
Unshifted	0	0	0	0	0	1703	30	0	80	0	47	0	18	1493	0	0	3371
% Unshifted	0	0	0	0	0	100	100	0	100	0	100	0	100	100	0	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.DonnaLea.AM.Peak
Site Code : 22222222
Start Date : 9/12/2013
Page No : 2

	Southbound					Maple Road Westbound					Donna Lea Boulevard Northbound					Maple Road Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	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	0	0	0	0	0	0	251	**6**								**2**	**257**	0	0	**259**	**531**
08:00 AM	0	0	0	0	0	0	192	0	0	192	**21**										
08:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**207**	**2**	**0**	**209**	**18**	**0**	**10**	**0**	**28**	2	133	0	0	135	372
08:30 AM	0	0	0	0	0	0	**261**	5	0	**266**	12	0	5	0	17	1	206	0	0	207	490
Total Volume	0	0	0	0	0	0	911	13	0	924	61	0	24	0	85	6	817	0	0	823	1832
% App. Total	0	0	0	0		0	98.6	1.4	0		71.8	0	28.2	0		0.7	99.3	0	0		
PHF	.000	.000	.000	.000	.000	.000	.873	.542	.000	.868	.726	.000	.600	.000	.759	.750	.795	.000	.000	.794	.863
Unshifted	0	0	0	0	0	0	911	13	0	924	61	0	24	0	85	6	817	0	0	823	1832
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.DonnaLea.PM.Peak
Site Code : 11111111
Start Date : 9/11/2013
Page No : 1

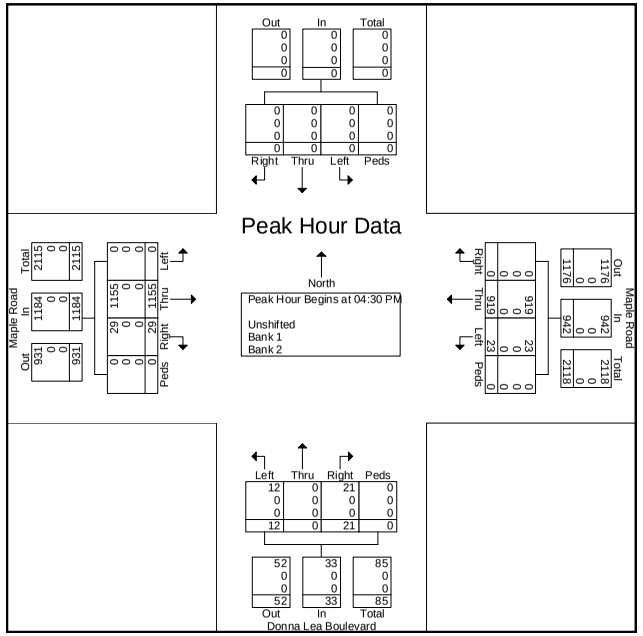
Groups Printed- Unshifted - Bank 1 - Bank 2

	Southbound				Maple Road Westbound				Donna Lea Boulevard Northbound				Maple Road Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	0	0	232	7	0	7	0	6	0	14	300	0	0	566
04:15 PM	0	0	0	0	0	194	7	0	3	0	2	0	8	233	0	0	447
04:30 PM	0	0	0	0	0	148	2	0	3	0	6	0	11	175	0	0	345
04:45 PM	0	0	0	0	0	227	4	0	8	0	2	0	4	261	0	0	506
Total	0	0	0	0	0	801	20	0	21	0	16	0	37	969	0	0	1864
05:00 PM	0	0	0	0	0	250	6	0	3	0	1	0	8	319	0	0	587
05:15 PM	0	0	0	0	0	294	11	0	7	0	3	0	6	400	0	0	721
05:30 PM	0	0	0	0	3	220	6	0	5	0	3	0	7	303	0	0	547
05:45 PM	0	0	0	0	0	199	9	0	5	0	1	0	5	245	0	0	464
Total	0	0	0	0	3	963	32	0	20	0	8	0	26	1267	0	0	2319
Grand Total	0	0	0	0	3	1764	52	0	41	0	24	0	63	2236	0	0	4183
Apprch %	0	0	0	0	0.2	97	2.9	0	63.1	0	36.9	0	2.7	97.3	0	0	
Total %	0	0	0	0	0.1	42.2	1.2	0	1	0	0.6	0	1.5	53.5	0	0	
Unshifted	0	0	0	0	3	1764	52	0	41	0	24	0	63	2236	0	0	4183
% Unshifted	0	0	0	0	100	100	100	0	100	0	100	0	100	100	0	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.DonnaLea.PM.Peak
Site Code : 11111111
Start Date : 9/11/2013
Page No : 2

	Southbound					Maple Road Westbound					Donna Lea Boulevard Northbound					Maple Road Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	0	148	2	0	150	3	0	**6**			**11**					
04:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**227**	**4**	**0**	**231**	**8**	**0**	**2**	**0**	**10**	4	261	0	0	265	506
05:00 PM	0	0	0	0	0	0	250	6	0	256	3	0	1	0	4	8	319	0	0	327	587
05:15 PM	0	0	0	0	0	0	**294**	**11**		**305**	7	0	3	0	10	6	**400**	0	0	**406**	**721**
Total Volume	0	0	0	0	0	0	919	23	0	942	21	0	12	0	33	29	1155	0	0	1184	2159
% App. Total	0	0	0	0		0	97.6	2.4	0		63.6	0	36.4	0		2.4	97.6	0	0		
PHF	.000	.000	.000	.000	.000	.000	.781	.523	.000	.772	.656	.000	.500	.000	.825	.659	.722	.000	.000	.729	.749
Unshifted	0	0	0	0	0	0	919	23	0	942	21	0	12	0	33	29	1155				
% Unshifted	0	0	0	0	0	0	100	100	0	100	100	0	100	0	100	100	100	0	0	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Harlem.I290SB.AM.Peak
Site Code : 11111111
Start Date : 9/12/2013
Page No : 1

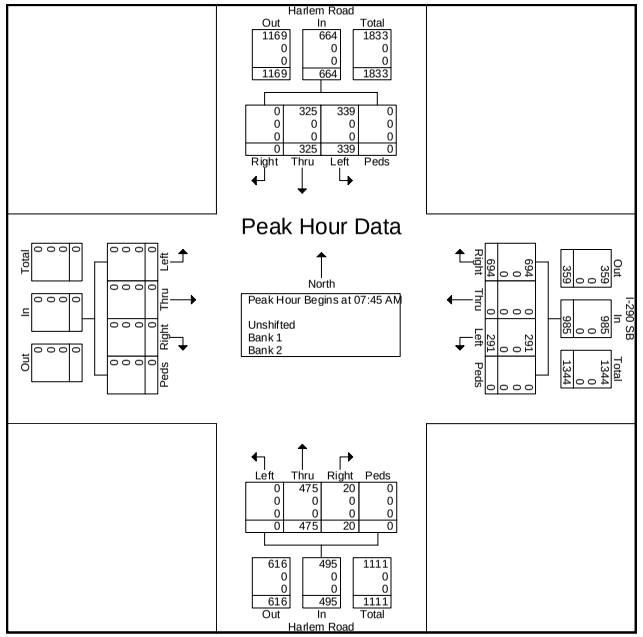
Groups Printed- Unshifted - Bank 1 - Bank 2

	Harlem Road Southbound				I-290 SB Westbound				Harlem Road Northbound				Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	53	97	1	107	0	35	0	5	50	0	0	0	0	0	0	348
07:15 AM	0	84	134	0	157	0	75	1	4	105	0	0	0	0	0	0	560
07:30 AM	3	107	85	0	176	0	119	0	1	136	0	0	0	0	0	0	627
07:45 AM	0	77	72	0	200	0	104	0	0	103	0	0	0	0	0	0	556
Total	3	321	388	1	640	0	333	1	10	394	0	0	0	0	0	0	2091
08:00 AM	0	92	86	0	163	0	94	0	8	134	0	0	0	0	0	0	577
08:15 AM	0	73	75	0	173	0	49	0	5	132	0	0	0	0	0	0	507
08:30 AM	0	83	106	0	158	0	44	0	7	106	0	0	0	0	0	0	504
08:45 AM	0	47	69	0	145	0	53	0	5	101	0	0	0	0	0	0	420
Total	0	295	336	0	639	0	240	0	25	473	0	0	0	0	0	0	2008
Grand Total	3	616	724	1	1279	0	573	1	35	867	0	0	0	0	0	0	4099
Apprch %	0.2	45.8	53.9	0.1	69	0	30.9	0.1	3.9	96.1	0	0	0	0	0	0	
Total %	0.1	15	17.7	0	31.2	0	14	0	0.9	21.2	0	0	0	0	0	0	
Unshifted	3	616	724	1	1279	0	573	1	35	867	0	0	0	0	0	0	4099
% Unshifted	100	100	100	100	100	0	100	100	100	100	0	0	0	0	0	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Harlem.I290SB.AM.Peak
Site Code : 11111111
Start Date : 9/12/2013
Page No : 2

	Harlem Road Southbound					I-290 SB Westbound					Harlem Road Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	0	77	72	0	149	**200**		**104**		**304**	0	103	0	0	103	0	0	0	0	0	556
08:00 AM	0	**92**	86	0	178	163	0	94	0	257	**8**	**134**	0	0	**142**	0	0	0	0	0	**577**
08:15 AM	0	73	75	0	148	173	0	49	0	222	5	132	0	0	137	0	0	0	0	0	507
08:30 AM	0	83	**106**		**189**	158	0	44	0	202	7	106	0	0	113	0	0	0	0	0	504
Total Volume	0	325	339	0	664	694	0	291	0	985	20	475	0	0	495	0	0	0	0	0	2144
% App. Total	0	48.9	51.1	0		70.5	0	29.5	0		4	96	0	0		0	0	0	0		
PHF	.000	.883	.800	.000	.878	.868	.000	.700	.000	.810	.625	.886	.000	.000	.871	.000	.000	.000	.000	.000	.929
Unshifted	0	325	339	0	664	694	0	291	0	985	20	475	0	0	495	0	0	0	0	0	2144
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Harlem.I290SB.PM.Peak
Site Code : 11111111
Start Date : 9/11/2013
Page No : 1

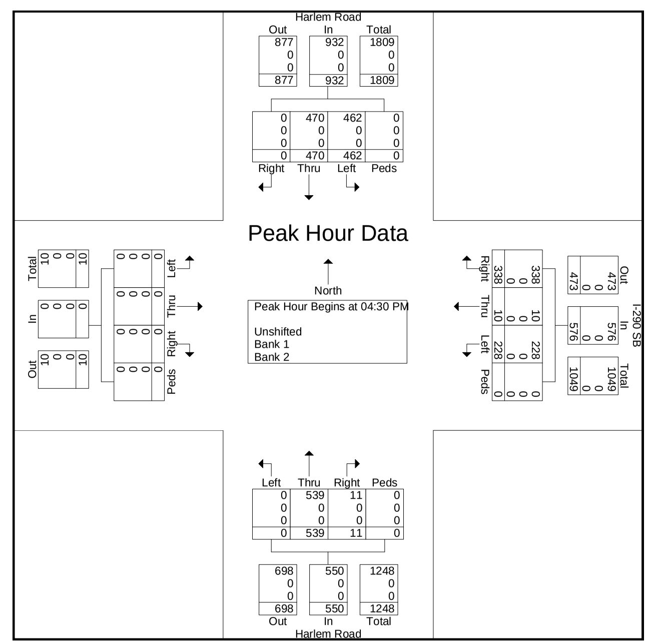
Groups Printed- Unshifted - Bank 1 - Bank 2

	Harlem Road Southbound				I-290 SB Westbound				Harlem Road Northbound				Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	109	170	1	78	0	28	7	14	131	0	0	0	0	0	0	538
04:15 PM	0	120	142	0	70	0	34	0	2	118	0	0	0	0	0	0	486
04:30 PM	0	108	145	0	57	0	11	0	4	128	0	0	0	0	0	0	453
04:45 PM	0	115	114	0	65	0	38	0	2	114	0	0	0	0	0	0	448
Total	0	452	571	1	270	0	111	7	22	491	0	0	0	0	0	0	1925
05:00 PM	0	123	110	0	115	0	81	0	5	118	0	0	0	0	0	0	552
05:15 PM	0	124	93	0	101	10	98	0	0	179	0	0	0	0	0	0	605
05:30 PM	0	118	82	0	88	0	43	0	6	158	0	0	0	0	0	0	495
05:45 PM	0	118	91	0	55	0	29	0	3	124	0	0	0	0	0	0	420
Total	0	483	376	0	359	10	251	0	14	579	0	0	0	0	0	0	2072
Grand Total	0	935	947	1	629	10	362	7	36	1070	0	0	0	0	0	0	3997
Apprch %	0	49.7	50.3	0.1	62.4	1	35.9	0.7	3.3	96.7	0	0	0	0	0	0	
Total %	0	23.4	23.7	0	15.7	0.3	9.1	0.2	0.9	26.8	0	0	0	0	0	0	
Unshifted	0	935	947	1	629	10	362	7	36	1070	0	0	0	0	0	0	3997
% Unshifted	0	100	100	100	100	100	100	100	100	100	0	0	0	0	0	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Harlem.I290SB.PM.Peak
Site Code : 11111111
Start Date : 9/11/2013
Page No : 2

	Harlem Road Southbound					I-290 SB Westbound					Harlem Road Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	108	**145**		**253**	57	0	11	0	68	4	128	0	0	132	0	0	0	0	0	453
04:45 PM	0	115	114	0	229	65	0	38	0	103	2	114	0	0	116	0	0	0	0	0	448
05:00 PM	0	123	110	0	233	**115**					**5**										
05:15 PM	**0**	**124**	93	0	217	101	**10**	**98**	**0**	**209**	0	**179**	0	0	**179**	0	0	0	0	0	**605**
Total Volume	0	470	462	0	932	338	10	228	0	576	11	539	0	0	550	0	0	0	0	0	2058
% App. Total	0	50.4	49.6	0		58.7	1.7	39.6	0		2	98	0	0		0	0	0	0		
PHF	.000	.948	.797	.000	.921	.735	.250	.582	.000	.689	.550	.753	.000	.000	.768	.000	.000	.000	.000	.000	.850
Unshifted	0	470	462	0	932	338	10	228	0	576	11	539	0	0	550	0	0	0	0	0	2058
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.MillersportEastRamp.AM.Peak
Site Code : 00032050
Start Date : 11/14/2012
Page No : 1

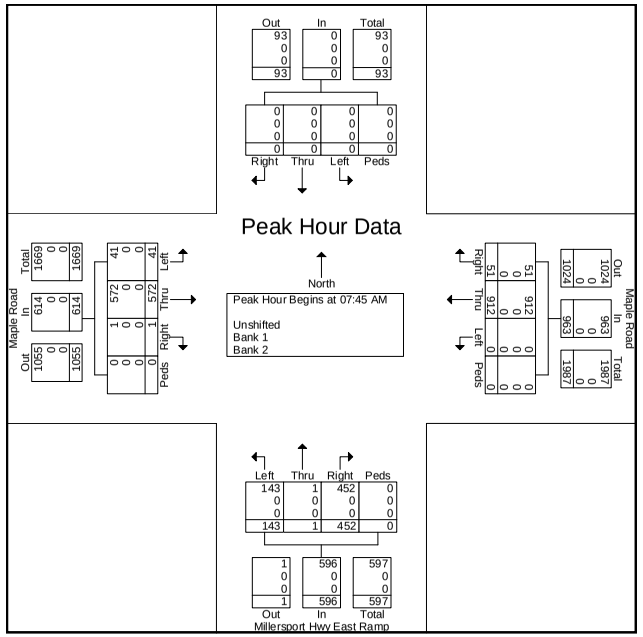
Groups Printed- Unshifted - Bank 1 - Bank 2

	Southbound				Maple Road Westbound				Millersport Hwy East Ramp Northbound				Maple Road Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	3	121	0	0	72	0	15	0	1	71	4	0	287
07:15 AM	0	0	0	0	3	197	0	0	75	1	13	0	0	73	6	0	368
07:30 AM	0	0	0	0	4	195	0	0	90	0	24	0	0	106	6	0	425
07:45 AM	0	0	0	0	10	238	0	0	131	0	28	0	0	171	10	0	588
Total	0	0	0	0	20	751	0	0	368	1	80	0	1	421	26	0	1668
08:00 AM	0	0	0	0	7	216	0	0	113	0	47	0	0	152	10	0	545
08:15 AM	0	0	0	0	16	218	0	0	91	0	28	0	0	130	13	0	496
08:30 AM	0	0	0	0	18	240	0	0	117	1	40	0	1	119	8	0	544
08:45 AM	0	0	0	0	23	236	0	0	99	0	40	0	0	109	12	0	519
Total	0	0	0	0	64	910	0	0	420	1	155	0	1	510	43	0	2104
Grand Total	0	0	0	0	84	1661	0	0	788	2	235	0	2	931	69	0	3772
Apprch %	0	0	0	0	4.8	95.2	0	0	76.9	0.2	22.9	0	0.2	92.9	6.9	0	
Total %	0	0	0	0	2.2	44	0	0	20.9	0.1	6.2	0	0.1	24.7	1.8	0	
Unshifted	0	0	0	0	84	1660	0	0	788	2	235	0	2	930	69	0	3770
% Unshifted	0	0	0	0	100	99.9	0	0	100	100	100	0	100	99.9	100	0	99.9
Bank 1	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
% Bank 1	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0.1	0	0	0.1
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.MillersportEastRamp.AM.Peak
Site Code : 00032050
Start Date : 11/14/2012
Page No : 2

	Southbound					Maple Road Westbound					Millersport Hwy East Ramp Northbound					Maple Road Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	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	0	0	0	0	0	10	238	0	0	248	**131**						**171**	10	0	**181**	**588**
08:00 AM	0	0	0	0	0	7	216	0	0	223	113	0	**47**		**160**	0	152	10	0	162	545
08:15 AM	0	0	0	0	0	16	218	0	0	234	91	0	28	0	119	0	130	**13**			
08:30 AM	**0**	**0**	**0**	**0**	**0**	**18**	**240**	0	0	**258**	117	**1**	40	0	158	**1**	**119**	**8**	**0**	**128**	**544**
Total Volume	0	0	0	0	0	51	912	0	0	963	452	1	143	0	596	1	572	41	0	614	2173
% App. Total	0	0	0	0		5.3	94.7	0	0		75.8	0.2	24	0		0.2	93.2	6.7	0		
PHF	.000	.000	.000	.000	.000	.708	.950	.000	.000	.933	.863	.250	.761	.000	.931	.250	.836	.788	.000	.848	.924
Unshifted	0	0	0	0	0	51	912	0	0	963	452	1	143	0	596	1	572	41	0	614	2173
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.Millersport.EastRamp.PM.Peak
Site Code : 00032050
Start Date : 11/14/2012
Page No : 1

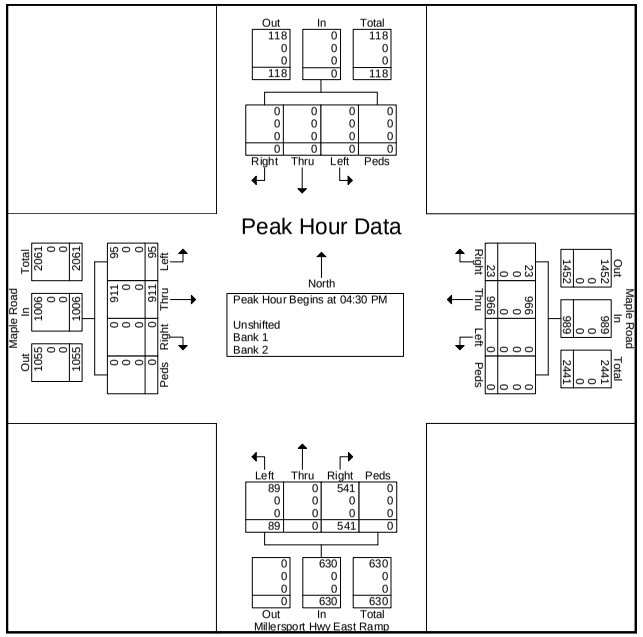
Groups Printed- Unshifted - Bank 1 - Bank 2

	Southbound				Maple Road Westbound				Millersport Hwy East Ramp Northbound				Maple Road Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	0	8	187	0	1	132	0	35	0	0	223	22	0	608
04:15 PM	0	0	0	0	7	231	0	0	142	0	20	0	2	165	20	0	587
04:30 PM	0	0	0	0	3	225	0	0	147	0	24	0	0	197	19	0	615
04:45 PM	0	0	0	0	8	248	0	0	134	0	19	0	0	219	18	0	646
Total	0	0	0	0	26	891	0	1	555	0	98	0	2	804	79	0	2456
05:00 PM	0	0	0	0	3	217	0	0	97	0	22	0	0	256	20	0	615
05:15 PM	0	0	0	0	9	276	0	0	163	0	24	0	0	239	38	0	749
05:30 PM	0	0	0	0	5	246	0	0	153	0	29	0	0	212	18	0	663
05:45 PM	0	0	0	0	5	229	0	0	141	0	32	0	0	192	30	0	629
Total	0	0	0	0	22	968	0	0	554	0	107	0	0	899	106	0	2656
Grand Total	0	0	0	0	48	1859	0	1	1109	0	205	0	2	1703	185	0	5112
Apprch %	0	0	0	0	2.5	97.4	0	0.1	84.4	0	15.6	0	0.1	90.1	9.8	0	
Total %	0	0	0	0	0.9	36.4	0	0	21.7	0	4	0	0	33.3	3.6	0	
Unshifted	0	0	0	0	48	1859	0	1	1109	0	205	0	2	1701	185	0	5110
% Unshifted	0	0	0	0	100	100	0	100	100	0	100	0	100	99.9	100	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.Millersport.EastRamp.PM.Peak
Site Code : 00032050
Start Date : 11/14/2012
Page No : 2

	Southbound					Maple Road Westbound					Millersport Hwy East Ramp Northbound					Maple Road Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	3	225	0	0	228	147	0	**24**								
04:45 PM	**0**	**0**	**0**	**0**	**0**	**8**	**248**	**0**	**0**	**256**	**134**	**0**	**19**	**0**	**153**	**0**	**219**	**18**	**0**	**237**	**646**
05:00 PM	**0**	**0**	**0**	**0**	**0**	**3**	**217**	**0**	**0**	**220**	**97**	**0**	**22**	**0**	**119**	**0**	**256**	20	0	276	615
05:15 PM	0	0	0	0	0	**9**	**276**	0	0	**285**	**163**				**187**	0	239	**38**		**277**	**749**
Total Volume	0	0	0	0	0	23	966	0	0	989	541	0	89	0	630	0	911	95	0	1006	2625
% App. Total	0	0	0	0		2.3	97.7	0	0		85.9	0	14.1	0		0	90.6	9.4	0		
PHF	.000	.000	.000	.000	.000	.639	.875	.000	.000	.868	.830	.000	.927	.000	.842	.000	.890	.625	.000	.908	.876
Unshifted	0	0	0	0	0	23	966	0	0	989	541	0	89	0	630	0	911	95	0	1006	2625
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.Maplemere.AM.Peak
Site Code : 11111111
Start Date : 11/14/2012
Page No : 1

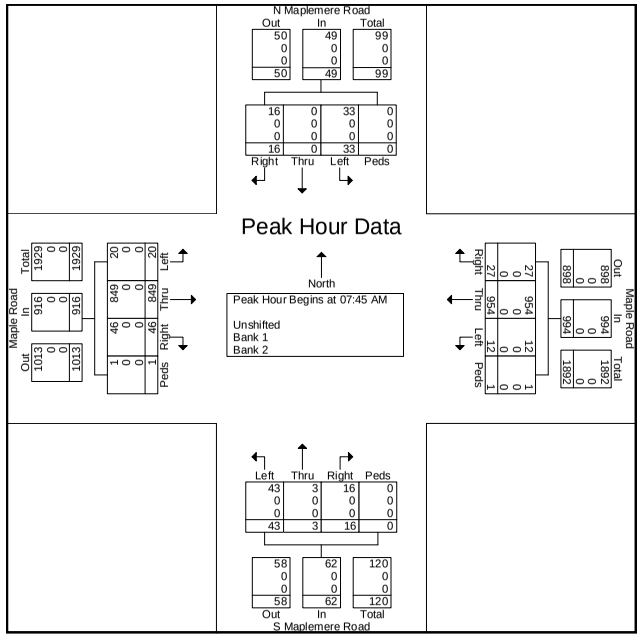
Groups Printed- Unshifted - Bank 1 - Bank 2

	N Maplemere Road Southbound				Maple Road Westbound				S Maplemere Road Northbound				Maple Road Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	1	0	0	0	1	132	0	0	5	0	7	1	3	91	7	0	248
07:15 AM	3	0	1	0	5	208	1	0	3	0	4	0	3	130	1	0	359
07:30 AM	3	3	2	0	4	220	5	0	3	0	3	0	8	217	5	0	473
07:45 AM	3	0	3	0	7	260	5	1	4	2	2	0	10	246	11	0	554
Total	10	3	6	0	17	820	11	1	15	2	16	1	24	684	24	0	1634
08:00 AM	5	0	6	0	6	213	2	0	5	0	21	0	17	216	4	0	495
08:15 AM	4	0	17	0	5	235	3	0	4	0	6	0	15	193	0	0	482
08:30 AM	4	0	7	0	9	246	2	0	3	1	14	0	4	194	5	1	490
08:45 AM	4	0	1	0	5	241	1	0	8	0	8	0	2	187	3	0	460
Total	17	0	31	0	25	935	8	0	20	1	49	0	38	790	12	1	1927
Grand Total	27	3	37	0	42	1755	19	1	35	3	65	1	62	1474	36	1	3561
Apprch %	40.3	4.5	55.2	0	2.3	96.6	1	0.1	33.7	2.9	62.5	1	3.9	93.7	2.3	0.1	
Total %	0.8	0.1	1	0	1.2	49.3	0.5	0	1	0.1	1.8	0	1.7	41.4	1	0	
Unshifted	27	3	37	0	42	1755	19	1	35	3	65	1	62	1474	36	1	3561
% Unshifted	100	100	100	0	100	100	100	100	100	100	100	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.Maplemere.AM.Peak
Site Code : 11111111
Start Date : 11/14/2012
Page No : 2

	N Maplemere Road Southbound					Maple Road Westbound					S Maplemere Road Northbound					Maple Road Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	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	3	0	3	0	6	7	**260**	**5**	**1**	**273**	4	**2**	2	0	8	10	**246**	**11**		**267**	**554**
08:00 AM	**5**										**5**		**21**		**26**	**17**					
08:15 AM	**4**	**0**	**17**	**0**	**21**	5	235	3	0	243	4	0	6	0	10	15	193	0	0	208	482
08:30 AM	4	0	7	0	11	**9**													**1**		
Total Volume	16	0	33	0	49	27	954	12	1	994	16	3	43	0	62	46	849	20	1	916	2021
% App. Total	32.7	0	67.3	0		2.7	96	1.2	0.1		25.8	4.8	69.4	0		5	92.7	2.2	0.1		
PHF	.800	.000	.485	.000	.583	.750	.917	.600	.250	.910	.800	.375	.512	.000	.596	.676	.863	.455	.250	.858	.912
Unshifted	16	0	33	0	49	27	954	12	1	994	16	3	43	0	62	46	849	20	1	916	2021
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.Maplemere.PM.Peak
Site Code : 11111111
Start Date : 11/14/2012
Page No : 1

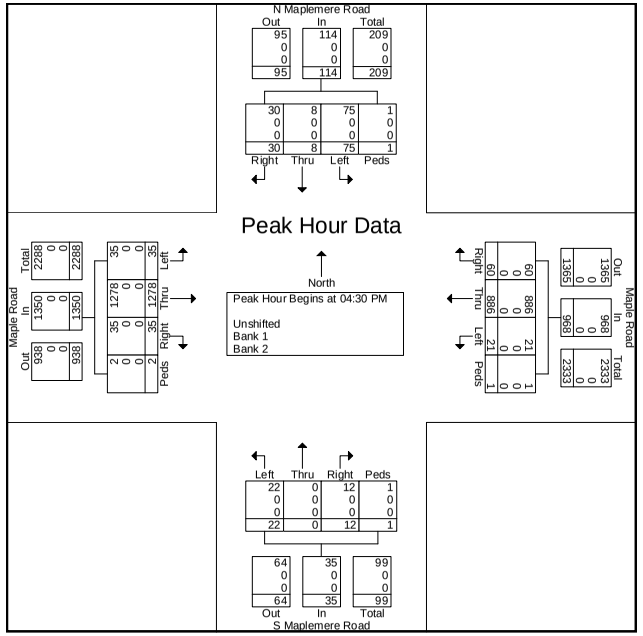
Groups Printed- Unshifted - Bank 1 - Bank 2

	N Maplemere Road Southbound				Maple Road Westbound				S Maplemere Road Northbound				Maple Road Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	10	1	13	0	10	185	10	0	3	2	6	0	5	269	7	0	521
04:15 PM	10	1	13	0	16	196	3	0	5	0	5	0	6	251	9	0	515
04:30 PM	10	4	18	0	12	217	6	0	2	0	4	1	9	340	8	1	632
04:45 PM	5	0	14	0	16	202	5	1	3	0	4	0	5	290	7	1	553
Total	35	6	58	0	54	800	24	1	13	2	19	1	25	1150	31	2	2221
05:00 PM	7	3	17	1	15	212	5	0	1	0	6	0	8	340	8	0	623
05:15 PM	8	1	26	0	17	255	5	0	6	0	8	0	13	308	12	0	659
05:30 PM	9	0	30	0	17	202	1	2	4	1	4	0	7	261	7	0	545
05:45 PM	7	3	14	1	14	218	3	7	0	1	7	0	3	267	3	0	548
Total	31	7	87	2	63	887	14	9	11	2	25	0	31	1176	30	0	2375
Grand Total	66	13	145	2	117	1687	38	10	24	4	44	1	56	2326	61	2	4596
Apprch %	29.2	5.8	64.2	0.9	6.3	91.1	2.1	0.5	32.9	5.5	60.3	1.4	2.3	95.1	2.5	0.1	
Total %	1.4	0.3	3.2	0	2.5	36.7	0.8	0.2	0.5	0.1	1	0	1.2	50.6	1.3	0	
Unshifted	66	13	145	2	117	1687	38	10	24	4	44	1	56	2326	61	2	4596
% Unshifted	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.Maplemere.PM.Peak
Site Code : 11111111
Start Date : 11/14/2012
Page No : 2

	N Maplemere Road Southbound					Maple Road Westbound					S Maplemere Road Northbound					Maple Road Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	**10**	**4**	18	0	32	12	217	**6**						**1**			**340**	8	**1**	**358**	632
04:45 PM	5	0	14	0	19	16	202	5	**1**												
05:00 PM	**7**	**3**	**17**	**1**	**28**	**15**	**212**	**5**	**0**	**232**	**1**	**0**	**6**	**0**	**7**	**8**	**340**	**8**	**0**	**356**	**623**
05:15 PM	**8**	**1**	**26**	**0**	**35**	**17**	**255**	5	0	**277**	**6**	**0**	**8**	**0**	**14**	**13**	**308**	**12**	**0**	**333**	**659**
Total Volume	30	8	75	1	114	60	886	21	1	968	12	0	22	1	35	35	1278	35	2	1350	2467
% App. Total	26.3	7	65.8	0.9		6.2	91.5	2.2	0.1		34.3	0	62.9	2.9		2.6	94.7	2.6	0.1		
PHF	.750	.500	.721	.250	.814	.882	.869	.875	.250	.874	.500	.000	.688	.250	.625	.673	.940	.729	.500	.943	.936
Unshifted	30	8	75	1	114	60	886	21	1	968	12	0	22	1	35	35	1278				
% Unshifted	100	100	100	100	100	100	100	100	100	100	100	0	100	100	100	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.NorthForest.AM.Peak
Site Code : 00000000
Start Date : 11/14/2012
Page No : 1

Groups Printed- Unshifted - Bank 1 - Bank 2

	N FOREST RD Southbound				MAPLE RD Westbound				N FOREST RD Northbound				MAPLE RD Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	19	43	16	0	17	117	52	0	26	26	13	0	10	97	8	0	444
07:15 AM	26	67	20	0	9	166	70	1	40	44	12	0	17	122	7	0	601
07:30 AM	37	89	26	0	20	171	84	0	32	43	16	0	17	155	17	0	707
07:45 AM	50	105	38	0	23	187	64	0	39	61	23	0	8	227	22	0	847
Total	132	304	100	0	69	641	270	1	137	174	64	0	52	601	54	0	2599
08:00 AM	33	80	24	0	16	175	60	0	47	48	16	3	21	180	19	0	722
08:15 AM	36	77	25	0	29	192	59	0	51	45	23	0	24	178	18	0	757
08:30 AM	35	84	33	0	20	179	60	0	42	69	26	0	22	184	18	1	773
08:45 AM	30	68	37	0	32	196	63	0	31	55	20	0	16	146	17	0	711
Total	134	309	119	0	97	742	242	0	171	217	85	3	83	688	72	1	2963
Grand Total	266	613	219	0	166	1383	512	1	308	391	149	3	135	1289	126	1	5562
Apprch %	24.2	55.8	19.9	0	8.1	67.1	24.8	0	36.2	45.9	17.5	0.4	8.7	83.1	8.1	0.1	
Total %	4.8	11	3.9	0	3	24.9	9.2	0	5.5	7	2.7	0.1	2.4	23.2	2.3	0	
Unshifted	266	613	219	0	166	1383	512	1	308	391	149	3	135	1289	126	1	5562
% Unshifted	100	100	100	0	100	100	100	100	100	100	100	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.NorthForest.AM.Peak
Site Code : 00000000
Start Date : 11/14/2012
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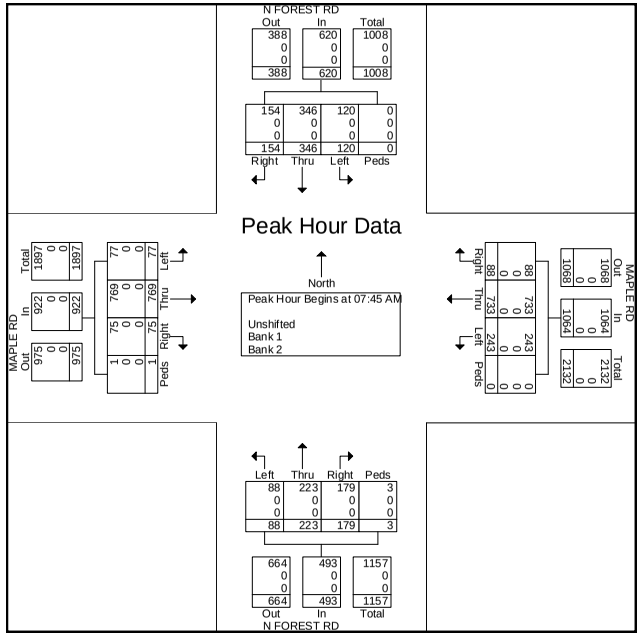
	N FOREST RD Southbound					MAPLE RD Westbound					N FOREST RD Northbound					MAPLE RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	**50**	**105**	**38**		**193**	23	187	**64**								**227**	**22**		**257**	**847**	
08:00 AM	33	80	24	0	137	16	175	60	0	251	47	48	16	**3**							
08:15 AM	**36**	**77**	**25**	**0**	**138**	**29**	**192**	59	0	**280**	**51**	**45**	**23**	**0**	**119**	**24**	**178**	**18**	**0**	**220**	**757**
08:30 AM	**35**	**84**	**33**	**0**	**152**	**20**	**179**	**60**	**0**	**259**	**42**	**69**	**26**	**0**	**137**	22	184	18	**1**	**225**	**773**
Total Volume	154	346	120	0	620	88	733	243	0	1064	179	223	88	3	493	75	769	77	1	922	3099
% App. Total	24.8	55.8	19.4	0		8.3	68.9	22.8	0		36.3	45.2	17.8	0.6		8.1	83.4	8.4	0.1		
PHF	.770	.824	.789	.000	.803	.759	.954	.949	.000	.950	.877	.808	.846	.250	.900	.781	.847	.875	.250	.897	.915
Unshifted	154	346	120	0	620	88	733	243	0	1064	179	223	88	3	493	75	769	77	1	922	3099
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.NorthForest.PM.Peak
Site Code : 00000000
Start Date : 11/14/2012
Page No : 1

Groups Printed- Unshifted - Bank 1 - Bank 2

	N FOREST RD Southbound				MAPLE RD Westbound				N FOREST RD Northbound				MAPLE RD Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	21	79	33	2	17	188	51	0	54	87	31	0	28	238	41	0	870
04:15 PM	28	105	35	0	19	157	69	0	55	81	29	0	32	176	37	0	823
04:30 PM	25	71	27	0	28	159	54	0	56	83	24	0	48	219	40	1	835
04:45 PM	26	101	40	2	16	180	56	0	46	92	22	1	27	256	48	2	915
Total	100	356	135	4	80	684	230	0	211	343	106	1	135	889	166	3	3443
05:00 PM	33	102	54	0	34	168	56	2	55	83	22	3	31	219	41	0	903
05:15 PM	32	100	44	0	16	211	64	0	40	80	22	0	33	266	48	1	957
05:30 PM	36	81	48	0	35	171	52	0	48	90	23	0	32	243	37	0	896
05:45 PM	30	79	47	0	25	174	53	0	48	64	29	0	23	210	39	0	821
Total	131	362	193	0	110	724	225	2	191	317	96	3	119	938	165	1	3577
Grand Total	231	718	328	4	190	1408	455	2	402	660	202	4	254	1827	331	4	7020
Apprch %	18	56	25.6	0.3	9.2	68.5	22.1	0.1	31.7	52.1	15.9	0.3	10.5	75.6	13.7	0.2	
Total %	3.3	10.2	4.7	0.1	2.7	20.1	6.5	0	5.7	9.4	2.9	0.1	3.6	26	4.7	0.1	
Unshifted	231	718	328	4	190	1408	455	2	402	660	202	4	254	1827	331	4	7020
% Unshifted	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
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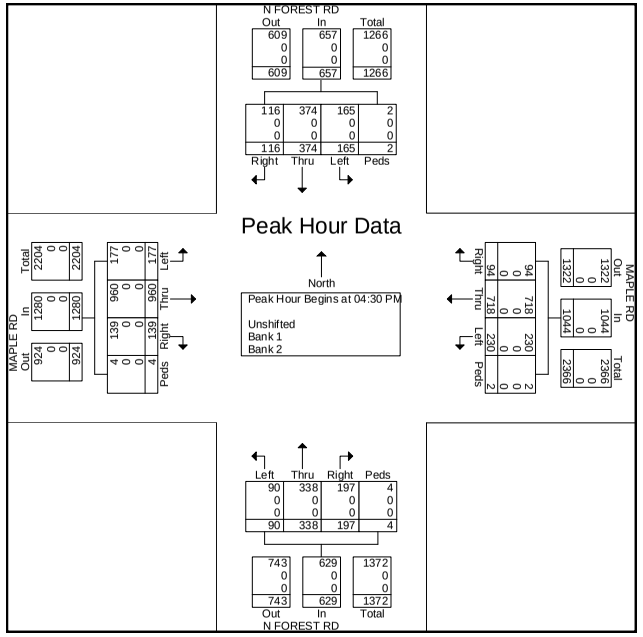
File Name : Maple.NorthForest.PM.Peak
Site Code : 00000000
Start Date : 11/14/2012
Page No : 2

	N FOREST RD Southbound					MAPLE RD Westbound					N FOREST RD Northbound					MAPLE RD Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	25	71	27	0	123	28	159	54	0	241	**56**		**24**		**163**	**48**					
04:45 PM	**26**	**101**	**40**	**2**	**169**	**16**	**180**	**56**	**0**	**252**	**46**	**92**	22	1	161	27	256	**48**	**2**	**333**	**915**
05:00 PM	**33**	**102**	**54**	**0**	**189**	**34**	**168**	**56**	**2**	**260**	**55**	**83**	**22**	**3**	**163**	**31**	**219**	**41**	**0**	**291**	**903**
05:15 PM	**32**	**100**	**44**	**0**	**176**	**16**	**211**	**64**	**0**	**291**	40	80	22	0	142	33	**266**	48	1	**348**	**957**
Total Volume	116	374	165	2	657	94	718	230	2	1044	197	338	90	4	629	139	960	177	4	1280	3610
% App. Total	17.7	56.9	25.1	0.3		9	68.8	22	0.2		31.3	53.7	14.3	0.6		10.9	75	13.8	0.3		
PHF	.879	.917	.764	.250	.869	.691	.851	.898	.250	.897	.879	.918	.938	.333	.965	.724	.902	.922	.500	.920	.943
Unshifted	116	374	165	2	657	94	718	230	2	1044	197	338	90	4	629	139	960	177	4	1280	3610
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.MillersportWestRamp.AM.Peak
Site Code : 33333333
Start Date : 11/14/2012
Page No : 1

Groups Printed- Unshifted - Bank 1 - Bank 2

	Millersport Hwy West Ramp Southbound				Maple Road Westbound				Northbound				Maple Road Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	9	1	3	0	67	76	0	1	0	0	0	0	0	62	1	0	220
07:15 AM	11	0	1	0	84	143	0	0	0	0	0	0	0	73	2	0	314
07:30 AM	20	0	2	0	92	159	0	0	0	0	0	0	0	127	3	0	403
07:45 AM	28	0	6	0	81	189	0	3	0	0	0	0	0	131	4	1	443
Total	68	1	12	0	324	567	0	4	0	0	0	0	0	393	10	1	1380
08:00 AM	20	0	7	0	74	171	0	1	0	0	0	0	0	140	4	0	417
08:15 AM	17	0	8	0	76	188	0	0	0	0	0	0	0	124	4	0	417
08:30 AM	16	0	4	0	66	204	0	5	0	0	0	0	0	108	6	1	410
08:45 AM	27	0	4	0	67	203	0	1	0	0	0	0	0	110	2	0	414
Total	80	0	23	0	283	766	0	7	0	0	0	0	0	482	16	1	1658
Grand Total	148	1	35	0	607	1333	0	11	0	0	0	0	0	875	26	2	3038
Apprch %	80.4	0.5	19	0	31.1	68.3	0	0.6	0	0	0	0	0	96.9	2.9	0.2	
Total %	4.9	0	1.2	0	20	43.9	0	0.4	0	0	0	0	0	28.8	0.9	0.1	
Unshifted	148	1	35	0	607	1333	0	11	0	0	0	0	0	875	26	2	3038
% Unshifted	100	100	100	0	100	100	0	100	0	0	0	0	0	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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File Name : Maple.MillersportWestRamp.AM.Peak
Site Code : 33333333
Start Date : 11/14/2012
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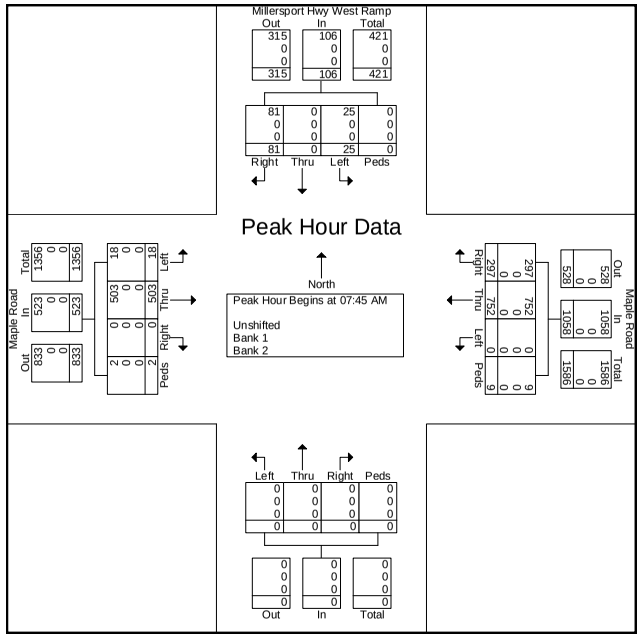
	Millersport Hwy West Ramp Southbound					Maple Road Westbound					Northbound					Maple Road Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	**28**				**34**	**81**													**1**		**443**
08:00 AM	20	0	7	0	27	74	171	0	1	246	0	0	0	0	0	0	**140**	4	0	**144**	417
08:15 AM	17	0	**8**																		
08:30 AM	**16**	**0**	**4**	**0**	**20**	**66**	**204**	0	**5**	**275**	0	0	0	0	0	0	108	**6**	**1**	**115**	**410**
Total Volume	81	0	25	0	106	297	752	0	9	1058	0	0	0	0	0	0	503	18	2	523	1687
% App. Total	76.4	0	23.6	0		28.1	71.1	0	0.9		0	0	0	0		0	96.2	3.4	0.4		
PHF	.723	.000	.781	.000	.779	.917	.922	.000	.450	.962	.000	.000	.000	.000	.000	.000	.898	.750	.500	.908	.952
Unshifted	81	0	25	0	106	297	752	0	9	1058	0	0	0	0	0	0	503	18	2	523	1687
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.MillersportWestRamp.PM.Peak
Site Code : 44444444
Start Date : 11/14/2012
Page No : 1

Groups Printed- Unshifted - Bank 1 - Bank 2

	Millersport Hwy West Ramp Southbound				Maple Road Westbound				Northbound				Maple Road Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	28	0	8	0	60	175	0	0	0	0	0	0	0	174	10	0	455
04:15 PM	35	0	10	0	65	181	0	0	0	0	0	0	0	178	0	0	469
04:30 PM	37	0	10	0	49	186	0	0	0	0	0	0	0	208	7	0	497
04:45 PM	28	0	12	0	67	208	0	0	0	0	0	0	0	209	4	0	528
Total	128	0	40	0	241	750	0	0	0	0	0	0	0	769	21	0	1949
05:00 PM	51	0	18	0	44	192	0	0	0	0	0	0	0	246	5	1	557
05:15 PM	54	0	14	0	61	219	0	0	0	0	0	0	0	211	12	0	571
05:30 PM	40	0	8	0	54	203	0	0	0	0	0	0	0	175	3	0	483
05:45 PM	26	0	6	0	50	202	0	10	0	0	0	0	0	180	3	1	478
Total	171	0	46	0	209	816	0	10	0	0	0	0	0	812	23	2	2089
Grand Total	299	0	86	0	450	1566	0	10	0	0	0	0	0	1581	44	2	4038
Apprch %	77.7	0	22.3	0	22.2	77.3	0	0.5	0	0	0	0	0	97.2	2.7	0.1	
Total %	7.4	0	2.1	0	11.1	38.8	0	0.2	0	0	0	0	0	39.2	1.1	0	
Unshifted	299	0	86	0	450	1566	0	10	0	0	0	0	0	1581	44	2	4038
% Unshifted	100	0	100	0	100	100	0	100	0	0	0	0	0	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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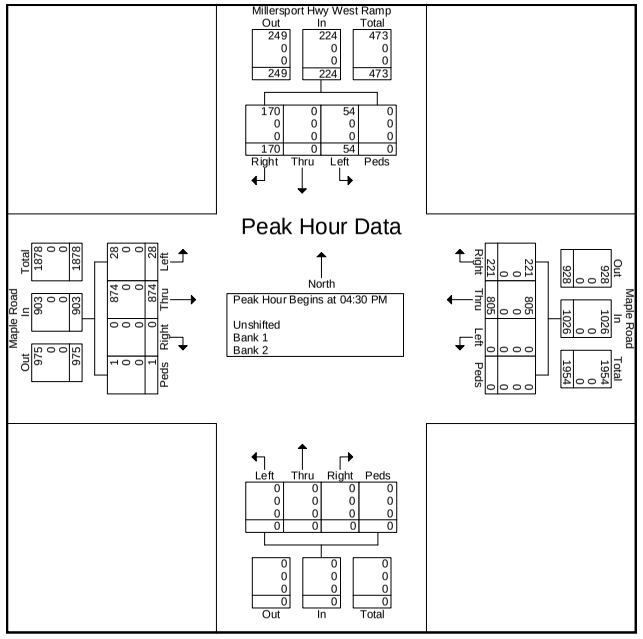
Rochester, NY 14623

File Name : Maple.MillersportWestRamp.PM.Peak
Site Code : 44444444
Start Date : 11/14/2012
Page No : 2

	Millersport Hwy West Ramp Southbound					Maple Road Westbound					Northbound					Maple Road Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	37	0	10	0	47	49	186	0	0	235	0	0	0	0	0	0	208	7	0	215	497
04:45 PM	28	0	12	0	40	**67**															
05:00 PM	**51**	**0**	**18**	**0**	**69**	44	192	0	0	236	0	0	0	0	0	0	**246**	5	**1**	**252**	557
05:15 PM	**54**						**219**	0	0	**280**	0	0	0	0	0	0	211	**12**			**571**
Total Volume	170	0	54	0	224	221	805	0	0	1026	0	0	0	0	0	0	874	28	1	903	2153
% App. Total	75.9	0	24.1	0		21.5	78.5	0	0		0	0	0	0		0	96.8	3.1	0.1		
PHF	.787	.000	.750	.000	.812	.825	.919	.000	.000	.916	.000	.000	.000	.000	.000	.000	.888	.583	.250	.896	.943
Unshifted	170	0	54	0	224	221	805	0	0	1026	0	0	0	0	0	0	874	28	1	903	2153
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : NorthForest.CCDriveway.AM.Peak
Site Code : 22222222
Start Date : 9/12/2013
Page No : 1

Groups Printed- Unshifted - Bank 1 - Bank 2

	North Forest Road Southbound				Westbound				North Forest Road Northbound				Westwood C.C. Driveway Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	1	145	0	0	0	0	1	0	0	61	1	0	0	0	0	0	209
07:15 AM	1	195	0	0	0	0	0	0	0	84	1	0	1	0	0	0	282
07:30 AM	2	200	0	0	0	0	0	0	0	110	2	0	1	0	0	0	315
07:45 AM	2	190	0	0	0	0	0	0	0	92	1	0	0	0	0	0	285
Total	6	730	0	0	0	0	1	0	0	347	5	0	2	0	0	0	1091
08:00 AM	1	175	0	0	0	0	0	0	0	109	2	0	0	0	1	0	288
08:15 AM	0	184	0	0	0	0	0	0	0	130	2	0	0	0	0	0	316
08:30 AM	2	164	0	0	0	0	0	0	0	100	3	0	1	0	0	0	270
08:45 AM	1	157	0	0	0	0	0	0	0	111	2	0	2	0	0	0	273
Total	4	680	0	0	0	0	0	0	0	450	9	0	3	0	1	0	1147
Grand Total	10	1410	0	0	0	0	1	0	0	797	14	0	5	0	1	0	2238
Apprch %	0.7	99.3	0	0	0	0	100	0	0	98.3	1.7	0	83.3	0	16.7	0	
Total %	0.4	63	0	0	0	0	0	0	0	35.6	0.6	0	0.2	0	0	0	
Unshifted	10	1410	0	0	0	0	1	0	0	797	14	0	5	0	1	0	2238
% Unshifted	100	100	0	0	0	0	100	0	0	100	100	0	100	0	100	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
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File Name : NorthForest.CCDriveway.AM.Peak
Site Code : 22222222
Start Date : 9/12/2013
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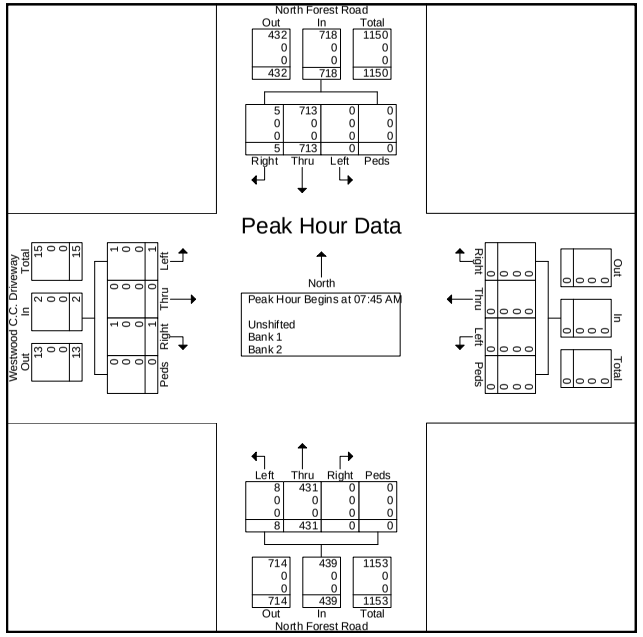
	North Forest Road Southbound					Westbound					North Forest Road Northbound					Westwood C.C. Driveway Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	**2**	**190**	0	0	**192**	0	0	0	0	0	0	92	1	0	93	0	0	0	0	0	285
08:00 AM	1	175	0	0	176	0	0	0	0	0	0	109	2	0	111	0	0	**1**		**1**	288
08:15 AM	0	184	0	0	184	0	0	0	0	0	0	**130**	2	0	**132**	0	0	0	0	0	**316**
08:30 AM	2	164	0	0	166	0	0	0	0	0	0	100	**3**			**1**					
Total Volume	5	713	0	0	718	0	0	0	0	0	0	431	8	0	439	1	0	1	0	2	1159
% App. Total	0.7	99.3	0	0		0	0	0	0		0	98.2	1.8	0		50	0	50	0		
PHF	.625	.938	.000	.000	.935	.000	.000	.000	.000	.000	.000	.829	.667	.000	.831	.250	.000	.250	.000	.500	.917
Unshifted	5	713	0	0	718	0	0	0	0	0	0	431	8	0	439	1	0	1	0	2	1159
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : NorthForest.CCDriveway.PM.Peak
Site Code : 11111111
Start Date : 9/11/2013
Page No : 1

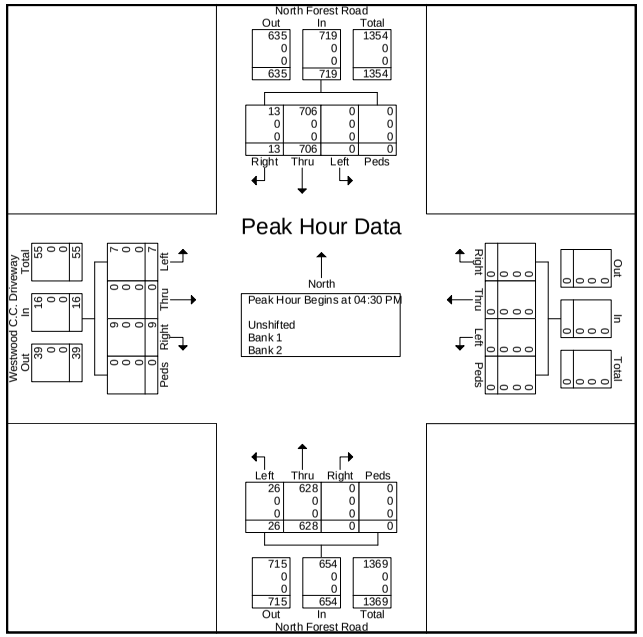
Groups Printed- Unshifted - Bank 1 - Bank 2

	North Forest Road Southbound				Westbound				North Forest Road Northbound				Westwood C.C. Driveway Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	5	166	0	0	0	0	0	0	0	156	3	0	4	0	1	0	335
04:15 PM	2	168	0	0	0	0	0	0	1	184	3	0	4	0	1	0	363
04:30 PM	0	162	0	0	0	0	0	0	0	153	3	0	6	0	2	0	326
04:45 PM	2	168	0	0	0	0	0	0	0	153	8	0	2	0	1	0	334
Total	9	664	0	0	0	0	0	0	1	646	17	0	16	0	5	0	1358
05:00 PM	6	194	0	0	0	0	0	0	0	134	6	0	0	0	1	0	341
05:15 PM	5	182	0	0	0	0	0	0	0	188	9	0	1	0	3	0	388
05:30 PM	3	198	0	0	0	0	0	0	0	171	11	0	12	0	4	0	399
05:45 PM	6	166	0	0	0	0	0	0	0	191	14	0	5	0	1	0	383
Total	20	740	0	0	0	0	0	0	0	684	40	0	18	0	9	0	1511
Grand Total	29	1404	0	0	0	0	0	0	1	1330	57	0	34	0	14	0	2869
Apprch %	2	98	0	0	0	0	0	0	0.1	95.8	4.1	0	70.8	0	29.2	0	
Total %	1	48.9	0	0	0	0	0	0	0	46.4	2	0	1.2	0	0.5	0	
Unshifted	29	1404	0	0	0	0	0	0	1	1330	57	0	34	0	14	0	2869
% Unshifted	100	100	0	0	0	0	0	0	100	100	100	0	100	0	100	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : NorthForest.CCDriveway.PM.Peak
Site Code : 11111111
Start Date : 9/11/2013
Page No : 2

	North Forest Road Southbound					Westbound					North Forest Road Northbound					Westwood C.C. Driveway Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	162	0	0	162	0	0	0	0	0	0	153	3	0	156	**6**				**8**	326
04:45 PM	2	168	0	0	170	0	0	0	0	0	0	153	8	0	161	2	0	1	0	3	334
05:00 PM	**6**	**194**	0	0	**200**	0	0	0	0	0	0	134	6	0	140	0	0	1	0	1	341
05:15 PM	5	182	0	0	187	0	0	0	0	0	0	**188**	**9**		**197**	1	0	**3**			**388**
Total Volume	13	706	0	0	719	0	0	0	0	0	0	628	26	0	654	9	0	7	0	16	1389
% App. Total	1.8	98.2	0	0		0	0	0	0		0	96	4	0		56.2	0	43.8	0		
PHF	.542	.910	.000	.000	.899	.000	.000	.000	.000	.000	.000	.835	.722	.000	.830	.375	.000	.583	.000	.500	.895
Unshifted	13	706	0	0	719	0	0	0	0	0	0	628	26	0	654	9	0	7	0	16	1389
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.Sandhurst.AM.Peak
Site Code : 11111111
Start Date : 11/14/2012
Page No : 1

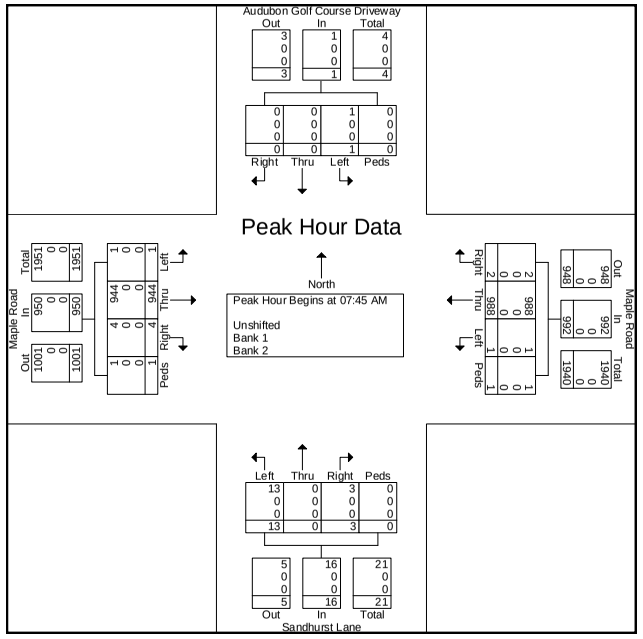
Groups Printed- Unshifted - Bank 1 - Bank 2

	Audubon Golf Course Driveway Southbound				Maple Road Westbound				Sandhurst Lane Northbound				Maple Road Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	150	0	0	2	0	3	0	0	107	0	0	262
07:15 AM	0	0	0	0	0	203	0	0	3	0	9	0	0	145	0	0	360
07:30 AM	0	0	0	0	0	239	0	0	2	0	2	0	0	210	0	0	453
07:45 AM	0	0	1	0	0	261	0	0	0	0	6	0	2	272	1	0	543
Total	0	0	1	0	0	853	0	0	7	0	20	0	2	734	1	0	1618
08:00 AM	0	0	0	0	0	221	0	0	0	0	3	0	1	220	0	1	446
08:15 AM	0	0	0	0	1	246	0	1	2	0	2	0	1	234	0	0	487
08:30 AM	0	0	0	0	1	260	1	0	1	0	2	0	0	218	0	0	483
08:45 AM	0	0	0	0	0	244	1	0	2	0	3	0	1	211	0	0	462
Total	0	0	0	0	2	971	2	1	5	0	10	0	3	883	0	1	1878
Grand Total	0	0	1	0	2	1824	2	1	12	0	30	0	5	1617	1	1	3496
Apprch %	0	0	100	0	0.1	99.7	0.1	0.1	28.6	0	71.4	0	0.3	99.6	0.1	0.1	
Total %	0	0	0	0	0.1	52.2	0.1	0	0.3	0	0.9	0	0.1	46.3	0	0	
Unshifted	0	0	1	0	2	1824	2	1	12	0	30	0	5	1617	1	1	3496
% Unshifted	0	0	100	0	100	100	100	100	100	0	100	0	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.Sandhurst.AM.Peak
Site Code : 11111111
Start Date : 11/14/2012
Page No : 2

	Audubon Golf Course Driveway Southbound					Maple Road Westbound					Sandhurst Lane Northbound					Maple Road Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	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	0	0	**1**		**1**	0	**261**	0	0	261	0	0	**6**		**6**	**2**	**272**	**1**		**275**	**543**
08:00 AM	0	0	0	0	0	0	221	0	0	221	0	0	3	0	3	1	220	0	**1**		
08:15 AM	**0**	**0**	**0**	**0**	**0**	**1**	**246**	**0**	**1**	**248**	**2**	**0**	**2**	**0**	**4**	**1**	**234**	**0**	**0**	**235**	**487**
08:30 AM	**0**	**0**	**0**	**0**	**0**	**1**	**260**	**1**	**0**	**262**	1	0	2	0	3	0	218	0	0	218	483
Total Volume	0	0	1	0	1	2	988	1	1	992	3	0	13	0	16	4	944	1	1	950	1959
% App. Total	0	0	100	0		0.2	99.6	0.1	0.1		18.8	0	81.2	0		0.4	99.4	0.1	0.1		
PHF	.000	.000	.250	.000	.250	.500	.946	.250	.250	.947	.375	.000	.542	.000	.667	.500	.868	.250	.250	.864	.902
Unshifted	0	0	1	0	1	2	988	1	1	992	3	0	13	0	16	4	944	1	1	950	1959
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.Sandhurst.PM.Peak
Site Code : 22222222
Start Date : 11/14/2012
Page No : 1

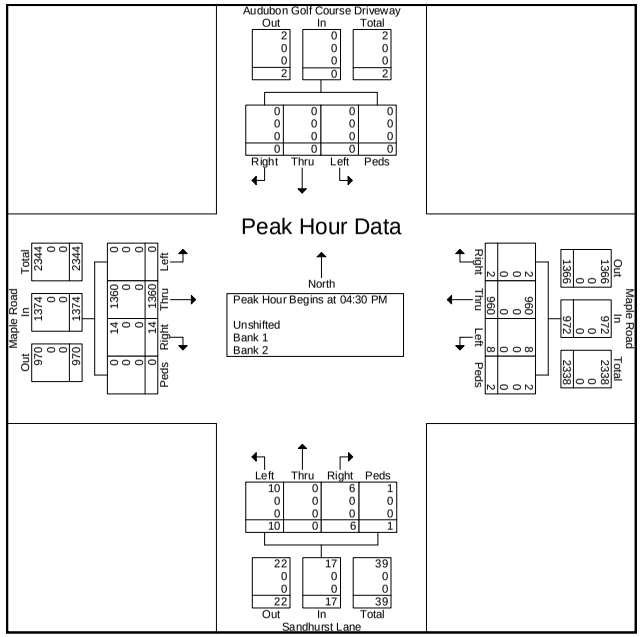
Groups Printed- Unshifted - Bank 1 - Bank 2

	Audubon Golf Course Driveway Southbound				Maple Road Westbound				Sandhurst Lane Northbound				Maple Road Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	0	0	234	4	1	3	0	0	0	4	318	0	1	565
04:15 PM	0	0	0	0	0	202	4	0	2	0	4	0	1	259	0	0	472
04:30 PM	0	0	0	0	1	239	4	0	1	0	3	0	4	368	0	0	620
04:45 PM	0	0	0	0	0	224	1	0	2	0	4	1	4	288	0	0	524
Total	0	0	0	0	1	899	13	1	8	0	11	1	13	1233	0	1	2181
05:00 PM	0	0	0	0	1	239	1	0	0	0	1	0	1	358	0	0	601
05:15 PM	0	0	0	0	0	258	2	2	3	0	2	0	5	346	0	0	618
05:30 PM	0	0	0	0	0	230	3	8	3	0	1	0	2	300	0	0	547
05:45 PM	0	0	0	0	0	234	3	1	0	0	2	0	5	285	0	0	530
Total	0	0	0	0	1	961	9	11	6	0	6	0	13	1289	0	0	2296
Grand Total	0	0	0	0	2	1860	22	12	14	0	17	1	26	2522	0	1	4477
Apprch %	0	0	0	0	0.1	98.1	1.2	0.6	43.8	0	53.1	3.1	1	98.9	0	0	
Total %	0	0	0	0	0	41.5	0.5	0.3	0.3	0	0.4	0	0.6	56.3	0	0	
Unshifted	0	0	0	0	2	1860	22	12	14	0	17	1	26	2522	0	1	4477
% Unshifted	0	0	0	0	100	100	100	100	100	0	100	100	100	100	0	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Maple.Sandhurst.PM.Peak
Site Code : 22222222
Start Date : 11/14/2012
Page No : 2

	Audubon Golf Course Driveway Southbound					Maple Road Westbound					Sandhurst Lane Northbound					Maple Road Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	**1**		**4**									**368**	0	0	**372**	**620**
04:45 PM	0	0	0	0	0	0	224	1	0	225	2	0	**4**	**1**	**7**	4	288	0	0	292	524
05:00 PM	0	0	0	0	0	1	239	1	0	241	0	0	1	0	1	1	358	0	0	359	601
05:15 PM	0	0	0	0	0	0	**258**	2	**2**	**262**	**3**					**5**					
Total Volume	0	0	0	0	0	2	960	8	2	972	6	0	10	1	17	14	1360	0	0	1374	2363
% App. Total	0	0	0	0		0.2	98.8	0.8	0.2		35.3	0	58.8	5.9		1	99	0	0		
PHF	.000	.000	.000	.000	.000	.500	.930	.500	.250	.927	.500	.000	.625	.250	.607	.700	.924	.000	.000	.923	.953
Unshifted	0	0	0	0	0	2	960	8	2	972	6	0	10	1	17	14	1360				
% Unshifted	0	0	0	0	0	100	100	100	100	100	100	0	100	100	100	100	100	0	0	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Sheridan.Frankhauser.AM.Peak
Site Code : 09122013
Start Date : 9/12/2013
Page No : 1

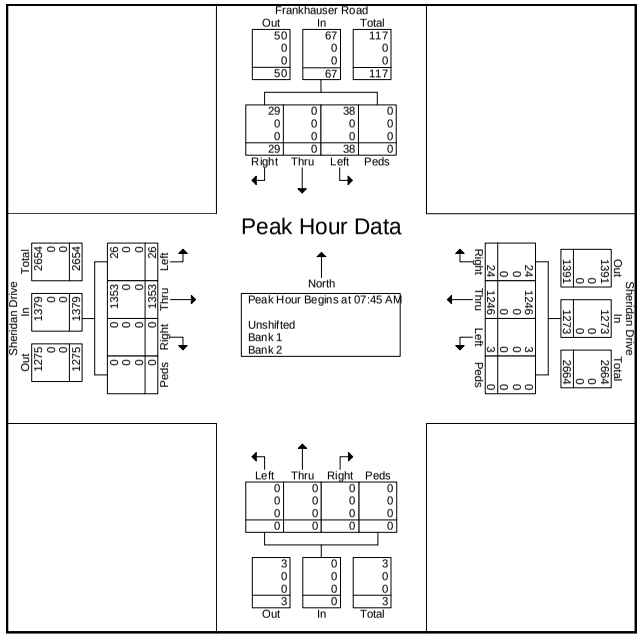
Groups Printed- Unshifted - Bank 1 - Bank 2

	Frankhauser Road Southbound				Sheridan Drive Westbound				Northbound				Sheridan Drive Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	3	0	5	0	7	237	0	0	0	0	0	0	0	229	1	0	482
07:15 AM	8	0	16	0	5	350	0	0	0	0	0	0	0	354	1	0	734
07:30 AM	5	0	19	0	4	351	0	0	0	0	0	0	0	374	5	0	758
07:45 AM	9	0	7	0	6	331	0	0	0	0	0	0	0	379	9	0	741
Total	25	0	47	0	22	1269	0	0	0	0	0	0	0	1336	16	0	2715
08:00 AM	6	0	7	0	4	290	3	0	0	0	0	0	0	368	8	0	686
08:15 AM	7	0	8	0	9	303	0	0	0	0	0	0	0	308	7	0	642
08:30 AM	7	0	16	0	5	322	0	0	0	0	0	0	0	298	2	0	650
08:45 AM	8	0	6	0	3	286	0	0	0	0	0	0	0	280	5	0	588
Total	28	0	37	0	21	1201	3	0	0	0	0	0	0	1254	22	0	2566
Grand Total	53	0	84	0	43	2470	3	0	0	0	0	0	0	2590	38	0	5281
Apprch %	38.7	0	61.3	0	1.7	98.2	0.1	0	0	0	0	0	0	98.6	1.4	0	
Total %	1	0	1.6	0	0.8	46.8	0.1	0	0	0	0	0	0	49	0.7	0	
Unshifted	53	0	84	0	43	2470	3	0	0	0	0	0	0	2590	38	0	5281
% Unshifted	100	0	100	0	100	100	100	0	0	0	0	0	0	100	100	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Sheridan.Frankhauser.AM.Peak
Site Code : 09122013
Start Date : 9/12/2013
Page No : 2

	Frankhauser Road Southbound					Sheridan Drive Westbound					Northbound					Sheridan Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	**9**						**331**	0	0	**337**	0	0	0	0	0	0	**379**	**9**		**388**	**741**
08:00 AM	6	0	7	0	13	4	290	**3**													
08:15 AM	**7**	**0**	**8**	**0**	**15**	**9**	**303**	**0**	**0**	**312**	**0**	**0**	**0**	**0**	**0**	**0**	**308**	**7**	**0**	**315**	**642**
08:30 AM	**7**	**0**	**16**	**0**	**23**	5	322	0	0	327	0	0	0	0	0	0	298	2	0	300	650
Total Volume	29	0	38	0	67	24	1246	3	0	1273	0	0	0	0	0	0	1353	26	0	1379	2719
% App. Total	43.3	0	56.7	0		1.9	97.9	0.2	0		0	0	0	0		0	98.1	1.9	0		
PHF	.806	.000	.594	.000	.728	.667	.941	.250	.000	.944	.000	.000	.000	.000	.000	.000	.892	.722	.000	.889	.917
Unshifted	29	0	38	0	67	24	1246										1353				
% Unshifted	100	0	100	0	100	100	100	100	0	100	0	0	0	0	0	0	100	100	0	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Sheridan.Frankhauser.PM.Peak
Site Code : 09112013
Start Date : 9/11/2013
Page No : 1

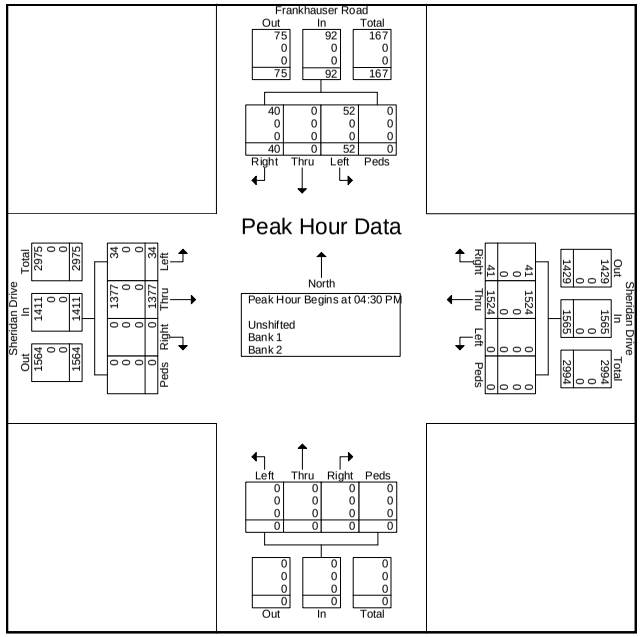
Groups Printed- Unshifted - Bank 1 - Bank 2

	Frankhauser Road Southbound				Sheridan Drive Westbound				Northbound				Sheridan Drive Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	7	0	14	0	8	406	0	0	0	0	0	0	0	347	7	0	789
04:15 PM	9	0	10	0	5	272	65	0	0	0	0	0	0	333	5	0	699
04:30 PM	9	0	11	0	15	364	0	0	0	0	0	0	0	303	12	0	714
04:45 PM	11	0	6	0	8	363	0	0	0	0	0	0	0	315	9	0	712
Total	36	0	41	0	36	1405	65	0	0	0	0	0	0	1298	33	0	2914
05:00 PM	11	0	16	0	9	421	0	0	0	0	0	0	0	383	9	0	849
05:15 PM	9	0	19	0	9	376	0	0	0	0	0	0	0	376	4	0	793
05:30 PM	10	0	13	0	16	376	12	0	0	0	0	0	0	401	3	0	831
05:45 PM	9	0	9	0	7	361	0	0	0	0	0	0	0	328	9	0	723
Total	39	0	57	0	41	1534	12	0	0	0	0	0	0	1488	25	0	3196
Grand Total	75	0	98	0	77	2939	77	0	0	0	0	0	0	2786	58	0	6110
Apprch %	43.4	0	56.6	0	2.5	95	2.5	0	0	0	0	0	0	98	2	0	
Total %	1.2	0	1.6	0	1.3	48.1	1.3	0	0	0	0	0	0	45.6	0.9	0	
Unshifted	75	0	98	0	77	2939	77	0	0	0	0	0	0	2786	58	0	6110
% Unshifted	100	0	100	0	100	100	100	0	0	0	0	0	0	100	100	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Sheridan.Frankhauser.PM.Peak
Site Code : 09112013
Start Date : 9/11/2013
Page No : 2

	Frankhauser Road Southbound					Sheridan Drive Westbound					Northbound					Sheridan Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	9	0	11	0	20	**15**												**12**			
04:45 PM	**11**	**0**	**6**	**0**	**17**	**8**	**363**	**0**	**0**	**371**	**0**	**0**	**0**	**0**	**0**	**0**	**315**	**9**	**0**	**324**	**712**
05:00 PM	**11**	**0**	**16**	**0**	**27**	**9**	**421**	0	0	**430**	0	0	0	0	0	0	**383**	9	0	**392**	**849**
05:15 PM	9	0	**19**		**28**	9	376	0	0	385	0	0	0	0	0	0	376	4	0	380	793
Total Volume	40	0	52	0	92	41	1524	0	0	1565	0	0	0	0	0	0	1377	34	0	1411	3068
% App. Total	43.5	0	56.5	0		2.6	97.4	0	0		0	0	0	0		0	97.6	2.4	0		
PHF	.909	.000	.684	.000	.821	.683	.905	.000	.000	.910	.000	.000	.000	.000	.000	.000	.899	.708	.000	.900	.903
Unshifted	40	0	52	0	92	41	1524										1377				
% Unshifted	100	0	100	0	100	100	100	0	0	100	0	0	0	0	0	0	100	100	0	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Sheridan.Fenwick.AM.Peak
Site Code : 12121212
Start Date : 9/12/2013
Page No : 1

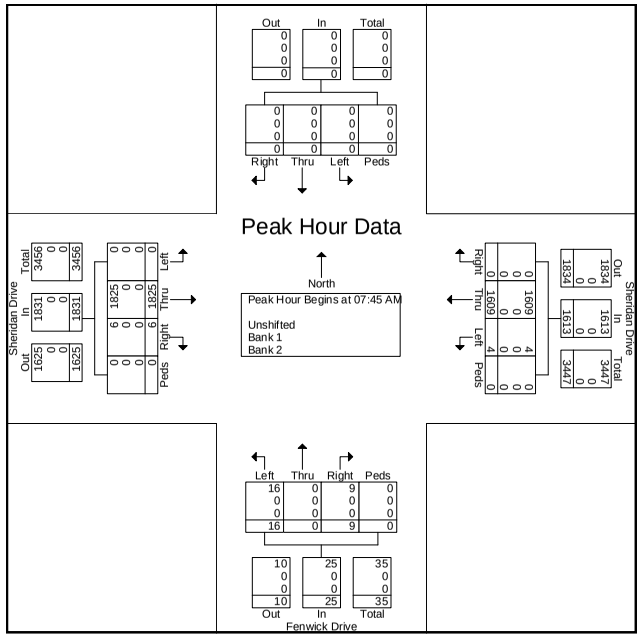
Groups Printed- Unshifted - Bank 1 - Bank 2

	Southbound				Sheridan Drive Westbound				Fenwick Drive Northbound				Sheridan Drive Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	290	0	0	1	0	5	0	3	289	0	0	588
07:15 AM	0	0	0	0	0	371	0	0	3	0	6	0	1	412	0	0	793
07:30 AM	0	0	0	0	0	380	1	0	2	0	9	0	0	494	0	0	886
07:45 AM	0	0	0	0	0	447	0	0	0	0	2	0	1	480	0	0	930
Total	0	0	0	0	0	1488	1	0	6	0	22	0	5	1675	0	0	3197
08:00 AM	0	0	0	0	0	437	0	0	4	0	5	0	2	518	0	0	966
08:15 AM	0	0	0	0	0	346	4	0	1	0	6	0	2	480	0	0	839
08:30 AM	0	0	0	0	0	379	0	0	4	0	3	0	1	347	0	0	734
08:45 AM	0	0	0	0	0	385	1	0	3	0	1	0	2	375	0	0	767
Total	0	0	0	0	0	1547	5	0	12	0	15	0	7	1720	0	0	3306
Grand Total	0	0	0	0	0	3035	6	0	18	0	37	0	12	3395	0	0	6503
Apprch %	0	0	0	0	0	99.8	0.2	0	32.7	0	67.3	0	0.4	99.6	0	0	
Total %	0	0	0	0	0	46.7	0.1	0	0.3	0	0.6	0	0.2	52.2	0	0	
Unshifted	0	0	0	0	0	3035	6	0	18	0	37	0	12	3395	0	0	6503
% Unshifted	0	0	0	0	0	100	100	0	100	0	100	0	100	100	0	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Sheridan.Fenwick.AM.Peak
Site Code : 12121212
Start Date : 9/12/2013
Page No : 2

