

Proposed Distribution Facility Project
7211 and 7219 Morgan Road
Town of Clay, Onondaga County, New York

Exhibit G

Traffic Impact Study

Traffic Impact Study

for the proposed

Proposed Distribution Facility Project

Town of Clay
Onondaga County, New York

Project No. 39038

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EXECUTIVE SUMMARY

OVERVIEW

The purpose of this report is to identify and evaluate the potential traffic impacts associated with the Proposed Distribution Facility Project in the Town of Clay, New York. The operating characteristics of the proposed access point and impacts to the adjacent roadway network are identified and project modifications and improvements are provided to minimize, to the maximum extent practicable, potential capacity and safety concerns. In an effort to define traffic impacts, this analysis establishes existing traffic conditions, projects background traffic flow including area growth, and projects changes in traffic flow due to the Proposed Distribution Facility Project.

The proposed project includes the development of a multistory warehouse with a footprint of approximately 823,522± square feet to house a new distribution facility. The site will include 69± loading docks, 200± trailer parking stalls, and 1,800± employee parking stalls. The project sponsor is also in discussions with CENTRO regarding providing a bus stop either within the site or along Morgan Rd. Access to the proposed development will be provided via five (5) driveways: one new driveway along the Liverpool Bypass that will provide access to the car parking lot for employees and a gated egress for the trailer parking area; and four (4) new driveways along Morgan Road.

Construction of the Proposed Distribution Facility Project is anticipated to reach full build-out in approximately 1-2 years. Town of Clay and Village of Liverpool officials were contacted to discuss projects within the study area that are under construction and/or approved. The following developments were identified: a new child care center located at Morgan and Waterhouse Roads, a small (15 lots) single family home development known as Morgan Meadow, and Meyer Manor Apartments (130 units) located on Tulip Street just north of the NYS Thruway. Given the location of the developments and proximity to the proposed site, traffic generated by the Meyer Manor apartments was added to the existing traffic volumes in the study area. The other two developments will not add significant volumes of traffic to study area intersections and traffic volumes were not added to study area intersections as a direct result of these developments. However, to account for normal increases in background traffic growth, including the two previously mentioned developments, as well as any other unforeseen developments in the project study area, a growth rate of 1.0 % per year has been applied to the existing traffic volumes, based upon historical traffic growth derived from NYSDOT traffic volume data for the area, for the two-year build-out period. Historical traffic volumes on Morgan Rd indicate a growth rate of approximately 0.5% per year while traffic volumes in the Village of Liverpool on Oswego Rd have decreased by approximately 0.6% per year of the last 20± years.

The existing and future operating characteristics of the site access intersections and impacts to the adjacent roadway network are identified and improvements are provided to minimize any capacity or safety concerns.

CONCLUSIONS & RECOMMENDATIONS

This Traffic Impact Study identifies and evaluates the potential traffic impacts resulting from full build-out of the Proposed Distribution Facility Project. Based upon the comprehensive traffic analysis contained in this report, it is our firm's professional opinion that the results indicate that the Proposed Distribution Facility Project 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 distribution facility is expected to generate approximately 1,289 (1,268) new trips during the AM (PM) study peak hours respectively inclusive of both passenger vehicles and trucks.
2. All truck traffic will travel directly to and from the NYS Thruway via Morgan Road and the Liverpool Bypass.
3. The following project modifications and improvements are recommended and, if approved by review agencies, will be constructed by the project sponsor:
 - a) Oswego St/Tulip St
 - Widen and restripe the westbound Tulip St approach to provide two exclusive left turn lanes and a shared left/through/right lane. These lane use changes will require revisions to the signal phasing to provide a split phased operation for the eastbound and westbound approaches. The signal currently operates with a long westbound advance phase therefore changing to split phasing will not have a significant impact on Oswego St operations. With the proposed improvements in place, the intersection will operate at LOS "D" or better on all approaches during both peak hours. This change will also improve existing signal coordination with the other intersections included in this coordination system. Eastbound queuing on Tulip St will be reduced significantly over current conditions as a result of these improvements.
 - b) Morgan Road/Buckley Road
 - Signal phasing/timing modifications to provide overlapping right turn arrows where appropriate.
 - c) Morgan Road/Proposed Site Driveways
 - Driveway 1 will create a "T" intersection at the northerly end of the site and be the primary truck ingress/egress as well as provide access to the northern end of the employee parking lot.
 - Driveway 2 will provide access to the largest number of employee parking spaces as well as ingress for the drop-off lane adjacent to the building and is located opposite the Raymour & Flanigan northerly (truck) driveway. As a result, this driveway will experience the highest volume of exiting traffic. Given the volume of traffic exiting this driveway and the projected operating conditions under unsignalized conditions, a new three-color signal is recommended at this location. The driveway should be designed to provide one entering lane and two exiting lanes (one shared left turn/through lane and one exclusive right turn lane).
 - Driveway 3 will be located opposite the southerly (employee) Raymour & Flanigan driveway. Given the volume of traffic exiting this driveway and the projected operating conditions under unsignalized conditions, a new three-color signal is recommended at this location. The driveway should be designed to provide one entering lane and two exiting lanes (one shared left turn/through lane and one exclusive right turn lane).
 - Driveway 4 will be located towards the southerly end of the proposed parking fields and will be slightly offset from the existing Morgan Place intersection on the east side of Morgan Rd. Given the offset and the opportunity to enter and exit the site at two

- signalized locations, this driveway should be limited to right turns entering and right turns exiting the driveway, i.e. all left turn movements should be prohibited.
- The two unsignalized driveways shall be constructed with one entering and one exiting lane and be stop controlled at their intersections with Morgan Road.
 - Widening of Morgan Rd is also recommended to provide a 5-lane section between Liverpool Bypass/Crown Road and Driveway 1 at the northerly end of the site. This will provide two travel lanes in each direction as well as left turn lanes at each intersection in that segment.
 - Queuing will be accommodated within the proposed left turn lanes on Morgan Road and/or on-site for exiting traffic.
- d) Liverpool Bypass/Proposed Driveway 5
- Driveway 5 will provide ingress and egress for the southerly end of the employee parking area as well as an egress for the trailer loading area.
 - Driveway 5 should be constructed with one entering and one exiting lane and be stop controlled at its intersection with Liverpool Bypass.
- e) Morgan Rd / Liverpool Bypass
- Given the heavy northbound through volume and improvements that are necessary at other nearby intersections, an additional northbound through lane will be constructed between Commerce Blvd and connecting to the existing four-lane section to the north of the Liverpool Bypass. Minor signal timing changes will also improve operating conditions at both this intersection as well as at the Sheridan Drive intersection to the south.
- f) Morgan Rd / Sheridan Rd
- Under full development conditions, the Sheridan Rd approach is expected to operate at LOS "F" with delays on the order of 65 seconds per vehicle during the AM peak hour and LOS "E" with delays on the order of 40 seconds per vehicle during the PM peak hour. Given the volume of traffic exiting Sheridan Rd during these peak time periods, 21 vehicles during the AM peak hour and 11 vehicles during the PM peak hour, no improvements are warranted or recommended at this location. The new northbound through lane will have minimal impact on operating conditions at this intersection. It is noted that signal modifications at the Liverpool Bypass intersection will provide gaps in through traffic on Morgan Rd at Sheridan Drive.
- g) Tulip St / Commerce Blvd
- Proposed improvements include first prohibiting westbound left turn movements from Commerce Blvd onto Tulip St. The existing westbound volumes are very low and there are better options for traveling south into the Village when coming from the east on Commerce Blvd. The westbound Commerce Blvd approach will then be re-stripped and reconfigured to provide an exclusive westbound channelized right turn. In addition, a separate northbound lane will be constructed beginning at this intersection and extending to the north through the Liverpool Bypass intersection meeting the existing northbound through lanes. This improvement will allow the right turns to flow freely through the intersection unimpeded.
4. The project sponsor should continue discussions with CENTRO to provide transit service either on-site or along Morgan Road.

I. INTRODUCTION

The purpose of this report is to identify and evaluate the potential traffic impacts associated with the Proposed Distribution Facility Project in the Town of Clay, New York. The operating characteristics of the proposed access point and impacts to the adjacent roadway network are identified and project modifications and improvements are provided to minimize potential capacity and safety concerns.

In an effort to define traffic impacts, this analysis establishes existing traffic conditions, projects background traffic flow including area growth, and projects changes in traffic flow due to the Proposed Distribution Facility Project.

II. LOCATION

The Proposed Distribution Facility Project is located at the northwest corner of Morgan Road and the Liverpool Bypass in the Town of Clay, Onondaga County, New York. The site is currently occupied by the Liverpool Golf and Public Country Club. In order to ensure a comprehensive analysis of potential traffic impacts, a geographically broad study area was selected consisting of the following 18 existing intersections and 3 proposed driveways:

1. Oswego St (Old Route 57)-Onondaga Lake Parkway / First Street – Old Liverpool Road, *signalized*
2. Oswego St (Old Route 57) / Cypress Street- Second Street, *signalized*
3. Oswego St (Old Route 57) / Vine Street, *signalized*
4. Oswego St (Old Route 57) / Tulip Street, *signalized*
5. Oswego St (Old Route 57) / Thruway Interchange 38, *signalized*
6. Oswego St (Old Route 57) / Liverpool Bypass, *signalized*
7. Oswego St (Old Route 57) / John Glenn Boulevard, *signalized*
8. Oswego St (Old Route 57) / Wetzels Road, *signalized*
9. Morgan Road / Wetzels Road, *signalized*
10. Morgan Road / Buckley Road, *signalized*
11. Henry Clay Boulevard / Buckley Road, *signalized*
12. Morgan Road / Proposed Driveway 1, *unsignalized*
13. Morgan Road / Raymour & Flanigan North Driveway-Proposed Driveway 2, *unsignalized*
14. Morgan Road / Raymour & Flanigan South Driveway-Proposed Driveway 3, *unsignalized*
15. Morgan Road / Proposed Driveway 4, *unsignalized*
16. Liverpool Bypass / Proposed Driveway 5, *unsignalized*
17. Morgan Road / Liverpool Bypass-Crown Road, *signalized*
18. Morgan Road / Sheridan Road, *unsignalized*
19. Morgan Road – Tulip Street / Commerce Boulevard, *unsignalized*
20. Vine Street / Commerce Boulevard, *signalized*
21. Henry Clay Boulevard / Vine-Street-Taft Road, *signalized*

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).

III. EXISTING HIGHWAY SYSTEM

A. Existing Transportation Facilities

Details of the existing roadway network in the vicinity of the project site are summarized in Table I below. 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).

