Exhibit IX.A.2.b – Local and Regional Impacts

Submit as Exhibit IX.A.2.b. studies completed by independent experts showing the local and regional impacts of the proposed Gaming Facility in each of the following areas: traffic and roadway infrastructure; water demand, supply and infrastructure capacity; waste water production, discharge, and infrastructure capacity; storm water discharge and management; electricity demand and infrastructure capacity; protected habitats and species; and light pollution.

EXHIBIT IX.A.2.b – LOCAL IMPACTS AND COSTS
(Impacts on Wastewater Production, Discharge and Infrastructure Capacity)

CHA Consulting Inc. (CHA) has calculated the estimated average daily water and sewer demands for the project in accordance with NYSDEC's publication entitled "Design Standards for Wastewater Treatment Works, 1988." Unit flow rates are taken from Table 3 – Estimated Hydraulic Loading Rates, and are reduced by 20 percent in accordance with the guidelines contained in the publication to account for the use of water saving fixtures. Estimated average daily water and sewer demands are summarized below:

Project Element	**Count**	**Unit**	**GPD/Unit**	**GPD**
Casino				
Casino floor toilets	94	each	320	30,800
Casino administration/offices/operations space	23,100	SF	0.08	1,848
Food & Beverage				
Casino & hotel dining (fine, casual, bar, lounge)	500	seats	28	14,000
Employee dining	150	seats	28	4,200
Entertainment				
Event center	500	seats	4	2,000
Retail				
Casino retail	500	SF	0.08	40
Hotel retail	100	SF	0.08	8
Hotel				
Hotel rooms	100	keys	96	9,600

Spa	100	patrons	8	800
TOTAL WATER/SEWER DEMAND				62,576
				65,000 GPD

Based on initial discussions with the Town engineering consultant, Hank LaBarba PE, it is anticipated that the Town's existing sewer infrastructure will provide adequate capacity for the project, with minor improvements to be sponsored by the project applicant. It is noted that the project site lies within a Generic Environmental Impact Statement (GEIS) study area, and mitigation fees have been established by the town for potential water and sewer impacts. Based upon the GEIS formula which sets the mitigation fee at $5,100 per Equivalent Domestic Unit (EDU) and 200 GPD per EDU, the mitigation fee required for this project with an anticipated demand of 65,000 (325 EDU) would be $1,657,500. The actual mitigation fee would be higher if the required improvements to existing infrastructure exceed this amount, although this is not anticipated. All mitigation fees will be paid by the Applicant, and improvements will be completed as required prior to operation of the casino.

The project site is located within the Town's Third Avenue Sewer District. An 8" gravity sewer is available at the project frontage on Thompson Hill Road. It is reputed to be vitrified clay pipe (VCP) installed in the 1970's, and the condition is not known, but it is assumed that there may be some amount of infiltration and inflow (I&I) through the joints. The proposed development will require minor pipe relocations/re-profiling near the proposed site driveway to accommodate access to the site.

There are two wastewater pumping stations between the site and the treatment plant that will be evaluated during site design. The first one is on Third Avenue. A pump upgrade is currently in progress at the Third Avenue pump station which will bring the pumping capacity to 800 GPM. It is anticipated the additional flows from the project may warrant minor modifications. The second pump station is located on Barracks Road. It is a larger station with higher flows. Capacity issues are not anticipated at this pump station; however the need for further evaluation will be reviewed with the Town engineer.

The Town is currently in the process of upgrading its wastewater treatment plant (WWTP) as per a NYSDEC consent order to remove the bypass that allows overflows to discharge directly into the Hudson. The WWTP upgrade project also involves increasing the capacity from 2.5 MGD to 4.4 MGD. That work is expected to be completed by the end of 2014, but the modification to the SPDES permit to allow the increased flow capacity may not occur until early 2015. Current flows to the WWTP are 1.7 MGD, and it is anticipated sufficient capacity will exist at the time the project is expected to be constructed.

One other Town business (Regeneron) is reputedly planning an expansion that is projected to add approximately 100,000 GPD to their current water and sewer demand. Mr. LaBarba anticipates that the Town will be able to meet the water and sewer demands of both projects.

The proposed connection to the existing sewer system is shown on Exhibit VIII.C.17.c.

Exhibit IX.A.2.b – Local and Regional Impacts

Submit as Exhibit IX.A.2.b. studies completed by independent experts showing the local and regional impacts of the proposed Gaming Facility in each of the following areas: traffic and roadway infrastructure; water demand, supply and infrastructure capacity; waste water production, discharge, and infrastructure capacity; storm water discharge and management; electricity demand and infrastructure capacity; protected habitats and species; and light pollution.

Impacts to Protected Habitats and Species

To identify potential ecological impacts associated with the proposed Capital View Casino & Resort project property and off-site interchange modification at I-90 Exit 9, the vegetative features of the project areas were inventoried by CHA Consulting Inc. (CHA). This inventory included field identification of wetlands in accordance with the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Manual: Northcentral and Northeast Region Version 2.0 (January 2012). This level of assessment does not constitute a wetland delineation, and was intended to generally locate wetlands for the purpose of calculating approximate impacts. A formal wetland delineation will be conducted for detailed design.

The vegetative features that are present within the Capital View Resort Casino project property and the off-site interchange modification at I-90 Exit 9 were identified in Exhibit VIII. C.1.c.
The New York State Department of Environmental Conservation (NYSDEC) Natural Heritage Program (NHP) and United States Department of the Interior Fish and Wildlife Service (USFWS) were consulted for information on rare, threatened and endangered species and significant habitats known to occur in the project vicinity.

The NHP responded in a letter dated May 5, 2014 (attached to this exhibit) that they have no records of rare or state listed animals and plants, or of significant communities at the Capital View Casino & Resort project property or in its immediate vicinity. A response from NHP is pending for the area involving the proposed interchange modification at I-90 Exit 9.

The USFWS Information, Planning, and Conservation System (IPaC) online system was reviewed on April 17 and June 10, 2014. The IPaC system identified that northern long-eared bat (Myotis septentrionalis) may occur in the proposed project locations, and/or may be affected by the proposed project (see information attached to this exhibit). This species is currently proposed for listing as an endangered species. The USFWS was contacted to identify if they have information on known northern long-eared bat occurrences within or in close proximity to the project area. In their response on May 6, 2014 (attached to this exhibit) the USFWS identified that they have no records of this species in East Greenbush, just potential.
Impacts to protected habitats and species were evaluated and are quantified as follows.

Wetlands and Streams

The Capital View Casino & Resort project has been designed to significantly avoid impacts to wetlands and streams. The proposed design will require a small amount of wetland impact. One area of impact involves the edges of forested wetland on each side of an existing farm road (slight widening of the road). Three potentially isolated (potentially non-jurisdictional) wetlands will also be impacted. These include a shallow emergent marsh, a small farm pond and a small farm pond/vernal pool-like wetland with fringe shrub swamp. A formal wetland delineation and jurisdictional determination will be performed during the permitting process to accurately document the existing conditions and proposed impacts.
The interchange modification at I-90 Exit 9 will require a culvert extension to accommodate the stream crossing. This will result in minor impacts to the rocky headwater stream and its fringe shallow emergent

Submit as Exhibit IX.A.2.b. studies completed by independent experts showing the local and regional impacts of the proposed Gaming Facility in each of the following areas: traffic and roadway infrastructure; water demand, supply and infrastructure capacity; waste water production, discharge, and infrastructure capacity; storm water discharge and management; electricity demand and infrastructure capacity; protected habitats and species; and light pollution.

marsh. Additionally, shallow emergent marsh along I-90 will be impacted to accommodate the road widening and culvert extension.

The anticipated permitting and mitigation requirements for this project are discussed in Section VIII.C.3.c.

Threatened & Endangered Species

As previously discussed, review of the USFWS IPaC online system identified that northern long-eared bat may occur in the proposed project locations, and/or may be affected by the proposed project. The Capital View Resort Casino location contains forested habitats with live and dead trees with potential bat-roosting structure, such as exfoliating bark, loose peeling bark, and cracks and crevices that may be suitable for the northern long-eared bat. If bats are present, the forests and associated adjacent habitats such as field edges and emergent wetlands would be important for bat survival.

It is unknown if northern long-eared bats inhabit the site. The majority of the development for the Capital View Resort Casino project will occur in the fields adjacent to the forests and on vacant properties located in the southwest portion of the site. This will result in an estimated 19.5 acres of forest impact and two of the on-site fields that occur adjacent to the forests will be displaced. The proposed forest impacts will mainly affect fragmented forest patches with high edge ratios, which is not the preferred habitat for this species. When compared to the onsite contiguous forest that occurs outside of the proposed development (and extends for hundreds of acres off site), the forest to be impacted is less likely to be used by the bat. Therefore the proposed forest impact appears to be minor, and it is associated with forest communities that do not provide main (core) habitat preferred by this species. Other potential impacts to be considered include a possible reduction in foraging habitat due to the development in the fields, and the potential for increased light pollution.

The impacts resulting from the interchange modification at I-90 Exit 9 will affect mowed roadside, shallow emergent marsh, rocky headwater stream, successional shrubland and deciduous forest. Approximately 2.3 acres of deciduous forest will be displaced. The deciduous forest occurs in a relatively developed area, between two very active roadways, and has a significant amount of edge habitat. Therefore it does not appear to provide ideal habitat for northern long-eared bat. The proposed impacts at the project site are not expected to directly impact or jeopardize the future existence of the northern long-eared bat due to the ability to incorporate a time of year tree-cutting restriction and the amount of intact contiguous forest and surrounding habitat that will remain after the project is constructed.

A Phase 1 Habitat Assessment Report with potential impacts determination for northern long-eared bat is being prepared and will be submitted to the USFWS for further guidance.

Exhibit IX.A.2.b – Local and Regional Impacts

Submit as Exhibit IX.A.2.b. studies completed by independent experts showing the local and regional impacts of the proposed Gaming Facility in each of the following areas: traffic and roadway infrastructure; water demand, supply and infrastructure capacity; waste water production, discharge, and infrastructure capacity; storm water discharge and management; electricity demand and infrastructure capacity; protected habitats and species; and light pollution.

Impacts on Stormwater Discharge and Management

Methodology

The project will be designed by CHA in accordance with the criteria presented in the New York State Stormwater Management Design Manual (August 2010) and the State Pollutant Discharge Elimination System (SPDES) General Permit for Construction Activities (GP-0-10-001).

In order to evaluate the potential impacts associated with the development of the site, existing and proposed condition hydrographs will be generated. The conditions will be modeled using the SCS unit hydrograph method using a type II rainfall distribution. Runoff curve numbers and times of concentration will be computed using standard NRCS TR-55 methodology. Additionally, peak stormwater flows and hydrographs for the existing and post-development conditions will be computed using the Bentley Pondpack Hydrology Program (Version V8i).

The project will be designed to meet the following New York Stormwater Sizing Criteria:

- Water Quality Volume
- Run-off Reduction Volume (Through the use of Green Infrastructure Techniques)
- Channel Protection Volume (24 Hour Extended Detention of post developed 1 year storm)
- Overbank Flood (Peak Flow mitigation of the 10 year storm)
- Extreme Storm (Peak Flow mitigation of the 100 year storm)

Stormwater Practices

The Stormwater Management Practice Selection Matrices will be utilized to determine the appropriate combination of practices for the site. The factors used to determine the proposed methods include:

- Land Use
- Physical Feasibility Factors
- Watershed Factors
- Stormwater Management Capability
- Community and Environmental Factors

The use of Green Infrastructure Techniques to meet the required Run-Off Reduction Volume (RRv) will be utilized. Practices to be evaluated include bioretention, vegetated swales, green roof, rain garden, planters and porous pavement. The geotechnical investigation indicates shallow rock in areas of the site with underlying soils having limited suitability for infiltration.