	Southbound					Sheridan Drive Westbound					Fenwick Drive Northbound					Sheridan Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	0	0	0	0	0	0	**447**	0	0	**447**	0	0	2	0	2	1	480	0	0	481	930
08:00 AM	0	0	0	0	0	0	437	0	0	437	**4**				**9**	**2**	**518**	0	0	**520**	**966**
08:15 AM	0	0	0	0	0	0	346	**4**					**6**								
08:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**379**	**0**	**0**	**379**	**4**	**0**	**3**	**0**	**7**	**1**	**347**	**0**	**0**	**348**	**734**
Total Volume	0	0	0	0	0	0	1609	4	0	1613	9	0	16	0	25	6	1825	0	0	1831	3469
% App. Total	0	0	0	0		0	99.8	0.2	0		36	0	64	0		0.3	99.7	0	0		
PHF	.000	.000	.000	.000	.000	.000	.900	.250	.000	.902	.563	.000	.667	.000	.694	.750	.881	.000	.000	.880	.898
Unshifted	0	0	0	0	0	0	1609										1825				
% Unshifted	0	0	0	0	0	0	100	100	0	100	100	0	100	0	100	100	100	0	0	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Sheridan.Fenwick.PM.Peak
Site Code : 00000000
Start Date : 9/11/2013
Page No : 1

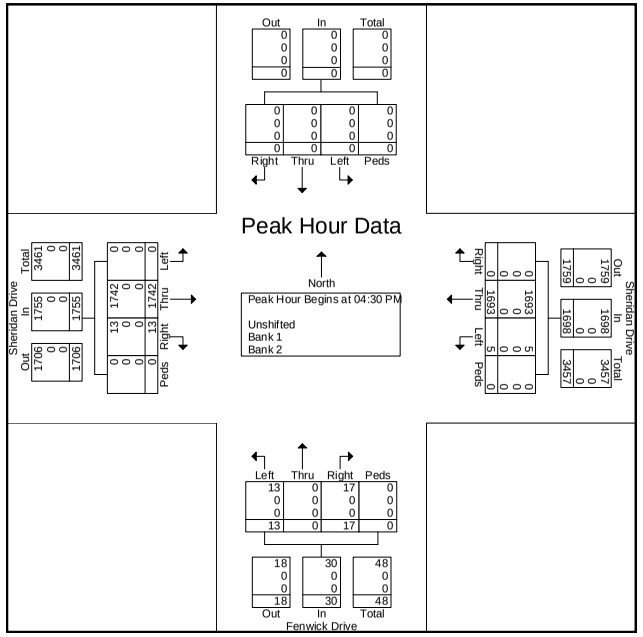
Groups Printed- Unshifted - Bank 1 - Bank 2

	Southbound				Sheridan Drive Westbound				Fenwick Drive Northbound				Sheridan Drive Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	3	0	0	0	0	389	1	0	1	0	2	0	2	420	0	0	818
04:15 PM	4	0	0	0	0	426	1	0	2	0	1	0	5	449	0	0	888
04:30 PM	0	0	0	0	0	408	1	0	5	0	4	0	10	397	0	0	825
04:45 PM	0	0	0	0	0	436	1	0	5	0	5	0	0	417	0	0	864
Total	7	0	0	0	0	1659	4	0	13	0	12	0	17	1683	0	0	3395
05:00 PM	0	0	0	0	0	449	1	0	4	0	1	0	1	425	0	0	881
05:15 PM	0	0	0	0	0	400	2	0	3	0	3	0	2	503	0	0	913
05:30 PM	0	0	0	0	0	416	3	0	3	0	5	0	8	417	0	0	852
05:45 PM	0	0	0	0	0	392	5	0	4	0	3	0	2	426	0	0	832
Total	0	0	0	0	0	1657	11	0	14	0	12	0	13	1771	0	0	3478
Grand Total	7	0	0	0	0	3316	15	0	27	0	24	0	30	3454	0	0	6873
Apprch %	100	0	0	0	0	99.5	0.5	0	52.9	0	47.1	0	0.9	99.1	0	0	
Total %	0.1	0	0	0	0	48.2	0.2	0	0.4	0	0.3	0	0.4	50.3	0	0	
Unshifted	7	0	0	0	0	3316	15	0	27	0	24	0	30	3454	0	0	6873
% Unshifted	100	0	0	0	0	100	100	0	100	0	100	0	100	100	0	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Sheridan.Fenwick.PM.Peak
Site Code : 00000000
Start Date : 9/11/2013
Page No : 2

	Southbound					Sheridan Drive Westbound					Fenwick Drive Northbound					Sheridan Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	0	408	1	0	409	**5**					**10**					
04:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**436**	**1**	**0**	**437**	**5**	**0**	**5**	**0**	**10**	0	417	0	0	417	864
05:00 PM	0	0	0	0	0	0	**449**	1	0	**450**	4	0	1	0	5	1	425	0	0	426	881
05:15 PM	0	0	0	0	0	0	400	**2**									**503**	0	0	**505**	**913**
Total Volume	0	0	0	0	0	0	1693	5	0	1698	17	0	13	0	30	13	1742	0	0	1755	3483
% App. Total	0	0	0	0		0	99.7	0.3	0		56.7	0	43.3	0		0.7	99.3	0	0		
PHF	.000	.000	.000	.000	.000	.000	.943	.625	.000	.943	.850	.000	.650	.000	.750	.325	.866	.000	.000	.869	.954
Unshifted	0	0	0	0	0	0	1693										1742				
% Unshifted	0	0	0	0	0	0	100	100	0	100	100	0	100	0	100	100	100	0	0	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Sheridan.I290NB.AM.Peak
Site Code : 22222222
Start Date : 9/12/2013
Page No : 1

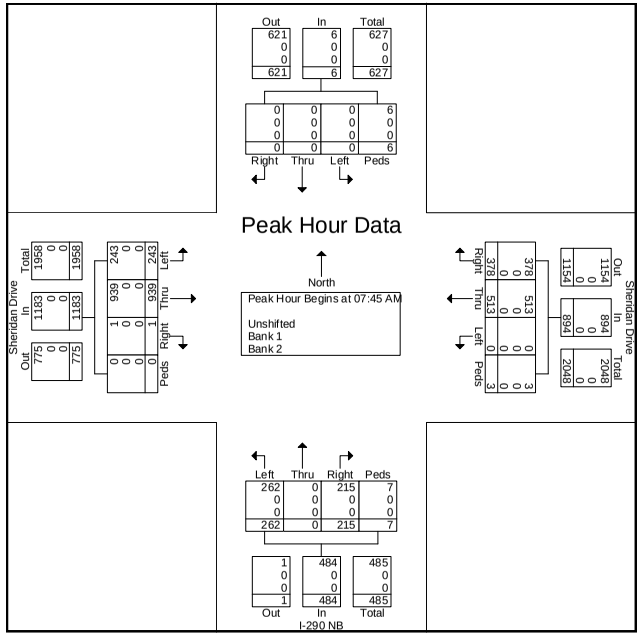
Groups Printed- Unshifted - Bank 1 - Bank 2

	Southbound				Sheridan Drive Westbound				I-290 NB Northbound				Sheridan Drive Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:15 AM	0	0	0	0	68	153	0	0	56	0	39	2	0	207	24	0	549
07:30 AM	0	0	0	1	78	157	0	0	50	0	67	1	0	202	38	0	594
07:45 AM	0	0	0	0	93	143	0	2	65	0	59	1	0	247	67	0	677
Total	0	0	0	1	239	453	0	2	171	0	165	4	0	656	129	0	1820
08:00 AM	0	0	0	6	98	126	0	0	56	0	54	0	0	210	57	0	607
08:15 AM	0	0	0	0	107	130	0	1	43	0	69	0	0	243	55	0	648
08:30 AM	0	0	0	0	80	114	0	0	51	0	80	6	1	239	64	0	635
08:45 AM	0	0	0	0	87	178	0	0	55	1	79	0	0	186	57	0	643
Total	0	0	0	6	372	548	0	1	205	1	282	6	1	878	233	0	2533
09:00 AM	0	0	0	0	73	160	0	0	57	0	87	1	0	200	42	0	620
Grand Total	0	0	0	7	684	1161	0	3	433	1	534	11	1	1734	404	0	4973
Apprch %	0	0	0	100	37	62.8	0	0.2	44.2	0.1	54.5	1.1	0	81.1	18.9	0	
Total %	0	0	0	0.1	13.8	23.3	0	0.1	8.7	0	10.7	0.2	0	34.9	8.1	0	
Unshifted	0	0	0	7	684	1161	0	3	433	1	534	11	1	1734	404	0	4973
% Unshifted	0	0	0	100	100	100	0	100	100	100	100	100	100	100	100	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Sheridan.I290NB.AM.Peak
Site Code : 22222222
Start Date : 9/12/2013
Page No : 2

	Southbound					Sheridan Drive Westbound					I-290 NB Northbound					Sheridan Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 09:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	0	0	0	0	0	93	**143**	0	**2**	**238**	**65**						**247**	**67**		**314**	**677**
08:00 AM	0	0	0	**6**	**6**	98	126	0	0	224	56	0	54	0	110	0	210	57	0	267	607
08:15 AM	0	0	0	0	0	**107**															
08:30 AM	**0**	**0**	**0**	**0**	**0**	**80**	**114**	**0**	**0**	**194**	**51**	**0**	**80**	**6**	**137**	**1**	**239**	**64**	**0**	**304**	**635**
Total Volume	0	0	0	6	6	378	513	0	3	894	215	0	262	7	484	1	939	243	0	1183	2567
% App. Total	0	0	0	100		42.3	57.4	0	0.3		44.4	0	54.1	1.4		0.1	79.4	20.5	0		
PHF	.000	.000	.000	.250	.250	.883	.897	.000	.375	.939	.827	.000	.819	.292	.883	.250	.950	.907	.000	.942	.948
Unshifted	0	0	0	6	6	378	513	0	3	894	215	0	262	7	484	1	939	243	0	1183	2567
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Sheridan.I290NB.PM.Peak
Site Code : 11111111
Start Date : 9/11/2013
Page No : 1

Groups Printed- Unshifted - Bank 1 - Bank 2

	Southbound				Sheridan Drive Westbound				I-290 NB Northbound				Sheridan Drive Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:15 PM	0	0	0	1	95	160	0	0	104	0	78	0	0	257	94	0	789
04:30 PM	0	0	0	3	103	132	0	0	128	0	93	0	0	250	95	0	804
04:45 PM	0	0	0	0	147	151	7	0	91	0	65	0	0	257	86	0	804
Total	0	0	0	4	345	443	7	0	323	0	236	0	0	764	275	0	2397
05:00 PM	0	0	0	0	117	185	0	0	90	0	72	0	0	268	81	0	813
05:15 PM	0	0	0	0	119	157	8	0	77	0	79	15	0	264	84	2	805
05:30 PM	0	0	0	0	117	143	2	1	86	0	83	1	0	279	90	2	804
05:45 PM	0	0	0	0	113	150	1	5	96	0	75	1	0	273	85	1	800
Total	0	0	0	0	466	635	11	6	349	0	309	17	0	1084	340	5	3222
06:00 PM	0	0	0	2	100	176	0	1	81	0	63	7	0	227	73	0	730
Grand Total	0	0	0	6	911	1254	18	7	753	0	608	24	0	2075	688	5	6349
Apprch %	0	0	0	100	41.6	57.3	0.8	0.3	54.4	0	43.9	1.7	0	75	24.9	0.2	
Total %	0	0	0	0.1	14.3	19.8	0.3	0.1	11.9	0	9.6	0.4	0	32.7	10.8	0.1	
Unshifted	0	0	0	6	911	1254	18	7	753	0	608	24	0	2075	688	5	6349
% Unshifted	0	0	0	100	100	100	100	100	100	0	100	100	0	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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File Name : Sheridan.I290NB.PM.Peak
Site Code : 11111111
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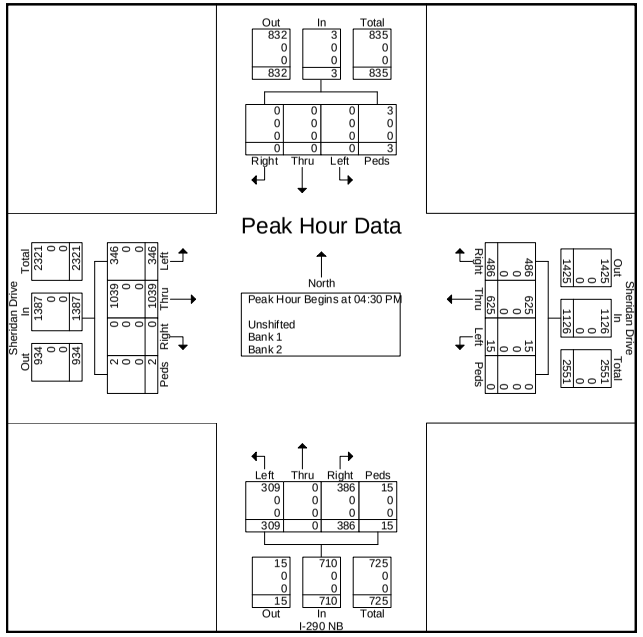
	Southbound					Sheridan Drive Westbound					I-290 NB Northbound					Sheridan Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 06:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	**3**	**3**	103	132	0	0	235	**128**		**93**		**221**	0	250	**95**			
04:45 PM	**0**	**0**	**0**	**0**	**0**	**147**	**151**	**7**	**0**	**305**	91	0	65	0	156	0	257	86	0	343	804
05:00 PM	0	0	0	0	0	117	**185**	0	0	302	90	0	72	0	162	0	**268**	81	0	349	**813**
05:15 PM	0	0	0	0	0	119	157	**8**						**15**					**2**	**350**	805
Total Volume	0	0	0	3	3	486	625	15	0	1126	386	0	309	15	710	0	1039	346	2	1387	3226
% App. Total	0	0	0	100		43.2	55.5	1.3	0		54.4	0	43.5	2.1		0	74.9	24.9	0.1		
PHF	.000	.000	.000	.250	.250	.827	.845	.469	.000	.923	.754	.000	.831	.250	.803	.000	.969	.911	.250	.991	.992
Unshifted	0	0	0	3	3	486	625	15	0	1126	386	0	309	15	710	0	1039				
% Unshifted	0	0	0	100	100	100	100	100	0	100	100	0	100	100	100	0	100	100	100	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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File Name : Sheridan.Harlem.AM.Peak
Site Code : 00000000
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Groups Printed- Unshifted - Bank 1 - Bank 2

	HARLEM RD Southbound				SHERIDAN DRA Westbound				HARLEM RD Northbound				SHERIDAN DRA Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	107	103	0	98	0	28	1	30	129	0	0	496
07:15 AM	0	0	0	0	0	187	126	0	172	0	40	1	60	153	0	0	739
07:30 AM	0	0	0	0	0	221	138	0	217	0	64	1	58	202	0	0	901
07:45 AM	0	0	0	0	0	214	109	0	245	0	62	0	76	260	0	0	966
Total	0	0	0	0	0	729	476	0	732	0	194	3	224	744	0	0	3102
08:00 AM	0	0	0	0	0	235	140	0	223	0	59	1	74	219	0	0	951
08:15 AM	0	0	0	0	0	190	116	0	193	0	79	0	92	230	0	0	900
08:30 AM	0	0	0	0	0	228	143	0	164	0	78	0	65	132	0	0	810
08:45 AM	0	0	0	0	0	246	102	0	109	0	63	0	65	160	0	0	745
Total	0	0	0	0	0	899	501	0	689	0	279	1	296	741	0	0	3406
Grand Total	0	0	0	0	0	1628	977	0	1421	0	473	4	520	1485	0	0	6508
Apprch %	0	0	0	0	0	62.5	37.5	0	74.9	0	24.9	0.2	25.9	74.1	0	0	
Total %	0	0	0	0	0	25	15	0	21.8	0	7.3	0.1	8	22.8	0	0	
Unshifted	0	0	0	0	0	1628	977	0	1421	0	473	4	520	1485	0	0	6508
% Unshifted	0	0	0	0	0	100	100	0	100	0	100	100	100	100	0	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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File Name : Sheridan.Harlem.AM.Peak
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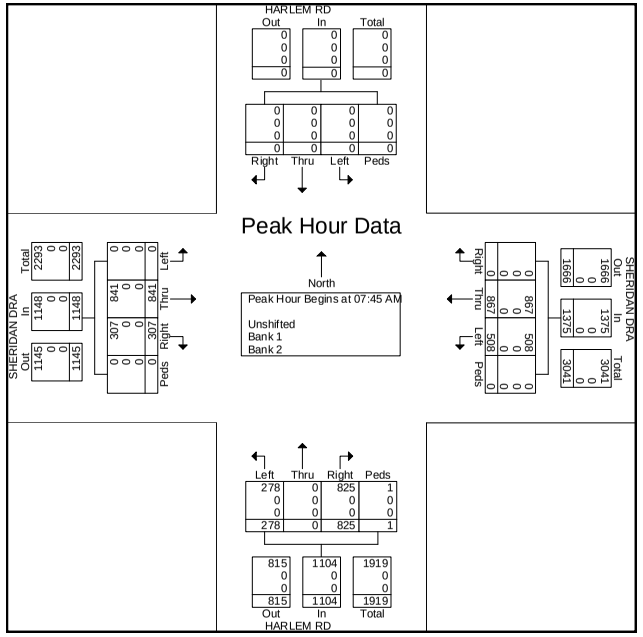
	HARLEM RD Southbound					SHERIDAN DRA Westbound					HARLEM RD Northbound					SHERIDAN DRA Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	0	0	0	0	0	0	214	109	0	323	**245**				**307**	76	**260**	0	0	**336**	**966**
08:00 AM	0	0	0	0	0	0	**235**	140	0	**375**	223	0	59	**1**							
08:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**190**	**116**	**0**	**306**	**193**	**0**	**79**	**0**	**272**	**92**	**230**	**0**	**0**	**322**	**900**
08:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**228**	**143**	**0**	**371**	**164**	**0**	**78**	**0**	**242**	**65**	**132**	**0**	**0**	**197**	**810**
Total Volume	0	0	0	0	0	0	867	508	0	1375	825	0	278	1	1104	307	841	0	0	1148	3627
% App. Total	0	0	0	0		0	63.1	36.9	0		74.7	0	25.2	0.1		26.7	73.3	0	0		
PHF	.000	.000	.000	.000	.000	.000	.922	.888	.000	.917	.842	.000	.880	.250	.899	.834	.809	.000	.000	.854	.939
Unshifted	0	0	0	0	0	0	867	508	0	1375	825	0	278	1	1104	307	841	0	0	1148	3627
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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File Name : Sheridan.Harlem.PM.Peak
Site Code : 00000000
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Groups Printed- Unshifted - Bank 1 - Bank 2

	HARLEM RD Southbound				SHERIDAN DR Westbound				HARLEM RD Northbound				SHERIDAN DR Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	0	0	0	0	1	234	113	0	179	0	66	5	185	192	0	7	982
04:15 PM	0	0	0	0	0	252	126	0	203	0	72	1	173	227	0	0	1054
04:30 PM	0	0	0	0	0	233	100	0	146	0	67	0	145	229	0	0	920
04:45 PM	0	0	0	0	0	244	108	0	153	0	54	0	133	235	0	0	927
Total	0	0	0	0	1	963	447	0	681	0	259	6	636	883	0	7	3883
05:00 PM	0	0	0	0	0	244	82	0	153	0	72	3	160	225	0	0	939
05:15 PM	0	0	0	0	0	236	88	0	200	0	67	1	151	233	0	0	976
05:30 PM	0	0	0	0	2	252	65	0	198	1	62	0	107	185	0	1	873
05:45 PM	0	0	0	0	0	253	95	0	136	0	72	0	129	256	0	0	941
Total	0	0	0	0	2	985	330	0	687	1	273	4	547	899	0	1	3729
Grand Total	0	0	0	0	3	1948	777	0	1368	1	532	10	1183	1782	0	8	7612
Apprch %	0	0	0	0	0.1	71.4	28.5	0	71.6	0.1	27.8	0.5	39.8	59.9	0	0.3	
Total %	0	0	0	0	0	25.6	10.2	0	18	0	7	0.1	15.5	23.4	0	0.1	
Unshifted	0	0	0	0	3	1948	777	0	1368	1	532	10	1183	1782	0	8	7612
% Unshifted	0	0	0	0	100	100	100	0	100	100	100	100	100	100	0	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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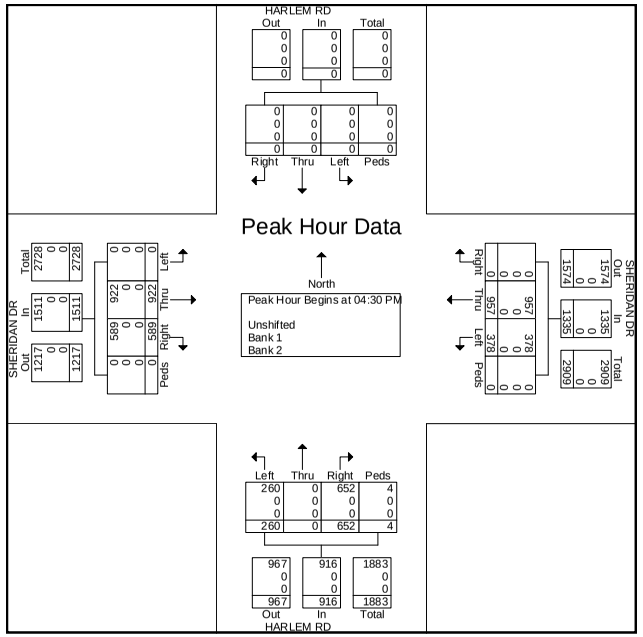
	HARLEM RD Southbound					SHERIDAN DR Westbound					HARLEM RD Northbound					SHERIDAN DR Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	0	233	100	0	333	146	0	67	0	213	145	229	0	0	374	920
04:45 PM	0	0	0	0	0	0	**244**	**108**		**352**	153	0	54	0	207	133	**235**	0	0	368	927
05:00 PM	0	0	0	0	0	0	244	82	0	326	153	0	**72**	**3**		**160**				**385**	939
05:15 PM	0	0	0	0	0	0	236	88	0	324	**200**				**268**	151	233	0	0	384	**976**
Total Volume	0	0	0	0	0	0	957	378	0	1335	652	0	260	4	916	589	922	0	0	1511	3762
% App. Total	0	0	0	0		0	71.7	28.3	0		71.2	0	28.4	0.4		39	61	0	0		
PHF	.000	.000	.000	.000	.000	.000	.981	.875	.000	.948	.815	.000	.903	.333	.854	.920	.981	.000	.000	.981	.964
Unshifted	0	0	0	0	0	0	957	378	0	1335	652	0	260	4	916	589	922	0	0	1511	3762
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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File Name : Sheridan.Mill.AM.Peak
Site Code : 22222222
Start Date : 9/12/2013
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Groups Printed- Unshifted - Bank 1 - Bank 2

	Mill Street Southbound				Sheridan Drive Westbound				Mill Street Northbound				Sheridan Drive Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	2	14	5	0	2	163	57	0	18	4	15	0	17	223	2	0	522
07:15 AM	4	24	9	0	0	241	76	0	26	4	12	0	25	305	0	0	726
07:30 AM	6	34	7	0	3	281	51	0	26	8	24	0	22	348	0	0	810
07:45 AM	6	30	11	0	4	248	53	0	17	3	21	0	27	302	0	0	722
Total	18	102	32	0	9	933	237	0	87	19	72	0	91	1178	2	0	2780
08:00 AM	3	26	5	0	3	255	71	0	19	5	18	0	34	323	2	0	764
08:15 AM	3	25	4	0	1	228	40	0	26	4	22	0	36	357	1	0	747
08:30 AM	3	65	10	0	1	211	51	0	60	9	36	2	22	258	2	0	730
08:45 AM	4	33	11	0	2	244	31	0	48	11	43	0	22	324	2	0	775
Total	13	149	30	0	7	938	193	0	153	29	119	2	114	1262	7	0	3016
Grand Total	31	251	62	0	16	1871	430	0	240	48	191	2	205	2440	9	0	5796
Apprch %	9	73	18	0	0.7	80.8	18.6	0	49.9	10	39.7	0.4	7.7	91.9	0.3	0	
Total %	0.5	4.3	1.1	0	0.3	32.3	7.4	0	4.1	0.8	3.3	0	3.5	42.1	0.2	0	
Unshifted	31	251	62	0	16	1871	430	0	240	48	191	2	205	2440	9	0	5796
% Unshifted	100	100	100	0	100	100	100	0	100	100	100	100	100	100	100	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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File Name : Sheridan.Mill.AM.Peak
Site Code : 22222222
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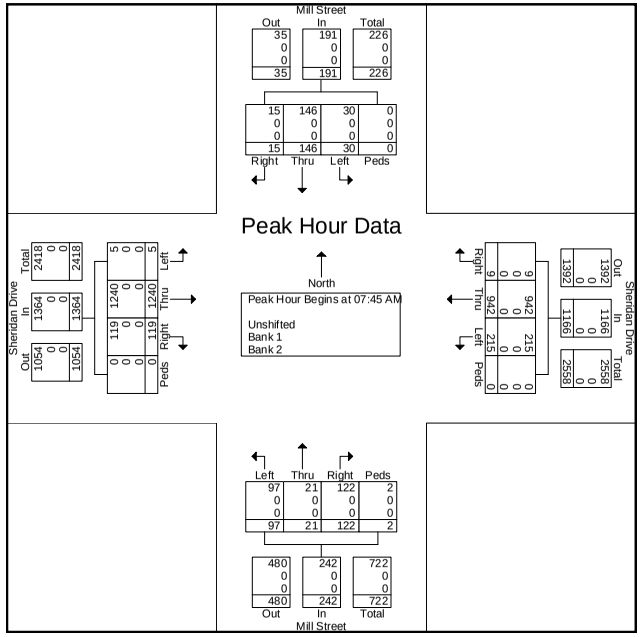
	Mill Street Southbound					Sheridan Drive Westbound					Mill Street Northbound					Sheridan Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	**6**		**11**			**4**															
08:00 AM	**3**	**26**	**5**	**0**	**34**	**3**	**255**	**71**	**0**	**329**	19	5	18	0	42	34	323	**2**	**0**	**359**	**764**
08:15 AM	3	25	4	0	32	1	228	40	0	269	26	4	22	0	52	**36**	**357**	1	0	**394**	747
08:30 AM	3	**65**	10	0	**78**	1	211	51	0	263	**60**	**9**	**36**	**2**	**107**	22	258	2	0	282	730
Total Volume	15	146	30	0	191	9	942	215	0	1166	122	21	97	2	242	119	1240	5	0	1364	2963
% App. Total	7.9	76.4	15.7	0		0.8	80.8	18.4	0		50.4	8.7	40.1	0.8		8.7	90.9	0.4	0		
PHF	.625	.562	.682	.000	.612	.563	.924	.757	.000	.886	.508	.583	.674	.250	.565	.826	.868	.625	.000	.865	.970
Unshifted	15	146	30	0	191	9	942	215	0	1166	122	21	97	2	242	119	1240				
% Unshifted	100	100	100	0	100	100	100	100	0	100	100	100	100	100	100	100	100	100	0	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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File Name : Sheridan.Mill.PM.Peak
Site Code : 11111111
Start Date : 9/11/2013
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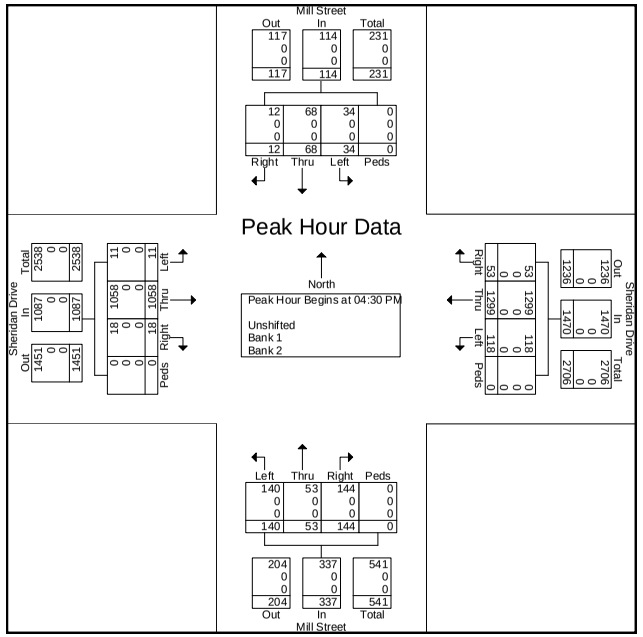
Groups Printed- Unshifted - Bank 1 - Bank 2

	Mill Street Southbound				Sheridan Drive Westbound				Mill Street Northbound				Sheridan Drive Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
04:00 PM	1	11	5	1	4	305	30	0	24	14	31	0	2	262	2	0	692
04:15 PM	1	13	5	0	6	299	37	0	28	14	24	0	3	287	4	0	721
04:30 PM	4	14	9	0	5	317	40	0	43	9	40	0	1	287	9	0	778
04:45 PM	0	17	6	0	11	356	31	0	17	14	36	0	1	319	2	0	810
Total	6	55	25	1	26	1277	138	0	112	51	131	0	7	1155	17	0	3001
05:00 PM	3	17	7	0	17	330	33	0	41	18	42	0	11	228	0	0	747
05:15 PM	5	20	12	0	20	296	14	0	43	12	22	0	5	224	0	0	673
05:30 PM	12	32	49	0	28	259	14	0	27	11	41	0	4	181	5	0	663
05:45 PM	19	59	69	0	37	254	20	0	41	14	38	0	6	185	8	0	750
Total	39	128	137	0	102	1139	81	0	152	55	143	0	26	818	13	0	2833
Grand Total	45	183	162	1	128	2416	219	0	264	106	274	0	33	1973	30	0	5834
Apprch %	11.5	46.8	41.4	0.3	4.6	87.4	7.9	0	41	16.5	42.5	0	1.6	96.9	1.5	0	
Total %	0.8	3.1	2.8	0	2.2	41.4	3.8	0	4.5	1.8	4.7	0	0.6	33.8	0.5	0	
Unshifted	45	183	162	1	128	2416	219	0	264	106	274	0	33	1973	30	0	5834
% Unshifted	100	100	100	100	100	100	100	0	100	100	100	0	100	100	100	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Sheridan.Mill.PM.Peak
Site Code : 11111111
Start Date : 9/11/2013
Page No : 2

	Mill Street Southbound					Sheridan Drive Westbound					Mill Street Northbound					Sheridan Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	4	14	9	0	27	5	317	**40**			**43**							**9**			
04:45 PM	**0**	**17**	**6**	**0**	**23**	**11**	**356**	31	0	**398**	17	14	36	0	67	1	**319**	2	0	**322**	**810**
05:00 PM	3	17	7	0	27	17	330	33	0	380	41	**18**	**42**		**101**	**11**					
05:15 PM	**5**	**20**	**12**	**0**	**37**	**20**	**296**	**14**	**0**	**330**	**43**	**12**	**22**	**0**	**77**	**5**	**224**	**0**	**0**	**229**	**673**
Total Volume	12	68	34	0	114	53	1299	118	0	1470	144	53	140	0	337	18	1058	11	0	1087	3008
% App. Total	10.5	59.6	29.8	0		3.6	88.4	8	0		42.7	15.7	41.5	0		1.7	97.3	1	0		
PHF	.600	.850	.708	.000	.770	.663	.912	.738	.000	.923	.837	.736	.833	.000	.834	.409	.829	.306	.000	.844	.928
Unshifted	12	68	34	0	114	53	1299										1058				
% Unshifted	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



SRF & Associates
3495 Winton Place, Building E, Suite 110
Rochester, NY 14623

File Name : Sheridan_Nforest_AM
Site Code : 01111111
Start Date : 9/12/2013
Page No : 1

Groups Printed- Unshifted - Bank 1 - Bank 2

	North Forest Road Southbound				Sheridan Drive Westbound				North Forest Road Northbound				Sheridan Drive Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	38	102	6	0	4	131	26	0	4	16	10	0	25	172	28	0	562
07:15 AM	44	110	2	0	7	228	37	0	0	54	26	0	22	254	23	0	807
07:30 AM	62	94	0	0	3	237	37	0	3	67	35	0	40	229	23	0	830
07:45 AM	54	104	1	0	6	270	46	0	3	73	50	0	44	250	17	0	918
Total	198	410	9	0	20	866	146	0	10	210	121	0	131	905	91	0	3117
08:00 AM	61	100	5	0	3	242	54	0	3	67	57	0	47	255	27	0	921
08:15 AM	85	111	5	0	5	256	42	0	6	87	46	0	44	245	20	0	952
08:30 AM	59	93	0	0	5	222	35	0	10	94	47	0	37	238	24	0	864
08:45 AM	70	103	10	0	7	198	53	0	9	55	34	0	40	226	33	0	838
Total	275	407	20	0	20	918	184	0	28	303	184	0	168	964	104	0	3575
Grand Total	473	817	29	0	40	1784	330	0	38	513	305	0	299	1869	195	0	6692
Apprch %	35.9	61.9	2.2	0	1.9	82.8	15.3	0	4.4	59.9	35.6	0	12.7	79.1	8.3	0	
Total %	7.1	12.2	0.4	0	0.6	26.7	4.9	0	0.6	7.7	4.6	0	4.5	27.9	2.9	0	
Unshifted	473	817	29	0	40	1784	330	0	38	513	305	0	299	1869	195	0	6692
% Unshifted	100	100	100	0	100	100	100	0	100	100	100	0	100	100	100	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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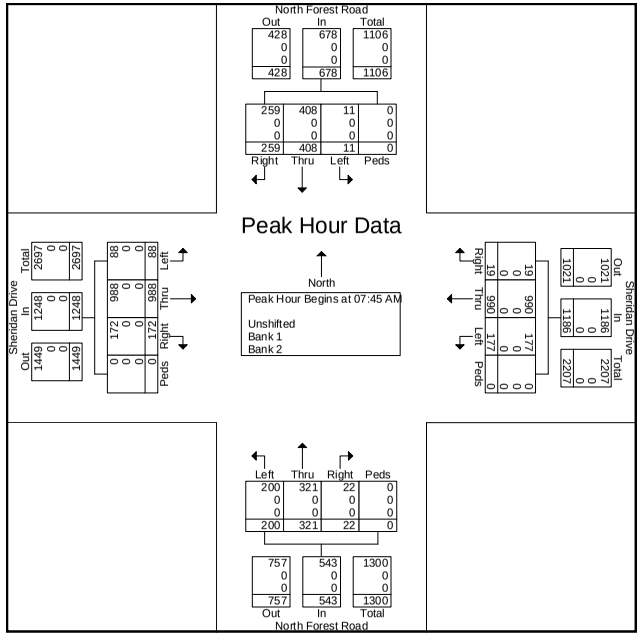
File Name : Sheridan_Nforest_AM
Site Code : 01111111
Start Date : 9/12/2013
Page No : 2

	North Forest Road Southbound					Sheridan Drive Westbound					North Forest Road Northbound					Sheridan Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	54	104	1	0	159	**6**	**270**	46	0	**322**	3	73	50	0	126	44	250	17	0	311	918
08:00 AM	61	100	**5**					**54**					**57**			**47**	**255**	**27**		**329**	921
08:15 AM	**85**	**111**	5	0	**201**	5	256	42	0	303	6	87	46	0	139	44	245	20	0	309	**952**
08:30 AM	59	93	0	0	152	5	222	35	0	262	**10**	**94**	47	0	**151**	37	238	24	0	299	864
Total Volume	259	408	11	0	678	19	990	177	0	1186	22	321	200	0	543	172	988	88	0	1248	3655
% App. Total	38.2	60.2	1.6	0		1.6	83.5	14.9	0		4.1	59.1	36.8	0		13.8	79.2	7.1	0		
PHF	.762	.919	.550	.000	.843	.792	.917	.819	.000	.921	.550	.854	.877	.000	.899	.915	.969	.815	.000	.948	.960
Unshifted	259	408	11	0	678	19	990	177	0	1186	22	321	200	0	543	172	988	88	0	1248	3655
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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Rochester, NY 14623

File Name : Sheridan_Nforest_AM
Site Code : 01111111
Start Date : 9/11/2013
Page No : 1

Groups Printed- Unshifted - Bank 1 - Bank 2

	North Forest Road Southbound				Sheridan Drive Westbound				North Forest Road Northbound				Sheridan Drive Eastbound				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	38	102	6	0	4	131	26	0	4	16	10	0	25	172	28	0	562
07:15 AM	44	110	2	0	7	228	37	0	0	54	26	0	22	254	23	0	807
07:30 AM	62	94	0	0	3	237	37	0	3	67	35	0	40	229	23	0	830
07:45 AM	54	104	1	0	6	270	46	0	3	73	50	0	44	250	17	0	918
Total	198	410	9	0	20	866	146	0	10	210	121	0	131	905	91	0	3117
08:00 AM	61	100	5	0	3	242	54	0	3	67	57	0	47	255	27	0	921
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08:45 AM	70	103	10	0	7	198	53	0	9	55	34	0	40	226	33	0	838
Total	275	407	20	0	20	918	184	0	28	303	184	0	168	964	104	0	3575
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Total %	7.1	12.2	0.4	0	0.6	26.7	4.9	0	0.6	7.7	4.6	0	4.5	27.9	2.9	0	
Unshifted	473	817	29	0	40	1784	330	0	38	513	305	0	299	1869	195	0	6692
% Unshifted	100	100	100	0	100	100	100	0	100	100	100	0	100	100	100	0	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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File Name : Sheridan_Nforest_AM
Site Code : 01111111
Start Date : 9/11/2013
Page No : 2

	North Forest Road Southbound					Sheridan Drive Westbound					North Forest Road Northbound					Sheridan Drive Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
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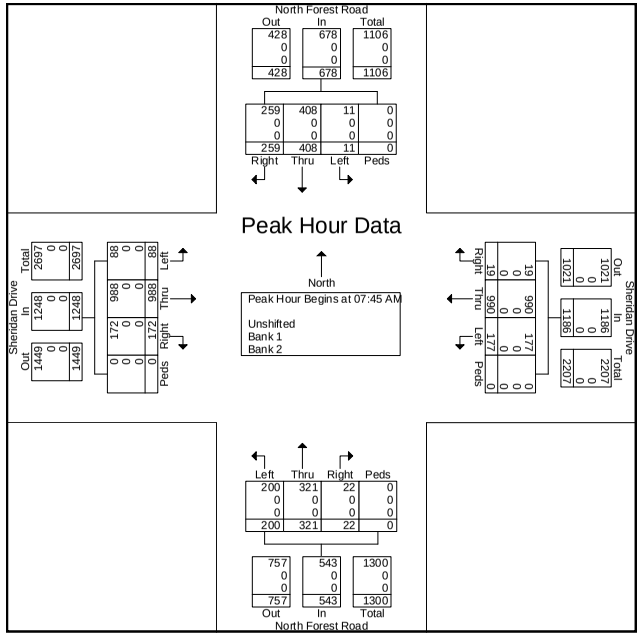
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	54	104	1	0	159	**6**	**270**	46	0	**322**	3	73	50	0	126	44	250	17	0	311	918
08:00 AM	61	100	**5**					**54**					**57**			**47**	**255**	**27**		**329**	921
08:15 AM	**85**	**111**	5	0	**201**	5	256	42	0	303	6	87	46	0	139	44	245	20	0	309	**952**
08:30 AM	59	93	0	0	152	5	222	35	0	262	**10**	**94**	47	0	**151**	37	238	24	0	299	864
Total Volume	259	408	11	0	678	19	990	177	0	1186	22	321	200	0	543	172	988	88	0	1248	3655
% App. Total	38.2	60.2	1.6	0		1.6	83.5	14.9	0		4.1	59.1	36.8	0		13.8	79.2	7.1	0		
PHF	.762	.919	.550	.000	.843	.792	.917	.819	.000	.921	.550	.854	.877	.000	.899	.915	.969	.815	.000	.948	.960
Unshifted	259	408	11	0	678	19	990	177	0	1186	22	321	200	0	543	172	988	88	0	1248	3655
% Unshifted																					
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



A2

Miscellaneous Traffic Data and Calculations

Project Information	
Project Name:	Westwood Mixed Use Neighborhood
No:	33042.1
Date:	2/5/2015
City:	Amherst
State/Province:	NY
Client Name:	Ciminelli Real Estate
Analyst's Name:	DLK
Edition:	ITE-TGM 9th Edition

Land Use	Size	Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.		Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.	
		Entry	Exit	Entry	Exit
820 - Shopping Center	115 1000 Sq. Feet Gross Leasable Area	105	65	316	342
Reduction		0	0	0	0
Internal		15	12	108	156
Pass-by		0	0	77	69
Non-pass-by		90	53	131	117
220 - Apartment	352 Dwelling Units	35	141	137	74
Reduction		0	0	0	0
Internal		1	4	68	36
Pass-by		0	0	0	0
Non-pass-by		34	137	69	38
224 - Rental Townhouse	93 Dwelling Units	21	44	34	33
Reduction		0	0	0	0
Internal		0	1	17	16
Pass-by		0	0	0	0
Non-pass-by		21	43	17	17
710 - General Office Building	200 1000 Sq. Feet Gross Floor Area	275	37	51	247
Reduction		0	0	0	0
Internal		26	10	15	36
Pass-by		0	0	0	0
Non-pass-by		249	27	36	211
310 - Hotel	85 Occupied Rooms	33	24	29	31
Reduction		0	0	0	0
Internal		0	11	11	5
Pass-by		0	0	0	0
Non-pass-by		33	13	18	26
230 - Residential Condominium/Townhouse	84 Dwelling Units	8	37	35	17
Reduction		0	0	0	0
Internal		0	1	17	9
Pass-by		0	0	0	0
Non-pass-by		8	36	18	8
210 - Single-Family Detached Housing	113 Dwelling Units	22	67	74	43
Reduction		0	0	0	0
Internal		0	2	37	21
Pass-by		0	0	0	0
Non-pass-by		22	65	37	22
210 - Single-Family Detached Housing - 1	47 Dwelling Units	11	32	33	20
Reduction		0	0	0	0
Internal		0	1	16	10
Pass-by		0	0	0	0
Non-pass-by		11	31	17	10
252 - Senior Adult Housing - Attached	96 Dwelling Units	6	13	14	11
Reduction		0	0	0	0
Internal		0	0	0	0
Pass-by		0	0	0	0
Non-pass-by		6	13	14	11
254 - Assisted Living	200 Beds	18	10	19	25
Reduction		0	0	0	0
Internal		0	0	0	0
Pass-by		0	0	0	0
Non-pass-by		18	10	19	25
Total		534	470	742	843
Total Reduction		0	0	0	0
Total Internal		42	42	289	289
Total Pass-by		0	0	77	69
Total Non-pass-by		492	428	376	485

Project Information	
Project Name:	Westwood Mixed-use Neighborhood
No:	33042
Date:	2/15/2015
City:	Amherst
State/Province:	NY
Analyst's Name:	DLK
Edition:	ITE-TGM 9th Edition

Land Use	Size	AM Peak		PM Peak	
		Entry	Exit	Entry	Exit
561 - Synagogue	25 1000 Sq. Feet Gross Floor Area	0	0	20	22
Reduction		0	0	0	0
Internal		0	0	0	0
Pass-by		0	0	0	0
Non-pass-by		0	0	20	22
Total		0	0	20	22
Total Reduction		0	0	0	0
Total Internal		0	0	0	0
Total Pass-by		0	0	0	0
Total Non-pass-by		0	0	20	22

SRF ASSOCIATES
WWW.SRFA.NET
Traffic Engineering & Planning Consultants

Proposed Westwood Mixed Use Neighborhood, Town of Amherst, Erie County

Documentation of Ambient Traffic Volume Growth

Roadway	Segment starts at	Segment end at	2002	2005	2007	2008	2010	2011	Estimated from counts 2012	Estimated from counts 2013	Annual Growth
Sheridan Drive	Route 290	North Forest Road	36,260	36,890		36,580		39,724		34,830	1.02%
Maple Road	Millersport Hwy	North Forest Road			25,600		21,913		23,532		-1.67%
North Forest	Maple Road	Sheridan Drive				13,550		11,960	13,680		0.24%

Average -0.14%

PROPOSED WESTWOOD MIXED USE NEIGHBORHOOD
TOWN OF AMHERST, ERIE COUNTY, NY
AM PEAK

Num of yrs: 10

LOCATION NUMBER	INTERSECTION DESCRIPTION	Existing Volume	Bkgd Volume 0.25%	Hotel				Residential				Commercial				Total Site Trips	Full Build Volumes
				Enter Dist. %	Exit Dist. %	Trips IN 33	Trips OUT 13	Enter Dist. %	Exit Dist. %	Trips IN 120	Trips OUT 335	Enter Dist. %	Exit Dist. %	Trips IN 339	Trips OUT 80		
1	Maple Road/ Millersport Hwy SB																
	SR	81	83														83
	ST																
	SL	25	26					1%		1		1%		3		5	31
	WR	297	305		1%		0		2%		7					7	312
	WT	758	777		1%		0		13%		44		9%		7	51	828
	WL																
	NR																
	NT																
	NL																
	ER																
	ET	545	559	1%		0		13%		16		9%		31		46	605
	EL	18	18														18
2	Maple Road/ Millersport Hwy NB																
	SR																
	ST																
	SL																
	WR	51	52						1%		3		1%		1	4	56
	WT	912	935		2%		0		15%		50		9%		7	58	993
	WL																
	NR	452	463	1%		0		2%		2						3	466
	NT	1	1														1
	NL	143	147														147
	ER																
	ET	529	542	1%		0		14%		17		10%		34		51	593
	EL	41	42														42
3	Maple Road/ Maplemere Road																
	SR	16	16														16
	ST	0	0														
	SL	33	34														34
	WR	27	28														28
	WT	954	978		2%		0		16%		54		10%		8	62	1040
	WL	12	12														12
	NR	16	16														16
	NT	3	3														3
	NL	43	43														43
	ER	46	46														46
	ET	849	870	2%		1		16%		19		10%		34		54	924
	EL	20	21														21
4	Maple Road/ Donna Lea Boulevard																
	SR																
	ST																
	SL																
	WR																
	WT	969	993		2%		0		16%		54		10%		8	62	1055
	WL	13	13														13
	NR	61	61														61
	NT																
	NL	24	24														24
	ER	6	6														6
	ET	892	915	2%		1		16%		19		10%		34		54	969
	EL																
5	Maple Road/ Sandhurst Lane																
	SR	0	0														
	ST	0	0														
	SL	1	1														1
	WR	2	2														2
	WT	988	1013					25%		30		20%		68		98	1111
	WL	1	1														1
	NR	3	3														3
	NT	0	0														
	NL	13	13														13
	ER	4	4														4
	ET	944	968						25%		84		20%		16	100	1068
	EL	1	1														1
6	Maple Road/ North Forest Road																
	SR	154	158					5%		6		5%		17		23	181
	ST	346	355									2%		7		7	362
	SL	120	123														123
	WR	88	90														90
	WT	733	752					18%		22		15%		51		72	824
	WL	243	249									1%		3		3	252
	NR	179	184										1%		1	1	185
	NT	223	229										2%		2	2	231
	NL	88	90					2%		2						2	92
	ER	75	77						2%		7					7	84
	ET	769	788						18%		60		15%		12	72	860
	EL	77	79						5%		17		5%		4	21	100

7	Sheridan Drive/ Mill Street																
	SR	15	15									1%		3		3	18
	ST	146	146														146
	SL	30	30														30
	WR	9	9														9
	WT	942	966	2%		1		15%		18		18%		61		80	1046
	WL	215	220														220
	NR	122	125														125
	NT	21	21														21
	NL	97	99					2%		2		1%		3		6	105
	ER	119	122						2%		7		1%		1	8	130
	ET	1240	1271		2%		0		15%		50		18%		14	65	1336
	EL	5	5										1%		1	1	6
8	Sheridan Drive/ North Forest Road																
	SR	277	284									3%		10		10	294
	ST	426	437						2%		7					7	444
	SL	11	11														11
	WR	19	19														19
	WT	990	1015	2%		1		17%		20		20%		68		89	1104
	WL	177	181														181
	NR	22	23														23
	NT	332	340					2%		2						2	342
	NL	200	205	6%		2		5%		6		7%		24		32	237
	ER	192	197		6%		1		5%		17		7%		6	23	220
	ET	1254	1286		2%		0		17%		57		20%		16	73	1359
	EL	88	90										3%		2	2	92
9	North Forest Road/ Country Club Driveway																
	SR	5	5														5
	ST	713	731						2%		7	3%		10		17	748
	SL																
	WR																
	WT																
	WL																
	NR																
	NT	431	442					2%		2			3%		2	5	447
	NL	8	8														8
	ER	1	1														1
	ET																
	EL	1	1														1
10	Sheridan Drive/ Fenwick Road																
	SR				90%		12		37%		124		40%		32	168	168
	ST																
	SL				8%		1		22%		74		30%		24	99	99
	WR			8%		3		22%		26		30%		102		131	131
	WT	1463	1500														1500
	WL	4	4														4
	NR	9	9														9
	NT																
	NL	16	16														16
	ER	6	6														6
	ET	1525	1564														1564
	EL			90%		30		37%		44		40%		136		210	210
11	Sheridan Drive/ Frankhauser Road																
	SR	29	29														29
	ST																
	SL	38	38														38
	WR	24	24														24
	WT	1455	1492		90%		12		37%		124		40%		32	168	1660
	WL																
	NR																
	NT																
	NL																
	ER																
	ET	1493	1531	90%		30		37%		44		40%		136		210	1741
	EL	26	26														26
12	Sheridan Drive/ I 290 NB																
	SR																
	ST																
	SL																
	WR	478	490		2%		0		10%		34		12%		10	43	533
	WT	963	987		88%		11		27%		90		28%		22	124	1111
	WL																
	NR	215	220	88%		29		6%		7		5%		17		53	273
	NT	0	0														
	NL	262	269														269
	ER																
	ET	1339	1373	2%		1		31%		37		35%		119		157	1530
	EL	243	249														249

13	Sheridan Drive/ Harlem Road																
	SR																
	ST																
	SL																
	WR																
	WT	777	797						15%		50		17%		14	64	861
	WL	448	459		88%		11		12%		40		11%		9	60	519
	NR	783	803	2%		1		16%		19		18%		61		81	884
	NT																
	NL	278	285														285
	ER	307	315														315
	ET	799	819					15%		18		17%		58		76	895
	EL																
14	Harlem Road/ I 290 SB																
	SR																
	ST	355	364						6%		20		6%		5	25	389
	SL	369	378		88%		11		6%		20		5%		4	36	414
	WR	664	681	2%		1		10%		12		12%		41		53	734
	WT																
	WL	291	298														298
	NR	20	21														21
	NT	435	446					6%		7		6%		20		28	474
	NL																
	ER																
	ET																
	EL																
15	Maple Road/ Proposed Driveway																
	SR																
	ST																
	SL																
	WR																
	WT	982	1007														1007
	WL							25%		30		20%		68		98	98
	NR								25%		84		20%		16	100	100
	NT																
	NL				2%		0		16%		54		10%		8	62	62
	ER			2%		1		16%		19		10%		34		54	54
	ET	953	977														977
	EL																

PROPOSED WESTWOOD MIXED USE NEIGHBORHOOD
TOWN OF AMHERST, ERIE COUNTY, NY
PM PEAK

Num of yrs: 10

LOCATION NUMBER	INTERSECTION DESCRIPTION	Existing Volume	Bkgd Volume 0.25%	Hotel				Residential				Commercial				Pass-by Trips	Total Site Trips	Full Build Volumes
				Enter Dist. %	Exit Dist. %	Trips IN 18	Trips OUT 26	Enter Dist. %	Exit Dist. %	Trips IN 191	Trips OUT 131	Enter Dist. %	Exit Dist. %	Trips IN 167	Trips OUT 328			
1	Maple Road/ Millersport Hwy SB																	
	SR	170	174														0	174
	ST																0	
	SL	54	55					1%		2		1%		2			4	59
	WR	221	227		1%		0		2%		3						3	230
	WT	820	841		1%		0		13%		17		9%		30		47	888
	WL																0	
	NR																0	
	NT																0	
	NL																0	
	ER																0	
	ET	913	936	1%		0		13%		25		9%		15			40	976
	EL	28	29														0	29
2	Maple Road/ Millersport Hwy NB																	
	SR																0	
	ST																0	
	SL																0	
	WR	23	24						1%		1		1%		3		5	29
	WT	952	976		2%		1		15%		20		9%		30		50	1026
	WL																0	
	NR	451	462	1%		0		2%		4							4	466
	NT	0	0														0	
	NL	89	91														0	91
	ER																0	
	ET	872	894	1%		0		14%		27		10%		17			44	938
	EL	95	97														0	97
3	Maple Road/ Maplemere Road																	
	SR	30	31														0	31
	ST	8	8														0	8
	SL	75	77														0	77
	WR	60	62														0	62
	WT	868	890		2%		1		16%		21		10%		33		54	944
	WL	21	21														0	21
	NR	12	12														0	12
	NT	0	0														0	
	NL	22	22														0	22
	ER	35	35														0	35
	ET	1188	1218	2%		0		16%		31		10%		17			48	1266
	EL	35	36														0	36
4	Maple Road/ Donna Lea Boulevard																	
	SR																0	
	ST																0	
	SL																0	
	WR																0	
	WT	937	961		2%		1		16%		21		10%		33		54	1015
	WL	23	23														0	23
	NR	21	21														0	21
	NT																0	
	NL	12	12														0	12
	ER	29	29														0	29
	ET	1246	1278	2%		0		16%		31		10%		17			48	1326
	EL																0	
5	Maple Road/ Sandhurst Lane																	
	SR	0	0														0	
	ST	0	0														0	
	SL	0	0														0	
	WR	2	2														0	2
	WT	960	984					25%		48		20%		33			81	1065
	WL	8	8														0	8
	NR	6	6														0	6
	NT	0	0														0	
	NL	10	10														0	10
	ER	14	14														0	14
	ET	1260	1292						25%		33		20%		66	-1	97	1389
	EL	0	0														0	
6	Maple Road/ North Forest Road																	
	SR	116	119					5%		10		5%		8			18	137
	ST	375	384									2%		3			3	387
	SL	165	169														0	169
	WR	94	96														0	96
	WT	718	736					18%		34		15%		25			59	795
	WL	230	236									1%		2			2	238
	NR	197	202										1%		3		3	205
	NT	338	347										2%		7		7	354
	NL	90	92					2%		4							4	96
	ER	139	143						2%		3						3	146
	ET	960	984						18%		24		15%		49	-1	72	1056
	EL	177	181						5%		7		5%		16		23	204

7	Sheridan Drive/ Mill Street																	
	SR	12	12									1%		2			2	14
	ST	68	68														0	68
	SL	34	34														0	34
	WR	53	53														0	53
	WT	1299	1332	2%		0		15%		29		18%		30			59	1391
	WL	118	121														0	121
	NR	144	148														0	148
	NT	53	53														0	53
	NL	140	144					2%		4		1%		2			5	149
	ER	18	18						2%		3		1%		3		6	24
	ET	1258	1290		2%		1		15%		20		18%		59	-5	74	1364
	EL	11	11										1%		3		3	14
8	Sheridan Drive/ North Forest Road																	
	SR	197	202									3%		5			5	207
	ST	482	494						2%		3						3	497
	SL	23	24														0	24
	WR	40	41														0	41
	WT	1096	1124	2%		0		17%		32		20%		33			66	1190
	WL	297	305														0	305
	NR	80	82														0	82
	NT	453	464					2%		4							4	468
	NL	264	271	6%		1		5%		10		7%		12			22	293
	ER	254	260		6%		2		5%		7		7%		23		31	291
	ET	1227	1258		2%		1		17%		22		20%		66	-5	83	1341
	EL	135	138										3%		10		10	148
9	North Forest Road/ Country Club Driveway																	
	SR	13	13														0	13
	ST	696	714						2%		3	3%		5			8	722
	SL																0	
	WR																0	
	WT																0	
	WL																0	
	NR																0	
	NT	608	623					2%		4			3%		10		14	637
	NL	26	26														0	26
	ER	9	9														0	9
	ET																0	
	EL	7	7														0	7
10	Sheridan Drive/ Fenwick Road																	
	SR				90%		23		37%		48		40%		131	30	233	233
	ST																0	
	SL				8%		2		22%		29		30%		98	31	160	160
	WR			8%		1		22%		42		30%		50		33	127	127
	WT	1552	1591													-33	-33	1558
	WL	5	5														0	5
	NR	17	17														0	17
	NT																0	
	NL	13	13														0	13
	ER	13	13														0	13
	ET	1599	1639													-36	-36	1603
	EL			90%		16		37%		71		40%		67		36	190	190
11	Sheridan Drive/ Frankhauser Road																	
	SR	40	40														0	40
	ST																0	
	SL	52	52														0	52
	WR	41	41														0	41
	WT	1524	1563		90%		23		37%		48		40%		131	-3	200	1763
	WL																0	
	NR																0	
	NT																0	
	NL																0	
	ER																0	
	ET	1560	1599	90%		16		37%		71		40%		67			154	1753
	EL	34	34														0	34
12	Sheridan Drive/ I 290 NB																	
	SR																0	
	ST																0	
	SL																0	
	WR	586	601		2%		1		10%		13		12%		39		53	654
	WT	1026	1052		88%		23		27%		35		28%		92	-3	147	1199
	WL																0	
	NR	386	396	88%		16		6%		11		5%		8			36	432
	NT	0	0														0	
	NL	309	317														0	317
	ER																0	
	ET	1228	1259	2%		0		31%		59		35%		58			118	1377
	EL	346	355														0	355

13	Sheridan Drive/ Harlem Road																	
	SR																0	
	ST																0	
	SL																0	
	WR																0	
	WT	957	981						15%		20		17%		56	-3	72	1053
	WL	378	388		88%		23		12%		16		11%		36		75	463
	NR	652	668	2%		0		16%		31		18%		30			61	729
	NT																0	
	NL	260	267														0	267
	ER	589	604														0	604
	ET	922	945					15%		29		17%		28			57	1002
	EL																0	
14	Harlem Road/ I 290 SB																	
	SR																0	
	ST	470	482						6%		8		6%		20		28	510
	SL	462	474		88%		23		6%		8		5%		16		47	521
	WR	338	347	2%		0		10%		19		12%		20			40	387
	WT																0	
	WL	228	234														0	234
	NR	11	11														0	11
	NT	539	553					6%		11		6%		10			21	574
	NL																0	
	ER																0	
	ET																0	
	EL																0	
15	Maple Road/ Proposed Driveway																	
	SR																0	
	ST																0	
	SL																0	
	WR																0	
	WT	960	984													-3	-3	981
	WL							25%		48		20%		33		3	84	84
	NR								25%		33		20%		66	4	102	102
	NT																0	
	NL				2%		1		16%		21		10%		33	3	57	57
	ER			2%		0		16%		31		10%		17		5	53	53
	ET	1267	1299													-5	-5	1294
	EL																0	

INTERSECTION ACCIDENT RATE CALCULATIONS

Rate per MEV = $\frac{\text{\# of Accidents x 1,000,000}}{\text{Total No. of Entering Vehicles}}$ =

Rate = $\frac{\text{\# of Accidents x 1,000,000}}{\text{Veh./Day x Duration of Study}}$ =

Accidents per million entering vehicles (Acc / MEV)

---

1 Maple Road/Maplemere Road

ADT = Peak hour entering volume / k factor

ADT = 2354 VPH / 0.10 = 23540 VPD

Rate = $\frac{11 \text{ Acc.} \times 1{,}000{,}000}{23540 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}}$ = 0.43 Acc / MEV

2 Maple Road/Sandhurst Lane

ADT = Peak hour entering volume / k factor

ADT = 2260 VPH / 0.10 = 22600 VPD

Rate = $\frac{0 \text{ Acc.} \times 1{,}000{,}000}{22600 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}}$ = 0.00 Acc / MEV

3 Maple Road/Donna Lea Blvd

ADT = Peak hour entering volume / k factor

ADT = 2268 VPH / 0.10 = 22680 VPD

Rate = $\frac{2 \text{ Acc.} \times 1{,}000{,}000}{22680 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}}$ = 0.08 Acc / MEV

4 Maple Road/North Forest Road

ADT = Peak hour entering volume / k factor

ADT = 3599 VPH / 0.10 = 35990 VPD

Rate = $\frac{43 \text{ Acc.} \times 1{,}000{,}000}{35990 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}}$ = 1.09 Acc / MEV

5 North Forest Road/Westwood C.C. Driveway

ADT = Peak hour entering volume / k factor

ADT = 1359 VPH / 0.10 = 13590 VPD

Rate = $\frac{1 \text{ Acc.} \times 1{,}000{,}000}{13590 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}}$ = 0.07 Acc / MEV

6 Harlem Road/I-290 SB Off-/on-ramp

ADT = Peak hour entering volume / k factor

ADT = 2048 VPH / 0.10 = 20480 VPD

Rate = $\frac{5 \text{ Acc.} \times 1{,}000{,}000}{20480 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}}$ = 0.22 Acc / MEV

7 Millersport Hwy NB/Maple Road

ADT = Peak hour entering volume / k factor

ADT = 2482 VPH / 0.10 = 24820 VPD

Rate = $\frac{1 \text{ Acc.} \times 1{,}000{,}000}{24820 \text{ VPD} \times 365 \text{ Days} \times 3.000 \text{ Yrs.}}$ = 0.04 Acc / MEV

INTERSECTION ACCIDENT RATE CALCULATIONS

8 Millersport Hwy SB/Maple Road

ADT = Peak hour entering volume / k factor

ADT = 2206 VPH / 0.10 = 22060 VPD

Rate = 0 Acc. x 1,000,000 / 22060 VPD x 365 Days x 3.000 Yrs. = 0.00 Acc / MEV

9 Sheridan Drive/N. Forest Road

ADT = Peak hour entering volume / k factor

ADT = 4584 VPH / 0.10 = 45840 VPD

Rate = 31 Acc. x 1,000,000 / 45840 VPD x 365 Days x 3.000 Yrs. = 0.62 Acc / MEV

10 Sheridan Drive/Fenwick Road

ADT = Peak hour entering volume / k factor

ADT = 3199 VPH / 0.10 = 31990 VPD

Rate = 2 Acc. x 1,000,000 / 31990 VPD x 365 Days x 3.000 Yrs. = 0.06 Acc / MEV

11 Sheridan Drive/Frankhauser Road

ADT = Peak hour entering volume / k factor

ADT = 3251 VPH / 0.10 = 32510 VPD

Rate = 3 Acc. x 1,000,000 / 32510 VPD x 365 Days x 3.000 Yrs. = 0.08 Acc / MEV

12 Sheridan Drive/Harlem Road

ADT = Peak hour entering volume / k factor

ADT = 3758 VPH / 0.10 = 37580 VPD

Rate = 27 Acc. x 1,000,000 / 37580 VPD x 365 Days x 3.000 Yrs. = 0.66 Acc / MEV

13 Sheridan Drive/I-290 Off-/on-ramp

ADT = Peak hour entering volume / k factor

ADT = 3881 VPH / 0.10 = 38810 VPD

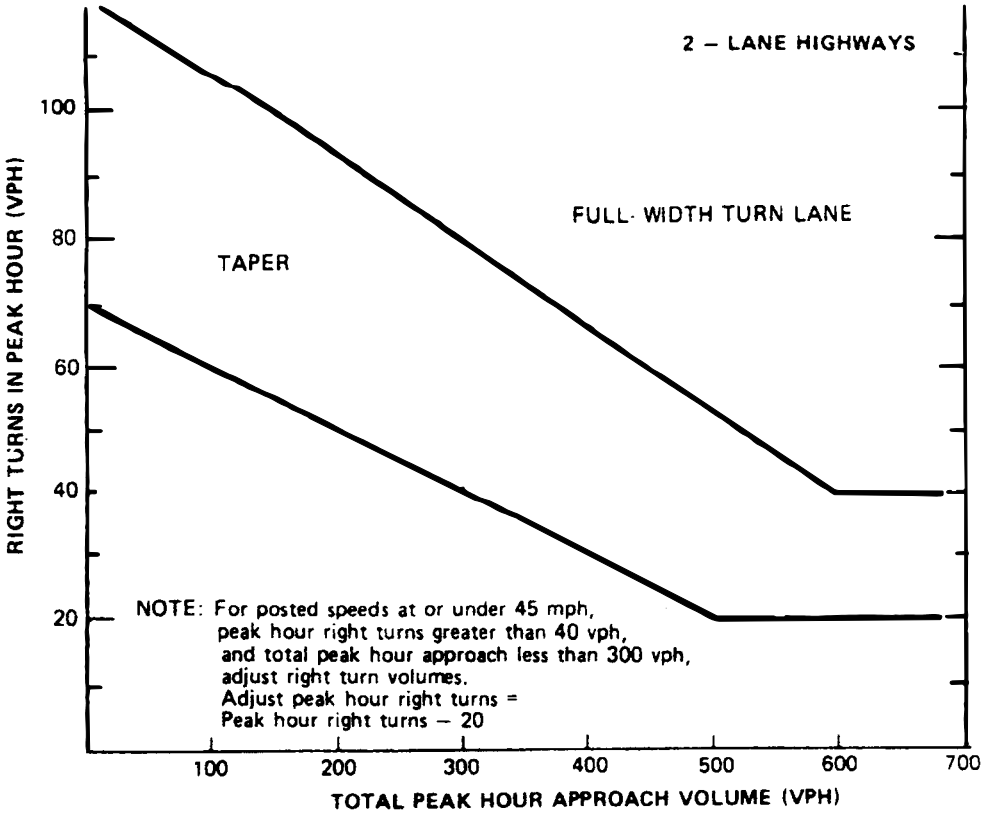
Rate = 16 Acc. x 1,000,000 / 38810 VPD x 365 Days x 3.000 Yrs. = 0.38 Acc / MEV

14 Sheridan Drive/Mill Street

ADT = Peak hour entering volume / k factor

ADT = 3208 VPH / 0.10 = 32080 VPD

Rate = 23 Acc. x 1,000,000 / 32080 VPD x 365 Days x 3.000 Yrs. = 0.65 Acc / MEV



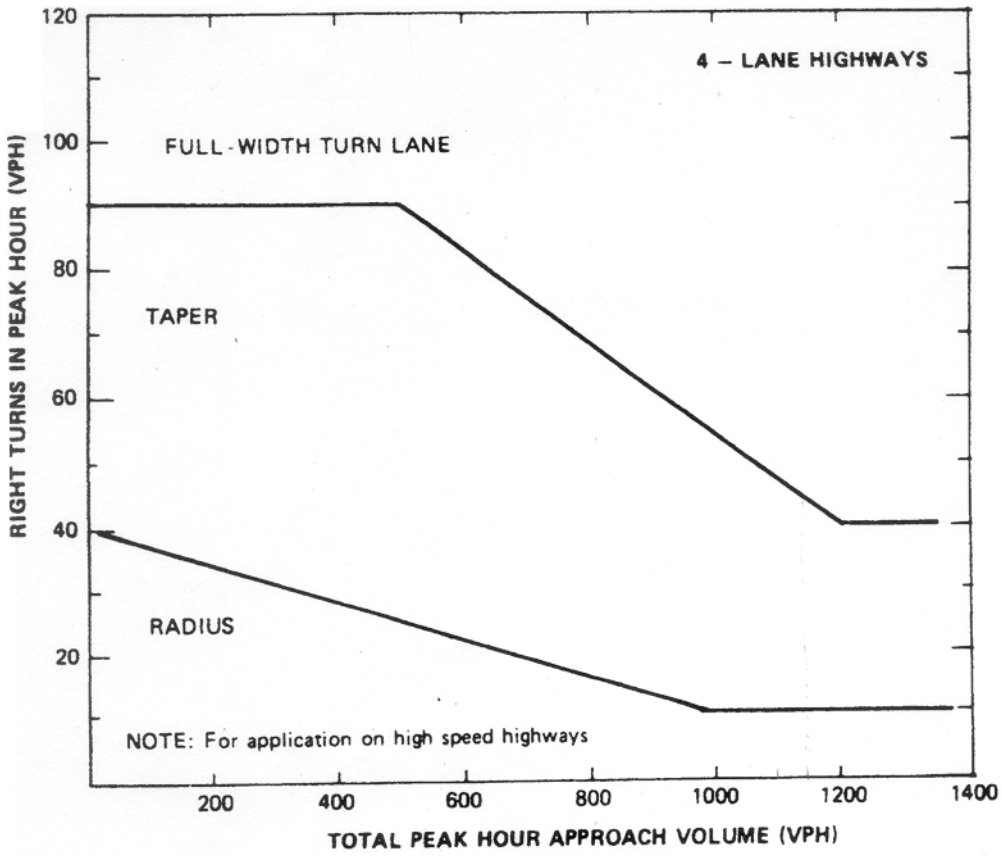


Figure 4-23. Traffic volume guidelines for design of right-turn lanes. (Source: Ref. *4-11*)

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR 1920** ROAD NAME: **MAPLE RD**
DIRECTION: Eastbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 36
DATE OF COUNT: 08/30/2010
NOTES LANE 0: EB 2 Lanes - 45 MPH

COUNT TAKEN BY: ORG CODE: HMM INITIALS: TCV

FROM: **MILLERSPORT HY**
REC. SERIAL #: 1564
PLACEMENT: 80 YDS W OF DONNA LEA
@ REF MARKER:
ADDL DATA:
COUNT TYPE: VEHICLES

PROCESSED BY: ORG CODE: DOT INITIALS: TMK

TO: **N FOREST RD**
FUNC. CLASS: 14
NHS: no
JURIS: County
CC Stn:
BATCH ID: DOT-Week 17

COUNTY: **Erie**
TOWN: **AMHERST**
LION#:
BIN: 3326390
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
30	M																											
31	T																											
1	W												**751**	**763**	**760**	**754**	**842**	**803**	**830**	**765**	**567**	**546**	**358**	**250**	**171**			
2	T	**77**	**32**	**21**	**12**	**32**	**82**	**269**	**765**	**858**	**736**	**715**	**698**	**796**	**771**	**767**	**823**	**844**	**855**	**933**	**610**	**467**	**330**	**269**	**173**	11935	933	18
3	F	**85**	**31**	**20**	**16**	**14**	**76**	**231**	**665**	**869**	**655**	**739**	**750**															

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	ADT
81	**32**	**20**	**14**	**23**	**79**	**250**	**715**	**864**	**696**	**727**	**733**	**780**	**766**	**760**	**832**	**824**	**842**	**849**	**588**	**506**	**344**	**260**	**172**	**11757**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
2	49	2	49	864	7%	1.000	1.099

ESTIMATED (one way)

AADT
10698

New York State Department of Transportation

Traffic Count Hourly Report

ROAD #: **CR 1920** ROAD NAME: **MAPLE RD** FROM: **MILLERSPORT HY** TO: **N FOREST RD** COUNTY: **Erie**
DIRECTION: Westbound FACTOR GROUP: 30 REC. SERIAL #: 1564 FUNC. CLASS: 14 TOWN: **AMHERST**
STATE DIR CODE: 2 WK OF YR: 36 PLACEMENT: 80 YDS W OF DONNA LEA NHS: no LION#:
DATE OF COUNT: 08/30/2010 @ REF MARKER: JURIS: County BIN: 3326390
NOTES LANE 0: WB 2 Lanes - 45 MPH ADDL DATA: CC Stn: RR CROSSING:
COUNT TYPE: VEHICLES BATCH ID: DOT-Week 17 HPMS SAMPLE:
COUNT TAKEN BY: ORG CODE: HMM INITIALS: TCV PROCESSED BY: ORG CODE: DOT INITIALS: TMK

		AM												PM													
DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
30	M																										
31	T																										
1	W												**742**	**791**	**789**	**816**	**882**	**1050**	**1103**	**825**	**673**	**631**	**503**	**301**	**174**			
2	T	**69**	**40**	**25**	**31**	**36**	**107**	**268**	**543**	**659**	**590**	**574**	**756**	**802**	**800**	**797**	**900**	**1066**	**1067**	**749**	**655**	**646**	**618**	**504**	**192**	12494	1067	17
3	F	**79**	**46**	**30**	**34**	**24**	**110**	**239**	**476**	**617**	**535**	**677**	**770**														

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
74	**43**	**28**	**32**	**30**	**108**	**254**	**510**	**638**	**562**	**626**	**756**	**796**	**794**	**806**	**891**	**1058**	**1085**	**787**	**664**	**638**	**560**	**402**	**183**	**12325**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
2	49	2	49	1085	9%	1.000	1.099

ESTIMATED (one way)

AADT
11215

New York State Department of Transportation

Traffic Count Hourly Report

ROUTE #: **NY 324** ROAD NAME:
DIRECTION: Eastbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 39
DATE OF COUNT: 09/27/2011
NOTES LANE 0: Two Lanes EB - 40 MPH

COUNT TAKEN BY: ORG CODE: TST INITIALS: GNL

FROM: **ACC RT 290I YOUNGMANN EXPY** TO: **RT 277 N FOREST RD**
REC. SERIAL #: 0023 FUNC. CLASS: 14
PLACEMENT: 600' E of Fenwick Rd NHS: no
@ REF MARKER: JURIS: NYSDOT
ADDL DATA: CC Stn:
COUNT TYPE: AXLE PAIRS BATCH ID: DOT-R05CW 40
PROCESSED BY: ORG CODE: R05 INITIALS: RPJ

COUNTY: **Erie**
TOWN: **AMHERST**
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	F																											
3	S																											
4	S																											
5	M																											
6	T																											
7	W																											
8	T																											
9	F																											
10	S																											
11	S																											
12	M																											
13	T																											
14	W																											
15	T																											
16	F																											
17	S																											
18	S																											
19	M																											
20	T																											
21	W																											
22	T																											
23	F																											
24	S																											
25	S																											
26	M																											
27	T			**21**	**28**	**32**	**123**	**427**	**1458**	**2300**	**1461**	**1293**	**1194**	**1388**	**1393**	**1561**	**1687**	**1843**	**2065**	**1578**	**1096**	**737**	**585**	**344**	**208**			
28	W	**104**	**60**	**46**	**42**	**42**	**119**	**454**	**1514**	**2196**	**1634**	**1214**	**1335**	**1414**	**1388**	**1483**	**1697**					**793**	**600**	**434**	**182**			
29	T	**109**	**60**	**39**	**32**	**41**	**125**	**475**	**1489**	**2244**	**1313**	**1195**	**1239**	**1388**	**1554**	**1521**	**1588**	**1785**	**1970**	**1517**	**1030**	**811**	**676**	**404**	**267**	22872	2244	8
30	F	**125**	**71**	**51**	**50**																							
		110	**62**	**38**	**37**	**37**	**119**	**441**	**1450**	**2191**	**1432**	**1203**	**1225**	**1362**	**1409**	**1484**	**1616**	**1769**	**1968**	**1509**	**1036**	**760**	**604**	**384**	**214**	**ADT 22460**		

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	70	4	70	2191	10%	0.975	1.068

ESTIMATED (one way)

AADT
21030

New York State Department of Transportation

Traffic Count Hourly Report

ROUTE #: **NY 324** ROAD NAME:
DIRECTION: Westbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 39
DATE OF COUNT: 09/27/2011
NOTES LANE 0: Two Lanes WB - 40 MPH

COUNT TAKEN BY: ORG CODE: TST INITIALS: GNL

FROM: **ACC RT 290I YOUNGMANN EXPY** TO: **RT 277 N FOREST RD**
REC. SERIAL #: 0023 FUNC. CLASS: 14
PLACEMENT: 600' E of Fenwick Rd NHS: no
@ REF MARKER: JURIS: NYSDOT
ADDL DATA: CC Stn:
COUNT TYPE: AXLE PAIRS BATCH ID: DOT-R05CW 40
PROCESSED BY: ORG CODE: R05 INITIALS: RPJ

COUNTY: **Erie**
TOWN: **AMHERST**
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1 AM	1 TO 2 AM	2 TO 3 AM	3 TO 4 AM	4 TO 5 AM	5 TO 6 AM	6 TO 7 AM	7 TO 8 AM	8 TO 9 AM	9 TO 10 AM	10 TO 11 AM	11 TO 12 AM	12 TO 1 PM	1 TO 2 PM	2 TO 3 PM	3 TO 4 PM	4 TO 5 PM	5 TO 6 PM	6 TO 7 PM	7 TO 8 PM	8 TO 9 PM	9 TO 10 PM	10 TO 11 PM	11 TO 12 PM	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
1	T																											
2	F																											
3	S																											
4	S																											
5	M																											
6	T																											
7	W																											
8	T																											
9	F																											
10	S																											
11	S																											
12	M																											
13	T																											
14	W																											
15	T																											
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17	S																											
18	S																											
19	M																											
20	T																											
21	W																											
22	T																											
23	F																											
24	S																											
25	S																											
26	M																											
27	T			**35**	**27**	**43**	**87**	**395**	**1126**	**1569**	**1245**	**1130**	**1090**	**1218**	**1226**	**1385**	**1556**	**1634**	**1747**	**1395**	**1099**	**800**	**646**	**393**	**246**			
28	W	**107**	**64**	**36**	**27**	**49**	**106**	**365**	**1151**	**1533**	**1291**	**1176**	**1122**	**1326**	**1243**	**1425**	**1450**					**773**	**716**	**475**	**242**			
29	T	**121**	**55**	**39**	**24**	**33**	**102**	**363**	**1110**	**1379**	**1257**	**1177**	**1311**	**1314**	**1225**	**1314**	**1431**	**1676**	**1803**	**1417**	**1091**	**826**	**714**	**451**	**273**	20506	1803	17
30	F	**149**	**57**	**39**	**30**																							

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

																									ADT
123	**58**	**36**	**26**	**41**	**96**	**365**	**1101**	**1457**	**1232**	**1132**	**1145**	**1254**	**1200**	**1341**	**1442**	**1614**	**1731**	**1371**	**1068**	**780**	**675**	**429**	**248**	**19965**

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor
4	70	4	70	1731	9%	0.975	1.068

ESTIMATED (one way)

AADT
18694

Traffic Signal Warrant Analysis

Maple Road - Proposed North Site Driveway

Town of Amherst, Erie County

Hour			Existing Fluctuation in Artery Volumes				**Full Development Artery Volume on Maple Rd. at North Site Driveway**	Hourly Fluctuation of office driveway traffic	**Total Hourly Volumes Exiting Proposed Driveway**
			per NYSDOT count on Maple Rd.	per NYSDOT count on Maple Rd.	per NYSDOT count on Maple Rd.	Hourly Fluctuation			
			EB	WB	Two-Way	Two-Way	**Total**	**Total**	
7:00 AM	to	8:00 AM	715	510	1225	5.59%	**1533**	0.80%	**6**
8:00 AM	to	9:00 AM	864	638	1502	6.85%	**1880**	1.94%	**137**
9:00 AM	to	10:00 AM	696	562	1258	5.74%	**1575**	4.00%	**32**
10:00 AM	to	11:00 AM	727	626	1353	6.17%	**1694**	5.36%	**43**
11:00 AM	to	12:00 PM	733	756	1489	6.80%	**1864**	9.61%	**76**
12:00 PM	to	1:00 PM	780	796	1576	7.19%	**1973**	12.27%	**98**
1:00 PM	to	2:00 PM	766	794	1560	7.12%	**1953**	6.19%	**49**
2:00 PM	to	3:00 PM	760	806	1566	7.15%	**1960**	6.89%	**55**
3:00 PM	to	4:00 PM	832	891	1723	7.86%	**2157**	8.27%	**66**
4:00 PM	to	5:00 PM	824	1058	1882	8.59%	**2356**	14.25%	**113**
5:00 PM	to	6:00 PM	842	1085	1927	8.79%	**2412**	16.73%	**133**
6:00 PM	to	7:00 PM	849	787	1636	7.47%	**2048**	6.26%	**50**
7:00 PM	to	8:00 PM	588	664	1252	5.71%	**1567**	2.65%	**21**
8:00 PM	to	9:00 PM	506	638	1144	5.22%	**1432**	1.94%	**15**
9:00 PM	to	10:00 PM	344	560	904	4.13%	**1132**	1.15%	**9**
10:00 PM	to	11:00 PM	260	402	662	3.02%	**829**	0.54%	**4**
					21,913		27,428		**795**