**TABLE I
EXISTING HIGHWAY SYSTEM**

ROADWAY	ROUTE ¹	FUNC. CLASS ²	JURIS. ³	SPEED LIMIT ⁴	# OF TRAVEL LANES ⁵	TRAVEL PATTERN/DIRECTION	EST. AADT ⁶	AADT SOURCE ⁷
Old Liverpool Rd (From 1 st St to Liverpool TL)	CR 137	Principal Arterial	Town of Clay	30	4	Two-way/ North-South	13,795	NYSDOT (2016)
Oswego St (From Tulip St to Cypress St)	CR 91	Principal Arterial	City of Liverpool	30	4	Two-way/ North-South	28,349	NYSDOT (2015)
Oswego St (From N Village Ln to Gaskin Rd)	CR 91	Minor Arterial	OCDPW	40	2	Two-way/ North-South	26,325	NYSDOT (2016)
NY 370 (From Old Liverpool Rd to City of Syracuse)	NY 370	Principal Arterial Expressway	Town of Salina	45	4	Two-way/ North-South	22,352	NYSDOT (2015)
Vine St (From Oswego St to Henry Clay Blvd)	CR 51	Minor Arterial	Town of Clay	40	2	Two-way/ East-West	13,682	NYSDOT (2016)
Tulip St (From Old Liverpool Rd to I-90)	CR 47	Minor Arterial	OCDPW	30	4	Two-way/ East-West	10,795	NYSDOT (2014)
Liverpool Bypass (From Old Liverpool Rd to CR 47)	CR 88	Minor Arterial	Town of Clay	40	2	Two-way/ East-West	6,899	NYSDOT (2015)
NYS Thruway Exit 38 Entrance/Exit	N/A	Principal Arterial Interstate	NYSDOT	20	2	Two-way/ East-West	13,759	NYSDOT (2016)
John Glenn Blvd (From Old Liverpool Rd to Morgan Rd)	CR 0810	Principal Arterial Expressway	OCDPW	40	4	Two-way/ East-West	13,012	NYSDOT (2011)
Wetzel Rd (From Old Liverpool Rd to Morgan Rd)	CR 252	Major Collector	OCDPW	30	2	Two-way/ East-West	5,250	NYSDOT (2014)
Wetzel Rd (From Morgan Rd to Henry Clay Blvd)	CR 252	Local	Town of Clay	35	2	Two-way/ North-South	6,201	NYSDOT (2016)
Morgan Rd (From Buckley Rd to NY 31)	CR 46	Minor Arterial	OCDPW	45	2	Two-way/ North-South	10,012	NYSDOT (2011)

ROADWAY	ROUTE ¹	FUNC. CLASS ²	JURIS. ³	SPEED LIMIT ⁴	# OF TRAVEL LANES ⁵	TRAVEL PATTERN/DIRECTION	EST. AADT ⁶	AADT SOURCE ⁷
Morgan Rd (From I-90 to Buckley Rd)	CR 47	Minor Arterial	Town of Clay	45	4	Two-way/ East-West	16,362	NYSDOT (2016)
Buckley Rd (From John Glenn Blvd to CSX Railroad)	N/A	Principal Arterial	OCDPW	45	2	Two-way/ East-West	16,350	NYSDOT (2012)
Henry Clay Blvd (From Hopkins Rd to CR 161)	CR 45	Principal Arterial	Town of Clay	45	4	Two-way/ North-South	21,594	NYSDOT (2015)
Henry Clay Blvd (From Buckley Rd to Wetzel Rd)	CR 121	Major Collector	Town of Clay	45	4	Two-way/ North-South	14,839	NYSDOT (2016)
Commerce Blvd (From Morgan Rd to Vine St)	N/A	Major Collector	Town of Clay	40	4	Two-way/ East-West	7,232	NYSDOT (2016)

Notes:

1. Route Name/Number: "NYS" = New York State.
2. State Functional Classification of Roadway: All are Urban.
3. Jurisdiction: "NYSDOT" = New York State Department of Transportation, "OCDPW" = Onondaga County Department of Public Works
4. Posted or Statewide Limit in Miles per Hour (MPH).
5. Excludes turning/auxiliary lanes developed at intersections.
6. Estimated AADT in Vehicles per Day (vpd).
7. Source (Year). SRF Associates ("SRF") volumes determined via an extrapolation of turning movement counts.

Figure 2 illustrates the lane geometry at each of the study intersections and the AADT volumes on the study roadways.

PEDESTRIAN FACILITIES

There are no existing pedestrian facilities in the vicinity of the site on either Morgan Road or the Liverpool Bypass.

BICYCLE FACILITIES

Currently no dedicated bicycle facilities exist within the study area. Bicyclists are permitted to share the road on all roadways within the study area.

TRANSIT FACILITIES

Public transit service within the study area is provided by the Central New York Regional Transportation Authority (CENTRO). CENTRO routes 46 and 246 provide service to the area using Old Route 57 and routes 48, 148, and 248 pass directly by the proposed site on Morgan Road.

B. Planned/Programmed Highway Improvements

The Onondaga County Department of Transportation (OCDOT) was contacted to determine if there are any highway or intersection improvements planned within the study area. The following improvements were identified:

- Oswego St (Old Route 57) / Wetzel Road - Signal to be replaced in 2019 with Ped accommodations, mast arms, and camera detection system
- Morgan Road / Buckley Road - Signal to be upgraded in 2019 with Ped accommodations and camera detection system
- Henry Clay Boulevard / Vine-Street-Taft Road - Signal to be upgraded in 2020 with Ped accommodations and camera detection system

Additionally, OCDOT has the following upcoming paving projects planned:

- Oswego St (Old Route 57) from Blackberry Drive to Pine Hollow is being repaved this year.
- Buckley Road from Morgan Road to Henry Clay Boulevard is being repaved this year
- Henry Clay Boulevard from West Taft Road to Hopkins Road scheduled to be repaved in 2020
- Vine Street from Henry Clay Boulevard to Burr Drive scheduled to be repaved in 2020
- West Taft Road from Henry Clay Boulevard to Buckley Road to be repaved in 2020

The planned OCDOT improvements are not included in the analyses in this report.

IV. EXISTING TRAFFIC CONDITIONS

A. Peak Intervals for Analysis

Given the functional characteristics of the Proposed Distribution Facility Project, the peak hours selected for analysis are generally 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 (6:00-9:00 AM) and PM (4:00-7:00 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 various dates between Tuesday, June 11, 2019 and Tuesday, June 25, 2019. The count dates and actual peak hour traffic periods for each study intersection are noted in Table II below.

**TABLE II
STUDY INTERSECTION COUNT DATES AND
ACTUAL INTERSECTION PEAK HOURS**

INTERSECTION	COUNT DATES	AM PEAK	PM PEAK
Oswego St / Onondaga Lake Parkway	Tuesday 06/11/2019	7:15-8:15 AM	4:30-5:30 PM
Oswego St / Cypress St / 2 nd St	Tuesday 06/11/2019	7:15-8:15 AM	4:30-5:30 PM

INTERSECTION	COUNT DATES	AM PEAK	PM PEAK
Oswego St / Vine St	Tuesday 06/11/2019	7:15-8:15 AM	4:30-5:30 PM
Oswego St / Tulip St	Tuesday 06/11/2019	7:15-8:15 AM	4:30-5:30 PM
Oswego Rd / NYS Thruway Access Exit 38	Wednesday 06/12/2019	7:15-8:15 AM	4:45-5:45 PM
Oswego Rd / Liverpool Bypass	Tuesday 06/11/2019	7:15-8:15 AM	4:30-5:30 PM
Oswego St / John Glenn Blvd	Tuesday 06/25/2019	7:15-8:15 AM	4:45-5:45 PM
Oswego Rd / Wetzel Rd	Tuesday 06/11/2019	7:00-8:00 AM	4:45-5:45 PM
Morgan Rd / Wetzel Rd	Thursday 06/13/2019	7:00-8:00 AM	4:30-5:30 PM
Morgan Rd / Buckley Rd	Wednesday 06/12/2019	7:00-8:00 AM	4:30-5:30 PM
Henry Clay Blvd / Buckley Rd	Thursday 06/13/2019	7:15-8:15 AM	4:30-5:30 PM
Morgan Rd / Raymour Flanigan N Driveway	Wednesday 06/12/2019	7:00-8:00 AM	4:30-5:30 PM
Morgan Rd / Raymour Flanigan S Driveway	Wednesday 06/12/2019	7:00-8:00 AM	4:30-5:30 PM
Morgan Rd / Sheridan Rd	Wednesday 06/12/2019	7:15-8:15 AM	4:30-5:30 PM
Tulip St / Commerce Blvd	Wednesday 06/12/2019	7:15-8:15 AM	4:30-5:30 PM
Vine St / Commerce Blvd	Wednesday 06/12/2019	7:30-8:30 AM	4:30-5:30 PM
Henry Clay Blvd / Vine St / W Taft Rd	Thursday 06/13/2019	7:15-8:15 AM	4:30-5:30 PM

The peak hours for the potential project traffic are different from the actual intersection peak time periods as a result of the shift times for employees (see detailed discussion in Section VI of this report). Based upon the employee arrival and departure times for the defined shifts, the peak hours used for analysis were 6:30-7:30 AM and 5:30-6:30 PM. Intersection traffic volumes during these time periods are generally similar to and slightly lower than traffic volumes during the actual intersection peak hours. In the vicinity of the site on Morgan Rd, traffic volumes are approximately 20% lower during the AM site peak hours and 30% lower during the PM site peak hours than during the AM and PM commuter peak hours.

Historical Saturday traffic volumes on Morgan Rd were also reviewed and compared to weekday traffic volumes during the same time periods. The proposed distribution facility will operate the same shifts on weekends that are used on weekdays. Facility peak hours for trip generation, as noted above, will occur between 6:30-7:30 AM and 5:30-6:30 PM. Saturday peak hours on Morgan Rd occur during the middle of the day when there are no shift changes at the site. During the shift change time periods (AM and PM peak hours), Saturday traffic volumes on Morgan Road are 74% lower than the weekday AM peak hour and 28% lower than the weekday PM peak hour traffic volumes. Therefore, improvements proposed by the project are based upon analysis of the weekday peak hours and no Saturday analyses are necessary.

All turning movement count data were collected on typical weekdays while local schools were in session. The traffic volumes were reviewed to confirm the accuracy and relative balance of the collective traffic counts. The 2019 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 collected in the field were utilized to determine peak hour phasing plans and phase durations during each interval. This information was used to support and/or calibrate capacity analysis models described in detail later in this report.

V. FUTURE AREA DEVELOPMENT AND LOCAL GROWTH

Construction of the Proposed Distribution Facility Project is anticipated to reach full build-out in approximately 1-2 years. Town of Clay and Village of Liverpool officials were contacted to discuss projects within the study area that are under construction and/or approved. The following developments were identified: a new child care center located at Morgan and Waterhouse Roads, a small (15 lots) single family home development known as Morgan Meadow, and Meyer Manor Apartments (130 units) located on Tulip Street just north of the NYS Thruway. Given the location of the developments and proximity to the proposed site, traffic generated by the Meyer Manor apartments was added to the existing traffic volumes in the study area. The other two developments will not add significant volumes of traffic to study area intersections and traffic volumes were not added to study area intersections as a direct result of these developments. However, to account for normal increases in background traffic growth, including the two previously mentioned developments, as well as any other unforeseen developments in the project study area, a growth rate of 1.0 % per year has been applied to the existing traffic volumes, based upon historical traffic growth derived from NYSDOT traffic volume data for the area, for the two-year build-out period. Historical traffic volumes on Morgan Rd indicate a growth rate of approximately 0.5% per year while traffic volumes in the Village of Liverpool on Oswego Rd have decreased by approximately 0.6% per year of the last 20± years. All ambient growth calculations are included in the appendix. The background traffic volumes are depicted in **Figure 4**.

VI. PROPOSED DEVELOPMENT

A. Description of Proposed Distribution Facility Project

The Proposed Distribution Facility Project includes the development of a multistory warehouse with a footprint of approximately 823,522± square feet to house a new distribution facility. The site will include 69± loading docks, 200± trailer parking stalls, and 1,800± employee parking stalls. The project sponsor is also in discussions with CENTRO regarding providing a bus stop either within the site or located at one of the site driveways on Morgan Rd.

Access to the proposed development will be provided via five (5) driveways: one new driveway along the Liverpool Bypass that will provide access to the car parking lot for employees and a gated egress for the trailer parking area; and four (4) new driveways along Morgan Road. **Figure 5** illustrates the proposed concept plan.

B. Site Traffic Generation

The volume of traffic generated by a site is dependent on the intended land use and size of the development. 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. Trip Generation, 10th Edition is used as a reference for this information. 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. In this case, volumes generated during the peak hour of the site represent a more critical volume when analyzing the capacity of the system; those intervals will provide the basis of this analysis. All trip generation information has been included in the appendix.

According to the Institute of Transportation Engineers (ITE), the following steps are recommended when determining trip generation for proposed land uses:

- i. *Check for the availability of local trip generation rates for comparable uses.*
- ii. *If local trip data for similar developments are not available and time and funding permit, conduct trip generation studies at sites with characteristics similar to those of the proposed development.*

Trip generation data for the Proposed Distribution Facility Project are based on employee count and truck traffic data for similar distribution facilities. From this data, peak hour passenger car and truck trips were calculated for Full Development Conditions.

These types of distribution facilities typically experience carpool and transit ridership that reduces the single occupant vehicles traveling to and from the site by approximately 19%. However, review of transit and carpool statistics for Onondaga County indicate that approximately 8% of people carpool to work and 3% of people use public transportation. In addition, 4% of people walk to work while less than 1% of people use a bicycle to commute to work. For analysis purposes, and to be conservative, it was assumed that 10% of employees will either carpool or use public transportation. Hence, the total peak hour employee trips were reduced by 10%.