Mitigation of the 1, 10 and 100 year storm events will be through standard practices such as micro-pool extended detention ponds. The remaining water quality volume that is not treated through Green Infrastructure Techniques will be treated within the permanent pool and extended detention of the ponds.

The location of proposed stormwater management features are depicted on Exhibit VIII.C.17.e.

Exhibit IX.A.2.b – Local and Regional Impacts

Submit as Exhibit IX.A.2.b. studies completed by independent experts showing the local and regional impacts of the proposed Gaming Facility in each of the following areas: traffic and roadway infrastructure; water demand, supply and infrastructure capacity; waste water production, discharge, and infrastructure capacity; storm water discharge and management; electricity demand and infrastructure capacity; protected habitats and species; and light pollution.

Drainage Areas

Run-off from the existing site encompasses several drainage areas and discharge points. The eastern portion of the site is generally sloped from the west to east with a discharge point along Route 4. The remaining portion of the site is undulating with discharge points to three distinct wetland complexes. The post developed condition will maintain similar drainage areas and discharge points from the site.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 LUKER ROAD
CORTLAND, NY 13045
PHONE: (607)753-9334 FAX: (607)753-9699
URL: www.fws.gov/northeast/nyfo/es/section7.htm

Consultation Tracking Number: 05E1NY00-2014-SLI-0618 April 17, 2014
Project Name: East Greenbush

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project.

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq*.). This list can also be used to determine whether listed species may be present for projects without federal agency involvement. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list. If listed, proposed, or candidate species were identified as potentially occurring in the project area, coordination with our office is encouraged. Information on the steps involved with assessing potential impacts from projects can be found at: http://www.fws.gov/northeast/nyfo/es/section7.htm

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq*.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects

should follow the Services wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: East Greenbush

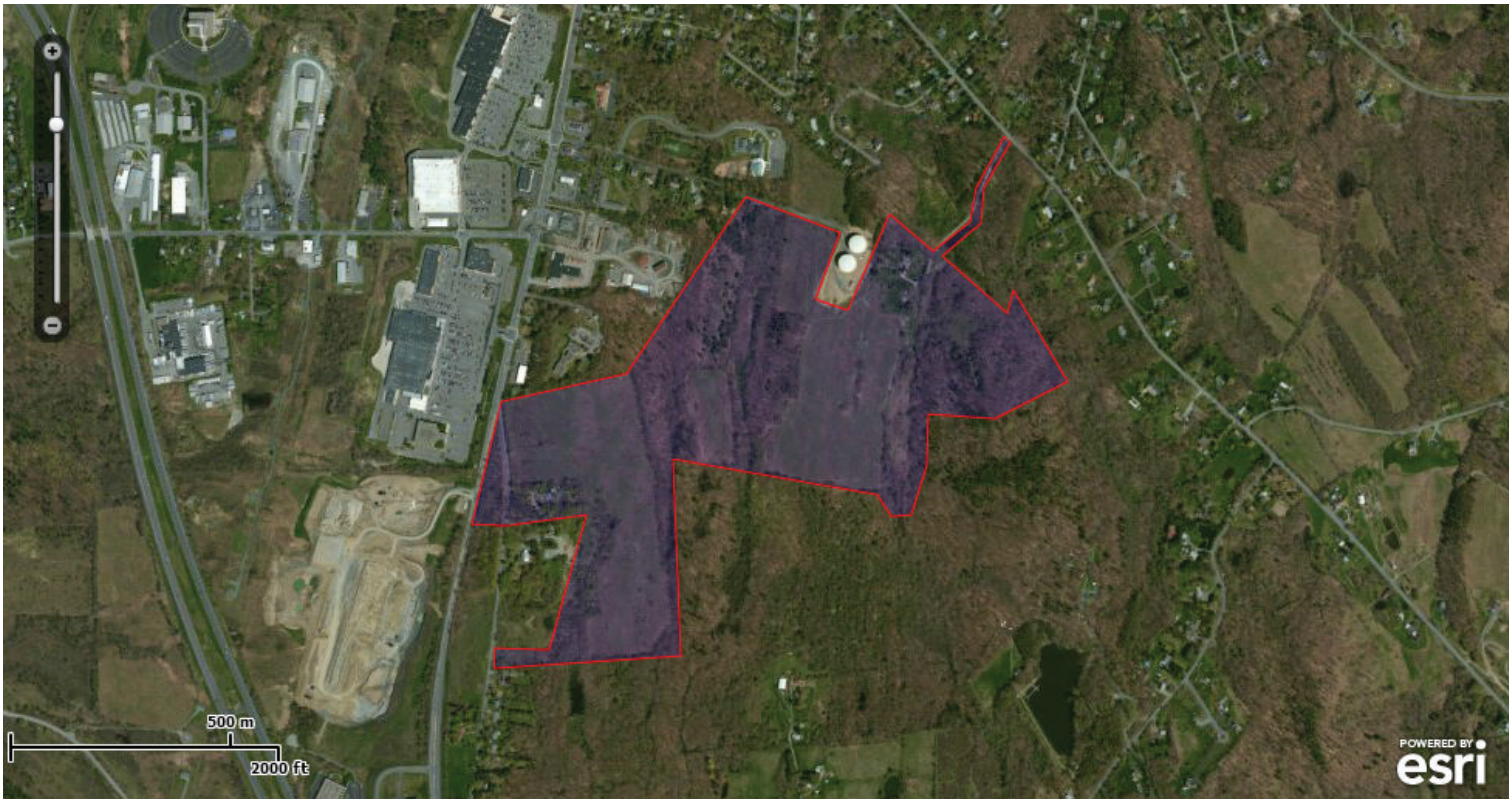
Official Species List

Provided by:

New York Ecological Services Field Office
3817 LUKER ROAD
CORTLAND, NY 13045
(607) 753-9334
http://www.fws.gov/northeast/nyfo/es/section7.htm

Consultation Tracking Number: 05E1NY00-2014-SLI-0618
Project Type: Development
Project Description: Potential site development.

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-73.6853772 42.6461193, -73.6852055 42.6459915, -73.6859351 42.645076, -73.6860209 42.64435, -73.6870938 42.6436871, -73.6852913 42.6425191, -73.6851197 42.6429926, -73.6836176 42.64113, -73.6856346 42.640374, -73.68748 42.6404671, -73.6875229 42.6394253, -73.6879521 42.638415, -73.68851 42.6383835, -73.6888962 42.638827, -73.694561 42.6395516, -73.6943465 42.6355421, -73.6995392 42.6352911, -73.6995392 42.6357015, -73.6979943 42.6356699, -73.6969643 42.638415, -73.6991959 42.6381956, -73.70014 42.6382272, -73.6993268 42.6407196, -73.6958506 42.6412879, -73.6925483 42.6448866, -73.6899262 42.6441606, -73.6906128 42.6428032, -73.6897116 42.6425838, -73.6885529 42.6445394, -73.6873534 42.6437818, -73.6863213 42.6443816, -73.6861518 42.645076, -73.6853772 42.6461193)))

Project Counties: Rensselaer, NY

Endangered Species Act Species List

There are a total of 1 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed on the **Has Critical Habitat** lines may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

northern long-eared Bat *(Myotis septentrionalis)*
Listing Status: Proposed Endangered

Critical habitats that lie within your project area

There are no critical habitats within your project area.

Greaves IV, John

From: Niver, Robyn <robyn_niver@fws.gov>
Sent: Tuesday, May 06, 2014 11:43 AM
To: Greaves IV, John
Subject: Re: East Greenbush Casino Info Request

Hi John,
No known records for NLEB in East Greenbush. Just potential.
Robyn

On Thu, Apr 24, 2014 at 2:38 PM, Greaves IV, John <JGreavesIV@chacompanies.com> wrote:

Hi Robyn,

I'm doing a habitat evaluation for the attached site and NLEB came up on ECOS-IPaC.

Does the FWS have any known records of NLEB on this site or in its immediate vicinity?

Thanks

John W. Greaves

Senior Scientist, CWS*

CHA ~ *design/construction solutions*

518.453.8251

jgreavesiv@chacompanies.com

www.chacompanies.com

*NH

--
****
Robyn A. Niver
Endangered Species Biologist
U.S. Fish & Wildlife Service
New York Field Office
3817 Luker Rd.
Cortland, NY 13045
(607) 753-9334 (voice)
(607) 753-9699 (fax)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, 5th Floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **Fax:** (518) 402-8925
Website: www.dec.ny.gov

Joe Martens
Commissioner

May 05, 2014

John Greaves
CHA
3 Winners Circle
Albany, NY 12205

Re: Assessment of Potential Site Development Constraints for potential site of casino
Town/City East Greenbush. County: Rensselaer.

Dear John Greaves :

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

We have no records of rare or state-listed animals or plants, or significant natural communities, at your site or in its immediate vicinity.

The absence of data does not necessarily mean that rare or state-listed species, natural communities or other significant habitats do not exist on or adjacent to the proposed site. Rather, our files currently do not contain information which indicates their presence. For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other resources may be required to fully assess impacts on biological resources.

This response applies only to known occurrences of rare or state-listed animals and plants, significant natural communities and other significant habitats maintained in the Natural Heritage Data bases. Your project may require additional review or permits; for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, as listed at www.dec.ny.gov/about/39381.html.

Sincerely,

Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program

403

Capital View Casino & Resort

East Greenbush, NY

TRAFFIC IMPACT STUDY

June 2014

Prepared for:

Saratoga Racing & Gaming, Inc.
342 Jefferson Street
Saratoga Springs, NY 12866

Prepared by:

CHA
III Winners Circle
Albany, NY 12205

CHA File: 27966

Table of Contents

Appendices

EXECUTIVE SUMMARY

With the Upstate New York Gaming Economic Development Act, four destination gaming resorts in Upstate New York will be established to help boost economic development and tourism in the area. Three regions in Upstate New York have been identified for the gaming resorts; the Hudson Valley-Catskill area, the Capital District-Saratoga area, and the Central-Southern Tier. One region may receive authorization for two gaming resorts. In the Capital District-Saratoga area, Saratoga Racing & Gaming, Inc. in conjunction with Churchill Downs is proposing a gaming facility in the Town of East Greenbush, New York.

The site is located adjacent to Thompson Hill Road, east of US Route 4 and north of Mannix Road. The proposed site will consist of 174,000 square feet of casino and amenity space with 1,842 gaming positions (combined slot machines and table games) and a 100-room hotel.

The purpose of this report is to evaluate the traffic impacts of the proposed Capital View Casino & Resort on the adjacent roadway network and identify improvement measures to mitigate the impacts. This traffic impact study is based on a larger site concept than is actually being proposed as a result of refinements in the site planning/programming process. The basis of the traffic analysis considered 196,000 square feet of casino and amenity space with 2,020 gaming positions, and a 151-room hotel. The impacts identified in this analysis are therefore conservative because they are based on a higher estimate of traffic generation, and the identified transportation improvements will provide for better mobility and more system reserve capacity than is described.

Access

The proposed primary access to the site will be located on US Route 4 opposite of the FedEx Distribution Center. Secondary access for emergency vehicles will be provided from Thompson Hill Road. There is nearby access to Interstate 90; Exit 9 is located less than one mile south of the site on US Route 4 and Exit 8 is approximately 2.5 miles northwest of the site on NY Route 43.