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Traffic Signal Warrant Analysis

Sheridan Drive - Proposed South Site Full Access Driveway

Town of Amherst, Erie County

Hour			Existing Fluctuation in Artery Volumes				**Full Development Artery Volume on Sheridan Dr. at South Site Full Access Driveway**	Hourly Fluctuation of office driveway traffic	**Total Hourly Volumes Exiting Proposed Driveway**
			per NYSDOT count on Sheridan Dr.	per NYSDOT count on Sheridan Dr.	per NYSDOT count on Sheridan Dr.	Hourly Fluctuation			
			EB	WB	Two-Way	Two-Way	**Total**	**Total**	
7:00 AM	to	8:00 AM	1450	1101	2551	6.42%	**2411**	0.80%	**16**
8:00 AM	to	9:00 AM	2191	1457	3648	9.18%	**3448**	1.94%	**225**
9:00 AM	to	10:00 AM	1432	1232	2664	6.71%	**2518**	4.00%	**80**
10:00 AM	to	11:00 AM	1203	1132	2335	5.88%	**2207**	5.36%	**107**
11:00 AM	to	12:00 PM	1225	1145	2370	5.97%	**2240**	9.61%	**192**
12:00 PM	to	1:00 PM	1362	1254	2616	6.59%	**2472**	12.27%	**246**
1:00 PM	to	2:00 PM	1409	1200	2609	6.57%	**2466**	6.19%	**124**
2:00 PM	to	3:00 PM	1484	1341	2825	7.11%	**2670**	6.89%	**138**
3:00 PM	to	4:00 PM	1616	1442	3058	7.70%	**2890**	8.27%	**166**
4:00 PM	to	5:00 PM	1769	1614	3383	8.52%	**3197**	14.25%	**285**
5:00 PM	to	6:00 PM	1968	1731	3699	9.31%	**3496**	16.73%	**335**
6:00 PM	to	7:00 PM	1509	1371	2880	7.25%	**2722**	6.26%	**125**
7:00 PM	to	8:00 PM	1036	1068	2104	5.30%	**1989**	2.65%	**53**
8:00 PM	to	9:00 PM	760	780	1540	3.88%	**1455**	1.94%	**39**
9:00 PM	to	10:00 PM	604	675	1279	3.22%	**1209**	1.15%	**23**
10:00 PM	to	11:00 PM	384	429	813	2.05%	**768**	0.54%	**11**
					39,724		37,544		**2,002**

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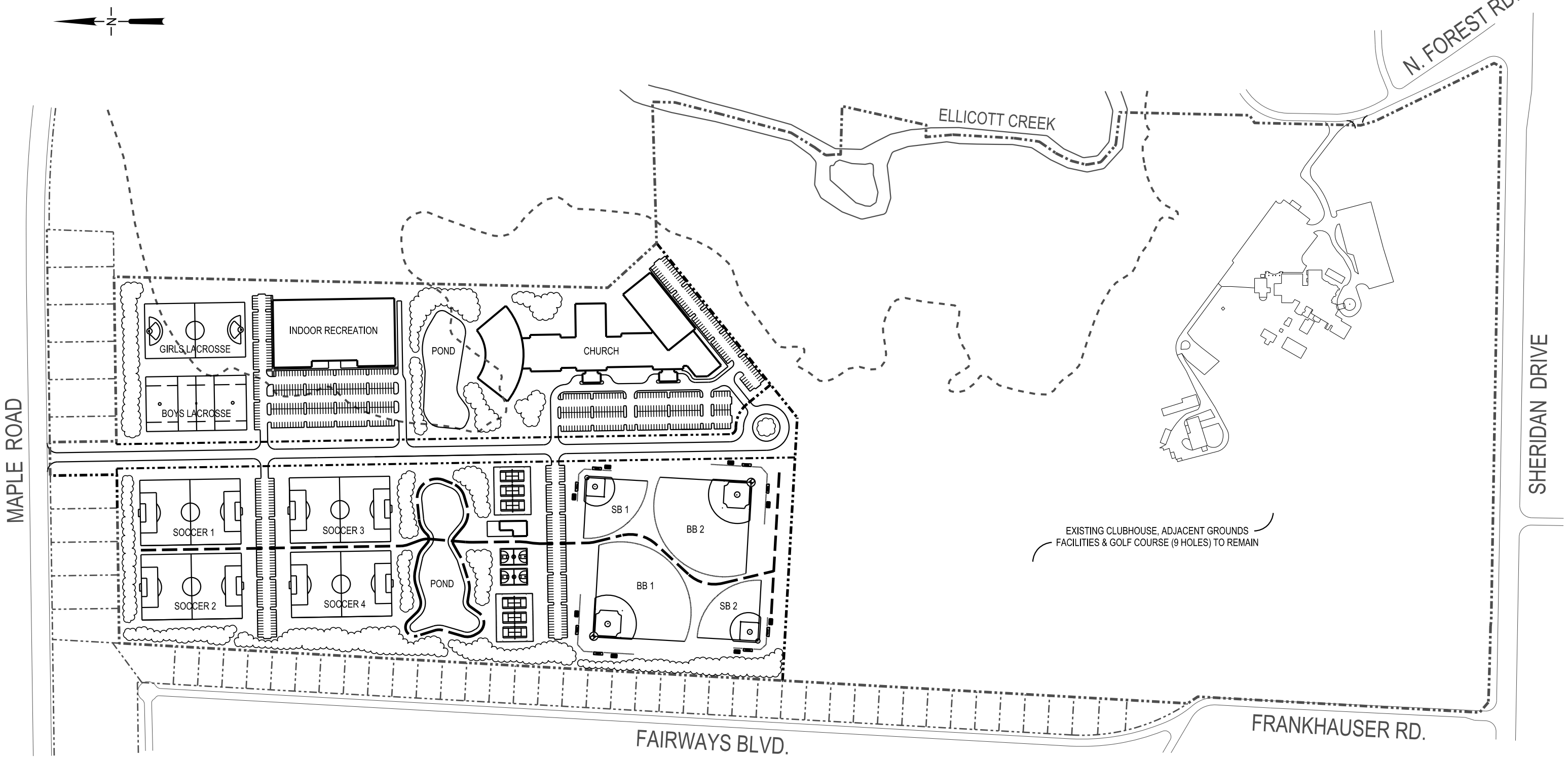
Traffic Engineering & Planning Consultants

Project Information	
Project Name:	Westwood Alts
No:	33042.1
Date:	2/5/2015
Analyst's Name:	DLK
Edition:	ITE-TGM 9th Edition

Alternative Plan No.	Land Use	Size	AM Peak Hour		PM Peak Hour	
			Entry	Exit	Entry	Exit
1	**560 - Church**	136.77 1000 Sq. Feet Gross Floor Area	48	29	36	39
	492 - Health/Fitness Club	89 1000 Sq. Feet Gross Floor Area	63	62	169	128
	488 - Soccer Complex	4 Fields	2	2	48	23
	Sub-total		**113**	**93**	**253**	**190**
2	**252 - Senior Adult Housing - Attached**	112 Dwelling Units	7	15	16	13
	252 - Senior Adult Housing - Attached - 1	262 Dwelling Units	18	34	35	30
	254 - Assisted Living	575 Beds	53	28	56	71
	566 - Cemetery	17.5 Acres	2	1	5	10
	252 - Senior Adult Housing - Attached - 2	228 Dwelling Units	15	30	30	26
	Sub-total		**95**	**108**	**142**	**150**
3	**210 - Single-Family Detached Housing**	320 Dwelling Units	60	180	188	111
	Sub-total		**60**	**180**	**188**	**111**
4	**561 - Synagogue**	25 1000 Sq. Feet Gross Floor Area	0	0	20	22
	230 - Residential Condominium/Townhouse - 1	114 Dwelling Units	9	41	40	19
	210 - Single-Family Detached Housing - 3	47 Dwelling Units	9	26	30	17
	210 - Single-Family Detached Housing - 2	150 Dwelling Units	28	85	95	55
	224 - Rental Townhouse	56 Dwelling Units	13	26	20	20
	230 - Residential Condominium/Townhouse	51 Dwelling Units	4	18	18	9
	820 - Shopping Center	97.9 1000 Sq. Feet Gross Leasable Area	58	36	174	189
	220 - Apartment	220 Dwelling Units	22	90	88	48
	310 - Hotel	85 Occupied Rooms	33	24	29	31
	210 - Single-Family Detached Housing - 1	146 Dwelling Units	28	82	92	54
	720 - Medical-Dental Office Building	120.7 1000 Sq. Feet Gross Floor Area	228	60	97	248
	Sub-total		**432**	**488**	**703**	**712**
5	**220 - Apartment**	252 Dwelling Units	25	102	101	55
	820 - Shopping Center	433.51 1000 Sq. Feet Gross Leasable Area	236	145	768	833
	9299 - Student Housing	440 Dwelling Units	11	50	125	73
	Sub-total		**272**	**297**	**994**	**961**
6	**760 - Research and Development Center**	1212.5 1000 Sq. Feet Gross Floor Area	945	193	157	890
	Sub-total		**945**	**193**	**157**	**890**
7	**220 - Apartment - 1**	280 Dwelling Units	29	114	113	61
	310 - Hotel - 1	85 Occupied Rooms	33	24	29	31
	210 - Single-Family Detached Housing - 4	72 Dwelling Units	14	40	45	27
	710 - General Office Building	200 1000 Sq. Feet Gross Floor Area	275	37	51	247
	820 - Shopping Center - 1	111 1000 Sq. Feet Gross Leasable Area	66	41	198	214
	230 - Residential Condominium/Townhouse - 2	93 Dwelling Units	7	34	32	16
	210 - Single-Family Detached Housing - 5	117 Dwelling Units	22	66	74	43
	210 - Single-Family Detached Housing - 6	47 Dwelling Units	9	26	30	17
	224 - Rental Townhouse - 1	87 Dwelling Units	20	41	32	31
	254 - Assisted Living	200 Beds	18	10	19	25
	252 - Senior Adult Housing - Attached	96 Dwelling Units	6	13	13	11
	561 - Synagogue	25 1000 Sq. Feet Gross Floor Area	0	0	20	22
	Sub-total		**499**	**446**	**656**	**745**



LEGEND

INDOOR RECREATION = 89,112± SF (INCL. CONCESSION BLDG.)
CHURCH = 136,772± SF

WESTWOOD RECREATIONAL = 513 PARKING SPACES
CHURCH PARKING = 302 SPACES

NOTES

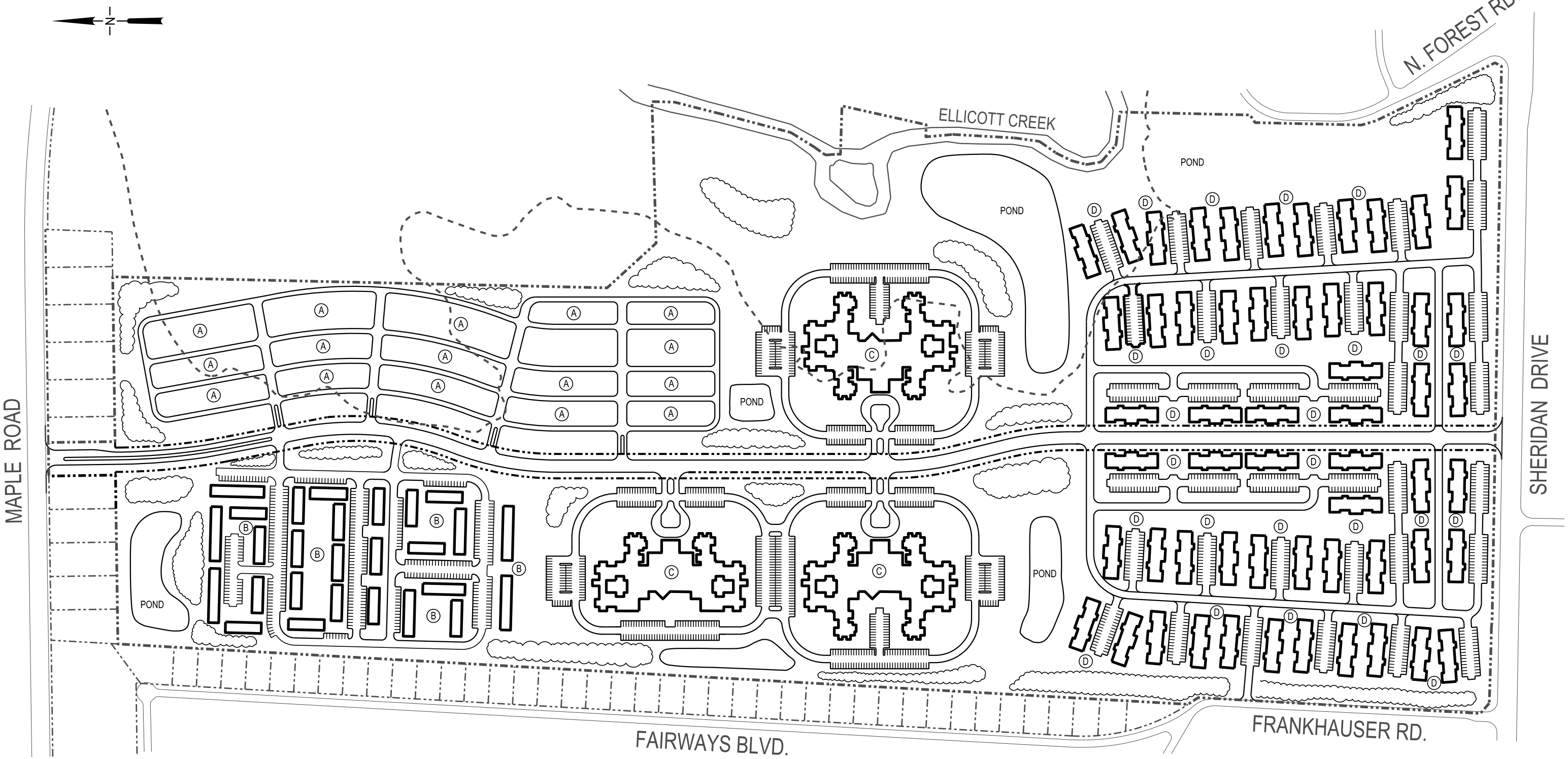
1. STANDARD RIGHT-OF-WAY WIDTH = 80'
2 . OPEN SPACE = 149 ACRES OR 87% OF TOTAL PARCEL (171 ACRES)

WESTWOOD

ALTERNATIVE PLAN NO. 1
CURRENT RECREATION CONSERVATION DISTICT (RC) PLAN

FIGURE 3-1 - FEBRUARY, 2015

C&S Engineers, Inc.
141 Elm Street, Suite 100
Buffalo, New York 14203
Phone: 716-847-1630
Fax: 716-847-1454
www.cscos.com



LEGEND

WESTWOOD RESIDENTIAL	QUANTITY:
A - CEMETERY	17.5± ACRES
B - SENIOR APARTMENTS	112 UNITS
C - SENIOR LIVING FACILITY	ASSIST. LIVING 575 / INDEPENDENT 262
D - SENIOR APATMENTS	228 UNITS

NOTES

1. WESTWOOD PARKWAY WIDTH = 80'
2. PUBLIC RIGHT-OF-WAY WIDTH = 50 '
3. OPEN SPACE = 104.0± ACRES OR 61% OF TOTAL PARCEL (171 ACRES)

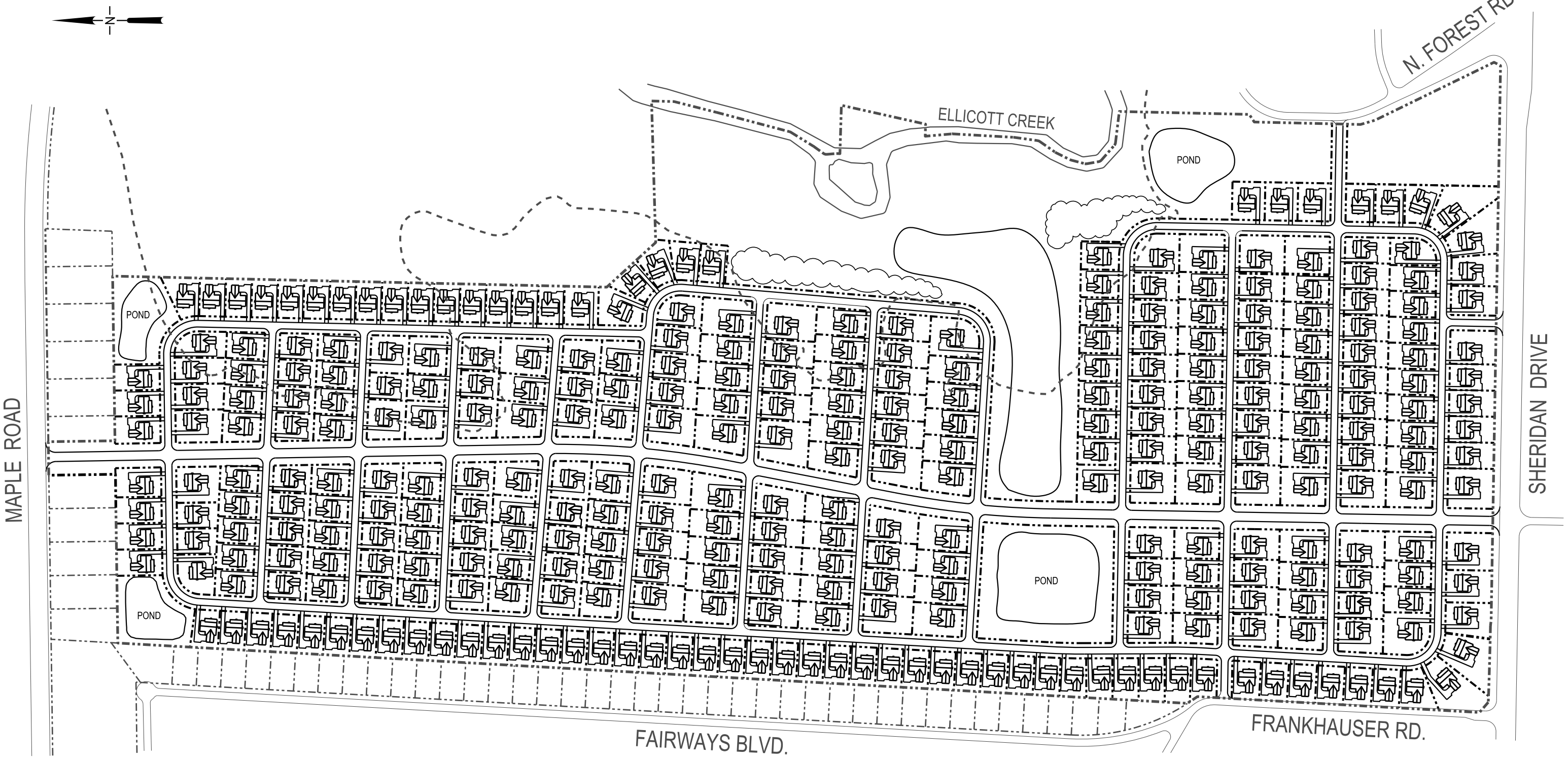
WESTWOOD

ALTERNATIVE NO. 2

COMMUNITY FACILITIES DISTRICT (CF) PLAN

FIGURE 3-2 - FEBRUARY, 2015

C&S COMPANIES®
C&S Engineers, Inc.
141 Elm Street, Suite 100
Buffalo, New York 14203
Phone: 716-847-1630
Fax: 716-847-1454
www.cscos.com



LEGEND

WESTWOOD RESIDENTIAL - 320 SINGLE FAMILY LOTS

NOTES

1. STANDARD ROADWAY WIDTH = 50'
2 . OPEN SPACE = 33.9 ACRES OR 20% OF TOTAL PARCEL (171 ACRES)

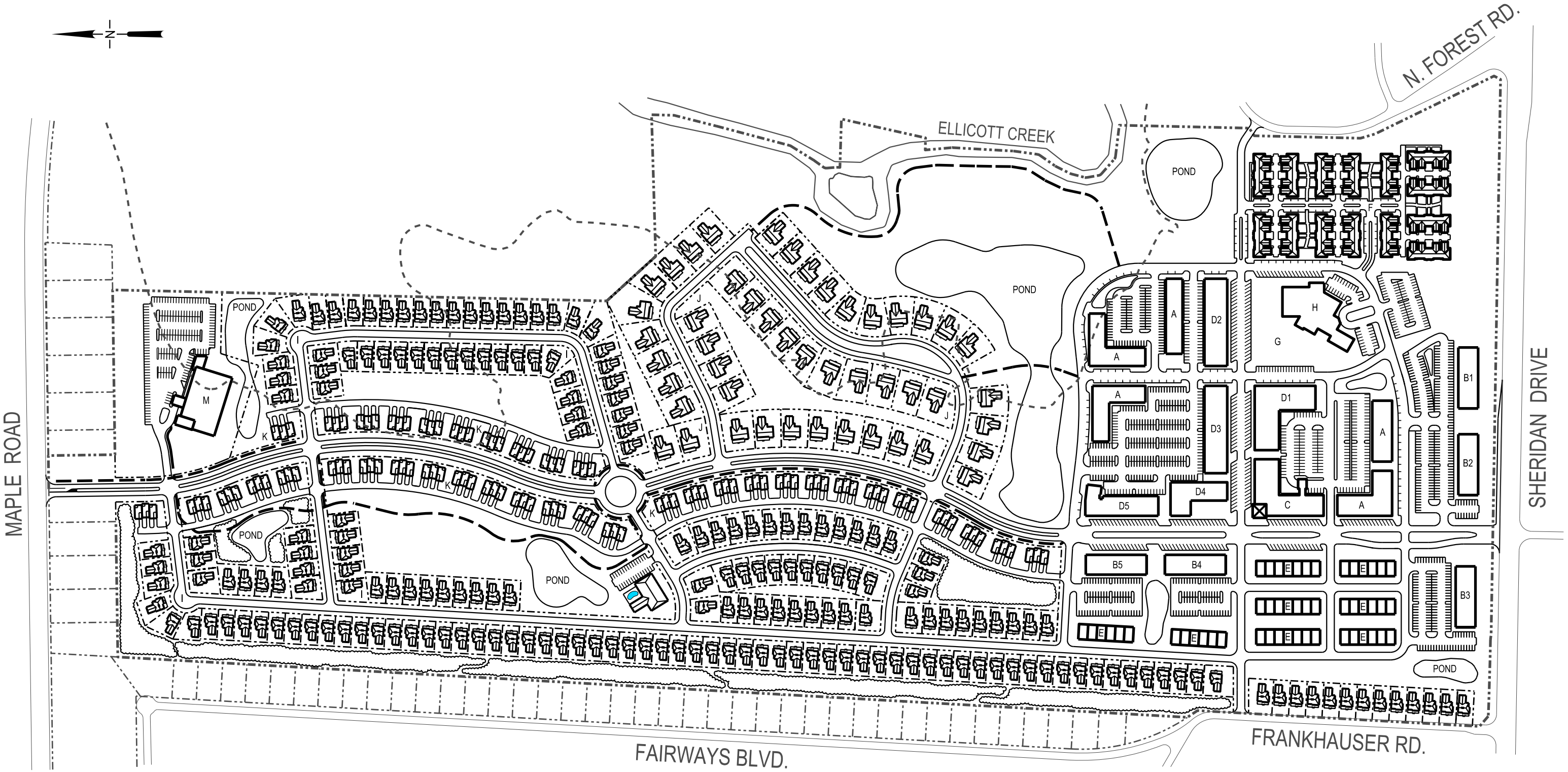
WESTWOOD

ALTERNATIVE NO. 3

RESIDENTIAL DESTRICT THREE (R-3) PLAN

FIGURE 3-3 - FEBRUARY, 2015

C&S COMPANIES®
C&S Engineers, Inc.
141 Elm Street, Suite 100
Buffalo, New York 14203
Phone: 716-847-1630
Fax: 716-847-1454
www.cscos.com



LEGEND

WESTWOOD NEIGHBORHOOD CENTER	DESCRIPTION	PARKING
A OFFICE	120,700 S.F.	400 SPACES
B RESIDENTIAL	146 UNITS	507 SPACES
C HOTEL	130 ROOMS	77 SPACES
D MULTI FAMILY OVER NEIGHBORHOOD BUSINESS	220 MFU'S / 97,900 SF NBO	330 SPACES
E TOWNHOMES	51 UNITS	GARAGE
F TOWNHOMES	56 UNITS	N/A
G EVENT SPACE	1.2 ACRES	74 SPACES
H EXISTING CLUBHOUSE	N/A	42 SPACES

RESIDENTIAL BREAKDOWN
B1 - 13,000 S.F. (2 STORY)
B2 - 13,000 S.F. (2 STORY)
B3 - 13,000 S.F. (2 STORY)
B4 - 13,000 S.F. (2 STORY)
B5 - 13,000 S.F. (2 STORY)
D1 - 26,500 S.F. (3 STORY)
D2 - 18,300 S.F. (3 STORY)
D3 - 21,500 S.F. (3 STORY)
D4 - 14,500 S.F. (3 STORY)
D5 - 17,100 S.F. (3-STORY)

WESTWOOD RESIDENTIAL	DESCRIPTION	PARKING
I PATIO HOME LOTS	150 UNITS	GARAGE
J LARGER LOTS - SINGLE FAMILY	47 UNITS	GARAGE
K TOWNHOMES	114 UNITS	GARAGE
ADDITIONAL USES		
M SYNAGOGUE	25,000 S.F.	184 SPACES

OPEN SPACE CALCULATION

OPEN SPACE + 64 ACRES OR 37% OF TOTAL PARCEL (171 ACRES)

WESTWOOD

ALTERNATIVE PLAN NO. 4
TRANSITIONAL RESIDENTIAL PLAN

FIGURE 3-4 - FEBRUARY, 2015

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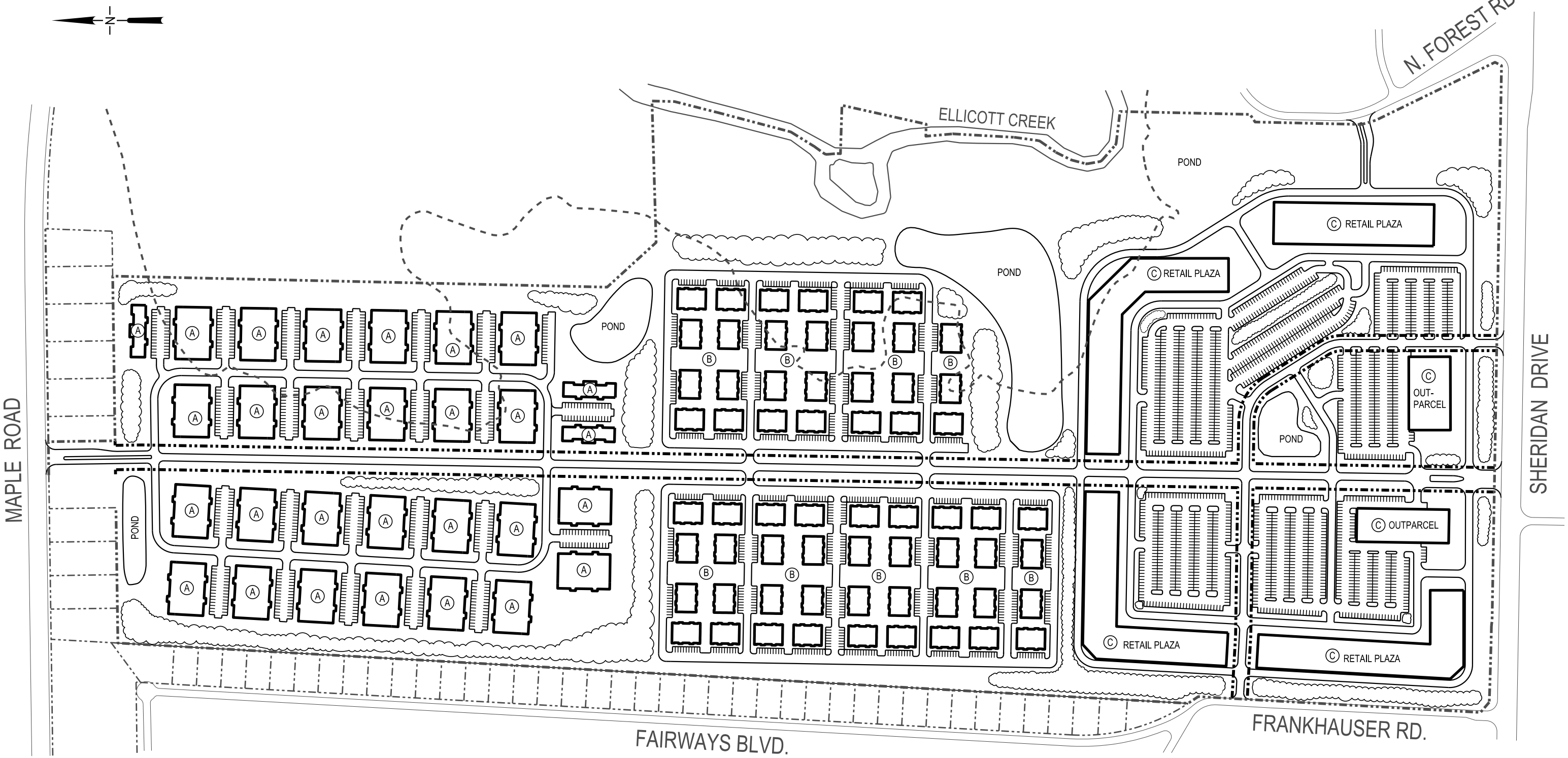
C&S Engineers, Inc.
141 Elm Street, Suite 100
Buffalo, New York 14203
Phone: 716-847-1630
Fax: 716-847-1454
www.cscos.com



LEGEND

TYPE:	QUANTITY:
A - STUDENT HOUSING	440 UNITS
B - MULTI FAMILY HOUSING	252 UNITS
C - RETAIL PLAZA / OUT PARCELS	433,507 S.F.

NOTES

1. TOTAL PARKING SPACES WITHIN RETAIL PLAZA = 1,812
2. PUBLIC RIGHT-OF-WAY WIDTH = 80' NORTH TO SOUTH
3. PUBLIC RIGHT-OF-WAY WIDTH = 50 ' EAST TO WEST
4. OPEN SPACE = 49 ACRES OR 29% OF TOTAL PARCEL (171 ACRES)

WESTWOOD

ALTERNATIVE NO. 5

GENERAL BUSINESS (GB) PLAN

FIGURE 3-5 - FEBRUARY, 2015

C&S COMPANIES®
C&S Engineers, Inc.
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Buffalo, New York 14203
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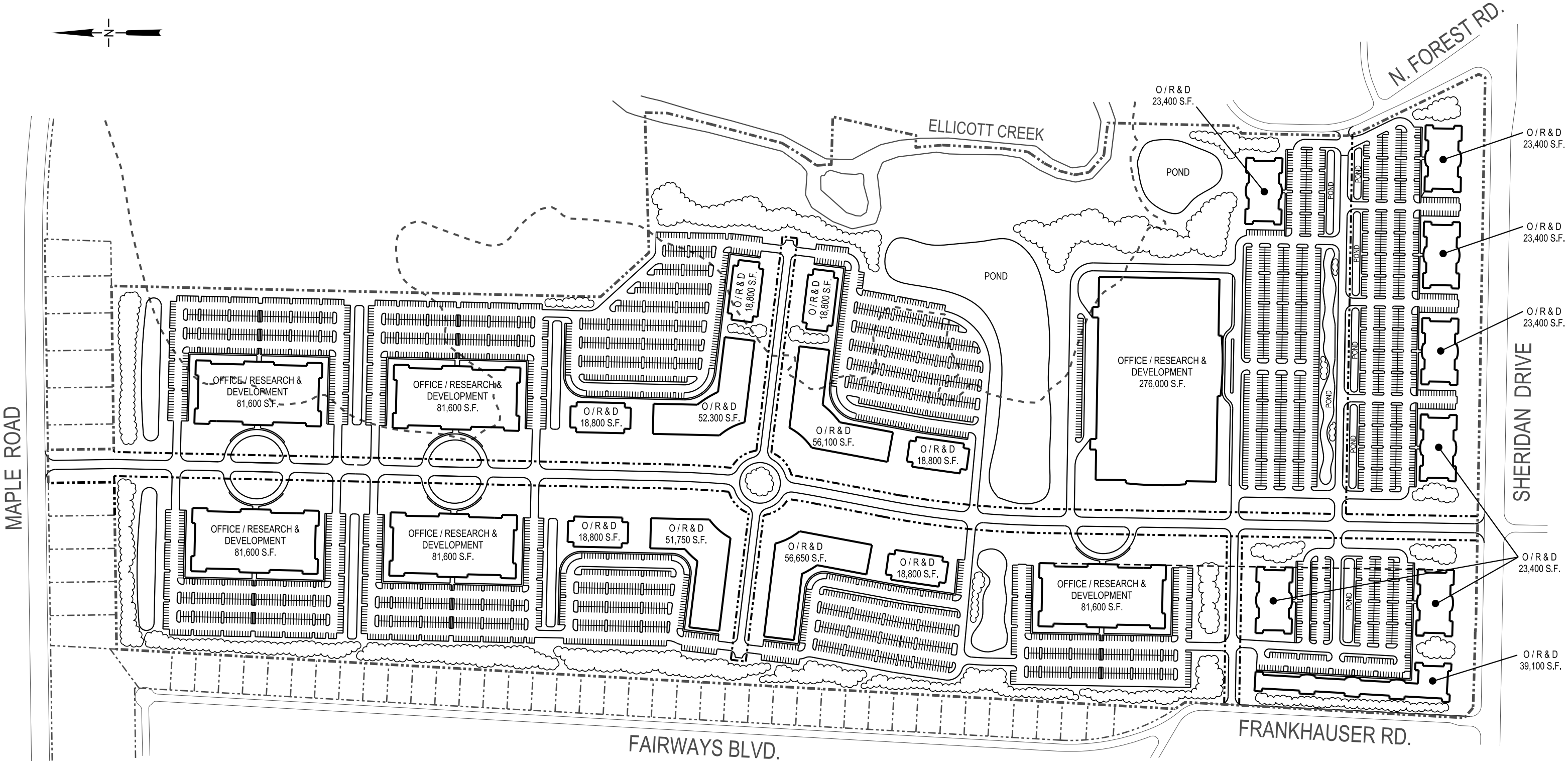

LEGEND

OFFICE / RESEARCH & DEVELOPMENT SPACE = 1,212,500± S.F.
TOTAL PARKING = 5,624 SPACES

NOTES

1. STANDARD ROADWAY WIDTH (PARKWAY) = 80'
2. STANDARD ROADWAY WIDTH (OTHER) = 50'
3 . OPEN SPACE = 54.5 ACRES OR 32% OF TOTAL PARCEL (171 ACRES)

WESTWOOD

ALTERNATIVE NO. 6

OFFICE BUILDING DISTRICT (OB)PLAN

FIGURE 3-6 - FEBRUARY, 2015

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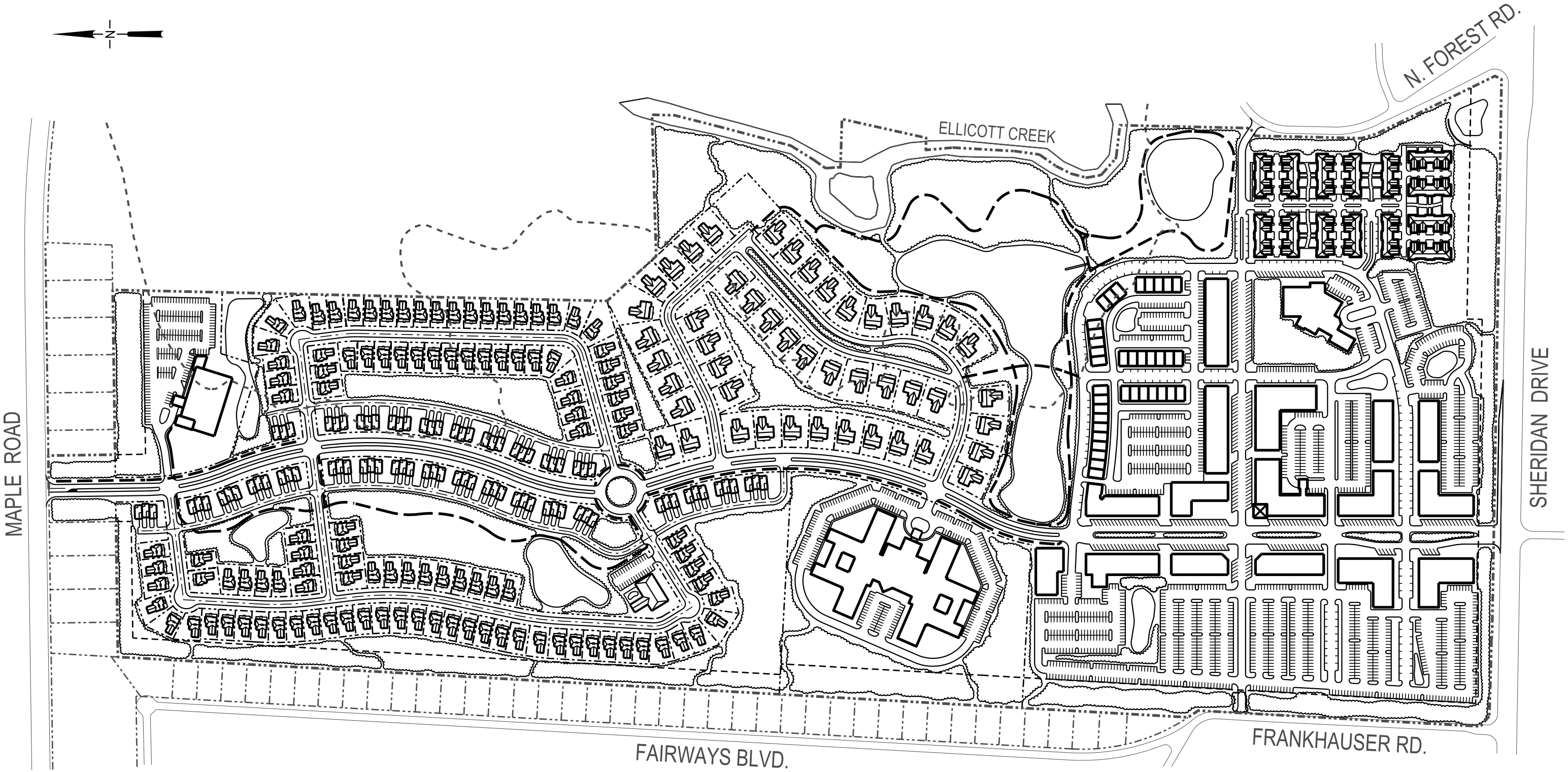

LEGEND

WESTWOOD NEIGHBORHOOD CENTER	DESCRIPTION	PARKING	RESIDENTIAL BREAKDOWN
A OFFICE	200,000 S.F.	652 SPACES	B1 - 21,500 S.F. (2 STORY)
B RESIDENTIAL	72 UNITS	165 SPACES	B2 - 12,400 S.F. (2 STORY)
C HOTEL	130 ROOMS	81 SPACES	D1 - 21,500 S.F. (3 STORY)
			D2 - 26,500 S.F. (3 STORY)
D MULTI FAMILY OVER NEIGHBORHOOD BUSINESS	280 MFU'S / 111,000 NBO	848 SPACES	D3 - 17,400 S.F. (3 STORY)
E TOWNHOMES	37 UNITS	105 SPACES	D4 - 14,500 S.F. (3 STORY)
F TOWNHOMES	56 UNITS	GARAGE	D5 - 18,300 S.F. (3 STORY)
G EVENT SPACE	1.2 ACRES	N/A	D6 - 12,500 S.F. (3 STORY)
H EXISTING CLUBHOUSE	N/A	66 SPACES	D7 - 15,000 S.F. (3 STORY)

WESTWOOD RESIDENTIAL	DESCRIPTION	PARKING
I PATIO HOME LOTS	117 UNITS	GARAGE
J LARGER LOTS - SINGLE FAMILY	47 UNITS	GARAGE
K TOWNHOMES	87 UNITS	GARAGE
L SENIOR LIVING FACILITY	ASSISTED LIVING 200 / INDENPENDENT 96	182 SPACES
ADDITIONAL USES		
M SYNAGOGUE	25,000 S.F.	184 SPACES

WESTWOOD

ALTERNATIVE NO. 7
ALTERNATIVE ACCESS PLAN

FIGURE 3-7 - FEBRUARY, 2015

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A3

Level of Service:
Criteria and Definitions

Level of Service Criteria

Highway Capacity Manual 2010

SIGNALIZED INTERSECTIONS

Level of Service is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. Level of Service for signalized intersections is defined in terms of delay specifically, average total delay per vehicle for a 15 minute analysis period. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 20
C	20 – 35
D	35 – 55
E	55 – 80
F	>80

UNSIGNALIZED INTERSECTIONS

Level of Service for unsignalized intersections is also defined in terms of delay. However, the delay criteria are different from a signalized intersection. The primary reason for this is driver expectation that a signalized intersection is designed to carry higher volumes than an unsignalized intersection. The total delay threshold for any given Level of Service is less for an unsignalized intersection than for a signalized intersection. The ranges are as follows:

Level of Service	Control Delay per vehicle (seconds)
A	< 10
B	10 – 15
C	15 – 25
D	25 – 35
E	35 - 50
F	>50

A4

Level of Service Calculations: Existing Conditions

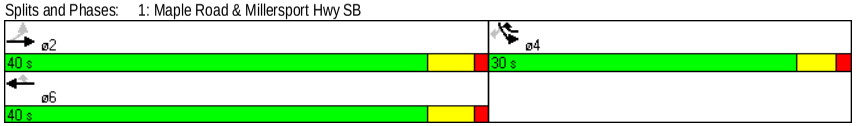
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	18	545	758	297	25	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150			150	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	35			100	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.353				0.950	
Satd. Flow (perm)	658	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						104
Link Speed (mph)		45	45		30	
Link Distance (ft)		555	654		281	
Travel Time (s)		8.4	9.9		6.4	
Peak Hour Factor	0.91	0.91	0.96	0.96	0.78	0.78
Adj. Flow (vph)	20	599	790	309	32	104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	599	790	309	32	104
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane			Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm			pm+ov		Perm
Protected Phases		2	6	4	4	
Permitted Phases	2			6		4
Detector Phase	2	2	6	4	4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	1.0	1.0	1.0
Minimum Split (s)	9.1	9.1	9.1	6.2	6.2	6.2
Total Split (s)	40.0	40.0	40.0	30.0	30.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	42.9%	42.9%	42.9%
Maximum Green (s)	34.9	34.9	34.9	25.4	25.4	25.4
Yellow Time (s)	3.9	3.9	3.9	3.2	3.2	3.2
All-Red Time (s)	1.2	1.2	1.2	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	4.6	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	52.9	52.9	52.9	70.0	7.4	7.4
Actuated g/C Ratio	0.76	0.76	0.76	1.00	0.11	0.11
v/c Ratio	0.04	0.22	0.30	0.20	0.17	0.40
Control Delay	2.8	2.9	3.2	0.3	29.7	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.8	2.9	3.2	0.3	29.7	11.4
LOS	A	A	A	A	C	B
Approach Delay		2.9	2.4		15.7	
Approach LOS		A	A		B	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.40
Intersection Signal Delay: 3.5 Intersection LOS: A
Intersection Capacity Utilization 34.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Maple Road & Millersport Hwy SB



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	529	0	0	912	51	143	1	452	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	50		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.992			0.850				
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	3539	0	0	3511	0	1770	1583	0	0	0	0
Flt Permitted	0.243						0.950					
Satd. Flow (perm)	453	3539	0	0	3511	0	1770	1583	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					14			291				
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		654			1770			319			263	
Travel Time (s)		9.9			26.8			7.3			6.0	
Peak Hour Factor	0.85	0.85	0.85	0.93	0.93	0.93	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	48	622	0	0	981	55	154	1	486	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	622	0	0	1036	0	154	487	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2				
Detector Template	Left	Thru			Thru		Left	Thru				
Leading Detector (ft)	20	100			100		20	100				
Trailing Detector (ft)	0	0			0		0	0				
Detector 1 Position(ft)	0	0			0		0	0				
Detector 1 Size(ft)	20	6			6		20	6				
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0				
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Perm						Perm					
Protected Phases		2			6			8				
Permitted Phases	2						8					
Detector Phase	2	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	20.0	20.0			20.0		6.0	6.0				
Minimum Split (s)	25.1	25.1			25.1		10.6	10.6				
Total Split (s)	51.0	51.0	0.0	0.0	51.0	0.0	24.0	24.0	0.0	0.0	0.0	0.0
Total Split (%)	68.0%	68.0%	0.0%	0.0%	68.0%	0.0%	32.0%	32.0%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	45.9	45.9			45.9		19.4	19.4				
Yellow Time (s)	3.9	3.9			3.9		3.2	3.2				
All-Red Time (s)	1.2	1.2			1.2		1.4	1.4				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	4.0	4.0	5.1	4.0	4.6	4.6	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Recall Mode	C-Max	C-Max			C-Max		None	None				
Act Effct Green (s)	49.6	49.6			49.6		15.7	15.7				
Actuated g/C Ratio	0.66	0.66			0.66		0.21	0.21				
v/c Ratio	0.16	0.27			0.45		0.42	0.87				
Control Delay	7.8	6.2			7.5		27.9	27.9				
Queue Delay	0.0	0.0			0.0		0.0	0.0				
Total Delay	7.8	6.2			7.5		27.9	27.9				
LOS	A	A			A		C	C				
Approach Delay		6.3			7.5			27.9				
Approach LOS		A			A			C				

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 12.7		Intersection LOS: B	
Intersection Capacity Utilization 70.2%		ICU Level of Service C	
Analysis Period (min) 15			

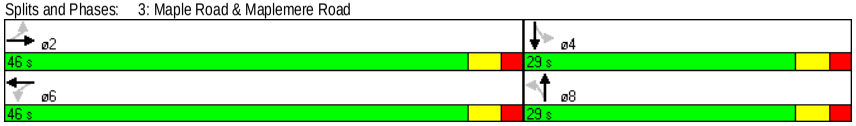
Splits and Phases: 2: Maple Road & Millersport Hwy NB

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	849	46	12	954	27	43	3	16	33	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	70		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50		25	50		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.996			0.965			0.956	
Flt Protected	0.950			0.950				0.967			0.968	
Satd. Flow (prot)	1770	3511	0	1770	3525	0	0	1738	0	0	1724	0
Flt Permitted	0.235			0.249				0.741			0.735	
Satd. Flow (perm)	438	3511	0	464	3525	0	0	1332	0	0	1309	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			6			25			28	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1770			1106			378			402	
Travel Time (s)		26.8			16.8			8.6			9.1	
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.60	0.60	0.60	0.58	0.58	0.58
Adj. Flow (vph)	23	987	53	13	1048	30	72	5	27	57	0	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	1040	0	13	1078	0	0	104	0	0	85	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		27.0	27.0		27.0	27.0	
Total Split (s)	46.0	46.0	0.0	46.0	46.0	0.0	29.0	29.0	0.0	29.0	29.0	0.0
Total Split (%)	61.3%	61.3%	0.0%	61.3%	61.3%	0.0%	38.7%	38.7%	0.0%	38.7%	38.7%	0.0%
Maximum Green (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)							7.0	7.0		7.0	7.0	
Flash Dont Walk (s)							15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)							0	0		0	0	
Act Effct Green (s)	25.6	25.6		25.6	25.6			8.2			8.1	
Actuated g/C Ratio	0.64	0.64		0.64	0.64			0.20			0.20	
v/c Ratio	0.08	0.46		0.04	0.48			0.35			0.30	
Control Delay	6.0	6.4		5.3	6.5			15.5			13.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	6.0	6.4		5.3	6.5			15.5			13.7	
LOS	A	A		A	A			B			B	
Approach Delay		6.4			6.5			15.5			13.7	
Approach LOS		A			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 40			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 7.1		Intersection LOS: A	
Intersection Capacity Utilization 39.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Maple Road & Maplemere Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	892	6	13	969	24	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999				0.904	
Flt Protected			0.950		0.986	
Satd. Flow (prot)	3536	0	1770	3539	1660	0
Flt Permitted			0.950		0.986	
Satd. Flow (perm)	3536	0	1770	3539	1660	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	1106			1928	355	
Travel Time (s)	16.8			29.2	8.1	
Peak Hour Factor	0.79	0.79	0.87	0.87	0.76	0.76
Adj. Flow (vph)	1129	8	15	1114	32	80
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1137	0	15	1114	112	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	892	6	13	969	24	61
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.87	0.87	0.76	0.76
Hourly flow rate (vph)	1129	8	15	1114	32	80
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	1106					
pX, platoon unblocked			0.88		0.88	0.88
vC, conflicting volume			1137		1720	568
vC1, stage 1 conf vol					1133	
vC2, stage 2 conf vol					587	
vCu, unblocked vol			893		1552	250
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		89	88
cM capacity (veh/h)			668		276	663

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	753	384	15	557	557	112
Volume Left	0	0	15	0	0	32
Volume Right	0	8	0	0	0	80
cSH	1700	1700	668	1700	1700	475
Volume to Capacity	0.44	0.23	0.02	0.33	0.33	0.24
Queue Length 95th (ft)	0	0	2	0	0	23
Control Delay (s)	0.0	0.0	10.5	0.0	0.0	14.9
Lane LOS			B			B
Approach Delay (s)	0.0		0.1			14.9
Approach LOS						B

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	38.5%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	944	4	1	988	2	13	0	3	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	50		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999						0.976				
Flt Protected	0.950			0.950				0.960			0.950	
Satd. Flow (prot)	1770	3536	0	1770	3539	0	0	1745	0	0	1770	0
Flt Permitted	0.950			0.950				0.960			0.950	
Satd. Flow (perm)	1770	3536	0	1770	3539	0	0	1745	0	0	1770	0
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		446			556			469			111	
Travel Time (s)		6.8			8.4			10.7			2.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	1026	4	1	1074	2	14	0	3	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	1030	0	1	1076	0	0	17	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	944	4	1	988	2	13	0	3	1	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1026	4	1	1074	2	14	0	3	1	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1076			1030			1570	2109	515	1596	2110	538
vC1, stage 1 conf vol							1030	1030		1077	1077	
vC2, stage 2 conf vol							539	1078		518	1033	
vCu, unblocked vol	1076			1030			1570	2109	515	1596	2110	538
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			94	100	99	99	100	100
cM capacity (veh/h)	644			670			225	211	505	213	211	488

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1	684	346	1	716	360	17	1
Volume Left	1	0	0	1	0	0	14	1
Volume Right	0	0	4	0	0	2	3	0
cSH	644	1700	1700	670	1700	1700	251	213
Volume to Capacity	0.00	0.40	0.20	0.00	0.42	0.21	0.07	0.01
Queue Length 95th (ft)	0	0	0	0	0	0	6	0
Control Delay (s)	10.6	0.0	0.0	10.4	0.0	0.0	20.4	22.0
Lane LOS	B			B			C	C
Approach Delay (s)	0.0			0.0			20.4	22.0
Approach LOS							C	C

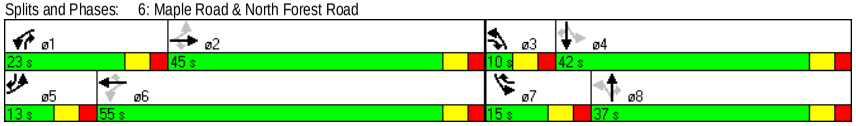
Intersection Summary				
Average Delay		0.2		
Intersection Capacity Utilization		37.4%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	769	75	243	733	88	88	223	179	120	346	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	415		220	315		150	125		220	250		250
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	90		115	60		25	95		25	90		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.299			0.122			0.243			0.365		
Satd. Flow (perm)	557	3539	1583	227	3539	1583	453	1863	1583	680	1863	1583
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			83						65			107
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1705			820			529			608	
Travel Time (s)		25.8			12.4			10.3			11.8	
Peak Hour Factor	0.90	0.90	0.90	0.95	0.95	0.95	0.90	0.90	0.90	0.80	0.80	0.80
Adj. Flow (vph)	86	854	83	256	772	93	98	248	199	150	432	192
Shared Lane Traffic (%)												
Lane Group Flow (vph)	86	854	83	256	772	93	98	248	199	150	432	192
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0
Minimum Split (s)	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0
Total Split (s)	13.0	45.0	10.0	23.0	55.0	15.0	10.0	37.0	23.0	15.0	42.0	13.0
Total Split (%)	10.8%	37.5%	8.3%	19.2%	45.8%	12.5%	8.3%	30.8%	19.2%	12.5%	35.0%	10.8%
Maximum Green (s)	7.0	39.0	4.0	17.0	49.0	9.0	4.0	31.0	17.0	9.0	36.0	7.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
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	3.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		22.0			22.0			22.0			22.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	38.2	31.3	41.6	50.9	38.5	53.6	27.8	23.7	44.1	37.4	28.5	41.6
Actuated g/C Ratio	0.37	0.30	0.40	0.50	0.37	0.52	0.27	0.23	0.43	0.36	0.28	0.40
v/c Ratio	0.30	0.79	0.12	0.79	0.58	0.11	0.56	0.58	0.28	0.44	0.84	0.27
Control Delay	18.2	39.7	5.3	39.7	27.8	13.8	39.8	42.1	14.1	27.8	51.3	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.2	39.7	5.3	39.7	27.8	13.8	39.8	42.1	14.1	27.8	51.3	11.2
LOS	B	D	A	D	C	B	D	D	B	C	D	B
Approach Delay		35.1			29.3			31.4			36.8	
Approach LOS		D			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 102.8			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 33.0		Intersection LOS: C	
Intersection Capacity Utilization 77.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Maple Road & North Forest Road



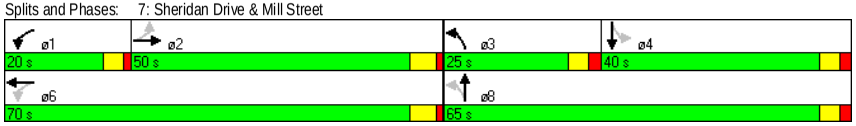
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	1240	119	215	942	9	97	21	122	30	146	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	150		0	40		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	65		25	60		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.999			0.872			0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3493	0	1770	3536	0	1770	1624	0	1770	1837	0
Flt Permitted	0.268			0.080			0.234			0.601		
Satd. Flow (perm)	499	3493	0	149	3536	0	436	1624	0	1120	1837	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					1						4	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		2782			977			838			362	
Travel Time (s)		42.2			14.8			19.0			8.2	
Peak Hour Factor	0.86	0.86	0.86	0.89	0.89	0.89	0.56	0.56	0.56	0.61	0.61	0.61
Adj. Flow (vph)	6	1442	138	242	1058	10	173	38	218	49	239	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	1580	0	242	1068	0	173	256	0	49	264	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			pm+pt			pm+pt			Perm		
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		3	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		1.0	4.0		1.0	4.0		4.0	4.0	
Minimum Split (s)	28.3	28.3		6.2	28.3		6.2	34.2		34.2	34.2	
Total Split (s)	50.0	50.0	0.0	20.0	70.0	0.0	25.0	65.0	0.0	40.0	40.0	0.0
Total Split (%)	37.0%	37.0%	0.0%	14.8%	51.9%	0.0%	18.5%	48.1%	0.0%	29.6%	29.6%	0.0%
Maximum Green (s)	44.5	44.5		15.7	64.5		19.8	59.8		34.8	34.8	
Yellow Time (s)	4.3	4.3		3.2	4.3		3.2	3.2		3.2	3.2	
All-Red Time (s)	1.2	1.2		1.1	1.2		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	4.3	5.5	4.0	5.2	5.2	4.0	5.2	5.2	4.0
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		None	Max		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0			15.0			22.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0			0			0		0	0	
Act Effct Green (s)	45.6	45.6		66.1	64.9		40.3	40.3		21.5	21.5	
Actuated g/C Ratio	0.39	0.39		0.57	0.56		0.35	0.35		0.19	0.19	
v/c Ratio	0.03	1.15		0.82	0.54		0.56	0.45		0.24	0.77	
Control Delay	27.2	110.5		51.4	18.7		34.0	31.4		43.2	59.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.2	110.5		51.4	18.7		34.0	31.4		43.2	59.5	
LOS	C	F		D	B		C	C		D	E	
Approach Delay		110.2			24.7			32.5			56.9	
Approach LOS		F			C			C			E	

Intersection Summary

Area Type: Other
Cycle Length: 135
Actuated Cycle Length: 116
Natural Cycle: 120
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.15
Intersection Signal Delay: 65.7 Intersection LOS: E
Intersection Capacity Utilization 80.8% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 7: Sheridan Drive & Mill Street

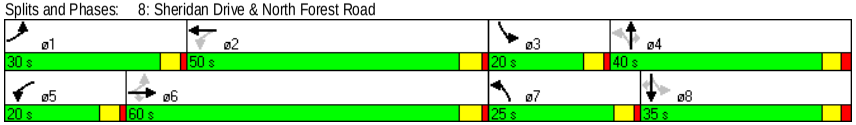


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	88	1254	192	177	990	19	200	332	22	11	426	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	405		170	260		0	180		265	180		200
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	200		25	200		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850		0.997				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3529	0	1770	1863	1583	1770	3539	1583
Flt Permitted	0.143			0.067			0.208			0.490		
Satd. Flow (perm)	266	3539	1583	125	3529	0	387	1863	1583	913	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			96		1				24			330
Link Speed (mph)		45			45			40			35	
Link Distance (ft)		1668			2219			547			354	
Travel Time (s)		25.3			33.6			9.3			6.9	
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.90	0.90	0.90	0.84	0.84	0.84
Adj. Flow (vph)	93	1320	202	192	1076	21	222	369	24	13	507	330
Shared Lane Traffic (%)												
Lane Group Flow (vph)	93	1320	202	192	1097	0	222	369	24	13	507	330
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		Perm	pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2			4		4	8		8
Detector Phase	1	6	6	5	2		7	4	4	3	8	8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	10.3	27.9	27.9	10.3	27.9		21.0	27.2	27.2	10.3	27.2	27.2
Total Split (s)	30.0	60.0	60.0	20.0	50.0	0.0	25.0	40.0	40.0	20.0	35.0	35.0
Total Split (%)	21.4%	42.9%	42.9%	14.3%	35.7%	0.0%	17.9%	28.6%	28.6%	14.3%	25.0%	25.0%
Maximum Green (s)	25.7	54.9	54.9	15.7	44.9		20.7	34.9	34.9	15.7	29.9	29.9
Yellow Time (s)	3.2	3.9	3.9	3.2	3.9		3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.1	1.2	1.2	1.1	1.2		1.1	1.9	1.9	1.1	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.1	5.1	4.3	5.1	4.0	4.3	5.1	5.1	4.3	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
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
Recall Mode	None	Max	Max	None	Max		None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		15.0	15.0		15.0			15.0	15.0		15.0	15.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
Act Effct Green (s)	65.0	55.3	55.3	73.6	60.1		48.2	43.2	43.2	32.1	24.9	24.9
Actuated g/C Ratio	0.50	0.42	0.42	0.56	0.46		0.37	0.33	0.33	0.25	0.19	0.19
v/c Ratio	0.40	0.88	0.28	0.79	0.68		0.66	0.60	0.04	0.05	0.75	0.58
Control Delay	20.1	44.6	15.2	54.6	31.9		39.9	42.5	12.1	27.5	58.3	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.1	44.6	15.2	54.6	31.9		39.9	42.5	12.1	27.5	58.3	9.1
LOS	C	D	B	D	C		D	D	B	C	E	A
Approach Delay		39.5			35.3			40.4			38.7	
Approach LOS		D			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 131			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 38.2		Intersection LOS: D	
Intersection Capacity Utilization 83.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Sheridan Drive & North Forest Road



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1	1	8	431	713	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932				0.999	
Flt Protected	0.976			0.999		
Satd. Flow (prot)	1694	0	0	1861	1861	0
Flt Permitted	0.976			0.999		
Satd. Flow (perm)	1694	0	0	1861	1861	0
Link Speed (mph)	30			35	35	
Link Distance (ft)	208			310	192	
Travel Time (s)	4.7			6.0	3.7	
Peak Hour Factor	0.50	0.50	0.83	0.83	0.94	0.94
Adj. Flow (vph)	2	2	10	519	759	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	0	0	529	764	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	8	431	713	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.83	0.83	0.94	0.94
Hourly flow rate (vph)	2	2	10	519	759	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				664		
pX, platoon unblocked	0.83					
vC, conflicting volume	1300	761	764			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1258	761	764			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	99			
cM capacity (veh/h)	154	405	849			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	4	529	764
Volume Left	2	10	0
Volume Right	2	0	5
cSH	224	849	1700
Volume to Capacity	0.02	0.01	0.45
Queue Length 95th (ft)	1	1	0
Control Delay (s)	21.4	0.3	0.0
Lane LOS	C	A	
Approach Delay (s)	21.4	0.3	0.0
Approach LOS	C		

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	47.8%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1525	6	4	1463	16	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999				0.951	
Flt Protected			0.950		0.969	
Satd. Flow (prot)	3536	0	1770	3539	1717	0
Flt Permitted			0.950		0.969	
Satd. Flow (perm)	3536	0	1770	3539	1717	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	635			1668	278	
Travel Time (s)	9.6			25.3	6.3	
Peak Hour Factor	0.88	0.88	0.90	0.90	0.69	0.69
Adj. Flow (vph)	1733	7	4	1626	23	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1740	0	4	1626	36	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1525	6	4	1463	16	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.90	0.90	0.69	0.69
Hourly flow rate (vph)	1733	7	4	1626	23	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	635					
pX, platoon unblocked			0.84		0.84	0.84
vC, conflicting volume			1740		2558	870
vC1, stage 1 conf vol					1736	
vC2, stage 2 conf vol					822	
vCu, unblocked vol			1508		2477	478
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		82	97
cM capacity (veh/h)			371		131	451

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1155	584	4	813	813	36
Volume Left	0	0	4	0	0	23
Volume Right	0	7	0	0	0	13
cSH	1700	1700	371	1700	1700	176
Volume to Capacity	0.68	0.34	0.01	0.48	0.48	0.21
Queue Length 95th (ft)	0	0	1	0	0	19
Control Delay (s)	0.0	0.0	14.8	0.0	0.0	30.7
Lane LOS			B			D
Approach Delay (s)	0.0		0.0			30.7
Approach LOS						D

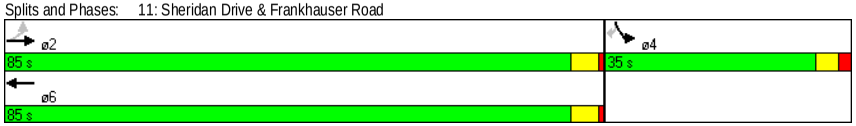
Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	52.3%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	26	1493	1455	24	38	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	105			0	0	50
Storage Lanes	1			0	1	1
Taper Length (ft)	65			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3532	0	1770	1583
Flt Permitted	0.145				0.950	
Satd. Flow (perm)	270	3539	3532	0	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			3			40
Link Speed (mph)		45	45		30	
Link Distance (ft)		1014	635		614	
Travel Time (s)		15.4	9.6		14.0	
Peak Hour Factor	0.89	0.89	0.94	0.94	0.73	0.73
Adj. Flow (vph)	29	1678	1548	26	52	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	1678	1574	0	52	40
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (ft)	20	100	100		20	20
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	6	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		1.0	1.0
Minimum Split (s)	40.0	40.0	40.0		31.1	31.1
Total Split (s)	85.0	85.0	85.0	0.0	35.0	35.0
Total Split (%)	70.8%	70.8%	70.8%	0.0%	29.2%	29.2%
Maximum Green (s)	80.2	80.2	80.2		29.9	29.9
Yellow Time (s)	3.9	3.9	3.9		3.2	3.2
All-Red Time (s)	0.9	0.9	0.9		1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.8	4.8	4.0	5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max	C-Max		None	None
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0	15.0		19.0	19.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	104.3	104.3	104.3		8.9	8.9
Actuated g/C Ratio	0.87	0.87	0.87		0.07	0.07
v/c Ratio	0.12	0.55	0.51		0.40	0.26
Control Delay	2.3	5.6	3.2		60.9	19.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	2.3	5.6	3.2		60.9	19.2
LOS	A	A	A		E	B
Approach Delay		5.6	3.3		42.8	
Approach LOS		A	A		D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 76 (63%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 5.5		Intersection LOS: A	
Intersection Capacity Utilization 52.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: Sheridan Drive & Frankhauser Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	243	1339	0	0	963	478	262	0	215	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	230		120	0		0
Storage Lanes	1		0	0		0	1		1	0		0
Taper Length (ft)	105		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.91	0.95	1.00	1.00	1.00
Frt					0.950			0.940	0.850			
Flt Protected	0.950						0.950	0.971				
Satd. Flow (prot)	1770	5085	0	0	4831	0	1681	1547	1504	0	0	0
Flt Permitted	0.113						0.950	0.971				
Satd. Flow (perm)	210	5085	0	0	4831	0	1681	1547	1504	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					164			26	61			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		197			193			830			423	
Travel Time (s)		3.0			2.9			18.9			9.6	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	259	1424	0	0	1024	509	298	0	244	0	0	0
Shared Lane Traffic (%)							37%		30%			
Lane Group Flow (vph)	259	1424	0	0	1533	0	188	183	171	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			
Detector Template	Left	Thru			Thru		Left	Thru	Right			
Leading Detector (ft)	20	100			100		20	100	20			
Trailing Detector (ft)	0	0			0		0	0	0			
Detector 1 Position(ft)	0	0			0		0	0	0			
Detector 1 Size(ft)	20	6			6		20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt						custom		Perm			
Protected Phases	1	6			2		3	3				
Permitted Phases	6						3		3			
Detector Phase	1	6			2		3	3	3			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	4.0			4.0		4.0	4.0	4.0			
Minimum Split (s)	6.2	33.9			27.8		29.0	29.0	29.0			
Total Split (s)	14.0	85.0	0.0	0.0	71.0	0.0	35.0	35.0	35.0	0.0	0.0	0.0
Total Split (%)	11.7%	70.8%	0.0%	0.0%	59.2%	0.0%	29.2%	29.2%	29.2%	0.0%	0.0%	0.0%
Maximum Green (s)	9.7	79.1			65.2		29.8	29.8	29.8			
Yellow Time (s)	3.2	3.9			3.9		3.2	3.2	3.2			
All-Red Time (s)	1.1	2.0			1.9		2.0	2.0	2.0			
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.9	4.0	4.0	5.8	4.0	5.2	5.2	5.2	4.0	4.0	4.0
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	2.0	3.0			3.0		2.0	2.0	2.0			
Recall Mode	None	C-Max			C-Max		None	None	None			
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		21.0			15.0							
Pedestrian Calls (#/hr)		0			0							
Act Effct Green (s)	92.2	90.6			70.8		18.3	18.3	18.3			
Actuated g/C Ratio	0.77	0.76			0.59		0.15	0.15	0.15			
v/c Ratio	0.71	0.37			0.53		0.73	0.71	0.61			
Control Delay	32.2	7.7			13.4		64.4	55.5	38.4			
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0			
Total Delay	32.2	7.7			13.4		64.4	55.5	38.4			
LOS	C	A			B		E	E	D			
Approach Delay		11.5			13.4			53.2				
Approach LOS		B			B			D				

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 37 (31%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 65.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 12: Sheridan Drive & I-290 NB

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	799	307	448	777	278	783
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	215		140	0
Storage Lanes		1	1		2	2
Taper Length (ft)		230	100		100	25
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	3433	3539	3433	2787
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3539	1583	3433	3539	3433	2787
Right Turn on Red		No				Yes
Satd. Flow (RTOR)						161
Link Speed (mph)	45			45	35	
Link Distance (ft)	314			413	338	
Travel Time (s)	4.8			6.3	6.6	
Peak Hour Factor	0.85	0.85	0.92	0.92	0.90	0.90
Adj. Flow (vph)	940	361	487	845	309	870
Shared Lane Traffic (%)						
Lane Group Flow (vph)	940	361	487	845	309	870
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	100	20	20	100	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type		custom	Prot			custom
Protected Phases	2	2	1	1 2	3	1 3
Permitted Phases		2				3
Detector Phase	2	2	1	1 2	3	1 3

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	20.0	20.0	3.0		6.0	
Minimum Split (s)	30.5	30.5	7.3		11.2	
Total Split (s)	66.0	66.0	29.0	95.0	25.0	54.0
Total Split (%)	55.0%	55.0%	24.2%	79.2%	20.8%	45.0%
Maximum Green (s)	60.5	60.5	24.7		19.8	
Yellow Time (s)	3.9	3.9	3.2		3.2	
All-Red Time (s)	1.6	1.6	1.1		2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.3	4.3	5.2	4.3
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Recall Mode	C-Max	C-Max	None		None	
Walk Time (s)	7.0	7.0				
Flash Dont Walk (s)	18.0	18.0				
Pedestrian Calls (#/hr)	0	0				
Act Effct Green (s)	61.4	61.4	23.8	90.7	19.8	48.8
Actuated g/C Ratio	0.51	0.51	0.20	0.76	0.16	0.41
v/c Ratio	0.52	0.45	0.71	0.32	0.55	0.71
Control Delay	21.0	21.0	51.7	4.3	50.1	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	21.0	51.7	4.3	50.1	27.3
LOS	C	C	D	A	D	C
Approach Delay	21.0			21.6	33.2	
Approach LOS	C			C	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 24 (20%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 25.0		Intersection LOS: C	
Intersection Capacity Utilization 57.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 13: Sheridan Drive & Harlem Road

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	291	664	435	20	369	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	330	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25	25		25	75	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.993			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3514	0	1770	3539
Flt Permitted	0.950				0.272	
Satd. Flow (perm)	1770	1583	3514	0	507	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		176	4			
Link Speed (mph)	30		35			35
Link Distance (ft)	333		250			456
Travel Time (s)	7.6		4.9			8.9
Peak Hour Factor	0.81	0.81	0.87	0.87	0.88	0.88
Adj. Flow (vph)	359	820	500	23	419	403
Shared Lane Traffic (%)						
Lane Group Flow (vph)	359	820	523	0	419	403
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		pm+ov			pm+pt	
Protected Phases	3	1	2		1	6
Permitted Phases		3			6	
Detector Phase	3	1	2		1	6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	6.0	3.0	10.0		3.0	10.0
Minimum Split (s)	22.0	9.2	30.6		9.2	21.0
Total Split (s)	40.0	35.0	50.0	0.0	35.0	85.0
Total Split (%)	32.0%	28.0%	40.0%	0.0%	28.0%	68.0%
Maximum Green (s)	35.2	30.7	45.0		30.7	80.0
Yellow Time (s)	3.2	3.2	3.6		3.2	3.6
All-Red Time (s)	1.6	1.1	1.4		1.1	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.3	5.0	4.0	4.3	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Min		None	None
Walk Time (s)			10.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			0			
Act Effct Green (s)	21.6	47.0	18.5		44.0	43.3
Actuated g/C Ratio	0.29	0.62	0.25		0.58	0.57
v/c Ratio	0.71	0.78	0.61		0.66	0.20
Control Delay	34.2	14.3	30.2		15.5	8.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	34.2	14.3	30.2		15.5	8.5
LOS	C	B	C		B	A
Approach Delay	20.4		30.2			12.1
Approach LOS	C		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 75.4			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 19.7		Intersection LOS: B	
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 14: I-290 SB & Harlem Road

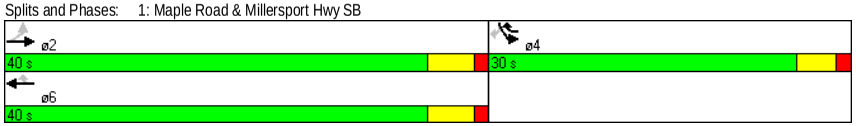
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	28	913	820	221	54	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150			150	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	35			100	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.305				0.950	
Satd. Flow (perm)	568	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						102
Link Speed (mph)		45	45		30	
Link Distance (ft)		555	654		281	
Travel Time (s)		8.4	9.9		6.4	
Peak Hour Factor	0.90	0.90	0.92	0.92	0.81	0.81
Adj. Flow (vph)	31	1014	891	240	67	210
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	1014	891	240	67	210
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane			Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm			pm+ov		Perm
Protected Phases		2	6	4	4	
Permitted Phases	2			6		4
Detector Phase	2	2	6	4	4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	1.0	1.0	1.0
Minimum Split (s)	9.1	9.1	9.1	6.2	6.2	6.2
Total Split (s)	40.0	40.0	40.0	30.0	30.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	42.9%	42.9%	42.9%
Maximum Green (s)	34.9	34.9	34.9	25.4	25.4	25.4
Yellow Time (s)	3.9	3.9	3.9	3.2	3.2	3.2
All-Red Time (s)	1.2	1.2	1.2	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	4.6	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	49.4	49.4	49.4	70.0	10.9	10.9
Actuated g/C Ratio	0.71	0.71	0.71	1.00	0.16	0.16
v/c Ratio	0.08	0.41	0.36	0.15	0.24	0.63
Control Delay	5.1	5.5	7.6	0.2	26.0	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.1	5.5	7.6	0.2	26.0	22.5
LOS	A	A	A	A	C	C
Approach Delay		5.5	6.0		23.3	
Approach LOS		A	A		C	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 7.7 Intersection LOS: A
Intersection Capacity Utilization 41.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Maple Road & Millersport Hwy SB

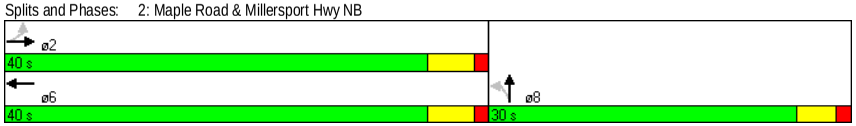


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	95	872	0	0	952	23	89	0	451	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	50		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.997			0.850				
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	3539	0	0	3529	0	1770	1583	0	0	0	0
Flt Permitted	0.174						0.950					
Satd. Flow (perm)	324	3539	0	0	3529	0	1770	1583	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					5			85				
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		654			1770			319			263	
Travel Time (s)		9.9			26.8			7.3			6.0	
Peak Hour Factor	0.91	0.91	0.91	0.87	0.87	0.87	0.84	0.84	0.84	0.92	0.92	0.92
Adj. Flow (vph)	104	958	0	0	1094	26	106	0	537	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	958	0	0	1120	0	106	537	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2				
Detector Template	Left	Thru			Thru		Left	Thru				
Leading Detector (ft)	20	100			100		20	100				
Trailing Detector (ft)	0	0			0		0	0				
Detector 1 Position(ft)	0	0			0		0	0				
Detector 1 Size(ft)	20	6			6		20	6				
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0				
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Perm						Perm					
Protected Phases		2			6			8				
Permitted Phases	2						8					
Detector Phase	2	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	1.0			4.0		1.0	1.0				
Minimum Split (s)	6.1	6.1			9.1		6.2	6.2				
Total Split (s)	40.0	40.0	0.0	0.0	40.0	0.0	30.0	30.0	0.0	0.0	0.0	0.0
Total Split (%)	57.1%	57.1%	0.0%	0.0%	57.1%	0.0%	42.9%	42.9%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	34.9	34.9			34.9		25.4	25.4				
Yellow Time (s)	3.9	3.9			3.9		3.2	3.2				
All-Red Time (s)	1.2	1.2			1.2		1.4	1.4				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	4.0	4.0	5.1	4.0	4.6	4.6	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Recall Mode	C-Min	C-Min			C-Min		None	None				
Act Effct Green (s)	36.1	36.1			36.1		24.2	24.2				
Actuated g/C Ratio	0.52	0.52			0.52		0.35	0.35				
v/c Ratio	0.62	0.52			0.61		0.17	0.89				
Control Delay	31.8	11.0			14.3		16.0	37.4				
Queue Delay	0.0	0.0			0.0		0.0	0.0				
Total Delay	31.8	11.0			14.3		16.0	37.4				
LOS	C	B			B		B	D				
Approach Delay		13.1			14.3			33.9				
Approach LOS		B			B			C				

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 72.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Maple Road & Millersport Hwy NB