Table III summarizes the peak hour trips during the peak hour of the generator (6:30-7:30AM and 5:30-6:30PM) based upon the shift times for these types of distribution facilities. This projection is based upon extensive data compiled by the developer for similar distribution facilities and is included the Appendix.

**TABLE III
PEAK HOUR SITE GENERATED TRIPS**

DESCRIPTION	AM PEAK		PM PEAK	
	ENTER	EXIT	ENTER	EXIT
Distribution Center Employees	704	575	621	631
Distribution Center Trucks	10	10	8	8
Total Site Generated Trips (2,142 Total Employees)	714	575	629	639

Under Full Development Conditions, the proposed distribution facility project is anticipated to generate 714 entering/575 exiting vehicle trips during the AM peak hour of the generator and 629 entering/639 exiting vehicle trips during the weekday PM peak hour of the generator; these volumes include both passenger vehicles and truck trips as noted in Table III above.

C. 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:

- Existing highway network;
- Proximity and access to local area highways;
- Population centers;
- Location of employee parking on the proposed site plan; and
- Existing traffic patterns, traffic conditions, and controls

Census data for the Syracuse area and Onondaga County were used to determine likely origin and destination areas for the potential employees. In addition, existing traffic patterns were reviewed in detail to determine likely travel routes. **Figure 6** shows the anticipated passenger car trip distribution pattern percentages for employees at full build-out of the proposed distribution facility. All truck traffic will travel directly to and from the NYS Thruway via Morgan Road and the Liverpool Bypass. **Figure 7** shows the resulting total site generated traffic (including cars and trucks) as assigned to the study area intersections for the weekday AM and PM peak hour periods under full build-out conditions.

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 site (Figures 7) 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

A. Description of 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 2016) published by the Transportation Research Board. Traffic analysis software, Synchro 10, 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.

B. Capacity Analysis Results

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 Distribution Facility Project 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	2019 EXISTING CONDITIONS		2021 BACKGROUND CONDITIONS		2021 FULL BUILD CONDITIONS		2021 FULL BUILD CONDITIONS W/MITIGATION	
	AM	PM	AM	PM	AM	PM	AM	PM
1. Oswego St / Onondaga Lake Parkway (S)								
EB thru - 1st St	C 20.7	C 31.2	C 20.7	C 31.1	C 20.7	C 31.1	C 20.7	C 31.1
WB thru - Oswego St	D 40.2	E 64.5	D 40.2	E 65.0	D 40.2	E 65.0	D 40.2	E 65.0
WB right - Oswego St	A 2.8	C 21.0	A 2.8	C 21.0	B 14.0	C 20.4	B 14.0	C 20.6
NB thru - Onondaga Lake Parkway	B 10.3	C 23.7	B 10.5	C 25.1	B 12.7	D 35.6	B 12.7	D 35.1
NB right - Onondaga Lake Parkway	A 0.0	A 0.1	A 0.0	A 0.1	A 0.0	A 0.1	A 0.0	A 0.1
SB left - Oswego St	C 26.7	D 40.5	C 27.4	D 40.4	C 29.7	D 39.8	C 31.3	D 40.1
SB thru - Oswego St	A 3.9	A 5.1	A 4.0	A 5.3	A 4.0	A 6.0	A 4.0	A 6.0
Overall LOS	A 8.6	C 22.6	A 8.7	C 23.2	B 10.3	C 26.6	B 10.5	C 26.4
2. Oswego St / Cypress St & 2nd St (S)								
EB left - 2nd St	D 35.3	B 16.7	D 36.1	B 16.9	D 35.0	B 16.9	D 35.0	C 23.2
WB right - Cypress St	A 0.0	A 0.6	A 0.0	A 0.8	A 0.0	A 1.6	A 0.0	A 1.4
NB left - Oswego St	A 6.9	A 2.1	A 6.6	A 2.6	A 2.9	A 7.6	A 2.0	A 7.1
NB thru - Oswego St	B 10.1	A 2.6	A 9.8	A 2.4	A 4.8	A 2.7	A 4.5	A 2.9
SB left - Oswego St	A 5.7	C 24.5	A 5.7	C 24.8	A 5.3	C 26.4	A 0.7	B 18.1
SB thru - Oswego St	A 7.4	C 33.7	A 7.9	D 35.3	B 11.4	F 87.8	A 3.3	D 39.6
Overall LOS	B 12.4	B 12.9	B 12.6	B 13.4	B 12.0	C 32.1	A 7.4	B 17.0
3. Oswego St / Vine St (S)								
EB left - Vine St	D 36.1	D 46.1	D 36.1	D 46.1	D 36.1	D 46.1	D 36.1	D 46.2
EB thru - Vine St	D 40.4	D 51.3	D 40.5	D 51.5	D 40.5	D 51.5	D 40.5	D 51.5
WB left - Vine St	C 26.6	C 34.3	C 26.6	C 34.3	C 27.4	C 34.3	C 26.6	C 34.3
WB thru - Vine St	B 19.0	C 32.2	B 19.0	C 32.2	B 19.0	C 32.2	B 19.0	C 32.3
NB thru - Oswego St	B 17.9	B 13.1	B 18.3	B 14.0	B 18.9	C 23.3	A 5.0	C 23.3
SB thru - Oswego St	B 10.6	A 9.8	B 11.4	B 10.1	B 16.7	B 15.7	B 13.1	A 7.1
Overall LOS	B 15.1	B 16.8	B 15.6	B 17.2	B 16.8	C 23.0	B 11.9	C 20.2
4. Oswego St / Tulip St (S)								
EB left - Tulip St	D 41.6	D 53.9	D 41.6	D 54.0	D 41.6	D 54.0	D 40.9	D 54.3
EB thru - Tulip St	D 40.3	D 44.9	D 40.3	D 45.0	D 40.3	D 45.0	D 41.2	D 50.5
WB left - Tulip St	D 48.5	D 46.9	E 68.4	D 52.8	F 257.1	F 302.2	C 25.6	D 36.6
WB thru - Tulip St	B 16.2	C 23.2	B 16.3	C 23.2	B 16.3	C 23.2	B 14.8	C 22.9
NB thru - Oswego St	B 11.3	A 3.7	B 10.9	A 3.6	A 6.5	A 4.2	C 31.4	C 29.2
NB right - Oswego St	A 0.3	-	A 0.3	-	A 3.4	-	A 2.7	A 2.1
SB thru - Oswego St	B 14.0	A 8.3	B 14.1	A 8.4	B 14.3	A 8.4	B 19.7	B 14.6
Overall LOS	C 23.6	B 13.8	C 30.6	B 14.8	F 99.4	E 72.8	B 19.1	C 21.6
5. Oswego Rd / NY Thruway Access Exit 38 (S)								
EB left - NYTA Exit 38	C 31.0	C 31.0	C 31.1	C 31.0	C 31.3	C 31.1	C 31.3	C 31.1
EB right - NYTA Exit 38	A 0.0	A 0.1	A 0.0	A 0.1	A 0.0	A 0.1	A 0.0	A 0.1
NB left - Oswego St	A 6.1	A 5.0	A 6.4	A 5.1	A 6.5	A 5.2	A 6.5	A 5.2
NB thru - Oswego St	A 3.9	A 5.5	A 4.0	A 5.7	A 4.0	A 5.8	A 4.0	A 5.8
SB thru - Oswego Rd	B 19.5	B 16.6	C 20.3	B 17.2	C 20.6	B 17.4	C 20.6	B 17.4
SB right - Oswego Rd	A 3.9	A 0.2	A 4.1	A 0.2	A 4.2	A 0.2	A 4.2	A 0.2
Overall LOS	B 12.6	B 12.0	B 13.0	B 12.2	B 13.2	B 12.4	B 13.2	B 12.4
6. Oswego Rd / Liverpool Bypass (S)								
WB left - Liverpool Bypass	D 42.8	C 27.9	D 43.3	C 28.0	D 45.0	C 28.1	D 45.0	C 28.1
WB right - Liverpool Bypass	B 19.6	B 19.7	B 19.7	B 19.9	C 20.1	C 20.1	C 20.1	C 20.1
NB thru - Oswego Rd	A 9.2	B 11.9	A 9.3	B 12.1	A 9.2	B 12.4	A 9.2	B 12.4
SB left - Oswego Rd	A 6.5	A 4.9	A 6.7	A 5.0	A 7.2	A 5.5	A 7.2	A 5.5
SB thru - Oswego Rd	A 6.0	A 3.6	A 6.1	A 3.6	A 6.2	A 3.8	A 6.2	A 3.8
Overall LOS	B 10.1	B 10.4	B 10.3	B 10.5	B 10.7	B 10.9	B 10.7	B 10.9
7. Oswego St / John Glenn Blvd (S)								
EB left - John Glenn Blvd	D 46.6	D 42.4	D 46.6	D 42.2	D 46.6	D 42.2	D 46.6	D 42.2
EB thru - John Glenn Blvd	D 37.4	C 31.3	D 37.4	C 31.3	D 38.1	C 32.8	D 38.1	C 32.8
WB left - John Glenn Blvd	D 54.8	D 52.0	E 55.2	D 52.1	E 55.2	D 52.1	E 55.2	D 52.1
WB thru - John Glenn Blvd	D 41.8	D 49.9	D 41.7	D 50.3	D 40.1	D 51.5	D 40.1	D 51.5
NB left - Oswego Rd	D 49.3	D 48.7	D 49.3	D 48.7	D 50.2	D 48.7	D 50.2	D 48.7
NB thru - Oswego Rd	B 19.7	D 40.4	C 20.0	D 42.3	C 21.4	D 43.3	C 21.4	D 43.3
NB right - Oswego Rd	B 11.6	B 16.2	B 11.8	B 16.4	B 12.9	B 16.6	B 12.9	B 16.6
SB left - Oswego Rd	D 48.4	D 50.9	D 48.5	D 51.1	D 48.5	D 51.1	D 48.5	D 51.1
SB thru - Oswego Rd	C 25.6	D 39.4	C 26.3	D 40.9	C 27.7	D 41.6	C 27.7	D 41.6
SB right - Oswego Rd	B 12.0	B 17.7	B 12.3	B 18.2	B 13.1	B 18.4	B 13.1	B 18.4
Overall LOS	C 30.9	D 38.1	C 31.2	D 38.9	C 32.1	D 39.7	C 32.1	D 39.7