Study Area and Peak Periods

The intersections included in the study area are as follows:

- US Route 4 & I-90 Eastbound Ramps
- US Route 4 & I-90 Westbound Ramps
- US Route 4 & Mannix Road
- Mannix Road & Thompson Hill Road
- US Route 4 & FedEx Facility / Site Access
- US Route 4 & Thompson Hill Road
- US Route 4 & Walmart / Mavis Discount Tire
- US Route 4 & 3rd Avenue Extension
- US Route 4 & Greenbush Commons / Grandview Drive
- US Route 4 & Bloomingrove Drive / Agway Drive
- US Route 4 & NY Route 43

The mainline merge and diverge ramp junctions at I-90 Exit 9 are also included in the study area.

Based on the typical peak trip generating characteristics of the proposed development, the commuter traffic patterns and the level of retail commercial development in the corridor, the Friday PM peak hour and the Saturday Midday peak hours of adjacent street traffic were determined to be critical with respect to overall traffic operations for this project. The Friday PM and Saturday midday peak hours are analyzed in detail in this report.

Existing and Future No-Build Conditions

Traffic counts were conducted in April/May 2014 to establish the 2014 Existing volume conditions within the study area for the Friday PM and Saturday Midday peak hours. Future year 2016 No-Build conditions without the proposed project were estimated by applying an annual growth rate. Based upon historic NYSDOT count data, there has only been minimal growth along the US Route 4 corridor, with approximately 0.5% growth per year in the project area. To account for additional development in the project area, as well as any induced growth as a result of the construction of the Capital View Casino & Resort, a conservative 2% annual growth rate was used to project existing volumes.

Capacity analyses were conducted for the Existing and No-Build conditions to estimate the traffic operations within the project study area. There are three intersections that have one or more movements that operate at Level of Service (LOS) E or F during the Friday PM or Saturday Midday peak hours without the proposed project:

- US Route 4 & I-90 Westbound Ramps
- US Route 4 & Greenbush Commons / Grandview Drive
- US Route 4 & NY Route 43

Parking and Circulation

The parking supply layout and site circulation plan are provided in Appendix A. The preliminary site plan includes 600 structured parking spaces and approximately 1,400 surface parking spaces. The parking supply was determined by the market analysis results for parking need for the facility.

The primary circulation of vehicles on site stems from the entry road from US Route 4. From the main entry road, an access driveway with a landscaped median provides the primary entrance to the facility for patrons. Here patrons access the surface parking lots in front of the building, the parking garage, and a horseshoe driveway at the porte cochere allows for patron drop-off and valet parking service. Behind the building (east side) are the bus drop-off area and service dock. Access to an additional surface parking lot is also provided on the east side of the site.

Pedestrian walkways are provided throughout the site to provide facilities for patrons from the parking areas to the building. Pedestrian crossings of internal roadways will be made highly visible to drivers.

Site Generated Trips and Distribution

The Institute of Transportation Engineers (ITE) Trip Generation Manual, ninth edition, is the industry standard for determining trip generation for various land uses.

ITE's Trip Generation Manual was not used to assess the trip generation for the proposed casino space, since the Manual does not contain a land use category that is specifically representative of the operations of this project. However, for the Hotel trip generation, ITE Land Use Code (LUC) 310 was used.

For the casino space, the trip generation was estimated by using data from traffic impact studies completed for other regional casino projects. These studies calculated trip generation rates based on counts at existing casino facilities that are similar in size to the Capital View Casino & Resort. To calculate trip generation rates for the Capital View Casino & Resort, the rates from the representative traffic impact studies were averaged for the independent variables of square footage of casino space and number of gaming positions. The proposed Capital View Casino & Resort will provide 174,000 square feet of space for casino and amenity space (including 1,842 gaming positions). However, the traffic impact analysis and recommended transportation improvement program is based on an original concept that was somewhat larger; comprised of 196,000 square feet of casino and amenity space featuring 2,020 gaming positions.

Similarly, the traffic analysis is based on an original concept for 151 hotel rooms, which is larger than the 100-room hotel that is proposed for the project. ITE's LUC 310 was used to estimate the trip generation of the hotel component of the project. For the analysis, it was assumed that 75% of the guests staying at the hotel would also be using the casino facilities and their site trips are already captured in the casino trip generation. Therefore, only 25% of the trips related to the hotel use would be considered new trips. The table below summarizes the calculated peak hour trips for the casino and hotel.

Total Site Trip Generation

Use	Friday PM			Saturday Midday		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Casino	423	376	799	384	225	609
Hotel	12	11	23	15	12	27
Total	**435**	**387**	**822**	**399**	**237**	**636**

The traffic generated by the project was distributed to the site access driveways and adjacent intersections based on the gravity model prepared by Spectrum Gaming Group. This model projects where patrons of the Capital View Casino & Resort are likely to travel from. It is projected that the majority of casino patron trips will originate from Albany County (35%), Rensselaer County (19%), and Schenectady County (15%). This information, in addition to existing traffic patterns in the area, was used to estimate the origins and destinations of site traffic and identify their likely routes to access the site. It is estimated that 63% of site trips will be to/from south of the site and 37% will be to/from north of the site.

Future Build Condition

Capacity analyses were conducted for the Build condition to estimate the traffic operations within the project study area with the site generated traffic. The addition of the project generated traffic does reduce the LOS for a number of movements at the study area intersections. Vehicular queues on US Route 4 are also exacerbated with the site traffic. This is largely due to operations in the No-Build condition already operating at LOS E or F or that experience long queuing characteristics that are very sensitive to any additional volume demand.

Mitigation

To mitigate project-related impacts, geometric and signal operations improvements are proposed throughout the corridor. The addition of a second northbound through lane on US Route 4 to match the existing capacity in the southbound direction will mitigate impacts of the site on the corridor north of the site as well improving the existing queues and delays experienced without the project. At the US Route 4 and I-90 Exit 9 interchange, the addition of a new US Route 4 southbound to I-90 westbound on-ramp will provide a free-flow condition for this major movement onto the interstate.

Specifically, the following improvements are proposed at the study area intersections:

- US Route 4 & I-90 Eastbound Ramps
  - Add an eastbound right-turn lane
  - Optimize signal timings
- US Route 4 & I-90 Westbound Ramps
  - Add new westbound on-ramp from US Route 4 southbound
  - Modify existing westbound on-ramp to only allow entry from US Route 4 northbound (free flow movement)
  - Signalize the intersection with the off-ramp
- US Route 4 & FedEx Facility / Site Access
  - Add a northbound through lane
  - Use split signal phasing for eastbound/westbound movements
  - Optimize signal timings
- US Route 4 & Walmart / Mavis Discount Tires
  - Add a northbound through lane
  - Optimize signal timings
- US Route 4 & 3rd Avenue Extension
  - Add a northbound through lane
  - Optimize signal timings
- US Route 4 & Greenbush Commons / Grandview Drive
  - Add a northbound through lane
  - Optimize signal timings
- US Route 4 & Bloomingrove Drive / Agway Drive
  - Modify northbound right-turn lane to be a shared through/right-turn lane
  - Optimize signal timings
- US Route 4 & NY Route 43
  - Add a northbound left-turn lane
  - Optimize signal timings

To allow for an additional northbound through lane from the FedEx Facility / Site Access intersection to the NY Route 43 intersection, US Route 4 will need to be widened from the existing four-lane section north of the Mannix Road intersection to just south of the NY Route 43 intersection. Figures F-1 to F-20 in Appendix F present a conceptual layout of the proposed improvements at the study area intersections and the interstate ramps.

The proposed mitigation improves the traffic operations to conditions that are the same or better than the No-Build condition with reserve capacity provided in the system. The overall LOS is better with the

project and its proposed mitigation measures than the No-Build condition during one or both the study peak hours at the following intersections:

- US Route 4 & I-90 Eastbound Ramps
- US Route 4 & I-90 Westbound Ramps
- US Route 4 & Greenbush Commons / Grandview Drive
- US Route 4 & Bloomingrove Drive / Agway Drive

All intersection approaches are estimated to operate at LOS D or better with the mitigation measures. All intersection movements are estimated to operate at LOS D or better with the exception of the following:

- US Route 4 & FedEx Facility / Site Access
    - Eastbound left/through (LOS E - Friday PM)

For the US Route 4 & FedEx Facility / Site Access eastbound left/through movement, the estimated LOS E is due to the low volume for the movement which limits the amount of green time allocated to the approach. The overall approach is projected to operate at LOS D.

1.0 INTRODUCTION

With the Upstate New York Gaming Economic Development Act, four destination gaming resorts in Upstate New York will be established to help boost economic development and tourism in the area. Three regions in Upstate New York have been identified for the gaming resorts; the Hudson Valley-Catskill area, the Capital District-Saratoga area, and the Central-Southern Tier. One region may receive authorization for two gaming resorts. In the Capital District-Saratoga area, Saratoga Racing & Gaming, Inc. in conjunction with Churchill Downs is proposing a gaming facility in the Town of East Greenbush, New York.

The site is located adjacent to Thompson Hill Road, east of US Route 4 and north of Mannix Road. The proposed site will consist of 174,000 square feet of casino and amenity space with 1,842 gaming positions (combined slot machines and table games) and a 100-room hotel. The proposed primary access to the site will be located on US Route 4 opposite of the FedEx Distribution Center. Appendix A includes a conceptual site plan of the proposed project.

The purpose of this report is to evaluate the traffic impacts of the proposed Capital View Casino & Resort on the adjacent roadway network and identify improvement measures to mitigate the impacts. This traffic impact study is based on a larger site concept than is actually being proposed as a result of refinements in the site planning/programming process. The basis of analysis considered 196,000 square feet of casino and amenity space with 2,020 gaming positions, and a 151-room hotel. The impacts identified in this analysis are therefore conservative because they are based on a higher estimate of traffic generation, and the identified transportation improvements will provide for better mobility and more reserve capacity in the system than is described.

2.0 EXISTING CONDITIONS

2.1 ADJACENT STREET NETWORK

The site is located adjacent to Thompson Hill Road, east of US Route 4 and north of Mannix Road. Primary access to the site is proposed at a traffic signal on US Route 4 opposite the FedEx Distribution Center. Secondary access for emergency vehicles will be provided from Thompson Hill Road. The location of the project and limits of the study area are shown in Figure 1 below.

The intersections included in the study area are as follows:

- US Route 4 & I-90 Eastbound Ramps
- US Route 4 & I-90 Westbound Ramps
- US Route 4 & Mannix Road
- Mannix Road & Thompson Hill Road
- US Route 4 & FedEx Facility / Site Access
- US Route 4 & Thompson Hill Road
- US Route 4 & Walmart / Mavis Discount Tire
- US Route 4 & 3rd Avenue Extension
- US Route 4 & Greenbush Commons / Grandview Drive
- US Route 4 & Bloomingrove Drive / Agway Drive
- US Route 4 & NY Route 43

The mainline merge and diverge ramp junctions at I-90 Exit 9 are also included in the study area.

I-90 is an east-west Urban Principal Arterial Interstate near the project site. Regionally, it extends from Buffalo, NY to Albany, NY to Boston, MA. The I-90 mainline has three lanes in each direction and a posted speed limit of 65 mph in the vicinity of the site. Exit 9 is located less than one mile south of the site on US Route 4 and Exit 8 is approximately 2.5 miles northwest of the site on NY Route 43.