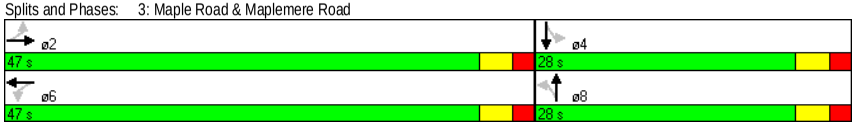


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	1188	35	21	868	60	22	0	12	75	8	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	70		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50		25	50		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.990			0.952			0.964	
Flt Protected	0.950			0.950				0.969			0.968	
Satd. Flow (prot)	1770	3525	0	1770	3504	0	0	1718	0	0	1738	0
Flt Permitted	0.239			0.169				0.792			0.767	
Satd. Flow (perm)	445	3525	0	315	3504	0	0	1404	0	0	1377	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			15			19			25	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1770			1106			378			402	
Travel Time (s)		26.8			16.8			8.6			9.1	
Peak Hour Factor	0.94	0.94	0.94	0.87	0.87	0.87	0.62	0.62	0.62	0.81	0.81	0.81
Adj. Flow (vph)	37	1264	37	24	998	69	35	0	19	93	10	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	1301	0	24	1067	0	0	54	0	0	140	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		27.0	27.0		27.0	27.0	
Total Split (s)	47.0	47.0	0.0	47.0	47.0	0.0	28.0	28.0	0.0	28.0	28.0	0.0
Total Split (%)	62.7%	62.7%	0.0%	62.7%	62.7%	0.0%	37.3%	37.3%	0.0%	37.3%	37.3%	0.0%
Maximum Green (s)	42.0	42.0		42.0	42.0		23.0	23.0		23.0	23.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)							7.0	7.0		7.0	7.0	
Flash Dont Walk (s)							15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)							0	0		0	0	
Act Effct Green (s)	32.1	32.1		32.1	32.1			8.7			10.0	
Actuated g/C Ratio	0.67	0.67		0.67	0.67			0.18			0.21	
v/c Ratio	0.12	0.55		0.11	0.45			0.20			0.46	
Control Delay	6.5	7.4		6.9	6.4			15.3			21.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	6.5	7.4		6.9	6.4			15.3			21.1	
LOS	A	A		A	A			B			C	
Approach Delay		7.4			6.5			15.3			21.1	
Approach LOS		A			A			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 47.9			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 7.9		Intersection LOS: A	
Intersection Capacity Utilization 49.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Maple Road & Maplemere Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1246	29	23	937	12	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.997				0.914	
Flt Protected			0.950		0.982	
Satd. Flow (prot)	3529	0	1770	3539	1672	0
Flt Permitted			0.950		0.982	
Satd. Flow (perm)	3529	0	1770	3539	1672	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	1106			1928	355	
Travel Time (s)	16.8			29.2	8.1	
Peak Hour Factor	0.73	0.73	0.77	0.77	0.82	0.82
Adj. Flow (vph)	1707	40	30	1217	15	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1747	0	30	1217	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1246	29	23	937	12	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.77	0.77	0.82	0.82
Hourly flow rate (vph)	1707	40	30	1217	15	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	1106					
pX, platoon unblocked			0.78		0.78	0.78
vC, conflicting volume			1747		2395	873
vC1, stage 1 conf vol					1727	
vC2, stage 2 conf vol					668	
vCu, unblocked vol			1393		2224	274
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			92		90	95
cM capacity (veh/h)			380		144	565

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1138	609	30	608	608	40
Volume Left	0	0	30	0	0	15
Volume Right	0	40	0	0	0	26
cSH	1700	1700	380	1700	1700	274
Volume to Capacity	0.67	0.36	0.08	0.36	0.36	0.15
Queue Length 95th (ft)	0	0	6	0	0	13
Control Delay (s)	0.0	0.0	15.3	0.0	0.0	20.4
Lane LOS			C			C
Approach Delay (s)	0.0		0.4			20.4
Approach LOS						C

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	45.4%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1260	14	8	960	2	10	0	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	50		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998						0.948				
Flt Protected				0.950				0.970				
Satd. Flow (prot)	1863	3532	0	1770	3539	0	0	1713	0	0	1863	0
Flt Permitted				0.950				0.970				
Satd. Flow (perm)	1863	3532	0	1770	3539	0	0	1713	0	0	1863	0
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		446			556			469			111	
Travel Time (s)		6.8			8.4			10.7			2.5	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.61	0.61	0.61	0.92	0.92	0.92
Adj. Flow (vph)	0	1370	15	9	1032	2	16	0	10	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1385	0	9	1034	0	0	26	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1260	14	8	960	2	10	0	6	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.61	0.61	0.61	0.92	0.92	0.92
Hourly flow rate (vph)	0	1370	15	9	1032	2	16	0	10	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1034			1385			1911	2429	692	1745	2435	517
vC1, stage 1 conf vol							1377	1377		1051	1051	
vC2, stage 2 conf vol							533	1052		695	1385	
vCu, unblocked vol	1034			1385			1911	2429	692	1745	2435	517
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			89	100	97	100	100	100
cM capacity (veh/h)	668			491			144	168	386	202	163	503

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	0	913	472	9	688	346	26	0
Volume Left	0	0	0	9	0	0	16	0
Volume Right	0	0	15	0	0	2	10	0
cSH	1700	1700	1700	491	1700	1700	188	1700
Volume to Capacity	0.00	0.54	0.28	0.02	0.40	0.20	0.14	0.00
Queue Length 95th (ft)	0	0	0	1	0	0	12	0
Control Delay (s)	0.0	0.0	0.0	12.5	0.0	0.0	27.2	0.0
Lane LOS				B			D	A
Approach Delay (s)	0.0			0.1			27.2	0.0
Approach LOS							D	A

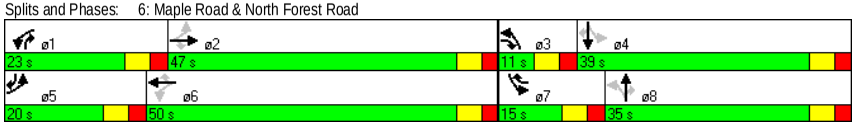
Intersection Summary					
Average Delay		0.3			
Intersection Capacity Utilization		45.3%	ICU Level of Service		A
Analysis Period (min)		15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	177	960	139	230	718	94	90	338	197	165	375	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	415		220	315		150	125		220	250		250
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	90		115	60		25	95		25	90		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.238			0.098			0.194			0.197		
Satd. Flow (perm)	443	3539	1583	183	3539	1583	361	1863	1583	367	1863	1583
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			143						33			84
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1705			820			529			608	
Travel Time (s)		25.8			12.4			10.3			11.8	
Peak Hour Factor	0.92	0.92	0.92	0.90	0.90	0.90	0.96	0.96	0.96	0.87	0.87	0.87
Adj. Flow (vph)	192	1043	151	256	798	104	94	352	205	190	431	133
Shared Lane Traffic (%)												
Lane Group Flow (vph)	192	1043	151	256	798	104	94	352	205	190	431	133
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0
Minimum Split (s)	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0
Total Split (s)	20.0	47.0	11.0	23.0	50.0	15.0	11.0	35.0	23.0	15.0	39.0	20.0
Total Split (%)	16.7%	39.2%	9.2%	19.2%	41.7%	12.5%	9.2%	29.2%	19.2%	12.5%	32.5%	16.7%
Maximum Green (s)	14.0	41.0	5.0	17.0	44.0	9.0	5.0	29.0	17.0	9.0	33.0	14.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
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	3.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		22.0			22.0			22.0			22.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	49.3	37.5	48.7	56.2	41.0	56.2	30.4	25.4	46.7	38.5	29.4	47.3
Actuated g/C Ratio	0.44	0.34	0.44	0.50	0.37	0.50	0.27	0.23	0.42	0.34	0.26	0.42
v/c Ratio	0.57	0.88	0.20	0.83	0.61	0.13	0.58	0.83	0.30	0.79	0.88	0.18
Control Delay	22.2	44.9	4.6	50.0	31.7	16.4	42.6	59.5	19.5	51.6	60.1	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	44.9	4.6	50.0	31.7	16.4	42.6	59.5	19.5	51.6	60.1	9.1
LOS	C	D	A	D	C	B	D	E	B	D	E	A
Approach Delay		37.4			34.4			44.4			49.0	
Approach LOS		D			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 111.6			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 39.9		Intersection LOS: D	
Intersection Capacity Utilization 86.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: Maple Road & North Forest Road

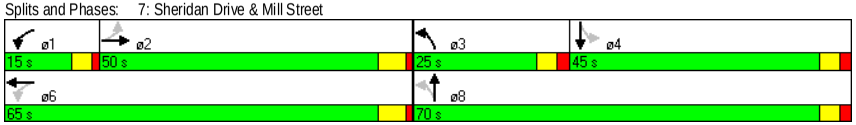


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1258	18	118	1299	53	140	53	144	34	68	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	150		0	40		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	65		25	60		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.994			0.891			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3532	0	1770	3518	0	1770	1660	0	1770	1820	0
Flt Permitted	0.089			0.082			0.601			0.611		
Satd. Flow (perm)	166	3532	0	153	3518	0	1120	1660	0	1138	1820	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					4						7	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		2782			977			838			362	
Travel Time (s)		42.2			14.8			19.0			8.2	
Peak Hour Factor	0.84	0.84	0.84	0.92	0.92	0.92	0.83	0.83	0.83	0.77	0.77	0.77
Adj. Flow (vph)	13	1498	21	128	1412	58	169	64	173	44	88	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	1519	0	128	1470	0	169	237	0	44	104	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			pm+pt			pm+pt			Perm		
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		3	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		1.0	4.0		1.0	4.0		4.0	4.0	
Minimum Split (s)	28.3	28.3		6.2	28.3		6.2	34.2		34.2	34.2	
Total Split (s)	50.0	50.0	0.0	15.0	65.0	0.0	25.0	70.0	0.0	45.0	45.0	0.0
Total Split (%)	37.0%	37.0%	0.0%	11.1%	48.1%	0.0%	18.5%	51.9%	0.0%	33.3%	33.3%	0.0%
Maximum Green (s)	44.5	44.5		10.7	59.5		19.8	64.8		39.8	39.8	
Yellow Time (s)	4.3	4.3		3.2	4.3		3.2	3.2		3.2	3.2	
All-Red Time (s)	1.2	1.2		1.1	1.2		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	4.3	5.5	4.0	5.2	5.2	4.0	5.2	5.2	4.0
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0			15.0			22.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0			0			0		0	0	
Act Effct Green (s)	44.6	44.6		60.1	58.9		64.8	64.8		39.8	39.8	
Actuated g/C Ratio	0.33	0.33		0.45	0.44		0.48	0.48		0.30	0.30	
v/c Ratio	0.24	1.29		0.68	0.95		0.27	0.30		0.13	0.19	
Control Delay	46.2	176.4		43.8	50.5		21.4	22.5		36.4	34.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	46.2	176.4		43.8	50.5		21.4	22.5		36.4	34.2	
LOS	D	F		D	D		C	C		D	C	
Approach Delay		175.3			50.0			22.0			34.9	
Approach LOS		F			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 134.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.29			
Intersection Signal Delay: 98.4		Intersection LOS: F	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Sheridan Drive & Mill Street

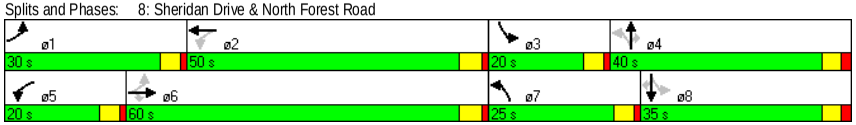


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	135	1227	254	297	1096	40	264	453	80	23	482	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	405		170	260		0	180		265	180		200
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	200		25	200		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850		0.995				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3522	0	1770	1863	1583	1770	3539	1583
Flt Permitted	0.087			0.068			0.192			0.186		
Satd. Flow (perm)	162	3539	1583	127	3522	0	358	1863	1583	346	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			130		3				70			207
Link Speed (mph)		45			45			40			35	
Link Distance (ft)		1668			2219			547			354	
Travel Time (s)		25.3			33.6			9.3			6.9	
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.89	0.89	0.89	0.95	0.95	0.95
Adj. Flow (vph)	144	1305	270	319	1178	43	297	509	90	24	507	207
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	1305	270	319	1221	0	297	509	90	24	507	207
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		Perm	pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2			4		4	8		8
Detector Phase	1	6	6	5	2		7	4	4	3	8	8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.3	27.9	27.9	8.3	27.9		21.0	27.2	27.2	8.3	27.2	27.2
Total Split (s)	30.0	60.0	60.0	20.0	50.0	0.0	25.0	40.0	40.0	20.0	35.0	35.0
Total Split (%)	21.4%	42.9%	42.9%	14.3%	35.7%	0.0%	17.9%	28.6%	28.6%	14.3%	25.0%	25.0%
Maximum Green (s)	25.7	54.9	54.9	15.7	44.9		20.7	34.9	34.9	15.7	29.9	29.9
Yellow Time (s)	3.2	3.9	3.9	3.2	3.9		3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.1	1.2	1.2	1.1	1.2		1.1	1.9	1.9	1.1	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.1	5.1	4.3	5.1	4.0	4.3	5.1	5.1	4.3	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
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
Recall Mode	None	Max	Max	None	Max		None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		15.0	15.0		15.0			15.0	15.0		15.0	15.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
Act Effct Green (s)	67.8	55.0	55.0	74.0	58.8		49.9	42.4	42.4	32.4	24.9	24.9
Actuated g/C Ratio	0.50	0.41	0.41	0.55	0.44		0.37	0.32	0.32	0.24	0.19	0.19
v/c Ratio	0.64	0.90	0.37	1.22	0.79		0.87	0.87	0.16	0.16	0.77	0.45
Control Delay	35.2	47.5	16.1	162.3	38.6		57.2	60.3	12.3	29.7	60.6	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.2	47.5	16.1	162.3	38.6		57.2	60.3	12.3	29.7	60.6	9.0
LOS	D	D	B	F	D		E	E	B	C	E	A
Approach Delay		41.5			64.2			54.5			45.1	
Approach LOS		D			E			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 134.4			
Natural Cycle: 115			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.22			
Intersection Signal Delay: 51.6		Intersection LOS: D	
Intersection Capacity Utilization 94.0%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 8: Sheridan Drive & North Forest Road



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	7	9	26	608	696	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.924				0.998	
Flt Protected	0.979			0.998		
Satd. Flow (prot)	1685	0	0	1859	1859	0
Flt Permitted	0.979			0.998		
Satd. Flow (perm)	1685	0	0	1859	1859	0
Link Speed (mph)	30			35	35	
Link Distance (ft)	217			310	192	
Travel Time (s)	4.9			6.0	3.7	
Peak Hour Factor	0.50	0.50	0.83	0.83	0.90	0.90
Adj. Flow (vph)	14	18	31	733	773	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	0	0	764	787	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	7	9	26	608	696	13
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.83	0.83	0.90	0.90
Hourly flow rate (vph)	14	18	31	733	773	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				664		
pX, platoon unblocked	0.70					
vC, conflicting volume	1576	781	788			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1609	781	788			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	82	95	96			
cM capacity (veh/h)	77	395	832			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	32	764	788
Volume Left	14	31	0
Volume Right	18	0	14
cSH	141	832	1700
Volume to Capacity	0.23	0.04	0.46
Queue Length 95th (ft)	21	3	0
Control Delay (s)	37.8	1.0	0.0
Lane LOS	E	A	
Approach Delay (s)	37.8	1.0	0.0
Approach LOS	E		

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization		63.1%	ICU Level of Service	B
Analysis Period (min)		15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1599	13	5	1552	13	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999				0.922	
Flt Protected			0.950		0.979	
Satd. Flow (prot)	3536	0	1770	3539	1681	0
Flt Permitted			0.950		0.979	
Satd. Flow (perm)	3536	0	1770	3539	1681	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	635			1668	278	
Travel Time (s)	9.6			25.3	6.3	
Peak Hour Factor	0.87	0.87	0.94	0.94	0.75	0.75
Adj. Flow (vph)	1838	15	5	1651	17	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1853	0	5	1651	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1599	13	5	1552	13	17
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.94	0.94	0.75	0.75
Hourly flow rate (vph)	1838	15	5	1651	17	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	635					
pX, platoon unblocked			0.83		0.83	0.83
vC, conflicting volume			1853		2682	926
vC1, stage 1 conf vol					1845	
vC2, stage 2 conf vol					836	
vCu, unblocked vol			1612		2615	491
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		85	95
cM capacity (veh/h)			331		115	433

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1225	628	5	826	826	40
Volume Left	0	0	5	0	0	17
Volume Right	0	15	0	0	0	23
cSH	1700	1700	331	1700	1700	196
Volume to Capacity	0.72	0.37	0.02	0.49	0.49	0.20
Queue Length 95th (ft)	0	0	1	0	0	18
Control Delay (s)	0.0	0.0	16.0	0.0	0.0	28.0
Lane LOS			C			D
Approach Delay (s)	0.0		0.1			28.0
Approach LOS						D

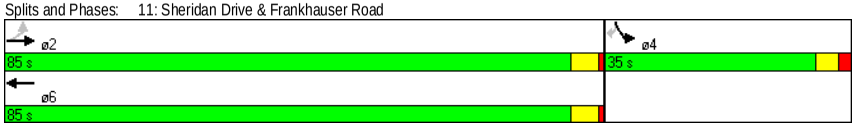
Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	54.6%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	34	1560	1524	41	52	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	105			0	0	50
Storage Lanes	1			0	1	1
Taper Length (ft)	65			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.996			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3525	0	1770	1583
Flt Permitted	0.120				0.950	
Satd. Flow (perm)	224	3539	3525	0	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			5			37
Link Speed (mph)		45	45		30	
Link Distance (ft)		1014	635		614	
Travel Time (s)		15.4	9.6		14.0	
Peak Hour Factor	0.90	0.90	0.91	0.91	0.82	0.82
Adj. Flow (vph)	38	1733	1675	45	63	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	38	1733	1720	0	63	49
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (ft)	20	100	100		20	20
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	6	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		1.0	1.0
Minimum Split (s)	40.0	40.0	40.0		31.1	31.1
Total Split (s)	85.0	85.0	85.0	0.0	35.0	35.0
Total Split (%)	70.8%	70.8%	70.8%	0.0%	29.2%	29.2%
Maximum Green (s)	80.2	80.2	80.2		29.9	29.9
Yellow Time (s)	3.9	3.9	3.9		3.2	3.2
All-Red Time (s)	0.9	0.9	0.9		1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.8	4.8	4.0	5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max	C-Max		None	None
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0	15.0		19.0	19.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	103.6	103.6	103.6		9.6	9.6
Actuated g/C Ratio	0.86	0.86	0.86		0.08	0.08
v/c Ratio	0.20	0.57	0.56		0.44	0.30
Control Delay	3.3	3.2	3.9		61.5	26.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.3	3.2	3.9		61.5	26.2
LOS	A	A	A		E	C
Approach Delay		3.2	3.9		46.0	
Approach LOS		A	A		D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 55 (46%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 4.8		Intersection LOS: A	
Intersection Capacity Utilization 55.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 11: Sheridan Drive & Frankhauser Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	346	1228	0	0	1026	586	309	0	386	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	230		120	0		0
Storage Lanes	1		0	0		0	1		1	0		0
Taper Length (ft)	105		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.91	0.95	1.00	1.00	1.00
Frt					0.945			0.894	0.850			
Flt Protected	0.950						0.950	0.985				
Satd. Flow (prot)	1770	5085	0	0	4806	0	1681	1493	1504	0	0	0
Flt Permitted	0.069						0.950	0.985				
Satd. Flow (perm)	129	5085	0	0	4806	0	1681	1493	1504	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					181			90	105			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		610			193			830			423	
Travel Time (s)		9.2			2.9			18.9			9.6	
Peak Hour Factor	0.99	0.99	0.99	0.92	0.92	0.92	0.80	0.80	0.80	0.92	0.92	0.92
Adj. Flow (vph)	349	1240	0	0	1115	637	386	0	482	0	0	0
Shared Lane Traffic (%)							22%		42%			
Lane Group Flow (vph)	349	1240	0	0	1752	0	301	287	280	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			
Detector Template	Left	Thru			Thru		Left	Thru	Right			
Leading Detector (ft)	20	100			100		20	100	20			
Trailing Detector (ft)	0	0			0		0	0	0			
Detector 1 Position(ft)	0	0			0		0	0	0			
Detector 1 Size(ft)	20	6			6		20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt						custom		Perm			
Protected Phases	1	6			2		3	3				
Permitted Phases	6						3		3			
Detector Phase	1	6			2		3	3	3			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	3.0	4.0			4.0		6.0	6.0	6.0			
Minimum Split (s)	7.3	33.9			27.8		29.0	29.0	29.0			
Total Split (s)	21.0	90.0	0.0	0.0	69.0	0.0	30.0	30.0	30.0	0.0	0.0	0.0
Total Split (%)	17.5%	75.0%	0.0%	0.0%	57.5%	0.0%	25.0%	25.0%	25.0%	0.0%	0.0%	0.0%
Maximum Green (s)	16.7	84.1			63.2		24.8	24.8	24.8			
Yellow Time (s)	3.2	3.9			3.9		3.2	3.2	3.2			
All-Red Time (s)	1.1	2.0			1.9		2.0	2.0	2.0			
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.9	4.0	4.0	5.8	4.0	5.2	5.2	5.2	4.0	4.0	4.0
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	2.0	3.0			3.0		2.0	2.0	2.0			
Recall Mode	None	C-Max			C-Max		None	None	None			
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		21.0			15.0							
Pedestrian Calls (#/hr)		0			0							
Act Effct Green (s)	86.9	85.3			63.2		23.6	23.6	23.6			
Actuated g/C Ratio	0.72	0.71			0.53		0.20	0.20	0.20			
v/c Ratio	1.03	0.34			0.67		0.91	0.78	0.73			
Control Delay	87.5	7.7			16.9		78.5	46.7	40.1			
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0			
Total Delay	87.5	7.7			16.9		78.5	46.7	40.1			
LOS	F	A			B		E	D	D			
Approach Delay		25.2			16.9			55.6				
Approach LOS		C			B			E				

Intersection Summary

Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 59 (49%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 28.0		Intersection LOS: C	
Intersection Capacity Utilization 77.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 12: Sheridan Drive & I-290 NB

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	922	589	378	957	260	652
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	215		140	0
Storage Lanes		1	1		2	2
Taper Length (ft)		230	100		100	25
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	3433	3539	3433	2787
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3539	1583	3433	3539	3433	2787
Right Turn on Red		No				Yes
Satd. Flow (RTOR)						161
Link Speed (mph)	45			45	35	
Link Distance (ft)	314			610	338	
Travel Time (s)	4.8			9.2	6.6	
Peak Hour Factor	0.98	0.98	0.95	0.95	0.85	0.85
Adj. Flow (vph)	941	601	398	1007	306	767
Shared Lane Traffic (%)						
Lane Group Flow (vph)	941	601	398	1007	306	767
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	100	20	20	100	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type		pm+ov	Prot			pm+ov
Protected Phases	2	3	1	1 2	3	1
Permitted Phases		2				3
Detector Phase	2	3	1	1 2	3	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	20.0	6.0	3.0		6.0	3.0
Minimum Split (s)	30.5	11.2	7.3		11.2	7.3
Total Split (s)	66.0	25.0	29.0	95.0	25.0	29.0
Total Split (%)	55.0%	20.8%	24.2%	79.2%	20.8%	24.2%
Maximum Green (s)	60.5	19.8	24.7		19.8	24.7
Yellow Time (s)	3.9	3.2	3.2		3.2	3.2
All-Red Time (s)	1.6	2.0	1.1		2.0	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.2	4.3	4.3	5.2	4.3
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Recall Mode	C-Max	None	None		None	None
Walk Time (s)	7.0					
Flash Dont Walk (s)	18.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	65.9	86.5	24.0	95.4	15.1	44.3
Actuated g/C Ratio	0.55	0.72	0.20	0.80	0.13	0.37
v/c Ratio	0.48	0.53	0.58	0.36	0.71	0.68
Control Delay	18.6	10.0	42.5	3.4	59.3	27.4
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	18.6	10.0	42.5	3.6	59.3	27.4
LOS	B	A	D	A	E	C
Approach Delay	15.2			14.6	36.5	
Approach LOS	B			B	D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 36 (30%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 20.7		Intersection LOS: C	
Intersection Capacity Utilization 56.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 13: Sheridan Drive & Harlem Road

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	228	338	539	11	462	470
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	330	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25	25		25	75	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.997			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3529	0	1770	3539
Flt Permitted	0.950				0.188	
Satd. Flow (perm)	1770	1583	3529	0	350	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		82	2			
Link Speed (mph)	30		35			35
Link Distance (ft)	333		250			456
Travel Time (s)	7.6		4.9			8.9
Peak Hour Factor	0.69	0.69	0.77	0.77	0.92	0.92
Adj. Flow (vph)	330	490	700	14	502	511
Shared Lane Traffic (%)						
Lane Group Flow (vph)	330	490	714	0	502	511
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		pm+ov			pm+pt	
Protected Phases	3	1	2		1	6
Permitted Phases		3			6	
Detector Phase	3	1	2		1	6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	22.0	9.2	30.6		9.2	21.0
Total Split (s)	40.0	35.0	50.0	0.0	35.0	85.0
Total Split (%)	32.0%	28.0%	40.0%	0.0%	28.0%	68.0%
Maximum Green (s)	35.2	30.7	45.0		30.7	80.0
Yellow Time (s)	3.2	3.2	3.6		3.2	3.6
All-Red Time (s)	1.6	1.1	1.4		1.1	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.3	5.0	4.0	4.3	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Min		None	None
Walk Time (s)			10.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			0			
Act Effct Green (s)	22.4	51.0	25.4		54.2	53.4
Actuated g/C Ratio	0.26	0.59	0.29		0.63	0.62
v/c Ratio	0.72	0.51	0.69		0.83	0.23
Control Delay	40.9	10.8	32.2		30.1	8.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	40.9	10.8	32.2		30.1	8.0
LOS	D	B	C		C	A
Approach Delay	22.9		32.2			18.9
Approach LOS	C		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 86.3			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 23.9		Intersection LOS: C	
Intersection Capacity Utilization 65.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: I-290 SB & Harlem Road

A5

Level of Service Calculations: Background Conditions

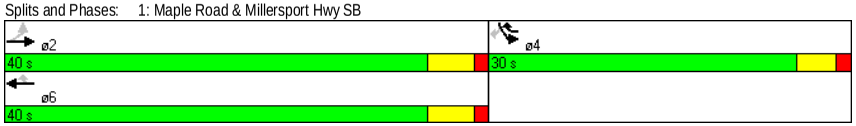
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	18	559	777	305	26	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150			150	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	35			100	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.345				0.950	
Satd. Flow (perm)	643	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						106
Link Speed (mph)		45	45		30	
Link Distance (ft)		555	654		281	
Travel Time (s)		8.4	9.9		6.4	
Peak Hour Factor	0.91	0.91	0.96	0.96	0.78	0.78
Adj. Flow (vph)	20	614	809	318	33	106
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	614	809	318	33	106
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane			Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm			pm+ov		Perm
Protected Phases		2	6	4	4	
Permitted Phases	2			6		4
Detector Phase	2	2	6	4	4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	1.0	1.0	1.0
Minimum Split (s)	9.1	9.1	9.1	6.2	6.2	6.2
Total Split (s)	40.0	40.0	40.0	30.0	30.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	42.9%	42.9%	42.9%
Maximum Green (s)	34.9	34.9	34.9	25.4	25.4	25.4
Yellow Time (s)	3.9	3.9	3.9	3.2	3.2	3.2
All-Red Time (s)	1.2	1.2	1.2	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	4.6	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	52.8	52.8	52.8	70.0	7.5	7.5
Actuated g/C Ratio	0.75	0.75	0.75	1.00	0.11	0.11
v/c Ratio	0.04	0.23	0.30	0.20	0.18	0.40
Control Delay	2.9	3.0	5.2	0.3	29.7	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	3.0	5.2	0.3	29.7	11.4
LOS	A	A	A	A	C	B
Approach Delay		3.0	3.8		15.8	
Approach LOS		A	A		B	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.40
Intersection Signal Delay: 4.4 Intersection LOS: A
Intersection Capacity Utilization 34.7% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Maple Road & Millersport Hwy SB

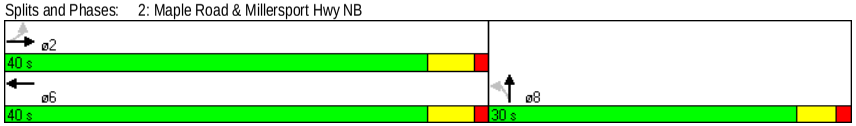


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	542	0	0	935	52	147	1	463	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	50		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.992			0.850				
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	3539	0	0	3511	0	1770	1583	0	0	0	0
Flt Permitted	0.214						0.950					
Satd. Flow (perm)	399	3539	0	0	3511	0	1770	1583	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					11			204				
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		654			1770			319			263	
Travel Time (s)		9.9			26.8			7.3			6.0	
Peak Hour Factor	0.85	0.85	0.85	0.93	0.93	0.93	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	49	638	0	0	1005	56	158	1	498	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	638	0	0	1061	0	158	499	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2				
Detector Template	Left	Thru			Thru		Left	Thru				
Leading Detector (ft)	20	100			100		20	100				
Trailing Detector (ft)	0	0			0		0	0				
Detector 1 Position(ft)	0	0			0		0	0				
Detector 1 Size(ft)	20	6			6		20	6				
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0				
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Perm						Perm					
Protected Phases		2			6			8				
Permitted Phases	2						8					
Detector Phase	2	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	1.0			4.0		1.0	1.0				
Minimum Split (s)	6.1	6.1			9.1		6.2	6.2				
Total Split (s)	40.0	40.0	0.0	0.0	40.0	0.0	30.0	30.0	0.0	0.0	0.0	0.0
Total Split (%)	57.1%	57.1%	0.0%	0.0%	57.1%	0.0%	42.9%	42.9%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	34.9	34.9			34.9		25.4	25.4				
Yellow Time (s)	3.9	3.9			3.9		3.2	3.2				
All-Red Time (s)	1.2	1.2			1.2		1.4	1.4				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	4.0	4.0	5.1	4.0	4.6	4.6	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Recall Mode	C-Min	C-Min			C-Min		None	None				
Act Effct Green (s)	40.3	40.3			40.3		20.0	20.0				
Actuated g/C Ratio	0.58	0.58			0.58		0.29	0.29				
v/c Ratio	0.21	0.31			0.52		0.31	0.84				
Control Delay	13.4	9.5			11.3		19.6	25.9				
Queue Delay	0.0	0.0			0.0		0.0	0.0				
Total Delay	13.4	9.5			11.3		19.6	25.9				
LOS	B	A			B		B	C				
Approach Delay		9.8			11.3			24.4				
Approach LOS		A			B			C				

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 14.4		Intersection LOS: B	
Intersection Capacity Utilization 71.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Maple Road & Millersport Hwy NB

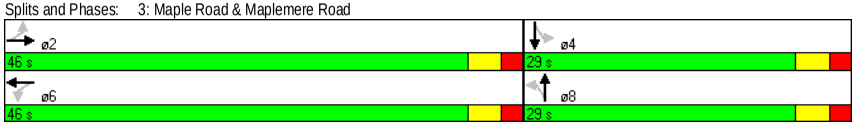


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	870	46	12	978	28	43	3	16	34	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	70		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50		25	50		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.996			0.965			0.957	
Flt Protected	0.950			0.950				0.967			0.967	
Satd. Flow (prot)	1770	3514	0	1770	3525	0	0	1738	0	0	1724	0
Flt Permitted	0.226			0.240				0.739			0.733	
Satd. Flow (perm)	421	3514	0	447	3525	0	0	1328	0	0	1307	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			6			25			28	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1770			1106			378			402	
Travel Time (s)		26.8			16.8			8.6			9.1	
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.60	0.60	0.60	0.58	0.58	0.58
Adj. Flow (vph)	24	1012	53	13	1075	31	72	5	27	59	0	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	1065	0	13	1106	0	0	104	0	0	87	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		27.0	27.0		27.0	27.0	
Total Split (s)	46.0	46.0	0.0	46.0	46.0	0.0	29.0	29.0	0.0	29.0	29.0	0.0
Total Split (%)	61.3%	61.3%	0.0%	61.3%	61.3%	0.0%	38.7%	38.7%	0.0%	38.7%	38.7%	0.0%
Maximum Green (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)							7.0	7.0		7.0	7.0	
Flash Dont Walk (s)							15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)							0	0		0	0	
Act Effct Green (s)	25.9	25.9		25.9	25.9			8.3			8.2	
Actuated g/C Ratio	0.64	0.64		0.64	0.64			0.21			0.20	
v/c Ratio	0.09	0.47		0.05	0.49			0.35			0.30	
Control Delay	6.0	6.4		5.4	6.6			15.7			14.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	6.0	6.4		5.4	6.6			15.7			14.1	
LOS	A	A		A	A			B			B	
Approach Delay		6.4			6.6			15.7			14.1	
Approach LOS		A			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 40.3			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 7.2		Intersection LOS: A	
Intersection Capacity Utilization 40.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Maple Road & Maplemere Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	915	6	13	993	24	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999				0.904	
Flt Protected			0.950		0.986	
Satd. Flow (prot)	3536	0	1770	3539	1660	0
Flt Permitted			0.950		0.986	
Satd. Flow (perm)	3536	0	1770	3539	1660	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	1106			1928	355	
Travel Time (s)	16.8			29.2	8.1	
Peak Hour Factor	0.79	0.79	0.87	0.87	0.76	0.76
Adj. Flow (vph)	1158	8	15	1141	32	80
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1166	0	15	1141	112	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	915	6	13	993	24	61
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.87	0.87	0.76	0.76
Hourly flow rate (vph)	1158	8	15	1141	32	80
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	1106					
pX, platoon unblocked			0.87		0.87	0.87
vC, conflicting volume			1166		1763	583
vC1, stage 1 conf vol					1162	
vC2, stage 2 conf vol					601	
vCu, unblocked vol			903		1585	237
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		88	88
cM capacity (veh/h)			655		269	669

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	772	394	15	571	571	112
Volume Left	0	0	15	0	0	32
Volume Right	0	8	0	0	0	80
cSH	1700	1700	655	1700	1700	471
Volume to Capacity	0.45	0.23	0.02	0.34	0.34	0.24
Queue Length 95th (ft)	0	0	2	0	0	23
Control Delay (s)	0.0	0.0	10.6	0.0	0.0	15.0
Lane LOS			B			C
Approach Delay (s)	0.0		0.1			15.0
Approach LOS						C

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	39.2%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	968	4	1	1013	2	13	0	3	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	50		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999						0.976				
Flt Protected	0.950			0.950				0.960			0.950	
Satd. Flow (prot)	1770	3536	0	1770	3539	0	0	1745	0	0	1770	0
Flt Permitted	0.950			0.950				0.960			0.950	
Satd. Flow (perm)	1770	3536	0	1770	3539	0	0	1745	0	0	1770	0
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		446			556			469			111	
Travel Time (s)		6.8			8.4			10.7			2.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	1052	4	1	1101	2	14	0	3	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	1056	0	1	1103	0	0	17	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.1%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	968	4	1	1013	2	13	0	3	1	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1052	4	1	1101	2	14	0	3	1	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1103			1057			1609	2162	528	1636	2163	552
vC1, stage 1 conf vol							1057	1057		1104	1104	
vC2, stage 2 conf vol							553	1105		532	1059	
vCu, unblocked vol	1103			1057			1609	2162	528	1636	2163	552
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			93	100	99	99	100	100
cM capacity (veh/h)	629			655			217	204	495	205	204	478

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1	701	355	1	734	369	17	1
Volume Left	1	0	0	1	0	0	14	1
Volume Right	0	0	4	0	0	2	3	0
cSH	629	1700	1700	655	1700	1700	242	205
Volume to Capacity	0.00	0.41	0.21	0.00	0.43	0.22	0.07	0.01
Queue Length 95th (ft)	0	0	0	0	0	0	6	0
Control Delay (s)	10.7	0.0	0.0	10.5	0.0	0.0	21.0	22.6
Lane LOS	B			B			C	C
Approach Delay (s)	0.0			0.0			21.0	22.6
Approach LOS							C	C

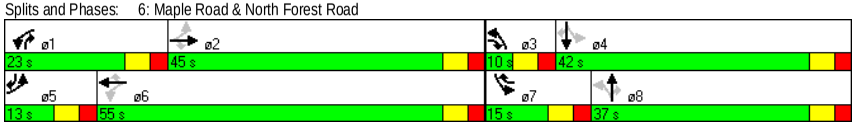
Intersection Summary				
Average Delay		0.2		
Intersection Capacity Utilization		38.1%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	788	77	249	752	90	90	229	184	123	355	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	415		220	315		150	125		220	250		250
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	90		115	60		25	95		25	90		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.292			0.112			0.223			0.358		
Satd. Flow (perm)	544	3539	1583	209	3539	1583	415	1863	1583	667	1863	1583
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			86						61			99
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1705			820			529			608	
Travel Time (s)		25.8			12.4			10.3			11.8	
Peak Hour Factor	0.90	0.90	0.90	0.95	0.95	0.95	0.90	0.90	0.90	0.80	0.80	0.80
Adj. Flow (vph)	88	876	86	262	792	95	100	254	204	154	444	198
Shared Lane Traffic (%)												
Lane Group Flow (vph)	88	876	86	262	792	95	100	254	204	154	444	198
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0
Minimum Split (s)	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0
Total Split (s)	13.0	45.0	10.0	23.0	55.0	15.0	10.0	37.0	23.0	15.0	42.0	13.0
Total Split (%)	10.8%	37.5%	8.3%	19.2%	45.8%	12.5%	8.3%	30.8%	19.2%	12.5%	35.0%	10.8%
Maximum Green (s)	7.0	39.0	4.0	17.0	49.0	9.0	4.0	31.0	17.0	9.0	36.0	7.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
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	3.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		22.0			22.0			22.0			22.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	39.0	32.1	42.3	52.5	39.9	54.9	28.6	24.5	45.5	38.3	29.4	42.5
Actuated g/C Ratio	0.37	0.31	0.40	0.50	0.38	0.52	0.27	0.23	0.43	0.37	0.28	0.41
v/c Ratio	0.31	0.81	0.12	0.81	0.59	0.11	0.60	0.58	0.28	0.46	0.85	0.28
Control Delay	18.6	41.0	5.2	43.8	28.1	13.8	43.5	42.7	14.7	28.6	53.2	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.6	41.0	5.2	43.8	28.1	13.8	43.5	42.7	14.7	28.6	53.2	12.5
LOS	B	D	A	D	C	B	D	D	B	C	D	B
Approach Delay		36.2			30.5			32.6			38.3	
Approach LOS		D			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 104.9			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 34.3		Intersection LOS: C	
Intersection Capacity Utilization 79.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Maple Road & North Forest Road



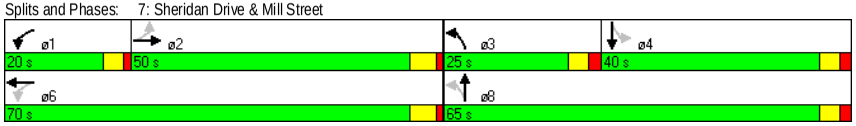
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	1271	122	220	966	9	99	21	125	30	146	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	150		0	40		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	65		25	60		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.999			0.872			0.986	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3493	0	1770	3536	0	1770	1624	0	1770	1837	0
Flt Permitted	0.261			0.080			0.235			0.598		
Satd. Flow (perm)	486	3493	0	149	3536	0	438	1624	0	1114	1837	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					1						4	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		2782			977			838			362	
Travel Time (s)		42.2			14.8			19.0			8.2	
Peak Hour Factor	0.86	0.86	0.86	0.89	0.89	0.89	0.56	0.56	0.56	0.61	0.61	0.61
Adj. Flow (vph)	6	1478	142	247	1085	10	177	38	223	49	239	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	1620	0	247	1095	0	177	261	0	49	264	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			pm+pt			pm+pt			Perm		
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		3	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		1.0	4.0		1.0	4.0		4.0	4.0	
Minimum Split (s)	28.3	28.3		6.2	28.3		6.2	34.2		34.2	34.2	
Total Split (s)	50.0	50.0	0.0	20.0	70.0	0.0	25.0	65.0	0.0	40.0	40.0	0.0
Total Split (%)	37.0%	37.0%	0.0%	14.8%	51.9%	0.0%	18.5%	48.1%	0.0%	29.6%	29.6%	0.0%
Maximum Green (s)	44.5	44.5		15.7	64.5		19.8	59.8		34.8	34.8	
Yellow Time (s)	4.3	4.3		3.2	4.3		3.2	3.2		3.2	3.2	
All-Red Time (s)	1.2	1.2		1.1	1.2		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	4.3	5.5	4.0	5.2	5.2	4.0	5.2	5.2	4.0
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		None	Max		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0			15.0			22.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0			0			0		0	0	
Act Effct Green (s)	45.4	45.4		66.1	64.9		40.5	40.5		21.6	21.6	
Actuated g/C Ratio	0.39	0.39		0.57	0.56		0.35	0.35		0.19	0.19	
v/c Ratio	0.03	1.19		0.83	0.55		0.57	0.46		0.24	0.77	
Control Delay	27.4	125.3		52.8	19.1		34.1	31.6		43.4	59.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.4	125.3		52.8	19.1		34.1	31.6		43.4	59.6	
LOS	C	F		D	B		C	C		D	E	
Approach Delay		125.0			25.3			32.6			57.1	
Approach LOS		F			C			C			E	

Intersection Summary

Area Type: Other
Cycle Length: 135
Actuated Cycle Length: 116.2
Natural Cycle: 130
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.19
Intersection Signal Delay: 72.4 Intersection LOS: E
Intersection Capacity Utilization 82.1% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 7: Sheridan Drive & Mill Street

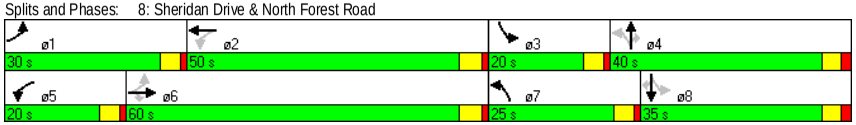


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	1286	197	181	1015	19	205	340	23	11	437	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	405		170	260		0	180		265	180		200
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	200		25	200		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850		0.997				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3529	0	1770	1863	1583	1770	3539	1583
Flt Permitted	0.132			0.067			0.201			0.477		
Satd. Flow (perm)	246	3539	1583	125	3529	0	374	1863	1583	889	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			96		1				26			337
Link Speed (mph)		45			45			40			35	
Link Distance (ft)		1668			2219			547			354	
Travel Time (s)		25.3			33.6			9.3			6.9	
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.90	0.90	0.90	0.84	0.84	0.84
Adj. Flow (vph)	95	1354	207	197	1103	21	228	378	26	13	520	338
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	1354	207	197	1124	0	228	378	26	13	520	338
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		Perm	pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2			4		4	8		8
Detector Phase	1	6	6	5	2		7	4	4	3	8	8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.3	27.9	27.9	8.3	27.9		21.0	27.2	27.2	8.3	27.2	27.2
Total Split (s)	30.0	60.0	60.0	20.0	50.0	0.0	25.0	40.0	40.0	20.0	35.0	35.0
Total Split (%)	21.4%	42.9%	42.9%	14.3%	35.7%	0.0%	17.9%	28.6%	28.6%	14.3%	25.0%	25.0%
Maximum Green (s)	25.7	54.9	54.9	15.7	44.9		20.7	34.9	34.9	15.7	29.9	29.9
Yellow Time (s)	3.2	3.9	3.9	3.2	3.9		3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.1	1.2	1.2	1.1	1.2		1.1	1.9	1.9	1.1	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.1	5.1	4.3	5.1	4.0	4.3	5.1	5.1	4.3	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
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
Recall Mode	None	Max	Max	None	Max		None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		15.0	15.0		15.0			15.0	15.0		15.0	15.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
Act Effct Green (s)	65.1	55.2	55.2	73.9	60.1		49.0	44.0	44.0	32.5	25.5	25.5
Actuated g/C Ratio	0.49	0.42	0.42	0.56	0.46		0.37	0.33	0.33	0.25	0.19	0.19
v/c Ratio	0.42	0.91	0.29	0.81	0.70		0.68	0.61	0.05	0.05	0.76	0.58
Control Delay	21.0	47.8	15.7	57.2	33.0		40.8	42.7	11.7	27.5	58.6	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	47.8	15.7	57.2	33.0		40.8	42.7	11.7	27.5	58.6	9.1
LOS	C	D	B	E	C		D	D	B	C	E	A
Approach Delay		42.3			36.6			40.8			38.9	
Approach LOS		D			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 132			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 39.7		Intersection LOS: D	
Intersection Capacity Utilization 84.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Sheridan Drive & North Forest Road



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	1	1	8	442	731	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932				0.999	
Flt Protected	0.976			0.999		
Satd. Flow (prot)	1694	0	0	1861	1861	0
Flt Permitted	0.976			0.999		
Satd. Flow (perm)	1694	0	0	1861	1861	0
Link Speed (mph)	30			35	35	
Link Distance (ft)	217			310	192	
Travel Time (s)	4.9			6.0	3.7	
Peak Hour Factor	0.50	0.50	0.83	0.83	0.94	0.94
Adj. Flow (vph)	2	2	10	533	778	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	0	0	543	783	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	8	442	731	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.83	0.83	0.94	0.94
Hourly flow rate (vph)	2	2	10	533	778	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				664		
pX, platoon unblocked	0.82					
vC, conflicting volume	1332	780	783			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1296	780	783			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	145	395	835			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	4	542	783
Volume Left	2	10	0
Volume Right	2	0	5
cSH	213	835	1700
Volume to Capacity	0.02	0.01	0.46
Queue Length 95th (ft)	1	1	0
Control Delay (s)	22.3	0.3	0.0
Lane LOS	C	A	
Approach Delay (s)	22.3	0.3	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1564	6	4	1500	16	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999				0.951	
Flt Protected			0.950		0.969	
Satd. Flow (prot)	3536	0	1770	3539	1717	0
Flt Permitted			0.950		0.969	
Satd. Flow (perm)	3536	0	1770	3539	1717	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	635			1668	278	
Travel Time (s)	9.6			25.3	6.3	
Peak Hour Factor	0.88	0.88	0.90	0.90	0.69	0.69
Adj. Flow (vph)	1777	7	4	1667	23	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1784	0	4	1667	36	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1564	6	4	1500	16	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.90	0.90	0.69	0.69
Hourly flow rate (vph)	1777	7	4	1667	23	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	635					
pX, platoon unblocked			0.84		0.84	0.84
vC, conflicting volume			1784		2623	892
vC1, stage 1 conf vol					1781	
vC2, stage 2 conf vol					842	
vCu, unblocked vol			1544		2548	476
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		81	97
cM capacity (veh/h)			356		124	447

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1185	599	4	833	833	36
Volume Left	0	0	4	0	0	23
Volume Right	0	7	0	0	0	13
cSH	1700	1700	356	1700	1700	168
Volume to Capacity	0.70	0.35	0.01	0.49	0.49	0.22
Queue Length 95th (ft)	0	0	1	0	0	20
Control Delay (s)	0.0	0.0	15.3	0.0	0.0	32.3
Lane LOS			C			D
Approach Delay (s)	0.0		0.0			32.3
Approach LOS						D

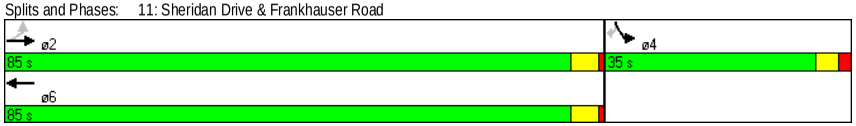
Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	53.4%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	26	1531	1492	24	38	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	105			0	0	50
Storage Lanes	1			0	1	1
Taper Length (ft)	65			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3532	0	1770	1583
Flt Permitted	0.138				0.950	
Satd. Flow (perm)	257	3539	3532	0	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			3			40
Link Speed (mph)		45	45		30	
Link Distance (ft)		1014	635		614	
Travel Time (s)		15.4	9.6		14.0	
Peak Hour Factor	0.89	0.89	0.94	0.94	0.73	0.73
Adj. Flow (vph)	29	1720	1587	26	52	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	1720	1613	0	52	40
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (ft)	20	100	100		20	20
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	6	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		1.0	1.0
Minimum Split (s)	40.0	40.0	40.0		31.1	31.1
Total Split (s)	85.0	85.0	85.0	0.0	35.0	35.0
Total Split (%)	70.8%	70.8%	70.8%	0.0%	29.2%	29.2%
Maximum Green (s)	80.2	80.2	80.2		29.9	29.9
Yellow Time (s)	3.9	3.9	3.9		3.2	3.2
All-Red Time (s)	0.9	0.9	0.9		1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.8	4.8	4.0	5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max	C-Max		None	None
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0	15.0		19.0	19.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	104.3	104.3	104.3		8.9	8.9
Actuated g/C Ratio	0.87	0.87	0.87		0.07	0.07
v/c Ratio	0.13	0.56	0.53		0.40	0.26
Control Delay	2.3	5.9	3.3		60.9	19.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	2.3	5.9	3.3		60.9	19.2
LOS	A	A	A		E	B
Approach Delay		5.8	3.3		42.8	
Approach LOS		A	A		D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 76 (63%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 5.6		Intersection LOS: A	
Intersection Capacity Utilization 53.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 11: Sheridan Drive & Frankhauser Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	249	1373	0	0	987	490	269	0	220	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	230		120	0		0
Storage Lanes	1		0	0		0	1		1	0		0
Taper Length (ft)	105		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.91	0.95	1.00	1.00	1.00
Frt					0.950			0.940	0.850			
Flt Protected	0.950						0.950	0.971				
Satd. Flow (prot)	1770	5085	0	0	4831	0	1681	1547	1504	0	0	0
Flt Permitted	0.104						0.950	0.971				
Satd. Flow (perm)	194	5085	0	0	4831	0	1681	1547	1504	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					163			26	56			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		197			193			830			423	
Travel Time (s)		3.0			2.9			18.9			9.6	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	265	1461	0	0	1050	521	306	0	250	0	0	0
Shared Lane Traffic (%)							37%		30%			
Lane Group Flow (vph)	265	1461	0	0	1571	0	193	188	175	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			
Detector Template	Left	Thru			Thru		Left	Thru	Right			
Leading Detector (ft)	20	100			100		20	100	20			
Trailing Detector (ft)	0	0			0		0	0	0			
Detector 1 Position(ft)	0	0			0		0	0	0			
Detector 1 Size(ft)	20	6			6		20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt						custom		Perm			
Protected Phases	1	6			2		3	3				
Permitted Phases	6						3		3			
Detector Phase	1	6			2		3	3	3			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	4.0			4.0		4.0	4.0	4.0			
Minimum Split (s)	6.2	33.9			27.8		29.0	29.0	29.0			
Total Split (s)	14.0	85.0	0.0	0.0	71.0	0.0	35.0	35.0	35.0	0.0	0.0	0.0
Total Split (%)	11.7%	70.8%	0.0%	0.0%	59.2%	0.0%	29.2%	29.2%	29.2%	0.0%	0.0%	0.0%
Maximum Green (s)	9.7	79.1			65.2		29.8	29.8	29.8			
Yellow Time (s)	3.2	3.9			3.9		3.2	3.2	3.2			
All-Red Time (s)	1.1	2.0			1.9		2.0	2.0	2.0			
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.9	4.0	4.0	5.8	4.0	5.2	5.2	5.2	4.0	4.0	4.0
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	2.0	3.0			3.0		2.0	2.0	2.0			
Recall Mode	None	C-Max			C-Max		None	None	None			
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		21.0			15.0							
Pedestrian Calls (#/hr)		0			0							
Act Effct Green (s)	91.8	90.2			68.9		18.7	18.7	18.7			
Actuated g/C Ratio	0.76	0.75			0.57		0.16	0.16	0.16			
v/c Ratio	0.71	0.38			0.55		0.74	0.71	0.62			
Control Delay	34.2	7.9			14.3		64.3	55.7	40.7			
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0			
Total Delay	34.2	7.9			14.3		64.3	55.7	40.7			
LOS	C	A			B		E	E	D			
Approach Delay		11.9			14.3			54.0				
Approach LOS		B			B			D				

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 37 (31%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 19.0 Intersection LOS: B
Intersection Capacity Utilization 66.3% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 12: Sheridan Drive & I-290 NB

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	819	315	459	797	285	803
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	215		140	0
Storage Lanes		1	1		2	2
Taper Length (ft)		230	100		100	25
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	3433	3539	3433	2787
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3539	1583	3433	3539	3433	2787
Right Turn on Red		No				Yes
Satd. Flow (RTOR)						151
Link Speed (mph)	45			45	35	
Link Distance (ft)	314			413	338	
Travel Time (s)	4.8			6.3	6.6	
Peak Hour Factor	0.85	0.85	0.92	0.92	0.90	0.90
Adj. Flow (vph)	964	371	499	866	317	892
Shared Lane Traffic (%)						
Lane Group Flow (vph)	964	371	499	866	317	892
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	100	20	20	100	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type		custom	Prot			custom
Protected Phases	2	2	1	1 2	3	1 3
Permitted Phases		2				3
Detector Phase	2	2	1	1 2	3	1 3

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	20.0	20.0	3.0		6.0	
Minimum Split (s)	30.5	30.5	7.3		11.2	
Total Split (s)	66.0	66.0	29.0	95.0	25.0	54.0
Total Split (%)	55.0%	55.0%	24.2%	79.2%	20.8%	45.0%
Maximum Green (s)	60.5	60.5	24.7		19.8	
Yellow Time (s)	3.9	3.9	3.2		3.2	
All-Red Time (s)	1.6	1.6	1.1		2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.3	4.3	5.2	4.3
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Recall Mode	C-Max	C-Max	None		None	
Walk Time (s)	7.0	7.0				
Flash Dont Walk (s)	18.0	18.0				
Pedestrian Calls (#/hr)	0	0				
Act Effct Green (s)	61.3	61.3	23.9	90.7	19.8	48.9
Actuated g/C Ratio	0.51	0.51	0.20	0.76	0.16	0.41
v/c Ratio	0.53	0.46	0.73	0.32	0.56	0.73
Control Delay	21.3	21.3	51.6	4.4	50.4	28.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.3	21.3	51.6	4.4	50.4	28.4
LOS	C	C	D	A	D	C
Approach Delay	21.3			21.6	34.2	
Approach LOS	C			C	C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 24 (20%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 25.4		Intersection LOS: C	
Intersection Capacity Utilization 58.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 13: Sheridan Drive & Harlem Road

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	298	681	446	21	378	364
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	330	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25	25		25	75	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.993			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3514	0	1770	3539
Flt Permitted	0.950				0.262	
Satd. Flow (perm)	1770	1583	3514	0	488	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		168	4			
Link Speed (mph)	30		35			35
Link Distance (ft)	333		250			456
Travel Time (s)	7.6		4.9			8.9
Peak Hour Factor	0.81	0.81	0.87	0.87	0.88	0.88
Adj. Flow (vph)	368	841	513	24	430	414
Shared Lane Traffic (%)						
Lane Group Flow (vph)	368	841	537	0	430	414
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		pm+ov			pm+pt	
Protected Phases	3	1	2		1	6
Permitted Phases		3			6	
Detector Phase	3	1	2		1	6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	22.0	9.2	30.6		9.2	21.0
Total Split (s)	40.0	35.0	50.0	0.0	35.0	85.0
Total Split (%)	32.0%	28.0%	40.0%	0.0%	28.0%	68.0%
Maximum Green (s)	35.2	30.7	45.0		30.7	80.0
Yellow Time (s)	3.2	3.2	3.6		3.2	3.6
All-Red Time (s)	1.6	1.1	1.4		1.1	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.3	5.0	4.0	4.3	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Min		None	None
Walk Time (s)			10.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			0			
Act Effct Green (s)	22.7	48.7	19.3		45.6	44.8
Actuated g/C Ratio	0.29	0.62	0.25		0.58	0.57
v/c Ratio	0.72	0.80	0.62		0.68	0.20
Control Delay	35.1	15.8	31.1		17.1	8.8
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	35.1	15.8	31.1		17.1	8.8
LOS	D	B	C		B	A
Approach Delay	21.7		31.1			13.0
Approach LOS	C		C			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 78			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 20.8		Intersection LOS: C	
Intersection Capacity Utilization 62.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 14: I-290 SB & Harlem Road

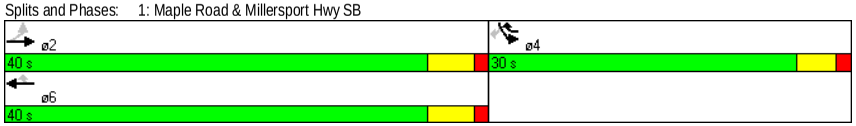
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	29	936	841	227	55	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150			150	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	35			100	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.296				0.950	
Satd. Flow (perm)	551	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						96
Link Speed (mph)		45	45		30	
Link Distance (ft)		555	654		281	
Travel Time (s)		8.4	9.9		6.4	
Peak Hour Factor	0.90	0.90	0.92	0.92	0.81	0.81
Adj. Flow (vph)	32	1040	914	247	68	215
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	1040	914	247	68	215
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane			Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm			pm+ov		Perm
Protected Phases		2	6	4	4	
Permitted Phases	2			6		4
Detector Phase	2	2	6	4	4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	1.0	1.0	1.0
Minimum Split (s)	9.1	9.1	9.1	6.2	6.2	6.2
Total Split (s)	40.0	40.0	40.0	30.0	30.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	42.9%	42.9%	42.9%
Maximum Green (s)	34.9	34.9	34.9	25.4	25.4	25.4
Yellow Time (s)	3.9	3.9	3.9	3.2	3.2	3.2
All-Red Time (s)	1.2	1.2	1.2	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	4.6	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	49.0	49.0	49.0	70.0	11.3	11.3
Actuated g/C Ratio	0.70	0.70	0.70	1.00	0.16	0.16
v/c Ratio	0.08	0.42	0.37	0.16	0.24	0.64
Control Delay	5.4	5.8	7.1	0.2	25.5	23.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.4	5.8	7.1	0.2	25.5	23.3
LOS	A	A	A	A	C	C
Approach Delay		5.8	5.6		23.9	
Approach LOS		A	A		C	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 7.7 Intersection LOS: A
Intersection Capacity Utilization 42.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Maple Road & Millersport Hwy SB

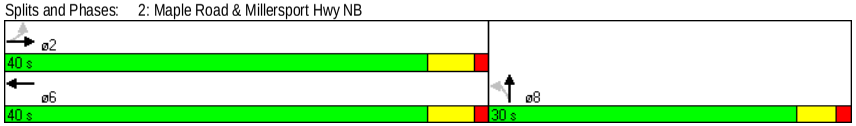


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	894	0	0	976	24	91	0	462	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	50		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.996			0.850				
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	3539	0	0	3525	0	1770	1583	0	0	0	0
Flt Permitted	0.164						0.950					
Satd. Flow (perm)	305	3539	0	0	3525	0	1770	1583	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					5			79				
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		654			1770			319			263	
Travel Time (s)		9.9			26.8			7.3			6.0	
Peak Hour Factor	0.91	0.91	0.91	0.87	0.87	0.87	0.84	0.84	0.84	0.92	0.92	0.92
Adj. Flow (vph)	107	982	0	0	1122	28	108	0	550	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	107	982	0	0	1150	0	108	550	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2				
Detector Template	Left	Thru			Thru		Left	Thru				
Leading Detector (ft)	20	100			100		20	100				
Trailing Detector (ft)	0	0			0		0	0				
Detector 1 Position(ft)	0	0			0		0	0				
Detector 1 Size(ft)	20	6			6		20	6				
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0				
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Perm						Perm					
Protected Phases		2			6			8				
Permitted Phases	2						8					
Detector Phase	2	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	1.0			4.0		1.0	1.0				
Minimum Split (s)	6.1	6.1			9.1		6.2	6.2				
Total Split (s)	40.0	40.0	0.0	0.0	40.0	0.0	30.0	30.0	0.0	0.0	0.0	0.0
Total Split (%)	57.1%	57.1%	0.0%	0.0%	57.1%	0.0%	42.9%	42.9%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	34.9	34.9			34.9		25.4	25.4				
Yellow Time (s)	3.9	3.9			3.9		3.2	3.2				
All-Red Time (s)	1.2	1.2			1.2		1.4	1.4				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	4.0	4.0	5.1	4.0	4.6	4.6	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Recall Mode	C-Min	C-Min			C-Min		None	None				
Act Effct Green (s)	36.0	36.0			36.0		24.3	24.3				
Actuated g/C Ratio	0.51	0.51			0.51		0.35	0.35				
v/c Ratio	0.68	0.54			0.63		0.18	0.92				
Control Delay	37.4	10.6			14.5		16.2	41.4				
Queue Delay	0.0	0.0			0.0		0.0	0.0				
Total Delay	37.4	10.6			14.5		16.2	41.4				
LOS	D	B			B		B	D				
Approach Delay		13.2			14.5			37.3				
Approach LOS		B			B			D				

Intersection Summary	
Area Type:	Other
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 19.2	Intersection LOS: B
Intersection Capacity Utilization 74.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 2: Maple Road & Millersport Hwy NB

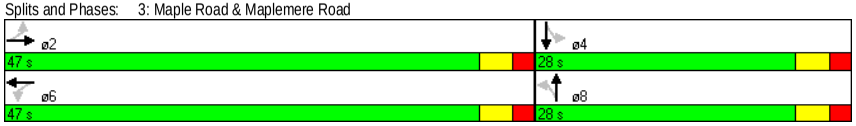


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	1218	35	21	890	62	22	0	12	77	8	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	70		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50		25	50		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.990			0.952			0.964	
Flt Protected	0.950			0.950				0.969			0.968	
Satd. Flow (prot)	1770	3525	0	1770	3504	0	0	1718	0	0	1738	0
Flt Permitted	0.231			0.161				0.788			0.767	
Satd. Flow (perm)	430	3525	0	300	3504	0	0	1397	0	0	1377	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			15			19			25	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1770			1106			378			402	
Travel Time (s)		26.8			16.8			8.6			9.1	
Peak Hour Factor	0.94	0.94	0.94	0.87	0.87	0.87	0.62	0.62	0.62	0.81	0.81	0.81
Adj. Flow (vph)	38	1296	37	24	1023	71	35	0	19	95	10	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1333	0	24	1094	0	0	54	0	0	143	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		27.0	27.0		27.0	27.0	
Total Split (s)	47.0	47.0	0.0	47.0	47.0	0.0	28.0	28.0	0.0	28.0	28.0	0.0
Total Split (%)	62.7%	62.7%	0.0%	62.7%	62.7%	0.0%	37.3%	37.3%	0.0%	37.3%	37.3%	0.0%
Maximum Green (s)	42.0	42.0		42.0	42.0		23.0	23.0		23.0	23.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)							7.0	7.0		7.0	7.0	
Flash Dont Walk (s)							15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)							0	0		0	0	
Act Effct Green (s)	33.2	33.2		33.2	33.2			9.6			10.2	
Actuated g/C Ratio	0.68	0.68		0.68	0.68			0.20			0.21	
v/c Ratio	0.13	0.56		0.12	0.46			0.19			0.47	
Control Delay	6.6	7.5		7.0	6.5			15.2			21.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	6.6	7.5		7.0	6.5			15.2			21.9	
LOS	A	A		A	A			B			C	
Approach Delay		7.5			6.5			15.2			21.9	
Approach LOS		A			A			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 49.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 8.0		Intersection LOS: A	
Intersection Capacity Utilization 50.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Maple Road & Maplemere Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1278	29	23	961	12	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.997				0.914	
Flt Protected			0.950		0.982	
Satd. Flow (prot)	3529	0	1770	3539	1672	0
Flt Permitted			0.950		0.982	
Satd. Flow (perm)	3529	0	1770	3539	1672	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	1106			1928	355	
Travel Time (s)	16.8			29.2	8.1	
Peak Hour Factor	0.73	0.73	0.77	0.77	0.82	0.82
Adj. Flow (vph)	1751	40	30	1248	15	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1791	0	30	1248	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1278	29	23	961	12	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.77	0.77	0.82	0.82
Hourly flow rate (vph)	1751	40	30	1248	15	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	1106					
pX, platoon unblocked			0.77		0.77	0.77
vC, conflicting volume			1790		2454	895
vC1, stage 1 conf vol					1771	
vC2, stage 2 conf vol					684	
vCu, unblocked vol			1430		2292	269
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			92		89	95
cM capacity (veh/h)			363		137	562

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1167	623	30	624	624	40
Volume Left	0	0	30	0	0	15
Volume Right	0	40	0	0	0	26
cSH	1700	1700	363	1700	1700	263
Volume to Capacity	0.69	0.37	0.08	0.37	0.37	0.15
Queue Length 95th (ft)	0	0	7	0	0	13
Control Delay (s)	0.0	0.0	15.8	0.0	0.0	21.1
Lane LOS			C			C
Approach Delay (s)	0.0		0.4			21.1
Approach LOS						C

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	46.2%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1292	14	8	984	2	10	0	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	50		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998						0.948				
Flt Protected				0.950				0.970				
Satd. Flow (prot)	1863	3532	0	1770	3539	0	0	1713	0	0	1863	0
Flt Permitted				0.950				0.970				
Satd. Flow (perm)	1863	3532	0	1770	3539	0	0	1713	0	0	1863	0
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		446			556			469			111	
Travel Time (s)		6.8			8.4			10.7			2.5	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.61	0.61	0.61	0.92	0.92	0.92
Adj. Flow (vph)	0	1404	15	9	1058	2	16	0	10	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1419	0	9	1060	0	0	26	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.2%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1292	14	8	984	2	10	0	6	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.61	0.61	0.61	0.92	0.92	0.92
Hourly flow rate (vph)	0	1404	15	9	1058	2	16	0	10	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1060			1420			1958	2489	710	1788	2496	530
vC1, stage 1 conf vol							1412	1412		1076	1076	
vC2, stage 2 conf vol							546	1077		712	1420	
vCu, unblocked vol	1060			1420			1958	2489	710	1788	2496	530
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			88	100	97	100	100	100
cM capacity (veh/h)	653			476			137	162	376	195	156	493

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	0	936	483	9	705	355	26	0
Volume Left	0	0	0	9	0	0	16	0
Volume Right	0	0	15	0	0	2	10	0
cSH	1700	1700	1700	476	1700	1700	180	1700
Volume to Capacity	0.00	0.55	0.28	0.02	0.41	0.21	0.15	0.00
Queue Length 95th (ft)	0	0	0	1	0	0	12	0
Control Delay (s)	0.0	0.0	0.0	12.7	0.0	0.0	28.4	0.0
Lane LOS				B			D	A
Approach Delay (s)	0.0			0.1			28.4	0.0
Approach LOS							D	A

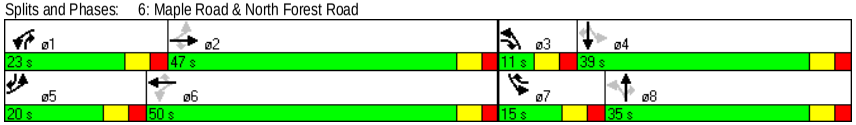
Intersection Summary					
Average Delay		0.3			
Intersection Capacity Utilization		46.2%	ICU Level of Service		A
Analysis Period (min)		15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	181	984	143	236	736	96	92	347	202	169	384	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	415		220	315		150	125		220	250		250
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	90		115	60		25	95		25	90		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.230			0.095			0.177			0.185		
Satd. Flow (perm)	428	3539	1583	177	3539	1583	330	1863	1583	345	1863	1583
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			140						30			77
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1705			820			529			608	
Travel Time (s)		25.8			12.4			10.3			11.8	
Peak Hour Factor	0.92	0.92	0.92	0.90	0.90	0.90	0.96	0.96	0.96	0.87	0.87	0.87
Adj. Flow (vph)	197	1070	155	262	818	107	96	361	210	194	441	137
Shared Lane Traffic (%)												
Lane Group Flow (vph)	197	1070	155	262	818	107	96	361	210	194	441	137
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0
Minimum Split (s)	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0
Total Split (s)	20.0	47.0	11.0	23.0	50.0	15.0	11.0	35.0	23.0	15.0	39.0	20.0
Total Split (%)	16.7%	39.2%	9.2%	19.2%	41.7%	12.5%	9.2%	29.2%	19.2%	12.5%	32.5%	16.7%
Maximum Green (s)	14.0	41.0	5.0	17.0	44.0	9.0	5.0	29.0	17.0	9.0	33.0	14.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
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	3.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		22.0			22.0			22.0			22.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	50.1	38.3	49.4	57.5	41.9	57.1	31.0	25.9	47.5	39.1	30.0	47.9
Actuated g/C Ratio	0.44	0.34	0.44	0.51	0.37	0.50	0.27	0.23	0.42	0.35	0.27	0.42
v/c Ratio	0.60	0.89	0.20	0.85	0.62	0.13	0.62	0.85	0.31	0.83	0.89	0.19
Control Delay	23.2	46.7	5.1	53.0	32.1	16.5	46.3	61.2	20.1	57.6	62.5	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	46.7	5.1	53.0	32.1	16.5	46.3	61.2	20.1	57.6	62.5	10.3
LOS	C	D	A	D	C	B	D	E	C	E	E	B
Approach Delay		38.9			35.3			46.1			52.0	
Approach LOS		D			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 113.1			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 41.5		Intersection LOS: D	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: Maple Road & North Forest Road

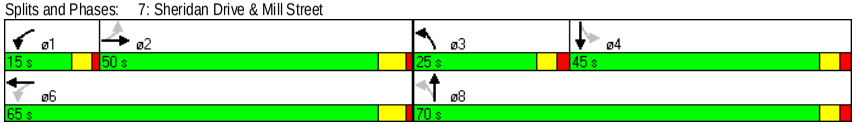


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	1290	18	121	1332	53	144	53	148	34	68	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	150		0	40		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	65		25	60		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.994			0.890			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3532	0	1770	3518	0	1770	1658	0	1770	1820	0
Flt Permitted	0.089			0.081			0.600			0.608		
Satd. Flow (perm)	166	3532	0	151	3518	0	1118	1658	0	1133	1820	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					4						7	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		2782			977			838			362	
Travel Time (s)		42.2			14.8			19.0			8.2	
Peak Hour Factor	0.84	0.84	0.84	0.92	0.92	0.92	0.83	0.83	0.83	0.77	0.77	0.77
Adj. Flow (vph)	13	1536	21	132	1448	58	173	64	178	44	88	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	1557	0	132	1506	0	173	242	0	44	104	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			pm+pt			pm+pt			Perm		
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		3	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		1.0	4.0		1.0	4.0		4.0	4.0	
Minimum Split (s)	28.3	28.3		6.2	28.3		6.2	34.2		34.2	34.2	
Total Split (s)	50.0	50.0	0.0	15.0	65.0	0.0	25.0	70.0	0.0	45.0	45.0	0.0
Total Split (%)	37.0%	37.0%	0.0%	11.1%	48.1%	0.0%	18.5%	51.9%	0.0%	33.3%	33.3%	0.0%
Maximum Green (s)	44.5	44.5		10.7	59.5		19.8	64.8		39.8	39.8	
Yellow Time (s)	4.3	4.3		3.2	4.3		3.2	3.2		3.2	3.2	
All-Red Time (s)	1.2	1.2		1.1	1.2		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	4.3	5.5	4.0	5.2	5.2	4.0	5.2	5.2	4.0
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0			15.0			22.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0			0			0		0	0	
Act Effct Green (s)	45.1	45.1		60.7	59.5		64.8	64.8		39.8	39.8	
Actuated g/C Ratio	0.33	0.33		0.45	0.44		0.48	0.48		0.29	0.29	
v/c Ratio	0.23	1.32		0.70	0.97		0.27	0.30		0.13	0.19	
Control Delay	46.1	186.5		45.9	53.6		21.6	22.7		36.4	34.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	46.1	186.5		45.9	53.6		21.6	22.7		36.4	34.3	
LOS	D	F		D	D		C	C		D	C	
Approach Delay		185.4			53.0			22.2			34.9	
Approach LOS		F			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 135			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.32			
Intersection Signal Delay: 104.0		Intersection LOS: F	
Intersection Capacity Utilization 75.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Sheridan Drive & Mill Street

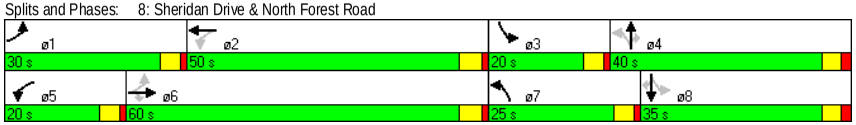


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	138	1258	260	305	1124	41	271	464	82	24	494	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	505		170	260		0	180		265	180		200
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	300		25	200		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850		0.995				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3522	0	1770	1863	1583	1770	3539	1583
Flt Permitted	0.074			0.068			0.185			0.171		
Satd. Flow (perm)	138	3539	1583	127	3522	0	345	1863	1583	319	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			130		3				70			213
Link Speed (mph)		45			45			40			35	
Link Distance (ft)		1668			2219			547			354	
Travel Time (s)		25.3			33.6			9.3			6.9	
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.89	0.89	0.89	0.95	0.95	0.95
Adj. Flow (vph)	147	1338	277	328	1209	44	304	521	92	25	520	213
Shared Lane Traffic (%)												
Lane Group Flow (vph)	147	1338	277	328	1253	0	304	521	92	25	520	213
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		Perm	pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2			4		4	8		8
Detector Phase	1	6	6	5	2		7	4	4	3	8	8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.3	27.9	27.9	8.3	27.9		21.0	27.2	27.2	8.3	27.2	27.2
Total Split (s)	30.0	60.0	60.0	20.0	50.0	0.0	25.0	40.0	40.0	20.0	35.0	35.0
Total Split (%)	21.4%	42.9%	42.9%	14.3%	35.7%	0.0%	17.9%	28.6%	28.6%	14.3%	25.0%	25.0%
Maximum Green (s)	25.7	54.9	54.9	15.7	44.9		20.7	34.9	34.9	15.7	29.9	29.9
Yellow Time (s)	3.2	3.9	3.9	3.2	3.9		3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.1	1.2	1.2	1.1	1.2		1.1	1.9	1.9	1.1	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.1	5.1	4.3	5.1	4.0	4.3	5.1	5.1	4.3	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
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
Recall Mode	None	Max	Max	None	Max		None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		15.0	15.0		15.0			15.0	15.0		15.0	15.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
Act Effct Green (s)	68.0	55.0	55.0	73.8	58.5		50.7	43.0	43.0	33.0	25.4	25.4
Actuated g/C Ratio	0.50	0.41	0.41	0.55	0.43		0.38	0.32	0.32	0.24	0.19	0.19
v/c Ratio	0.68	0.93	0.38	1.26	0.82		0.89	0.88	0.17	0.17	0.78	0.45
Control Delay	42.3	50.8	16.7	177.9	40.4		60.3	61.5	12.6	29.9	61.0	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.3	50.8	16.7	177.9	40.4		60.3	61.5	12.6	29.9	61.0	8.9
LOS	D	D	B	F	D		E	E	B	C	E	A
Approach Delay		44.7			68.9			56.2			45.4	
Approach LOS		D			E			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 135.1			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.26			
Intersection Signal Delay: 54.5		Intersection LOS: D	
Intersection Capacity Utilization 96.0%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 8: Sheridan Drive & North Forest Road



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	7	9	26	623	714	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.924				0.998	
Flt Protected	0.979			0.998		
Satd. Flow (prot)	1685	0	0	1859	1859	0
Flt Permitted	0.979			0.998		
Satd. Flow (perm)	1685	0	0	1859	1859	0
Link Speed (mph)	30			35	35	
Link Distance (ft)	224			310	238	
Travel Time (s)	5.1			6.0	4.6	
Peak Hour Factor	0.50	0.50	0.83	0.83	0.90	0.90
Adj. Flow (vph)	14	18	31	751	793	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	0	0	782	807	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	7	9	26	623	714	13
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.83	0.83	0.90	0.90
Hourly flow rate (vph)	14	18	31	751	793	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				664		
pX, platoon unblocked	0.69					
vC, conflicting volume	1614	801	808			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1665	801	808			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	80	95	96			
cM capacity (veh/h)	70	385	817			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	32	782	808
Volume Left	14	31	0
Volume Right	18	0	14
cSH	130	817	1700
Volume to Capacity	0.25	0.04	0.48
Queue Length 95th (ft)	23	3	0
Control Delay (s)	41.5	1.0	0.0
Lane LOS	E	A	
Approach Delay (s)	41.5	1.0	0.0
Approach LOS	E		

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	63.9%	ICU Level of Service	B	
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1639	13	5	1591	13	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	75		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999				0.922	
Flt Protected			0.950		0.979	
Satd. Flow (prot)	3536	0	1770	3539	1681	0
Flt Permitted			0.950		0.979	
Satd. Flow (perm)	3536	0	1770	3539	1681	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	635			1668	278	
Travel Time (s)	9.6			25.3	6.3	
Peak Hour Factor	0.87	0.87	0.94	0.94	0.75	0.75
Adj. Flow (vph)	1884	15	5	1693	17	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1899	0	5	1693	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1639	13	5	1591	13	17
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.94	0.94	0.75	0.75
Hourly flow rate (vph)	1884	15	5	1693	17	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	635					
pX, platoon unblocked			0.82		0.82	0.82
vC, conflicting volume			1899		2748	949
vC1, stage 1 conf vol					1891	
vC2, stage 2 conf vol					857	
vCu, unblocked vol			1649		2691	484
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		84	95
cM capacity (veh/h)			316		108	431

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1256	643	5	846	846	40
Volume Left	0	0	5	0	0	17
Volume Right	0	15	0	0	0	23
cSH	1700	1700	316	1700	1700	188
Volume to Capacity	0.74	0.38	0.02	0.50	0.50	0.21
Queue Length 95th (ft)	0	0	1	0	0	19
Control Delay (s)	0.0	0.0	16.6	0.0	0.0	29.3
Lane LOS			C			D
Approach Delay (s)	0.0		0.1			29.3
Approach LOS						D