TABLE IV: CAPACITY ANALYSIS RESULTS

INTERSECTION	2019 EXISTING CONDITIONS		2021 BACKGROUND CONDITIONS		2021 FULL BUILD CONDITIONS		2021 FULL BUILD CONDITIONS W/MITIGATION	
	AM	PM	AM	PM	AM	PM	AM	PM
8. Oswego Rd / Wetzel Rd (S)								
EB left/thru/right - Wetzel Rd	B 19.7	C 33.6	B 19.7	C 33.8	C 20.3	C 34.9	C 20.4	D 35.2
WB left/thru - Wetzel Rd	C 24.4	C 29.3	C 24.6	C 29.6	C 22.3	C 30.5	C 23.1	C 30.9
WB right - Wetzel Rd	A 4.1	A 6.8	A 4.3	A 6.8	A 6.6	A 7.3	A 6.7	A 7.4
NB left - Oswego Rd	C 20.5	B 17.5	C 20.5	B 17.5	C 20.5	B 17.7	C 23.0	B 18.9
NB thru/right - Oswego Rd	C 21.1	C 24.8	C 21.6	C 25.2	C 23.3	C 27.2	C 28.3	C 28.8
SB left - Oswego Rd	C 34.1	D 40.5	D 35.1	D 41.0	F 95.3	D 51.2	E 57.3	D 47.8
SB thru/right - Oswego Rd	A 8.2	A 7.5	A 8.4	A 7.6	A 9.0	A 7.4	A 8.8	A 7.4
Overall LOS	B 18.6	B 18.8	B 17.0	B 19.0	C 29.3	C 21.3	C 23.7	C 21.6
9. Morgan Rd / Wetzel Rd (S)								
EB left - Wetzel Rd	D 35.0	C 25.4	D 35.5	C 25.6	D 39.0	C 26.7	D 39.0	C 28.5
EB thru - Wetzel Rd	D 36.7	C 25.5	D 37.1	C 25.5	D 44.1	C 26.6	D 44.1	C 27.8
EB right - Wetzel Rd	A 7.0	A 0.5	A 7.3	A 0.5	B 14.9	A 6.9	B 14.9	A 7.1
WB left - Wetzel Rd	C 32.6	C 21.9	C 32.7	C 22.2	C 33.1	C 23.6	C 33.1	C 24.1
WB thru - Wetzel Rd	D 40.3	C 30.0	D 40.7	C 30.6	D 44.1	C 33.8	D 44.1	C 34.6
NB left - Morgan Rd	D 36.1	C 23.4	D 36.5	C 23.5	D 49.1	C 33.9	D 49.1	C 31.0
NB thru - Morgan Rd	C 31.4	C 20.1	C 31.6	C 20.1	C 31.4	B 19.8	C 31.4	C 20.2
SB left - Morgan Rd	B 18.3	C 26.7	B 18.7	C 26.8	B 19.9	C 26.2	B 19.9	C 26.9
SB thru - Morgan Rd	C 30.8	C 26.4	C 31.6	C 26.7	D 35.2	C 27.5	D 35.2	C 28.2
Overall LOS	C 29.4	C 23.5	C 30.0	C 23.7	C 34.0	C 25.1	C 34.0	C 25.3
10. Morgan Rd / Buckley Rd (S)								
EB left - Buckley Rd	E 76.4	F 80.0	F 88.6	F 92.2	F 258.1	F 583.0	F 258.1	F 248.3
EB thru - Buckley Rd	C 21.2	C 26.7	C 22.2	C 28.5	C 23.8	D 44.6	E 57.1	D 40.6
WB left - Buckley Rd	E 60.9	E 55.2	E 61.1	E 56.5	F 309.1	F 92.7	E 65.0	E 72.1
WB thru - Buckley Rd	C 20.1	C 33.5	C 20.2	C 34.0	C 20.2	C 34.0	C 20.6	D 36.3
NB left - Morgan Rd	D 35.3	D 50.5	D 35.4	D 50.5	D 42.0	D 49.7	E 70.4	D 44.9
NB thru - Morgan Rd	C 21.2	D 36.1	C 21.9	D 36.1	C 31.3	C 33.4	C 30.4	C 31.8
SB left - Morgan Rd	D 37.1	E 56.4	D 37.3	E 57.5	D 37.3	E 57.5	D 36.8	E 62.1
SB thru - Morgan Rd	C 34.7	D 35.5	C 35.0	D 35.6	F 87.2	C 34.6	D 48.1	D 38.0
SB right - Morgan Rd	A 3.4	A 4.0	A 3.4	A 4.1	A 3.5	A 4.5	A 3.0	A 4.3
Overall LOS	C 30.0	D 37.9	C 31.3	D 35.5	E 72.4	E 78.9	D 54.2	D 53.0
11. Henry Clay Blvd / Buckley Rd (S)								
EB left - Buckley Rd	D 39.0	C 31.8	D 39.3	C 32.1	D 44.1	C 33.7	D 44.1	C 33.7
EB thru - Buckley Rd	D 35.1	C 22.0	D 35.2	C 22.1	C 34.4	C 21.8	C 34.4	C 21.8
EB right - Buckley Rd	A 0.2	A 3.0	A 0.3	A 3.1	A 0.2	A 2.9	A 0.2	A 2.9
WB left - Buckley Rd	D 39.5	C 32.2	D 39.7	C 32.6	D 40.9	C 34.5	D 40.9	C 34.5
WB thru - Buckley Rd	C 29.7	C 25.6	C 29.6	C 25.9	C 34.0	C 27.7	C 34.0	C 27.7
NB left - Henry Clay Blvd	D 36.7	C 31.7	D 37.0	C 32.0	D 38.0	C 33.8	D 38.0	C 33.8
NB thru - Henry Clay Blvd	B 14.2	C 25.1	B 14.4	C 25.5	B 15.3	C 26.7	B 15.3	C 26.7
NB right - Henry Clay Blvd	D 40.6	C 31.9	D 41.0	C 32.2	D 42.4	C 34.4	D 42.4	C 34.4
SB thru - Henry Clay Blvd	B 18.3	C 21.8	B 18.6	C 22.2	C 20.2	C 22.8	C 20.2	C 22.8
Overall LOS	C 24.3	C 23.9	C 24.5	C 24.3	C 26.7	C 25.3	C 26.7	C 25.3
12. Morgan Rd / Proposed Driveway 1 (U)								
EB - Proposed Driveway 1	- -	- -	- -	- -	F 428.3	F 312.5	E 49.0	D 28.1
NB left - Morgan Rd	- -	- -	- -	- -	C 23.9	C 15.5	C 23.9	C 15.5
13. Morgan Rd / RMF N Driveway / Proposed Driveway 2 (U)								
EB left/thru - Proposed Driveway 2	- -	- -	- -	- -	F 675.0	F 434.8	C 34.4	C 26.6
EB right - Proposed Driveway 2	- -	- -	- -	- -	- -	- -	B 11.1	A 7.7
WB - RMF Driveway	B 13.6	C 17.0	B 13.9	C 17.6	F 72.2	F 69.8	A 0.2	A 9.1
NB left - Morgan Rd	- -	- -	- -	- -	B 13.3	B 10.1	B 13.4	B 11.1
NB thru - Morgan Rd	- -	- -	- -	- -	A 1.5	A 1.6	A 3.5	A 5.4
SB left - Morgan Rd	A 7.9	A 9.7	A 7.9	A 9.8	A 8.2	A 9.8	B 10.1	A 3.7
SB thru - Morgan Rd	A 0.1	A 0.0	A 0.1	A 0.0	A 0.1	A 0.0	B 19.6	A 4.8
Overall LOS	- -	- -	- -	- -	- -	- -	B 15.3	A 6.9
14. Morgan Rd / RMFS Driveway / Proposed Driveway 3 (U)								
EB left/thru - Proposed Driveway 3	- -	- -	- -	- -	F 1130.0	F 216.7	C 33.8	C 21.6
EB right - Proposed Driveway 3	- -	- -	- -	- -	- -	- -	B 12.6	A 6.1
WB - RMF Driveway	B 14.5	C 20.7	B 14.9	C 22.0	F 80.5	F 211.4	A 0.2	B 10.5
NB left - Morgan Rd	- -	- -	- -	- -	B 14.8	B 10.1	C 22.4	B 11.6
NB thru - Morgan Rd	- -	- -	- -	- -	A 2.6	A 1.4	A 4.8	A 7.3
SB left - Morgan Rd	A 8.4	A 9.4	A 8.5	A 9.5	A 9.2	B 10.4	A 9.4	A 5.7
SB thru - Morgan Rd	A 0.2	A 0.1	A 0.3	A 0.1	A 0.6	A 0.1	B 18.8	A 6.5
Overall LOS	- -	- -	- -	- -	- -	- -	B 15.3	A 6.1

TABLE IV: CAPACITY ANALYSIS RESULTS

INTERSECTION	2019 EXISTING CONDITIONS		2021 BACKGROUND CONDITIONS		2021 FULL BUILD CONDITIONS		2021 FULL BUILD CONDITIONS W/MITIGATION	
	AM	PM	AM	PM	AM	PM	AM	PM
15. Morgan Rd / Proposed Driveway 4 (U)								
EB - Proposed Driveway 4	-	-	-	-	C 19.0	B 14.8	C 20.5	C 15.6
NB left - Morgan Rd	-	-	-	-	C 15.6	B 11.5	-	-
16. Liverpool Bypass / Proposed Driveway 5 (U)								
EB Left - Liverpool Bypass	-	-	-	-	A 7.8	A 8.0	A 8.1	A 8.4
SB - Proposed Driveway 5	-	-	-	-	A 9.7	B 10.4	B 10.2	B 10.9
17. Morgan Rd / Liverpool Bypass (S)								
EB thru - Liverpool Bypass	C 34.6	C 20.3	C 34.8	C 21.2	C 34.9	C 33.8	C 34.4	C 33.8
EB right - Liverpool Bypass	B 11.0	A 6.0	B 11.8	A 6.1	B 14.6	A 7.4	A 9.5	B 10.0
WB thru - Crown Rd	B 19.7	B 12.2	B 19.7	B 12.7	B 19.1	B 16.2	B 18.8	B 16.5
NB left - Morgan Rd	A 5.5	A 6.6	A 5.8	A 6.7	B 10.4	B 10.0	C 29.1	B 17.8
NB thru - Morgan Rd	A 5.4	B 10.2	A 5.6	B 10.4	B 15.9	C 26.5	A 5.6	A 4.8
SB left - Morgan Rd	A 9.3	B 12.3	A 9.3	B 12.3	B 10.3	B 12.0	B 11.3	B 13.7
SB thru - Morgan Rd	B 11.8	B 15.4	B 12.1	B 15.4	B 18.9	B 15.2	C 26.8	B 19.6
Overall LOS	B 11.7	B 11.7	B 12.0	B 11.9	B 18.1	C 20.0	B 19.8	B 12.7
18. Morgan Rd / Sheridan Rd (U)								
EB - Sheridan Rd	A 6.9	A 3.1	C 16.1	A 3.7	F 69.7	F 153.7	C 23.8	B 11.5
NB left - Morgan Rd	A 0.3	A 0.5	A 0.4	A 0.6	A 0.7	A 0.8	B 13.3	A 5.7
19. Tulip St / Commerce Blvd (U/S)								
WB right - Tulip St	-	-	-	-	-	-	A 0.0	A 0.0
WB - Tulip St	C 15.0	D 32.1	C 19.0	E 49.5	F 445.4	F 707.6	-	-
SB left - Commerce Blvd	A 9.7	A 9.9	A 9.9	B 10.1	C 17.4	C 15.2	C 17.4	C 15.2
20. Vine St / Commerce Blvd (S)								
EB thru - Vine St	B 13.8	A 9.1	B 14.2	A 9.2	B 17.1	A 8.4	B 18.9	B 10.0
WB thru - Vine St	A 7.3	B 14.3	A 7.1	B 14.3	A 7.4	B 15.1	A 7.7	B 18.0
SB left - Commerce Blvd	B 12.1	B 19.1	B 13.5	C 20.8	C 20.9	D 46.5	B 19.4	C 34.8
Overall LOS	B 10.9	B 14.3	B 11.5	B 14.8	B 14.9	C 22.9	B 14.8	C 21.4
21. Henry Clay Blvd / Vine St / W Taft Rd (S)								
EB left - Vine St	D 39.0	D 40.0	D 40.0	D 41.3	D 45.1	D 43.4	D 45.1	D 43.4
EB thru - Vine St	D 36.4	D 35.9	D 37.2	D 38.1	D 40.6	D 41.5	D 40.6	D 41.5
EB right - Vine St	A 7.0	A 2.5	A 7.6	A 3.0	A 8.0	A 6.5	A 8.0	A 6.5
WB left - Taft Rd	D 35.0	D 36.4	D 35.9	D 37.1	D 40.7	D 38.9	D 40.7	D 38.9
WB thru - Taft Rd	C 20.0	B 18.2	C 20.4	B 19.3	C 24.8	C 23.3	C 24.8	C 23.3
NB left - Henry Clay Blvd	D 39.2	D 39.3	D 40.2	D 40.5	D 46.8	D 43.8	D 46.8	D 43.8
NB thru - Henry Clay Blvd	C 32.3	C 30.1	C 32.8	C 31.3	C 34.2	C 33.1	C 34.2	C 33.1
NB right - Henry Clay Blvd	A 6.6	A 7.0	A 6.9	A 7.1	A 6.8	A 7.3	A 6.8	A 7.3
SB left - Henry Clay Blvd	D 39.0	D 40.7	D 40.3	D 42.1	D 46.1	D 44.3	D 46.1	D 44.3
SB thru - Henry Clay Blvd	C 23.8	C 25.0	C 24.3	C 24.6	C 30.5	C 27.0	C 30.5	C 27.0
Overall LOS	C 27.3	C 25.7	C 27.9	C 26.5	C 31.9	C 29.1	C 31.9	C 29.1

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 greater than 200 seconds per vehicle

The peak hour capacity analysis results indicate that in general, most of the approaches at the study intersections will operate similarly to 2021 Background Conditions with the proposed improvements in place.