US Route 4 is a north-south Urban Principal Arterial adjacent to the project site. It serves regional travel from US Routes 9/20 in East Greenbush north to the City of Troy and on to Saratoga and Washington Counties. Within the project study area, US Route 4 generally has a four-lane section. Between NY Route 43 and Mannix Road, US Route 4 generally has two southbound lanes and one northbound lane and a center two-way left-turn lane. Between Mannix Road and the I-90 eastbound off-ramp intersection, US Route 4 consists of two lanes in both directions. Additional turn lanes are provided at some signalized intersections. It is primarily a commercial corridor within the study area. Access to I-90 Exit 9 is provided from US Route 4 immediately south of the site. The posted speed limit on US Route 4 is 40 mph north of Thompson Hill Road and 45 mph south of Thompson Hill Road.

Mannix Road is an east-west local road south of the project site. It extends from US Route 4 east to Best Road. It is a two-lane roadway with approximately 10 to 11 foot lanes and a posted speed of 30 mph. It services primarily residential uses, with the exception of the East Greenbush Technology Park and Marriot Residence Inn, which are located near US Route 4 on Mannix Road. The intersection of US Route 4 & Mannix Road was reconstructed in 2013 to provide a roundabout traffic control.

Thompson Hill Road is a north-south local road immediately west of the project site. It extends from Mannix Road north to a skewed intersection with US Route 4. It provides access to less than 15 residences. It has a width of approximately 19-20 feet and a posted speed limit of 30 mph.

Figure 1 – Study Area

3rd Avenue Extension is an east-west Urban Minor Arterial that extends from US Route 4 to the west in the City of Rensselaer. It is a two-lane roadway with 11 foot lanes and a posted speed of 45 mph.

NY Route 43 is an east-west roadway that is classified as an Urban Principal Arterial between I-90 Exit 8 and US Route 4 and an Urban Minor Arterial east of US Route 4. Between I-90 and US Route 4 it has two lanes in each direction and a posted speed of 45 mph. East of US Route 4 it also has two lanes in each direction but drops to one in each direction east of Best Road.

2.2 TRAFFIC VOLUMES

To analyze traffic operations in the vicinity of the project, it was first necessary to determine the time period during which the combined volume of the proposed project traffic and external (background) traffic would have the greatest effect on the roadway system. Based on the typical peak trip generating characteristics of the proposed development, the commuter traffic patterns and the level of retail commercial development in the corridor, the Friday PM peak hour and the Saturday Midday peak hours of adjacent street traffic were determined to be critical with respect to overall traffic operations for this project. The Friday PM and Saturday midday peak hours are analyzed in detail in this report.

Existing traffic counts were conducted on April 25 & 26, 2014 and May 2 & 3, 2014. The Friday counts were conducted during the PM peak period of adjacent street traffic from 4 PM to 6 PM. The Saturday counts were conducted during the midday peak period of adjacent street traffic from 11 AM to 2 PM. All counts were recorded at 15-minute increments and classified as either passenger cars or trucks. Pedestrian and bicycle counts were also recorded at the intersections concurrently with the vehicle counts.

Appendix C contains the turning movement count data. The count data showed the following:

- The Friday PM peak hour generally occurs between 4:30 PM– 5:30 PM
- The Saturday midday peak hour generally occurs between 11:00 AM – 12:00 PM

Figure 2 in Appendix B shows the Existing Friday PM and Saturday midday peak hour traffic volumes.

2.3 PUBLIC TRANSPORTATION SERVICES

Bus service within the study area is provided by Capital District Transportation Authority (CDTA). CDTA has two routes that currently serve the Route 4 corridor: Route 214 (Rensselaer 3rd St/Amtrak) and Route 224 (Albany-Troy via Route 4). Route 214 provides service between Downtown Albany and Rensselaer County Plaza (Wal-Mart Plaza on Route 4). Route 224 provides service between Downtown Albany, Hudson Valley Community College and Downtown Troy. Bus stops are located in the Walmart Plaza, adjacent to the Greenbush Commons / Grandview Drive intersection, the Thompson Court intersection, and at the Park and Ride lot. There is currently no route that provides service adjacent to the project site.

Passenger rail service is provided near the site at the Rensselaer Train Station. The station is just three miles from the project site and it provides regional Amtrak service on routes to/from New York, Boston, Buffalo, Chicago, Rutland and Montreal. There are also CDTA bus routes that stop at the station as well as other regional charter bus companies (such as Megabus) that use the station as their Albany stop.

2.4 PEDESTRIAN AND BICYCLE ACCOMMODATIONS

Currently there are segmented pieces of sidewalk along the Route 4 corridor. At the south end of the project study area, sidewalk starts at the Mannix Road roundabout and continues north to the FedEx Distribution Center on the west side of US Route 4. At the Walmart / Mavis Tire intersection, short segments of sidewalk are provided for the pedestrian crossings. The sidewalk then picks up again approximately 250 feet north of the 3rd Avenue intersection on both sides of US Route 4 to just north of the Greenbush Commons intersection. From this point, the sidewalk continues on the west side of US Route 4 to the Park and Ride Facility. Pedestrian signals are currently provided at the following intersections:

- US Route 4 & FedEx Distribution Center
- US Route 4 & Walmart / Mavis Tire
- US Route 4 & Greenbush Commons / Grandview Drive
- US Route 4 & Bloomingrove Drive / Agway Drive
- US Route 4 & NY Route 43

Bicycle lanes are currently provided on US Route 4 at the intersection approaches with right-turn lanes. In the segments between the bike lanes, bicyclists may use the existing shoulder width.

3.0 FUTURE YEAR NO-BUILD CONDITIONS

3.1 BACKGROUND GROWTH

Whether or not the project is built, it is assumed that background growth and development unrelated to the project will affect roadway operations within the study area. It is anticipated that the Capital View Casino & Resort will be completed in 2016.

Based upon historic NYSDOT count data, there has only been minimal growth along the US Route 4 corridor, with approximately 0.5% growth per year in the project area. This is consistent with the forecasts in the *Route 4 Corridor Study*[1] for the medium growth scenario between 2015 and 2025. To account for additional development in the project area, as well as any induced growth as a result of the construction of the Capital View Casino & Resort, a conservative 2% annual growth rate was used to project existing volumes.

3.2 NO-BUILD CONDITIONS

The 2016 No-Build conditions were developed by applying the 2% annual growth rate to the 2014 Existing Friday PM and Saturday midday peak hour volumes. Figure 3 in Appendix B shows the No-Build Friday PM and Saturday midday peak hour traffic volumes.

[1] *Route 4 Corridor Study, Capital District Transportation Committee, 2006*

4.0 FUTURE YEAR BUILD CONDITIONS

4.1 SITE GENERATED TRAFFIC

Trip generation determines the quantity of traffic expected to travel to/from the project site. The Institute of Transportation Engineers (ITE) Trip Generation Manual, ninth edition, is the industry standard for determining trip generation for various land uses.

ITE's Trip Generation Manual was not used to assess the trip generation for the proposed casino space, since the Manual does not contain a land use category that is specifically representative of the operations of this project. However, for the Hotel trip generation, ITE Land Use Code (LUC) 310 was used.

For the casino space, the trip generation was estimated by using data from traffic impact studies completed for other regional casino projects. These studies calculated trip generation rates based on counts at existing casino facilities that are similar in size to the Capital View Casino & Resort. The following studies were used for the analysis:

- *Project First Light, Transportation Study*; City of Taunton, MA[2]
- *Traffic Impact and Access Study, MGM Springfield*; Springfield, MA[3]
- *Transportation Impact Study, Hollywood Casino*; Philadelphia, PA[4]
- *Transportation Impact Study, Casino Revolution*; Philadelphia, PA[5]

Trip generation rates were calculated in these studies based on square footage of the casino space or the number of gaming positions. The square footage of the casino space is made up of the gaming floor and supporting amenities such as retail, restaurants, entertainment and back-of-house. A gaming position is considered to be a seat from which gaming is conducted and is the sum of the number of slot machines and the number of seats from all table games. To calculate trip generation rates for the Capital View Casino & Resort, the rates from the representative traffic impact studies were averaged for the independent variables of square footage of casino space and number of gaming positions. Excerpts from the traffic impact studies used for this analysis and their trip generation rates are shown in Appendix D.

For the Capital View Casino & Resort trip generation, an average was taken of the number of trips calculated based on the square footage of the casino space rate and the gaming position rate from the representative traffic impact studies. For the Saturday midday peak hour, since the representative

[2] *Project First Light, Transportation Study*, Howard/Stein-Hudson Associates, Inc., May 21,2012
[3] *Traffic Impact and Access Study MGM Springfield*, TEC, Inc., December 17,2012
[4] *Transportation Impact Study, Hollywood Casino*, Pennoni Associates, Inc., November 20,2013
[5] *Transportation Impact Study, Casino Revolution*, Langan Engineering & Environmental Services, November 21, 2013

studies only calculated a Saturday PM peak hour rate, the midday trip generation rate was determined using the *Saturday Hourly Volume Comparison* Figure in the Millbury, Massachusetts Casino Traffic Impact Study[6] shown in Appendix D. In this figure, the hourly volumes for five casinos were compared. For each of the casinos, the percent difference in Saturday PM volume and Saturday Midday volume was calculated. It was determined that the average volume difference between the two peaks was approximately 38 percent. For the Capital View Casino & Resort, the calculated Saturday PM peak hour trips were reduced by 35 percent to obtain the Saturday Midday peak hour trips. Table 1 summarizes the calculated Friday PM and Saturday midday peak hour trip rates for the casino space. Additional backup calculations are provided in Appendix D with the trip generation sample studies.

Table 1
Casino Trip Generation

Independent Variable	Friday PM			Saturday Midday		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Square Feet of Casino	408	363	771	320	188	508
# of Gaming Positions	439	389	828	447	262	709
Average	**423**	**376**	**799**	**384**	**225**	**609**

The proposed Capital View Casino & Resort will provide 174,000 square feet of space for casino and amenity space (including 1,842 gaming positions). However, the trip generation estimates presented in Table 1 are based on an initial concept that was somewhat larger; comprised of 196,000 square feet of casino and amenity space featuring 2,020 gaming positions.

Similarly, the traffic analysis is based on an original concept for 151 hotel rooms, which is larger than the 100-room hotel that is proposed for the project. As noted previously, ITE's LUC 310 was used to estimate the trip generation of the hotel component of the project. For the analysis, it was assumed that 75% of the guests staying at the hotel would also be using the casino facilities and their site trips are already captured in the casino trip generation. Therefore, only 25% of the trips related to the hotel use would be considered new trips. Table 2 summarizes the calculated peak hour trips for the hotel, and the total trips with the casino space.

[6] *Traffic Impact and Access Study*, *Proposed Category 2 Casino*, MDM Transportation Consultants, Inc., July 18, 2013

Table 2

Total Site Trip Generation

Use	Friday PM			Saturday Midday		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Casino	423	376	799	384	225	609
Hotel	12	11	23	15	12	27
Total	**435**	**387**	**822**	**399**	**237**	**636**

4.2 TRIP DISTRIBUTION AND ASSIGNMENT

The traffic generated by the project was distributed to the site access driveways and adjacent intersections based on the gravity model prepared by Spectrum Gaming Group. This model projects where patrons of the Capital View Casino & Resort are likely to travel from. It is projected that the majority of casino patron trips will originate from Albany County (35%), Rensselaer County (19%), and Schenectady County (15%). This information, in addition to existing traffic patterns in the area, was used to estimate the origins and destinations of site traffic and identify their likely routes to access the site. It is estimated that 63% of site trips will be to/from south of the site and 37% will be to/from north of the site.