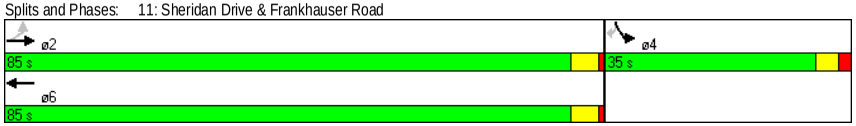
Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	55.7%	ICU Level of Service		B
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	34	1599	1563	41	52	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	105			0	0	50
Storage Lanes	1			0	1	1
Taper Length (ft)	65			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.996			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3525	0	1770	1583
Flt Permitted	0.113				0.950	
Satd. Flow (perm)	210	3539	3525	0	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			5			34
Link Speed (mph)		45	45		30	
Link Distance (ft)		1014	635		614	
Travel Time (s)		15.4	9.6		14.0	
Peak Hour Factor	0.90	0.90	0.91	0.91	0.82	0.82
Adj. Flow (vph)	38	1777	1718	45	63	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	38	1777	1763	0	63	49
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (ft)	20	100	100		20	20
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	6	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		1.0	1.0
Minimum Split (s)	40.0	40.0	40.0		31.1	31.1
Total Split (s)	85.0	85.0	85.0	0.0	35.0	35.0
Total Split (%)	70.8%	70.8%	70.8%	0.0%	29.2%	29.2%
Maximum Green (s)	80.2	80.2	80.2		29.9	29.9
Yellow Time (s)	3.9	3.9	3.9		3.2	3.2
All-Red Time (s)	0.9	0.9	0.9		1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.8	4.8	4.0	5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max	C-Max		None	None
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0	15.0		19.0	19.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	103.6	103.6	103.6		9.6	9.6
Actuated g/C Ratio	0.86	0.86	0.86		0.08	0.08
v/c Ratio	0.21	0.58	0.58		0.44	0.31
Control Delay	3.6	3.3	4.0		61.5	28.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.6	3.3	4.0		61.5	28.2
LOS	A	A	A		E	C
Approach Delay		3.3	4.0		47.0	
Approach LOS		A	A		D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 55 (46%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 5.0		Intersection LOS: A	
Intersection Capacity Utilization 56.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 11: Sheridan Drive & Frankhauser Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	355	1259	0	0	1052	601	317	0	396	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	230		120	0		0
Storage Lanes	1		0	0		0	1		1	0		0
Taper Length (ft)	105		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.91	0.95	1.00	1.00	1.00
Frt					0.945			0.894	0.850			
Flt Protected	0.950						0.950	0.985				
Satd. Flow (prot)	1770	5085	0	0	4806	0	1681	1493	1504	0	0	0
Flt Permitted	0.063						0.950	0.985				
Satd. Flow (perm)	117	5085	0	0	4806	0	1681	1493	1504	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					182			90	98			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		610			193			830			423	
Travel Time (s)		9.2			2.9			18.9			9.6	
Peak Hour Factor	0.99	0.99	0.99	0.92	0.92	0.92	0.80	0.80	0.80	0.92	0.92	0.92
Adj. Flow (vph)	359	1272	0	0	1143	653	396	0	495	0	0	0
Shared Lane Traffic (%)							22%		42%			
Lane Group Flow (vph)	359	1272	0	0	1796	0	309	295	287	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			
Detector Template	Left	Thru			Thru		Left	Thru	Right			
Leading Detector (ft)	20	100			100		20	100	20			
Trailing Detector (ft)	0	0			0		0	0	0			
Detector 1 Position(ft)	0	0			0		0	0	0			
Detector 1 Size(ft)	20	6			6		20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt						custom		Perm			
Protected Phases	1	6			2		3	3				
Permitted Phases	6						3		3			
Detector Phase	1	6			2		3	3	3			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	3.0	4.0			4.0		6.0	6.0	6.0			
Minimum Split (s)	7.3	33.9			27.8		29.0	29.0	29.0			
Total Split (s)	21.0	90.0	0.0	0.0	69.0	0.0	30.0	30.0	30.0	0.0	0.0	0.0
Total Split (%)	17.5%	75.0%	0.0%	0.0%	57.5%	0.0%	25.0%	25.0%	25.0%	0.0%	0.0%	0.0%
Maximum Green (s)	16.7	84.1			63.2		24.8	24.8	24.8			
Yellow Time (s)	3.2	3.9			3.9		3.2	3.2	3.2			
All-Red Time (s)	1.1	2.0			1.9		2.0	2.0	2.0			
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.9	4.0	4.0	5.8	4.0	5.2	5.2	5.2	4.0	4.0	4.0
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	2.0	3.0			3.0		2.0	2.0	2.0			
Recall Mode	None	C-Max			C-Max		None	None	None			
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		21.0			15.0							
Pedestrian Calls (#/hr)		0			0							
Act Effct Green (s)	86.7	85.1			63.2		23.8	23.8	23.8			
Actuated g/C Ratio	0.72	0.71			0.53		0.20	0.20	0.20			
v/c Ratio	1.09	0.35			0.69		0.93	0.80	0.76			
Control Delay	107.2	7.9			17.3		81.3	48.5	43.3			
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0			
Total Delay	107.2	7.9			17.3		81.3	48.5	43.3			
LOS	F	A			B		F	D	D			
Approach Delay		29.8			17.3			58.2				
Approach LOS		C			B			E				

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 59 (49%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay: 30.4		Intersection LOS: C	
Intersection Capacity Utilization 79.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 12: Sheridan Drive & I-290 NB

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	945	604	388	981	267	668
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	215		140	0
Storage Lanes		1	1		2	2
Taper Length (ft)		230	100		100	25
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	3433	3539	3433	2787
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3539	1583	3433	3539	3433	2787
Right Turn on Red		No				Yes
Satd. Flow (RTOR)						151
Link Speed (mph)	45			45	35	
Link Distance (ft)	314			610	338	
Travel Time (s)	4.8			9.2	6.6	
Peak Hour Factor	0.98	0.98	0.95	0.95	0.85	0.85
Adj. Flow (vph)	964	616	408	1033	314	786
Shared Lane Traffic (%)						
Lane Group Flow (vph)	964	616	408	1033	314	786
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	100	20	20	100	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type		pm+ov	Prot			pm+ov
Protected Phases	2	3	1	1 2	3	1
Permitted Phases		2				3
Detector Phase	2	3	1	1 2	3	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	20.0	6.0	3.0		6.0	3.0
Minimum Split (s)	30.5	11.2	7.3		11.2	7.3
Total Split (s)	66.0	25.0	29.0	95.0	25.0	29.0
Total Split (%)	55.0%	20.8%	24.2%	79.2%	20.8%	24.2%
Maximum Green (s)	60.5	19.8	24.7		19.8	24.7
Yellow Time (s)	3.9	3.2	3.2		3.2	3.2
All-Red Time (s)	1.6	2.0	1.1		2.0	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.2	4.3	4.3	5.2	4.3
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Recall Mode	C-Max	None	None		None	None
Walk Time (s)	7.0					
Flash Dont Walk (s)	18.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	65.4	86.4	24.1	95.0	15.5	44.8
Actuated g/C Ratio	0.54	0.72	0.20	0.79	0.13	0.37
v/c Ratio	0.50	0.54	0.59	0.37	0.71	0.69
Control Delay	19.1	10.2	42.4	3.6	58.8	28.2
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	19.1	10.2	42.4	3.9	58.8	28.2
LOS	B	B	D	A	E	C
Approach Delay	15.6			14.8	36.9	
Approach LOS	B			B	D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 36 (30%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 21.0		Intersection LOS: C	
Intersection Capacity Utilization 57.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 13: Sheridan Drive & Harlem Road

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	234	347	553	11	474	482
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	330	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25	25		25	75	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.997			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3529	0	1770	3539
Flt Permitted	0.950				0.177	
Satd. Flow (perm)	1770	1583	3529	0	330	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		77	2			
Link Speed (mph)	30		35			35
Link Distance (ft)	333		250			456
Travel Time (s)	7.6		4.9			8.9
Peak Hour Factor	0.69	0.69	0.77	0.77	0.92	0.92
Adj. Flow (vph)	339	503	718	14	515	524
Shared Lane Traffic (%)						
Lane Group Flow (vph)	339	503	732	0	515	524
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		pm+ov			pm+pt	
Protected Phases	3	1	2		1	6
Permitted Phases		3			6	
Detector Phase	3	1	2		1	6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	22.0	9.2	30.6		9.2	21.0
Total Split (s)	40.0	35.0	50.0	0.0	35.0	85.0
Total Split (%)	32.0%	28.0%	40.0%	0.0%	28.0%	68.0%
Maximum Green (s)	35.2	30.7	45.0		30.7	80.0
Yellow Time (s)	3.2	3.2	3.6		3.2	3.6
All-Red Time (s)	1.6	1.1	1.4		1.1	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.3	5.0	4.0	4.3	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Min		None	None
Walk Time (s)			10.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			0			
Act Effct Green (s)	23.2	52.9	26.3		56.2	55.5
Actuated g/C Ratio	0.26	0.59	0.30		0.63	0.62
v/c Ratio	0.74	0.52	0.70		0.85	0.24
Control Delay	42.5	11.4	33.4		33.2	8.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	42.5	11.4	33.4		33.2	8.2
LOS	D	B	C		C	A
Approach Delay	23.9		33.4			20.6
Approach LOS	C		C			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 89.1			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 25.2		Intersection LOS: C	
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: I-290 SB & Harlem Road

A6

Level of Service Calculations: Full Development Conditions

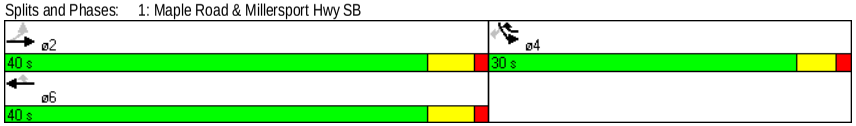
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	18	605	828	312	31	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150			150	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	35			100	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.324				0.950	
Satd. Flow (perm)	604	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						106
Link Speed (mph)		45	45		30	
Link Distance (ft)		555	654		281	
Travel Time (s)		8.4	9.9		6.4	
Peak Hour Factor	0.91	0.91	0.96	0.96	0.78	0.78
Adj. Flow (vph)	20	665	862	325	40	106
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	665	862	325	40	106
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane			Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm			pm+ov		Perm
Protected Phases		2	6	4	4	
Permitted Phases	2			6		4
Detector Phase	2	2	6	4	4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	1.0	1.0	1.0
Minimum Split (s)	9.1	9.1	9.1	6.2	6.2	6.2
Total Split (s)	40.0	40.0	40.0	30.0	30.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	42.9%	42.9%	42.9%
Maximum Green (s)	34.9	34.9	34.9	25.4	25.4	25.4
Yellow Time (s)	3.9	3.9	3.9	3.2	3.2	3.2
All-Red Time (s)	1.2	1.2	1.2	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	4.6	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	52.7	52.7	52.7	70.0	7.6	7.6
Actuated g/C Ratio	0.75	0.75	0.75	1.00	0.11	0.11
v/c Ratio	0.04	0.25	0.32	0.21	0.21	0.40
Control Delay	2.9	3.1	5.8	0.3	30.2	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	3.1	5.8	0.3	30.2	11.3
LOS	A	A	A	A	C	B
Approach Delay		3.1	4.3		16.4	
Approach LOS		A	A		B	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.40
Intersection Signal Delay: 4.7 Intersection LOS: A
Intersection Capacity Utilization 36.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Maple Road & Millersport Hwy SB

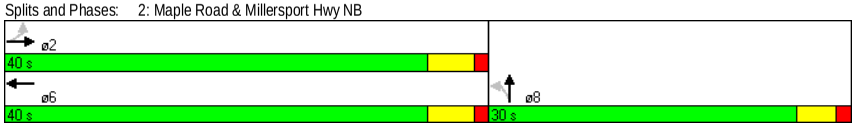


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	593	0	0	993	56	147	1	466	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	50		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.992			0.850				
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	3539	0	0	3511	0	1770	1583	0	0	0	0
Flt Permitted	0.187						0.950					
Satd. Flow (perm)	348	3539	0	0	3511	0	1770	1583	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					12			174				
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		654			1770			319			263	
Travel Time (s)		9.9			26.8			7.3			6.0	
Peak Hour Factor	0.85	0.85	0.85	0.93	0.93	0.93	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	49	698	0	0	1068	60	158	1	501	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	698	0	0	1128	0	158	502	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2				
Detector Template	Left	Thru			Thru		Left	Thru				
Leading Detector (ft)	20	100			100		20	100				
Trailing Detector (ft)	0	0			0		0	0				
Detector 1 Position(ft)	0	0			0		0	0				
Detector 1 Size(ft)	20	6			6		20	6				
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0				
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Perm						Perm					
Protected Phases		2			6			8				
Permitted Phases	2						8					
Detector Phase	2	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	1.0			4.0		1.0	1.0				
Minimum Split (s)	6.1	6.1			9.1		6.2	6.2				
Total Split (s)	40.0	40.0	0.0	0.0	40.0	0.0	30.0	30.0	0.0	0.0	0.0	0.0
Total Split (%)	57.1%	57.1%	0.0%	0.0%	57.1%	0.0%	42.9%	42.9%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	34.9	34.9			34.9		25.4	25.4				
Yellow Time (s)	3.9	3.9			3.9		3.2	3.2				
All-Red Time (s)	1.2	1.2			1.2		1.4	1.4				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	4.0	4.0	5.1	4.0	4.6	4.6	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Recall Mode	C-Min	C-Min			C-Min		None	None				
Act Effct Green (s)	39.1	39.1			39.1		21.2	21.2				
Actuated g/C Ratio	0.56	0.56			0.56		0.30	0.30				
v/c Ratio	0.25	0.35			0.57		0.30	0.84				
Control Delay	15.6	10.6			12.5		18.7	27.4				
Queue Delay	0.0	0.0			0.0		0.0	0.0				
Total Delay	15.6	10.6			12.5		18.7	27.4				
LOS	B	B			B		B	C				
Approach Delay		10.9			12.5			25.3				
Approach LOS		B			B			C				

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 71.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Maple Road & Millersport Hwy NB

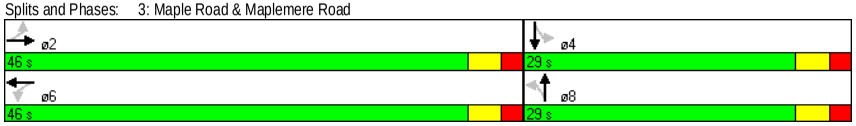


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	924	46	12	1040	28	43	3	16	34	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	70		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50		25	50		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.996			0.965			0.957	
Flt Protected	0.950			0.950				0.967			0.967	
Satd. Flow (prot)	1770	3514	0	1770	3525	0	0	1738	0	0	1724	0
Flt Permitted	0.205			0.220				0.739			0.733	
Satd. Flow (perm)	382	3514	0	410	3525	0	0	1328	0	0	1307	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			6			25			28	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1770			1106			378			402	
Travel Time (s)		26.8			16.8			8.6			9.1	
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.60	0.60	0.60	0.58	0.58	0.58
Adj. Flow (vph)	24	1074	53	13	1143	31	72	5	27	59	0	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	1127	0	13	1174	0	0	104	0	0	87	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		27.0	27.0		27.0	27.0	
Total Split (s)	46.0	46.0	0.0	46.0	46.0	0.0	29.0	29.0	0.0	29.0	29.0	0.0
Total Split (%)	61.3%	61.3%	0.0%	61.3%	61.3%	0.0%	38.7%	38.7%	0.0%	38.7%	38.7%	0.0%
Maximum Green (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)							7.0	7.0		7.0	7.0	
Flash Dont Walk (s)							15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)							0	0		0	0	
Act Effct Green (s)	27.3	27.3		27.3	27.3			8.4			8.3	
Actuated g/C Ratio	0.65	0.65		0.65	0.65			0.20			0.20	
v/c Ratio	0.10	0.49		0.05	0.51			0.36			0.31	
Control Delay	6.1	6.5		5.4	6.7			16.6			14.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	6.1	6.5		5.4	6.7			16.6			14.9	
LOS	A	A		A	A			B			B	
Approach Delay		6.5			6.7			16.6			14.9	
Approach LOS		A			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 41.8			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 7.3		Intersection LOS: A	
Intersection Capacity Utilization 42.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Maple Road & Maplemere Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	969	6	13	1055	24	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999				0.904	
Flt Protected			0.950		0.986	
Satd. Flow (prot)	3536	0	1770	3539	1660	0
Flt Permitted			0.950		0.986	
Satd. Flow (perm)	3536	0	1770	3539	1660	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	1106			1002	355	
Travel Time (s)	16.8			15.2	8.1	
Peak Hour Factor	0.79	0.79	0.87	0.87	0.76	0.76
Adj. Flow (vph)	1227	8	15	1213	32	80
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1235	0	15	1213	112	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	969	6	13	1055	24	61
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.87	0.87	0.76	0.76
Hourly flow rate (vph)	1227	8	15	1213	32	80
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	1106					
pX, platoon unblocked			0.85		0.85	0.85
vC, conflicting volume			1234		1867	617
vC1, stage 1 conf vol					1230	
vC2, stage 2 conf vol					636	
vCu, unblocked vol			928		1670	204
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		88	88
cM capacity (veh/h)			624		253	684

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	818	416	15	606	606	112
Volume Left	0	0	15	0	0	32
Volume Right	0	8	0	0	0	80
cSH	1700	1700	624	1700	1700	462
Volume to Capacity	0.48	0.24	0.02	0.36	0.36	0.24
Queue Length 95th (ft)	0	0	2	0	0	23
Control Delay (s)	0.0	0.0	10.9	0.0	0.0	15.3
Lane LOS			B			C
Approach Delay (s)	0.0		0.1			15.3
Approach LOS						C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1068	4	1	1111	2	13	0	3	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	50		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999						0.976				
Flt Protected	0.950			0.950				0.960			0.950	
Satd. Flow (prot)	1770	3536	0	1770	3539	0	0	1745	0	0	1770	0
Flt Permitted	0.950			0.950				0.960			0.950	
Satd. Flow (perm)	1770	3536	0	1770	3539	0	0	1745	0	0	1770	0
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		446			556			469			111	
Travel Time (s)		6.8			8.4			10.7			2.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	1161	4	1	1208	2	14	0	3	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	1165	0	1	1210	0	0	17	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1068	4	1	1111	2	13	0	3	1	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1161	4	1	1208	2	14	0	3	1	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1210			1165			1771	2377	583	1797	2378	605
vC1, stage 1 conf vol							1165	1165		1211	1211	
vC2, stage 2 conf vol							606	1212		586	1167	
vCu, unblocked vol	1210			1165			1771	2377	583	1797	2378	605
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			92	100	99	99	100	100
cM capacity (veh/h)	572			595			186	179	456	177	179	441

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1	774	391	1	805	405	17	1
Volume Left	1	0	0	1	0	0	14	1
Volume Right	0	0	4	0	0	2	3	0
cSH	572	1700	1700	595	1700	1700	210	177
Volume to Capacity	0.00	0.46	0.23	0.00	0.47	0.24	0.08	0.01
Queue Length 95th (ft)	0	0	0	0	0	0	7	0
Control Delay (s)	11.3	0.0	0.0	11.1	0.0	0.0	23.7	25.5
Lane LOS	B			B			C	D
Approach Delay (s)	0.0			0.0			23.7	25.5
Approach LOS							C	D

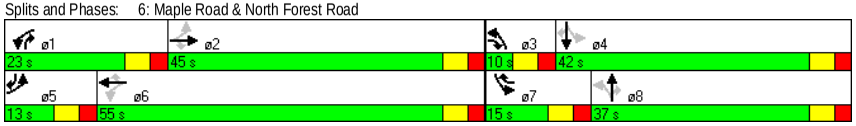
Intersection Summary				
Average Delay		0.2		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	860	84	252	824	90	92	231	185	123	362	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	415		220	315		150	125		220	250		250
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	90		115	60		25	95		25	90		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.253			0.099			0.202			0.353		
Satd. Flow (perm)	471	3539	1583	184	3539	1583	376	1863	1583	658	1863	1583
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			92						53			79
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1705			820			529			608	
Travel Time (s)		25.8			12.4			10.3			11.8	
Peak Hour Factor	0.90	0.90	0.90	0.95	0.95	0.95	0.90	0.90	0.90	0.80	0.80	0.80
Adj. Flow (vph)	111	956	93	265	867	95	102	257	206	154	452	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	111	956	93	265	867	95	102	257	206	154	452	226
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0
Minimum Split (s)	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0
Total Split (s)	13.0	45.0	10.0	23.0	55.0	15.0	10.0	37.0	23.0	15.0	42.0	13.0
Total Split (%)	10.8%	37.5%	8.3%	19.2%	45.8%	12.5%	8.3%	30.8%	19.2%	12.5%	35.0%	10.8%
Maximum Green (s)	7.0	39.0	4.0	17.0	49.0	9.0	4.0	31.0	17.0	9.0	36.0	7.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
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	3.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		22.0			22.0			22.0			22.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	41.5	34.5	44.7	55.8	43.1	58.1	29.8	25.8	47.4	39.5	30.6	43.7
Actuated g/C Ratio	0.38	0.32	0.41	0.51	0.39	0.53	0.27	0.24	0.43	0.36	0.28	0.40
v/c Ratio	0.42	0.85	0.13	0.83	0.62	0.11	0.66	0.59	0.29	0.47	0.87	0.33
Control Delay	21.0	44.2	5.2	48.9	29.0	13.9	49.8	43.8	16.1	29.8	56.0	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	44.2	5.2	48.9	29.0	13.9	49.8	43.8	16.1	29.8	56.0	16.5
LOS	C	D	A	D	C	B	D	D	B	C	E	B
Approach Delay		38.9			32.1			34.8			40.4	
Approach LOS		D			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 109.2			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 36.4		Intersection LOS: D	
Intersection Capacity Utilization 81.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Maple Road & North Forest Road

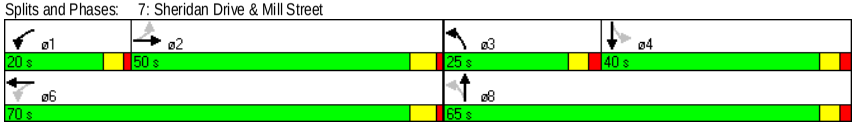


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	1336	130	220	1046	9	105	21	125	30	146	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	150		0	40		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	65		25	60		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.999			0.872			0.983	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3493	0	1770	3536	0	1770	1624	0	1770	1831	0
Flt Permitted	0.223			0.080			0.233			0.598		
Satd. Flow (perm)	415	3493	0	149	3536	0	434	1624	0	1114	1831	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					1						5	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		2782			977			838			362	
Travel Time (s)		42.2			14.8			19.0			8.2	
Peak Hour Factor	0.86	0.86	0.86	0.89	0.89	0.89	0.56	0.56	0.56	0.61	0.61	0.61
Adj. Flow (vph)	7	1553	151	247	1175	10	188	38	223	49	239	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	1704	0	247	1185	0	188	261	0	49	269	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			pm+pt			pm+pt			Perm		
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		3	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		1.0	4.0		1.0	4.0		4.0	4.0	
Minimum Split (s)	28.3	28.3		6.2	28.3		6.2	34.2		34.2	34.2	
Total Split (s)	50.0	50.0	0.0	20.0	70.0	0.0	25.0	65.0	0.0	40.0	40.0	0.0
Total Split (%)	37.0%	37.0%	0.0%	14.8%	51.9%	0.0%	18.5%	48.1%	0.0%	29.6%	29.6%	0.0%
Maximum Green (s)	44.5	44.5		15.7	64.5		19.8	59.8		34.8	34.8	
Yellow Time (s)	4.3	4.3		3.2	4.3		3.2	3.2		3.2	3.2	
All-Red Time (s)	1.2	1.2		1.1	1.2		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	4.3	5.5	4.0	5.2	5.2	4.0	5.2	5.2	4.0
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		None	Max		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0			15.0			22.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0			0			0		0	0	
Act Effct Green (s)	45.4	45.4		66.2	65.0		41.8	41.8		22.2	22.2	
Actuated g/C Ratio	0.39	0.39		0.56	0.55		0.36	0.36		0.19	0.19	
v/c Ratio	0.04	1.26		0.84	0.61		0.59	0.45		0.23	0.77	
Control Delay	28.7	156.4		54.5	20.8		34.5	31.1		43.3	59.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	28.7	156.4		54.5	20.8		34.5	31.1		43.3	59.6	
LOS	C	F		D	C		C	C		D	E	
Approach Delay		155.9			26.6			32.5			57.1	
Approach LOS		F			C			C			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 117.5			
Natural Cycle: 140			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.26			
Intersection Signal Delay: 86.4		Intersection LOS: F	
Intersection Capacity Utilization 84.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 7: Sheridan Drive & Mill Street

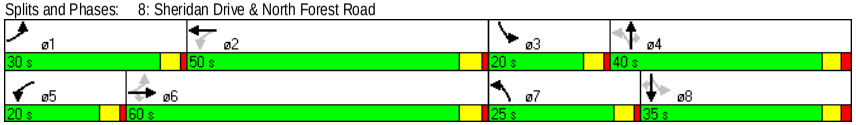


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	92	1359	220	181	1104	19	237	342	23	11	444	294
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	405		170	260		0	180		265	180		200
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	200		25	200		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850		0.997				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3529	0	1770	1863	1583	1770	3539	1583
Flt Permitted	0.094			0.067			0.194			0.494		
Satd. Flow (perm)	175	3539	1583	125	3529	0	361	1863	1583	920	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102		1				26			324
Link Speed (mph)		45			45			40			35	
Link Distance (ft)		1668			2219			547			354	
Travel Time (s)		25.3			33.6			9.3			6.9	
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.90	0.90	0.90	0.84	0.84	0.84
Adj. Flow (vph)	97	1431	232	197	1200	21	263	380	26	13	529	350
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	1431	232	197	1221	0	263	380	26	13	529	350
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		Perm	pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2			4		4	8		8
Detector Phase	1	6	6	5	2		7	4	4	3	8	8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.3	27.9	27.9	8.3	27.9		21.0	27.2	27.2	8.3	27.2	27.2
Total Split (s)	30.0	60.0	60.0	20.0	50.0	0.0	25.0	40.0	40.0	20.0	35.0	35.0
Total Split (%)	21.4%	42.9%	42.9%	14.3%	35.7%	0.0%	17.9%	28.6%	28.6%	14.3%	25.0%	25.0%
Maximum Green (s)	25.7	54.9	54.9	15.7	44.9		20.7	34.9	34.9	15.7	29.9	29.9
Yellow Time (s)	3.2	3.9	3.9	3.2	3.9		3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.1	1.2	1.2	1.1	1.2		1.1	1.9	1.9	1.1	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.1	5.1	4.3	5.1	4.0	4.3	5.1	5.1	4.3	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
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
Recall Mode	None	Max	Max	None	Max		None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		15.0	15.0		15.0			15.0	15.0		15.0	15.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
Act Effct Green (s)	65.2	55.2	55.2	73.8	59.9		50.6	45.5	45.5	32.9	25.9	25.9
Actuated g/C Ratio	0.49	0.41	0.41	0.55	0.45		0.38	0.34	0.34	0.25	0.19	0.19
v/c Ratio	0.49	0.98	0.32	0.81	0.77		0.77	0.60	0.05	0.05	0.77	0.62
Control Delay	25.3	58.3	16.9	58.5	36.3		45.8	42.3	11.7	27.4	59.5	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.3	58.3	16.9	58.5	36.3		45.8	42.3	11.7	27.4	59.5	11.8
LOS	C	E	B	E	D		D	D	B	C	E	B
Approach Delay		51.0			39.4			42.5			40.3	
Approach LOS		D			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 133.5			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 44.3		Intersection LOS: D	
Intersection Capacity Utilization 88.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Sheridan Drive & North Forest Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	210	1564	6	4	1500	131	16	0	9	99	0	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0	75		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.988			0.951				0.850
Flt Protected	0.950			0.950				0.969			0.950	
Satd. Flow (prot)	1770	3536	0	1770	3497	0	0	1717	0	0	1770	1583
Flt Permitted	0.950			0.950				0.969			0.950	
Satd. Flow (perm)	1770	3536	0	1770	3497	0	0	1717	0	0	1770	1583
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		635			1668			278			269	
Travel Time (s)		9.6			25.3			6.3			6.1	
Peak Hour Factor	0.92	0.88	0.88	0.90	0.90	0.92	0.69	0.92	0.69	0.92	0.92	0.92
Adj. Flow (vph)	228	1777	7	4	1667	142	23	0	13	108	0	183
Shared Lane Traffic (%)												
Lane Group Flow (vph)	228	1784	0	4	1809	0	0	36	0	0	108	183
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 75.4%		ICU Level of Service D	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	210	1564	6	4	1500	131	16	0	9	99	0	168
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.88	0.88	0.90	0.90	0.92	0.69	0.92	0.69	0.92	0.92	0.92
Hourly flow rate (vph)	228	1777	7	4	1667	142	23	0	13	108	0	183
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		635										
pX, platoon unblocked				0.80			0.80	0.80	0.80	0.80	0.80	
vC, conflicting volume	1809			1784			3262	4055	892	3105	3987	905
vC1, stage 1 conf vol							2237	2237		1747	1747	
vC2, stage 2 conf vol							1025	1818		1358	2241	
vCu, unblocked vol	1809			1483			3327	4316	371	3131	4232	905
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	32			99			0	100	97	0	100	35
cM capacity (veh/h)	336			360			0	0	502	49	20	280

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	228	1185	599	4	1111	698	36	108	183
Volume Left	228	0	0	4	0	0	23	108	0
Volume Right	0	0	7	0	0	142	13	0	183
cSH	336	1700	1700	360	1700	1700	1	49	280
Volume to Capacity	0.68	0.70	0.35	0.01	0.65	0.41	57.14	2.20	0.65
Queue Length 95th (ft)	118	0	0	1	0	0	Err	275	105
Control Delay (s)	35.6	0.0	0.0	15.1	0.0	0.0	Err	728.2	39.2
Lane LOS	E			C			F	F	E
Approach Delay (s)	4.0			0.0			Err	294.7	
Approach LOS							F	F	

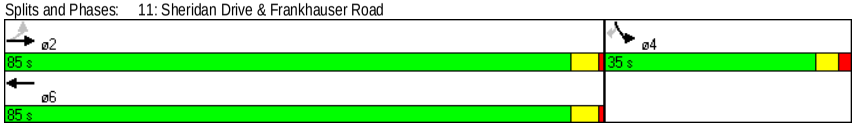
Intersection Summary				
Average Delay		109.8		
Intersection Capacity Utilization		75.4%	ICU Level of Service	D
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	26	1741	1660	24	38	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	105			0	0	50
Storage Lanes	1			0	1	1
Taper Length (ft)	65			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3532	0	1770	1583
Flt Permitted	0.110				0.950	
Satd. Flow (perm)	205	3539	3532	0	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			3			31
Link Speed (mph)		45	45		30	
Link Distance (ft)		1014	635		614	
Travel Time (s)		15.4	9.6		14.0	
Peak Hour Factor	0.89	0.89	0.94	0.94	0.73	0.73
Adj. Flow (vph)	29	1956	1766	26	52	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	1956	1792	0	52	40
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (ft)	20	100	100		20	20
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	6	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		1.0	1.0
Minimum Split (s)	40.0	40.0	40.0		31.1	31.1
Total Split (s)	85.0	85.0	85.0	0.0	35.0	35.0
Total Split (%)	70.8%	70.8%	70.8%	0.0%	29.2%	29.2%
Maximum Green (s)	80.2	80.2	80.2		29.9	29.9
Yellow Time (s)	3.9	3.9	3.9		3.2	3.2
All-Red Time (s)	0.9	0.9	0.9		1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.8	4.8	4.0	5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max	C-Max		None	None
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0	15.0		19.0	19.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	104.3	104.3	104.3		8.9	8.9
Actuated g/C Ratio	0.87	0.87	0.87		0.07	0.07
v/c Ratio	0.16	0.64	0.58		0.40	0.27
Control Delay	3.0	7.5	3.8		60.9	26.6
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.0	7.5	3.8		60.9	26.6
LOS	A	A	A		E	C
Approach Delay		7.4	3.8		46.0	
Approach LOS		A	A		D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 76 (63%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 6.7		Intersection LOS: A	
Intersection Capacity Utilization 59.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 11: Sheridan Drive & Frankhauser Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	249	1530	0	0	1111	533	269	0	273	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	230		120	0		0
Storage Lanes	1		0	0		0	1		1	0		0
Taper Length (ft)	105		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.91	0.95	1.00	1.00	1.00
Frt					0.951			0.917	0.850			
Flt Protected	0.950						0.950	0.978				
Satd. Flow (prot)	1770	5085	0	0	4836	0	1681	1520	1504	0	0	0
Flt Permitted	0.073						0.950	0.978				
Satd. Flow (perm)	136	5085	0	0	4836	0	1681	1520	1504	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					158			39	39			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		197			193			830			423	
Travel Time (s)		3.0			2.9			18.9			9.6	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	265	1628	0	0	1182	567	306	0	310	0	0	0
Shared Lane Traffic (%)							30%		37%			
Lane Group Flow (vph)	265	1628	0	0	1749	0	214	207	195	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			
Detector Template	Left	Thru			Thru		Left	Thru	Right			
Leading Detector (ft)	20	100			100		20	100	20			
Trailing Detector (ft)	0	0			0		0	0	0			
Detector 1 Position(ft)	0	0			0		0	0	0			
Detector 1 Size(ft)	20	6			6		20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt						custom		Perm			
Protected Phases	1	6			2		3	3				
Permitted Phases	6						3		3			
Detector Phase	1	6			2		3	3	3			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	4.0			4.0		4.0	4.0	4.0			
Minimum Split (s)	6.2	33.9			27.8		29.0	29.0	29.0			
Total Split (s)	14.0	85.0	0.0	0.0	71.0	0.0	35.0	35.0	35.0	0.0	0.0	0.0
Total Split (%)	11.7%	70.8%	0.0%	0.0%	59.2%	0.0%	29.2%	29.2%	29.2%	0.0%	0.0%	0.0%
Maximum Green (s)	9.7	79.1			65.2		29.8	29.8	29.8			
Yellow Time (s)	3.2	3.9			3.9		3.2	3.2	3.2			
All-Red Time (s)	1.1	2.0			1.9		2.0	2.0	2.0			
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.9	4.0	4.0	5.8	4.0	5.2	5.2	5.2	4.0	4.0	4.0
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	2.0	3.0			3.0		2.0	2.0	2.0			
Recall Mode	None	C-Max			C-Max		None	None	None			
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		21.0			15.0							
Pedestrian Calls (#/hr)		0			0							
Act Effct Green (s)	90.2	88.6			65.2		20.3	20.3	20.3			
Actuated g/C Ratio	0.75	0.74			0.54		0.17	0.17	0.17			
v/c Ratio	0.73	0.43			0.65		0.75	0.72	0.68			
Control Delay	41.6	8.6			17.0		63.3	51.1	48.5			
Queue Delay	0.0	0.1			0.0		0.0	0.0	0.0			
Total Delay	41.6	8.7			17.0		63.3	51.1	48.5			
LOS	D	A			B		E	D	D			
Approach Delay		13.3			17.0			54.5				
Approach LOS		B			B			D				

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 37 (31%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 20.8		Intersection LOS: C	
Intersection Capacity Utilization 70.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 12: Sheridan Drive & I-290 NB

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	895	315	519	861	285	884
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	215		140	0
Storage Lanes		1	1		2	2
Taper Length (ft)		230	100		100	25
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	3433	3539	3433	2787
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3539	1583	3433	3539	3433	2787
Right Turn on Red		No				Yes
Satd. Flow (RTOR)						118
Link Speed (mph)	45			45	35	
Link Distance (ft)	314			413	338	
Travel Time (s)	4.8			6.3	6.6	
Peak Hour Factor	0.85	0.85	0.92	0.92	0.90	0.90
Adj. Flow (vph)	1053	371	564	936	317	982
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1053	371	564	936	317	982
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	100	20	20	100	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type		custom	Prot			custom
Protected Phases	2	2	1	1 2	3	1 3
Permitted Phases		2				3
Detector Phase	2	2	1	1 2	3	1 3

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	20.0	20.0	3.0		6.0	
Minimum Split (s)	30.5	30.5	7.3		11.2	
Total Split (s)	66.0	66.0	29.0	95.0	25.0	54.0
Total Split (%)	55.0%	55.0%	24.2%	79.2%	20.8%	45.0%
Maximum Green (s)	60.5	60.5	24.7		19.8	
Yellow Time (s)	3.9	3.9	3.2		3.2	
All-Red Time (s)	1.6	1.6	1.1		2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.3	4.3	5.2	4.3
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Recall Mode	C-Max	C-Max	None		None	
Walk Time (s)	7.0	7.0				
Flash Dont Walk (s)	18.0	18.0				
Pedestrian Calls (#/hr)	0	0				
Act Effct Green (s)	60.5	60.5	24.7	90.7	19.8	49.7
Actuated g/C Ratio	0.50	0.50	0.21	0.76	0.16	0.41
v/c Ratio	0.59	0.46	0.80	0.35	0.56	0.80
Control Delay	22.7	21.7	53.6	4.7	50.4	33.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	21.7	53.6	4.7	50.4	33.0
LOS	C	C	D	A	D	C
Approach Delay	22.4			23.1	37.3	
Approach LOS	C			C	D	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 24 (20%), Referenced to phase 2:EBWB, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 27.2 Intersection LOS: C
Intersection Capacity Utilization 63.8% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 13: Sheridan Drive & Harlem Road

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	298	734	474	21	414	389
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	330	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25	25		25	75	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3518	0	1770	3539
Flt Permitted	0.950				0.225	
Satd. Flow (perm)	1770	1583	3518	0	419	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		149	4			
Link Speed (mph)	30		35			35
Link Distance (ft)	333		250			456
Travel Time (s)	7.6		4.9			8.9
Peak Hour Factor	0.81	0.81	0.87	0.87	0.88	0.88
Adj. Flow (vph)	368	906	545	24	470	442
Shared Lane Traffic (%)						
Lane Group Flow (vph)	368	906	569	0	470	442
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		pm+ov			pm+pt	
Protected Phases	3	1	2		1	6
Permitted Phases		3			6	
Detector Phase	3	1	2		1	6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	22.0	9.2	30.6		9.2	21.0
Total Split (s)	40.0	35.0	50.0	0.0	35.0	85.0
Total Split (%)	32.0%	28.0%	40.0%	0.0%	28.0%	68.0%
Maximum Green (s)	35.2	30.7	45.0		30.7	80.0
Yellow Time (s)	3.2	3.2	3.6		3.2	3.6
All-Red Time (s)	1.6	1.1	1.4		1.1	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.3	5.0	4.0	4.3	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Min		None	None
Walk Time (s)			10.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			0			
Act Effct Green (s)	23.5	55.9	20.6		53.2	52.4
Actuated g/C Ratio	0.27	0.65	0.24		0.62	0.61
v/c Ratio	0.76	0.84	0.67		0.68	0.21
Control Delay	41.1	19.1	35.1		19.2	8.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	41.1	19.1	35.1		19.2	8.5
LOS	D	B	D		B	A
Approach Delay	25.4		35.1			14.0
Approach LOS	C		D			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 86.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 23.7		Intersection LOS: C	
Intersection Capacity Utilization 67.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: I-290 SB & Harlem Road

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	977	54	98	1007	62	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	225		0	150
Storage Lanes		0	1		1	1
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.992					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3511	0	1770	3539	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3511	0	1770	3539	1770	1583
Link Speed (mph)	45			45	30	
Link Distance (ft)	1002			926	372	
Travel Time (s)	15.2			14.0	8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1062	59	107	1095	67	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1121	0	107	1095	67	109
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	977	54	98	1007	62	100
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1062	59	107	1095	67	109
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						6
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1121		1852	560
vC1, stage 1 conf vol					1091	
vC2, stage 2 conf vol					760	
vCu, unblocked vol			1121		1852	560
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			83		69	77
cM capacity (veh/h)			619		220	471

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	708	413	107	547	547	176
Volume Left	0	0	107	0	0	67
Volume Right	0	59	0	0	0	109
cSH	1700	1700	619	1700	1700	575
Volume to Capacity	0.42	0.24	0.17	0.32	0.32	0.31
Queue Length 95th (ft)	0	0	15	0	0	32
Control Delay (s)	0.0	0.0	12.0	0.0	0.0	20.1
Lane LOS			B			C
Approach Delay (s)	0.0		1.1			20.1
Approach LOS						C

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	47.6%	ICU Level of Service		A
Analysis Period (min)	15			

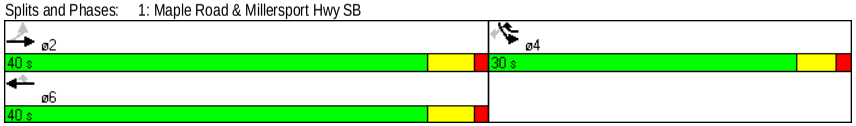
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	29	976	888	230	59	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150			150	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	35			100	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.276				0.950	
Satd. Flow (perm)	514	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						83
Link Speed (mph)		45	45		30	
Link Distance (ft)		555	654		281	
Travel Time (s)		8.4	9.9		6.4	
Peak Hour Factor	0.90	0.90	0.92	0.92	0.81	0.81
Adj. Flow (vph)	32	1084	965	250	73	215
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	1084	965	250	73	215
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane			Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm			pm+ov		Perm
Protected Phases		2	6	4	4	
Permitted Phases	2			6		4
Detector Phase	2	2	6	4	4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	1.0	1.0	1.0
Minimum Split (s)	9.1	9.1	9.1	6.2	6.2	6.2
Total Split (s)	40.0	40.0	40.0	30.0	30.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	42.9%	42.9%	42.9%
Maximum Green (s)	34.9	34.9	34.9	25.4	25.4	25.4
Yellow Time (s)	3.9	3.9	3.9	3.2	3.2	3.2
All-Red Time (s)	1.2	1.2	1.2	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	4.6	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	48.5	48.5	48.5	70.0	11.8	11.8
Actuated g/C Ratio	0.69	0.69	0.69	1.00	0.17	0.17
v/c Ratio	0.09	0.44	0.39	0.16	0.25	0.64
Control Delay	5.8	6.2	8.4	0.2	25.2	24.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.8	6.2	8.4	0.2	25.2	24.6
LOS	A	A	A	A	C	C
Approach Delay		6.2	6.7		24.7	
Approach LOS		A	A		C	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 8.5 Intersection LOS: A
Intersection Capacity Utilization 43.4% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Maple Road & Millersport Hwy SB

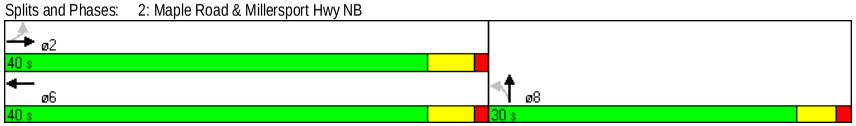


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	938	0	0	1026	29	91	0	466	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	50		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.996			0.850				
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	3539	0	0	3525	0	1770	1583	0	0	0	0
Flt Permitted	0.144						0.950					
Satd. Flow (perm)	268	3539	0	0	3525	0	1770	1583	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					6			69				
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		654			1770			319			263	
Travel Time (s)		9.9			26.8			7.3			6.0	
Peak Hour Factor	0.91	0.91	0.91	0.87	0.87	0.87	0.84	0.84	0.84	0.92	0.92	0.92
Adj. Flow (vph)	107	1031	0	0	1179	33	108	0	555	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	107	1031	0	0	1212	0	108	555	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2				
Detector Template	Left	Thru			Thru		Left	Thru				
Leading Detector (ft)	20	100			100		20	100				
Trailing Detector (ft)	0	0			0		0	0				
Detector 1 Position(ft)	0	0			0		0	0				
Detector 1 Size(ft)	20	6			6		20	6				
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0				
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Perm						Perm					
Protected Phases		2			6			8				
Permitted Phases	2						8					
Detector Phase	2	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	1.0			4.0		1.0	1.0				
Minimum Split (s)	6.1	6.1			9.1		6.2	6.2				
Total Split (s)	40.0	40.0	0.0	0.0	40.0	0.0	30.0	30.0	0.0	0.0	0.0	0.0
Total Split (%)	57.1%	57.1%	0.0%	0.0%	57.1%	0.0%	42.9%	42.9%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	34.9	34.9			34.9		25.4	25.4				
Yellow Time (s)	3.9	3.9			3.9		3.2	3.2				
All-Red Time (s)	1.2	1.2			1.2		1.4	1.4				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	4.0	4.0	5.1	4.0	4.6	4.6	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Recall Mode	C-Min	C-Min			C-Min		None	None				
Act Effct Green (s)	35.9	35.9			35.9		24.4	24.4				
Actuated g/C Ratio	0.51	0.51			0.51		0.35	0.35				
v/c Ratio	0.78	0.57			0.67		0.18	0.93				
Control Delay	52.4	11.2			15.2		16.2	44.4				
Queue Delay	0.0	0.0			0.0		0.0	0.0				
Total Delay	52.4	11.2			15.2		16.2	44.4				
LOS	D	B			B		B	D				
Approach Delay		15.1			15.2			39.8				
Approach LOS		B			B			D				

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 20.6		Intersection LOS: C	
Intersection Capacity Utilization 75.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Maple Road & Millersport Hwy NB

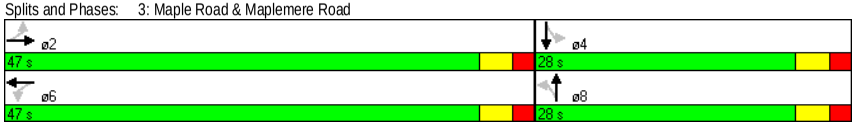


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	1266	35	21	944	62	22	0	12	77	8	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	70		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50		25	50		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.991			0.952			0.964	
Flt Protected	0.950			0.950				0.969			0.968	
Satd. Flow (prot)	1770	3525	0	1770	3507	0	0	1718	0	0	1738	0
Flt Permitted	0.212			0.150				0.786			0.767	
Satd. Flow (perm)	395	3525	0	279	3507	0	0	1394	0	0	1377	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			14			19			25	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1770			1106			378			402	
Travel Time (s)		26.8			16.8			8.6			9.1	
Peak Hour Factor	0.94	0.94	0.94	0.87	0.87	0.87	0.62	0.62	0.62	0.81	0.81	0.81
Adj. Flow (vph)	38	1347	37	24	1085	71	35	0	19	95	10	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1384	0	24	1156	0	0	54	0	0	143	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		27.0	27.0		27.0	27.0	
Total Split (s)	47.0	47.0	0.0	47.0	47.0	0.0	28.0	28.0	0.0	28.0	28.0	0.0
Total Split (%)	62.7%	62.7%	0.0%	62.7%	62.7%	0.0%	37.3%	37.3%	0.0%	37.3%	37.3%	0.0%
Maximum Green (s)	42.0	42.0		42.0	42.0		23.0	23.0		23.0	23.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)							7.0	7.0		7.0	7.0	
Flash Dont Walk (s)							15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)							0	0		0	0	
Act Effct Green (s)	34.3	34.3		34.3	34.3			9.7			10.3	
Actuated g/C Ratio	0.68	0.68		0.68	0.68			0.19			0.20	
v/c Ratio	0.14	0.58		0.13	0.48			0.19			0.47	
Control Delay	6.8	7.7		7.2	6.6			15.5			22.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	6.8	7.7		7.2	6.6			15.5			22.5	
LOS	A	A		A	A			B			C	
Approach Delay		7.6			6.7			15.5			22.5	
Approach LOS		A			A			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 50.3			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 8.1		Intersection LOS: A	
Intersection Capacity Utilization 52.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Maple Road & Maplemere Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1326	29	23	1015	12	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.997				0.914	
Flt Protected			0.950		0.982	
Satd. Flow (prot)	3529	0	1770	3539	1672	0
Flt Permitted			0.950		0.982	
Satd. Flow (perm)	3529	0	1770	3539	1672	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	1106			1000	355	
Travel Time (s)	16.8			15.2	8.1	
Peak Hour Factor	0.73	0.73	0.77	0.77	0.82	0.82
Adj. Flow (vph)	1816	40	30	1318	15	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1856	0	30	1318	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1326	29	23	1015	12	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.77	0.77	0.82	0.82
Hourly flow rate (vph)	1816	40	30	1318	15	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	1106					
pX, platoon unblocked			0.75		0.75	0.75
vC, conflicting volume			1856		2555	928
vC1, stage 1 conf vol					1836	
vC2, stage 2 conf vol					719	
vCu, unblocked vol			1483		2410	252
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			91		88	95
cM capacity (veh/h)			339		125	564

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1211	645	30	659	659	40
Volume Left	0	0	30	0	0	15
Volume Right	0	40	0	0	0	26
cSH	1700	1700	339	1700	1700	248
Volume to Capacity	0.71	0.38	0.09	0.39	0.39	0.16
Queue Length 95th (ft)	0	0	7	0	0	14
Control Delay (s)	0.0	0.0	16.6	0.0	0.0	22.3
Lane LOS			C			C
Approach Delay (s)	0.0		0.4			22.3
Approach LOS						C

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	47.6%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1389	14	8	1065	2	10	0	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	50		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999						0.948				
Flt Protected				0.950				0.970				
Satd. Flow (prot)	1863	3536	0	1770	3539	0	0	1713	0	0	1863	0
Flt Permitted				0.950				0.970				
Satd. Flow (perm)	1863	3536	0	1770	3539	0	0	1713	0	0	1863	0
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		446			556			469			111	
Travel Time (s)		6.8			8.4			10.7			2.5	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.61	0.61	0.61	0.92	0.92	0.92
Adj. Flow (vph)	0	1510	15	9	1145	2	16	0	10	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1525	0	9	1147	0	0	26	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1389	14	8	1065	2	10	0	6	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.61	0.61	0.61	0.92	0.92	0.92
Hourly flow rate (vph)	0	1510	15	9	1145	2	16	0	10	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1147			1525			2107	2682	762	1928	2688	574
vC1, stage 1 conf vol							1517	1517		1163	1163	
vC2, stage 2 conf vol							590	1165		765	1525	
vCu, unblocked vol	1147			1525			2107	2682	762	1928	2688	574
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			86	100	97	100	100	100
cM capacity (veh/h)	605			433			118	143	347	172	138	462

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	0	1007	518	9	763	384	26	0
Volume Left	0	0	0	9	0	0	16	0
Volume Right	0	0	15	0	0	2	10	0
cSH	1700	1700	1700	433	1700	1700	157	1700
Volume to Capacity	0.00	0.59	0.30	0.02	0.45	0.23	0.17	0.00
Queue Length 95th (ft)	0	0	0	2	0	0	15	0
Control Delay (s)	0.0	0.0	0.0	13.5	0.0	0.0	32.5	0.0
Lane LOS				B			D	A
Approach Delay (s)	0.0			0.1			32.5	0.0
Approach LOS							D	A

Intersection Summary					
Average Delay		0.4			
Intersection Capacity Utilization		48.8%	ICU Level of Service		A
Analysis Period (min)		15			

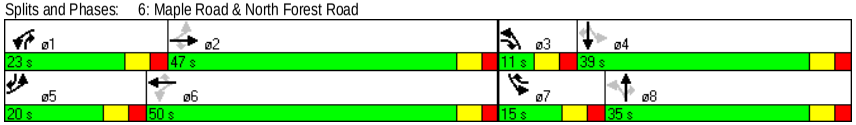
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	204	1056	146	238	795	96	96	354	205	169	387	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	415		220	315		150	125		220	250		250
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	90		115	60		25	95		25	90		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.194			0.093			0.168			0.170		
Satd. Flow (perm)	361	3539	1583	173	3539	1583	313	1863	1583	317	1863	1583
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			137						25			63
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1705			820			529			608	
Travel Time (s)		25.8			12.4			10.3			11.8	
Peak Hour Factor	0.92	0.92	0.92	0.90	0.90	0.90	0.96	0.96	0.96	0.87	0.87	0.87
Adj. Flow (vph)	222	1148	159	264	883	107	100	369	214	194	445	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	1148	159	264	883	107	100	369	214	194	445	157
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0
Minimum Split (s)	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0
Total Split (s)	20.0	47.0	11.0	23.0	50.0	15.0	11.0	35.0	23.0	15.0	39.0	20.0
Total Split (%)	16.7%	39.2%	9.2%	19.2%	41.7%	12.5%	9.2%	29.2%	19.2%	12.5%	32.5%	16.7%
Maximum Green (s)	14.0	41.0	5.0	17.0	44.0	9.0	5.0	29.0	17.0	9.0	33.0	14.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
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	3.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		22.0			22.0			22.0			22.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	52.1	39.7	50.8	58.7	43.0	58.1	31.4	26.4	48.1	39.5	30.4	48.9
Actuated g/C Ratio	0.45	0.35	0.44	0.51	0.37	0.51	0.27	0.23	0.42	0.34	0.26	0.43
v/c Ratio	0.70	0.94	0.20	0.86	0.67	0.13	0.67	0.86	0.32	0.87	0.90	0.22
Control Delay	29.6	52.1	5.6	55.9	33.6	16.7	51.4	63.5	21.1	64.7	64.3	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	52.1	5.6	55.9	33.6	16.7	51.4	63.5	21.1	64.7	64.3	13.1
LOS	C	D	A	E	C	B	D	E	C	E	E	B
Approach Delay		44.0			36.8			48.4			54.3	
Approach LOS		D			D			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 115
Natural Cycle: 95
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 44.5 Intersection LOS: D
Intersection Capacity Utilization 90.4% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 6: Maple Road & North Forest Road

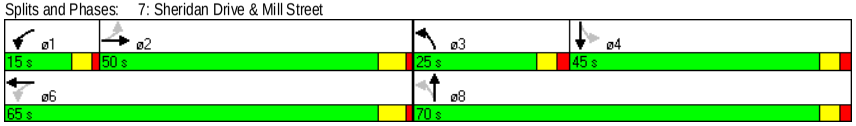


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	1364	24	121	1391	53	149	53	148	34	68	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	150		0	40		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	65		25	60		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.994			0.890			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3529	0	1770	3518	0	1770	1658	0	1770	1816	0
Flt Permitted	0.089			0.081			0.597			0.608		
Satd. Flow (perm)	166	3529	0	151	3518	0	1112	1658	0	1133	1816	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					4						8	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		2782			977			838			362	
Travel Time (s)		42.2			14.8			19.0			8.2	
Peak Hour Factor	0.84	0.84	0.84	0.92	0.92	0.92	0.83	0.83	0.83	0.77	0.77	0.77
Adj. Flow (vph)	17	1624	29	132	1512	58	180	64	178	44	88	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	1653	0	132	1570	0	180	242	0	44	106	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			pm+pt			pm+pt			Perm		
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		3	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		1.0	4.0		1.0	4.0		4.0	4.0	
Minimum Split (s)	28.3	28.3		6.2	28.3		6.2	34.2		34.2	34.2	
Total Split (s)	50.0	50.0	0.0	15.0	65.0	0.0	25.0	70.0	0.0	45.0	45.0	0.0
Total Split (%)	37.0%	37.0%	0.0%	11.1%	48.1%	0.0%	18.5%	51.9%	0.0%	33.3%	33.3%	0.0%
Maximum Green (s)	44.5	44.5		10.7	59.5		19.8	64.8		39.8	39.8	
Yellow Time (s)	4.3	4.3		3.2	4.3		3.2	3.2		3.2	3.2	
All-Red Time (s)	1.2	1.2		1.1	1.2		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	4.3	5.5	4.0	5.2	5.2	4.0	5.2	5.2	4.0
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0			15.0			22.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0			0			0		0	0	
Act Effct Green (s)	45.1	45.1		60.7	59.5		64.8	64.8		39.8	39.8	
Actuated g/C Ratio	0.33	0.33		0.45	0.44		0.48	0.48		0.29	0.29	
v/c Ratio	0.30	1.40		0.70	1.01		0.29	0.30		0.13	0.20	
Control Delay	51.5	221.1		45.9	63.0		21.7	22.7		36.4	34.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	51.5	221.1		45.9	63.0		21.7	22.7		36.4	34.1	
LOS	D	F		D	E		C	C		D	C	
Approach Delay		219.4			61.7			22.3			34.8	
Approach LOS		F			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 135			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.40			
Intersection Signal Delay: 123.2		Intersection LOS: F	
Intersection Capacity Utilization 77.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Sheridan Drive & Mill Street

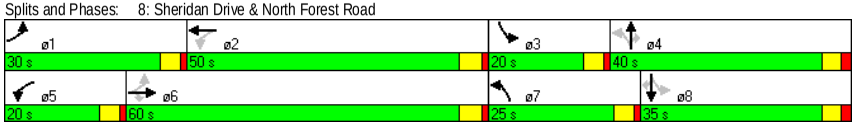


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	148	1341	291	305	1190	41	293	468	82	24	497	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	405		170	260		0	180		265	180		200
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	200		25	200		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850		0.995				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3522	0	1770	1863	1583	1770	3539	1583
Flt Permitted	0.073			0.069			0.183			0.173		
Satd. Flow (perm)	136	3539	1583	129	3522	0	341	1863	1583	322	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136		3				69			218
Link Speed (mph)		45			45			40			35	
Link Distance (ft)		1668			2219			547			354	
Travel Time (s)		25.3			33.6			9.3			6.9	
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.89	0.89	0.89	0.95	0.95	0.95
Adj. Flow (vph)	157	1427	310	328	1280	44	329	526	92	25	523	218
Shared Lane Traffic (%)												
Lane Group Flow (vph)	157	1427	310	328	1324	0	329	526	92	25	523	218
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		Perm	pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2			4		4	8		8
Detector Phase	1	6	6	5	2		7	4	4	3	8	8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.3	27.9	27.9	8.3	27.9		21.0	27.2	27.2	8.3	27.2	27.2
Total Split (s)	30.0	60.0	60.0	20.0	50.0	0.0	25.0	40.0	40.0	20.0	35.0	35.0
Total Split (%)	21.4%	42.9%	42.9%	14.3%	35.7%	0.0%	17.9%	28.6%	28.6%	14.3%	25.0%	25.0%
Maximum Green (s)	25.7	54.9	54.9	15.7	44.9		20.7	34.9	34.9	15.7	29.9	29.9
Yellow Time (s)	3.2	3.9	3.9	3.2	3.9		3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.1	1.2	1.2	1.1	1.2		1.1	1.9	1.9	1.1	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.1	5.1	4.3	5.1	4.0	4.3	5.1	5.1	4.3	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
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
Recall Mode	None	Max	Max	None	Max		None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		15.0	15.0		15.0			15.0	15.0		15.0	15.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
Act Effct Green (s)	68.7	55.0	55.0	73.2	57.8		51.5	43.8	43.8	33.2	25.7	25.7
Actuated g/C Ratio	0.51	0.40	0.40	0.54	0.43		0.38	0.32	0.32	0.24	0.19	0.19
v/c Ratio	0.70	1.00	0.43	1.27	0.88		0.95	0.88	0.17	0.17	0.78	0.46
Control Delay	45.1	63.5	18.3	180.7	45.0		70.9	61.1	12.8	29.8	61.3	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.1	63.5	18.3	180.7	45.0		70.9	61.1	12.8	29.8	61.3	8.9
LOS	D	E	B	F	D		E	E	B	C	E	A
Approach Delay		54.6			71.9			59.8			45.4	
Approach LOS		D			E			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 135.9			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.27			
Intersection Signal Delay: 59.6		Intersection LOS: E	
Intersection Capacity Utilization 99.6%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 8: Sheridan Drive & North Forest Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	1603	13	5	1558	127	13	0	17	160	0	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0	75		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.988			0.922				0.850
Flt Protected	0.950			0.950				0.979			0.950	
Satd. Flow (prot)	1770	3536	0	1770	3497	0	0	1681	0	0	1770	1583
Flt Permitted	0.950			0.950				0.979			0.950	
Satd. Flow (perm)	1770	3536	0	1770	3497	0	0	1681	0	0	1770	1583
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		635			1668			278			241	
Travel Time (s)		9.6			25.3			6.3			5.5	
Peak Hour Factor	0.92	0.87	0.87	0.94	0.94	0.92	0.75	0.92	0.75	0.92	0.92	0.92
Adj. Flow (vph)	207	1843	15	5	1657	138	17	0	23	174	0	253
Shared Lane Traffic (%)												
Lane Group Flow (vph)	207	1858	0	5	1795	0	0	40	0	0	174	253
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 83.2%		ICU Level of Service E	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	190	1603	13	5	1558	127	13	0	17	160	0	233
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.87	0.87	0.94	0.94	0.92	0.75	0.92	0.75	0.92	0.92	0.92
Hourly flow rate (vph)	207	1843	15	5	1657	138	17	0	23	174	0	253
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		635										
pX, platoon unblocked				0.79			0.79	0.79	0.79	0.79	0.79	
vC, conflicting volume	1795			1857			3356	4069	929	3094	4008	898
vC1, stage 1 conf vol							2263	2263		1737	1737	
vC2, stage 2 conf vol							1093	1806		1357	2271	
vCu, unblocked vol	1795			1560			3448	4348	389	3119	4270	898
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	39			98			0	100	95	0	100	10
cM capacity (veh/h)	340			333			0	0	483	55	23	282

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1	SB 2
Volume Total	207	1228	629	5	1105	691	40	174	253
Volume Left	207	0	0	5	0	0	17	174	0
Volume Right	0	0	15	0	0	138	23	0	253
cSH	340	1700	1700	333	1700	1700	0	55	282
Volume to Capacity	0.61	0.72	0.37	0.02	0.65	0.41	158.80	3.13	0.90
Queue Length 95th (ft)	95	0	0	1	0	0	Err	Err	202
Control Delay (s)	30.7	0.0	0.0	16.0	0.0	0.0	Err	Err	69.9
Lane LOS	D			C			F	F	F
Approach Delay (s)	3.1			0.0			Err	4112.3	
Approach LOS							F	F	

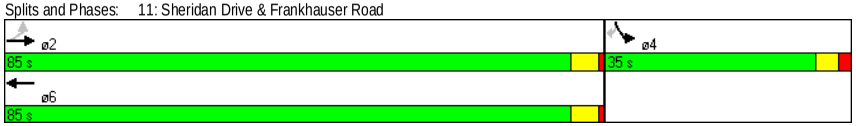
Intersection Summary				
Average Delay		499.3		
Intersection Capacity Utilization		83.2%	ICU Level of Service	E
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	34	1753	1763	41	52	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	105			0	0	50
Storage Lanes	1			0	1	1
Taper Length (ft)	65			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.997			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3529	0	1770	1583
Flt Permitted	0.084				0.950	
Satd. Flow (perm)	156	3539	3529	0	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			4			21
Link Speed (mph)		45	45		30	
Link Distance (ft)		1014	635		614	
Travel Time (s)		15.4	9.6		14.0	
Peak Hour Factor	0.90	0.90	0.91	0.91	0.82	0.82
Adj. Flow (vph)	38	1948	1937	45	63	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	38	1948	1982	0	63	49
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (ft)	20	100	100		20	20
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	6	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		1.0	1.0
Minimum Split (s)	40.0	40.0	40.0		31.1	31.1
Total Split (s)	85.0	85.0	85.0	0.0	35.0	35.0
Total Split (%)	70.8%	70.8%	70.8%	0.0%	29.2%	29.2%
Maximum Green (s)	80.2	80.2	80.2		29.9	29.9
Yellow Time (s)	3.9	3.9	3.9		3.2	3.2
All-Red Time (s)	0.9	0.9	0.9		1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.8	4.8	4.0	5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max	C-Max		None	None
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0	15.0		19.0	19.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	103.6	103.6	103.6		9.6	9.6
Actuated g/C Ratio	0.86	0.86	0.86		0.08	0.08
v/c Ratio	0.28	0.64	0.65		0.44	0.34
Control Delay	6.0	3.9	4.8		61.5	39.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	6.0	3.9	4.8		61.5	39.3
LOS	A	A	A		E	D
Approach Delay		3.9	4.8		51.8	
Approach LOS		A	A		D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 55 (46%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 5.7		Intersection LOS: A	
Intersection Capacity Utilization 61.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 11: Sheridan Drive & Frankhauser Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	355	1377	0	0	1199	654	317	0	432	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	230		120	0		0
Storage Lanes	1		0	0		0	1		1	0		0
Taper Length (ft)	105		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.91	0.95	1.00	1.00	1.00
Frt					0.947			0.884	0.850			
Flt Protected	0.950						0.950	0.989				
Satd. Flow (prot)	1770	5085	0	0	4816	0	1681	1482	1504	0	0	0
Flt Permitted	0.059						0.950	0.989				
Satd. Flow (perm)	110	5085	0	0	4816	0	1681	1482	1504	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					173			78	78			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		610			193			830			423	
Travel Time (s)		9.2			2.9			18.9			9.6	
Peak Hour Factor	0.99	0.99	0.99	0.92	0.92	0.92	0.80	0.80	0.80	0.92	0.92	0.92
Adj. Flow (vph)	359	1391	0	0	1303	711	396	0	540	0	0	0
Shared Lane Traffic (%)							18%		44%			
Lane Group Flow (vph)	359	1391	0	0	2014	0	325	309	302	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			
Detector Template	Left	Thru			Thru		Left	Thru	Right			
Leading Detector (ft)	20	100			100		20	100	20			
Trailing Detector (ft)	0	0			0		0	0	0			
Detector 1 Position(ft)	0	0			0		0	0	0			
Detector 1 Size(ft)	20	6			6		20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt						custom		Perm			
Protected Phases	1	6			2		3	3				
Permitted Phases	6						3		3			
Detector Phase	1	6			2		3	3	3			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	3.0	4.0			4.0		6.0	6.0	6.0			
Minimum Split (s)	7.3	33.9			27.8		29.0	29.0	29.0			
Total Split (s)	21.0	90.0	0.0	0.0	69.0	0.0	30.0	30.0	30.0	0.0	0.0	0.0
Total Split (%)	17.5%	75.0%	0.0%	0.0%	57.5%	0.0%	25.0%	25.0%	25.0%	0.0%	0.0%	0.0%
Maximum Green (s)	16.7	84.1			63.2		24.8	24.8	24.8			
Yellow Time (s)	3.2	3.9			3.9		3.2	3.2	3.2			
All-Red Time (s)	1.1	2.0			1.9		2.0	2.0	2.0			
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.9	4.0	4.0	5.8	4.0	5.2	5.2	5.2	4.0	4.0	4.0
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	2.0	3.0			3.0		2.0	2.0	2.0			
Recall Mode	None	C-Max			C-Max		None	None	None			
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		21.0			15.0							
Pedestrian Calls (#/hr)		0			0							
Act Effct Green (s)	86.2	84.6			63.2		24.3	24.3	24.3			
Actuated g/C Ratio	0.72	0.70			0.53		0.20	0.20	0.20			
v/c Ratio	1.13	0.39			0.77		0.96	0.85	0.82			
Control Delay	121.3	8.6			19.2		86.3	56.5	52.7			
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0			
Total Delay	121.3	8.6			19.2		86.3	56.5	52.7			
LOS	F	A			B		F	E	D			
Approach Delay		31.7			19.2			65.6				
Approach LOS		C			B			E				

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 59 (49%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay: 33.1		Intersection LOS: C	
Intersection Capacity Utilization 83.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 12: Sheridan Drive & I-290 NB

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1002	604	463	1053	267	729
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	215		140	0
Storage Lanes		1	1		2	2
Taper Length (ft)		230	100		100	25
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	3433	3539	3433	2787
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3539	1583	3433	3539	3433	2787
Right Turn on Red		No				Yes
Satd. Flow (RTOR)						129
Link Speed (mph)	45			45	35	
Link Distance (ft)	314			610	338	
Travel Time (s)	4.8			9.2	6.6	
Peak Hour Factor	0.98	0.98	0.95	0.95	0.85	0.85
Adj. Flow (vph)	1022	616	487	1108	314	858
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1022	616	487	1108	314	858
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	100	20	20	100	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type		pm+ov	Prot			pm+ov
Protected Phases	2	3	1	1 2	3	1
Permitted Phases		2				3
Detector Phase	2	3	1	1 2	3	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	20.0	6.0	3.0		6.0	3.0
Minimum Split (s)	30.5	11.2	7.3		11.2	7.3
Total Split (s)	66.0	25.0	29.0	95.0	25.0	29.0
Total Split (%)	55.0%	20.8%	24.2%	79.2%	20.8%	24.2%
Maximum Green (s)	60.5	19.8	24.7		19.8	24.7
Yellow Time (s)	3.9	3.2	3.2		3.2	3.2
All-Red Time (s)	1.6	2.0	1.1		2.0	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.2	4.3	4.3	5.2	4.3
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Recall Mode	C-Max	None	None		None	None
Walk Time (s)	7.0					
Flash Dont Walk (s)	18.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	63.4	84.4	26.1	95.0	15.5	46.8
Actuated g/C Ratio	0.53	0.70	0.22	0.79	0.13	0.39
v/c Ratio	0.55	0.55	0.65	0.40	0.71	0.74
Control Delay	20.7	11.0	40.6	5.0	58.8	30.2
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	20.7	11.0	40.6	5.3	58.8	30.2
LOS	C	B	D	A	E	C
Approach Delay	17.1			16.1	37.9	
Approach LOS	B			B	D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 36 (30%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 22.2		Intersection LOS: C	
Intersection Capacity Utilization 61.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 13: Sheridan Drive & Harlem Road

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	234	387	574	11	521	510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	330	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25	25		25	75	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.997			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3529	0	1770	3539
Flt Permitted	0.950				0.153	
Satd. Flow (perm)	1770	1583	3529	0	285	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		69	2			
Link Speed (mph)	30		35			35
Link Distance (ft)	333		250			456
Travel Time (s)	7.6		4.9			8.9
Peak Hour Factor	0.69	0.69	0.77	0.77	0.92	0.92
Adj. Flow (vph)	339	561	745	14	566	554
Shared Lane Traffic (%)						
Lane Group Flow (vph)	339	561	759	0	566	554
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		pm+ov			pm+pt	
Protected Phases	3	1	2		1	6
Permitted Phases		3			6	
Detector Phase	3	1	2		1	6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	22.0	9.2	30.6		9.2	21.0
Total Split (s)	40.0	35.0	50.0	0.0	35.0	85.0
Total Split (%)	32.0%	28.0%	40.0%	0.0%	28.0%	68.0%
Maximum Green (s)	35.2	30.7	45.0		30.7	80.0
Yellow Time (s)	3.2	3.2	3.6		3.2	3.6
All-Red Time (s)	1.6	1.1	1.4		1.1	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.3	5.0	4.0	4.3	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Min		None	None
Walk Time (s)			10.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			0			
Act Effct Green (s)	23.8	58.4	27.7		62.5	61.8
Actuated g/C Ratio	0.25	0.61	0.29		0.65	0.65
v/c Ratio	0.77	0.56	0.74		0.87	0.24
Control Delay	46.9	12.9	36.3		38.5	8.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	46.9	12.9	36.3		38.5	8.0
LOS	D	B	D		D	A
Approach Delay	25.7		36.3			23.4
Approach LOS	C		D			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 95.7			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 27.7		Intersection LOS: C	
Intersection Capacity Utilization 69.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: I-290 SB & Harlem Road

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1294	53	84	981	57	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	225		0	150
Storage Lanes		0	1		1	1
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.994					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3518	0	1770	3539	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3518	0	1770	3539	1770	1583
Link Speed (mph)	45			45	30	
Link Distance (ft)	1000			928	337	
Travel Time (s)	15.2			14.1	7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1407	58	91	1066	62	111
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1465	0	91	1066	62	111
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1294	53	84	981	57	102
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1407	58	91	1066	62	111
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						6
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			1464		2151	732
vC1, stage 1 conf vol					1435	
vC2, stage 2 conf vol					716	
vCu, unblocked vol			1464		2151	732
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			80		62	70
cM capacity (veh/h)			457		161	364

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	938	526	91	533	533	173
Volume Left	0	0	91	0	0	62
Volume Right	0	58	0	0	0	111
cSH	1700	1700	457	1700	1700	450
Volume to Capacity	0.55	0.31	0.20	0.31	0.31	0.38
Queue Length 95th (ft)	0	0	18	0	0	44
Control Delay (s)	0.0	0.0	14.8	0.0	0.0	26.8
Lane LOS			B			D
Approach Delay (s)	0.0		1.2			26.8
Approach LOS						D

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	55.4%	ICU Level of Service		B
Analysis Period (min)	15			

A7

Level of Service Calculations: Full Development Conditions with Mitigation

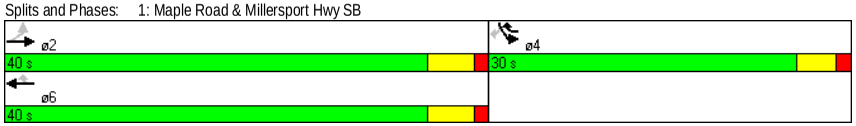
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	18	605	828	312	31	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150			150	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	35			100	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.324				0.950	
Satd. Flow (perm)	604	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						106
Link Speed (mph)		45	45		30	
Link Distance (ft)		555	654		281	
Travel Time (s)		8.4	9.9		6.4	
Peak Hour Factor	0.91	0.91	0.96	0.96	0.78	0.78
Adj. Flow (vph)	20	665	862	325	40	106
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	665	862	325	40	106
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane			Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm			pm+ov		Perm
Protected Phases		2	6	4	4	
Permitted Phases	2			6		4
Detector Phase	2	2	6	4	4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	1.0	1.0	1.0
Minimum Split (s)	9.1	9.1	9.1	6.2	6.2	6.2
Total Split (s)	40.0	40.0	40.0	30.0	30.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	42.9%	42.9%	42.9%
Maximum Green (s)	34.9	34.9	34.9	25.4	25.4	25.4
Yellow Time (s)	3.9	3.9	3.9	3.2	3.2	3.2
All-Red Time (s)	1.2	1.2	1.2	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	4.6	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	52.7	52.7	52.7	70.0	7.6	7.6
Actuated g/C Ratio	0.75	0.75	0.75	1.00	0.11	0.11
v/c Ratio	0.04	0.25	0.32	0.21	0.21	0.40
Control Delay	2.9	3.1	5.8	0.3	30.2	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	3.1	5.8	0.3	30.2	11.3
LOS	A	A	A	A	C	B
Approach Delay		3.1	4.3		16.4	
Approach LOS		A	A		B	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.40
Intersection Signal Delay: 4.7 Intersection LOS: A
Intersection Capacity Utilization 36.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Maple Road & Millersport Hwy SB

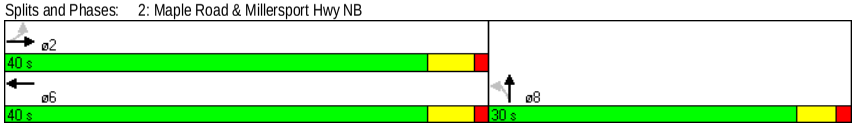


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	593	0	0	993	56	147	1	466	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	50		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.992			0.850				
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	3539	0	0	3511	0	1770	1583	0	0	0	0
Flt Permitted	0.187						0.950					
Satd. Flow (perm)	348	3539	0	0	3511	0	1770	1583	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					12			174				
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		654			1770			319			263	
Travel Time (s)		9.9			26.8			7.3			6.0	
Peak Hour Factor	0.85	0.85	0.85	0.93	0.93	0.93	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	49	698	0	0	1068	60	158	1	501	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	698	0	0	1128	0	158	502	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2				
Detector Template	Left	Thru			Thru		Left	Thru				
Leading Detector (ft)	20	100			100		20	100				
Trailing Detector (ft)	0	0			0		0	0				
Detector 1 Position(ft)	0	0			0		0	0				
Detector 1 Size(ft)	20	6			6		20	6				
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0				
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Perm						Perm					
Protected Phases		2			6			8				
Permitted Phases	2						8					
Detector Phase	2	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	1.0			4.0		1.0	1.0				
Minimum Split (s)	6.1	6.1			9.1		6.2	6.2				
Total Split (s)	40.0	40.0	0.0	0.0	40.0	0.0	30.0	30.0	0.0	0.0	0.0	0.0
Total Split (%)	57.1%	57.1%	0.0%	0.0%	57.1%	0.0%	42.9%	42.9%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	34.9	34.9			34.9		25.4	25.4				
Yellow Time (s)	3.9	3.9			3.9		3.2	3.2				
All-Red Time (s)	1.2	1.2			1.2		1.4	1.4				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	4.0	4.0	5.1	4.0	4.6	4.6	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Recall Mode	C-Min	C-Min			C-Min		None	None				
Act Effct Green (s)	39.1	39.1			39.1		21.2	21.2				
Actuated g/C Ratio	0.56	0.56			0.56		0.30	0.30				
v/c Ratio	0.25	0.35			0.57		0.30	0.84				
Control Delay	15.6	10.6			12.5		18.7	27.4				
Queue Delay	0.0	0.0			0.0		0.0	0.0				
Total Delay	15.6	10.6			12.5		18.7	27.4				
LOS	B	B			B		B	C				
Approach Delay		10.9			12.5			25.3				
Approach LOS		B			B			C				

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 71.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Maple Road & Millersport Hwy NB

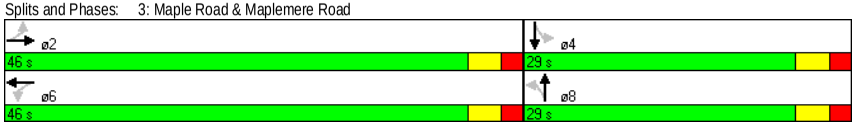


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	924	46	12	1040	28	43	3	16	34	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	70		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50		25	50		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.996			0.965			0.957	
Flt Protected	0.950			0.950				0.967			0.967	
Satd. Flow (prot)	1770	3514	0	1770	3525	0	0	1738	0	0	1724	0
Flt Permitted	0.205			0.220				0.739			0.733	
Satd. Flow (perm)	382	3514	0	410	3525	0	0	1328	0	0	1307	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			6			25			28	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1770			1106			378			402	
Travel Time (s)		26.8			16.8			8.6			9.1	
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.60	0.60	0.60	0.58	0.58	0.58
Adj. Flow (vph)	24	1074	53	13	1143	31	72	5	27	59	0	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	1127	0	13	1174	0	0	104	0	0	87	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		27.0	27.0		27.0	27.0	
Total Split (s)	46.0	46.0	0.0	46.0	46.0	0.0	29.0	29.0	0.0	29.0	29.0	0.0
Total Split (%)	61.3%	61.3%	0.0%	61.3%	61.3%	0.0%	38.7%	38.7%	0.0%	38.7%	38.7%	0.0%
Maximum Green (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)							7.0	7.0		7.0	7.0	
Flash Dont Walk (s)							15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)							0	0		0	0	
Act Effct Green (s)	27.3	27.3		27.3	27.3			8.4			8.3	
Actuated g/C Ratio	0.65	0.65		0.65	0.65			0.20			0.20	
v/c Ratio	0.10	0.49		0.05	0.51			0.36			0.31	
Control Delay	6.1	6.5		5.4	6.7			16.6			14.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	6.1	6.5		5.4	6.7			16.6			14.9	
LOS	A	A		A	A			B			B	
Approach Delay		6.5			6.7			16.6			14.9	
Approach LOS		A			A			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 41.8			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 7.3		Intersection LOS: A	
Intersection Capacity Utilization 42.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Maple Road & Maplemere Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	969	6	13	1055	24	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999				0.904	
Flt Protected			0.950		0.986	
Satd. Flow (prot)	3536	0	1770	3539	1660	0
Flt Permitted			0.950		0.986	
Satd. Flow (perm)	3536	0	1770	3539	1660	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	1106			1002	355	
Travel Time (s)	16.8			15.2	8.1	
Peak Hour Factor	0.79	0.79	0.87	0.87	0.76	0.76
Adj. Flow (vph)	1227	8	15	1213	32	80
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1235	0	15	1213	112	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	969	6	13	1055	24	61
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.87	0.87	0.76	0.76
Hourly flow rate (vph)	1227	8	15	1213	32	80
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	1106			1002		
pX, platoon unblocked			0.85		0.92	0.85
vC, conflicting volume			1234		1867	617
vC1, stage 1 conf vol					1230	
vC2, stage 2 conf vol					636	
vCu, unblocked vol			928		1117	204
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		89	88
cM capacity (veh/h)			624		283	684

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	818	416	15	606	606	112
Volume Left	0	0	15	0	0	32
Volume Right	0	8	0	0	0	80
cSH	1700	1700	624	1700	1700	489
Volume to Capacity	0.48	0.24	0.02	0.36	0.36	0.23
Queue Length 95th (ft)	0	0	2	0	0	22
Control Delay (s)	0.0	0.0	10.9	0.0	0.0	14.5
Lane LOS			B			B
Approach Delay (s)	0.0		0.1			14.5
Approach LOS						B