The following intersections do not require improvements as a result of the proposed development: Oswego Rd/NYS Thruway, Oswego Rd/Liverpool Bypass, Oswego Rd/John Glenn Blvd, Henry Clay Blvd/Buckley Rd, Henry Clay Blvd/Taft Rd, and Morgan Rd/Sheridan Rd. Additionally, the following intersections will require minor signal timing adjustments to minimize minor traffic impacts associated with the proposed distribution facility: Oswego St/Onondaga Lake Parkway-Old Liverpool Rd-First St., Oswego St/Cypress St-2nd St, Oswego St/Vine St, Oswego Rd/Wetzel Rd, Morgan Rd/Wetzel Rd, and Vine St/Commerce Blvd. Minor signal adjustments can either be handled by the existing signal via the actuated controller or may require minor programming adjustments by the appropriate agency (NYSDOT or Onondaga County DOT). Intersections requiring additional modifications or improvements are discussed in detail below.

4. Oswego St / Tulip St

During the peak hours, the eastbound and westbound approaches operate at LOS “D” and “E” under existing and background conditions. The addition of traffic related to the proposed distribution facility results in LOS “F” on the westbound left turn movement during both peak hours. The westbound Tulip St approach should be widened and restriped to provide two exclusive left turn lanes and a shared through/right lane. These lane use changes will require revisions to the signal phasing to provide a split phased operation for the eastbound and westbound approaches. The signal currently operates with a long westbound advance phase therefore changing to split phasing will not have a significant impact on Oswego St operations. With the proposed improvements in place, the intersection will operate at LOS “D” or better on all approaches during both peak hours. This change will also improve existing signal coordination with the other intersections included in this coordination system. Eastbound queuing on Tulip St will be reduced significantly over current conditions as a result of these improvements.

10. Morgan Rd / Buckley Rd

The intersection of Morgan and Buckley Roads operates at LOS “D”, “E”, and “F” for most of the movements under existing and background conditions. The proposed distribution facility is expected to add traffic through this intersection further increasing delays. The project proposes to revise signal timings and to work with OCDOT to provide right turn arrows overlapping with left turn phasing where feasible and appropriate. Synchro cannot appropriately model conditions with right turn arrows where exclusive turn lanes do not exist. Therefore the analysis results are not reflective of these improvements.

Morgan Rd / Proposed Driveways

Driveways 1 through 4 are proposed to provide site access to the site along Morgan Road. Driveway 1 will create a “T” intersection at the northerly end of the site and be the primary truck ingress/egress as well as provide access to the northern end of the employee parking lot. All movements are projected to operate at LOS “D”(“E”) or better the AM(PM) peak hours once driveways 2 and 3 are signalized as discussed below.

Driveway 2 will provide access to the largest number of employee parking spaces as well as ingress for the drop-off lane adjacent to the building and is located opposite the Raymour & Flanigan northerly truck driveway. As a result, this driveway will experience the highest volume of exiting traffic. Given the volume of traffic exiting this driveway and the projected operating conditions

under unsignalized conditions, a new three-color signal is recommended at this location. A signal at this driveway will also draw additional traffic from driveway 1 to this location. The driveway should be designed to provide one entering lane and two exiting lanes (one shared left turn/through lane and one exclusive right turn lane). The signalized intersection is projected to operate at LOS “C” or better during both peak hours on all approaches.

Driveway 3 will be located opposite the southerly Raymour & Flanigan (employee) driveway and will experience delays when exiting during peak hours. Given the volume of traffic exiting this driveway and the projected operating conditions under unsignalized conditions, a new three-color signal is recommended at this location. A signal at this driveway will also draw additional traffic from driveway 4 to this location. The driveway should be designed to provide one entering lane and two exiting lanes (one shared left turn/through lane and one exclusive right turn lane). The signalized intersection is projected to operate at LOS “C” or better during both peak hours on all approaches.

Driveway 4 will be located towards the southerly end of the proposed parking fields and will be slightly offset from the existing Morgan Place intersection on the east side of Morgan Rd. Given the offset and the opportunity to enter and exit the site at two signalized locations, this driveway should be limited to right turns entering and right turns exiting the driveway, i.e. all left turn movements should be prohibited. This driveway is projected to operate at LOS “C” or better during both peak hours.

Figure 8B shows the re-distributed traffic volumes at all of the site driveways and the Morgan Rd/Liverpool Bypass intersections resulting from signalization of driveways 2 and 3. There are no traffic volume changes at any of the other study area intersections.

The two unsignalized driveways shall be constructed with one entering and one exiting lane and be stop controlled at their intersections with Morgan Road.

Widening of Morgan Rd is also recommended to provide a 5-lane section between Liverpool Bypass/Crown Road and Driveway 1 at the northerly end of the site. This will provide two travel lanes in each direction as well as left turn lanes at each intersection in that segment.

Queuing will be accommodated within the proposed left turn lanes on Morgan Road and/or on-site for exiting traffic.

16. Liverpool Bypass / Proposed Driveway 5

Driveway 5 will provide ingress and egress for the southerly end of the employee parking area as well as an egress for the trailer loading area. This driveway is expected to operate at LOS “B” on all approaches during both peak hours.

17. Morgan Rd / Liverpool Bypass

The Morgan Rd/Liverpool Bypass intersection is projected to operate at LOS “C” on all approaches during both peak hours. Given the heavy northbound through volume and improvements that are necessary at other nearby intersections, an additional northbound through lane will be constructed between Commerce Blvd and connecting to the existing four-lane section to the north of the Liverpool Bypass. Minor signal timing changes will also improve operating conditions at both this intersection as well as at the Sheridan Drive intersection to the south. All approaches will continue to operate at LOS “C” or better during both peak hours.

18. Morgan Rd / Sheridan Rd

The Sheridan Rd approach operates at LOS “C” or better under existing and background conditions during both peak hours. Under full development conditions, the Sheridan Rd approach is expected to operate at LOS “F” with delays exceeding 70 seconds per vehicle during the AM peak hour. Given the volume of traffic exiting Sheridan Rd during these peak time periods, 21 vehicles during the AM peak hour and 11 vehicles during the PM peak hour, no modifications or improvements are warranted or recommended at this location. The new northbound through lane will have minimal impact on operating conditions at this intersection. It is noted that signal modifications at the Liverpool Bypass intersection will provide gaps in through traffic on Morgan Rd at Sheridan Drive. With the proposed improvements in place, Sheridan Drive is expected to operate at LOS “C” or better. It is noted that capacity analysis results are based upon SimTraffic analysis. SimTraffic is a microscopic, dynamic traffic simulation model that considers the traffic flow and gap conditions at intersections and can more accurately reflect actual operating conditions at unsignalized intersections that are in close proximity to signalized intersections.

19. Tulip St / Commerce Blvd

Under existing and background conditions, the Commerce Blvd approach is projected to operate at LOS “C” and “E” during the AM and PM peak hours respectively. The northbound and southbound approaches operate at LOS “B” or better during both peak hours under existing and background conditions. The full build conditions result in very long delays for the westbound Commerce Blvd approach with LOS “F” during both peak hours. Proposed improvements include first prohibiting westbound left turn movements from Commerce Blvd onto Tulip St. The existing westbound volumes are very low and there are better options for traveling south into the Village when coming from the east on Commerce Blvd. The westbound Commerce Blvd approach will then be re-striped and reconfigured to provide an exclusive westbound channelized right turn. In addition, a separate northbound lane will be constructed beginning at this intersection and extending to the north through the Liverpool Bypass intersection meeting the existing northbound through lanes. This improvement will allow the right turns to flow freely through the intersection unimpeded.

Concept plans showing the proposed physical intersection improvements as well as the proposed truck route are attached following the referenced figures in this report.

IX. CONCLUSIONS & RECOMMENDATIONS

This Traffic Impact Study identifies and evaluates the potential traffic impacts resulting from full build-out of the Proposed Distribution Facility Project. Based upon the comprehensive traffic analysis contained in this report, it is our firm’s professional opinion that the results indicate that the Proposed Distribution Facility Project 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:

- I. The proposed distribution facility is expected to generate approximately 1,289 (1,268) new trips during the AM (PM) study peak hours respectively inclusive of both passenger vehicles and trucks.

2. All truck traffic will travel directly to and from the NYS Thruway via Morgan Road and the Liverpool Bypass.
3. The following project modifications and improvements are recommended and, if approved by review agencies, will be constructed by the project sponsor:
 - a) Oswego St/Tulip St
 - Widen and restripe the westbound Tulip St approach to provide two exclusive left turn lanes and a shared left/through/right lane. These lane use changes will require revisions to the signal phasing to provide a split phased operation for the eastbound and westbound approaches. The signal currently operates with a long westbound advance phase therefore changing to split phasing will not have a significant impact on Oswego St operations. With the proposed improvements in place, the intersection will operate at LOS “D” or better on all approaches during both peak hours. This change will also improve existing signal coordination with the other intersections included in this coordination system. Eastbound queuing on Tulip St will be reduced significantly over current conditions as a result of these improvements.
 - b) Morgan Road/Buckley Road
 - Signal phasing/timing modifications to provide overlapping right turn arrows where appropriate.
 - c) Morgan Road/Proposed Site Driveways
 - Driveway 1 will create a “T” intersection at the northerly end of the site and be the primary truck ingress/egress as well as provide access to the northern end of the employee parking lot.
 - Driveway 2 will provide access to the largest number of employee parking spaces as well as ingress for the drop-off lane adjacent to the building and is located opposite the Raymour & Flanigan northerly (truck) driveway. As a result, this driveway will experience the highest volume of exiting traffic. Given the volume of traffic exiting this driveway and the projected operating conditions under unsignalized conditions, a new three-color signal is recommended at this location. The driveway should be designed to provide one entering lane and two exiting lanes (one shared left turn/through lane and one exclusive right turn lane).
 - Driveway 3 will be located opposite the southerly (employee) Raymour & Flanigan driveway. Given the volume of traffic exiting this driveway and the projected operating conditions under unsignalized conditions, a new three-color signal is recommended at this location. The driveway should be designed to provide one entering lane and two exiting lanes (one shared left turn/through lane and one exclusive right turn lane).
 - Driveway 4 will be located towards the southerly end of the proposed parking fields and will be slightly offset from the existing Morgan Place intersection on the east side of Morgan Rd. Given the offset and the opportunity to enter and exit the site at two signalized locations, this driveway should be limited to right turns entering and right turns exiting the driveway, i.e. all left turn movements should be prohibited.
 - The two unsignalized driveways shall be constructed with one entering and one exiting lane and be stop controlled at their intersections with Morgan Road.

- Widening of Morgan Rd is also recommended to provide a 5-lane section between Liverpool Bypass/Crown Road and Driveway 1 at the northerly end of the site. This will provide two travel lanes in each direction as well as left turn lanes at each intersection in that segment.
 - Queuing will be accommodated within the proposed left turn lanes on Morgan Road and/or on-site for exiting traffic.
 - d) Liverpool Bypass/Proposed Driveway 5
 - Driveway 5 will provide ingress and egress for the southerly end of the employee parking area as well as an egress for the trailer loading area.
 - Driveway 5 should be constructed with one entering and one exiting lane and be stop controlled at its intersection with Liverpool Bypass.
 - e) Morgan Rd / Liverpool Bypass
 - Given the heavy northbound through volume and improvements that are necessary at other nearby intersections, an additional northbound through lane will be constructed between Commerce Blvd and connecting to the existing four-lane section to the north of the Liverpool Bypass. Minor signal timing changes will also improve operating conditions at both this intersection as well as at the Sheridan Drive intersection to the south.
 - f) Morgan Rd / Sheridan Rd
 - Under full development conditions, the Sheridan Rd approach is expected to operate at LOS “F” with delays on the order of 65 seconds per vehicle during the AM peak hour and LOS “E” with delays on the order of 40 seconds per vehicle during the PM peak hour. Given the volume of traffic exiting Sheridan Rd during these peak time periods, 21 vehicles during the AM peak hour and 11 vehicles during the PM peak hour, no improvements are warranted or recommended at this location. The new northbound through lane will have minimal impact on operating conditions at this intersection. It is noted that signal modifications at the Liverpool Bypass intersection will provide gaps in through traffic on Morgan Rd at Sheridan Drive.
 - g) Tulip St / Commerce Blvd
 - Proposed improvements include first prohibiting westbound left turn movements from Commerce Blvd onto Tulip St. The existing westbound volumes are very low and there are better options for traveling south into the Village when coming from the east on Commerce Blvd. The westbound Commerce Blvd approach will then be re-stripped and reconfigured to provide an exclusive westbound channelized right turn. In addition, a separate northbound lane will be constructed beginning at this intersection and extending to the north through the Liverpool Bypass intersection meeting the existing northbound through lanes. This improvement will allow the right turns to flow freely through the intersection unimpeded.
4. The project sponsor should continue discussions with CENTRO to provide transit service either on-site or along Morgan Road.