The estimated proportional distribution of the site trips within the project study area are shown on Figure 4. The resulting distributed site generated trips are shown on Figure 5.

4.3 BUILD TRAFFIC VOLUMES

The site generated traffic was combined with the 2016 No-Build volumes to represent the estimated future volume conditions for the site. The 2016 Build volumes are shown on Figure 6.

4.4 PARKING & CIRCULATION

The parking supply layout and site circulation plan are provided in Appendix A. The preliminary site plan includes 600 structured parking spaces and approximately 1,400 surface parking spaces. The parking supply was determined by the market analysis results for parking need for the facility.

The primary circulation of vehicles on site stems from the entry road from US Route 4. From the main entry road, an access driveway with a landscaped median provides the primary entrance the facility for patrons. Here patrons access the surface parking lots in front of the building, the parking garage, and a horseshoe driveway at the porte cochere allows for patron drop-off and valet parking service. Behind the building (east side) are the bus drop-off area and service dock. Access to an additional surface parking lot is also provided on the east side of the site.

Pedestrian walkways are provided throughout the site to provide facilities for patrons from the parking areas to the building. Pedestrian crossings of internal roadways will be made highly visible to drivers.

5.0 OPERATING CONDITIONS

5.1 LEVEL OF SERVICE METHODOLOGY

The operating conditions of transportation facilities are evaluated based on the relationship of existing or projected traffic volumes to the theoretical capacity of the highway. Various factors affect highway capacity, including traffic volume, speed, roadway geometry, grade, number and width of travel lanes and intersection control. The current standards for evaluating capacity and operating conditions are contained in the Highway Capacity Manual 2010 (HCM 2010), published by the Transportation Research Board (TRB). The procedures describe operating conditions in terms of Level of Service (LOS). In general, LOS "A" represents the best operating conditions and LOS "F" represents the worst.

To determine existing traffic operating conditions at the study area intersections, a capacity analysis was performed using SYNCHRO 8 software. The HCM 2010 methodology of using an intersection peak hour factor was used but since the 2010 methodology cannot analyze the signal phasing at some of the study area intersections, the HCM 2000 reports were utilized for reporting the operational analysis.

The HCM methodology for unsignalized intersections generally assumes that major street traffic is not affected by minor street flows. Left turns from the major street are assumed to be affected by opposing, or oncoming, major street flow. Minor street traffic is affected by all conflicting movements. The HCM methodology expresses the quality of flow at unsignalized intersections in terms of Levels of Service (LOS) based on the amount of delay that a driver experiences. This relationship differs somewhat from the criteria used for signalized intersections, primarily because drivers expect different levels of performance from the two different kinds of transportation facilities. For unsignalized intersections, LOS range from A, with minimal delay (ten seconds or less per vehicle), to F, which represents long delays (50 seconds or greater per vehicle). A LOS of E or better is generally considered acceptable for unsignalized movements during peak periods. Table 3 below summarizes the HCM LOS for signalized and unsignalized intersections.

Table 3

LOS	Control Delay per Vehicle (seconds)	
	Signalized Intersection	Unsignalized Intersections
A	10 or less	10 or less
B	>10-20	>10-15
C	>20-35	>15-25
D	>35-55	>25-35
E	>55-80	>35-50
F	greater than 80	greater than 50

Freeway analyses were conducted in accordance with the HCM 2010 using Highway Capacity Software (HCS) 2010. Table 4 below summarizes the HCM Merge and Diverge Area LOS Standards for Freeways.

Table 4

LOS	HCM Merge and Diverge Area LOS Standards
	Density (pc/mi/ln)
A	10 or less
B	>10-20
C	>20-28
D	>28-35
E	>35
F	Demand exceeds capacity

5.2 CAPACITY ANALYSIS

To determine the impact of the Capital View Casino & Resort on the operations of the adjacent transportation system, traffic operations of the study intersections and roadway segments were analyzed for the Friday PM peak hour and the Saturday midday peak hour for the following conditions:

- 2014 Existing Condition
- 2016 (ETC) No-Build Condition
- 2016 (ETC) Build Condition

5.2.1 Intersection Level of Service

5.2.1.1 Existing Condition

Summaries of the LOS for the Existing condition are presented in Table 5. As shown in this analysis, the following study area intersections have one or more movements that experience LOS E or F during the Existing studied peak hours:

- US Route 4 & I-90 Westbound Ramps
  - Westbound left (Friday PM)
  - Westbound right (Friday PM)
- US Route 4 & Greenbush Commons / Grandview Drive
  - Eastbound left/through (Friday PM and Saturday Midday)
- US Route 4 & NY Route 43
  - Westbound left (Friday PM)
  - Westbound through (Friday PM)
  - Northbound left (Friday PM)
  - Southbound left (Friday PM)

5.2.1.2 No-Build Condition

Delay is estimated to increase through the ETC design horizon due to background traffic growth. As shown in Table 6, the following study area intersections are projected to experience LOS E or F for one or more movements during the studied peak hours for the No-Build condition:

- US Route 4 & I-90 Westbound Ramps
    - Westbound left (Friday PM)
    - Westbound right (Friday PM)
- US Route 4 & Greenbush Commons / Grandview Drive
    - Eastbound left/through (Friday PM and Saturday Midday)
    - Northbound through/right (Friday PM)
- US Route 4 & NY Route 43
    - Westbound left (Friday PM)
    - Westbound through (Friday PM)
    - Northbound left (Friday PM)
    - Southbound left (Friday PM)

5.2.1.3 Build Condition

Using existing geometry and signal timings, the study intersections were analyzed using the projected Build volumes. For the intersection of US Route 4 & FedEx Facility / Site Driveway, a southbound left-turn lane and a northbound right-turn lane were added to the intersection geometry for the analysis. For the Site Driveway, a dual left-turn lane and right-turn lane were included. A summary of the LOS for the Build Condition is presented in Tables 7 and 8.

As shown, the addition of the project generated traffic does reduce the LOS for a number of movements at the study area intersections. Vehicular queues on US Route 4 are also exacerbated with the site traffic. This is largely due to operations in the No-Build condition already operating at LOS E or F or that experience long queuing characteristics that are very sensitive to any additional volume demand.

The proposed mitigation for these impacts is shown in Section 5.3.

Table 5
Capital View Casino & Resort Traffic Impact Study
2014 Existing Condition

Intersection	Level of Service											
	Friday PM						Saturday Midday					
	Mvmt	Delay	LOS	App	Delay	LOS	Mvmt	Delay	LOS	App	Delay	LOS
Signalized Intersections												
US Route 4 & I-90 Eastbound Ramps												
I-90 EB Off-Ramp	EB L	42.8	D	EB	34.1	C	EB L	20.2	C	EB	16.3	B
	EB R	32.2	C				EB R	15.3	B			
US Route 4	NB L	6.5	A	NB	6.4	A	NB L	5.2	A	NB	6.3	A
	NB T	6.4	A				NB T	6.4	A			
	SB T	33.7	C	SB	28.4	C	SB T	14.7	B	SB	12.8	B
	SB R	15.6	B				SB R	6.6	A			
OVERALL					22.9	C					10.7	B
US Route 4 & FedEx Facility												
FedEx Facility	EB L	28.8	C	EB	23.9	C	EB L	31.7	C	EB	29.4	C
	EB R	22.8	C				EB R	28.5	C			
US Route 4	NB L	2.5	A	NB	3.4	A	NB L	1.7	A	NB	3.9	A
	NB T	3.4	A				NB T	3.9	A			
	SB TR	6.4	A	SB	6.4	A	SB TR	4.3	A	SB	4.3	A
OVERALL					5.4	A					4.2	A
US Route 4 & Walmart / Mavis												
Walmart	EB LT	28.1	C	EB	21.2	C	EB LT	32.8	C	EB	22.4	C
	EB R	18.3	B				EB R	17.4	B			
Mavis	WB LTR	23.2	C	WB	23.2	C	WB LTR	24.2	C	WB	24.2	C
US Route 4	NB L	4.3	A	NB	7.0	A	NB L	5.4	A	NB	7.9	A
	NB TR	7.8	A				NB TR	9.0	A			
	SB L	7.2	A	SB	10.3	B	SB L	8.5	A	SB	11.7	B
	SB TR	10.4	B				SB TR	11.8	B			
OVERALL					10.9	B					12.0	B
US Route 4 & 3rd Avenue Ext												
3rd Avenue Ext	EB L	36.0	D	EB	29.2	C	EB L	27.9	C	EB	23.9	C
	EB R	16.8	B			A	EB R	16.0	B			
US Route 4	NB L	19.6	B	NB	14.4	B	NB L	13.6	B	NB	10.3	B
	NB T	13.5	B				NB T	9.6	A			
	SB TR	22.3	C	SB	22.3	C	SB TR	15.9	B	SB	15.9	B
OVERALL					21.8	C					15.5	B
US Route 4 & Greenbush Commons / Grandview Drive												
Greenbush Commons	EB LT	59.0	E	EB	50.3	D	EB LT	79.6	E	EB	62.0	E
	EB R	30.0	C				EB R	27.7	C			
Grandview Drive	WB LTR	30.6	C	WB	30.6	C	WB LTR	29.5	C	WB	29.5	C
US Route 4	NB L	10.2	B	NB	45.4	D	NB L	10.5	B	NB	27.2	C
	NB TR	49.1	D				NB TR	31.2	C			
	SB L	23.6	C	SB	16.5	B	SB L	18.1	B	SB	18.1	B
	SB T	17.0	B				SB T	18.8	B			
	SB R	14.1	B				SB R	16.9	B			
OVERALL					33.2	C					30.3	C