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	40.9%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1068	4	1	1111	2	13	0	3	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	50		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999						0.976				
Flt Protected	0.950			0.950				0.960			0.950	
Satd. Flow (prot)	1770	3536	0	1770	3539	0	0	1745	0	0	1770	0
Flt Permitted	0.950			0.950				0.960			0.950	
Satd. Flow (perm)	1770	3536	0	1770	3539	0	0	1745	0	0	1770	0
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		446			556			469			111	
Travel Time (s)		6.8			8.4			10.7			2.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	1161	4	1	1208	2	14	0	3	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	1165	0	1	1210	0	0	17	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1068	4	1	1111	2	13	0	3	1	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1161	4	1	1208	2	14	0	3	1	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1210			1165			1771	2377	583	1797	2378	605
vC1, stage 1 conf vol							1165	1165		1211	1211	
vC2, stage 2 conf vol							606	1212		586	1167	
vCu, unblocked vol	1210			1165			1771	2377	583	1797	2378	605
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			92	100	99	99	100	100
cM capacity (veh/h)	572			595			186	179	456	177	179	441

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1	774	391	1	805	405	17	1
Volume Left	1	0	0	1	0	0	14	1
Volume Right	0	0	4	0	0	2	3	0
cSH	572	1700	1700	595	1700	1700	210	177
Volume to Capacity	0.00	0.46	0.23	0.00	0.47	0.24	0.08	0.01
Queue Length 95th (ft)	0	0	0	0	0	0	7	0
Control Delay (s)	11.3	0.0	0.0	11.1	0.0	0.0	23.7	25.5
Lane LOS	B			B			C	D
Approach Delay (s)	0.0			0.0			23.7	25.5
Approach LOS							C	D

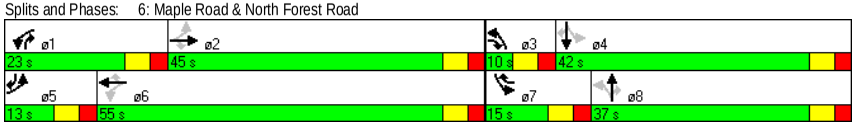
Intersection Summary				
Average Delay		0.2		
Intersection Capacity Utilization		40.8%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	860	84	252	824	90	92	231	185	123	362	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	415		220	315		150	125		220	250		250
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	90		115	60		25	95		25	90		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.253			0.099			0.202			0.353		
Satd. Flow (perm)	471	3539	1583	184	3539	1583	376	1863	1583	658	1863	1583
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			92						53			79
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1705			820			529			608	
Travel Time (s)		25.8			12.4			10.3			11.8	
Peak Hour Factor	0.90	0.90	0.90	0.95	0.95	0.95	0.90	0.90	0.90	0.80	0.80	0.80
Adj. Flow (vph)	111	956	93	265	867	95	102	257	206	154	452	226
Shared Lane Traffic (%)												
Lane Group Flow (vph)	111	956	93	265	867	95	102	257	206	154	452	226
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0
Minimum Split (s)	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0
Total Split (s)	13.0	45.0	10.0	23.0	55.0	15.0	10.0	37.0	23.0	15.0	42.0	13.0
Total Split (%)	10.8%	37.5%	8.3%	19.2%	45.8%	12.5%	8.3%	30.8%	19.2%	12.5%	35.0%	10.8%
Maximum Green (s)	7.0	39.0	4.0	17.0	49.0	9.0	4.0	31.0	17.0	9.0	36.0	7.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
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	3.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		22.0			22.0			22.0			22.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	41.5	34.5	44.7	55.8	43.1	58.1	29.8	25.8	47.4	39.5	30.6	43.7
Actuated g/C Ratio	0.38	0.32	0.41	0.51	0.39	0.53	0.27	0.24	0.43	0.36	0.28	0.40
v/c Ratio	0.42	0.85	0.13	0.83	0.62	0.11	0.66	0.59	0.29	0.47	0.87	0.33
Control Delay	21.0	44.2	5.2	48.9	29.0	13.9	49.8	43.8	16.1	29.8	56.0	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	44.2	5.2	48.9	29.0	13.9	49.8	43.8	16.1	29.8	56.0	16.5
LOS	C	D	A	D	C	B	D	D	B	C	E	B
Approach Delay		38.9			32.1			34.8			40.4	
Approach LOS		D			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 109.2			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 36.4		Intersection LOS: D	
Intersection Capacity Utilization 81.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 6: Maple Road & North Forest Road

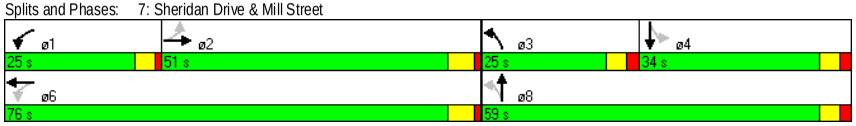


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	1336	130	220	1046	9	105	21	125	30	146	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	150		0	40		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	65		25	60		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.999			0.872			0.983	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3493	0	1770	3536	0	1770	1624	0	1770	1831	0
Flt Permitted	0.229			0.074			0.210			0.598		
Satd. Flow (perm)	427	3493	0	138	3536	0	391	1624	0	1114	1831	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					1						4	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		2782			977			838			362	
Travel Time (s)		42.2			14.8			19.0			8.2	
Peak Hour Factor	0.86	0.86	0.86	0.89	0.89	0.89	0.56	0.56	0.56	0.61	0.61	0.61
Adj. Flow (vph)	7	1553	151	247	1175	10	188	38	223	49	239	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	1704	0	247	1185	0	188	261	0	49	269	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			pm+pt			pm+pt			Perm		
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		3	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		1.0	4.0		1.0	4.0		4.0	4.0	
Minimum Split (s)	28.3	28.3		6.2	28.3		6.2	34.2		34.2	34.2	
Total Split (s)	51.0	51.0	0.0	25.0	76.0	0.0	25.0	59.0	0.0	34.0	34.0	0.0
Total Split (%)	37.8%	37.8%	0.0%	18.5%	56.3%	0.0%	18.5%	43.7%	0.0%	25.2%	25.2%	0.0%
Maximum Green (s)	45.5	45.5		20.7	70.5		19.8	53.8		28.8	28.8	
Yellow Time (s)	4.3	4.3		3.2	4.3		3.2	3.2		3.2	3.2	
All-Red Time (s)	1.2	1.2		1.1	1.2		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	4.3	5.5	4.0	5.2	5.2	4.0	5.2	5.2	4.0
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		None	Max		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0			15.0			22.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0			0			0		0	0	
Act Effct Green (s)	50.0	50.0		72.0	70.8		42.5	42.5		22.4	22.4	
Actuated g/C Ratio	0.40	0.40		0.58	0.57		0.34	0.34		0.18	0.18	
v/c Ratio	0.04	1.21		0.83	0.59		0.63	0.47		0.24	0.81	
Control Delay	30.0	135.2		54.7	19.9		39.0	34.4		47.1	67.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.0	135.2		54.7	19.9		39.0	34.4		47.1	67.0	
LOS	C	F		D	B		D	C		D	E	
Approach Delay		134.7			25.9			36.3			64.0	
Approach LOS		F			C			D			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 124.1			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.21			
Intersection Signal Delay: 77.8		Intersection LOS: E	
Intersection Capacity Utilization 84.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 7: Sheridan Drive & Mill Street

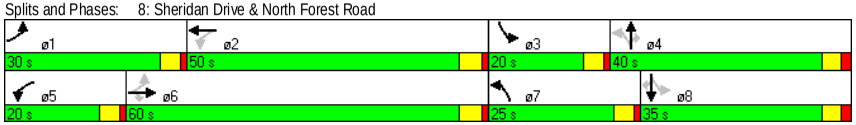


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	92	1359	220	181	1104	19	237	342	23	11	444	294
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	405		170	260		0	180		265	180		200
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	200		25	200		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850		0.997				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3529	0	1770	1863	1583	1770	3539	1583
Flt Permitted	0.094			0.067			0.194			0.494		
Satd. Flow (perm)	175	3539	1583	125	3529	0	361	1863	1583	920	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102		1				26			324
Link Speed (mph)		45			45			40			35	
Link Distance (ft)		1668			2219			547			354	
Travel Time (s)		25.3			33.6			9.3			6.9	
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.90	0.90	0.90	0.84	0.84	0.84
Adj. Flow (vph)	97	1431	232	197	1200	21	263	380	26	13	529	350
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	1431	232	197	1221	0	263	380	26	13	529	350
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		Perm	pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2			4		4	8		8
Detector Phase	1	6	6	5	2		7	4	4	3	8	8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.3	27.9	27.9	8.3	27.9		21.0	27.2	27.2	8.3	27.2	27.2
Total Split (s)	30.0	60.0	60.0	20.0	50.0	0.0	25.0	40.0	40.0	20.0	35.0	35.0
Total Split (%)	21.4%	42.9%	42.9%	14.3%	35.7%	0.0%	17.9%	28.6%	28.6%	14.3%	25.0%	25.0%
Maximum Green (s)	25.7	54.9	54.9	15.7	44.9		20.7	34.9	34.9	15.7	29.9	29.9
Yellow Time (s)	3.2	3.9	3.9	3.2	3.9		3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.1	1.2	1.2	1.1	1.2		1.1	1.9	1.9	1.1	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.1	5.1	4.3	5.1	4.0	4.3	5.1	5.1	4.3	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
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
Recall Mode	None	Max	Max	None	Max		None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		15.0	15.0		15.0			15.0	15.0		15.0	15.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
Act Effct Green (s)	65.2	55.2	55.2	73.8	59.9		50.6	45.5	45.5	32.9	25.9	25.9
Actuated g/C Ratio	0.49	0.41	0.41	0.55	0.45		0.38	0.34	0.34	0.25	0.19	0.19
v/c Ratio	0.49	0.98	0.32	0.81	0.77		0.77	0.60	0.05	0.05	0.77	0.62
Control Delay	25.3	58.3	16.9	58.5	36.3		45.8	42.3	11.7	27.4	59.5	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.3	58.3	16.9	58.5	36.3		45.8	42.3	11.7	27.4	59.5	11.8
LOS	C	E	B	E	D		D	D	B	C	E	B
Approach Delay		51.0			39.4			42.5			40.3	
Approach LOS		D			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 133.5			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 44.3		Intersection LOS: D	
Intersection Capacity Utilization 88.7%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Sheridan Drive & North Forest Road

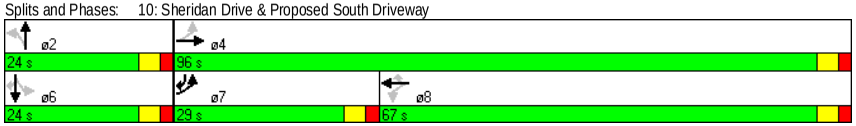


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	210	1564	6	4	1500	131	16	0	9	99	0	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0	75		425	0		0	0		0
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	25		25	25		75	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999				0.850		0.951				0.850
Flt Protected	0.950			0.950				0.969			0.950	
Satd. Flow (prot)	1770	3536	0	1770	3539	1583	0	1717	0	0	1770	1583
Flt Permitted	0.055			0.119				0.799			0.734	
Satd. Flow (perm)	102	3536	0	222	3539	1583	0	1415	0	0	1367	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				142		13				13
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		635			1668			278			269	
Travel Time (s)		9.6			25.3			6.3			6.1	
Peak Hour Factor	0.92	0.88	0.88	0.90	0.90	0.92	0.69	0.92	0.69	0.92	0.92	0.92
Adj. Flow (vph)	228	1777	7	4	1667	142	23	0	13	108	0	183
Shared Lane Traffic (%)												
Lane Group Flow (vph)	228	1784	0	4	1667	142	0	36	0	0	108	183
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt			Perm		Perm	Perm			Perm		pm+ov
Protected Phases	7	4			8			2			6	7
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		8	8	8	2	2		6	6	7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	21.0		21.0	21.0	21.0	21.0	21.0		21.0	21.0	9.0
Total Split (s)	29.0	96.0	0.0	67.0	67.0	67.0	24.0	24.0	0.0	24.0	24.0	29.0
Total Split (%)	24.2%	80.0%	0.0%	55.8%	55.8%	55.8%	20.0%	20.0%	0.0%	20.0%	20.0%	24.2%
Maximum Green (s)	24.0	91.0		62.0	62.0	62.0	19.0	19.0		19.0	19.0	24.0
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						Lead
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	Max	Max		Max	Max	None
Walk Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	
Act Effct Green (s)	91.0	91.0		70.4	70.4	70.4		19.0			19.0	39.6
Actuated g/C Ratio	0.76	0.76		0.59	0.59	0.59		0.16			0.16	0.33
v/c Ratio	0.78	0.67		0.03	0.80	0.14		0.15			0.50	0.34
Control Delay	49.2	5.4		13.8	24.3	2.6		33.1			55.1	28.9
Queue Delay	0.0	0.1		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	49.2	5.5		13.8	24.3	2.6		33.1			55.1	28.9
LOS	D	A		B	C	A		C			E	C
Approach Delay		10.5			22.6			33.1			38.6	
Approach LOS		B			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 35 (29%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 17.9		Intersection LOS: B	
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 10: Sheridan Drive & Proposed South Driveway

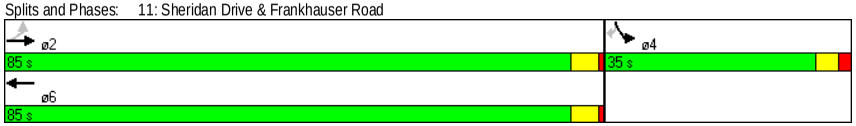


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	26	1741	1660	24	38	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	105			0	0	50
Storage Lanes	1			0	1	1
Taper Length (ft)	65			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3532	0	1770	1583
Flt Permitted	0.110				0.950	
Satd. Flow (perm)	205	3539	3532	0	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			3			31
Link Speed (mph)		45	45		30	
Link Distance (ft)		1014	635		614	
Travel Time (s)		15.4	9.6		14.0	
Peak Hour Factor	0.89	0.89	0.94	0.94	0.73	0.73
Adj. Flow (vph)	29	1956	1766	26	52	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	1956	1792	0	52	40
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (ft)	20	100	100		20	20
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	6	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		1.0	1.0
Minimum Split (s)	40.0	40.0	40.0		31.1	31.1
Total Split (s)	85.0	85.0	85.0	0.0	35.0	35.0
Total Split (%)	70.8%	70.8%	70.8%	0.0%	29.2%	29.2%
Maximum Green (s)	80.2	80.2	80.2		29.9	29.9
Yellow Time (s)	3.9	3.9	3.9		3.2	3.2
All-Red Time (s)	0.9	0.9	0.9		1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.8	4.8	4.0	5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max	C-Max		None	None
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0	15.0		19.0	19.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	104.3	104.3	104.3		8.9	8.9
Actuated g/C Ratio	0.87	0.87	0.87		0.07	0.07
v/c Ratio	0.16	0.64	0.58		0.40	0.27
Control Delay	3.0	7.5	1.1		60.9	26.6
Queue Delay	0.0	0.0	0.5		0.0	0.0
Total Delay	3.0	7.5	1.5		60.9	26.6
LOS	A	A	A		E	C
Approach Delay		7.4	1.5		46.0	
Approach LOS		A	A		D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 76 (63%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 5.6		Intersection LOS: A	
Intersection Capacity Utilization 59.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 11: Sheridan Drive & Frankhauser Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	249	1530	0	0	1111	533	269	0	273	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	230		120	0		0
Storage Lanes	1		0	0		0	1		1	0		0
Taper Length (ft)	105		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.91	0.95	1.00	1.00	1.00
Frt					0.951			0.917	0.850			
Flt Protected	0.950						0.950	0.978				
Satd. Flow (prot)	1770	5085	0	0	4836	0	1681	1520	1504	0	0	0
Flt Permitted	0.073						0.950	0.978				
Satd. Flow (perm)	136	5085	0	0	4836	0	1681	1520	1504	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					158			39	39			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		197			193			830			423	
Travel Time (s)		3.0			2.9			18.9			9.6	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	265	1628	0	0	1182	567	306	0	310	0	0	0
Shared Lane Traffic (%)							30%		37%			
Lane Group Flow (vph)	265	1628	0	0	1749	0	214	207	195	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			
Detector Template	Left	Thru			Thru		Left	Thru	Right			
Leading Detector (ft)	20	100			100		20	100	20			
Trailing Detector (ft)	0	0			0		0	0	0			
Detector 1 Position(ft)	0	0			0		0	0	0			
Detector 1 Size(ft)	20	6			6		20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt						custom		Perm			
Protected Phases	1	6			2		3	3				
Permitted Phases	6						3		3			
Detector Phase	1	6			2		3	3	3			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	4.0			4.0		4.0	4.0	4.0			
Minimum Split (s)	6.2	33.9			27.8		29.0	29.0	29.0			
Total Split (s)	14.0	85.0	0.0	0.0	71.0	0.0	35.0	35.0	35.0	0.0	0.0	0.0
Total Split (%)	11.7%	70.8%	0.0%	0.0%	59.2%	0.0%	29.2%	29.2%	29.2%	0.0%	0.0%	0.0%
Maximum Green (s)	9.7	79.1			65.2		29.8	29.8	29.8			
Yellow Time (s)	3.2	3.9			3.9		3.2	3.2	3.2			
All-Red Time (s)	1.1	2.0			1.9		2.0	2.0	2.0			
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.9	4.0	4.0	5.8	4.0	5.2	5.2	5.2	4.0	4.0	4.0
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	2.0	3.0			3.0		2.0	2.0	2.0			
Recall Mode	None	C-Max			C-Max		None	None	None			
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		21.0			15.0							
Pedestrian Calls (#/hr)		0			0							
Act Effct Green (s)	90.2	88.6			65.2		20.3	20.3	20.3			
Actuated g/C Ratio	0.75	0.74			0.54		0.17	0.17	0.17			
v/c Ratio	0.73	0.43			0.65		0.75	0.72	0.68			
Control Delay	41.6	8.6			15.7		63.3	51.1	48.5			
Queue Delay	0.0	0.1			0.0		0.0	0.0	0.0			
Total Delay	41.6	8.7			15.7		63.3	51.1	48.5			
LOS	D	A			B		E	D	D			
Approach Delay		13.3			15.7			54.5				
Approach LOS		B			B			D				

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 37 (31%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 20.2		Intersection LOS: C	
Intersection Capacity Utilization 70.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 12: Sheridan Drive & I-290 NB

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	895	315	519	861	285	884
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	215		140	0
Storage Lanes		1	1		2	2
Taper Length (ft)		230	100		100	25
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	3433	3539	3433	2787
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3539	1583	3433	3539	3433	2787
Right Turn on Red		No				Yes
Satd. Flow (RTOR)						118
Link Speed (mph)	45			45	35	
Link Distance (ft)	314			413	338	
Travel Time (s)	4.8			6.3	6.6	
Peak Hour Factor	0.85	0.85	0.92	0.92	0.90	0.90
Adj. Flow (vph)	1053	371	564	936	317	982
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1053	371	564	936	317	982
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	100	20	20	100	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type		custom	Prot			custom
Protected Phases	2	2	1	1 2	3	1 3
Permitted Phases		2				3
Detector Phase	2	2	1	1 2	3	1 3

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	20.0	20.0	3.0		6.0	
Minimum Split (s)	30.5	30.5	7.3		11.2	
Total Split (s)	66.0	66.0	29.0	95.0	25.0	54.0
Total Split (%)	55.0%	55.0%	24.2%	79.2%	20.8%	45.0%
Maximum Green (s)	60.5	60.5	24.7		19.8	
Yellow Time (s)	3.9	3.9	3.2		3.2	
All-Red Time (s)	1.6	1.6	1.1		2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.3	4.3	5.2	4.3
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	2.0	2.0	2.0		2.0	
Recall Mode	C-Max	C-Max	None		None	
Walk Time (s)	7.0	7.0				
Flash Dont Walk (s)	18.0	18.0				
Pedestrian Calls (#/hr)	0	0				
Act Effct Green (s)	60.5	60.5	24.7	90.7	19.8	49.7
Actuated g/C Ratio	0.50	0.50	0.21	0.76	0.16	0.41
v/c Ratio	0.59	0.46	0.80	0.35	0.56	0.80
Control Delay	22.7	21.7	50.5	6.8	50.4	33.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.7	21.7	50.5	6.8	50.4	33.0
LOS	C	C	D	A	D	C
Approach Delay	22.4			23.2	37.3	
Approach LOS	C			C	D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 24 (20%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 27.3		Intersection LOS: C	
Intersection Capacity Utilization 63.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 13: Sheridan Drive & Harlem Road

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	298	734	474	21	414	389
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	330	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25	25		25	75	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3518	0	1770	3539
Flt Permitted	0.950				0.225	
Satd. Flow (perm)	1770	1583	3518	0	419	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		149	4			
Link Speed (mph)	30		35			35
Link Distance (ft)	333		250			456
Travel Time (s)	7.6		4.9			8.9
Peak Hour Factor	0.81	0.81	0.87	0.87	0.88	0.88
Adj. Flow (vph)	368	906	545	24	470	442
Shared Lane Traffic (%)						
Lane Group Flow (vph)	368	906	569	0	470	442
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		pm+ov			pm+pt	
Protected Phases	3	1	2		1	6
Permitted Phases		3			6	
Detector Phase	3	1	2		1	6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	22.0	9.2	30.6		9.2	21.0
Total Split (s)	40.0	35.0	50.0	0.0	35.0	85.0
Total Split (%)	32.0%	28.0%	40.0%	0.0%	28.0%	68.0%
Maximum Green (s)	35.2	30.7	45.0		30.7	80.0
Yellow Time (s)	3.2	3.2	3.6		3.2	3.6
All-Red Time (s)	1.6	1.1	1.4		1.1	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.3	5.0	4.0	4.3	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Min		None	None
Walk Time (s)			10.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			0			
Act Effct Green (s)	23.5	55.9	20.6		53.2	52.4
Actuated g/C Ratio	0.27	0.65	0.24		0.62	0.61
v/c Ratio	0.76	0.84	0.67		0.68	0.21
Control Delay	41.1	19.1	35.1		19.2	8.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	41.1	19.1	35.1		19.2	8.5
LOS	D	B	D		B	A
Approach Delay	25.4		35.1			14.0
Approach LOS	C		D			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 86.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 23.7		Intersection LOS: C	
Intersection Capacity Utilization 67.0%		ICU Level of Service C	
Analysis Period (min) 15			

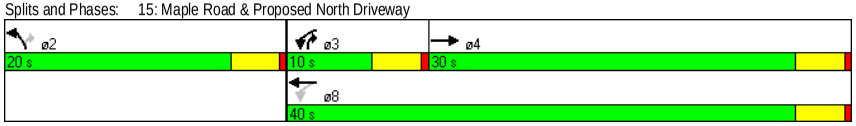
Splits and Phases: 14: I-290 SB & Harlem Road

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	977	54	98	1007	62	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	225		0	150
Storage Lanes		0	1		1	1
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.992					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3511	0	1770	3539	1770	1583
Flt Permitted			0.161		0.950	
Satd. Flow (perm)	3511	0	300	3539	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	12					40
Link Speed (mph)	45			45	30	
Link Distance (ft)	1002			926	372	
Travel Time (s)	15.2			14.0	8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1062	59	107	1095	67	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1121	0	107	1095	67	109
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	6		20	6	20	20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type			pm+pt			pm+ov
Protected Phases	4		3	8	2	3
Permitted Phases			8			2
Detector Phase	4		3	8	2	3

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	20.0		8.0	20.0	20.0	8.0
Total Split (s)	30.0	0.0	10.0	40.0	20.0	10.0
Total Split (%)	50.0%	0.0%	16.7%	66.7%	33.3%	16.7%
Maximum Green (s)	26.0		6.0	36.0	16.0	6.0
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	0.5		0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	None	Min	None
Walk Time (s)	5.0			5.0	5.0	
Flash Dont Walk (s)	11.0			11.0	11.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	20.9		28.2	28.2	7.6	18.2
Actuated g/C Ratio	0.47		0.64	0.64	0.17	0.41
v/c Ratio	0.67		0.27	0.49	0.22	0.16
Control Delay	11.9		4.6	4.8	20.7	8.6
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	11.9		4.6	4.8	20.7	8.6
LOS	B		A	A	C	A
Approach Delay	11.9			4.8	13.2	
Approach LOS	B			A	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 44.4			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 8.6		Intersection LOS: A	
Intersection Capacity Utilization 47.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Maple Road & Proposed North Driveway



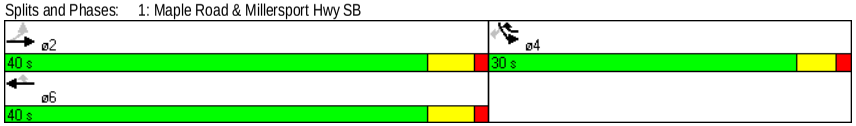
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	29	976	888	230	59	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150			150	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	35			100	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.276				0.950	
Satd. Flow (perm)	514	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						83
Link Speed (mph)		45	45		30	
Link Distance (ft)		555	654		281	
Travel Time (s)		8.4	9.9		6.4	
Peak Hour Factor	0.90	0.90	0.92	0.92	0.81	0.81
Adj. Flow (vph)	32	1084	965	250	73	215
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	1084	965	250	73	215
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane			Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm			pm+ov		Perm
Protected Phases		2	6	4	4	
Permitted Phases	2			6		4
Detector Phase	2	2	6	4	4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	1.0	1.0	1.0
Minimum Split (s)	9.1	9.1	9.1	6.2	6.2	6.2
Total Split (s)	40.0	40.0	40.0	30.0	30.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	42.9%	42.9%	42.9%
Maximum Green (s)	34.9	34.9	34.9	25.4	25.4	25.4
Yellow Time (s)	3.9	3.9	3.9	3.2	3.2	3.2
All-Red Time (s)	1.2	1.2	1.2	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	4.6	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	48.5	48.5	48.5	70.0	11.8	11.8
Actuated g/C Ratio	0.69	0.69	0.69	1.00	0.17	0.17
v/c Ratio	0.09	0.44	0.39	0.16	0.25	0.64
Control Delay	5.8	6.2	8.4	0.2	25.2	24.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.8	6.2	8.4	0.2	25.2	24.6
LOS	A	A	A	A	C	C
Approach Delay		6.2	6.7		24.7	
Approach LOS		A	A		C	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 8.5 Intersection LOS: A
Intersection Capacity Utilization 43.4% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Maple Road & Millersport Hwy SB

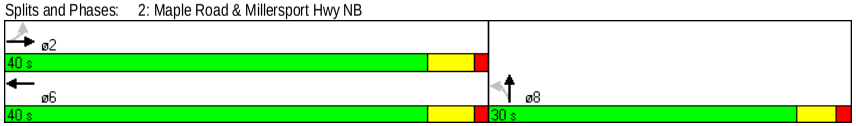


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	938	0	0	1026	29	91	0	466	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	50		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.996			0.850				
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	3539	0	0	3525	0	1770	1583	0	0	0	0
Flt Permitted	0.144						0.950					
Satd. Flow (perm)	268	3539	0	0	3525	0	1770	1583	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					6			69				
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		654			1770			319			263	
Travel Time (s)		9.9			26.8			7.3			6.0	
Peak Hour Factor	0.91	0.91	0.91	0.87	0.87	0.87	0.84	0.84	0.84	0.92	0.92	0.92
Adj. Flow (vph)	107	1031	0	0	1179	33	108	0	555	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	107	1031	0	0	1212	0	108	555	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2				
Detector Template	Left	Thru			Thru		Left	Thru				
Leading Detector (ft)	20	100			100		20	100				
Trailing Detector (ft)	0	0			0		0	0				
Detector 1 Position(ft)	0	0			0		0	0				
Detector 1 Size(ft)	20	6			6		20	6				
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0				
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Perm						Perm					
Protected Phases		2			6			8				
Permitted Phases	2						8					
Detector Phase	2	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	1.0			4.0		1.0	1.0				
Minimum Split (s)	6.1	6.1			9.1		6.2	6.2				
Total Split (s)	40.0	40.0	0.0	0.0	40.0	0.0	30.0	30.0	0.0	0.0	0.0	0.0
Total Split (%)	57.1%	57.1%	0.0%	0.0%	57.1%	0.0%	42.9%	42.9%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	34.9	34.9			34.9		25.4	25.4				
Yellow Time (s)	3.9	3.9			3.9		3.2	3.2				
All-Red Time (s)	1.2	1.2			1.2		1.4	1.4				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	4.0	4.0	5.1	4.0	4.6	4.6	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Recall Mode	C-Min	C-Min			C-Min		None	None				
Act Effct Green (s)	35.9	35.9			35.9		24.4	24.4				
Actuated g/C Ratio	0.51	0.51			0.51		0.35	0.35				
v/c Ratio	0.78	0.57			0.67		0.18	0.93				
Control Delay	52.4	11.2			15.2		16.2	44.4				
Queue Delay	0.0	0.0			0.0		0.0	0.0				
Total Delay	52.4	11.2			15.2		16.2	44.4				
LOS	D	B			B		B	D				
Approach Delay		15.1			15.2			39.8				
Approach LOS		B			B			D				

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 20.6		Intersection LOS: C	
Intersection Capacity Utilization 75.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Maple Road & Millersport Hwy NB

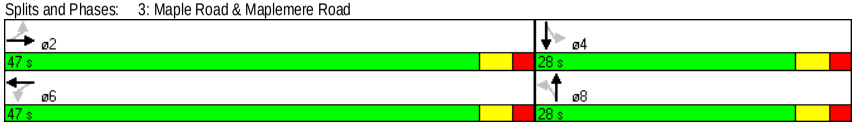


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	1266	35	21	944	62	22	0	12	77	8	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	70		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50		25	50		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.991			0.952			0.964	
Flt Protected	0.950			0.950				0.969			0.968	
Satd. Flow (prot)	1770	3525	0	1770	3507	0	0	1718	0	0	1738	0
Flt Permitted	0.212			0.150				0.786			0.767	
Satd. Flow (perm)	395	3525	0	279	3507	0	0	1394	0	0	1377	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			14			19			25	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1770			1106			378			402	
Travel Time (s)		26.8			16.8			8.6			9.1	
Peak Hour Factor	0.94	0.94	0.94	0.87	0.87	0.87	0.62	0.62	0.62	0.81	0.81	0.81
Adj. Flow (vph)	38	1347	37	24	1085	71	35	0	19	95	10	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1384	0	24	1156	0	0	54	0	0	143	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		27.0	27.0		27.0	27.0	
Total Split (s)	47.0	47.0	0.0	47.0	47.0	0.0	28.0	28.0	0.0	28.0	28.0	0.0
Total Split (%)	62.7%	62.7%	0.0%	62.7%	62.7%	0.0%	37.3%	37.3%	0.0%	37.3%	37.3%	0.0%
Maximum Green (s)	42.0	42.0		42.0	42.0		23.0	23.0		23.0	23.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)							7.0	7.0		7.0	7.0	
Flash Dont Walk (s)							15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)							0	0		0	0	
Act Effct Green (s)	34.3	34.3		34.3	34.3			9.7			10.3	
Actuated g/C Ratio	0.68	0.68		0.68	0.68			0.19			0.20	
v/c Ratio	0.14	0.58		0.13	0.48			0.19			0.47	
Control Delay	6.8	7.7		7.2	6.6			15.5			22.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	6.8	7.7		7.2	6.6			15.5			22.5	
LOS	A	A		A	A			B			C	
Approach Delay		7.6			6.7			15.5			22.5	
Approach LOS		A			A			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 50.3			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 8.1		Intersection LOS: A	
Intersection Capacity Utilization 52.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Maple Road & Maplemere Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1326	29	23	1015	12	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.997				0.914	
Flt Protected			0.950		0.982	
Satd. Flow (prot)	3529	0	1770	3539	1672	0
Flt Permitted			0.950		0.982	
Satd. Flow (perm)	3529	0	1770	3539	1672	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	1106			1000	355	
Travel Time (s)	16.8			15.2	8.1	
Peak Hour Factor	0.73	0.73	0.77	0.77	0.82	0.82
Adj. Flow (vph)	1816	40	30	1318	15	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1856	0	30	1318	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1326	29	23	1015	12	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.77	0.77	0.82	0.82
Hourly flow rate (vph)	1816	40	30	1318	15	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	1106			1000		
pX, platoon unblocked			0.75		0.81	0.75
vC, conflicting volume			1856		2555	928
vC1, stage 1 conf vol					1836	
vC2, stage 2 conf vol					719	
vCu, unblocked vol			1483		1854	252
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			91		89	95
cM capacity (veh/h)			339		130	564

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1211	645	30	659	659	40
Volume Left	0	0	30	0	0	15
Volume Right	0	40	0	0	0	26
cSH	1700	1700	339	1700	1700	255
Volume to Capacity	0.71	0.38	0.09	0.39	0.39	0.16
Queue Length 95th (ft)	0	0	7	0	0	14
Control Delay (s)	0.0	0.0	16.6	0.0	0.0	21.7
Lane LOS			C			C
Approach Delay (s)	0.0		0.4			21.7
Approach LOS						C

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	47.6%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1389	14	8	1065	2	10	0	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	50		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999						0.948				
Flt Protected				0.950				0.970				
Satd. Flow (prot)	1863	3536	0	1770	3539	0	0	1713	0	0	1863	0
Flt Permitted				0.950				0.970				
Satd. Flow (perm)	1863	3536	0	1770	3539	0	0	1713	0	0	1863	0
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		446			556			469			111	
Travel Time (s)		6.8			8.4			10.7			2.5	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.61	0.61	0.61	0.92	0.92	0.92
Adj. Flow (vph)	0	1510	15	9	1145	2	16	0	10	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1525	0	9	1147	0	0	26	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1389	14	8	1065	2	10	0	6	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.61	0.61	0.61	0.92	0.92	0.92
Hourly flow rate (vph)	0	1510	15	9	1145	2	16	0	10	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1147			1525			2107	2682	762	1928	2688	574
vC1, stage 1 conf vol							1517	1517		1163	1163	
vC2, stage 2 conf vol							590	1165		765	1525	
vCu, unblocked vol	1147			1525			2107	2682	762	1928	2688	574
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			86	100	97	100	100	100
cM capacity (veh/h)	605			433			118	143	347	172	138	462

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	0	1007	518	9	763	384	26	0
Volume Left	0	0	0	9	0	0	16	0
Volume Right	0	0	15	0	0	2	10	0
cSH	1700	1700	1700	433	1700	1700	157	1700
Volume to Capacity	0.00	0.59	0.30	0.02	0.45	0.23	0.17	0.00
Queue Length 95th (ft)	0	0	0	2	0	0	15	0
Control Delay (s)	0.0	0.0	0.0	13.5	0.0	0.0	32.5	0.0
Lane LOS				B			D	A
Approach Delay (s)	0.0			0.1			32.5	0.0
Approach LOS							D	A

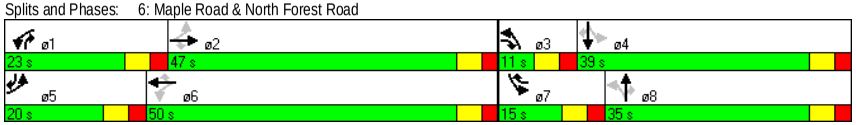
Intersection Summary					
Average Delay		0.4			
Intersection Capacity Utilization		48.8%	ICU Level of Service		A
Analysis Period (min)		15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	204	1056	146	238	795	96	96	354	205	169	387	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	415		220	315		150	125		220	250		250
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	90		115	60		25	95		25	90		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.194			0.093			0.168			0.170		
Satd. Flow (perm)	361	3539	1583	173	3539	1583	313	1863	1583	317	1863	1583
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			137						25			63
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1705			820			529			608	
Travel Time (s)		25.8			12.4			10.3			11.8	
Peak Hour Factor	0.92	0.92	0.92	0.90	0.90	0.90	0.96	0.96	0.96	0.87	0.87	0.87
Adj. Flow (vph)	222	1148	159	264	883	107	100	369	214	194	445	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	1148	159	264	883	107	100	369	214	194	445	157
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0
Minimum Split (s)	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0
Total Split (s)	20.0	47.0	11.0	23.0	50.0	15.0	11.0	35.0	23.0	15.0	39.0	20.0
Total Split (%)	16.7%	39.2%	9.2%	19.2%	41.7%	12.5%	9.2%	29.2%	19.2%	12.5%	32.5%	16.7%
Maximum Green (s)	14.0	41.0	5.0	17.0	44.0	9.0	5.0	29.0	17.0	9.0	33.0	14.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
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	3.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		22.0			22.0			22.0			22.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	52.1	39.7	50.8	58.7	43.0	58.1	31.4	26.4	48.1	39.5	30.4	48.9
Actuated g/C Ratio	0.45	0.35	0.44	0.51	0.37	0.51	0.27	0.23	0.42	0.34	0.26	0.43
v/c Ratio	0.70	0.94	0.20	0.86	0.67	0.13	0.67	0.86	0.32	0.87	0.90	0.22
Control Delay	29.6	52.1	5.6	55.9	33.6	16.7	51.4	63.5	21.1	64.7	64.3	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.6	52.1	5.6	55.9	33.6	16.7	51.4	63.5	21.1	64.7	64.3	13.1
LOS	C	D	A	E	C	B	D	E	C	E	E	B
Approach Delay		44.0			36.8			48.4			54.3	
Approach LOS		D			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 115			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 44.5		Intersection LOS: D	
Intersection Capacity Utilization 90.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: Maple Road & North Forest Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	1364	24	121	1391	53	149	53	148	34	68	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	150		0	40		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	65		25	60		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.994			0.890			0.975	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3529	0	1770	3518	0	1770	1658	0	1770	1816	0
Flt Permitted	0.098			0.056			0.561			0.608		
Satd. Flow (perm)	183	3529	0	104	3518	0	1045	1658	0	1133	1816	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					5						7	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		2782			977			838			362	
Travel Time (s)		42.2			14.8			19.0			8.2	
Peak Hour Factor	0.84	0.84	0.84	0.92	0.92	0.92	0.83	0.83	0.83	0.77	0.77	0.77
Adj. Flow (vph)	17	1624	29	132	1512	58	180	64	178	44	88	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	1653	0	132	1570	0	180	242	0	44	106	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			pm+pt			pm+pt			Perm		
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		3	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		1.0	4.0		1.0	4.0		4.0	4.0	
Minimum Split (s)	28.3	28.3		6.2	28.3		6.2	34.2		34.2	34.2	
Total Split (s)	77.0	77.0	0.0	12.0	89.0	0.0	12.0	46.0	0.0	34.0	34.0	0.0
Total Split (%)	57.0%	57.0%	0.0%	8.9%	65.9%	0.0%	8.9%	34.1%	0.0%	25.2%	25.2%	0.0%
Maximum Green (s)	71.5	71.5		7.7	83.5		6.8	40.8		28.8	28.8	
Yellow Time (s)	4.3	4.3		3.2	4.3		3.2	3.2		3.2	3.2	
All-Red Time (s)	1.2	1.2		1.1	1.2		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	4.3	5.5	4.0	5.2	5.2	4.0	5.2	5.2	4.0
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0			15.0			22.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0			0			0		0	0	
Act Effct Green (s)	66.9	66.9		80.2	79.0		41.1	41.1		29.1	29.1	
Actuated g/C Ratio	0.51	0.51		0.61	0.60		0.31	0.31		0.22	0.22	
v/c Ratio	0.18	0.92		0.81	0.74		0.49	0.46		0.17	0.26	
Control Delay	22.6	38.3		60.2	20.9		41.4	40.6		45.4	42.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	22.6	38.3		60.2	20.9		41.4	40.6		45.4	42.5	
LOS	C	D		E	C		D	D		D	D	
Approach Delay		38.1			24.0			41.0			43.4	
Approach LOS		D			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 130.8			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 32.5		Intersection LOS: C	
Intersection Capacity Utilization 77.2%		ICU Level of Service D	
Analysis Period (min) 15			

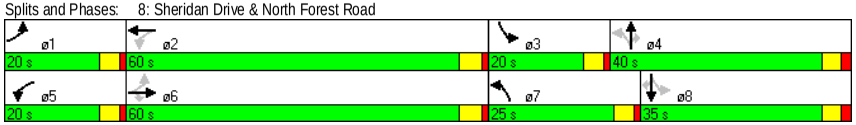
Splits and Phases: 7: Sheridan Drive & Mill Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	148	1341	291	305	1190	41	293	468	82	24	497	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	405		170	260		0	180		265	180		300
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	200		25	200		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850		0.995				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3522	0	1770	1863	1583	1770	3539	1583
Flt Permitted	0.073			0.069			0.183			0.173		
Satd. Flow (perm)	136	3539	1583	129	3522	0	341	1863	1583	322	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			136		3				69			218
Link Speed (mph)		45			45			40			35	
Link Distance (ft)		1668			2219			547			473	
Travel Time (s)		25.3			33.6			9.3			9.2	
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.89	0.89	0.89	0.95	0.95	0.95
Adj. Flow (vph)	157	1427	310	328	1280	44	329	526	92	25	523	218
Shared Lane Traffic (%)												
Lane Group Flow (vph)	157	1427	310	328	1324	0	329	526	92	25	523	218
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		Perm	pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases	6		6	2			4		4	8		8
Detector Phase	1	6	6	5	2		7	4	4	3	8	8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.3	27.9	27.9	8.3	27.9		21.0	27.2	27.2	8.3	27.2	27.2
Total Split (s)	20.0	60.0	60.0	20.0	60.0	0.0	25.0	40.0	40.0	20.0	35.0	35.0
Total Split (%)	14.3%	42.9%	42.9%	14.3%	42.9%	0.0%	17.9%	28.6%	28.6%	14.3%	25.0%	25.0%
Maximum Green (s)	15.7	54.9	54.9	15.7	54.9		20.7	34.9	34.9	15.7	29.9	29.9
Yellow Time (s)	3.2	3.9	3.9	3.2	3.9		3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.1	1.2	1.2	1.1	1.2		1.1	1.9	1.9	1.1	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.1	5.1	4.3	5.1	4.0	4.3	5.1	5.1	4.3	5.1	5.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
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
Recall Mode	None	Max	Max	None	Max		None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		15.0	15.0		15.0			15.0	15.0		15.0	15.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
Act Effct Green (s)	68.2	55.0	55.0	73.8	58.3		51.5	43.8	43.8	33.2	25.7	25.7
Actuated g/C Ratio	0.50	0.40	0.40	0.54	0.43		0.38	0.32	0.32	0.24	0.19	0.19
v/c Ratio	0.72	1.00	0.43	1.26	0.88		0.95	0.88	0.17	0.17	0.78	0.46
Control Delay	47.7	63.5	18.3	179.4	44.2		70.9	61.1	12.8	29.8	61.3	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	63.5	18.3	179.4	44.2		70.9	61.1	12.8	29.8	61.3	8.9
LOS	D	E	B	F	D		E	E	B	C	E	A
Approach Delay		54.8			71.0			59.8			45.4	
Approach LOS		D			E			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 135.9			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.26			
Intersection Signal Delay: 59.4		Intersection LOS: E	
Intersection Capacity Utilization 99.6%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 8: Sheridan Drive & North Forest Road

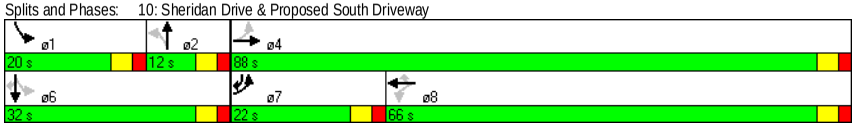


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	1603	13	5	1558	127	13	0	17	160	0	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0	75		425	0		0	0		0
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	25		25	25		75	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999				0.850		0.922				0.850
Flt Protected	0.950			0.950				0.979			0.950	
Satd. Flow (prot)	1770	3536	0	1770	3539	1583	0	1681	0	0	1770	1583
Flt Permitted	0.058			0.082				0.862			0.731	
Satd. Flow (perm)	108	3536	0	153	3539	1583	0	1480	0	0	1362	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				138		23				13
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		635			1668			278			241	
Travel Time (s)		9.6			25.3			6.3			5.5	
Peak Hour Factor	0.92	0.87	0.87	0.94	0.94	0.92	0.75	0.92	0.75	0.92	0.92	0.92
Adj. Flow (vph)	207	1843	15	5	1657	138	17	0	23	174	0	253
Shared Lane Traffic (%)												
Lane Group Flow (vph)	207	1858	0	5	1657	138	0	40	0	0	174	253
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt			Perm		Perm	Perm			pm+pt		pm+ov
Protected Phases	7	4			8			2		1	6	7
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		8	8	8	2	2		1	6	7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	21.0		21.0	21.0	21.0	21.0	21.0		9.0	21.0	9.0
Total Split (s)	22.0	88.0	0.0	66.0	66.0	66.0	12.0	12.0	0.0	20.0	32.0	22.0
Total Split (%)	18.3%	73.3%	0.0%	55.0%	55.0%	55.0%	10.0%	10.0%	0.0%	16.7%	26.7%	18.3%
Maximum Green (s)	17.0	83.0		61.0	61.0	61.0	7.0	7.0		15.0	27.0	17.0
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag	Lag	Lag		Lead		Lead
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes		Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	Max	None
Walk Time (s)		5.0		5.0	5.0	5.0	5.0	5.0			5.0	
Flash Dont Walk (s)		11.0		11.0	11.0	11.0	11.0	11.0			11.0	
Pedestrian Calls (#/hr)		0		0	0	0	0	0			0	
Act Effct Green (s)	83.0	83.0		64.4	64.4	64.4		27.0			27.0	45.6
Actuated g/C Ratio	0.69	0.69		0.54	0.54	0.54		0.22			0.22	0.38
v/c Ratio	0.79	0.76		0.06	0.87	0.15		0.11			0.57	0.41
Control Delay	54.1	11.7		17.4	31.3	2.9		21.3			49.7	27.6
Queue Delay	0.0	0.2		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	54.1	11.9		17.4	31.3	2.9		21.3			49.7	27.6
LOS	D	B		B	C	A		C			D	C
Approach Delay		16.1			29.1			21.3			36.6	
Approach LOS		B			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 28 (23%), Referenced to phase 4:EBTL and 8:WBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 23.6		Intersection LOS: C	
Intersection Capacity Utilization 81.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 10: Sheridan Drive & Proposed South Driveway

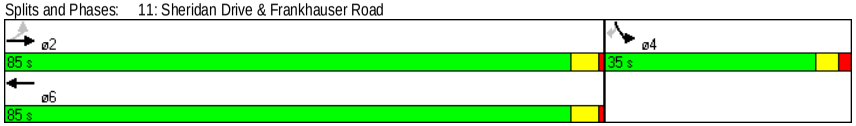


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	34	1753	1763	41	52	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	105			0	0	50
Storage Lanes	1			0	1	1
Taper Length (ft)	65			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.997			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3529	0	1770	1583
Flt Permitted	0.084				0.950	
Satd. Flow (perm)	156	3539	3529	0	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			4			21
Link Speed (mph)		45	45		30	
Link Distance (ft)		1014	635		614	
Travel Time (s)		15.4	9.6		14.0	
Peak Hour Factor	0.90	0.90	0.91	0.91	0.82	0.82
Adj. Flow (vph)	38	1948	1937	45	63	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	38	1948	1982	0	63	49
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (ft)	20	100	100		20	20
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	6	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		1.0	1.0
Minimum Split (s)	40.0	40.0	40.0		31.1	31.1
Total Split (s)	85.0	85.0	85.0	0.0	35.0	35.0
Total Split (%)	70.8%	70.8%	70.8%	0.0%	29.2%	29.2%
Maximum Green (s)	80.2	80.2	80.2		29.9	29.9
Yellow Time (s)	3.9	3.9	3.9		3.2	3.2
All-Red Time (s)	0.9	0.9	0.9		1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.8	4.8	4.0	5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max	C-Max		None	None
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0	15.0		19.0	19.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	103.6	103.6	103.6		9.6	9.6
Actuated g/C Ratio	0.86	0.86	0.86		0.08	0.08
v/c Ratio	0.28	0.64	0.65		0.44	0.34
Control Delay	6.0	3.9	2.1		61.5	39.3
Queue Delay	0.0	0.0	0.3		0.0	0.0
Total Delay	6.0	3.9	2.4		61.5	39.3
LOS	A	A	A		E	D
Approach Delay		3.9	2.4		51.8	
Approach LOS		A	A		D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 55 (46%), Referenced to phase 2:EBTL and 6:WBT, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 4.5		Intersection LOS: A	
Intersection Capacity Utilization 61.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 11: Sheridan Drive & Frankhauser Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	355	1377	0	0	1199	654	317	0	432	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	230		120	0		0
Storage Lanes	1		0	0		0	1		1	0		0
Taper Length (ft)	105		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.91	0.95	1.00	1.00	1.00
Frt					0.947			0.884	0.850			
Flt Protected	0.950						0.950	0.989				
Satd. Flow (prot)	1770	5085	0	0	4816	0	1681	1482	1504	0	0	0
Flt Permitted	0.061						0.950	0.989				
Satd. Flow (perm)	114	5085	0	0	4816	0	1681	1482	1504	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					167			78	78			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		610			193			830			423	
Travel Time (s)		9.2			2.9			18.9			9.6	
Peak Hour Factor	0.99	0.99	0.99	0.92	0.92	0.92	0.80	0.80	0.80	0.92	0.92	0.92
Adj. Flow (vph)	359	1391	0	0	1303	711	396	0	540	0	0	0
Shared Lane Traffic (%)							18%		44%			
Lane Group Flow (vph)	359	1391	0	0	2014	0	325	309	302	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			
Detector Template	Left	Thru			Thru		Left	Thru	Right			
Leading Detector (ft)	20	100			100		20	100	20			
Trailing Detector (ft)	0	0			0		0	0	0			
Detector 1 Position(ft)	0	0			0		0	0	0			
Detector 1 Size(ft)	20	6			6		20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt						custom		Perm			
Protected Phases	1	6			2		3	3				
Permitted Phases	6						3		3			
Detector Phase	1	6			2		3	3	3			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	3.0	4.0			4.0		6.0	6.0	6.0			
Minimum Split (s)	7.3	33.9			27.8		29.0	29.0	29.0			
Total Split (s)	23.0	90.0	0.0	0.0	67.0	0.0	30.0	30.0	30.0	0.0	0.0	0.0
Total Split (%)	19.2%	75.0%	0.0%	0.0%	55.8%	0.0%	25.0%	25.0%	25.0%	0.0%	0.0%	0.0%
Maximum Green (s)	18.7	84.1			61.2		24.8	24.8	24.8			
Yellow Time (s)	3.2	3.9			3.9		3.2	3.2	3.2			
All-Red Time (s)	1.1	2.0			1.9		2.0	2.0	2.0			
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.9	4.0	4.0	5.8	4.0	5.2	5.2	5.2	4.0	4.0	4.0
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	2.0	3.0			3.0		2.0	2.0	2.0			
Recall Mode	None	C-Max			C-Max		None	None	None			
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		21.0			15.0							
Pedestrian Calls (#/hr)		0			0							
Act Effct Green (s)	86.2	84.6			61.2		24.3	24.3	24.3			
Actuated g/C Ratio	0.72	0.70			0.51		0.20	0.20	0.20			
v/c Ratio	1.04	0.39			0.79		0.96	0.85	0.82			
Control Delay	88.9	8.6			10.8		86.3	56.5	52.7			
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0			
Total Delay	88.9	8.6			10.8		86.3	56.5	52.7			
LOS	F	A			B		F	E	D			
Approach Delay		25.1			10.8			65.6				
Approach LOS		C			B			E				

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 59 (49%), Referenced to phase 2:WBT and 6:EBTL, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 27.0		Intersection LOS: C	
Intersection Capacity Utilization 83.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 12: Sheridan Drive & I-290 NB

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1002	604	463	1053	267	729
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	215		140	0
Storage Lanes		1	1		2	2
Taper Length (ft)		230	100		100	25
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	3433	3539	3433	2787
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3539	1583	3433	3539	3433	2787
Right Turn on Red		No				Yes
Satd. Flow (RTOR)						129
Link Speed (mph)	45			45	35	
Link Distance (ft)	314			610	338	
Travel Time (s)	4.8			9.2	6.6	
Peak Hour Factor	0.98	0.98	0.95	0.95	0.85	0.85
Adj. Flow (vph)	1022	616	487	1108	314	858
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1022	616	487	1108	314	858
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	100	20	20	100	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type		pm+ov	Prot			pm+ov
Protected Phases	2	3	1	1 2	3	1
Permitted Phases		2				3
Detector Phase	2	3	1	1 2	3	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	20.0	6.0	3.0		6.0	3.0
Minimum Split (s)	30.5	11.2	7.3		11.2	7.3
Total Split (s)	66.0	25.0	29.0	95.0	25.0	29.0
Total Split (%)	55.0%	20.8%	24.2%	79.2%	20.8%	24.2%
Maximum Green (s)	60.5	19.8	24.7		19.8	24.7
Yellow Time (s)	3.9	3.2	3.2		3.2	3.2
All-Red Time (s)	1.6	2.0	1.1		2.0	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.2	4.3	4.3	5.2	4.3
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	2.0	2.0	2.0		2.0	2.0
Recall Mode	C-Max	None	None		None	None
Walk Time (s)	7.0					
Flash Dont Walk (s)	18.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	63.4	84.4	26.1	95.0	15.5	46.8
Actuated g/C Ratio	0.53	0.70	0.22	0.79	0.13	0.39
v/c Ratio	0.55	0.55	0.65	0.40	0.71	0.74
Control Delay	20.7	11.0	39.0	5.5	58.8	30.2
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	20.7	11.0	39.0	5.9	58.8	30.2
LOS	C	B	D	A	E	C
Approach Delay	17.1			16.0	37.9	
Approach LOS	B			B	D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 36 (30%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 22.2		Intersection LOS: C	
Intersection Capacity Utilization 61.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 13: Sheridan Drive & Harlem Road

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	234	387	574	11	521	510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	330	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25	25		25	75	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.997			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3529	0	1770	3539
Flt Permitted	0.950				0.153	
Satd. Flow (perm)	1770	1583	3529	0	285	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		69	2			
Link Speed (mph)	30		35			35
Link Distance (ft)	333		250			456
Travel Time (s)	7.6		4.9			8.9
Peak Hour Factor	0.69	0.69	0.77	0.77	0.92	0.92
Adj. Flow (vph)	339	561	745	14	566	554
Shared Lane Traffic (%)						
Lane Group Flow (vph)	339	561	759	0	566	554
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		pm+ov			pm+pt	
Protected Phases	3	1	2		1	6
Permitted Phases		3			6	
Detector Phase	3	1	2		1	6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	22.0	9.2	30.6		9.2	21.0
Total Split (s)	40.0	35.0	50.0	0.0	35.0	85.0
Total Split (%)	32.0%	28.0%	40.0%	0.0%	28.0%	68.0%
Maximum Green (s)	35.2	30.7	45.0		30.7	80.0
Yellow Time (s)	3.2	3.2	3.6		3.2	3.6
All-Red Time (s)	1.6	1.1	1.4		1.1	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.3	5.0	4.0	4.3	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Min		None	None
Walk Time (s)			10.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			0			
Act Effct Green (s)	23.8	58.4	27.7		62.5	61.8
Actuated g/C Ratio	0.25	0.61	0.29		0.65	0.65
v/c Ratio	0.77	0.56	0.74		0.87	0.24
Control Delay	46.9	12.9	36.3		38.5	8.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	46.9	12.9	36.3		38.5	8.0
LOS	D	B	D		D	A
Approach Delay	25.7		36.3			23.4
Approach LOS	C		D			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 95.7			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 27.7		Intersection LOS: C	
Intersection Capacity Utilization 69.8%		ICU Level of Service C	
Analysis Period (min) 15			

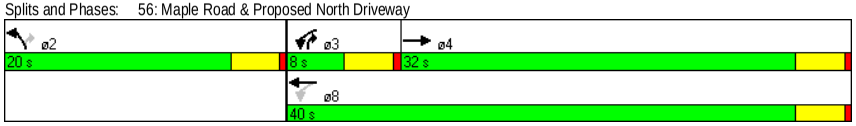
Splits and Phases: 14: I-290 SB & Harlem Road

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1294	53	84	981	57	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	225		0	150
Storage Lanes		0	1		1	1
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.994					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3518	0	1770	3539	1770	1583
Flt Permitted			0.133		0.950	
Satd. Flow (perm)	3518	0	248	3539	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	9					18
Link Speed (mph)	45			45	30	
Link Distance (ft)	1000			928	337	
Travel Time (s)	15.2			14.1	7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1407	58	91	1066	62	111
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1465	0	91	1066	62	111
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	6		20	6	20	20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type			pm+pt			pm+ov
Protected Phases	4		3	8	2	3
Permitted Phases			8			2
Detector Phase	4		3	8	2	3

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	20.0		8.0	20.0	20.0	8.0
Total Split (s)	32.0	0.0	8.0	40.0	20.0	8.0
Total Split (%)	53.3%	0.0%	13.3%	66.7%	33.3%	13.3%
Maximum Green (s)	28.0		4.0	36.0	16.0	4.0
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	0.5		0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	None	Min	None
Walk Time (s)	5.0			5.0	5.0	
Flash Dont Walk (s)	11.0			11.0	11.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	26.0		31.9	31.9	7.3	15.7
Actuated g/C Ratio	0.55		0.67	0.67	0.15	0.33
v/c Ratio	0.76		0.30	0.45	0.23	0.21
Control Delay	12.3		5.4	4.3	21.6	12.8
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	12.3		5.4	4.3	21.6	12.8
LOS	B		A	A	C	B
Approach Delay	12.3			4.4	15.9	
Approach LOS	B			A	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 47.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 9.3		Intersection LOS: A	
Intersection Capacity Utilization 55.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 56: Maple Road & Proposed North Driveway



A8

Level of Service Calculations: Alternative Plan No. 7 (Alternative Access)

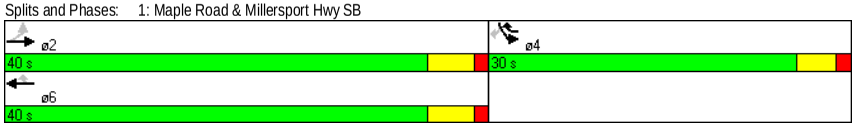
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	18	612	831	312	31	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150			150	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	35			100	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.323				0.950	
Satd. Flow (perm)	602	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						106
Link Speed (mph)		45	45		30	
Link Distance (ft)		555	654		281	
Travel Time (s)		8.4	9.9		6.4	
Peak Hour Factor	0.91	0.91	0.96	0.96	0.78	0.78
Adj. Flow (vph)	20	673	866	325	40	106
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	673	866	325	40	106
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane			Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm			pm+ov		Perm
Protected Phases		2	6	4	4	
Permitted Phases	2			6		4
Detector Phase	2	2	6	4	4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	1.0	1.0	1.0
Minimum Split (s)	9.1	9.1	9.1	6.2	6.2	6.2
Total Split (s)	40.0	40.0	40.0	30.0	30.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	42.9%	42.9%	42.9%
Maximum Green (s)	34.9	34.9	34.9	25.4	25.4	25.4
Yellow Time (s)	3.9	3.9	3.9	3.2	3.2	3.2
All-Red Time (s)	1.2	1.2	1.2	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	4.6	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	52.7	52.7	52.7	70.0	7.6	7.6
Actuated g/C Ratio	0.75	0.75	0.75	1.00	0.11	0.11
v/c Ratio	0.04	0.25	0.33	0.21	0.21	0.40
Control Delay	2.9	3.1	5.9	0.3	30.2	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.9	3.1	5.9	0.3	30.2	11.3
LOS	A	A	A	A	C	B
Approach Delay		3.1	4.3		16.4	
Approach LOS		A	A		B	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.40
Intersection Signal Delay: 4.8 Intersection LOS: A
Intersection Capacity Utilization 36.2% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Maple Road & Millersport Hwy SB

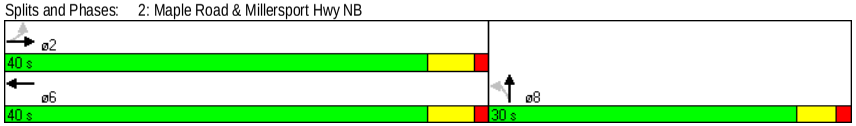


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	601	0	0	996	57	147	1	466	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	50		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.992			0.850				
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	3539	0	0	3511	0	1770	1583	0	0	0	0
Flt Permitted	0.185						0.950					
Satd. Flow (perm)	345	3539	0	0	3511	0	1770	1583	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					12			170				
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		654			1770			319			263	
Travel Time (s)		9.9			26.8			7.3			6.0	
Peak Hour Factor	0.85	0.85	0.85	0.93	0.93	0.93	0.93	0.93	0.93	0.92	0.92	0.92
Adj. Flow (vph)	49	707	0	0	1071	61	158	1	501	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	707	0	0	1132	0	158	502	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2				
Detector Template	Left	Thru			Thru		Left	Thru				
Leading Detector (ft)	20	100			100		20	100				
Trailing Detector (ft)	0	0			0		0	0				
Detector 1 Position(ft)	0	0			0		0	0				
Detector 1 Size(ft)	20	6			6		20	6				
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0				
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Perm						Perm					
Protected Phases		2			6			8				
Permitted Phases	2						8					
Detector Phase	2	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	1.0			4.0		1.0	1.0				
Minimum Split (s)	6.1	6.1			9.1		6.2	6.2				
Total Split (s)	40.0	40.0	0.0	0.0	40.0	0.0	30.0	30.0	0.0	0.0	0.0	0.0
Total Split (%)	57.1%	57.1%	0.0%	0.0%	57.1%	0.0%	42.9%	42.9%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	34.9	34.9			34.9		25.4	25.4				
Yellow Time (s)	3.9	3.9			3.9		3.2	3.2				
All-Red Time (s)	1.2	1.2			1.2		1.4	1.4				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	4.0	4.0	5.1	4.0	4.6	4.6	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Recall Mode	C-Min	C-Min			C-Min		None	None				
Act Effct Green (s)	39.0	39.0			39.0		21.3	21.3				
Actuated g/C Ratio	0.56	0.56			0.56		0.30	0.30				
v/c Ratio	0.26	0.36			0.58		0.29	0.84				
Control Delay	15.8	10.7			12.6		18.6	27.6				
Queue Delay	0.0	0.0			0.0		0.0	0.0				
Total Delay	15.8	10.7			12.6		18.6	27.6				
LOS	B	B			B		B	C				
Approach Delay		11.0			12.6			25.4				
Approach LOS		B			B			C				

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 15.5		Intersection LOS: B	
Intersection Capacity Utilization 71.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Maple Road & Millersport Hwy NB



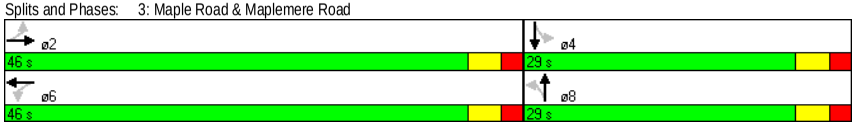
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	931	46	12	1044	28	43	3	16	34	0	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	70		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50		25	50		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.996			0.965			0.957	
Flt Protected	0.950			0.950				0.967			0.967	
Satd. Flow (prot)	1770	3514	0	1770	3525	0	0	1738	0	0	1724	0
Flt Permitted	0.204			0.217				0.739			0.733	
Satd. Flow (perm)	380	3514	0	404	3525	0	0	1328	0	0	1307	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			6			25			28	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1770			1106			378			402	
Travel Time (s)		26.8			16.8			8.6			9.1	
Peak Hour Factor	0.86	0.86	0.86	0.91	0.91	0.91	0.60	0.60	0.60	0.58	0.58	0.58
Adj. Flow (vph)	24	1083	53	13	1147	31	72	5	27	59	0	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	1136	0	13	1178	0	0	104	0	0	87	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		27.0	27.0		27.0	27.0	
Total Split (s)	46.0	46.0	0.0	46.0	46.0	0.0	29.0	29.0	0.0	29.0	29.0	0.0
Total Split (%)	61.3%	61.3%	0.0%	61.3%	61.3%	0.0%	38.7%	38.7%	0.0%	38.7%	38.7%	0.0%
Maximum Green (s)	41.0	41.0		41.0	41.0		24.0	24.0		24.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)							7.0	7.0		7.0	7.0	
Flash Dont Walk (s)							15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)							0	0		0	0	
Act Effct Green (s)	27.4	27.4		27.4	27.4			8.5			8.3	
Actuated g/C Ratio	0.65	0.65		0.65	0.65			0.20			0.20	
v/c Ratio	0.10	0.49		0.05	0.51			0.36			0.31	
Control Delay	6.1	6.5		5.4	6.7			16.6			14.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	6.1	6.5		5.4	6.7			16.6			14.9	
LOS	A	A		A	A			B			B	
Approach Delay		6.5			6.7			16.6			14.9	
Approach LOS		A			A			B			B	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 41.9
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.51
Intersection Signal Delay: 7.3 Intersection LOS: A
Intersection Capacity Utilization 42.2% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: Maple Road & Maplemere Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	976	6	13	1059	24	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999				0.904	
Flt Protected			0.950		0.986	
Satd. Flow (prot)	3536	0	1770	3539	1660	0
Flt Permitted			0.950		0.986	
Satd. Flow (perm)	3536	0	1770	3539	1660	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	1106			1002	355	
Travel Time (s)	16.8			15.2	8.1	
Peak Hour Factor	0.79	0.79	0.87	0.87	0.76	0.76
Adj. Flow (vph)	1235	8	15	1217	32	80
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1243	0	15	1217	112	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	976	6	13	1059	24	61
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.87	0.87	0.76	0.76
Hourly flow rate (vph)	1235	8	15	1217	32	80
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	1106			1002		
pX, platoon unblocked			0.85		0.92	0.85
vC, conflicting volume			1243		1878	622
vC1, stage 1 conf vol					1239	
vC2, stage 2 conf vol					639	
vCu, unblocked vol			930		1119	197
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		89	88
cM capacity (veh/h)			621		282	688

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	824	419	15	609	609	112
Volume Left	0	0	15	0	0	32
Volume Right	0	8	0	0	0	80
cSH	1700	1700	621	1700	1700	489
Volume to Capacity	0.48	0.25	0.02	0.36	0.36	0.23
Queue Length 95th (ft)	0	0	2	0	0	22
Control Delay (s)	0.0	0.0	10.9	0.0	0.0	14.5
Lane LOS			B			B
Approach Delay (s)	0.0		0.1			14.5
Approach LOS						B

Intersection Summary				
Average Delay	0.7			
Intersection Capacity Utilization	41.0%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1065	4	1	1123	2	13	0	3	1	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	50		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999						0.976				
Flt Protected	0.950			0.950				0.960			0.950	
Satd. Flow (prot)	1770	3536	0	1770	3539	0	0	1745	0	0	1770	0
Flt Permitted	0.950			0.950				0.960			0.950	
Satd. Flow (perm)	1770	3536	0	1770	3539	0	0	1745	0	0	1770	0
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		446			556			469			111	
Travel Time (s)		6.8			8.4			10.7			2.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	1158	4	1	1221	2	14	0	3	1	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	1162	0	1	1223	0	0	17	0	0	1	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.1%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1065	4	1	1123	2	13	0	3	1	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1158	4	1	1221	2	14	0	3	1	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1223			1162			1774	2387	581	1808	2388	611
vC1, stage 1 conf vol							1162	1162		1224	1224	
vC2, stage 2 conf vol							612	1225		584	1164	
vCu, unblocked vol	1223			1162			1774	2387	581	1808	2388	611
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			92	100	99	99	100	100
cM capacity (veh/h)	566			597			187	178	457	174	178	436

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	1	772	390	1	814	409	17	1
Volume Left	1	0	0	1	0	0	14	1
Volume Right	0	0	4	0	0	2	3	0
cSH	566	1700	1700	597	1700	1700	210	174
Volume to Capacity	0.00	0.45	0.23	0.00	0.48	0.24	0.08	0.01
Queue Length 95th (ft)	0	0	0	0	0	0	7	0
Control Delay (s)	11.4	0.0	0.0	11.0	0.0	0.0	23.7	25.8
Lane LOS	B			B			C	D
Approach Delay (s)	0.0			0.0			23.7	25.8
Approach LOS							C	D

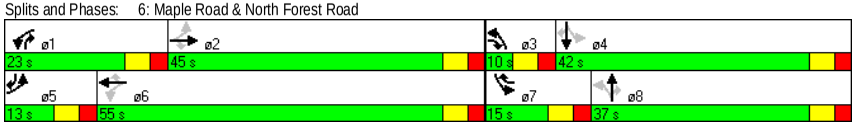
Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	41.1%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	102	863	84	254	835	90	90	231	189	123	363	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	415		220	315		150	125		220	250		250
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	90		115	60		25	95		25	90		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.248			0.099			0.198			0.353		
Satd. Flow (perm)	462	3539	1583	184	3539	1583	369	1863	1583	658	1863	1583
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			92						53			77
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1705			820			529			608	
Travel Time (s)		25.8			12.4			10.3			11.8	
Peak Hour Factor	0.90	0.90	0.90	0.95	0.95	0.95	0.90	0.90	0.90	0.80	0.80	0.80
Adj. Flow (vph)	113	959	93	267	879	95	100	257	210	154	454	231
Shared Lane Traffic (%)												
Lane Group Flow (vph)	113	959	93	267	879	95	100	257	210	154	454	231
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0
Minimum Split (s)	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0
Total Split (s)	13.0	45.0	10.0	23.0	55.0	15.0	10.0	37.0	23.0	15.0	42.0	13.0
Total Split (%)	10.8%	37.5%	8.3%	19.2%	45.8%	12.5%	8.3%	30.8%	19.2%	12.5%	35.0%	10.8%
Maximum Green (s)	7.0	39.0	4.0	17.0	49.0	9.0	4.0	31.0	17.0	9.0	36.0	7.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
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	3.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		22.0			22.0			22.0			22.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	41.6	34.6	44.8	56.1	43.2	58.2	30.0	25.9	47.7	39.6	30.7	43.8
Actuated g/C Ratio	0.38	0.32	0.41	0.51	0.39	0.53	0.27	0.24	0.44	0.36	0.28	0.40
v/c Ratio	0.44	0.86	0.13	0.83	0.63	0.11	0.65	0.58	0.29	0.47	0.87	0.34
Control Delay	21.4	44.5	5.2	49.4	29.2	13.9	49.5	43.7	16.2	29.8	56.3	17.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.4	44.5	5.2	49.4	29.2	13.9	49.5	43.7	16.2	29.8	56.3	17.0
LOS	C	D	A	D	C	B	D	D	B	C	E	B
Approach Delay		39.1			32.4			34.6			40.6	
Approach LOS		D			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 109.5			
Natural Cycle: 85			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 36.6		Intersection LOS: D	
Intersection Capacity Utilization 82.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: Maple Road & North Forest Road



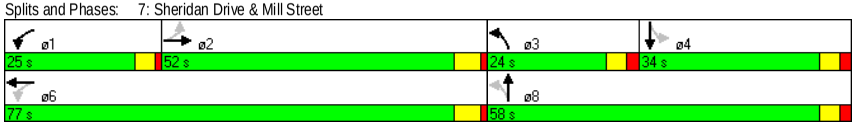
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	1343	130	220	1060	9	106	21	125	30	146	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	150		0	40		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	65		25	60		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.999			0.872			0.983	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3493	0	1770	3536	0	1770	1624	0	1770	1831	0
Flt Permitted	0.223			0.072			0.207			0.598		
Satd. Flow (perm)	415	3493	0	134	3536	0	386	1624	0	1114	1831	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					1						4	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		2782			977			838			362	
Travel Time (s)		42.2			14.8			19.0			8.2	
Peak Hour Factor	0.86	0.86	0.86	0.89	0.89	0.89	0.56	0.56	0.56	0.61	0.61	0.61
Adj. Flow (vph)	7	1562	151	247	1191	10	189	38	223	49	239	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	1713	0	247	1201	0	189	261	0	49	270	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			pm+pt			pm+pt			Perm		
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		3	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		1.0	4.0		1.0	4.0		4.0	4.0	
Minimum Split (s)	28.3	28.3		6.2	28.3		6.2	34.2		34.2	34.2	
Total Split (s)	52.0	52.0	0.0	25.0	77.0	0.0	24.0	58.0	0.0	34.0	34.0	0.0
Total Split (%)	38.5%	38.5%	0.0%	18.5%	57.0%	0.0%	17.8%	43.0%	0.0%	25.2%	25.2%	0.0%
Maximum Green (s)	46.5	46.5		20.7	71.5		18.8	52.8		28.8	28.8	
Yellow Time (s)	4.3	4.3		3.2	4.3		3.2	3.2		3.2	3.2	
All-Red Time (s)	1.2	1.2		1.1	1.2		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	4.3	5.5	4.0	5.2	5.2	4.0	5.2	5.2	4.0
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		None	Max		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0			15.0			22.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0			0			0		0	0	
Act Effct Green (s)	51.0	51.0		73.0	71.8		42.7	42.7		22.6	22.6	
Actuated g/C Ratio	0.41	0.41		0.58	0.57		0.34	0.34		0.18	0.18	
v/c Ratio	0.04	1.21		0.84	0.59		0.64	0.47		0.24	0.81	
Control Delay	29.7	133.3		56.3	19.9		40.1	35.0		47.4	67.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	29.7	133.3		56.3	19.9		40.1	35.0		47.4	67.8	
LOS	C	F		E	B		D	C		D	E	
Approach Delay		132.9			26.1			37.1			64.7	
Approach LOS		F			C			D			E	

Intersection Summary

Area Type: Other
Cycle Length: 135
Actuated Cycle Length: 125.3
Natural Cycle: 140
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.21
Intersection Signal Delay: 77.2 Intersection LOS: E
Intersection Capacity Utilization 85.0% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 7: Sheridan Drive & Mill Street

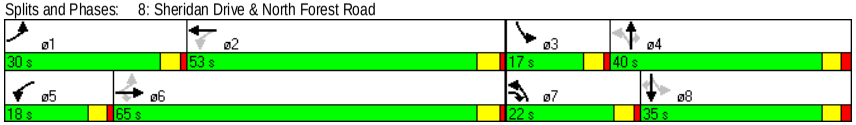


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	1327	217	181	1113	26	239	345	23	51	450	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	405		170	260		0	180		265	180		200
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	200		25	200		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850		0.997				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3529	0	1770	1863	1583	1770	3539	1583
Flt Permitted	0.105			0.062			0.172			0.312		
Satd. Flow (perm)	196	3539	1583	115	3529	0	320	1863	1583	581	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			65		2				26			310
Link Speed (mph)		45			45			40			35	
Link Distance (ft)		969			2219			547			354	
Travel Time (s)		14.7			33.6			9.3			6.9	
Peak Hour Factor	0.95	0.95	0.95	0.92	0.92	0.92	0.90	0.90	0.90	0.84	0.84	0.84
Adj. Flow (vph)	95	1397	228	197	1210	28	266	383	26	61	536	338
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	1397	228	197	1238	0	266	383	26	61	536	338
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		pm+ov	pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases	6		6	2			4		4	8		8
Detector Phase	1	6	7	5	2		7	4	4	3	8	8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.3	27.9	21.0	8.3	27.9		21.0	27.2	27.2	8.3	27.2	27.2
Total Split (s)	30.0	65.0	22.0	18.0	53.0	0.0	22.0	40.0	40.0	17.0	35.0	35.0
Total Split (%)	21.4%	46.4%	15.7%	12.9%	37.9%	0.0%	15.7%	28.6%	28.6%	12.1%	25.0%	25.0%
Maximum Green (s)	25.7	59.9	17.7	13.7	47.9		17.7	34.9	34.9	12.7	29.9	29.9
Yellow Time (s)	3.2	3.9	3.2	3.2	3.9		3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.1	1.2	1.1	1.1	1.2		1.1	1.9	1.9	1.1	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.1	4.3	4.3	5.1	4.0	4.3	5.1	5.1	4.3	5.1	5.1
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
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
Recall Mode	None	Max	None	None	Max		None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		15.0			15.0			15.0	15.0		15.0	15.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	69.9	60.0	82.8	77.6	64.2		49.2	37.7	37.7	35.8	26.5	26.5
Actuated g/C Ratio	0.51	0.44	0.61	0.57	0.47		0.36	0.28	0.28	0.26	0.19	0.19
v/c Ratio	0.46	0.90	0.23	0.87	0.74		0.88	0.74	0.06	0.27	0.78	0.61
Control Delay	21.6	44.6	9.7	68.6	33.6		61.9	55.8	13.5	32.3	60.7	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.6	44.6	9.7	68.6	33.6		61.9	55.8	13.5	32.3	60.7	12.0
LOS	C	D	A	E	C		E	E	B	C	E	B
Approach Delay		38.7			38.4			56.6			41.2	
Approach LOS		D			D			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 136.2			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 41.6		Intersection LOS: D	
Intersection Capacity Utilization 88.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Sheridan Drive & North Forest Road



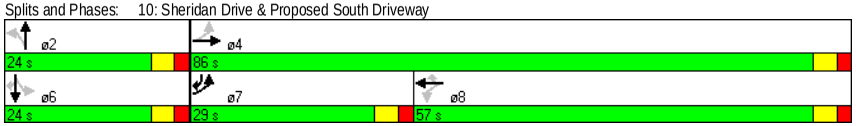
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	172	1597	6	4	1523	66	16	0	9	55	0	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0	75		425	0		0	0		0
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	25		25	25		75	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999				0.850		0.951				0.850
Flt Protected	0.950			0.950				0.969			0.950	
Satd. Flow (prot)	1770	3536	0	1770	3539	1583	0	1717	0	0	1770	1583
Flt Permitted	0.058			0.103				0.825			0.734	
Satd. Flow (perm)	108	3536	0	192	3539	1583	0	1461	0	0	1367	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				72		13				8
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		635			699			278			269	
Travel Time (s)		9.6			10.6			6.3			6.1	
Peak Hour Factor	0.92	0.88	0.88	0.90	0.90	0.92	0.69	0.92	0.69	0.92	0.92	0.92
Adj. Flow (vph)	187	1815	7	4	1692	72	23	0	13	60	0	140
Shared Lane Traffic (%)												
Lane Group Flow (vph)	187	1822	0	4	1692	72	0	36	0	0	60	140
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt			Perm		Perm	Perm			Perm		pm+ov
Protected Phases	7	4			8			2			6	7
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		8	8	8	2	2		6	6	7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	21.0	21.0		21.0	21.0	21.0	21.0	21.0		21.0	21.0	21.0
Total Split (s)	29.0	86.0	0.0	57.0	57.0	57.0	24.0	24.0	0.0	24.0	24.0	29.0
Total Split (%)	26.4%	78.2%	0.0%	51.8%	51.8%	51.8%	21.8%	21.8%	0.0%	21.8%	21.8%	26.4%
Maximum Green (s)	24.0	81.0		52.0	52.0	52.0	19.0	19.0		19.0	19.0	24.0
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag						Lead
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	Max	Max		None	None	None
Walk Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Flash Dont Walk (s)		11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0		0	0	0	0	0		0	0	
Act Effct Green (s)	81.0	81.0		64.1	64.1	64.1		19.0			19.0	35.9
Actuated g/C Ratio	0.74	0.74		0.58	0.58	0.58		0.17			0.17	0.33
v/c Ratio	0.72	0.70		0.04	0.82	0.08		0.14			0.25	0.27
Control Delay	35.5	9.4		13.0	23.6	3.1		29.3			42.7	26.2
Queue Delay	0.0	0.1		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	35.5	9.5		13.0	23.6	3.1		29.3			42.7	26.2
LOS	D	A		B	C	A		C			D	C
Approach Delay		11.9			22.7			29.3			31.1	
Approach LOS		B			C			C			C	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 90 (82%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 17.8 — Intersection LOS: B
Intersection Capacity Utilization 72.2% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 10: Sheridan Drive & Proposed South Driveway