X. FIGURES

Figures 1 through 8B are included on the following pages.

FIGURE 1 - SITE LOCATION AND STUDY AREA

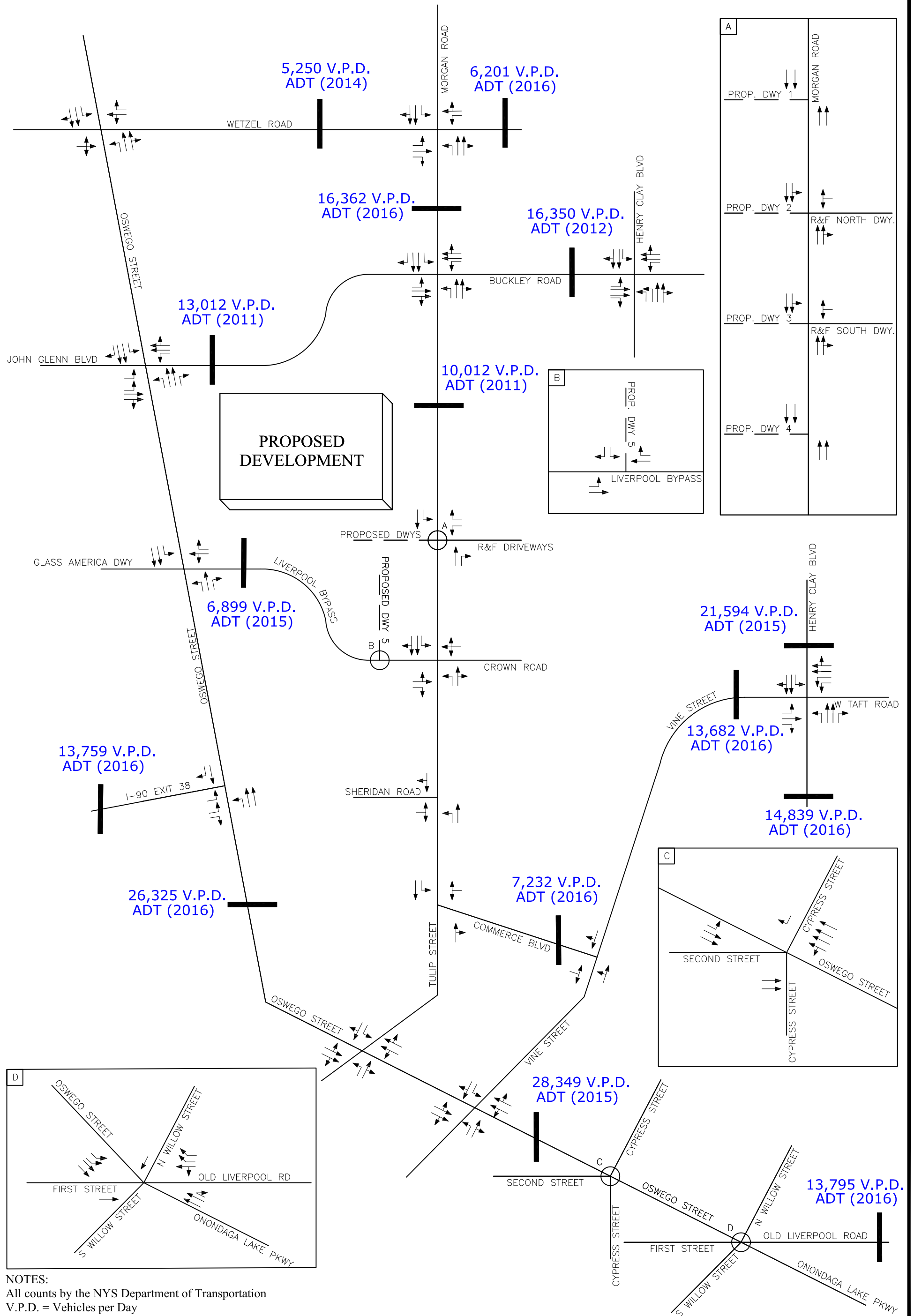


- Existing Intersection
- Existing/Proposed Intersection
- Proposed Intersection
- Site Location
- Study Area

**PROPOSED PROJECT EAGLE
DEVELOPMENT**

TOWN OF CLAY, NY





NOTES:
All counts by the NYS Department of Transportation
V.P.D. = Vehicles per Day

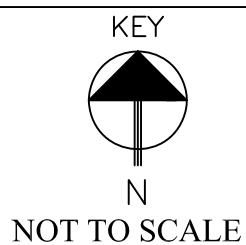
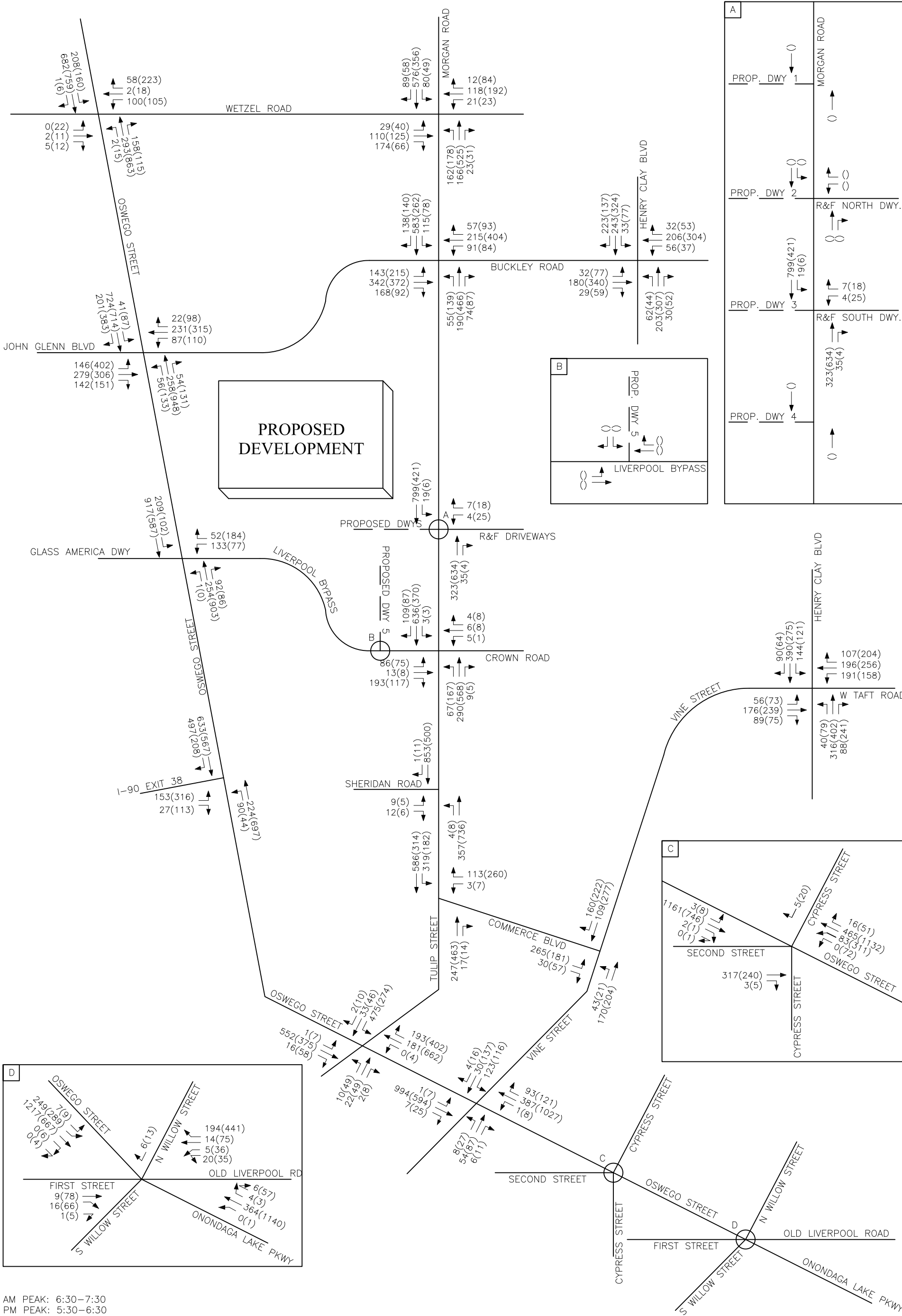


FIGURE 2

EXISTING LANE GEOMETRY
AVERAGE DAILY TRAFFIC

PROPOSED PROJECT EAGLE DEVELOPMENT
TOWN OF CLAY, N.Y.





AM PEAK: 6:30–7:30
PM PEAK: 5:30–6:30

KEY

N

NOT TO SCALE

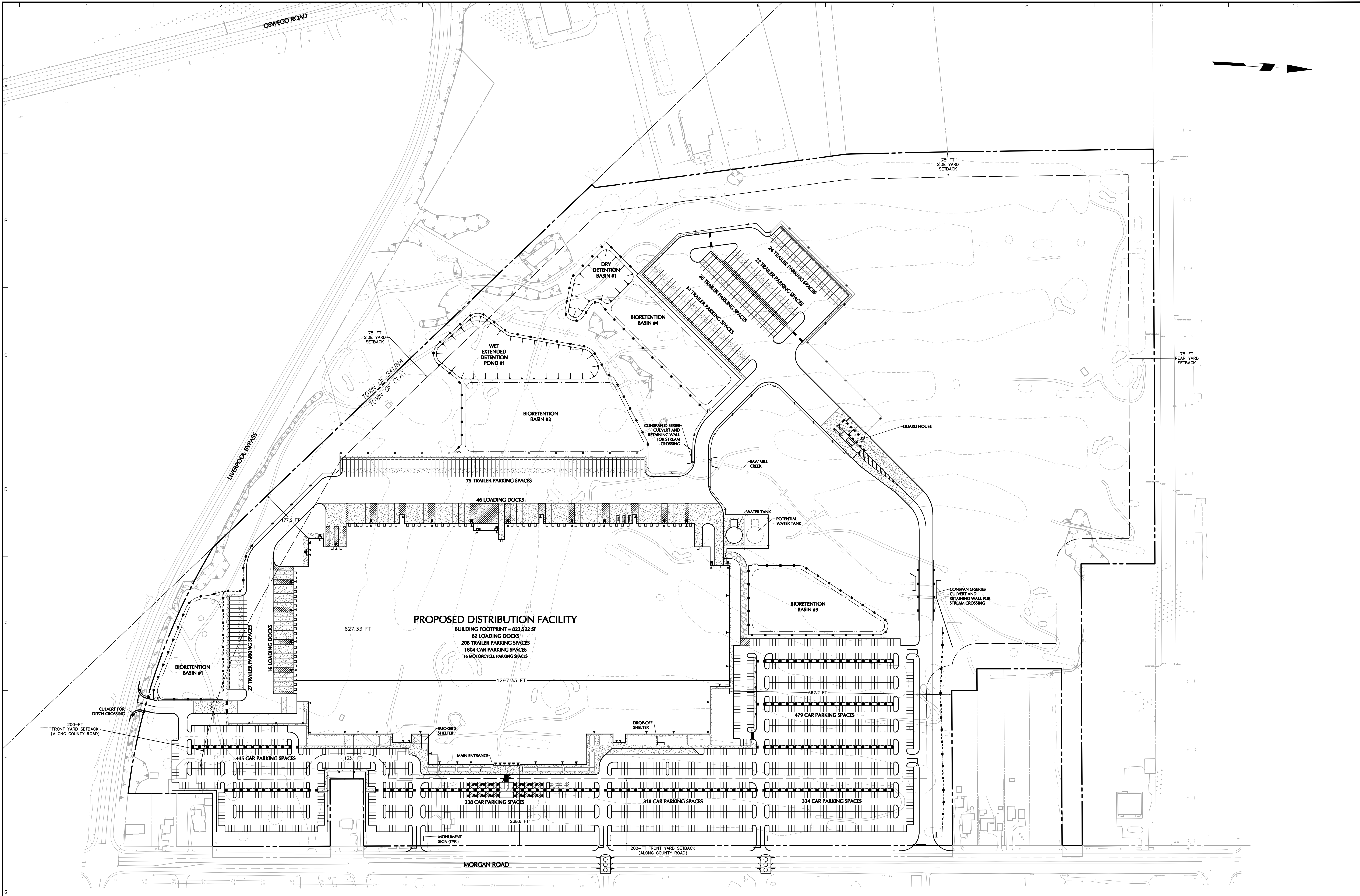
00(00) = AM(PM)

FIGURE 3

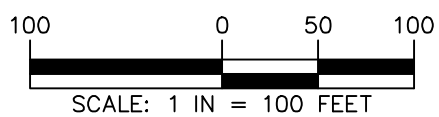
PEAK HOUR VOLUMES
2019 EXISTING CONDITIONS

PROPOSED PROJECT EAGLE DEVELOPMENT
TOWN OF CLAY, N.Y.