Table 5 Continued

Intersection	Level of Service											
	Friday PM						Saturday Midday					
	Mvmt	Delay	LOS	App	Delay	LOS	Mvmt	Delay	LOS	App	Delay	LOS
US Route 4 & Bloomingrove Drive / Agway Drive												
Bloomingrove Drive	EB L	33.1	C	EB	20.5	C	EB L	37.3	D	EB	20.7	C
	EB T	37.4	D				EB T	40.7	D			
	EB R	17.9	B				EB R	18.4	B			
Agway Drive	WB L	34.0	C	WB	37.8	D	WB L	33.1	C	WB	35.3	D
	WB TR	40.6	D				WB TR	38.3	D			
US Route 4	NB L	12.3	B	NB	17.0	B	NB L	11.9	B	NB	11.4	B
	NB T	18.4	B				NB T	11.4	B			
	NB R	4.3	A				NB R	3.4	A			
	SB L	22.7	C	SB	30.6	C	SB L	19.9	B	SB	29.1	C
	SB TR	30.6	C				SB TR	29.2	C			
OVERALL					22.3	C					19.8	B
US Route 4 & NY Route 43												
NY Route 43	EB L	36.0	D	EB	34.4	C	EB L	32.9	C	EB	31.3	C
	EB T	33.8	C				EB T	30.1	C			
	EB R	25.7	C				EB R	28.4	C			
	WB L	56.1	E	WB	54.8	D	WB L	35.0	C	WB	34.1	C
	WB T	55.8	E				WB T	34.1	C			
	WB R	49.9	D				WB R	31.0	C			
US Route 4	NB L	55.6	E	NB	39.3	D	NB L	38.9	D	NB	24.2	C
	NB T	39.8	D				NB T	23.9	C			
	NB R	33.9	C				NB R	20.8	C			
	SB L	55.5	E	SB	40.0	D	SB L	35.2	D	SB	22.5	C
	SB T	39.1	D				SB T	22.4	C			
	SB R	37.5	D				SB R	19.8	B			
OVERALL					39.3	D					26.8	C
Unsignalized Intersections												
US Route 4 & I-90 Westbound Ramps												
I-90 WB Off-Ramp	WB L	72.0	F	WB	72.0	F	WB L	21.0	C	WB	21.0	C
	WB R	72.0	F				WB R	21.0	C			
US Route 4	SB L	13.7	B	SB	4.6	A	SB L	9.7	A	SB	1.2	A
US Route 4 & Mannix Road												
Mannix Road	EB LTR	11.2	B	EB	11.2	B	EB LTR	10.1	B	EB	10.1	B
	WB L	13.6	B	WB	12.0	B	WB L	13.0	B	WB	10.3	B
	WB LTR	10.6	B				WB LTR	7.8	A			
US Route 4	NB LT	5.5	A	NB	4.9	A	NB LT	4.6	A	NB	4.4	A
	NB TR	4.4	A				NB TR	4.2	A			
	SB LT	7.9	A	SB	7.7	A	SB LT	4.7	A	SB	4.6	A
	SB TR	7.4	A				SB TR	4.4	A			
OVERALL					7.4	A					4.8	A
Mannix Road & Thompson Hill Road												
Mannix Road	EB L	8.4	A	EB	0.5	A	EB L	7.3	A	EB	1.3	A
Thompson Hill Road	SB LR	12.6	B	SB	12.6	B	SB LR	9.1	A	SB	9.1	A
US Route 4 & Thompson Hill Road												
Thompson Hill Road	WB LR	15.9	C	WB	15.9	C	WB LR	19.9	C	WB	19.9	C
US Route 4	SB L	9.8	A	SB	0.1	A	SB L	11.4	B	SB	0.1	A

Table 6
Capital View Casino & Resort Traffic Impact Study
2016 No-Build Condition

Intersection	Level of Service											
	Friday PM						Saturday Midday					
	Mvmt	Delay	LOS	App	Delay	LOS	Mvmt	Delay	LOS	App	Delay	LOS
Signalized Intersections												
US Route 4 & I-90 Eastbound Ramps												
I-90 EB Off-Ramp	EB L	44.1	D	EB	42.0	D	EB L	21.0	C	EB	16.8	B
	EB R	41.6	D				EB R	15.7	B			
US Route 4	NB L	6.8	A	NB	6.7	A	NB L	5.3	A	NB	6.4	A
	NB T	6.6	A				NB T	6.5	A			
	SB T	34.1	C	SB	28.6	C	SB T	15.3	B	SB	13.2	B
	SB R	15.4	B				SB R	6.7	A			
OVERALL					25.9	C					11.0	B
US Route 4 & FedEx Facility												
FedEx Facility	EB LT	29.2	C	EB	24.2	C	EB LT	32.5	C	EB	30.3	C
	EB R	23.0	C				EB R	29.3	C			
US Route 4	NB L	2.6	A	NB	3.5	A	NB L	1.7	A	NB	4.1	A
	NB T	3.6	A				NB T	4.1	A			
	SB TR	6.5	A	SB	6.5	A	SB TR	4.2	A	SB	4.2	A
OVERALL					5.5	A					4.3	A
US Route 4 & Walmart / Mavis												
Walmart	EB LT	28.9	C	EB	21.9	C	EB LT	33.7	C	EB	23.0	C
	EB R	19.0	B				EB R	17.9	B			
Mavis	WB LTR	23.8	C	WB	23.8	C	WB LTR	24.6	C	WB	24.6	C
US Route 4	NB L	4.4	A	NB	7.1	A	NB L	5.7	A	NB	8.3	A
	NB TR	8.0	A				NB TR	9.3	A			
	SB L	7.1	A	SB	10.4	B	SB L	8.5	A	SB	11.7	B
	SB TR	10.4	B				SB TR	11.8	B			
OVERALL					11.1	B					12.2	B
US Route 4 & 3rd Avenue Ext												
3rd Avenue Ext	EB L	37.9	D	EB	30.6	C	EB L	29.8	C	EB	25.3	C
	EB R	17.2	B				EB R	16.7	B			
US Route 4	NB L	22.2	C	NB	15.8	B	NB L	15.3	B	NB	11.1	B
	NB T	14.7	B				NB T	10.2	B			
	SB TR	24.2	C	SB	24.2	C	SB TR	16.8	B	SB	16.8	B
OVERALL					23.4	C					16.5	B
US Route 4 & Greenbush Commons / Grandview Drive												
Greenbush Commons	EB LT	61.0	E	EB	51.7	D	EB LT	95.8	F	EB	73.2	E
	EB R	30.1	C				EB R	29.3	C			
Grandview Drive	WB LTR	30.7	C	WB	30.7	C	WB LTR	31.7	C	WB	31.7	C
US Route 4	NB L	10.4	B	NB	54.7	D	NB L	10.3	B	NB	27.9	C
	NB TR	59.2	E				NB TR	31.8	C			
	SB L	24.7	C	SB	16.7	B	SB L	18.6	B	SB	17.6	B
	SB T	17.3	B				SB T	18.2	B			
	SB R	14.1	B				SB R	16.3	B			
OVERALL					37.0	D					32.4	C

Table 6 Continued

Intersection	Level of Service											
	Friday PM						Saturday Midday					
	Mvmt	Delay	LOS	App	Delay	LOS	Mvmt	Delay	LOS	App	Delay	LOS
US Route 4 & Bloomingrove Drive / Agway Drive												
Bloomingrove Drive	EB L	33.3	C	EB	21.5	C	EB L	38.1	D	EB	21.7	C
	EB T	37.7	D				EB T	41.4	D			
	EB R	19.1	B				EB R	19.5	B			
Agway Drive	WB L	34.4	C	WB	38.3	D	WB L	33.9	C	WB	36.1	D
	WB TR	41.2	D				WB TR	39.2	D			
US Route 4	NB L	13.0	B	NB	19.7	B	NB L	12.5	B	NB	12.2	B
	NB T	21.6	C				NB T	12.3	B			
	NB R	4.5	A				NB R	3.4	A			
	SB L	22.2	C	SB	29.8	C	SB L	19.4	B	SB	28.0	C
	SB TR	29.9	C				SB TR	28.0	C			
OVERALL					23.5	C					19.9	B
US Route 4 & NY Route 43												
NY Route 43	EB L	38.2	D	EB	36.4	D	EB L	34.2	C	EB	32.5	C
	EB T	35.9	D				EB T	31.3	C			
	EB R	26.8	C				EB R	29.5	C			
	WB L	57.8	E	WB	56.5	E	WB L	36.3	D	WB	35.3	D
	WB T	57.6	E				WB T	35.4	D			
	WB R	51.1	D				WB R	32.0	C			
US Route 4	NB L	58.9	E	NB	40.4	D	NB L	40.4	D	NB	25.0	C
	NB T	40.7	D				NB T	24.7	C			
	NB R	34.6	C				NB R	21.4	C			
	SB L	57.0	E	SB	40.4	D	SB L	36.4	D	SB	23.1	C
	SB T	39.4	D				SB T	23.1	C			
	SB R	37.9	D				SB R	20.3	C			
OVERALL					40.7	D					27.7	C
Unsignalized Intersections												
US Route 4 & I-90 Westbound Ramps												
I-90 WB Off-Ramp	WB L	96.5	F	WB	96.5	F	WB L	23.0	C	WB	23.0	C
	WB R	96.5	F				WB R	23.0	C			
US Route 4	SB L	14.6	B	SB	5.0	A	SB L	9.9	A	SB	1.2	A
US Route 4 & Mannix Road												
Mannix Road	EB LTR	11.5	B	EB	11.5	B	EB LTR	10.2	B	EB	10.2	B
	WB L	13.8	B	WB	12.2	B	WB L	13.1	B	WB	10.5	B
	WB LTR	10.7	B				WB LTR	7.9	A			
US Route 4	NB LT	5.5	A	NB	4.9	A	NB LT	4.6	A	NB	4.4	A
	NB TR	4.4	A				NB TR	4.2	A			
	SB LT	8.3	A	SB	8.1	A	SB LT	4.7	A	SB	4.6	A
	SB TR	7.9	A				SB TR	4.5	A			
OVERALL					7.6	A					4.8	A
Mannix Road & Thompson Hill Road												
Mannix Road	EB L	8.5	A	EB	0.5	A	EB L	7.3	A	EB	1.3	A
Thompson Hill Road	SB LR	12.9	B	SB	12.9	B	SB LR	9.1	A	SB	9.1	A
US Route 4 & Thompson Hill Road												
Thompson Hill Road	WB LR	16.6	C	WB	16.6	C	WB LR	18.8	C	WB	18.8	C
US Route 4	SB L	10.1	B	SB	0.1	A	SB L	14.0	B	SB	0.1	A

Table 7
Capital View Casino & Resort Traffic Impact Study
2016 No-Build and Build Conditions
Friday PM Peak Hour

Intersection	Level of Service											
	2016 No-Build						2016 Build					
	Mvmt	Delay	LOS	App	Delay	LOS	Mvmt	Delay	LOS	App	Delay	LOS
Signalized Intersections												
US Route 4 & I-90 Eastbound Ramps												
I-90 EB Off-Ramp	EB L	44.1	D	EB	42.0	D	EB L	61.3	E	EB	44.7	D
	EB R	41.6	D				EB R	37.5	D			
US Route 4	NB L	6.8	A	NB	6.7	A	NB L	11.6	B	NB	12.3	B
	NB T	6.6	A				NB T	12.4	B			
	SB T	34.1	C	SB	28.6	C	SB T	42.0	D	SB	33.0	C
	SB R	15.4	B				SB R	13.2	B			
OVERALL					25.9	C					30.8	C
US Route 4 & FedEx Facility/Site Access												
FedEx Facility	EB LT	29.2	C	EB	24.2	C	EB LT	25.1	C	EB	23.5	C
	EB R	23.0	C				EB R	23.1	C			
Site Access	WB L	-	-	WB	-	-	WB L	31.1	C	WB	28.1	C
	WB LT	-	-				WB LT	31.1	C			
	WB R	-	-				WB R	22.9	C			
US Route 4	NB L	2.6	A	NB	3.5	A	NB L	7.6	A	NB	18.5	B
	NB T	3.6	A				NB TR	22.1	C			
	NB R	-	-				NB R	9.0	A			
	SB L	-	-	SB	6.5	A	SB L	31.3	C	SB	13.4	B
	SB TR	6.5	A				SB TR	10.4	B			
OVERALL					5.5	A					17.8	B
US Route 4 & Walmart / Mavis												
Walmart	EB LT	28.9	C	EB	21.9	C	EB LT	33.8	C	EB	25.6	C
	EB R	19.0	B				EB R	22.2	C			
Mavis	WB LTR	23.8	C	WB	23.8	C	WB LTR	27.0	C	WB	27.0	C
US Route 4	NB L	4.4	A	NB	7.1	A	NB L	5.3	A	NB	8.5	A
	NB TR	8.0	A				NB TR	9.3	A			
	SB L	7.1	A	SB	10.4	B	SB L	7.2	A	SB	10.9	A
	SB TR	10.4	B				SB TR	10.9	B			
OVERALL					11.1	B					12.1	B
US Route 4 & 3rd Avenue Ext												
3rd Avenue Ext	EB L	37.9	D	EB	30.6	C	EB L	46.6	D	EB	36.8	D
	EB R	17.2	B				EB R	19.6	B			
US Route 4	NB L	22.2	C	NB	15.8	B	NB L	29.3	C	NB	18.9	B
	NB T	14.7	B				NB T	17.4	B			
	SB TR	24.2	C	SB	24.2	C	SB TR	29.1	C	SB	29.1	C
OVERALL					23.4	C					27.8	C
US Route 4 & Greenbush Commons / Grandview Drive												
Greenbush Commons	EB LT	61.0	E	EB	51.7	D	EB LT	62.1	E	EB	52.5	D
	EB R	30.1	C				EB R	30.3	C			
Grandview Drive	WB LTR	30.7	C	WB	30.7	C	WB LTR	30.9	C	WB	30.9	C
US Route 4	NB L	10.4	B	NB	54.7	D	NB L	11.4	B	NB	100.6	F
	NB TR	59.2	E				NB TR	108.5	F			
	SB L	24.7	C	SB	16.7	B	SB L	24.8	C	SB	17.9	B
	SB T	17.3	B				SB T	18.7	B			
	SB R	14.1	B				SB R	14.0	B			
OVERALL					37.0	D					55.4	E