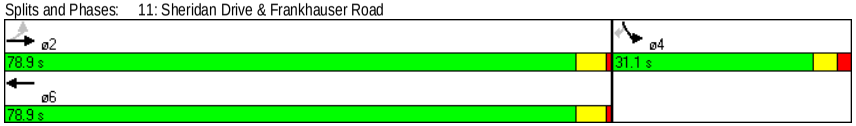


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	68	1730	1644	24	44	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	105			0	0	50
Storage Lanes	1			0	1	1
Taper Length (ft)	65			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3532	0	1770	1583
Flt Permitted	0.110				0.950	
Satd. Flow (perm)	205	3539	3532	0	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			3			33
Link Speed (mph)		45	45		30	
Link Distance (ft)		1014	635		825	
Travel Time (s)		15.4	9.6		18.8	
Peak Hour Factor	0.89	0.89	0.94	0.94	0.73	0.73
Adj. Flow (vph)	76	1944	1749	26	60	79
Shared Lane Traffic (%)						
Lane Group Flow (vph)	76	1944	1775	0	60	79
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (ft)	20	100	100		20	20
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	6	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		1.0	1.0
Minimum Split (s)	40.0	40.0	40.0		31.1	31.1
Total Split (s)	78.9	78.9	78.9	0.0	31.1	31.1
Total Split (%)	71.7%	71.7%	71.7%	0.0%	28.3%	28.3%
Maximum Green (s)	74.1	74.1	74.1		26.0	26.0
Yellow Time (s)	3.9	3.9	3.9		3.2	3.2
All-Red Time (s)	0.9	0.9	0.9		1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.8	4.8	4.0	5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max	C-Max		None	None
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0	15.0		19.0	19.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	94.0	94.0	94.0		9.2	9.2
Actuated g/C Ratio	0.85	0.85	0.85		0.08	0.08
v/c Ratio	0.43	0.64	0.59		0.41	0.48
Control Delay	9.8	3.6	0.8		54.9	39.4
Queue Delay	0.0	0.0	0.3		0.0	0.0
Total Delay	9.8	3.6	1.2		54.9	39.4
LOS	A	A	A		D	D
Approach Delay		3.9	1.2		46.1	
Approach LOS		A	A		D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 99 (90%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 4.1		Intersection LOS: A	
Intersection Capacity Utilization 65.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 11: Sheridan Drive & Frankhauser Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	249	1557	0	0	1120	538	269	0	277	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	230		120	0		0
Storage Lanes	1		0	0		0	1		1	0		0
Taper Length (ft)	105		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.91	0.95	1.00	1.00	1.00
Frt					0.951			0.916	0.850			
Flt Protected	0.950						0.950	0.978				
Satd. Flow (prot)	1770	5085	0	0	4836	0	1681	1519	1504	0	0	0
Flt Permitted	0.074						0.950	0.978				
Satd. Flow (perm)	138	5085	0	0	4836	0	1681	1519	1504	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					142			42	42			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		197			193			830			423	
Travel Time (s)		3.0			2.9			18.9			9.6	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	265	1656	0	0	1191	572	306	0	315	0	0	0
Shared Lane Traffic (%)							30%		37%			
Lane Group Flow (vph)	265	1656	0	0	1763	0	214	209	198	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			
Detector Template	Left	Thru			Thru		Left	Thru	Right			
Leading Detector (ft)	20	100			100		20	100	20			
Trailing Detector (ft)	0	0			0		0	0	0			
Detector 1 Position(ft)	0	0			0		0	0	0			
Detector 1 Size(ft)	20	6			6		20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt						custom		Perm			
Protected Phases	1	6			2		3	3				
Permitted Phases	6						3		3			
Detector Phase	1	6			2		3	3	3			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	4.0			4.0		4.0	4.0	4.0			
Minimum Split (s)	6.2	33.9			27.8		29.0	29.0	29.0			
Total Split (s)	26.0	81.0	0.0	0.0	55.0	0.0	29.0	29.0	29.0	0.0	0.0	0.0
Total Split (%)	23.6%	73.6%	0.0%	0.0%	50.0%	0.0%	26.4%	26.4%	26.4%	0.0%	0.0%	0.0%
Maximum Green (s)	21.7	75.1			49.2		23.8	23.8	23.8			
Yellow Time (s)	3.2	3.9			3.9		3.2	3.2	3.2			
All-Red Time (s)	1.1	2.0			1.9		2.0	2.0	2.0			
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.9	4.0	4.0	5.8	4.0	5.2	5.2	5.2	4.0	4.0	4.0
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	2.0	3.0			3.0		2.0	2.0	2.0			
Recall Mode	None	C-Max			C-Max		None	None	None			
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		21.0			15.0							
Pedestrian Calls (#/hr)		0			0							
Act Effct Green (s)	82.1	80.5			61.4		18.4	18.4	18.4			
Actuated g/C Ratio	0.75	0.73			0.56		0.17	0.17	0.17			
v/c Ratio	0.82	0.44			0.64		0.76	0.72	0.69			
Control Delay	39.0	4.0			7.4		60.7	48.4	46.0			
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0			
Total Delay	39.0	4.0			7.4		60.7	48.4	46.0			
LOS	D	A			A		E	D	D			
Approach Delay		8.9			7.4			51.9				
Approach LOS		A			A			D				

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 8 (7%), Referenced to phase 2:WBT and 6:EBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 14.5		Intersection LOS: B	
Intersection Capacity Utilization 70.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 12: Sheridan Drive & I-290 NB

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	908	315	521	868	285	898
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	215		140	0
Storage Lanes		1	1		2	2
Taper Length (ft)		230	100		100	25
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	3433	3539	3433	2787
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3539	1583	3433	3539	3433	2787
Right Turn on Red		No				Yes
Satd. Flow (RTOR)						107
Link Speed (mph)	45			45	35	
Link Distance (ft)	314			413	338	
Travel Time (s)	4.8			6.3	6.6	
Peak Hour Factor	0.85	0.85	0.92	0.92	0.90	0.90
Adj. Flow (vph)	1068	371	566	943	317	998
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1068	371	566	943	317	998
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	100	20	20	100	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type		pm+ov	Prot			pm+ov
Protected Phases	2	3	1	6	3	1
Permitted Phases		2				3
Detector Phase	2	3	1	6	3	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	1.0	1.0	1.0	4.0	1.0	1.0
Minimum Split (s)	30.5	6.2	5.3	32.3	6.2	5.3
Total Split (s)	60.0	25.0	25.0	85.0	25.0	25.0
Total Split (%)	54.5%	22.7%	22.7%	77.3%	22.7%	22.7%
Maximum Green (s)	54.5	19.8	20.7	80.7	19.8	20.7
Yellow Time (s)	3.9	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.6	2.0	1.1	1.1	2.0	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.2	4.3	4.3	5.2	4.3
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	C-Max	None	None	None	None	None
Walk Time (s)	7.0			7.0		
Flash Dont Walk (s)	18.0			21.0		
Pedestrian Calls (#/hr)	0			0		
Act Effct Green (s)	56.9	76.9	23.6	86.0	14.5	43.3
Actuated g/C Ratio	0.52	0.70	0.21	0.78	0.13	0.39
v/c Ratio	0.58	0.34	0.77	0.34	0.70	0.86
Control Delay	20.5	7.5	58.1	3.4	54.1	35.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.5	7.5	58.1	3.4	54.1	35.5
LOS	C	A	E	A	D	D
Approach Delay	17.1			23.9	40.0	
Approach LOS	B			C	D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 7 (6%), Referenced to phase 2:EBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 26.6		Intersection LOS: C	
Intersection Capacity Utilization 64.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 13: Sheridan Drive & Harlem Road

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	298	744	478	21	413	391
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	330	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25	25		25	75	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3518	0	1770	3539
Flt Permitted	0.950				0.215	
Satd. Flow (perm)	1770	1583	3518	0	400	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		146	4			
Link Speed (mph)	30		35			35
Link Distance (ft)	333		250			456
Travel Time (s)	7.6		4.9			8.9
Peak Hour Factor	0.81	0.81	0.87	0.87	0.88	0.88
Adj. Flow (vph)	368	919	549	24	469	444
Shared Lane Traffic (%)						
Lane Group Flow (vph)	368	919	573	0	469	444
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		pm+ov			pm+pt	
Protected Phases	3	1	2		1	6
Permitted Phases		3			6	
Detector Phase	3	1	2		1	6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	22.0	9.2	30.6		9.2	21.0
Total Split (s)	40.0	35.0	50.0	0.0	35.0	85.0
Total Split (%)	32.0%	28.0%	40.0%	0.0%	28.0%	68.0%
Maximum Green (s)	35.2	30.7	45.0		30.7	80.0
Yellow Time (s)	3.2	3.2	3.6		3.2	3.6
All-Red Time (s)	1.6	1.1	1.4		1.1	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.3	5.0	4.0	4.3	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Min		None	None
Walk Time (s)			10.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			0			
Act Effct Green (s)	23.7	57.9	20.8		55.2	54.5
Actuated g/C Ratio	0.27	0.66	0.24		0.63	0.62
v/c Ratio	0.77	0.84	0.69		0.67	0.20
Control Delay	42.7	19.6	36.2		19.1	8.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	42.7	19.6	36.2		19.1	8.4
LOS	D	B	D		B	A
Approach Delay	26.2		36.2			13.9
Approach LOS	C		D			B

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 88.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 24.2 Intersection LOS: C
Intersection Capacity Utilization 67.7% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 14: I-290 SB & Harlem Road

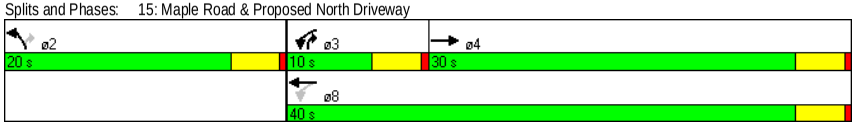
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	977	61	110	1007	66	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	225		0	150
Storage Lanes		0	1		1	1
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.991					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3507	0	1770	3539	1770	1583
Flt Permitted			0.160		0.950	
Satd. Flow (perm)	3507	0	298	3539	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	13					40
Link Speed (mph)	45			45	30	
Link Distance (ft)	1002			926	372	
Travel Time (s)	15.2			14.0	8.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1062	66	120	1095	72	105
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1128	0	120	1095	72	105
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	6		20	6	20	20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type			pm+pt			pm+ov
Protected Phases	4		3	8	2	3
Permitted Phases			8			2
Detector Phase	4		3	8	2	3

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	20.0		8.0	20.0	20.0	8.0
Total Split (s)	30.0	0.0	10.0	40.0	20.0	10.0
Total Split (%)	50.0%	0.0%	16.7%	66.7%	33.3%	16.7%
Maximum Green (s)	26.0		6.0	36.0	16.0	6.0
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	0.5		0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	None	Min	None
Walk Time (s)	5.0			5.0	5.0	
Flash Dont Walk (s)	11.0			11.0	11.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	21.0		28.3	28.3	7.7	18.3
Actuated g/C Ratio	0.47		0.63	0.63	0.17	0.41
v/c Ratio	0.68		0.30	0.49	0.24	0.16
Control Delay	12.1		4.9	4.9	20.9	8.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	12.1		4.9	4.9	20.9	8.5
LOS	B		A	A	C	A
Approach Delay	12.1			4.9	13.5	
Approach LOS	B			A	B	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 44.6
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 8.7 — Intersection LOS: A
Intersection Capacity Utilization 48.7% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 15: Maple Road & Proposed North Driveway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	27	1634	1570	66	0	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			425	0	0
Storage Lanes	1			1	0	1
Taper Length (ft)	25			75	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	1770	3539	3539	1583	0	1611
Flt Permitted	0.950					
Satd. Flow (perm)	1770	3539	3539	1583	0	1611
Link Speed (mph)		45	45		30	
Link Distance (ft)		699	969		220	
Travel Time (s)		10.6	14.7		5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	1776	1707	72	0	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	1776	1707	72	0	25
Enter Blocked Intersection	No	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	27	1634	1570	66	0	23
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	29	1776	1707	72	0	25
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		699	969			
pX, platoon unblocked	0.71				0.84	0.71
vC, conflicting volume	1778				2653	853
vC1, stage 1 conf vol					1707	
vC2, stage 2 conf vol					947	
vCu, unblocked vol	1290				1058	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	92				100	97
cM capacity (veh/h)	381				175	775

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	29	888	888	853	853	72	25
Volume Left	29	0	0	0	0	0	0
Volume Right	0	0	0	0	0	72	25
cSH	381	1700	1700	1700	1700	1700	775
Volume to Capacity	0.08	0.52	0.52	0.50	0.50	0.04	0.03
Queue Length 95th (ft)	6	0	0	0	0	0	2
Control Delay (s)	15.2	0.0	0.0	0.0	0.0	0.0	9.8
Lane LOS	C						A
Approach Delay (s)	0.2			0.0			9.8
Approach LOS							A

Intersection Summary				
Average Delay		0.2		
Intersection Capacity Utilization		53.4%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	35	0	50	42	0	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.939			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1749	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1749	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	252		825			231
Travel Time (s)	5.7		18.8			5.3
Peak Hour Factor	0.85	0.85	0.85	0.85	0.73	0.73
Adj. Flow (vph)	41	0	59	49	0	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	41	0	108	0	0	92
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	35	0	50	42	0	67
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.73	0.73
Hourly flow rate (vph)	41	0	59	49	0	92
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			825			
pX, platoon unblocked						
vC, conflicting volume	175	84			108	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	175	84			108	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	100			100	
cM capacity (veh/h)	815	976			1482	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	41	108	92
Volume Left	41	0	0
Volume Right	0	49	0
cSH	815	1700	1482
Volume to Capacity	0.05	0.06	0.00
Queue Length 95th (ft)	4	0	0
Control Delay (s)	9.7	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.7	0.0	0.0
Approach LOS	A		

Intersection Summary					
Average Delay		1.6			
Intersection Capacity Utilization		15.2%	ICU Level of Service		A
Analysis Period (min)		15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	7	52	12	442	731	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.881				0.997	
Flt Protected	0.994			0.999		
Satd. Flow (prot)	1631	0	0	1861	1857	0
Flt Permitted	0.994			0.999		
Satd. Flow (perm)	1631	0	0	1861	1857	0
Link Speed (mph)	30			35	35	
Link Distance (ft)	238			202	152	
Travel Time (s)	5.4			3.9	3.0	
Peak Hour Factor	0.85	0.85	0.90	0.90	0.84	0.84
Adj. Flow (vph)	8	61	13	491	870	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	69	0	0	504	887	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	7	52	12	442	731	14
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.90	0.90	0.84	0.84
Hourly flow rate (vph)	8	61	13	491	870	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				866		
pX, platoon unblocked	0.81					
vC, conflicting volume	1396	879	887			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1372	879	887			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	82	98			
cM capacity (veh/h)	128	347	763			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	69	504	887
Volume Left	8	13	0
Volume Right	61	0	17
cSH	288	763	1700
Volume to Capacity	0.24	0.02	0.52
Queue Length 95th (ft)	23	1	0
Control Delay (s)	21.4	0.5	0.0
Lane LOS	C	A	
Approach Delay (s)	21.4	0.5	0.0
Approach LOS	C		

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	49.6%	ICU Level of Service		A
Analysis Period (min)	15			

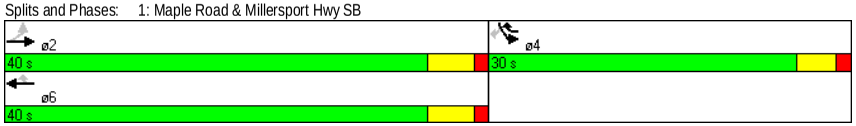
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	29	989	909	229	60	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150			150	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	35			100	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.268				0.950	
Satd. Flow (perm)	499	3539	3539	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)						78
Link Speed (mph)		45	45		30	
Link Distance (ft)		555	654		281	
Travel Time (s)		8.4	9.9		6.4	
Peak Hour Factor	0.90	0.90	0.92	0.92	0.81	0.81
Adj. Flow (vph)	32	1099	988	249	74	215
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	1099	988	249	74	215
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane			Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	6	20	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm			pm+ov		Perm
Protected Phases		2	6	4	4	
Permitted Phases	2			6		4
Detector Phase	2	2	6	4	4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	1.0	1.0	1.0
Minimum Split (s)	9.1	9.1	9.1	6.2	6.2	6.2
Total Split (s)	40.0	40.0	40.0	30.0	30.0	30.0
Total Split (%)	57.1%	57.1%	57.1%	42.9%	42.9%	42.9%
Maximum Green (s)	34.9	34.9	34.9	25.4	25.4	25.4
Yellow Time (s)	3.9	3.9	3.9	3.2	3.2	3.2
All-Red Time (s)	1.2	1.2	1.2	1.4	1.4	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.1	5.1	4.6	4.6	4.6
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	48.4	48.4	48.4	70.0	11.9	11.9
Actuated g/C Ratio	0.69	0.69	0.69	1.00	0.17	0.17
v/c Ratio	0.09	0.45	0.40	0.16	0.25	0.64
Control Delay	5.9	6.3	2.3	0.1	25.0	25.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.9	6.3	2.3	0.1	25.0	25.1
LOS	A	A	A	A	C	C
Approach Delay		6.3	1.8		25.0	
Approach LOS		A	A		C	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 17 (24%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 6.3 Intersection LOS: A
Intersection Capacity Utilization 44.0% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Maple Road & Millersport Hwy SB

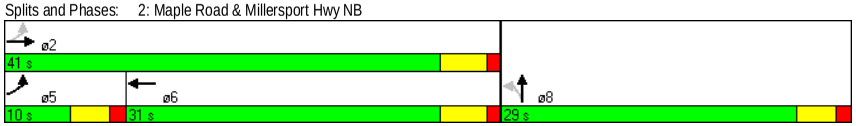


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	952	0	0	1046	31	91	0	466	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	1		0	0		0
Taper Length (ft)	50		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.996			0.850				
Flt Protected	0.950						0.950					
Satd. Flow (prot)	1770	3539	0	0	3525	0	1770	1583	0	0	0	0
Flt Permitted	0.124						0.950					
Satd. Flow (perm)	231	3539	0	0	3525	0	1770	1583	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					5			72				
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		654			1770			319			263	
Travel Time (s)		9.9			26.8			7.3			6.0	
Peak Hour Factor	0.91	0.91	0.91	0.87	0.87	0.87	0.84	0.84	0.84	0.92	0.92	0.92
Adj. Flow (vph)	107	1046	0	0	1202	36	108	0	555	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	107	1046	0	0	1238	0	108	555	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2				
Detector Template	Left	Thru			Thru		Left	Thru				
Leading Detector (ft)	20	100			100		20	100				
Trailing Detector (ft)	0	0			0		0	0				
Detector 1 Position(ft)	0	0			0		0	0				
Detector 1 Size(ft)	20	6			6		20	6				
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex				
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0				
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0				
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt						Perm					
Protected Phases	5	2			6			8				
Permitted Phases	2						8					
Detector Phase	5	2			6		8	8				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	1.0			4.0		1.0	1.0				
Minimum Split (s)	8.6	6.1			9.1		6.2	6.2				
Total Split (s)	10.0	41.0	0.0	0.0	31.0	0.0	29.0	29.0	0.0	0.0	0.0	0.0
Total Split (%)	14.3%	58.6%	0.0%	0.0%	44.3%	0.0%	41.4%	41.4%	0.0%	0.0%	0.0%	0.0%
Maximum Green (s)	5.4	35.9			25.9		24.4	24.4				
Yellow Time (s)	3.2	3.9			3.9		3.2	3.2				
All-Red Time (s)	1.4	1.2			1.2		1.4	1.4				
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.0	4.0	5.1	4.0	4.6	4.6	4.0	4.0	4.0	4.0
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0				
Recall Mode	None	C-Min			C-Min		None	None				
Act Effct Green (s)	37.0	36.5			28.5		23.8	23.8				
Actuated g/C Ratio	0.53	0.52			0.41		0.34	0.34				
v/c Ratio	0.44	0.57			0.86		0.18	0.95				
Control Delay	19.4	10.9			28.5		16.9	48.2				
Queue Delay	0.0	0.0			0.0		0.0	0.0				
Total Delay	19.4	10.9			28.5		16.9	48.2				
LOS	B	B			C		B	D				
Approach Delay		11.7			28.5			43.1				
Approach LOS		B			C			D				

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 5 (7%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 25.3		Intersection LOS: C	
Intersection Capacity Utilization 76.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Maple Road & Millersport Hwy NB

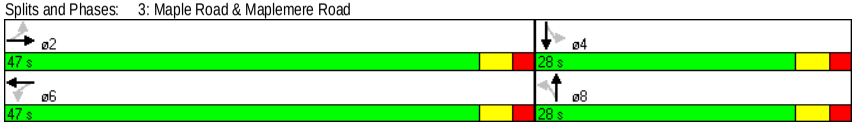


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	36	1280	35	21	967	62	22	0	12	77	8	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	70		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50		25	50		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.991			0.952			0.964	
Flt Protected	0.950			0.950				0.969			0.968	
Satd. Flow (prot)	1770	3525	0	1770	3507	0	0	1718	0	0	1738	0
Flt Permitted	0.205			0.147				0.785			0.767	
Satd. Flow (perm)	382	3525	0	274	3507	0	0	1392	0	0	1377	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			14			19			25	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1770			1106			378			402	
Travel Time (s)		26.8			16.8			8.6			9.1	
Peak Hour Factor	0.94	0.94	0.94	0.87	0.87	0.87	0.62	0.62	0.62	0.81	0.81	0.81
Adj. Flow (vph)	38	1362	37	24	1111	71	35	0	19	95	10	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1399	0	24	1182	0	0	54	0	0	143	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		27.0	27.0		27.0	27.0	
Total Split (s)	47.0	47.0	0.0	47.0	47.0	0.0	28.0	28.0	0.0	28.0	28.0	0.0
Total Split (%)	62.7%	62.7%	0.0%	62.7%	62.7%	0.0%	37.3%	37.3%	0.0%	37.3%	37.3%	0.0%
Maximum Green (s)	42.0	42.0		42.0	42.0		23.0	23.0		23.0	23.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)							7.0	7.0		7.0	7.0	
Flash Dont Walk (s)							15.0	15.0		15.0	15.0	
Pedestrian Calls (#/hr)							0	0		0	0	
Act Effct Green (s)	34.6	34.6		34.6	34.6			9.7			10.3	
Actuated g/C Ratio	0.68	0.68		0.68	0.68			0.19			0.20	
v/c Ratio	0.15	0.58		0.13	0.49			0.19			0.48	
Control Delay	6.9	7.7		7.3	6.7			15.6			22.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	6.9	7.7		7.3	6.7			15.6			22.7	
LOS	A	A		A	A			B			C	
Approach Delay		7.7			6.7			15.6			22.7	
Approach LOS		A			A			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 50.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 8.2		Intersection LOS: A	
Intersection Capacity Utilization 52.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Maple Road & Maplemere Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1340	29	23	1038	12	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	50		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.997				0.914	
Flt Protected			0.950		0.982	
Satd. Flow (prot)	3529	0	1770	3539	1672	0
Flt Permitted			0.950		0.982	
Satd. Flow (perm)	3529	0	1770	3539	1672	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	1106			1000	355	
Travel Time (s)	16.8			15.2	8.1	
Peak Hour Factor	0.73	0.73	0.77	0.77	0.82	0.82
Adj. Flow (vph)	1836	40	30	1348	15	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1876	0	30	1348	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1340	29	23	1038	12	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.73	0.77	0.77	0.82	0.82
Hourly flow rate (vph)	1836	40	30	1348	15	26
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)	1106			1000		
pX, platoon unblocked			0.75		0.80	0.75
vC, conflicting volume			1875		2589	938
vC1, stage 1 conf vol					1855	
vC2, stage 2 conf vol					734	
vCu, unblocked vol			1499		1869	247
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			91		88	95
cM capacity (veh/h)			332		127	564

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1224	652	30	674	674	40
Volume Left	0	0	30	0	0	15
Volume Right	0	40	0	0	0	26
cSH	1700	1700	332	1700	1700	251
Volume to Capacity	0.72	0.38	0.09	0.40	0.40	0.16
Queue Length 95th (ft)	0	0	7	0	0	14
Control Delay (s)	0.0	0.0	16.9	0.0	0.0	22.1
Lane LOS			C			C
Approach Delay (s)	0.0		0.4			22.1
Approach LOS						C

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	48.0%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1434	14	8	1089	2	10	0	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	50		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999						0.948				
Flt Protected				0.950				0.970				
Satd. Flow (prot)	1863	3536	0	1770	3539	0	0	1713	0	0	1863	0
Flt Permitted				0.950				0.970				
Satd. Flow (perm)	1863	3536	0	1770	3539	0	0	1713	0	0	1863	0
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		446			556			469			111	
Travel Time (s)		6.8			8.4			10.7			2.5	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.61	0.61	0.61	0.92	0.92	0.92
Adj. Flow (vph)	0	1559	15	9	1171	2	16	0	10	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1574	0	9	1173	0	0	26	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.1%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1434	14	8	1089	2	10	0	6	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.93	0.93	0.93	0.61	0.61	0.61	0.92	0.92	0.92
Hourly flow rate (vph)	0	1559	15	9	1171	2	16	0	10	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1173			1574			2169	2757	787	1978	2763	587
vC1, stage 1 conf vol							1566	1566		1189	1189	
vC2, stage 2 conf vol							603	1190		789	1574	
vCu, unblocked vol	1173			1574			2169	2757	787	1978	2763	587
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			85	100	97	100	100	100
cM capacity (veh/h)	591			415			110	136	335	166	131	453

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	0	1039	535	9	781	392	26	0
Volume Left	0	0	0	9	0	0	16	0
Volume Right	0	0	15	0	0	2	10	0
cSH	1700	1700	1700	415	1700	1700	147	1700
Volume to Capacity	0.00	0.61	0.31	0.02	0.46	0.23	0.18	0.00
Queue Length 95th (ft)	0	0	0	2	0	0	16	0
Control Delay (s)	0.0	0.0	0.0	13.9	0.0	0.0	34.7	0.0
Lane LOS				B			D	A
Approach Delay (s)	0.0			0.1			34.7	0.0
Approach LOS							D	A

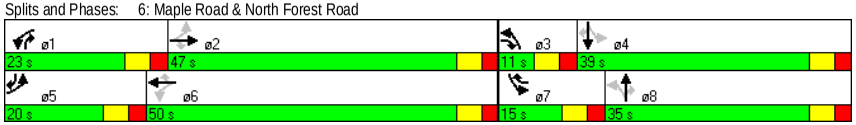
Intersection Summary					
Average Delay		0.4			
Intersection Capacity Utilization		50.1%	ICU Level of Service		A
Analysis Period (min)		15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	216	1091	143	241	816	96	92	359	209	169	390	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	415		220	315		150	125		220	250		250
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	90		115	60		25	95		25	90		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	1863	1583	1770	1863	1583
Flt Permitted	0.183			0.091			0.155			0.160		
Satd. Flow (perm)	341	3539	1583	170	3539	1583	289	1863	1583	298	1863	1583
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			129						23			60
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		1705			820			529			608	
Travel Time (s)		25.8			12.4			10.3			11.8	
Peak Hour Factor	0.92	0.92	0.92	0.90	0.90	0.90	0.96	0.96	0.96	0.87	0.87	0.87
Adj. Flow (vph)	235	1186	155	268	907	107	96	374	218	194	448	166
Shared Lane Traffic (%)												
Lane Group Flow (vph)	235	1186	155	268	907	107	96	374	218	194	448	166
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov	pm+pt		pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	3	1	6	7	3	8	1	7	4	5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0	1.0	4.0	1.0
Minimum Split (s)	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0	7.0	35.0	7.0
Total Split (s)	20.0	47.0	11.0	23.0	50.0	15.0	11.0	35.0	23.0	15.0	39.0	20.0
Total Split (%)	16.7%	39.2%	9.2%	19.2%	41.7%	12.5%	9.2%	29.2%	19.2%	12.5%	32.5%	16.7%
Maximum Green (s)	14.0	41.0	5.0	17.0	44.0	9.0	5.0	29.0	17.0	9.0	33.0	14.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
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	3.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		22.0			22.0			22.0			22.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	53.7	41.0	52.0	60.0	44.1	59.1	31.7	26.7	48.6	39.7	30.7	49.5
Actuated g/C Ratio	0.46	0.35	0.45	0.51	0.38	0.51	0.27	0.23	0.42	0.34	0.26	0.42
v/c Ratio	0.75	0.95	0.20	0.88	0.68	0.13	0.68	0.88	0.32	0.90	0.91	0.24
Control Delay	33.5	54.5	5.9	58.4	34.0	16.8	52.4	65.9	21.6	71.1	66.5	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	54.5	5.9	58.4	34.0	16.8	52.4	65.9	21.6	71.1	66.5	14.0
LOS	C	D	A	E	C	B	D	E	C	E	E	B
Approach Delay		46.6			37.7			50.0			56.8	
Approach LOS		D			D			D			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 116.6			
Natural Cycle: 95			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 46.4		Intersection LOS: D	
Intersection Capacity Utilization 91.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 6: Maple Road & North Forest Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	1411	26	121	1418	53	151	53	148	34	68	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	150		0	40		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	65		25	60		25	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.995			0.890			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3529	0	1770	3522	0	1770	1658	0	1770	1812	0
Flt Permitted	0.097			0.054			0.559			0.608		
Satd. Flow (perm)	181	3529	0	101	3522	0	1041	1658	0	1133	1812	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					5						7	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		2782			977			838			362	
Travel Time (s)		42.2			14.8			19.0			8.2	
Peak Hour Factor	0.84	0.84	0.84	0.92	0.92	0.92	0.83	0.83	0.83	0.77	0.77	0.77
Adj. Flow (vph)	20	1680	31	132	1541	58	182	64	178	44	88	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	1711	0	132	1599	0	182	242	0	44	107	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm			pm+pt			pm+pt			Perm		
Protected Phases		2		1	6		3	8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		1	6		3	8		4	4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		1.0	4.0		1.0	4.0		4.0	4.0	
Minimum Split (s)	28.3	28.3		6.2	28.3		6.2	34.2		34.2	34.2	
Total Split (s)	79.0	79.0	0.0	12.0	91.0	0.0	10.0	44.0	0.0	34.0	34.0	0.0
Total Split (%)	58.5%	58.5%	0.0%	8.9%	67.4%	0.0%	7.4%	32.6%	0.0%	25.2%	25.2%	0.0%
Maximum Green (s)	73.5	73.5		7.7	85.5		4.8	38.8		28.8	28.8	
Yellow Time (s)	4.3	4.3		3.2	4.3		3.2	3.2		3.2	3.2	
All-Red Time (s)	1.2	1.2		1.1	1.2		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	4.0	4.3	5.5	4.0	5.2	5.2	4.0	5.2	5.2	4.0
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes			Yes			Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	15.0	15.0			15.0			22.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0			0			0		0	0	
Act Effct Green (s)	69.2	69.2		82.5	81.3		39.1	39.1		29.1	29.1	
Actuated g/C Ratio	0.53	0.53		0.63	0.62		0.30	0.30		0.22	0.22	
v/c Ratio	0.21	0.92		0.81	0.73		0.54	0.49		0.18	0.26	
Control Delay	22.8	37.2		60.6	19.6		45.3	42.9		45.5	42.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	22.8	37.2		60.6	19.6		45.3	42.9		45.5	42.6	
LOS	C	D		E	B		D	D		D	D	
Approach Delay		37.1			22.7			43.9			43.5	
Approach LOS		D			C			D			D	

Intersection Summary

Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 131.1			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 31.9		Intersection LOS: C	
Intersection Capacity Utilization 78.6%		ICU Level of Service D	
Analysis Period (min) 15			

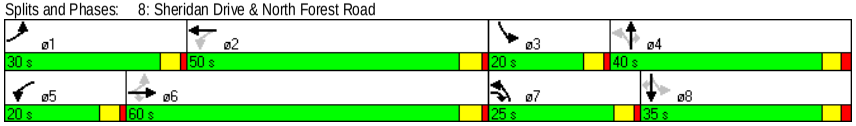
Splits and Phases: 7: Sheridan Drive & Mill Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	138	1335	295	305	1213	48	302	469	82	82	509	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	405		170	260		0	180		265	180		200
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	200		25	200		25	25		25	25		25
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850		0.994				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3539	1583	1770	3518	0	1770	1863	1583	1770	3539	1583
Flt Permitted	0.073			0.069			0.163			0.152		
Satd. Flow (perm)	136	3539	1583	129	3518	0	304	1863	1583	283	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			39		3				69			213
Link Speed (mph)		45			45			40			35	
Link Distance (ft)		969			2219			547			354	
Travel Time (s)		14.7			33.6			9.3			6.9	
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.89	0.89	0.89	0.95	0.95	0.95
Adj. Flow (vph)	147	1420	314	328	1304	52	339	527	92	86	536	213
Shared Lane Traffic (%)												
Lane Group Flow (vph)	147	1420	314	328	1356	0	339	527	92	86	536	213
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt		pm+ov	pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases	6		6	2			4		4	8		8
Detector Phase	1	6	7	5	2		7	4	4	3	8	8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.3	27.9	21.0	8.3	27.9		21.0	27.2	27.2	8.3	27.2	27.2
Total Split (s)	30.0	60.0	25.0	20.0	50.0	0.0	25.0	40.0	40.0	20.0	35.0	35.0
Total Split (%)	21.4%	42.9%	17.9%	14.3%	35.7%	0.0%	17.9%	28.6%	28.6%	14.3%	25.0%	25.0%
Maximum Green (s)	25.7	54.9	20.7	15.7	44.9		20.7	34.9	34.9	15.7	29.9	29.9
Yellow Time (s)	3.2	3.9	3.2	3.2	3.9		3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.1	1.2	1.1	1.1	1.2		1.1	1.9	1.9	1.1	1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.1	4.3	4.3	5.1	4.0	4.3	5.1	5.1	4.3	5.1	5.1
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
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
Recall Mode	None	Max	None	None	Max		None	None	None	None	None	None
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		15.0			15.0			15.0	15.0		15.0	15.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	68.1	54.9	80.7	73.7	58.3		52.2	37.3	37.3	36.9	26.3	26.3
Actuated g/C Ratio	0.50	0.40	0.59	0.54	0.43		0.38	0.27	0.27	0.27	0.19	0.19
v/c Ratio	0.68	1.00	0.33	1.27	0.90		1.00	1.04	0.19	0.47	0.78	0.45
Control Delay	43.3	63.9	13.8	182.6	46.5		85.3	97.6	14.0	37.0	61.2	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.3	63.9	13.8	182.6	46.5		85.3	97.6	14.0	37.0	61.2	8.8
LOS	D	E	B	F	D		F	F	B	D	E	A
Approach Delay		53.9			73.0			85.2			45.4	
Approach LOS		D			E			F			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 136.5			
Natural Cycle: 125			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.27			
Intersection Signal Delay: 64.2		Intersection LOS: E	
Intersection Capacity Utilization 100.3%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 8: Sheridan Drive & North Forest Road

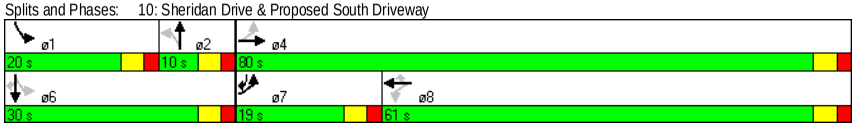


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	175	1677	13	5	1595	83	13	0	17	108	0	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	350		0	75		425	0		0	0		0
Storage Lanes	1		0	1		1	0		0	0		1
Taper Length (ft)	25		25	25		75	25		25	25		25
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999				0.850		0.922				0.850
Flt Protected	0.950			0.950				0.979			0.950	
Satd. Flow (prot)	1770	3536	0	1770	3539	1583	0	1681	0	0	1770	1583
Flt Permitted	0.059			0.089				0.858			0.731	
Satd. Flow (perm)	110	3536	0	166	3539	1583	0	1474	0	0	1362	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				90		23				11
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		635			699			278			241	
Travel Time (s)		9.6			10.6			6.3			5.5	
Peak Hour Factor	0.92	0.87	0.87	0.94	0.94	0.92	0.75	0.92	0.75	0.92	0.92	0.92
Adj. Flow (vph)	190	1928	15	5	1697	90	17	0	23	117	0	236
Shared Lane Traffic (%)												
Lane Group Flow (vph)	190	1943	0	5	1697	90	0	40	0	0	117	236
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt			Perm		Perm	Perm			pm+pt		pm+ov
Protected Phases	7	4			8			2		1	6	7
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		8	8	8	2	2		1	6	7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	9.0	21.0		21.0	21.0	21.0	21.0	21.0		9.0	21.0	9.0
Total Split (s)	19.0	80.0	0.0	61.0	61.0	61.0	10.0	10.0	0.0	20.0	30.0	19.0
Total Split (%)	17.3%	72.7%	0.0%	55.5%	55.5%	55.5%	9.1%	9.1%	0.0%	18.2%	27.3%	17.3%
Maximum Green (s)	14.0	75.0		56.0	56.0	56.0	5.0	5.0		15.0	25.0	14.0
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Lead/Lag	Lead			Lag	Lag	Lag	Lag	Lag		Lead		Lead
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes		Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max	C-Max	None	None		None	None	None
Walk Time (s)		5.0		5.0	5.0	5.0	5.0	5.0			5.0	
Flash Dont Walk (s)		11.0		11.0	11.0	11.0	11.0	11.0			11.0	
Pedestrian Calls (#/hr)		0		0	0	0	0	0			0	
Act Effct Green (s)	83.8	83.8		67.3	67.3	67.3		16.2			16.2	32.7
Actuated g/C Ratio	0.76	0.76		0.61	0.61	0.61		0.15			0.15	0.30
v/c Ratio	0.74	0.72		0.05	0.78	0.09		0.17			0.58	0.49
Control Delay	47.5	5.5		14.2	21.3	3.0		22.5			54.3	32.2
Queue Delay	0.0	0.1		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	47.5	5.6		14.2	21.3	3.0		22.5			54.3	32.2
LOS	D	A		B	C	A		C			D	C
Approach Delay		9.4			20.4			22.5			39.5	
Approach LOS		A			C			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 76 (69%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 78.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 10: Sheridan Drive & Proposed South Driveway

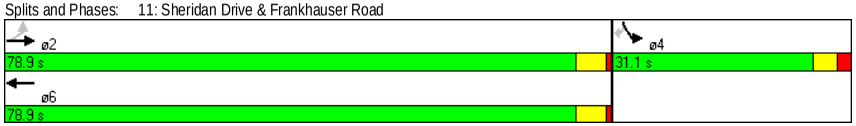


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	74	1772	1784	41	92	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	105			0	0	50
Storage Lanes	1			0	1	1
Taper Length (ft)	65			25	25	25
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.997			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	3539	3529	0	1770	1583
Flt Permitted	0.069				0.950	
Satd. Flow (perm)	129	3539	3529	0	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			4			21
Link Speed (mph)		45	45		30	
Link Distance (ft)		1014	635		835	
Travel Time (s)		15.4	9.6		19.0	
Peak Hour Factor	0.90	0.90	0.91	0.91	0.82	0.82
Adj. Flow (vph)	82	1969	1960	45	112	141
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	1969	2005	0	112	141
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (ft)	20	100	100		20	20
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	6	6		20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm					Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Detector Phase	2	2	6		4	4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		1.0	1.0
Minimum Split (s)	40.0	40.0	40.0		31.1	31.1
Total Split (s)	78.9	78.9	78.9	0.0	31.1	31.1
Total Split (%)	71.7%	71.7%	71.7%	0.0%	28.3%	28.3%
Maximum Green (s)	74.1	74.1	74.1		26.0	26.0
Yellow Time (s)	3.9	3.9	3.9		3.2	3.2
All-Red Time (s)	0.9	0.9	0.9		1.9	1.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.8	4.8	4.0	5.1	5.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	C-Max	C-Max	C-Max		None	None
Walk Time (s)	7.0	7.0	7.0		7.0	7.0
Flash Dont Walk (s)	15.0	15.0	15.0		19.0	19.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	86.3	86.3	86.3		13.8	13.8
Actuated g/C Ratio	0.78	0.78	0.78		0.13	0.13
v/c Ratio	0.81	0.71	0.72		0.50	0.65
Control Delay	60.4	6.8	4.9		51.7	52.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	60.4	6.8	4.9		51.7	52.2
LOS	E	A	A		D	D
Approach Delay		9.0	4.9		52.0	
Approach LOS		A	A		D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 66 (60%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 140			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 9.6		Intersection LOS: A	
Intersection Capacity Utilization 72.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 11: Sheridan Drive & Frankhauser Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	355	1429	0	0	1266	684	317	0	439	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	230		120	0		0
Storage Lanes	1		0	0		0	1		1	0		0
Taper Length (ft)	105		25	25		25	25		25	25		25
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	0.95	0.91	0.95	1.00	1.00	1.00
Frt					0.947			0.882	0.850			
Flt Protected	0.950						0.950	0.989				
Satd. Flow (prot)	1770	5085	0	0	4816	0	1681	1479	1504	0	0	0
Flt Permitted	0.071						0.950	0.989				
Satd. Flow (perm)	132	5085	0	0	4816	0	1681	1479	1504	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					163			65	65			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		610			193			830			423	
Travel Time (s)		9.2			2.9			18.9			9.6	
Peak Hour Factor	0.99	0.99	0.99	0.92	0.92	0.92	0.80	0.80	0.80	0.92	0.92	0.92
Adj. Flow (vph)	359	1443	0	0	1376	743	396	0	549	0	0	0
Shared Lane Traffic (%)							17%		45%			
Lane Group Flow (vph)	359	1443	0	0	2119	0	329	314	302	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			
Detector Template	Left	Thru			Thru		Left	Thru	Right			
Leading Detector (ft)	20	100			100		20	100	20			
Trailing Detector (ft)	0	0			0		0	0	0			
Detector 1 Position(ft)	0	0			0		0	0	0			
Detector 1 Size(ft)	20	6			6		20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	pm+pt						custom		Perm			
Protected Phases	1	6			2		3	3				
Permitted Phases	6						3		3			
Detector Phase	1	6			2		3	3	3			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	1.0	4.0			4.0		4.0	4.0	4.0			
Minimum Split (s)	6.2	33.9			27.8		29.0	29.0	29.0			
Total Split (s)	25.0	81.0	0.0	0.0	56.0	0.0	29.0	29.0	29.0	0.0	0.0	0.0
Total Split (%)	22.7%	73.6%	0.0%	0.0%	50.9%	0.0%	26.4%	26.4%	26.4%	0.0%	0.0%	0.0%
Maximum Green (s)	20.7	75.1			50.2		23.8	23.8	23.8			
Yellow Time (s)	3.2	3.9			3.9		3.2	3.2	3.2			
All-Red Time (s)	1.1	2.0			1.9		2.0	2.0	2.0			
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.3	5.9	4.0	4.0	5.8	4.0	5.2	5.2	5.2	4.0	4.0	4.0
Lead/Lag	Lead				Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	2.0	3.0			3.0		2.0	2.0	2.0			
Recall Mode	None	C-Max			C-Max		None	None	None			
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		21.0			15.0							
Pedestrian Calls (#/hr)		0			0							
Act Effct Green (s)	77.5	75.9			52.2		23.0	23.0	23.0			
Actuated g/C Ratio	0.70	0.69			0.47		0.21	0.21	0.21			
v/c Ratio	0.94	0.41			0.89		0.93	0.87	0.83			
Control Delay	54.7	7.4			21.0		77.5	57.7	51.9			
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0			
Total Delay	54.7	7.4			21.0		77.5	57.7	51.9			
LOS	D	A			C		E	E	D			
Approach Delay		16.9			21.0			62.7				
Approach LOS		B			C			E				

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 106 (96%), Referenced to phase 2:WBT and 6:EBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 27.6		Intersection LOS: C	
Intersection Capacity Utilization 85.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 12: Sheridan Drive & I-290 NB

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1027	604	489	1094	267	755
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	215		140	0
Storage Lanes		1	1		2	2
Taper Length (ft)		230	100		100	25
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3539	1583	3433	3539	3433	2787
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3539	1583	3433	3539	3433	2787
Right Turn on Red		No				Yes
Satd. Flow (RTOR)						57
Link Speed (mph)	45			45	35	
Link Distance (ft)	314			610	338	
Travel Time (s)	4.8			9.2	6.6	
Peak Hour Factor	0.98	0.98	0.95	0.95	0.85	0.85
Adj. Flow (vph)	1048	616	515	1152	314	888
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1048	616	515	1152	314	888
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2	1	1	2	1	1
Detector Template	Thru	Right	Left	Thru	Left	Right
Leading Detector (ft)	100	20	20	100	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0
Detector 1 Size(ft)	6	20	20	6	20	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type		pm+ov	Prot			pm+ov
Protected Phases	2	3	1	6	3	1
Permitted Phases		2				3
Detector Phase	2	3	1	6	3	1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	1.0	1.0	1.0	4.0	1.0	1.0
Minimum Split (s)	30.5	6.2	5.3	32.3	6.2	5.3
Total Split (s)	49.7	31.2	29.1	78.8	31.2	29.1
Total Split (%)	45.2%	28.4%	26.5%	71.6%	28.4%	26.5%
Maximum Green (s)	44.2	26.0	24.8	74.5	26.0	24.8
Yellow Time (s)	3.9	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	1.6	2.0	1.1	1.1	2.0	1.1
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.2	4.3	4.3	5.2	4.3
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	C-Max	None	None	None	None	None
Walk Time (s)	7.0			7.0		
Flash Dont Walk (s)	18.0			21.0		
Pedestrian Calls (#/hr)	0			0		
Act Effct Green (s)	57.1	77.4	23.1	85.7	14.8	43.1
Actuated g/C Ratio	0.52	0.70	0.21	0.78	0.13	0.39
v/c Ratio	0.57	0.55	0.72	0.42	0.68	0.79
Control Delay	20.7	10.8	31.0	9.2	52.8	32.5
Queue Delay	0.0	0.0	0.0	0.7	0.0	0.0
Total Delay	20.7	10.8	31.0	9.8	52.8	32.5
LOS	C	B	C	A	D	C
Approach Delay	17.1			16.4	37.8	
Approach LOS	B			B	D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 66 (60%), Referenced to phase 2:EBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utilization 63.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 13: Sheridan Drive & Harlem Road

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	234	404	583	11	533	524
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	330	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25	25		25	75	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Frt		0.850	0.997			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1583	3529	0	1770	3539
Flt Permitted	0.950				0.147	
Satd. Flow (perm)	1770	1583	3529	0	274	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		66	2			
Link Speed (mph)	30		35			35
Link Distance (ft)	333		250			456
Travel Time (s)	7.6		4.9			8.9
Peak Hour Factor	0.69	0.69	0.77	0.77	0.92	0.92
Adj. Flow (vph)	339	586	757	14	579	570
Shared Lane Traffic (%)						
Lane Group Flow (vph)	339	586	771	0	579	570
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (ft)	20	20	100		20	100
Trailing Detector (ft)	0	0	0		0	0
Detector 1 Position(ft)	0	0	0		0	0
Detector 1 Size(ft)	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type		pm+ov			pm+pt	
Protected Phases	3	1	2		1	6
Permitted Phases		3			6	
Detector Phase	3	1	2		1	6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0		4.0	4.0
Minimum Split (s)	22.0	9.2	30.6		9.2	21.0
Total Split (s)	40.0	35.0	50.0	0.0	35.0	85.0
Total Split (%)	32.0%	28.0%	40.0%	0.0%	28.0%	68.0%
Maximum Green (s)	35.2	30.7	45.0		30.7	80.0
Yellow Time (s)	3.2	3.2	3.6		3.2	3.6
All-Red Time (s)	1.6	1.1	1.4		1.1	1.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.8	4.3	5.0	4.0	4.3	5.0
Lead/Lag		Lead	Lag		Lead	
Lead-Lag Optimize?		Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Min		None	None
Walk Time (s)			10.0			
Flash Dont Walk (s)			15.0			
Pedestrian Calls (#/hr)			0			
Act Effct Green (s)	24.0	60.2	28.6		65.0	64.3
Actuated g/C Ratio	0.24	0.61	0.29		0.66	0.65
v/c Ratio	0.78	0.59	0.75		0.88	0.25
Control Delay	48.9	13.9	37.0		39.9	8.0
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	48.9	13.9	37.0		39.9	8.0
LOS	D	B	D		D	A
Approach Delay	26.7		37.0			24.1
Approach LOS	C		D			C

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 98.3			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 28.4		Intersection LOS: C	
Intersection Capacity Utilization 70.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: I-290 SB & Harlem Road

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	115	0	75	40	0	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.953			
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1775	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1775	0	0	1863
Link Speed (mph)	30		30			30
Link Distance (ft)	223		835			104
Travel Time (s)	5.1		19.0			2.4
Peak Hour Factor	0.85	0.85	0.85	0.85	0.82	0.82
Adj. Flow (vph)	135	0	88	47	0	112
Shared Lane Traffic (%)						
Lane Group Flow (vph)	135	0	135	0	0	112
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 19.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	115	0	75	40	0	92
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.82	0.82
Hourly flow rate (vph)	135	0	88	47	0	112
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			835			
pX, platoon unblocked						
vC, conflicting volume	224	112			135	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	224	112			135	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	82	100			100	
cM capacity (veh/h)	764	941			1449	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	135	135	112
Volume Left	135	0	0
Volume Right	0	47	0
cSH	764	1700	1449
Volume to Capacity	0.18	0.08	0.00
Queue Length 95th (ft)	16	0	0
Control Delay (s)	10.7	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.7	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	19.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	19	73	12	623	714	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.893				0.998	
Flt Protected	0.990			0.999		
Satd. Flow (prot)	1647	0	0	1861	1859	0
Flt Permitted	0.990			0.999		
Satd. Flow (perm)	1647	0	0	1861	1859	0
Link Speed (mph)	30			35	35	
Link Distance (ft)	284			201	256	
Travel Time (s)	6.5			3.9	5.0	
Peak Hour Factor	0.85	0.85	0.89	0.89	0.95	0.95
Adj. Flow (vph)	22	86	13	700	752	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	108	0	0	713	764	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	19	73	12	623	714	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.89	0.89	0.95	0.95
Hourly flow rate (vph)	22	86	13	700	752	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				865		
pX, platoon unblocked	0.71					
vC, conflicting volume	1484	757	763			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1478	757	763			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	77	79	98			
cM capacity (veh/h)	97	407	849			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	108	713	763
Volume Left	22	13	0
Volume Right	86	0	12
cSH	245	849	1700
Volume to Capacity	0.44	0.02	0.45
Queue Length 95th (ft)	53	1	0
Control Delay (s)	30.8	0.4	0.0
Lane LOS	D	A	
Approach Delay (s)	30.8	0.4	0.0
Approach LOS	D		

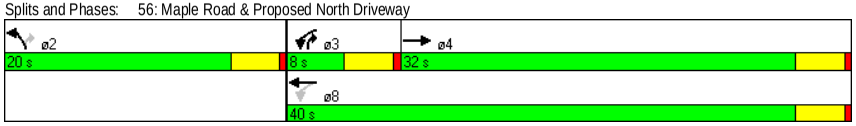
Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	54.6%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1294	67	108	981	80	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	225		0	150
Storage Lanes		0	1		1	1
Taper Length (ft)		25	25		25	25
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.993					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3514	0	1770	3539	1770	1583
Flt Permitted			0.129		0.950	
Satd. Flow (perm)	3514	0	240	3539	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	12					18
Link Speed (mph)	45			45	30	
Link Distance (ft)	1000			928	337	
Travel Time (s)	15.2			14.1	7.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1407	73	117	1066	87	160
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1480	0	117	1066	87	160
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	6		20	6	20	20
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94			94		
Detector 2 Size(ft)	6			6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type			pm+pt			pm+ov
Protected Phases	4		3	8	2	3
Permitted Phases			8			2
Detector Phase	4		3	8	2	3

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Switch Phase						
Minimum Initial (s)	4.0		4.0	4.0	4.0	4.0
Minimum Split (s)	20.0		8.0	20.0	20.0	8.0
Total Split (s)	32.0	0.0	8.0	40.0	20.0	8.0
Total Split (%)	53.3%	0.0%	13.3%	66.7%	33.3%	13.3%
Maximum Green (s)	28.0		4.0	36.0	16.0	4.0
Yellow Time (s)	3.5		3.5	3.5	3.5	3.5
All-Red Time (s)	0.5		0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		None	None	Min	None
Walk Time (s)	5.0			5.0	5.0	
Flash Dont Walk (s)	11.0			11.0	11.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	27.1		33.0	33.0	7.9	16.2
Actuated g/C Ratio	0.55		0.67	0.67	0.16	0.33
v/c Ratio	0.76		0.40	0.45	0.30	0.30
Control Delay	13.1		7.3	4.6	22.4	14.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	13.1		7.3	4.6	22.4	14.0
LOS	B		A	A	C	B
Approach Delay	13.1			4.9	17.0	
Approach LOS	B			A	B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 49.2			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 10.1		Intersection LOS: B	
Intersection Capacity Utilization 58.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 56: Maple Road & Proposed North Driveway



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	33	1770	1645	71	0	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			425	0	0
Storage Lanes	1			1	0	1
Taper Length (ft)	25			75	25	25
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.865
Flt Protected	0.950					
Satd. Flow (prot)	1770	3539	3539	1583	0	1611
Flt Permitted	0.950					
Satd. Flow (perm)	1770	3539	3539	1583	0	1611
Link Speed (mph)		45	45		30	
Link Distance (ft)		699	969		280	
Travel Time (s)		10.6	14.7		6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	1924	1788	77	0	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	36	1924	1788	77	0	41
Enter Blocked Intersection	No	Yes	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane		Yes	Yes			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.5%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	33	1770	1645	71	0	38
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	1924	1788	77	0	41
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		699	969			
pX, platoon unblocked	0.64				0.80	0.64
vC, conflicting volume	1865				2822	894
vC1, stage 1 conf vol					1788	
vC2, stage 2 conf vol					1034	
vCu, unblocked vol	1227				976	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	90				100	94
cM capacity (veh/h)	361				174	694

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	36	962	962	894	894	77	41
Volume Left	36	0	0	0	0	0	0
Volume Right	0	0	0	0	0	77	41
cSH	361	1700	1700	1700	1700	1700	694
Volume to Capacity	0.10	0.57	0.57	0.53	0.53	0.05	0.06
Queue Length 95th (ft)	8	0	0	0	0	0	5
Control Delay (s)	16.1	0.0	0.0	0.0	0.0	0.0	10.5
Lane LOS	C						B
Approach Delay (s)	0.3			0.0			10.5
Approach LOS							B

Intersection Summary				
Average Delay		0.3		
Intersection Capacity Utilization		55.5%	ICU Level of Service	B
Analysis Period (min)		15		

Westwood Country Club Redevelopment

Economic and Fiscal Impact

August, 2015

Promising Solutions

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Westwood Country Club Redevelopment

Economic and Fiscal Impact

August, 2015

Prepared for:
Mensch Capital Partners

Prepared by:
Kent Gardner, Ph.D.
Project Director

100 years
CGR • 1915-2015

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Summary

CGR was engaged by Mensch Capital Partners to estimate the economic and fiscal impact of the proposed Westwood County Club redevelopment in the Town of Amherst, NY. The developer proposes investing over $238 million to redevelop the site that currently houses the Westwood Country Club.

This report details CGR's estimate of the impact of the proposed project plus a series of alternative site uses, as requested by the Town of Amherst, lead agency under the State Environmental Quality Review Act.

The redevelopment will have a short term impact during the construction phase of the project and an ongoing impact once operational. The impact will vary depending on which plan is selected. This report estimates the fiscal and economic impact of the redevelopment proposed for the Westwood Country Club in Amherst NY. Six plans have been studied and impacts estimated.

Using the project sponsor's preferred plan, we estimate that over the ten years modeled will result in about:

- 1,900 new residents to the Town of Amherst.
- 270 new students in the Williamsville Central School District.
- 2,200 jobs during the construction phase earning $116 million.
- 320 new jobs once fully operational earning about $16 million annually.
- $25 to $35 million net increase in property tax revenue (depending on the PILOT), consisting of an estimated $27 million increase in cost offset by a $52 million to $63 million increase in revenue.
- $14 to $16 million net increase in state and local sales tax revenue.
- $10 million net increase in NYS income tax revenue.
- $2 million net increase in county occupancy tax revenue.

The fiscal impact to each of the taxing jurisdictions is summarized in the following tables.

Town Fiscal Impact over Ten Year Period (dollars in millions)*

	Total Costs	Estimated Revenue	Net Revenue
Preferred Plan - No PILOT	$5.1	$11.5	$6.4
Condo Ownership Alternative	$5.1	$10.1	$5.0
Preferred Plan - PILOT for Office Park	$5.1	$10.0	$4.9
Condo Ownership Alternative	$5.1	$8.7	$3.6
Preferred Plan - PILOT for Office Park and Senior Development	$5.1	$9.5	$4.4
Condo Ownership Alternative	$5.1	$8.2	$3.1
Alternative 1 - Recreation Conservation Plan	$0.4	$1.0	$0.6
Alternative 2 - Community Facility Plan	$3.6	$6.6	$2.9
Alternative 3 - Residential Three Plan	$2.0	$5.6	$3.6
Condo Ownership Alternative	$2.0	$3.4	$1.4
Alternative 4 - Transitional Residential Plan	$3.5	$9.8	$6.3
Condo Ownership Alternative	$3.5	$8.0	$4.5
Alternative 5 - General Business Plan	$3.5	$8.2	$4.7
Alternative 6 - Office Building Plan	$3.1	$15.3	$12.2

* Summed over 10 years. Future years discounted at 2%

County Fiscal Impact over Ten Year Period (dollars in millions)*

	Total Costs	Estimated Revenue	Net Revenue
Preferred Plan - No PILOT	$1.9	$11.0	$9.1
Condo Ownership Alternative	$1.9	$9.7	$7.8
Preferred Plan - PILOT for Office Park	$1.9	$9.6	$7.8
Condo Ownership Alternative	$1.9	$8.3	$6.4
Preferred Plan - PILOT for Office Park and Senior Development	$1.9	$9.1	$7.3
Condo Ownership Alternative	$1.9	$7.8	$5.9
Alternative 1 - Recreation Conservation Plan	$0.1	$0.9	$0.8
Alternative 2 - Community Facility Plan	$1.2	$6.2	$5.0
Alternative 3 - Residential Three Plan	$0.8	$5.3	$4.6
Condo Ownership Alternative	$0.8	$3.2	$2.5
Alternative 4 - Transitional Residential Plan	$1.6	$9.4	$7.8
Condo Ownership Alternative	$1.6	$7.7	$6.1
Alternative 5 - General Business Plan	$1.5	$7.8	$6.4
Alternative 6 - Office Building Plan	$0.7	$14.9	$14.2

* Summed over 10 years. Future years discounted at 2%

School District Fiscal Impact over Ten Year Period (dollars in millions)*

	Total Costs	Estimated Revenue	Net Revenue
Preferred Plan - No PILOT	$20.2	$40.1	$19.9
Condo Ownership Alternative	$20.2	$35.3	$15.1
Preferred Plan - PILOT for Office Park	$20.2	$35.1	$14.9
Condo Ownership Alternative	$20.2	$30.3	$10.1
Preferred Plan - PILOT for Office Park and Senior Development	$20.2	$33.3	$13.1
Condo Ownership Alternative	$20.2	$28.5	$8.3
Alternative 1 - Recreation Conservation Plan	$0.0	$3.4	$3.4
Alternative 2 - Community Facility Plan	$0.0	$22.4	$22.4
Alternative 3 - Residential Three Plan	$16.7	$19.6	$2.9
Condo Ownership Alternative	$16.7	$12.0	-$4.7
Alternative 4 - Transitional Residential Plan	$24.2	$34.4	$10.2
Condo Ownership Alternative	$24.2	$28.2	$4.1
Alternative 5 - General Business Plan	$9.0	$28.4	$19.4
Alternative 6 - Office Building Plan	$0.0	$52.8	$52.8

* Summed over 10 years. Future years discounted at 2%

Acknowledgements

CGR would like to thank Brad Packard, Director of Development & Planning at Ciminelli Real Estate Corporation for providing information used in this report. We received additional information from the Town of Amherst Planning and Police departments and the Snyder Fire Department.

Staff Team

Principal project support was provided by Mike Silva, Data Analyst. Mr. Silva handled draft reporting, data entry, primary analysis and provided methodological support.

Paul Bishop, Associate Principal, conducted interviews and performed analysis pertaining to anticipated police, fire and emergency medical service impacts.

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Introduction

CGR was engaged by Mensch Capital Partners to estimate the change in costs and/or service demands plus revenue resulting from the land use changes anticipated in either the partners' preferred plan or the alternatives posed by the Town of Amherst.

Changing the Westwood site from a golf course to a residential/commercial site will change the number of residents and businesses. It is reasonable to expect changes in the costs of community services as a result of this development.

Development Profiles

The proposed development will be at the site of the Westwood Country Club in Amherst, NY, a town northeast of Buffalo, NY. The development will transform the golf course into the following mix of residential and commercial space.

Preferred Plan

1. **Mixed-Use Town Center Development (58.9 acres)** – This portion of the project is meant to serve as the commercial core of the site with primary access to Sheridan Drive.

2. **Mixed Use Town Center (22.2 acres- 352 residential units, 115,000 sq. ft. neighborhood business/office space)** – This site is planned to feature approximately 115,000 sq. ft. of neighborhood business and office space within the first floor of mixed use buildings focused around the central plaza and hotel space. The buildings in this space will consist of 2 and 3 story structures that include upper story residential development totaling 352 units.

3. **Lake Edge Townhome Development (4.8 acres, 37 units total)** – This site is planned to have 37 townhome units developed along the central Westwood Lake and adjacent to the Town Center.

4. **Office Development (15.2 acres)** – This project component will be directly adjacent to Sheridan Drive, offering the most direct access to interstate options within close proximity to the site. This area is planned to contain 2-story medical and professional office buildings with approximately 200,000 total square feet of available space.

5. **River Edge Townhome Development (11.6 acres)** – This portion of the project will feature 56 rental townhome units in close proximity to the historic clubhouse that will provide both indoor and outdoor opportunities for public events and gatherings.

6. **Clubhouse/Public Event Space (3.6 acres)** – The existing Country Club features a historic clubhouse facility that will serve as a space for community events and banquets. Directly adjacent to the clubhouse will be a public gathering space and open green approximately 1.2 acres in size for outdoor events.

7. **Hotel Development (1.5 acre site, 130 rooms)** – The project will feature a 4-story 130 room hotel designed to be central to the Town Center development.

8. **Single Family Residential Subdivision (46 acres, 160 lots)** – This subdivision is planned to include a mix of 113 patio home lots and 47 conventional single family lots to be serviced via new private roads that will be accessed off of the primary public right of way through the center of the development

9. **Condominium Townhome Development (27.6 acres)** – This portion of the project is intended to be developed adjacent to the single family subdivision and will feature 84 townhome units with a community center that can be accessed by both the single family subdivision and townhome residents.

10. **Creekside Conservation/Recreation Area (21.6 acres)** – This portion of the project will serve as the primary recreational opportunity for residents and adjacent neighbors. The park will include the Westwood Lake and Ellicott Creek corridor as significant natural features and will have a trail network extended and connected throughout the Westwood community.

11. **Senior Living Development (15 acres)** – This project component will feature a 200 room assisted living facility. In addition, the building will also contain 96 independent living apartment units, connected via building corridors to the central community services offered within the assisted living facility.

In addition to the proposed development we modeled the impact of some alternative land uses summarized below:

Alternative 1 – Recreation Conservation ("RC") Plan

1. **Nine Hole Golf Course and Clubhouse** – Retaining part of the existing country club.

2. **Indoor Recreation Center –** ninety thousand square foot privately owned recreation center.

3. **Church –** one hundred and thirty-seven thousand square foot church.

Alternative 2 – Community Facility ("CF") Plan

4. Senior Apartments – 340 apartment units. 100 will be one bedroom and 240 will be two bedroom units, with a monthly rent of $995 and $1,200 respectively.

5. Senior Living Development – 575 room assisted living facility. In addition, there will be 262 independent living apartment units.

6. Cemetery – 17.5 acre cemetery.

Alternative 3 – Residential Three ("R-3") Plan

1. Patio Home Subdivision –185 two thousand square foot homes with a median price around $250K.

2. Single Family Home Subdivision – 135 twenty-eight hundred square foot homes with a median price of $325K.

Alternative 4 – Transitional Residential ("TND") Plan

1. Mixed Use Town Center – ninety-eight thousand square feet of neighborhood business and office space and 366 two bedroom residential units.

2. Lake Edge Townhome Development – 51 townhome units with a monthly rent around $1,680.

3. Office Development – A little more than one hundred twenty thousand square feet of space.

4. River Edge Townhome Development – 56 rental townhome with a monthly rent around $1,680.

5. Hotel Development – A 4-story 130 room hotel.

6. Single Family Residential Subdivision – This subdivision is planned to include a mix of 150 patio home lots and 47 conventional single family lots.

7. Condominium Townhome Development – 114 townhome units with a median sale price around $180K.

Alternative 5 – General Business ("GB") Plan

1. Multi-Family Town Home Development – 252 units in total, half of which are two bedroom units and half three bedroom units. Monthly rent is $1,680 and $1,980 respectively.

2. **Student Housing** – 145 studio units, 145 one bedroom units and 150 two bedroom units. Monthly rent is $990, $1,650 and $2,800 respectively.

3. **Retail Plaza/Out Parcels** – 435,000 square feet of commercial space divided primarily between retail, food service, and other commercial uses.

Alternative 6 – Office Building ("OB") Plan

Office Park Development – 1,212,500 square feet of office space.

Condominium Ownership Alternative

CGR was asked to model a condominium ownership alternative. The patio home, town home and single family home subdivisions at the Westwood site might be developed as condominiums. NYS Real Property Law dictates that condominiums be assessed for real property purposes on the basis of income, not market value. CGR used the estimates prepared by Real Property Services, Inc. in a report provided by Mensch Capital Partners dated July 21, 2015.

This condominium ownership alternative impacts the modeling of the preferred, residential three and transitional residential plans. The assessed value of the condominiums is typically lower than market value assessment. All other assumptions (i.e. number of housing units, residential population estimates, etc.) are unchanged.

Residential Population

Housing Units

We estimated the population change by starting with the number of new housing units. These data were provided to us by Mensch Capital Partners. The following table summarizes the number of housing units under each of the plans:

New Housing Units

	Total	Rental Units by Number of Bedrooms				Homes by Value ($1,000's)		
		1*	2	3	4	$262	$325	$415
Preferred Plan	**985**	**248**	**493**	**0**	**0**	**84**	**113**	**47**
Mixed-Use Town Center	445		445					
Mixed-Use Apartments (2 BR)	*352*		*352*					
River's Edge Townhomes	*56*		*56*					
Lake Edge Townhomes	*37*		*37*					
Single Family Residential Subdivision	160						113	47
Patio Home Lots	*113*						*113*	
Conventional Single Family Home Lots	*47*							*47*
Condominium Townhome Development	84					84		
Senior Living Development	296	248	48					
Alternative 1 - Recreation Conservation Plan	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Alternative 2 - Community Facility Plan	**1,177**	**806**	**371**	**0**	**0**	**0**	**0**	**0**
Senior Apartments	340	100	240					
Senior Living Development	837	706	131					
Alternative 3 - Residential Three Plan	**320**	**0**	**0**	**0**	**0**	**0**	**185**	**135**
Patio Home Subdivision	185						185	
Single Family Home Subdivision	135							135
Alternative 4 - Transitional Residential Plan	**784**	**0**	**473**	**0**	**0**	**114**	**150**	**47**
Mixed-Use Town Center	473		473					
Mixed-Use Apartments (2 BR)	*366*		*366*					
River's Edge Townhomes	*56*		*56*					
Lake Edge Townhomes	*51*		*51*					
Single Family Residential Subdivision	197						150	47
Patio Home Lots	*150*						*150*	
Conventional Single Family Home Lots	*47*							*47*
Condominium Townhome Development	114					114		
Alternative 5 - General Business Plan	**692**	**145**	**271**	**126**	**150**	**0**	**0**	**0**
Multi-Family Town Home Development	252		126	126				
Student Housing	440	145	145		150			
Alternative 6 - Office Building Plan	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: * Includes studios and assisted living facility units

Monthly rent for a one bedroom or studio unit are just under $1,000 and the two bedroom apartments range from $1,120 to $1,680.

Households

From these data we estimated the number of new households. We assume only one household will live in a housing unit and that once a housing unit is built it will be fully occupied. Thus the number of new households is equal to the number of new housing units.

The only exception to this assumption is the case of the senior living center. We assume that senior living center housing units will maintain a 95% occupancy rate.

Population

We employed census data to estimate the number of people per household. This was done using the most recent Public Release Microdata Survey (PUMS) data for the American Community Survey (ACS) for the Buffalo-Niagara Falls Metropolitan Statistical Area.

Using the PUMS data we estimated the number of persons per household and the number of school-aged children per household. The PUMS data allowed us to break this out by housing characteristics (number of rooms for rental housing and the home value for owner occupied homes). The following table details the ratios:

Census Bureau Population Demographics

Housing Type	Persons	School Aged Children
Renter Occupied Home		
2 Bedroom Unit	1.8	0.2
3 Bedroom Unit	2.7	0.7
4 Bedroom Unit	3.7	1.2
Owner Occupied Home		
$250,000 - $299,999	3.2	0.7
$300,000 - $399,999	3.3	0.7
$400,000 - $499,999	3.2	0.7

Source: Census Bureau 2007-11 PUMS (Buffalo MSA)

We applied the above ratios to the number of households we estimated to get the change in residents. In the case where there were one room units (senior living development) we assumed one person.

School Age Children

To estimate the impact on the school district, we applied the average number of school aged children per housing unit as reported to the American Community Survey for the Buffalo Metro, based on the type of housing contemplated for the development.

The proposed plan would result in the following increase in a total of 689 housing units that potentially would have school age children. The following table summarizes the estimated number of children based on the Buffalo MSA PUMS assumptions detailed in the preceding table.

Estimated School Age Children

	Housing Units	School Age Children
Renter Occupied Housing (all 2 BR dwellings)		
2 Bedroom	445	101
Owner Occupied Housing		
$250,000 - $299,999	84	57
$300,000 - $399,999	113	81
$400,000 - $499,999	47	31
Total	**689**	**271**

Source: Census Bureau 2007-11 PUMS (Buffalo MSA)

This is one of the most important assumptions in the study. These estimates, combined with information on excess capacity in the school district (based on information provided by the district to the project sponsors) suggest that the development will not absorb the district's excess capacity and force the construction of a new building. It may require a change in attendance boundaries for individual schools, but this is a periodic need confronted by most school districts. While one-time costs may be incurred, redistricting does not generally cause a change in the ongoing per pupil cost of public education.

Demographic Estimates

Combining the parameters of the project with parameters and estimates discussed above, we have developed estimates of the demographic impact of the preferred project and alternatives. See table below.

Population Assumptions and Estimates

(Note: Despite the apparent precision of these figures, these are only estimates and should be treated accordingly)

	Households	People per Household	New Residents	New Children
Preferred Plan	**970**	**N/A**	**1,928**	**271**
Mixed-Use Town Center	445	N/A	821	101
Mixed-Use Apartments (2 BR)	*352*	1.8	649	80
River's Edge Townhomes	*56*	1.8	103	13
Lake Edge Townhomes	*37*	1.8	68	8
Single Family Residential Subdivision	160	N/A	523	113
Patio Home Lots	*113*	3.3	371	81
Conventional Single Family Home Lots	*47*	3.2	152	31
Condominium Townhome Development	84	3.2	265	57
Senior Living Development*	281	N/A	320	N/A
Alternative 1 - Recreation Conservation Plan	**0**	**N/A**	**0**	**0**
Alternative 2 - Community Facility Plan	**1,135**	**N/A**	**1,240**	**0**
Senior Apartments	340	N/A	340	N/A
Senior Living Development**	795	N/A	900	N/A
Alternative 3 - Residential Three Plan	**320**	**N/A**	**1,043**	**223**
Patio Home Subdivision	185	3.3	607	133
Single Family Home Subdivision	135	3.2	436	90
Alternative 4 - Transitional Residential Plan	**784**	**N/A**	**1,876**	**324**
Mixed-Use Town Center	473	N/A	872	108
Mixed-Use Apartments (2 BR)	366	1.8	675	83
River's Edge Townhomes	*56*	1.8	103	13
Lake Edge Townhomes	*51*	1.8	94	12
Single Family Residential Subdivision	197	N/A	644	139
Patio Home Lots	150	3.3	492	108
Conventional Single Family Home Lots	47	3.2	152	31
Condominium Townhome Development	*114*	3.2	360	77
Alternative 5 - General Business Plan	**692**	**N/A**	**1,546**	**121**
Multi-Family Town Home Development	252	Multiple	579	121
Student Housing	440	Multiple	967	N/A
Alternative 6 - Office Building Plan	**0**	**N/A**	**0**	**0**

Note: * The senior living development has 296 housing units but we estimated 277 household due to an assumed 95% occupancy rate. ** The senior living development has 837 housing units but we estimated 795 household due to the 95% occupancy rate. We assumed 100% occupancy rates for all other housing units.

Economic Impact

CGR was asked to model the economic impact of the preferred plan. The impact of this proposed development can be broken down into two parts. The first part is the construction phase. During the construction phase $238 million will be invested in the site. This will be spent on labor and materials. It will provide temporary construction jobs and paychecks to the workers. The state will collect income tax, and there will be sales tax generated on the material spending. This impact will be temporary in nature, but will be substantial.

Once the site is fully operational, the development will create jobs and deliver paychecks to the workers, about one quarter of whom are assumed to be new to the region. There will be an increase in income tax, sales tax, occupancy tax and property tax revenues for local and state governments. There will also be an increase in government services demand, which will result in an increase in the costs for providing government services.

This report details these economic and fiscal impacts. CGR focuses on the Buffalo metropolitan area (Erie and Niagara counties) as the level of analysis in determining the economic impact. Throughout the report any reference to "the region" makes reference to the Buffalo metropolitan area. New York State is the level of analysis for estimation of the income and sales tax impact.

CGR used IMPLAN, a regional input-output modeling system, for estimating the spillover economic impact. IMPLAN is widely acknowledged to be a credible tool for estimating spillover economic activity. The IMPLAN database, created by MIG, Inc., consists of two major parts: 1) a national-level technology matrix and 2) estimates of sectorial activity for final demand, final payments, industry output and employment for each county in the U.S. along with state and national totals. Data are updated annually. IMPLAN estimates the direct, indirect and induced impacts of economic change through the use of multipliers, and estimates the impact of an increase in demand in a particular sector on 440 different industries/sectors of the local economy.

Construction Phase Impact

During the construction phase there will be a substantial but temporary impact on the economy. The following table summarizes the economic impact during the construction phase:

Temporary Construction Impact (dollars in millions)

	Direct	Spillover	Total
Employment	1,600	700	2,200
Labor Income	$81.6	$34.1	$115.8

The project's construction spending will support about 1,600 yearlong FTE construction jobs. Spending by their suppliers will support an additional 700 jobs for a total impact of 2,200 jobs.

This project will result in an estimated $116 million of income for workers. The construction workers themselves will be paid about $82 million dollars in total. The spillover payroll sums to about $34 million for the 700 workers.

Operational Phase Impact

Commercial Square Footage

After construction the amount of space available for businesses in the Town of Amherst will increase by the following amounts:

New Commercial Square Footage

	Square Feet
Preferred Plan	**537,200**
Mixed-Use Town Center	115,000
Office Park	200,000
Hotel	66,400
Senior Living Center*	155,800
Alternative 1 - Recreation Conservation Plan	**227,000**
Alternative 2 - Community Facility Plan	**N/A**
Alternative 3 - Residential Three Plan	**N/A**
Alternative 4 - Transitional Residential Plan	**285,100**
Mixed-Use Town Center	98,000
Office Park	120,700
Hotel	66,400
Alternative 5 - General Business Plan	**435,000**
Retail Plaza/Out Parcels	435,000
Alternative 6 - Office Building Plan	**1,212,500**
Office Park	1,212,500

*** Note: 155,800 sq. ft. of Preferred Plan total New Commercial Square Footage is assigned to the assisted living housing units within the Senior Living Center**

The cost of community services explained later in this report will draw upon these figures in estimating the costs for the new businesses.

Employment

Employment estimates were supplied to CGR by the project sponsor for the senior living development and hotel. Employment for all other components were estimated applying average square footage per worker ratios developed by the U.S. Department of Energy's Commercial Buildings Energy Consumption Survey. The following table summarizes the square footage, the square footage per worker ratio and the estimated employment:

Workers Estimated by Square Footage by Use

	Square Footage	Square Foot per Worker	Estimated Workers
Total	**537,200**	**N/A**	**716**
Food Sales	5,800	877	7
Food Service	17,300	528	33
Retail	46,000	1,246	37
Office	223,000	434	514
Service	23,000	1,105	21
Hotel*	66,400	N/A	32
Senior Care*	155,800	N/A	73

Source: U.S. Department of Energy and Mensch Capital Partners

Note: *Estimate of direct employment was supplied by Mensch

We assumed that 25% of these jobs would be new to the region and 75% would be relocation from somewhere else in the region. We stress that this is a key assumption applied in this analysis. If the development serves as a catalyst for an expansion in regional economic activity and brings a larger proportion of new activity, the impacts will be greater. To the extent that the development simply displaces economic activity already taking place in the metro area, these impacts will be much smaller. The fiscal impacts for the Town of Amherst are more easily predicted, however, and are very likely to occur. The following table summarizes what the impact will be on an annual basis.