Transportation Planning / Engineering / Design
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REVISIONS		

SIGNATURE: RICHARD BURROW
PROFESSIONAL ENGINEER NY Lic. No. 082168
DATE SIGNED

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NJ CERTIFICATE OF AUTHORIZATION No. 246A2796403

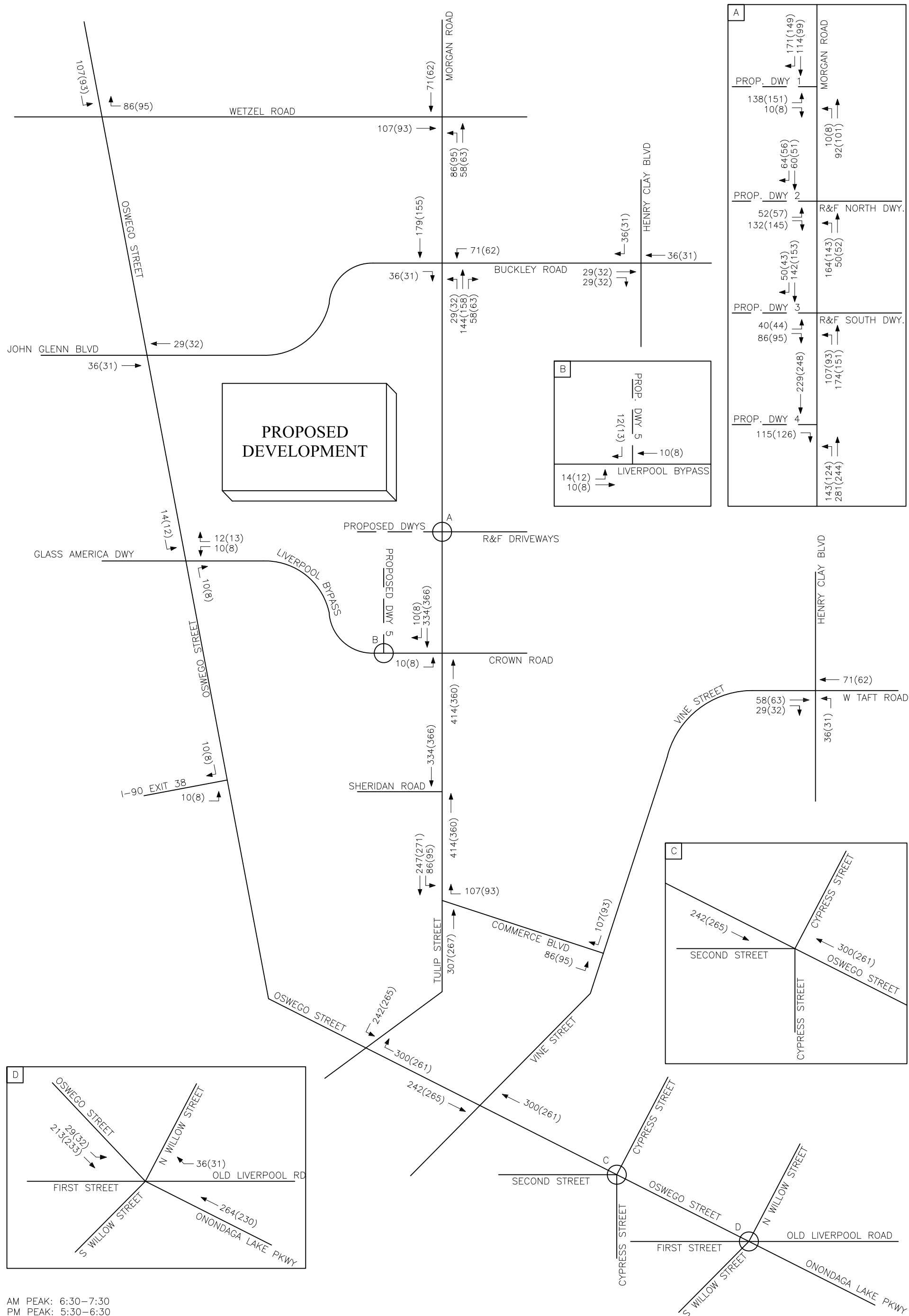
Project
**PROPOSED DISTRIBUTION
FACILITY PROJECT**
SECTION 114, BLOCK 1, LOT 2.3
TOWN OF CLAY

ONONDAGA COUNTY NEW YORK

Drawing Title
**OVERALL
SITE PLAN**

Project No.
100796101
Date
10/02/2019
Drawn By
JRS
Checked By
TLK

Drawing No.
CS100



AM PEAK: 6:30–7:30
PM PEAK: 5:30–6:30

KEY

ENTERING TRIPS 

EXITING TRIPS 

NOT TO SCALE

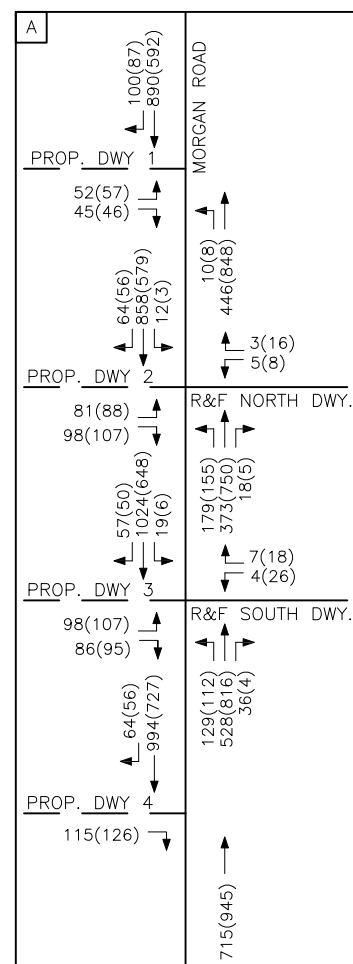
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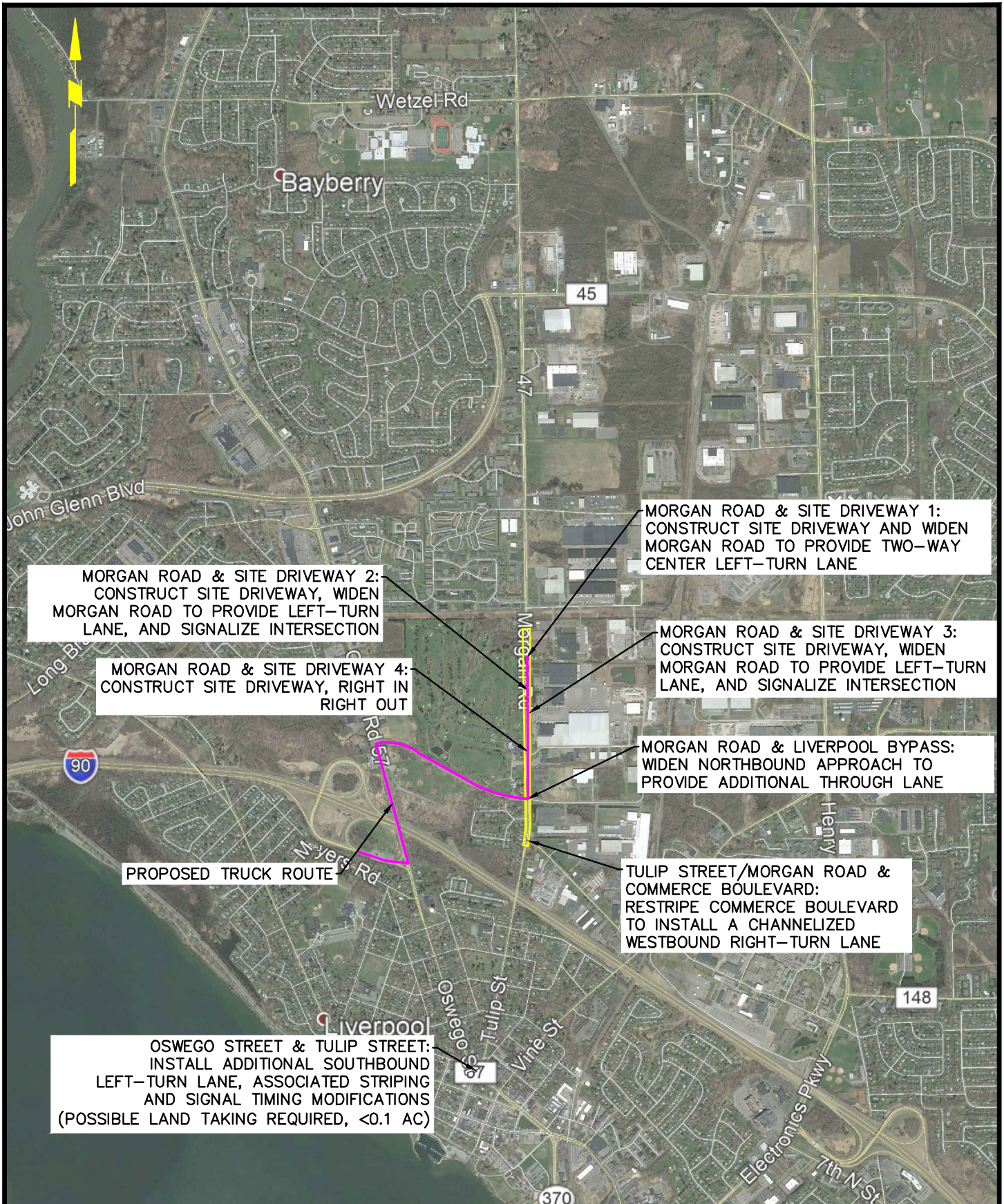
FIGURE 7