Table 7 Continued

Intersection	Level of Service											
	2016 No-Build						2016 Build					
	Mvmt	Delay	LOS	App	Delay	LOS	Mvmt	Delay	LOS	App	Delay	LOS
US Route 4 & Bloomingrove Drive / Agway Drive												
Bloomingrove Drive	EB L	33.3	C	EB	21.5	C	EB L	33.6	C	EB	22.8	C
	EB T	37.7	D				EB T	37.6	D			
	EB R	19.1	B				EB R	20.6	C			
Agway Drive	WB L	34.4	C	WB	38.3	D	WB L	39.6	D	WB	41.5	D
	WB TR	41.2	D				WB TR	43.0	D			
US Route 4	NB L	13.0	B	NB	19.7	B	NB L	16.5	B	NB	39.3	D
	NB T	21.6	C				NB T	45.1	D			
	NB R	4.5	A				NB R	5.9	A			
	SB L	22.2	C	SB	29.8	C	SB L	21.9	C	SB	30.4	C
	SB TR	29.9	C				SB TR	30.5	C			
OVERALL					23.5	C					33.5	C
US Route 4 & NY Route 43												
NY Route 43	EB L	38.2	D	EB	36.4	D	EB L	46.5	D	EB	44.7	D
	EB T	35.9	D				EB T	44.9	D			
	EB R	26.8	C				EB R	35.5	D			
	WB L	57.8	E	WB	56.5	E	WB L	65.3	E	WB	63.6	E
	WB T	57.6	E				WB T	64.8	E			
	WB R	51.1	D				WB R	56.9	E			
US Route 4	NB L	58.9	E	NB	40.4	D	NB L	70.2	E	NB	46.7	D
	NB T	40.7	D				NB T	45.2	D			
	NB R	34.6	C				NB R	38.4	D			
	SB L	57.0	E	SB	40.4	D	SB L	57.0	E	SB	44.6	D
	SB T	39.4	D				SB T	43.6	D			
	SB R	37.9	D				SB R	42.9	D			
OVERALL					40.7	D					47.2	D
Unsignalized Intersections												
US Route 4 & I-90 Westbound Ramps												
I-90 WB Off-Ramp	WB L	96.5	F	WB	96.5	F	WB L	999.9	F	WB	999.9	F
	WB R	96.5	F				WB R	999.9	F			
US Route 4	SB L	14.6	B	SB	5.0	A	SB L	53.3	F	SB	21.2	C
US Route 4 & Mannix Road												
Mannix Road	EB LTR	11.5	B	EB	11.5	B	EB LTR	13.2	B	EB	13.2	B
	WB L	13.8	B	WB	12.2	B	WB L	15.9	B	WB	14.0	B
	WB LTR	10.7	B				WB LTR	12.2	B			
US Route 4	NB LT	5.5	A	NB	4.9	A	NB LT	5.4	A	NB	5.0	A
	NB TR	4.4	A				NB TR	4.6	A			
	SB LT	8.3	A	SB	8.1	A	SB LT	10.7	B	SB	10.5	B
	SB TR	7.9	A				SB TR	10.3	B			
OVERALL					7.6	A					8.8	A
Mannix Road & Thompson Hill Road												
Mannix Road	EB L	8.5	A	EB	0.5	A	EB L	8.5	A	EB	1.0	A
Thompson Hill Road	SB LR	12.9	B	SB	12.9	B	SB LR	13.0	B	SB	13.0	B
US Route 4 & Thompson Hill Road												
Thompson Hill Road	WB LR	16.6	C	WB	16.6	C	WB LR	-	-	WB	-	-
US Route 4	SB L	10.1	B	SB	0.1	A	SB L	-	-	SB	-	-

Table 8
Capital View Casino & Resort Traffic Impact Study
2016 No-Build and Build Conditions
Saturday Midday Peak Hour

Intersection	Level of Service											
	2016 No-Build						2016 Build					
	Mvmt	Delay	LOS	App	Delay	LOS	Mvmt	Delay	LOS	App	Delay	LOS
Signalized Intersections												
US Route 4 & I-90 Eastbound Ramps												
I-90 EB Off-Ramp	EB L	21.0	C	EB	16.8	B	EB L	24.0	C	EB	19.5	B
	EB R	15.7	B				EB R	16.3	B			
US Route 4	NB L	5.3	A	NB	6.4	A	NB L	8.1	A	NB	10.2	B
	NB T	6.5	A				NB T	10.4	B			
	SB T	15.3	B	SB	13.2	B	SB T	18.3	B	SB	15.0	B
	SB R	6.7	A				SB R	5.3	A			
OVERALL					11.0	B					14.2	B
US Route 4 & FedEx Facility/Site Access												
FedEx Facility	EB LT	32.5	C	EB	30.3	C	EB LT	37.3	D	EB	36.8	D
	EB R	29.3	C				EB R	36.5	D			
Site Access	WB L	-	-	WB	-	-	WB L	48.0	D	WB	42.5	D
	WB LT	-	-				WB LT	48.0	D			
	WB R	-	-				WB R	33.3	C			
US Route 4	NB L	1.7	A	NB	4.1	A	NB L	5.4	A	NB	14.4	B
	NB T	4.1	A				NB T	16.6	B			
	NB R	-	-				NB R	6.5	A			
	SB L	-	-	SB	4.2	A	SB L	22.5	C	SB	8.3	A
	SB TR	4.2	A				SB TR	5.8	A			
OVERALL					4.3	A					14.8	B
US Route 4 & Walmart / Mavis												
Walmart	EB LT	33.7	C	EB	23.0	C	EB LT	39.6	D	EB	27.3	C
	EB R	17.9	B				EB R	21.4	C			
Mavis	WB LTR	24.6	C	WB	24.6	C	WB LTR	27.9	C	WB	27.9	C
US Route 4	NB L	5.7	A	NB	8.3	A	NB L	8.0	A	NB	9.6	A
	NB TR	9.3	A				NB TR	10.1	B			
	SB L	8.5	A	SB	11.7	B	SB L	8.3	A	SB	12.1	B
	SB TR	11.8	B				SB TR	12.1	B			
OVERALL					12.2	B					13.4	B
US Route 4 & 3rd Avenue Ext												
3rd Avenue Ext	EB L	29.8	C	EB	25.3	C	EB L	34.9	C	EB	29.3	C
	EB R	16.7	B				EB R	19.0	B			
US Route 4	NB L	15.3	B	NB	11.1	B	NB L	20.1	C	NB	12.8	B
	NB T	10.2	B				NB T	11.2	B			
	SB TR	16.8	B	SB	16.8	B	SB TR	19.2	B	SB	19.2	B
OVERALL					16.5	B					18.8	B
US Route 4 & Greenbush Commons / Grandview Drive												
Greenbush Commons	EB LT	95.8	F	EB	73.2	E	EB LT	117.9	F	EB	88.5	F
	EB R	29.3	C				EB R	31.5	C			
Grandview Drive	WB LTR	31.7	C	WB	31.7	C	WB LTR	34.7	C	WB	34.7	C
US Route 4	NB L	10.3	B	NB	27.9	C	NB L	10.9	B	NB	33.9	C
	NB TR	31.8	C				NB TR	38.7	D			
	SB L	18.6	B	SB	17.6	B	SB L	21.6	C	SB	17.7	B
	SB T	18.2	B				SB T	18.4	B			
	SB R	16.3	B				SB R	15.6	B			
OVERALL					32.4	C					36.7	D

Table 8 Continued

Intersection	Level of Service											
	2016 No-Build						2016 Build					
	Mvmt	Delay	LOS	App	Delay	LOS	Mvmt	Delay	LOS	App	Delay	LOS
US Route 4 & Bloomingrove Drive / Agway Drive												
Bloomingrove Drive	EB L	38.1	D	EB	21.7	C	EB L	41.0	D	EB	25.7	C
	EB T	41.4	D				EB T	44.5	D			
	EB R	19.5	B				EB R	23.6	C			
Agway Drive	WB L	33.9	C	WB	36.1	D	WB L	37.2	D	WB	39.3	D
	WB TR	39.2	D				WB TR	42.4	D			
US Route 4	NB L	12.5	B	NB	12.2	B	NB L	14.7	B	NB	14.5	B
	NB T	12.3	B				NB T	14.6	B			
	NB R	3.4	A				NB R	3.6	A			
	SB L	19.4	B	SB	28.0	C	SB L	17.9	B	SB	24.6	C
	SB TR	28.0	C				SB TR	24.6	C			
OVERALL					19.9	B					20.3	C
US Route 4 & NY Route 43												
NY Route 43	EB L	34.2	C	EB	32.5	C	EB L	39.9	D	EB	38.4	D
	EB T	31.3	C				EB T	37.2	D			
	EB R	29.5	C				EB R	37.2	D			
	WB L	36.3	D	WB	35.3	D	WB L	42.0	D	WB	41.3	D
	WB T	35.4	D				WB T	41.6	D			
	WB R	32.0	C				WB R	37.1	D			
US Route 4	NB L	40.4	D	NB	25.0	C	NB L	40.9	D	NB	26.8	C
	NB T	24.7	C				NB T	25.9	C			
	NB R	21.4	C				NB R	22.6	C			
	SB L	36.4	D	SB	23.1	C	SB L	38.7	D	SB	26.7	C
	SB T	23.1	C				SB T	27.1	C			
	SB R	20.3	C				SB R	23.3	C			
OVERALL					27.7	C					31.7	C
Unsignalized Intersections												
US Route 4 & I-90 Westbound Ramps												
I-90 WB Off-Ramp	WB L	23.0	C	WB	23.0	C	WB L	78.1	F	WB	78.1	F
	WB R	23.0	C				WB R	78.1	F			
US Route 4	SB L	9.9	A	SB	1.2	A	SB L	12.6	B	SB	2.7	A
US Route 4 & Mannix Road												
Mannix Road	EB LTR	10.2	B	EB	10.2	B	EB LTR	10.9	B	EB	10.9	B
	WB L	13.1	B	WB	10.5	B	WB L	14.2	B	WB	10.9	B
	WB LTR	7.9	A				WB LTR	8.0	A			
US Route 4	NB LT	4.6	A	NB	4.4	A	NB LT	4.6	A	NB	4.5	A
	NB TR	4.2	A				NB TR	4.3	A			
	SB LT	4.7	A	SB	4.6	A	SB LT	4.8	A	SB	4.6	A
	SB TR	4.5	A				SB TR	4.5	A			
OVERALL					4.8	A					4.8	A
Mannix Road & Thompson Hill Road												
Mannix Road	EB L	7.3	A	EB	1.3	A	EB L	7.4	A	EB	2.4	A
Thompson Hill Road	SB LR	9.1	A	SB	9.1	A	SB LR	9.1	A	SB	9.1	A
US Route 4 & Thompson Hill Road												
Thompson Hill Road	WB LR	18.8	C	WB	18.8	C	WB LR	-	-	WB	-	-
US Route 4	SB L	14.0	B	SB	0.1	A	SB L	-	-	SB	-	-

5.2.2 Freeway Level of Service

Freeway analyses for I-90 were conducted using HCS 2010. The analyses were conducted for the ramp junctions at Exit 9 for the Friday PM peak hour, as this is the worst case condition of the two study peak hours.