Annual Permanent Impact (dollars in millions)

	Direct	Spillover	Total
Employment	180	140	320
Labor Income	$9.8	$6.0	$15.9

Of the 700 jobs that are expected to be located on the Westwood project site, we are assuming that about 180 are new to the region. The spending by these companies

and their employees will spur on an additional 140 jobs in the local economy for a total impact of approximately 320 additional jobs.

Each year employees working at the site will earn in total around $10 million. After adding in the spillover income of $6 million, the region could expect an additional $16 million in income each year.

Fiscal Impact

Revenue

Property Tax

We were asked to present property tax estimates for the preferred plan and alternatives. We were also asked to model two additional scenarios for the preferred plan: one where a PILOT agreement is applied to the office park component of the development; and one where the PILOT agreement is applied to both the office park plus the senior living development components of the development.

Assessed Value

The property tax revenue impact is driven by the expected taxable assessed value of the property after development.

We have adopted different assumptions for residential and nonresidential properties. The assessed values of the homes are assumed to be equal to their sale prices. For the nonresidential portions of the development, we used their construction costs to represent the assessment.

Since part of the recreation conservation alternative retains part of the current golf course we assumed two-thirds of the current assessed value to represent the assessed value of the smaller golf course.

For the condominium ownership alternative CGR drew upon the work of Donald A. Griebner, President of Real Property Services, LLC. Mr. Griebner was engaged by Mensch Capital Partners to estimate the assessment and taxation of the residential condominiums. The following table summarizes his conclusions:

Condominium Ownership Alternative Assessed Value Assumptions

	Income Approach	Market Value
Patio Home Units	$200,000	$325,000
Single Family "Large Lot" Units	$255,000	$415,000
Condominium Townhome Units	$167,000	$262,000

CGR used these assessment assumptions in lieu of the sale price of the homes for the assessed value in the condominium alternative.

Ultimately the Town Assessor would determine these values, of course. Our approach permits some estimate of fiscal impact in advance of the detailed work of the assessor. The following table summarizes our findings:

Estimated Assessed Value (dollars in millions)

Currently	$2.5
Preferred Plan	$239.9
Condo Ownership Alternative	$210.3
Alternative 1 - Recreation Conservation Plan	$22.2
Alternative 2 - Community Facility Plan	$135.8
Alternative 3 - Residential Three Plan	$116.2
Condo Ownership Alternative	$71.4
Alternative 4 - Transitional Residential Plan	$203.8
Condo Ownership Alternative	$166.7
Alternative 5 - General Business Plan	$170.4
Alternative 6 - Office Building Plan	$327.4

Estimated Property Taxes

The Westwood property owners are currently paying property tax. After development and the resulting increase in the assessed value, the amount that will come in to all taxing jurisdictions will increase. We use the taxable assessed values described above along with the tax rates that were developed as part of the cost of community service to estimate how much revenue would come in. The following tables present the increase property tax revenue that can be expected after the development:

Annual Property Tax Revenues (dollars in millions)

	Town of Amherst	Williamsville School District	Erie County	Total
Preferred Plan	$1.3	$4.4	$1.2	$6.8
Condo Ownership Alternative	$1.1	$3.8	$1.1	$6.0
Alternative 1 - Recreation Conservation Plan	$0.1	$0.4	$0.1	$0.6
Alternative 2 - Community Facility Plan	$0.7	$2.4	$0.7	$3.8
Alternative 3 - Residential Three Plan	$0.6	$2.1	$0.6	$3.3
Condo Ownership Alternative	$0.4	$1.3	$0.4	$2.0
Alternative 4 - Transitional Residential Plan	$1.1	$3.7	$1.0	$5.8
Condo Ownership Alternative	$0.9	$3.1	$0.8	$4.8
Alternative 5 - General Business Plan	$0.9	$3.1	$0.9	$4.8
Alternative 6 - Office Building Plan	$1.7	$5.8	$1.6	$9.1

Property Tax Revenues over Ten Year Period (dollars in millions)*

	Town of Amherst	Williamsville School District	Erie County	Total
Preferred Plan	$11.5	$40.1	$11.0	$62.6
Condo Ownership Alternative	$10.1	$35.3	$9.7	$55.0
Alternative 1 - Recreation Conservation Plan	$1.0	$3.4	$0.9	$5.3
Alternative 2 - Community Facility Plan	$6.6	$22.4	$6.2	$35.2
Alternative 3 - Residential Three Plan	$5.6	$19.6	$5.3	$30.5
Condo Ownership Alternative	$3.4	$12.0	$3.2	$18.6
Alternative 4 - Transitional Residential Plan	$9.8	$34.4	$9.4	$53.5
Condo Ownership Alternative	$8.0	$28.2	$7.7	$43.9
Alternative 5 - General Business Plan	$8.2	$28.4	$7.8	$44.4
Alternative 6 - Office Building Plan	$15.3	$52.8	$14.9	$83.0

* Summed over 10 years. Future years discounted at 2%

PILOT Calculations

CGR estimated PILOT revenue for the preferred plan under two scenarios: one where the PILOT is only granted for the office park and another where it is on the office park and elder care components. We used the Amherst IDA's ten year real property tax abatement for general office, multi-tenant facilities, facilities for the aging and commercial (office) projects in our estimation process. The abatement rates and revenue projections are summarized in the tables below:

Amherst IDA Abatement Policy

Project Tax Year	Tax on Value-Added Portion of the Assessed Valuation
1	20%
2	25%
3	30%
4	35%
5	40%
6	45%
7	50%
8	55%
9	60%
10	60%

Property Tax Revenues with PILOTS on Preferred Plan over Ten Year Period (dollars in millions)*

	Town of Amherst	Williamsville School District	Erie County	Total
No PILOT	$11.5	$40.1	$11.0	$62.6
With PILOT for Office Park	$10.0	$35.1	$9.6	$54.8
With PILOT for Office Park and Senior Development	$9.5	$33.3	$9.1	$52.0

* Summed over 10 years. Future years discounted at 2%

Due to the substantial change in the taxable assessed value, the estimated increase in tax revenues will more than cover the additional costs of government services. This is the case even when some property tax revenue is given away in a PILOT agreement as illustrated in the table below:

Estimated Net Revenue on Preferred Plan over Ten Year Period (dollars in millions)*

	Town of Amherst	Williamsville School District	Erie County	Total
No PILOT	$6.4	$19.9	$9.1	$35.4
With PILOT for Office Park	$4.9	$14.9	$7.8	$27.6
With PILOT for Office Park and Senior Development	$4.4	$13.1	$7.3	$24.8

* Summed over 10 years. Future years discounted at 2%

CGR also estimated PILOT revenue and net revenue over the costs of government services for the office building plan (alternative 6). Applying the IDA abatement policy detailed above to the whole office park the revenue projections are summarized in the tables below:

Property Tax Revenues with PILOTS on Office Building Plan (Alt. 6) over Ten Year Period (dollars in millions)*

	Town of Amherst	Williamsville School District	Erie County	Total
No PILOT	$15.3	$52.8	$14.9	$83.0
With PILOT	$6.4	$21.9	$6.2	$34.5

* Summed over 10 years. Future years discounted at 2%

Estimated Net Revenue on Office Building Plan over Ten Year Period (dollars in millions)*

	Town of Amherst	Williamsville School District	Erie County	Total
No PILOT	$12.2	$52.8	$14.2	$79.2
With PILOT	$3.2	$21.9	$5.5	$30.6

* Summed over 10 years. Future years discounted at 2%

Sales Tax

During the construction period, sales tax is earned both on construction materials and on sales-taxable spending by workers, both those being paid directly by the project directly and the spillover payroll that is associated with employee spending.

Sales tax revenue earned on an annual basis after the project has been completed is derived from the spending of employees on site and the spillover payroll that is associated with employee spending.

To estimate the sales tax revenue derived from payroll, we first determined what share of income is spent on sales taxable goods and services. This was done by dividing the region's sales taxable sales as reported by the New York Department of Taxation (about $16 billion) by the Bureau of Economic Analysis's estimate of personal income (about $47 billion), which equals 35%. We applied that share (35%) to the labor income estimates. Then we applied the sales tax rate (8.75% = 4% for NYS and 4.75% for local governments).

For the sales tax revenue from project spending we applied the sales tax rate to the estimated share of construction spending subject to sales tax (40%). Note that the sales tax due on construction materials is often waived as part of a PILOT agreement with the local industrial development agency (as the property becomes technically "owned" by the IDA, a tax exempt entity).

Sales tax revenue will be generated during both the construction and operational phases. The table below summarizes sales tax revenue totals by jurisdiction:

Sales Tax Revenue (dollars in millions)

	NYS	Total Local	Total	*Estimated Amherst*
Total Sales Tax Revenue	**$5.6**	**$6.7**	**$12.3**	***$0.38***
Construction Phase ONLY	$5.4	$6.4	**$11.9**	*$0.37*
Project Spending (subject to PILOT)	$1.1	$1.3	$2.4	*$0.07*
Project Spending (not subject to PILOT)	$2.7	$3.2	$5.9	*$0.18*
Employee Spending (not subject to PILOT)	$1.6	$1.9	$3.5	*$0.11*
Operational Phase (annual)	$0.2	$0.3	**$0.5**	*$0.01*

NOTE: Amherst currently receives 5.7% of the local sales tax.

Sales Tax Revenues over Ten Year Period (dollars in millions)

	NYS	Local	Total	*Estimated Amherst*
Total Sales Tax Revenue	**$7.4**	**$8.8**	**$16.3**	***$0.51***
Construction Phase ONLY	$5.4	$6.4	**$11.9**	*$0.37*
Project Spending (subject to PILOT)	$1.1	$1.3	$2.4	*$0.07*
Project Spending (not subject to PILOT)	$2.7	$3.2	$5.9	*$0.18*
Employee Spending (not subject to PILOT)	$1.6	$1.9	$3.5	*$0.11*
Operational Phase*	$2.0	$2.4	**$4.4**	*$0.14*

*** Summed over 10 years. Future years discounted at 2%**

NOTE: Amherst currently receives 5.7% of the local sales tax.

Project spending on materials during the construction phase will result in an estimated $8 million in sales tax revenue for the state and the local governments. As construction labor income is spent it will also generate about $3 million in sales tax revenue. Construction spending on materials for the office park would generate about $1.8 million in sales tax revenue. Approximately $0.6 million comes from the senior living development construction spending. All other components make up the remaining $5.6 million.

If a PILOT agreement is agreed to between the developer and the Amherst IDA, it would only affect the office park and senior living community, thus reducing sales tax receipts by $2.4 million, of which about $70,000 would flow to Amherst in absence of the PILOT.

Once operational, employee spending will have a continued fiscal impact. The present value of 10 years of additional sales tax revenue is estimated to be a little over $4 million in total.

Due to the sales tax revenue sharing agreement that exists, we estimate that over a ten year period the Town of Amherst would receive around $510,000 (net present value).

Occupancy Tax

Once operational, the onsite hotel will collect occupancy tax which will benefit the County. We estimate the occupancy tax using occupancy rates and average daily room rate data provided by Mensch Capital Partners. We estimate annual occupancy tax revenues will total around $0.2 million. We also estimate ten years of occupancy tax revenue to have the present value of about $2 million.

Income Tax

We estimate NYS income tax revenue by calculating the "effective" income tax rates from NYS Department of Taxation data reporting total tax liability and total taxable rate by income class. These figures allow CGR to estimate the effective average tax rate by

income class. We applied the effective tax rate for the Buffalo metropolitan area to the income estimates generated by our economic impact analysis. The following table summarizes the present value of the income tax receipts during the two phases.

Annual Income Tax Revenue (dollars in millions)

	Direct	Spillover	Total
Total Income Tax Revenue	**$3.4**	**$1.5**	**$4.9**
Construction Phase	$3.0	$1.3	$4.3
Operational Phase	$0.4	$0.2	$0.6

Income Tax Revenue over Ten Year Period (dollars in millions)

	Direct	Spillover	Total
Total Income Tax Revenue	**$6.4**	**$3.1**	**$9.5**
Construction Phase	$3.0	$1.3	$4.3
Operational Phase*	$3.3	$1.9	$5.2

*** Summed over 10 years. Future years discounted at 2%**

A total of about $4.3 million will result from the construction phase. 70% of it will come through the spending of the construction workers and the remaining 30% will be from the spending of supporting firms' workers.

Once operational, New York State will receive a new stream of income tax revenue from firms located on site that are new to the region. We estimate that the present value of ten years of the additional income tax revenue totals about $5 million. An estimated $3 million is due directly to the employees at the Westwood site. There will also be a corporate income tax benefit that will flow to New York State, though we are unable to estimate this impact without knowledge of what businesses will be located at the site.

Revenue Summary

The development of the Westwood site is expected to spur a significant increase in tax revenue. Over the next ten years the present value of the revenue totals about $85 million assuming no PILOT agreement. This is summarized below:

Annual Revenue Summary (dollars in millions)

Total Revenue	**$20.4**
Income Tax	**$4.9**
Construction Phase	$4.3
Operational Phase	$0.6
Sales Tax	**$8.5**
Project Construction Spending	$4.5
Employee Spending	$4.0
Construction Phase	$3.5
Operational Phase	$0.5
Occupancy Tax	**$0.2**
New Property Tax (No PILOT)	**$6.8**

Estimated Revenue over Ten Year Period (dollars in millions)*

Total Revenue	**$86.4**
Income Tax	$9.5
Construction Phase	$4.3
Operational Phase	$5.2
Sales Tax	$12.5
Project Construction Spending	$4.5
Employee Spending	$7.9
Construction Phase	$3.5
Operational Phase	$4.4
Occupancy Tax	$1.9
New Property Tax (No PILOT)	$62.5

*** Summed over 10 years. Future years discounted at 2%**

Cost of Community Service

The increase in residents and business will result in an increase in demand for government services. The increase demand will have an increase cost of providing these community services. The cost of community services were computed in two parts. The first part can be thought of as the incremental increase in the operational expenses.

We assume that the increase in demand can be met with only minor additional costs for most services. For example, the library may have to purchase more computers or hire an additional librarian but won't have to build a new library.

After allocating all benefits across specific lines we broke the costs into fixed and variable parts. The fixed costs would not change due to the increase in government services demand however the variable part would.

Because businesses have a different need and cost for governmental services than residents, we broke the variable cost out by residential and non-residential parts. We then created per capita or per housing unit costs figures for the residential side and per commercial square feet on the non-residential side. We did this across all funds and lines of the budget. From this we could estimate the cost impact of the development. Since the costs of community service on the residential side is tied to the number of residents, and this is assumed not to vary if the housing unit is developed as a condominium or not, the costs of community services under the condominium ownership alternatives are assumed to be the same

Town of Amherst

The Town of Amherst is a large community with a history of professional management and an established structure for delivering public services. The Westwood Development will require an increase in the quantity of public services. The following table summarizes our estimates of the marginal expenses:

Town of Amherst Cost of Community Service Assumptions

	Added Costs Per Each
New Person	$24
New Housing Unit	$203
New Commercial SF	$0.2

Changes in Community Service Demand Factors

	People	Housing Units	Commercial SF
Preferred Plan	1,928	985	537,168
Alternative 1 - Recreation Conservation Plan	0	0	227,000
Alternative 2 - Community Facility Plan	1,240	1,177	0
Alternative 3 - Residential Three Plan	1,043	320	0
Alternative 4 - Transitional Residential Plan	1,876	784	285,068
Alternative 5 - General Business Plan	1,546	692	435,000
Alternative 6 - Office Building Plan	0	0	1,212,500

Multiplying the changes by the cost would result in the following additional costs for the Town of Amherst:

Additional Costs of Community Services (dollars in thousands)

	People	Housing Units	Commercial SF	Total Costs
Preferred Plan	$45	$199	$95	**$341**
Alternative 1 - Recreation Conservation Plan	$0	$0	$40	**$40**
Alternative 2 - Community Facility Plan	$30	$238	$0	**$268**
Alternative 3 - Residential Three Plan	$25	$65	$0	**$90**
Alternative 4 - Transitional Residential Plan	$45	$159	$51	**$254**
Alternative 5 - General Business Plan	$37	$140	$77	**$254**
Alternative 6 - Office Building Plan	$0	$0	$215	**$215**

Public Parks

There are some costs that would result from the development that would be in addition to these incremental cost increases, such as public park space. There are over 4,500 acres dedicated to parks, recreation and open space in the Town of Amherst according to the Planning Department. We assume that the existing parks and recreational administrative staff could oversee the proposed 26.1 acre increase with minimal additional cost. Nonetheless, this would add a new park to the system. There will be some site costs associated with the park land. Estimating on an average cost per acre we assume that the new park space would cost the town about $90,000 per year. This is based on the clubhouse remaining under private ownership.

This would be in addition to the estimated $16,000 increase per year for the increase demand of the existing parks and recreation stock already figured in the model above as a result of the projected increase in population. These are generous assumptions. As was previously shown in the report the revenues accrued by the Town will be more than sufficient to cover the increase in the costs. The Project Sponsor has indicated they are willing to consider either a public park approach or maintaining the publicly accessible park area as privately held property that is maintained by the homeowners association at no cost to the Town.

Fire Protection Costs

Based on our discussion with the Snyder Fire District any residential development of the Westwood site would require a new fire station as the current station is about 3 miles away. This is a significant capital cost outlay which is not represented by our marginal costs derived from the budget.

Based on our research the fire station will cost $925,000 to build and equip. A light rescue vehicle will need to be acquired at a cost of $55,000 including all necessary equipment. In addition to creating a substation, the fire company indicated that it might need to develop a water rescue capability to respond to events in the water

features that would be created in the project. This will cost about $10,000. In total there will be about a $990,000 expense.

We assume that the fire district will bond these costs. We assume a 4.9% interest rate for the bond and a 10 year term. Based on this we would estimate a cost of about $127,000 per year. These costs are not included in the above calculations. Once again it was shown earlier that the revenues will be more than sufficient to cover the increase in costs.

Police Costs

We approached the increase in demand for police costs in two ways. First, we used the budget model and projected an increase in cost based on the increase in the number of housing units and commercial square feet. By this method the preferred development would increase costs by around $130,000.

CGR also contacted the police department directly and studied current calls for service, estimating the possible increase in calls for service that would be expected from the development. This approach to modeling suggests that new calls for service generated by the completed development would be about 790 each year or about 2 calls per day.

It is possible that the Police Department could absorb the increase in calls from this development without additional staff. However, based on the increase in calls for service and the static staffing levels, the department believes that existing capacity would be strained and that the department might require an additional officer to adequately respond to the increased calls for service. The cost of an officer's salary is about $71,000 plus an additional two thirds ($47,000) for benefits leading to a total estimated cost for an additional officer of $118,000, within the same order of magnitude as the sum derived by our other approach.

In the interest of providing the community with a more conservative figure, we have used the $130,000 estimate in our modeling of the police costs to the Town. Once again, it was shown earlier that the increase in revenues will be sufficient to meet any increase in police costs.

Public Infrastructure Costs

The Town of Amherst has special district funds (i.e. lighting, water, sewer, drainage, etc.) to manage their public infrastructure. Special districts will have to be established or extended to service the development. Since the public infrastructure is new we have no reason to expect any large public infrastructure outlays in the next 10 years. Usage fees rates will be set and will cover the costs of maintenance.

Erie County

A similar approach was used for estimating the costs to Erie County. Its costs are summarized in the following tables:

Erie County Cost of Community Services Assumptions

	Added Costs Per Each
New Person	$66
New Housing Unit	$45
New Commercial SF	$0.1

Additional Costs of Community Services (dollars in thousands)

	People	Housing Units	Commercial SF	Total Costs
Preferred Plan	$127	$44	$34	**$205**
Alternative 1 - Recreation Conservation Plan	$0	$0	$14	**$14**
Alternative 2 - Community Facility Plan	$82	$53	$0	**$135**
Alternative 3 - Residential Three Plan	$69	$14	$0	**$83**
Alternative 4 - Transitional Residential Plan	$124	$35	$18	**$177**
Alternative 5 - General Business Plan	$102	$31	$27	**$160**
Alternative 6 - Office Building Plan	$0	$0	$76	**$76**

The major cost centers for the county are social services and public safety. Since the Town of Amherst has its own police force, we do not anticipate a substantial increase in demand for the Erie County Sherriff's services.

We likewise do not expect a significant increase in social service demand for these new residents. According to census data, about 8% for the Town of Amherst residents are living in poverty. About two thirds of persons living in poverty in Erie County are residents of Buffalo.

Persons Living in Poverty

	Number	Share of Erie
Erie County	80,686	100%
Buffalo	52,285	65%
Suburbs	28,400	35%
Amherst	6,127	8%

Source: Census Bureau 2012 ACS 1-Year Estimates

If we assume that 8% of the new residents would be living in poverty and that social service costs are uniformly distributed among the population based on poverty status,

then the increase in population would result in the addition of 158 people needing social services. Based on these proportions, we estimate additional health and human services costs to total about $176,000 per year, $151,000 being specifically Department of Social Services. This figure is generous, however, as the home prices and rents of the proposed development are not likely to attract residents in need of support from Erie County Social Services.

School District

The development will be located in the Williamsville Central School District. The incremental tax revenue to the school district per child is greater than the incremental cost of education, provided that existing buildings can accommodate the children without requiring an expansion. The Project Sponsor has met with the WCSD administration and has received confirmation that they have sufficient capacity within their existing facilities and staff to serve the anticipated increase in enrollment.

The cost per student, based off the difference between state aid per student and the spending per student, is $8,142. Total annual school district costs are summarized in the following table:

Estimated Annual School Costs (dollars in thousands)

	New Children	Total Costs
Preferred Plan	271	$2,205
Alternative 1 - Recreation Conservation Plan	0	$0
Alternative 2 - Community Facility Plan	0	$0
Alternative 3 - Residential Three Plan	223	$1,818
Alternative 4 - Transitional Residential Plan	324	$2,639
Alternative 5 - General Business Plan	121	$983
Alternative 6 - Office Building Plan	0	$0

Cost Summary

CGR analyzed the budget impact on town services for both residential and commercial separately. We assume a portion of each line item of the budget to be variable based upon CGR's experience and best estimate of marginal impact when new people and/or houses come into the community. Each item of the budget is assumed to be impacted by residential development and commercial development. The following table summarizes the assumptions used to calculate the costs of community services:

Total Annual Costs of Community Services (dollars in thousands)

	Town				County	School District	Total
	Marginal Cost Model	Additional Costs		Town Total			
		Fire Protection	New Park				
Preferred Plan	$341	$128	$89	$558	$205	$2,205	**$2,968**
Alternative 1 - Recreation Conservation Plan	$40			$40	$14	$0	**$55**
Alternative 2 - Community Facility Plan	$268	$128		$396	$135	$0	**$530**
Alternative 3 - Residential Three Plan	$90	$128		$217	$83	$1,818	**$2,118**
Alternative 4 - Transitional Residential Plan	$254	$128		$382	$177	$2,639	**$3,197**
Alternative 5 - General Business Plan	$254	$128		$382	$160	$983	**$1,526**
Alternative 6 - Office Building Plan	$215	$128		$343	$76	$0	**$419**

The estimated cost of government services to support this new development is about $0.5 to $29 million annually depending on which plan is selected. The following table summarizes the ten year costs on a discounted present value basis (discounting at 2%):

Total Costs of Community Services over Ten Year Period (dollars in millions)*

	Town of Amherst	Williamsville School District	Erie County	Total
Preferred Plan	$5.1	$20.2	$1.9	$27.2
Alternative 1 - Recreation Conservation Plan	$0.4	$0.0	$0.1	$0.5
Alternative 2 - Community Facility Plan	$3.6	$0.0	$1.2	$4.9
Alternative 3 - Residential Three Plan	$2.0	$16.7	$0.8	$19.4
Alternative 4 - Transitional Residential Plan	$3.5	$24.2	$1.6	$29.3
Alternative 5 - General Business Plan	$3.5	$9.0	$1.5	$14.0
Alternative 6 - Office Building Plan	$3.1	$0.0	$0.7	$3.8

* Summed over 10 years. Future years discounted at 2%

Conclusion

This report estimates the fiscal and economic impact of the redevelopment proposed for the Westwood Country Club in Amherst NY. The fiscal impact to each of the taxing jurisdictions is summarized in the following tables.

Town Fiscal Impact over Ten Year Period (dollars in millions)*

	Total Costs	Estimated Revenue	Net Revenue
Preferred Plan - No PILOT	$5.1	$11.5	$6.4
Condo Ownership Alternative	$5.1	$10.1	$5.0
Preferred Plan - PILOT for Office Park	$5.1	$10.0	$4.9
Condo Ownership Alternative	$5.1	$8.7	$3.6
Preferred Plan - PILOT for Office Park and Senior Development	$5.1	$9.5	$4.4
Condo Ownership Alternative	$5.1	$8.2	$3.1
Alternative 1 - Recreation Conservation Plan	$0.4	$1.0	$0.6
Alternative 2 - Community Facility Plan	$3.6	$6.6	$2.9
Alternative 3 - Residential Three Plan	$2.0	$5.6	$3.6
Condo Ownership Alternative	$2.0	$3.4	$1.4
Alternative 4 - Transitional Residential Plan	$3.5	$9.8	$6.3
Condo Ownership Alternative	$3.5	$8.0	$4.5
Alternative 5 - General Business Plan	$3.5	$8.2	$4.7
Alternative 6 - Office Building Plan	$3.1	$15.3	$12.2

* Summed over 10 years. Future years discounted at 2%

County Fiscal Impact over Ten Year Period (dollars in millions)*

	Total Costs	Estimated Revenue	Net Revenue
Preferred Plan - No PILOT	$1.9	$11.0	$9.1
Condo Ownership Alternative	$1.9	$9.7	$7.8
Preferred Plan - PILOT for Office Park	$1.9	$9.6	$7.8
Condo Ownership Alternative	$1.9	$8.3	$6.4
Preferred Plan - PILOT for Office Park and Senior Development	$1.9	$9.1	$7.3
Condo Ownership Alternative	$1.9	$7.8	$5.9
Alternative 1 - Recreation Conservation Plan	$0.1	$0.9	$0.8
Alternative 2 - Community Facility Plan	$1.2	$6.2	$5.0
Alternative 3 - Residential Three Plan	$0.8	$5.3	$4.6
Condo Ownership Alternative	$0.8	$3.2	$2.5
Alternative 4 - Transitional Residential Plan	$1.6	$9.4	$7.8
Condo Ownership Alternative	$1.6	$7.7	$6.1
Alternative 5 - General Business Plan	$1.5	$7.8	$6.4
Alternative 6 - Office Building Plan	$0.7	$14.9	$14.2

* Summed over 10 years. Future years discounted at 2%

School District Fiscal Impact over Ten Year Period (dollars in millions)*

	Total Costs	Estimated Revenue	Net Revenue
Preferred Plan - No PILOT	$20.2	$40.1	$19.9
Condo Ownership Alternative	$20.2	$35.3	$15.1
Preferred Plan - PILOT for Office Park	$20.2	$35.1	$14.9
Condo Ownership Alternative	$20.2	$30.3	$10.1
Preferred Plan - PILOT for Office Park and Senior Development	$20.2	$33.3	$13.1
Condo Ownership Alternative	$20.2	$28.5	$8.3
Alternative 1 - Recreation Conservation Plan	$0.0	$3.4	$3.4
Alternative 2 - Community Facility Plan	$0.0	$22.4	$22.4
Alternative 3 - Residential Three Plan	$16.7	$19.6	$2.9
Condo Ownership Alternative	$16.7	$12.0	-$4.7
Alternative 4 - Transitional Residential Plan	$24.2	$34.3	$10.2
Condo Ownership Alternative	$24.2	$28.2	$4.1
Alternative 5 - General Business Plan	$9.0	$28.4	$19.4
Alternative 6 - Office Building Plan	$0.0	$52.8	$52.8

* Summed over 10 years. Future years discounted at 2%

The redevelopment will have a short term economic impact during the construction phase of the project and an ongoing economic impact once operational.

Using the project sponsor's preferred plan, we estimate that over the ten years modeled will result in about:

- 1,900 new residents to the Town of Amherst.
- 270 new students in the Williamsville Central School District.
- 2,200 jobs during the construction phase earning $116 million.
- 320 new jobs once fully operational earning about $16 million annually.
- $25 to $35 million net increase in property tax revenue (depending on the PILOT), consisting of an estimated $27 million increase in cost offset by a $52 million to $63 million increase in revenue.
- $14 to $16 million net increase in state and local sales tax revenue.
- $10 million net increase in NYS income tax revenue.
- $2 million net increase in county occupancy tax revenue.

The six alternative development scenarios provide the town's Planning Department and the community with a perspective on the condominium ownership alternatives that can be physically placed within the site footprint. Although CGR has assessed the

fiscal costs and benefits associated with each of these scenarios, CGR has not determined whether these scenarios are economically feasible within the Amherst market.

The key conclusion to be drawn from this analysis is that the developer's preferred plan—which the developer's analysis has concluded is economically viable—would add substantially more to town, county and school district revenue than to the costs imposed upon these levels of government by the development proposed.

Residential Condominium
Assessment and Taxation Analysis
for the
Westwood Neighborhood Project

Client: **Mensch Capital Partners, LLC**
c/o Andrew J. Shaevel
Managing Partner

Prepared By: **Real Property Services, LLC**
Donald A. Griebner, President

RPS File Number: **15-199**

Date of Analysis: July 21, 2015

MASTER PLAN


WESTWOOD
Revised Draft Generic Environmental Impact Statement – March 2015
SHERIDAN DRIVE
N. FOREST RD.
ELLICOTT CREEK
FRANKHAUSER ROAD
FAIRWAYS BLVD.
MAPLE ROAD
PRELIMINARY CONCEPTUAL MASTER PLAN
MARCH, 2015 SCALE: 1" = 120'
Westwood
A Traditional Neighborhood in the heart of Amherst
MENSCH
Capital Partners, LLC
Figure 1-3 - Preliminary Conceptual Master Plan
Mensch Capital Partners, LLC

MASTER PLAN – TARGET AREA

(I) Patio Homes – 113 Units

(J) Larger Lots – Single Family – 47 Units

(K) Townhomes – 84 Units

July 21, 2015

Mensch Capital Partners, LLC
5477 Main Street
Williamsville, New York 14221
Att: Mr. Andrew J. Shaevel
Managing Partner

Re: Condominium Assessment and Tax Analysis
Westwood Neighborhood Project
Town of Amherst, New York

Dear Mr. Shaevel,

At your request and pursuant to our contract, I have completed an assessment and tax analysis for the planned residential units within the proposed Westwood Neighborhood Project in the Town of Amherst. My analysis and projections are based upon application of NYSRPTL 339-Y which states that condominiums in New York State are to be assessed for real estate tax purposes based upon their rental value.

Overview of Project

The proposed Westwood Neighborhood Project reflects the planned redevelopment of the Westwood Country Club property in the Town of Amherst. The project's location is bounded by Sheridan Drive, North Forest Road, Maple Road, and Fairways Boulevard, and will transform the existing golf course property into a mix of residential and commercial uses.

Multiple alternative development options have been detailed by the developer, however this analysis will focus on the residential component of the preferred alternative. The residential mix of offerings in this plan, along with their projected sales prices as provided by the developer, are as follows:

Building Type	No. of Units	Average Square Footage	Average No of Bedrooms	Average Sales Price	Lot Value	Building Price/SF	Overall Price/SF
Single-Family	47	2,800	3	$415,000	$90,000	$116	$148
Patio Homes	113	2,000	3	$325,000	$75,000	$125	$163
Condominiums / Townhouses	84	1,600	3	$262,000	$50,000	$133	$164

NOTE: The size and sales price projections above have been provided by the developer and reflect average quality build-out and finishes.

Scope of Analysis

My analysis involved an income-based valuation for each of the three (3) types of residential units to be offered within the condominium offering plan. A Pro Forma Operating Statement has been constructed for each unit type, projecting market level income (rent), vacancy and collection, operating expenses and reserves. The resultant net operating incomes were then capitalized into value, indicating an appropriate "condominium assessment" for each unit type.

It should be noted that the "Assessors Method" of capitalization was utilized, meaning that the derived market level capitalization rate (7%) was adjusted by adding the overall tax rate ($31.00/1,000 or 3.1%) to create a tax-adjusted capitalization rate of 10.1%. This rate is applied to the net operating income before real estate taxes are deducted in order to derive a value at tax equilibrium. (Note: The tax rate reflects adjustment for the STAR exemption).

Operating expenses for insurance, utilities, maintenance, management, professional fees, and reserve for replacement were applied at typical market levels for a multi-unit complex. If the tax expense were added in, the overall expense ratio would be 44%, which is in line with the market for a newer multi-unit complex as is being assumed here.

Following are the market rental comparables that were reviewed in order to derive appropriate rents for each unit type. Pro Forma Operating Statements are then constructed, concluding to a capitalized value which reflects the appropriate condominium assessment for each unit type. From these condominium assessment levels, real estate tax projections are made based upon current tax rates for town, county, school and special district taxes.

Rental Comparables: Single-Family

Address	Year Built	Size	Rent/Month	Rent/SF
Rubino Court Williamsville	2005	3,420sf 4/3	$3,334 (rent to own)	$.97
5326 Coyote Court Williamsville	2000	3,850sf 4/2.5	$3,300 (furnished)	$.86
Subject Units	2015	2,800sf 3/2.5	$2,800	$1.00

Conclusion: $1.00/sf or $2,800/mo. for the subject units. (Note: Smaller units will command more per square foot).

Rental Comparables: Patio Homes

Address	Year Built	Size	Rent/Month	Rent/SF
62 Union Common Williamsville	2003	2,300sf 2/2	$1,750	$.76
1280 Sweet Home Rd. (apartment) Amherst	2013	1,800sf 2/2	$2,000	$1.11
Subject Units	2015	2,000sf 3/2	$2,200	$1.10

Conclusion: $1.10/sf or $2,200/mo. for the subject units.

Rental Comparables: Condominium/Townhouse

Address	Year Built	Size	Rent/Month	Rent/SF
2211 Sweet Home Rd. Amherst	2013	2,000sf 4/2.5	$2,140	$1.07
2367 Sweet Home Rd. Amherst	2012	1,700sf 3/2.5	$1,780	$1.05
1691 Maple Road Amherst	2013	1,500sf 3/1.5	$1,650	$1.10
42 Sean Riley Amherst	2013	1,500sf	$1,496	$1.00
Subject Units	2015	1,600sf 3/2	$1,760	$1.10

Conclusion: $1.10/sf or $1,760/mo. for the subject units.

Westwood Neighborhood Project

Pro Forma Operating Statement

Single Family Homes @ 2,800+/- sf

Pro Forma 1		
Income		
2,800sf @ $1.00/sf = $2,800/mo. x 12 =		$ 33,600
Less: Vacancy & Collection @ 5%:		$ (1,680)
Effective Gross Income:		$ 31,920
Expenses:		
Real Estate Taxes	(In Cap Rate)	
Insurance (2.5%):	$798	
Utilities:		
Water & Common (2.5%):	$798	
Maintenance (7%):	$2,234	
Management (5%):	$1,596	
Professional Fees (.5%):	$160	
Replacement Reserves (2%):	$638	
Total Operating Expenses Before Real Estate Taxes:		($6,224)
Net Operating Income Before Real Estate Taxes:		$25,696
Capitalization Rate: .07 + .031 =		0.101
Indicated Condominium Assessment:		$254,416
		$255,000 ®

Single-Family Home Condominium Assessment:

$255,000

Note: Condominium assessment of $255,000 equates to 61% of projected sales price of $415,000.

Westwood Neighborhood Project

Pro Forma Operating Statement

Patio Homes @ 2,000+/- sf

Pro Forma 2

Income		
2,000sf @ $1.10/sf = $2,200/mo. x 12 =		$ 26,400
Less: Vacancy & Collection @ 5%:		$ (1,320)
Effective Gross Income:		$ 25,080
Expenses:		
Real Estate Taxes	(In Cap Rate)	
Insurance (2.5%):	$627	
Utilities:		
Water & Common (2.5%):	$627	
Maintenance (7%):	$1,756	
Management (5%):	$1,254	
Professional Fees (.5%):	$125	
Replacement Reserves (2%):	$502	
Total Operating Expenses Before Real Estate Taxes:		($4,891)
Net Operating Income Before Real Estate Taxes:		$20,189
Capitalization Rate: .07 + .031 =		0.101
Indicated Condominium Assessment:		$199,891
		$200,000 ®

Patio Home Condominium Assessment:

$200,000

Note: Condominium assessment of $200,000 equates to 61% of projected sales price of $325,000.

Westwood Neighborhood Project

Pro Forma Operating Statement

Condominium/Tounhouse Units @ 1,600+/- sf

Pro Forma 3

Income		
1,600sf @ $1.15/sf = $1,840/mo. x 12 =		$ 22,080
Less: Vacancy & Collection @ 5%:		$ (1,104)
Effective Gross Income:		$ 20,976
Expenses:		
Real Estate Taxes	(In Cap Rate)	
Insurance (2.5%):	$524	
Utilities:		
Water & Common (2.5%):	$524	
Maintenance (7%):	$1,468	
Management (5%):	$1,049	
Professional Fees (.5%):	$105	
Replacement Reserves (2%):	$420	
Total Operating Expenses Before Real Estate Taxes:		($4,090)
Net Operating Income Before Real Estate Taxes:		$16,886
Capitalization Rate: .07 + .031 =		0.101
Indicated Condominium Assessment:		$167,188
		$167,000 ®

Condominium/Townhouse Assessment:

$167,000

Note: This assessment reflects 74% of projected sales price of $225,000.

Tax Projections

Following are the current tax rates per $1,000 that apply to the existing subject property:

Town of Amherst:	$3.00
County of Erie:	$4.70
Special Districts:	$6.36
Williamsville School	$18.97
	$33.03

Tax Computation

Property Type	Sale Price	Appropriate Assessment as Condominium	%	Amherst Town Tax $3.00/1,000	Erie County Tax $4.70/1,000	Williamsville School Tax w/STAR	Special Districts $6.36/1,000	Total Taxes w/STAR
Single-Family	$415,000	**$255,000**	61%	$765	$1,199	$4,268	$1,622	$7,854
Patio Homes	$325,000	**$200,000**	61%	$600	$940	$3,225	$1,272	$6,037
Condominium / Townhouse	$262,000	**$160,000**	61%	$480	$752	$2,466	$1,018	$4,716

Cumulative Tax Impact at Stabilization (2015 Dollars)

Property Type	Annual Taxes (Net of STAR)	No. of Units	Total Taxes
Single-Family	$7,854	47	$369,138
Patio Homes	$6,037	113	$682,181
Condominium / Townhouse	$4,716	84	$396,144
			$1,447,463

Total Projected Annual Tax Revenue:

Town of Amherst:	$144,075
County of Erie:	$225,741
Williamsville School:	$772,165
Special Districts:	$305,482
Total:	$1,447,463

Conclusion

My research and analysis has concluded to the above-stated levels of assessment as condominiums for each of the proposed unit types, based upon the preliminary sales price levels provided. Thank you for the opportunity to complete this analysis.

Respectfully submitted,

Donald A. Griebner
President/Principal Appraiser
New York State Certified
General Real Estate Appraiser
ID #: 46-4373

Westwood

A Traditional Neighborhood
in the heart of Amherst.

Retail Market Study & Tenanting Strategy Report

January 31, 2015

Prepared For:
Andrew J. Shaevel, Managing Partner
Mensch Capital Partners, LLC
5477 Main Street
Williamsville, NY 14221

Prepared By:

MJB CONSULTING
A Retail Real Estate Consulting Firm
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Michael J. Berne, President, MJB Consulting

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Westwood

A Traditional Neighborhood
in the heart of Amherst.

Retail Market Study & Tenanting Strategy Report

Table of Contents

MJB Consulting : A Retail Real Estate Consulting Firm

I. MJB Consulting- About Our Firm

MJB Consulting (MJB) is an award-winning, New York City- and San Francisco Bay Area-based retail planning and real estate consulting concern retained across the U.S., Canada and the U.K. to undertake market analyses, devise tenanting strategies and spearhead recruitment efforts.

Our clients include municipalities, quasi-public/non-profit development corporations, BID's and institutions as well as private developers, landlords and retailers.

We are among the nation's leading consultancies on urban and Downtown retail, having strategized and recruited for high-profile CBD's like Brooklyn (NY), Newark (NJ), Toronto, Pittsburgh, Cleveland, Minneapolis, St. Louis, San Antonio and Denver, among others.

In addition, we have worked in many other satellite Downtowns and neighborhood business districts within larger cities and metros, including, for example, ones in London (U.K.), New York City, Boston (Cambridge), Philadelphia, Baltimore, Cleveland, Columbus (OH), Cincinnati (Covington), Atlanta (Decatur), Milwaukee, Minneapolis-St. Paul, Seattle, San Francisco (Berkeley) and Los Angeles (Long Beach).

Finally, we are also active in smaller cities and markets, including Downtown and "Main Street" business districts in New Haven (CT), Albany (NY), Kitchener (ON, CA), Akron, Fort Wayne (IN), Dubuque, Roanoke (VA), Raleigh, Winnipeg, Saskatoon (SK, CA), Wichita, Corpus Christi, Las Cruces (NM), Albuquerque, Tuscon and Modesto, among numerous others.

Our Principal

Our Principal, **Michael J. Berne**, is one of the nation's foremost experts on urban and Downtown retail.

Michael is a regular speaker at International Downtown Association (IDA) conferences. He is also a member of the IDA Board and sits on its Executive Committee.

In addition, Michael has presented at the annual gatherings of the International Economic Development Council (IEDC), the National Main Street Center, the Local Initiatives Support Corporation (LISC) and the International Council of Shopping Centers (ICSC), among others.

Michael has lectured at the University of Pennsylvania, written numerous articles for the Urban Land Institute's (ULI) *Urban Land* magazine as well as the prestigious *Journal of Urban Affairs*, served on expert advisory panels for the ULI and the IEDC, and appeared in high-profile publications such as *The Washington Post, The Financial Times* and *The San Francisco Chronicle.*

Michael received a B.A. degree from Columbia University (Columbia College) in New York City and an M.Phil degree from Cambridge University (Gonville & Caius College) in the United Kingdom. He currently splits his time between residences/offices in New York City's Union Square and Berkeley's Elmwood neighborhood.

MJB Consulting : A Retail Real Estate Consulting Firm

Our Unique Approach

We at MJB Consulting approach our work differently from our competitors, and offer unique strengths and specialized expertise in a number of areas:

1. We are retail specialists: it is our passion and our obsession.
2. We are in tune with the newest trends and the latest thinking, as a result of working across North America and beyond.
3. We are able to identify opportunities where others cannot, with our emphasis on psycho-graphics and our understanding of diverse sub-markets.
4. We fully immerse ourselves in our study areas, as if we were locals ("total immersion"), in order to truly understand their unique rhythms and sensibilities.
5. We possess a keen understanding of the tenant's perspective, as a result of practical experience in the leasing and selling of retail space.
6. We have devised a number of proprietary tools, including our database of retailers willing to consider Downtown and "Main Street" settings.

7. We have promoted the concept of small "chain-lets" as balancing local distinctiveness with the landlord's desire for creditworthy tenants.
8. We do more than provide lots of data; we also interpret all of that information and tell you what to do with it on a block-by-block level.
9. We do not write reports that sit on shelves: our scope-of-work typically proceeds to implementation, including actual recruitment and staff training.
10. We are able to explain the nuances and intricacies of retail clearly and accessibly to different sorts of audiences, including those new to the field.
11. We do not pull punches, but we are able to convey the harsh realities while still generating excitement for what is in fact possible.
12. We are a boutique consultancy: our Principal (and not some junior associate) is the Project Manager and the one who develops the work product.

II. Report Purpose

In November 2014, Mensch Capital Partners retained MJB Consulting ("MJB"), a retail planning and real estate consultancy firm based in New York City and the San Francisco Bay Area, to undertake a retail market study and devise a tenanting strategy for its proposed mixed-use redevelopment of the Westwood Country Club ("Project") site in Amherst, NY. MJB was also asked to evaluate the project's potential impact on the retail mix along Main Street in the Village of Williamsville.

MJB was instructed by Mensch Capital Partners LLC to consider certain baseline assumptions in evaluating the retail potential of the site. These included the following:

- The project would contain a pedestrian oriented, mixed-use core with a modestly scaled retail component on the order of 100,000 to 125,000 square feet and laid out in accordance with established site location principles so as to maximize the likelihood of successful lease-up. (The specifics of the current site plan have not been taken into account in this assessment).

- The site plan for the retail component of the proposed mixed-use project would not be designed to accommodate larger-format "big box" superstores measuring 50,000 square feet or more in size, as these already exist on and would be more appropriate for other high-volume arterials within the Town of Amherst, such as Niagara Falls Boulevard (U.S. 62), Transit Road (SR 78) and Sheridan Drive (SR 324).

- The tenanting strategy for the retail component would be geared instead towards smaller-format businesses that complement other on-site residential/commercial uses and adjacent neighborhoods, and/or fill underserved niches in the competitive marketplace.

III. Scope of Work

MJB's scope-of-work for this assignment consisted of the following:

- Guided tour from and extensive discussions with Andrew Shaevel of Mensch Capital Partners and Brad Packard of Ciminelli Real Estate Corporation, for the purpose of understanding project vision, specific plans and broader context, as well as review of the current site plan and design standards.

- Self-guided touring of the subject site and immediate vicinity as well as other Amherst communities and business districts, including Main Street / Snyder, Sheridan and Evans, Hopkins and Klein, etc.

- Observations of existing retail mix and dynamics on Main Street / Williamsville, as well as review of the 2013 "Main Street Corridor Market Study" by Market & Feasibility Advisors, the 2013 "Picture Main Street" report by and for the Village of Williamsville.

- Survey and assessment of competing districts and centers, including (but not limited to) Walden Galleria, Boulevard Mall / Boulevard, Eastern Hills Mall / Transit Road, Northtown Plaza, Sheridan Avenue and Maple Road corridors, Fashion Outlets of Niagara Falls, Outlet Collection at Niagara, University at Buffalo (UB) / North Campus, Main Street / University Heights, Elmwood Village, Hertel Avenue / North Buffalo, etc.

- Interviews with local retail leasing professionals, including Ronald "Gunner" Tronolone of MJ Peterson Real Estate as well as Benedict J. Borruso and Arthur H. Judelsohn of Pyramid Brokerage Company.

- Review of available data on the structure and trajectory of the regional economy, including reference to the 2006 Economic Analysis undertaken by Donald A. Griebner in connection with Benderson Development Company's application for the redevelopment of the former Buffalo Gun Club site on Maple Road in the Town of Amherst.

- Retrieval and nuanced analysis of demographic and sales-leakage data for both a theoretical "primary trade area" and the Buffalo-Niagara Metropolitan Statistical Area (MSA), as well as a specific grocery store trade area.

- Gathering of available data on non-residential consumer sub-markets, such as daytime workers, UB students and faculty/staff, Canadian tourists, etc., drawing on a variety of sources that include the Buffalo Niagara Enterprise website, UB's 2013-2023 Facilities Master Plan, UB's 2014 "Student Housing Market Analysis" by Asset Campus Housing, etc.

- Delineation of a core customer(s) for the project's retail component, including detailing of demographic and psycho-graphic characteristics, the latter utilizing MJB's proprietary lifestyle segmentation analysis.

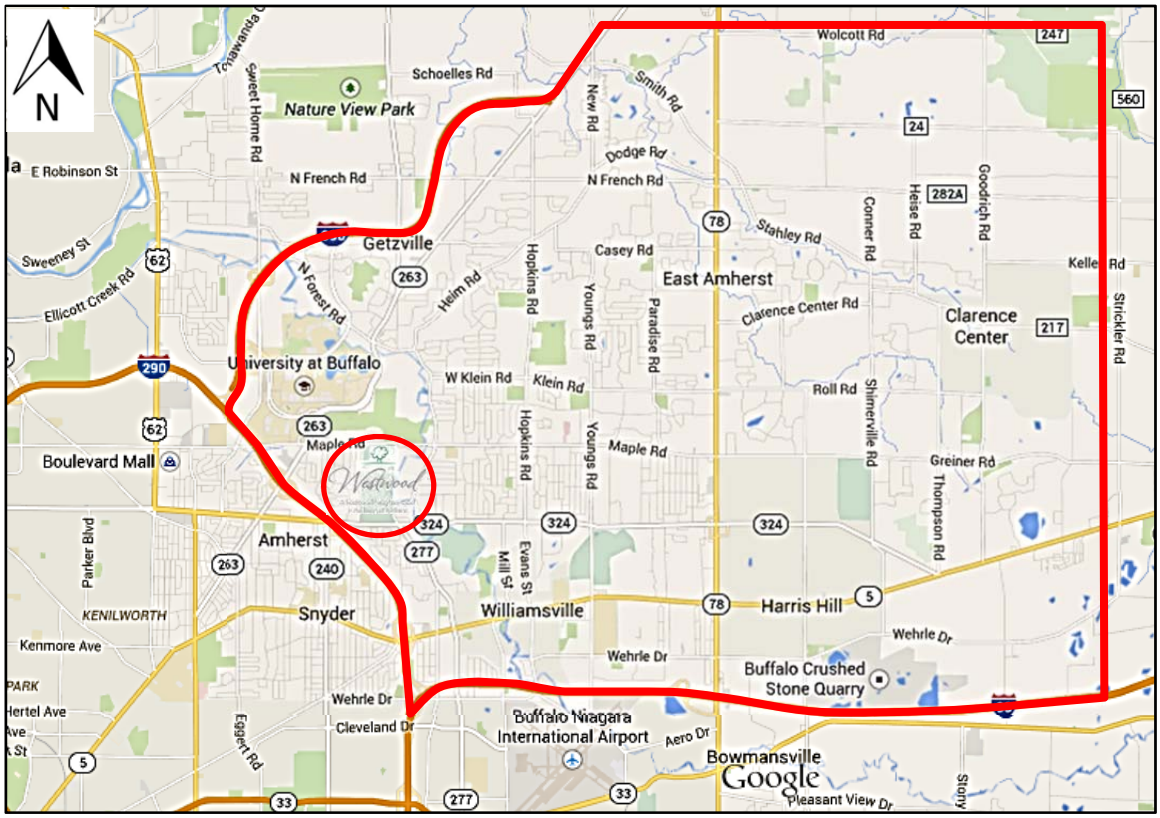
- Consideration and evaluation of local comparables such as University Place on Sweet Home Road and French Road Commons on North French Road, as well as reference to appropriate analogs from across North America, including outreach to existing contacts with information on the Emory Point development in suburban Atlanta.

- Research on specific retail prospects that might serve as traffic-generating anchors for the project, drawing on MJB's proprietary database of larger brands typically willing to consider such opportunities.

In undertaking this scope of work as outlined above, MJB's Principal, Michael J. Berne, applied the firm's unique "total immersion" methodology, staying in Williamsville and exploring the area for a period of seven days in November 2014. Identifying the right "positioning" of a retail mix requires an assessment of two discrete "markets", one in

which consumers demand goods and services from businesses, and the other in which tenants seek street-level space from landlords.

IV. Consumer Demand Evaluation



WESTWOOD PROJECT SITE
Primary Trade Area

Within the polygon drawn to correspond to the site's "primary trade area" (above), there are, as of 2015, an estimated 103,111 residents -- a number that has been growing since 2000 and is expected to continue increasing until at least 2020. A relatively high percentage possesses a B.A. degree or more (53%) and works in a creative class job (also, 53%). Not surprisingly, median household income (roughly $79,000) and median home value (about $215,000) are well above metro-wide averages.[1]

Sales leakage figures indicate that this primary trade area can support additional operators in specific categories, including, for instance, specialty grocery; sporting goods; home furnishings; shoes; jewelry; luggage and leather goods; cosmetics, beauty supplies and perfume; office supplies and stationery; drinking places as well as restaurants. These numbers also suggest opportunity for so-called "non-traditional" retail, like, say, vendor markets.

[1] Based on figures from Nielsen-Claritas and analyzed by MJB Consulting.

Both the University at Buffalo and Daemon College currently lack a true central gathering place in close proximity to their respective campuses for shopping, eating, studying, recreating and socializing. On-campus retail offerings for both students and faculty/staff are limited, and public safety remains a concern on Main Street in University Heights District, which is also not particularly convenient for UB's North Campus, where most of the residential dormitories and off-campus student housing complexes as well as all of the undergraduate programs are located. And while Maple Road is closer, the auto orientation along that corridor has the effect of dispersing the energy among multiple disconnected businesses.

While the trade area consists overwhelmingly of native-born Caucasians, its diverse character is also worth noting. In particular, there are some 8,600 residents of Asian descent – largely Indian, Chinese and Korean -- with median household incomes of $102,000 (higher than any other ethnicity). [2] With its 6,600 international students, UB ranks 17th among the 2,900 colleges and universities surveyed nationally, and extrapolating from their (much) higher tuitions, these foreign students typically arrive with financial resources. With all of this spending power, the corresponding retail offer could be enhanced.

Canadian traffic and trade should decline somewhat in the near term due to the weakening Canadian dollar as well as the 700,000 square feet of (more conveniently located) outlet mall space that was recently developed. However, Canadian shoppers are likely to remain a major sub-market for Western New York shops, restaurants and other businesses – particularly those sitting along its circumferential beltway (I-190, I-290 and I-90) -- due to the (still) better selection, (still) cheaper prices and lower taxes, the comparative ease and affordability of flying to and from Buffalo as well as, on a more basic level, the appeal of the different and the novel.

Unlike other suburbs in Western New York, the Town of Amherst is also an employment destination. Indeed, based on the rule-of-thumb that the typical worker will drive as many as seven minutes for lunch and/or daytime conveniences, the project would be able to draw from a population of some 44,000 employees, of which 33% are in higher-earning "creative class" occupations[3], driven primarily by the growth engines of health care and higher education. [4]

A population of 1.14 million normally translates to four to five regional shopping destinations, yet the Buffalo-Niagara MSA has only one bona fide top-tier mall – the Walden Galleria, along I-90 in the Town of Cheektowaga. Furthermore, metro-wide sales leakage figures indicate that there is still latent potential in a number of retail categories, including, for instance, specialty grocery; sporting goods; jewelry; luggage and leather goods; cosmetics, beauty supplies and perfume; office supplies and stationery; as

[2] Based on figures from Nielsen-Claritas and analyzed by MJB Consulting.
[3] Based on figures from Nielsen-Claritas and analyzed by MJB Consulting.
[4] Based on figures from the Commercial Listing System GIS mapping program on the Buffalo Niagara Enterprise website.

well as "non-traditional" retail – many of which also happen to echo the ones leaking from the trade area (above).

Furthermore, both the Buffalo-Niagara MSA and Canada's Niagara Region still lack a true "town/village center" development -- along the lines of, say, the Legacy Village and Crocker Park projects in suburban Cleveland or Southside Works in Pittsburgh – that features a traditional two-sided, pedestrian-oriented retailing corridor lined with mixed-use buildings and that functions as a sort of community living room. The Amherst Town Centre/University Town Centre concept proposed for the old Buffalo Gun Club property along Maple Road would have qualified, but it is no longer under consideration and the property has since been sold to a national developer of student housing complexes.

V. Tenant Demand Evaluation

In recent years, whether due to the relative stability of their respective economies, the diminishing opportunities in saturated first-tier markets or various other factors, the major metros of Upstate New York have started to draw the attention of certain higher-end retail concepts that had previously ignored them. The Buffalo-Niagara MSA, for example, has welcomed Trader Joe's and a Whole Foods Market is anticipated to open in the next year, while others like Recreational Equipment Inc. (REI), L.L. Bean and Costco Wholesale continue to evaluate sites in Western New York.

Furthermore, there is reason to believe that this sort of interest will continue to grow, with the population and employment gains expected in connection with various "next-generation" economic development initiatives in the Buffalo Niagara region, including the ongoing expansion of the Buffalo Niagara Medical Campus, IBM's decision to occupy a vast swath of Downtown Buffalo's high-profile Key Center office building with a new software research facility as well as the large SolarCity factory planned for the Riverbend site in South Buffalo.

From the tenant's perspective, the site itself offers a location within one of the metropolitan area's most desirable suburbs (Amherst) and adjacent to another desirable suburb (Clarence). Not only does its trade area outperform the MSA on educational attainment, income levels and home values (see above), but also, the population continues to increase steadily even as the region stagnates or shrinks. And aside from the numbers, real estate professionals can be just as impacted by a sub-market's "soft" attributes – its cachet and brand, for instance – as lay consumers.

Another of the site's selling points is its visibility and access. Its planned entrance sits along Sheridan Drive (SR 324), a principal arterial road with almost 40,000 cars per day, with secondary ingress/egress along Maple Road, with 22,000 cars per day and just a quick one-minute drive from UB's North Campus. [5] And it has the ability to draw

[5] New York State Department of Transportation Traffic Data Viewer. Retrieved from https://www.dot.ny.gov/tdv. 2013.

regionally and beyond as a result of its location just 0.5 miles from the Harlem Road / Sheridan Drive interchange on Western New York's circumferential beltway, an approximately 25-minute drive to and from the Canadian border.

At 170 acres, the site is capable of accommodating development on a large scale, with a considerable amount of retail square footage as well as several other sources of captive, "in-place" demand from the other on-site uses (i.e. residential, office, hotel). And with the project's size and aspirations as well as its distinctiveness as the first true mixed-use village/town center in the region, there should be little difficulty in generating attention within the local tenant community.

The site is located in the "Eastern Hills" sub-market, which boasted a 7.2% retail vacancy rate as of 4Q 2012, by far the lowest in the Buffalo-Niagara region -- as compared to 10.8% for "Boulevard", 14.4% for "Galleria", 13.0% for the metro as a whole and 12.9% nationally.[6] The tightness in the leasing environment, combined with the high barriers-to-entry for new development, should act to intensify demand for new retail inventory.

The Walden Galleria's sales levels of more than $600 per square foot[7] – compared to the nationwide average of $468 per square foot – deem it a "Class A" mall. This, combined with its low vacancy rate as well as the physical limitations to its further expansion, suggests the possibility of "spillover" tenant demand that could benefit other regionally oriented centers, particularly ones located amidst or near concentrations of that mall's well-educated, relatively affluent core customer.

With so-called comparison goods (that is, goods for which one typically prefers to "comparison-shop", like apparel, footwear, jewelry, furniture, etc.), the consumer typically gravitates to existing districts and centers that already offer a broad array of options. And partly for this reason, tenants selling such merchandise prefer to open in close proximity to other operators in their respective categories (even their direct competitors); with a bias towards the largest such clusters.

The site, however, would be considered a classic "tweener" location in the leasing community, as it sits *between* two established mall-anchored, strip-heavy shopping destinations with strong gravitational pull -- Niagara Falls Boulevard (U.S. 62) and Transit Road (SR 78) – and it offers no nearby fashion co-tenancy of its own and just 115,000 square feet to work with. That said, certain brands have started to experiment with smaller, "neighborhood-scaled" formats that could more easily tap such interstitial opportunities.

While the negotiation of retail rent levels will ultimately be driven to a significant degree by pro-forma considerations, open-air centers typically have lower occupancy costs than enclosed malls. Prime small-shop spaces at Walden Galleria and Boulevard Mall can be

[6] According to CB Richard Ellis' *Retail Marketview Report* for the 4th quarter of 2012, as stated in the "Main Street Corridor Market Study" submitted by Market & Feasibility Advisors in May 2013.
[7] According to industry experts, as stated in a 5/11/09 *Buffalo Business First* article by James Fink entitled "Galleria changed WNY retailing".

as high as $60 per square foot plus a percentage component as well as CAM charges, with even sub-optimal locations within those centers pegged at roughly $30 per square foot. This suggests an opportunity for the project, which sits in a sub-market that can presently support at least $17 to $25 per square foot NNN.

An important variable, of course, is Northtown Plaza. Also an open-air center, its new owners are reportedly offering many long-time tenants just short-term, one-year leases at $20 per square foot NNN. One presumes, however, that its occupancy costs will increase considerably once the new Whole Foods Market anchor is in place, the retail bays are physically overhauled and the overall atmospherics improved. Of course, the project might have to offer more than just a slight discount in order to effectively undercut Northtown.

The one category in which the site might be able to claim some relevant co-tenancy is home furnishings: it is just a three-minute drive along Sheridan Drive from Ethan Allen, which sits at the eastern edge of a stretch of that corridor containing a cluster of larger-format, mid-market furniture retailers (i.e. Ethan Allen, Bassett Home Furnishings, Newtrend Furniture, La-Z-Boy Furniture Galleries, Carolina Furniture, HomeGoods, etc.), some of which could be displaced in the coming years by Whole Foods Market-driven redevelopment.

VI. Retail Positioning

Given all of the above factors, the site's retail component will likely require a different format, one that does not necessarily fit within existing shopping-center typologies – and that might not have many direct antecedents or comparables -- but rather, represents a unique hybrid of sorts, customized to the specifics of the marketplace. Indeed, with the industry currently in a period of upheaval, this kind of creative approach is becoming far more commonplace and necessary.

In order to differentiate itself (as well as the larger development) in the marketplace, the retail component should take the form of a "village center", with its signature element a traditional two-sided, pedestrian-oriented corridor lined with mixed-use buildings, its street-level spaces filled with a diverse range of retail categories that also include comparison goods, restaurants as well as coffeehouses, public spaces and other sorts of "Third Place" venues (that is, central gathering places separate from home and work) that can help to forge a sense of identity and "neighborhood" in what would otherwise be a relatively atomized and anonymous suburban environment.

This is to be contrasted with something like The Orchard (on North Buffalo Road in Orchard Park) or a redeveloped Northtown Plaza (see above), which are smaller and larger examples of the "lifestyle center" -- that is, a strip mall without traditional department store anchors yet nonetheless containing a cluster of comparison goods stores historically found in regional malls -- or, for that matter, University Place, on Sweet Home Road across from UB's North Campus, which adds upper floor apartments but lacks connectivity with adjacent residential neighborhoods and devotes

its primary place-making opportunity to a large surface parking lot; and, with just 20,000 square feet of retail space, does not provide the critical mass needed to attract much more than fast food purveyors and basic services.

While a well-integrated grouping of on-site uses, including a diverse array of housing types, a large amount of office space and a hotel, will surely impact the composition of the foot traffic and the retail mix as well as the development's overall energy and positioning, the "anchor" stores are the ones that will ultimately determine the nature and extent of the destination trade. However, given the project's "tweener" location, its anchoring strategy will have to be less conventional, with little hope of attracting the full-price department stores that drive traffic to regional malls or the large-format discounters that fill power centers.

The Buffalo-Niagara MSA not only leaks sales of roughly $7 million in the sporting goods category, but also, appears particularly light on fashions for the outdoor lifestyle, which have become ever more popular among younger consumers, even those who do not actually participate in such activities. While likely to be intrigued by the presence of Whole Foods Market, a retailer such as Seattle, WA-based REI might still be a possibility if tied in with nearby Elliott Creek as well as other on-site and nearby recreational amenities that competing centers, including Northtown Plaza, cannot offer.

Also, a community-oriented bookstore such as a Talking Leaves & Books might be enticed by the primary trade area's high levels of educational attainment as well as the site's close proximity to UB's North Campus. The locally based chain-let has clearly shown an ability to survive in a fast-changing industry – where, contrary to popular belief, the number of independently owned shops has actually been *growing* -- and while Talking Leaves is no doubt somewhat limited in capacity and resources and might be initially wary of a third location, it was willing to open on Elmwood Avenue in 2001 because community residents pushed for and offered to invest in the store.

Another possible anchor is a specialty grocer, defined as one that focuses to a greater extent on gourmet and natural/organic products than a conventional supermarket. One candidate is the hugely popular Lexington Co-operative Market, which has been searching for a location for a second store but has yet to commit to one. There is also Orchard Fresh; the new format that locally based Tops Friendly Market debuted in Orchard Park almost two years ago (although after initially planning for an aggressive rollout, it decided to put a hold on new locations). Other operators from further afield, like Greensboro, NC-based The Fresh Market or the Cleveland, OH-based Constantinos Market, might be tempted as well.

That said, a value-oriented concept with a lower price point would probably be able to compete more effectively with both Wegmans as well as the new Whole Foods Market. Operators such as Phoenix, AZ-based Sprouts Farmers Market, Boulder, CO-based Lucky's Farmers Market and the Chicago, IL-based Fresh Thyme Farmers Market are presently concentrating on expansion across the Southeast and Midwest, but at their

current rate of growth, will likely pursue locations in Upstate/Western New York in the not-too-distant future.

Finally, while the higher-profile home brands that have yet to establish a presence in the Buffalo-Niagara MSA (e.g. Restoration Hardware, West Elm, Sur le Table, etc.) are more likely to gravitate to Northtown Plaza with its Whole Foods Market anchor, there might still be an opportunity to draw lesser-known national "chain-lets" to the site, especially given the existing Sheridan Drive furniture cluster that starts just to the west (with Ethan Allen), like, for instance, the Los Angeles-based Z Gallerie, the Oakland, CA-based Cost Plus World Market (now owned by Bed Bath & Beyond), the Nashville, TN-based Kirkland's or perhaps even one or more of the Canadian concepts (e.g. Structube, Urban Barn, etc.) that could be tempted to cross the border and test the U.S. market.

Fashion is unlikely to play more than a supportive role in the retail mix. As in the furniture category, operators selling such merchandise typically prefer to locate near each other, resulting in a competitive disadvantage for districts and projects that are effectively starting from scratch. Smaller "mini-anchors", however, could help to establish a stream of foot traffic for a more modest collection of stores. Houston, TX-based Charming Charlie, for example, appeals to a wide range of shoppers with its jewelry and accessories emporiums.

Amenities such as bookstores and niche grocers, while admittedly lower-margin retailers, should nevertheless be aggressively pursued for the site and then subsidized once there (if necessary), not just to drive pedestrian traffic and boost in-line leasing, but also, to underscore the project's mixed-use, community-oriented lifestyle, clearly differentiate it in the marketplace and perhaps even justify a premium for its other components. Indeed, especially if coupled with an in-store coffeehouse, a locally oriented bookseller can – in contrast to say, a mass-market operator like a Barnes & Noble or a Books-A-Million – become that "Third Place" to which the locals will gravitate as their "home away from home [and work]."

Even, however, if the project is ultimately not able to attract any of the above anchors, it is not necessarily fatal: a cluster of unique and diversified restaurants, for example, can also play the role of primary traffic driver. On this point, the trade area does not appear to contain many of the kinds of modern dining concepts that appeal to more contemporary tastes and sensibilities. Indeed, a growing number of eating establishments today are able to offer a casually up-market experience, with high-quality food and beverage served in a stylishly appointed space, while keeping to a relatively moderate price point that is accessible to a broad range of sub-markets.

Canadian restaurateurs have been especially quick to jump on this trend, with a number of the so-called "premium casual" brands, like Earls Kitchen & Bar, JOEY and The Keg having already opened U.S. locations, and facing an extremely fierce battle for market share and premier sites across Canada. But also, in the U.S., the "fast-casual" model (i.e. counter service but with higher-quality ingredients, more up-market atmospherics and slightly elevated pricing) has changed perceptions of gourmet dining, how such food is

served and in what kinds of environments, etc., and has even been embraced in some cases by celebrated restaurateurs and chefs, most notably by Danny Meyer with his Shake Shack empire.

A dining cluster is even more powerful if offered in concert with other sorts of non-traditional magnets, including not just the aforementioned "Third Place" venues but also, creative programming of the project's public spaces, like, for example, "fashion truck" pods and vendor markets, weekly food truck fairs and event nights (e.g. movies screened on building walls, open-air dancing lessons, etc.), perhaps even the full-sized Americana Carousel formerly situated in the Boulevard Mall's food court (but which will *not* be relocated within that center).

In contrast to an exclusive focus on "deal-making", where individual storefronts are leased without reference to any sort of broader vision, the tenanting of the project's in-line spaces must be approached with an eye towards the larger whole. As in any well-conceived shopping center, concepts should be selected on the basis of whether they synergize with and generate cross-traffic for their neighbors, for this will yield a cohesive, mutually reinforcing retail mix that amounts to more than the sum of its component parts.

The type of anchor will shape the basic contours of the in-line tenanting strategy. A grocery store, for instance, typically implies other convenience-oriented businesses as well as quick-service food and beverage purveyors. Furthermore, a *specialty* grocer such as the kind proposed for this project implies a broader range of concepts – "fast-casual" eateries (see above), clothing boutiques, etc. – that are united not so much by the purpose of the shopping trip (e.g. basic essentials, versus discretionary buying) as the lifestyle and psycho-graphic of the core customer.

In order to differentiate itself in the marketplace and compete for tenants in such a "tweener" location, the project should as a general rule deemphasize large ubiquitous brands in favor of smaller national, regional and local "chain-lets". For example, in contrast to the lineup at Walden Galleria's "ThEATry", well established, Buffalo-area restaurateurs might be approached with the idea of developing new concepts at the site. Similarly, boutiques in Elmwood Village or on Hertel Avenue might be pursued for an additional location that taps the Amherst sub-market.

In sum, with all of these tenanting opportunities, it would be realistic to expect to fill and sustain at least 75,000 to 100,000 square feet of retail space at the site, with a significant percentage – say, one-third to as much as one-half – devoted to food and beverage, perhaps one 20,000 to 25,000 square foot anchor (along with basic conveniences and services, particularly if it is a specialty grocer) and then, a modest collection of comparison goods retailers targeting the two primary sub-markets of Baby Boomers and 20-somethings.

A close comparable would be Emory Point, in the Atlanta metro. Sitting in the shadow of the similarly well-off, well-educated suburb (Decatur), at a stand-alone location but in

close proximity to both a university (Emory University) and other major employers (e.g. CDC headquarters), this mixed-use village center, developed by locally based Cousins Properties and opened in 2012, will contain a total of 122,000 square feet of retail space as well as 758 apartments upon completion of its Phase II this year, with a Phase III still to come.

Emory Point's retail mix, also devised with the intention of complementing a successful Downtown nearby (Decatur's), is similar to the one envisioned above for the project. Phase II will be adding a 25,000 square foot Earth Fare specialty grocer as an anchor, but Phase I did not contain a primary traffic generator within its 80,000 square feet of retail space, save a 24-hour CVS. Rather, its draw has been rooted largely in a cache of national and local dining chain-lets, with one, a new concept by an established Atlanta restaurateur, even receiving national attention.

Meanwhile, all six of the shops that comprise the center's modest (and anchor-less) offering of fashion retailers remain. And while sales figures are not known, the interest from others, according to Cousins, has been "overwhelming" and partly spurred the decision to commence with Phase II.[8] The balance between large national brands (LOFT, Francesca's and Jos. A. Bank) and smaller chain-lets (i.e. Lizard Thicket, Fab'rik and American Threads) has been even, and will likely remain so in Phase II.

VII. Broader Impact

It is important to note at the outset that Main Street in Williamsville offers a number of compelling attributes as a retail location. With an interchange on I-290 and as Amherst's busiest east-west thoroughfare, the corridor boasts traffic counts of nearly 45,000 cars per day, translating to superior visibility and access.[9] Furthermore, it enjoys a positive brand in association with Amherst, which is not only a "choice" suburb within the MSA but also, unlike the others, one with a large employment base as well.

Main Street also offers strong co-tenancy. Its effective anchor, the still-expanding Tony Walker & Co., is probably the most upscale department store in Western New York, and headlines a mix of comparison goods retailers that also includes up-market brands like Talbots, Chico's and Calico Corners as well as popular, independently-owned and operated boutiques such as Monarch, Blum's Swimwear and Leelee.

Moreover, the corridor's current trajectory is a positive one. The roster of high-caliber operators appears to be growing, with the recent arrivals of Alex and Ani, D'Avolio, Billybar and Moor Pat, and a number of the region's leading developers are active there. In addition, the Village, with the leadership of the Mayor, has been moving aggressively to transform the high-volume arterial into a more pedestrian-friendly space as well as create a new public square centered on the iconic Water Mill property.

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[8] As based on a 10/18/13 *Curbed Atlanta* blog post by Josh Green entitled "Is Emory Point Poised To Be Atlanta's Next Mini-City?".

[9] New York State Department of Transportation Traffic Data Viewer. Retrieved from https://www.dot.ny.gov/tdv. 2013.

That said, the project certainly could compete with Williamsville for certain kinds of retail concepts and consumers. Both locations will have been developed in the spirit of a walk-able, pedestrian scaled environment that typically supports smaller-format businesses.

There will be distinguishing factors, however, that put the project at a competitive disadvantage vis-à-vis Williamsville when vying for tenants. Most notably, with a history dating to the 1800's, Main Street has had a "head start" of sorts, with the corridor firmly established as a commercial corridor, able to offer existing co-tenancy in the targeted categories and, as discussed above, presently enjoying some leasing momentum as well as local political support.

Also, overall occupancy costs on the most "Main Street-like" stretch of Main Street – that with the historic, zero-setback building fabric – currently range from roughly $16 to $20 per square foot, whereas the site would currently bear at least the mid $20's to low $30's per square foot (i.e. a base of $17 to 25 per square foot plus NNN), as new construction built to modern specifications and tenanted with synergy and cross-traffic in mind tends not to be priced as affordably as stand-alone "second-generation" spaces. Williamsville, then, would, in this respect, remain the preferred option for the kinds of smaller independently owned and operated businesses that it most values.

And even if certain tenants still prefer the project, there is some merit to the proverb that "a rising tide lifts all boats". With dining, for example, greater variety and selection often acts to *expand* the trade area and generate increasing returns to scale. Savvy restaurateurs, then, are typically not afraid of competition; on the contrary, they usually welcome it. Indeed, Bryan Bryndle was not worried about cannibalizing his Tabree Restaurant in Snyder when he opened Billybar in Williamsville, just five minutes away.

In fact, many locally based entrepreneurs, particularly those in the food and beverage space, relish the opportunity to create, develop and/or operate different concepts, and actually derive some benefit from co-locating them within the same sub-market. Take, as another example, Michael Shatzel: the impresario behind the new Moor Pat craft beer bar in Williamsville, he owns both Coles and Blue Monk, which sit less than a mile away from each other on Elmwood Avenue.

Not only might an operator enjoying strong returns at the site be willing to consider another concept on Main Street, but also, such success would then be associated in the broader tenant community with the sub-market as a whole, boosting interest among other entrepreneurs in nearby districts as well, especially since the project itself is only going to contain a relatively modest amount of retail space, thereby limiting its ability to capture all of the spill-over.

Finally, the project might offer the only opportunity in Amherst that certain operators would be willing to consider. Larger-format retail anchors in particular might be quite wary of the kinds of complex, drawn-out redevelopment schemes that would likely be

necessary on Main Street in Williamsville in order to create suitably sized space (and sufficient off-street parking) that meets their various needs and specifications, especially in light of the hard line that the Village and/or the community might take on matters of site planning.

In terms of the consumer, while he/she might at first be drawn to the novelty of the project, there is reason to believe that in the longer term, there would be sufficient demand to sustain both as healthy and vibrant business districts.

Indeed, by considering the sub-market's broader retail ecology and identifying the different roles that individual districts/centers might play within it, one is freed from the conventional zero-sum logic that typically underlies concerns about cannibalization, and can devise a retail mix for the project that would complement – or at least not compete directly with -- what already exists on Main Street in Williamsville.

For example, the core customer on Main Street skews slightly older, reflecting Williamsville's median age in the upper 40's, and the Williamsville community clearly treasures the village's and corridor's historic character. On the other hand, the site might be developed with a more current aesthetic and vibe, and tenanted with concepts – perhaps additional locations of successful operators from Elmwood Village or Hertel Avenue -- that would appeal to a somewhat younger demographic in its 20's and 30's.

In keeping with this orientation, the project might also pitch itself to a greater extent to diverse sub-markets in its midst. For instance, Main Street's retail mix caters almost exclusively to mainstream tastes, yet 8% of the trade area is of Asian descent -- well above 3% for the MSA as a whole – and might desire a broader selection than what currently exists along Sheridan Drive (which itself might soon be displaced by Whole Foods-related redevelopment).

In addition, the project might pursue categories that are currently leaking large volumes of sales and sub niches that do not already exist on Main Street. Examples might include, as discussed above, outdoor sporting goods or home furnishings and accessories. Meanwhile, it could forgo the active pursuit of more overtly up-market fashion concepts that cater to the well-off, 45-and-over shopper, thereby mooting a potential impediment to that cluster's future expansion along the corridor.

Obviously there is going to be some overlap: for instance, Main Street already contains offerings that also appeal to a younger demographic (e.g. Leelee, Alex and Ani), to a more contemporary sensibility (e.g. Billybar), to a diverse clientele (e.g. The Original Pancake House) and to an outdoor sports enthusiast (e.g. Old Orchard Fly Shop, JB's Tennis Shop). In a system of *private* actors, however, this is unavoidable, and, some might say, desirable, ensuring the sort of ongoing reinvention and evolution that ultimately fortifies such districts in the face of changing habits and outside threats.

VIII. Conclusion & Findings

- The project would provide both the Buffalo-Niagara MSA and Canada's Niagara Region with its first true "town/village center" development, featuring a traditional two-sided, pedestrian-oriented retailing corridor lined with mixed-use buildings and functioning as a sort of community living room.

- The project would target a diverse range of consumer sub-markets, including residents of the primary trade area as well as nearby daytime workers; students, faculty and staff at University at Buffalo's North Campus; visitors from Canada; and, for certain "niche" offerings, shoppers from across the metro.

- Given its "tweener" location between two established mall-anchored, strip-heavy shopping destinations with strong gravitational pull, the project's anchoring would be unconventional and "niche"-driven, led by one or more of the following: an outdoor sporting goods purveyor, a local bookstore, a specialty grocer, a home goods retailer, a restaurant cluster as well as other non-traditional magnets, like, for instance, vendor markets or fashion truck "pods".

- It would be realistic to expect to fill and sustain at least 75,000 to 100,000 square feet of retail space at the site, with, say, one 20,000 to 25,000 square foot anchor; a significant percentage – one-third to as much as one-half – devoted to food and beverage; a modest collection of comparison goods stores narrowly targeting the specific lifestyles and psychographics of the core customer(s); and some basic conveniences servicing the on-site demand.

- In order to differentiate itself in the marketplace and compete for tenants in a "tweener" location, the retail component should as a general rule deemphasize large ubiquitous brands in favor of smaller national, regional and local "chain-lets" and multi-concept operators (MCO's) as well as select Canadian brands interested in growing their U.S. portfolios.

- Not only, however, can Williamsville point to a number of compelling site attributes and competitive advantages as a retail location, but also, it would in many respects benefit from the project's success: as just one example, its landlords and brokers could find themselves fielding more calls from (higher-caliber) leasing prospects.

Indeed, by considering the broader retail ecology and identifying the different roles that individual districts/centers might play within it, one is freed from the conventional zero-sum logic that typically underlies such concerns, and can devise a tenant mix for the project that complements -- if not directly feeds -- the existing dynamic in Williamsville.