PEAK HOUR SITE GENERATED TRIPS

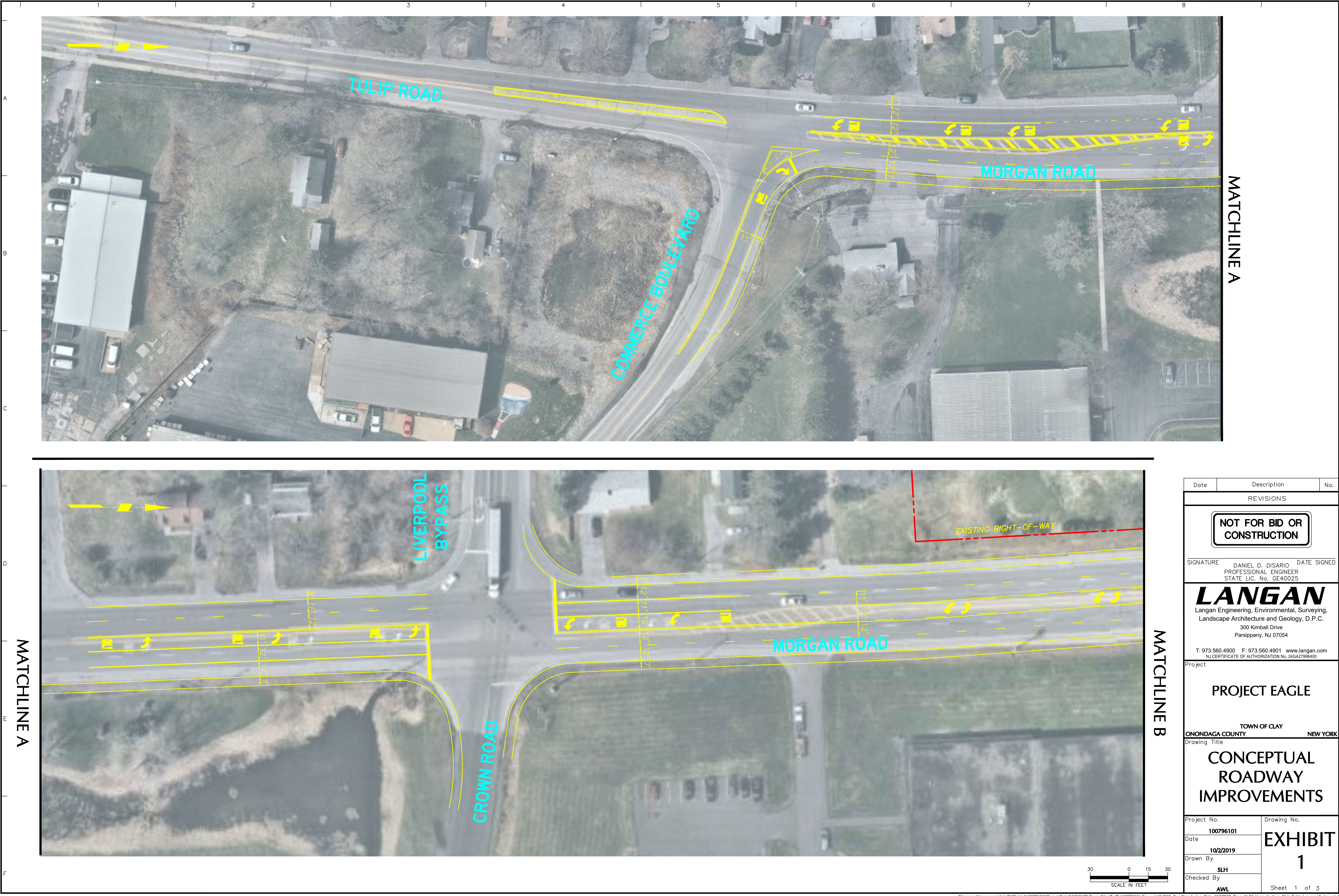
PROPOSED PROJECT EAGLE DEVELOPMENT
TOWN OF CLAY, N.Y.



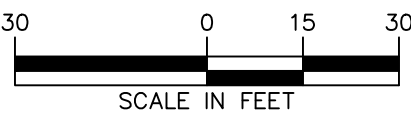


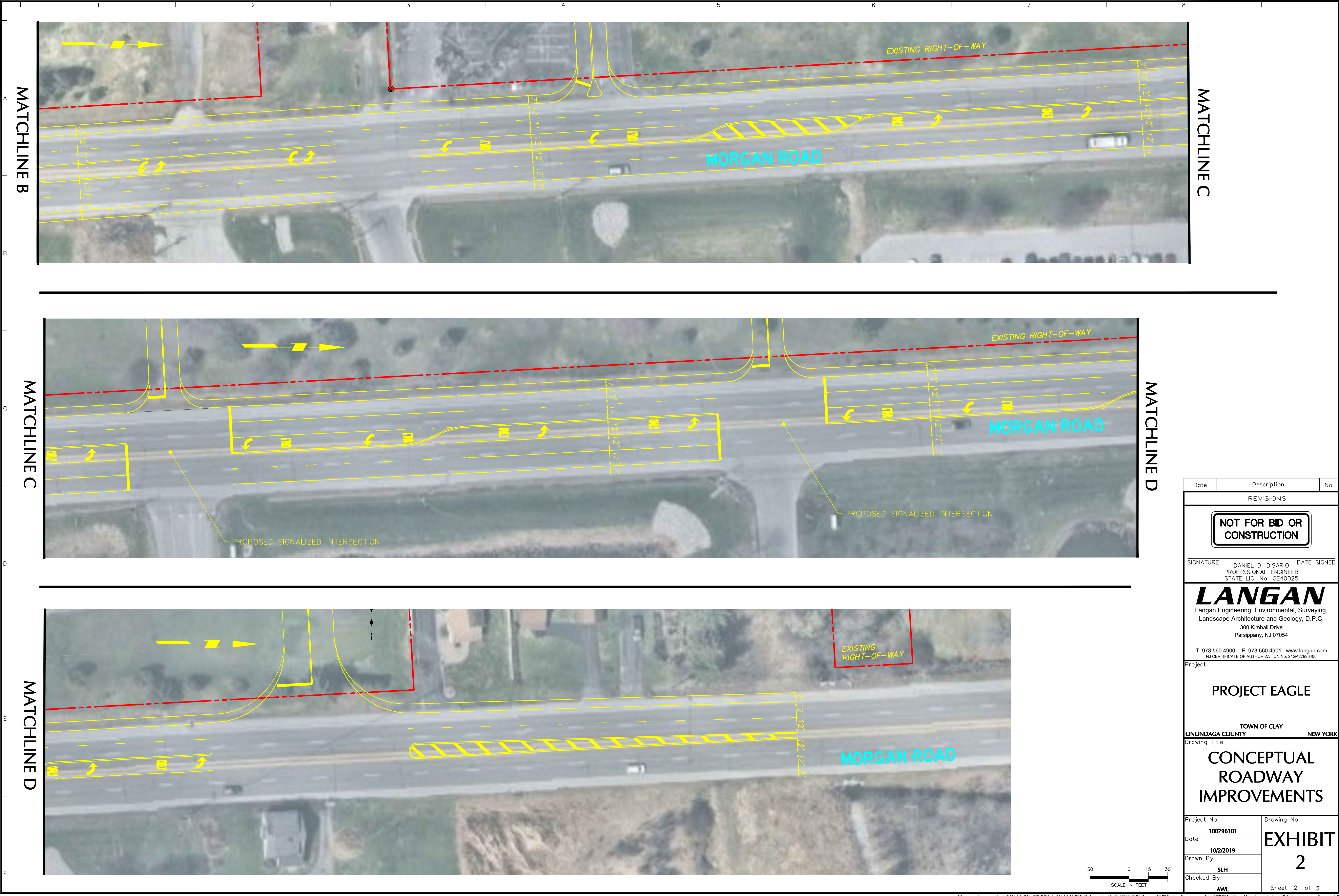


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			Date 10/4/2019	
			Drawn By SLH	
			Checked By AWL	

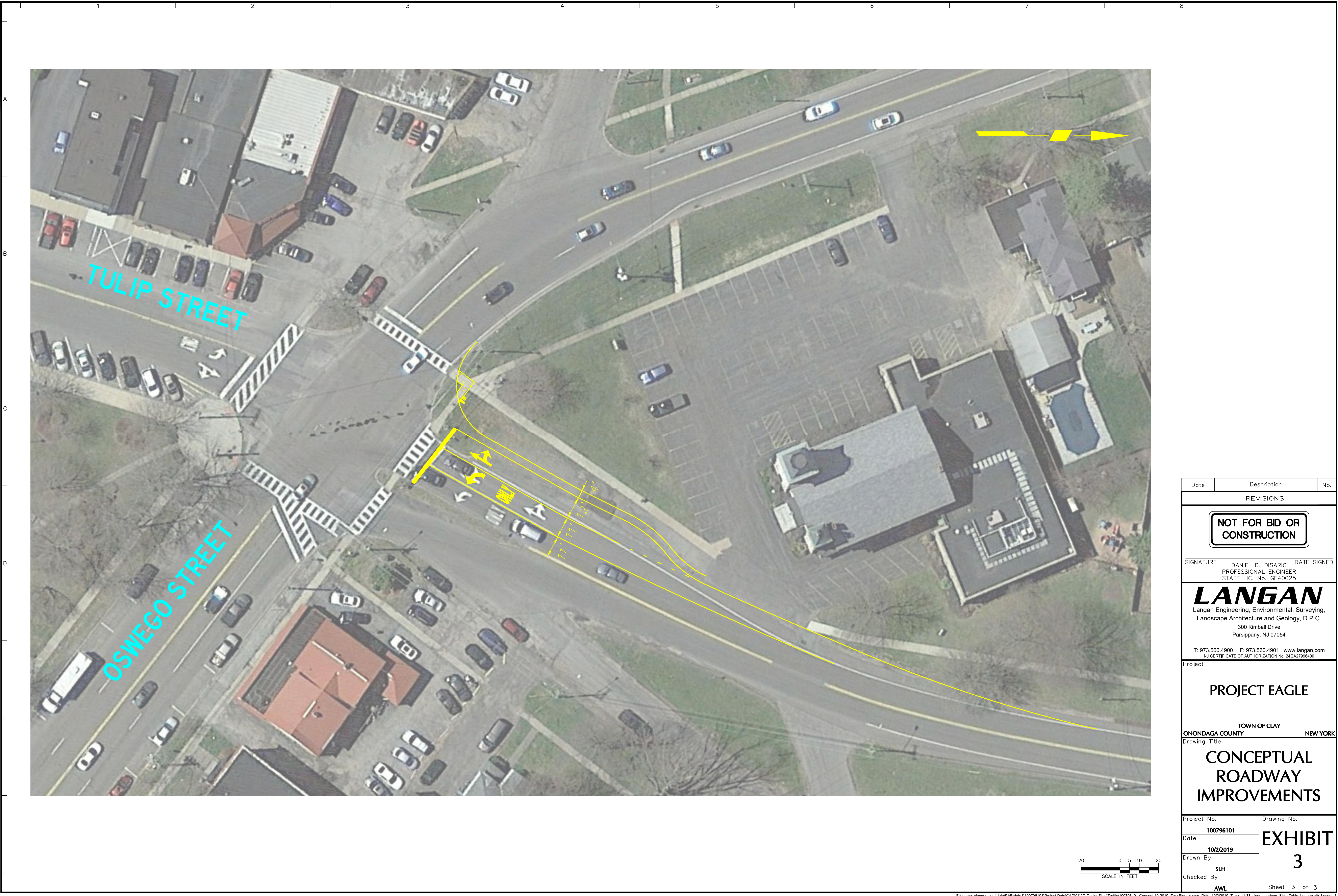


Date	Description	No.
REVISIONS		
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	PROFESSIONAL ENGINEER	
	STATE LIC. No. GE40025	
LANGAN		
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Project		
PROJECT EAGLE		
TOWN OF CLAY		
ONONDAGA COUNTY		NEW YORK
Drawing Title		
CONCEPTUAL ROADWAY IMPROVEMENTS		
Project No.	Drawing No.	
100796101	EXHIBIT	
Date	10/2/2019	
Drawn By	SLH	
Checked By	AWL	
Sheet 1 of 3		1





Date	Description	No.
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Project		
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TOWN OF CLAY		
ONONDAGA COUNTY NEW YORK		
Drawing Title		
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Project No.	Drawing No.	
100796101	EXHIBIT 2	
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Sheet 2 of 3		



Date	Description	No.
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Project PROJECT EAGLE		
TOWN OF CLAY ONONDAGA COUNTY NEW YORK		
Drawing Title CONCEPTUAL ROADWAY IMPROVEMENTS		
Project No. 100796101	Drawing No. EXHIBIT 3	
Date 10/2/2019	Sheet 3 of 3	
Drawn By SLH		
Checked By AWL		