5.2.2.1 Existing Condition

The results of the Friday PM peak hour Existing freeway analyses are summarized in Table 9 below. As shown, all ramp junctions operate at LOS C or better.

Table 9

Freeway Level of Service
2014 Existing Condition
Friday PM Peak Hour

Direction	Junction	Density pc/mi/ln	LOS
Eastbound	Exit 9 Off-Ramp	24.3	C
	Exit 9 On-Ramp	15.9	B
Westbound	Exit 9 Off-Ramp	12.2	B
	Exit 9 On-Ramp	13.2	B

5.2.2.2 No-Build Condition

The results of the Friday PM peak hour No-Build freeway analyses are summarized in Table 10 below. As shown, all ramp junctions are estimated to operate at LOS C or better.

Table 10

Freeway Level of Service
2016 No-Build Condition
Friday PM Peak Hour

Direction	Junction	Density pc/mi/ln	LOS
Eastbound	Exit 9 Off-Ramp	25.1	C
	Exit 9 On-Ramp	16.6	B
Westbound	Exit 9 Off-Ramp	12.7	B
	Exit 9 On-Ramp	13.9	B

5.2.2.3 Build Condition

The results of the Friday PM peak hour Build freeway analyses are summarized in Table 11 below. As shown, all ramp junctions are estimated to operate at LOS C or better.

Table 11

Freeway Level of Service
2016 Build Condition
Friday PM Peak Hour

Direction	Junction	Density pc/mi/ln	LOS
Eastbound	Exit 9 Off-Ramp	27.3	C
	Exit 9 On-Ramp	17.7	B
Westbound	Exit 9 Off-Ramp	13.3	B
	Exit 9 On-Ramp	15.6	B

5.3 MITIGATION

As discussed in Section 5.2, the addition of the project generated traffic does reduce the LOS for a number of movements at the study area intersections. Vehicular queues on US Route 4 are also exacerbated with the site traffic. To mitigate these impacts, geometric and signal operations improvements are proposed throughout the corridor. The addition of a second northbound through lane on US Route 4 to match the existing capacity in the southbound direction will mitigate impacts of the site on the corridor north of the site as well improving the existing queues and delays experienced without the project. At the US Route 4 and I-90 Exit 9 interchange, the addition of a new US Route 4 southbound to I-90 westbound on-ramp will provide a free-flow condition for this major movement onto the interstate.

Specifically, the following improvements are proposed at the study area intersections:

- US Route 4 & I-90 Eastbound Ramps
  - Add an eastbound right-turn lane
  - Optimize signal timings
- US Route 4 & I-90 Westbound Ramps
  - Add new westbound on-ramp from US Route 4 southbound
  - Modify existing westbound on-ramp to only allow entry from US Route 4 northbound (free flow movement)
  - Signalize the intersection with the off-ramp
- US Route 4 & FedEx Facility / Site Access
  - Add a northbound through lane
  - Use split signal phasing for eastbound/westbound movements
  - Optimize signal timings
- US Route 4 & Walmart / Mavis Discount Tires
  - Add a northbound through lane
  - Optimize signal timings

- US Route 4 & 3rd Avenue Extension
    - Add a northbound through lane
    - Optimize signal timings
- US Route 4 & Greenbush Commons / Grandview Drive
    - Add a northbound through lane
    - Optimize signal timings
- US Route 4 & Bloomingrove Drive / Agway Drive
    - Modify northbound right-turn lane to be a shared through/right-turn lane
    - Optimize signal timings
- US Route 4 & NY Route 43
    - Add a northbound left-turn lane
    - Optimize signal timings

To allow for an additional northbound through lane from the FedEx Facility / Site Access intersection to the NY Route 43 intersection, US Route 4 will need to be widened from the existing four-lane section north of the Mannix Road intersection to just south of the NY Route 43 intersection. Figures F-1 to F-20 in Appendix F present a conceptual layout of the proposed improvements at the study area intersections and the interstate ramps.

A summary of the intersection LOS for the Build with Mitigation Condition is presented in Tables 12 and 13. As shown, the proposed mitigation improves the traffic operations to conditions that are the same or better than the No-Build condition with reserve capacity provided in the system. The overall LOS is better with the project and its proposed mitigation measures than the No-Build condition during one or both the study peak hours at the following intersections:

- US Route 4 & I-90 Eastbound Ramps
- US Route 4 & I-90 Westbound Ramps
- US Route 4 & Greenbush Commons / Grandview Drive
- US Route 4 & Bloomingrove Drive / Agway Drive

All intersection approaches are estimated to operate at LOS D or better with the mitigation measures. All intersection movements are estimated to operate at LOS D or better with the exception of the following:

- US Route 4 & FedEx Facility / Site Access
    - Eastbound left/through (LOS E - Friday PM)

For the US Route 4 & FedEx Facility / Site Access eastbound left/through movement, the estimated LOS E is due to the low volume for the movement which limits the amount of green time allocated to the approach. The overall approach is projected to operate at LOS D.

A summary of the merge and diverge operations for the new westbound on-ramp configuration is presented in Table 14. As shown, all ramp junctions are estimated to operate at LOS C or better.

Table 14

Freeway Level of Service
2016 Build Condition with Mitigation
Friday PM Peak Hour

Direction	Junction	Density pc/mi/ln	LOS
Westbound	Exit 9 Off-Ramp	13.3	B
Westbound	Exit 9 On-Ramp (from US Route 4 NB)	13.9	B
	Exit 9 On-Ramp (from US Route 4 SB)	20.5	C

Table 12
Capital View Casino & Resort Traffic Impact Study
2016 No-Build and Build with Mitigation Conditions
Friday PM

Intersection	Level of Service											
	2016 No-Build						2016 Build - Mitigation					
	Mvmt	Delay	LOS	App	Delay	LOS	Mvmt	Delay	LOS	App	Delay	LOS
Signalized Intersections												
US Route 4 & I-90 Eastbound Ramps												
I-90 EB Off-Ramp	EB L	44.1	D	EB	42.0	D	EB L	29.4	C	EB	19.5	B
	EB R	41.6	D				EB R	15.1	B			
US Route 4	NB L	6.8	A	NB	6.7	A	NB L	10.3	B	NB	12.0	B
	NB T	6.6	A				NB T	12.2	B			
	SB T	34.1	C	SB	28.6	C	SB T	24.1	C	SB	18.5	B
	SB R	15.4	B				SB R	6.1	A			
OVERALL					25.9	C					16.8	B
US Route 4 & I-90 Westbound Ramps												
I-90 WB Off-Ramp	WB L	-	-	WB	-	-	WB L	10.7	B	WB	13.1	B
	WB R	-	-				WB R	13.3	B			
US Route 4	NB T	-	-	NB	-	-	NB T	9.3	A	NB	6.3	A
	NB R	-	-				NB R	0.5	A			
	SB L	-	-	SB	-	-	SB T	9.3	A	SB	5.9	A
	SB T	-	-				SB R	0.9	A			
OVERALL						-					6.8	A
US Route 4 & FedEx Facility/Site Access												
FedEx Facility	EB LT	29.2	C	EB	24.2	C	EB LT	60.2	E	EB	37.1	D
	EB R	23.0	C				EB R	31.8	C			
Site Access	WB L	-	-	WB	-	-	WB L	29.3	C	WB	25.5	C
	WB LT	-	-			-	WB LT	29.3	C			
	WB R	-	-			-	WB R	19.2	B			
US Route 4	NB L	2.6	A	NB	3.5	A	NB L	15.2	B	NB	14.3	B
	NB T	3.6	A				NB T	18.9	B			
	NB R	-	-				NB R	0.2	A			
	SB L	-	-	SB	6.5	A	SB L	14.7	B	SB	15.1	A
	SB TR	6.5	A				SB TR	15.2	B			
OVERALL					5.5	A					16.5	B
US Route 4 & Walmart / Mavis												
Walmart	EB LT	28.9	C	EB	21.9	C	EB LT	27.4	C	EB	20.9	C
	EB R	19.0	B				EB R	18.2	B			
Mavis	WB LTR	23.8	C	WB	23.8	C	WB LTR	21.5	C	WB	21.5	C
US Route 4	NB L	4.4	A	NB	7.1	A	NB L	5.8	A	NB	6.1	A
	NB TR	8.0	A				NB TR	6.1	A			
	SB L	7.1	A	SB	10.4	B	SB L	6.7	A	SB	11.0	B
	SB TR	10.4	B				SB TR	11.1	B			
OVERALL					11.1	B					10.5	B
US Route 4 & 3rd Avenue Ext												
3rd Avenue Ext	EB L	37.9	D	EB	30.6	C	EB L	39.5	D	EB	30.3	C
	EB R	17.2	B				EB R	14.1	B			
US Route 4	NB L	22.2	C	NB	15.8	B	NB L	21.2	C	NB	10.5	B
	NB T	14.7	B				NB T	8.9	A			
	SB TR	24.2	C	SB	24.2	C	SB TR	25.7	C	SB	25.7	C
OVERALL					23.4	C					21.9	C

Table 12 Continued

Intersection	Level of Service											
	2016 No-Build						2016 Build - Mitigation					
	Mvmt	Delay	LOS	App	Delay	LOS	Mvmt	Delay	LOS	App	Delay	LOS
US Route 4 & Greenbush Commons / Grandview Drive												
Greenbush Commons	EB LT	61.0	E	EB	51.7	D	EB LT	30.9	C	EB	26.9	C
	EB R	30.1	C				EB R	17.3	B			
Grandview Drive	WB LTR	30.7	C	WB	30.7	C	WB LTR	17.7	B	WB	17.7	B
US Route 4	NB L	10.4	B	NB	54.7	D	NB L	10.7	B	NB	16.5	B
	NB TR	59.2	E				NB TR	17.0	B			
	SB L	24.7	C	SB	16.7	B	SB L	10.9	B	SB	15.4	B
	SB T	17.3	B				SB T	16.8	B			
	SB R	14.1	B				SB R	11.5	B			
OVERALL					37.0	D					17.5	B
US Route 4 & Bloomingrove Drive / Agway Drive												
Bloomingrove Drive	EB L	33.3	C	EB	21.5	C	EB L	21.7	C	EB	18.6	B
	EB T	37.7	D				EB T	20.6	C			
	EB R	19.1	B				EB R	18.0	B			
Agway Drive	WB L	34.4	C	WB	38.3	D	WB L	28.8	C	WB	29.6	C
	WB TR	41.2	D				WB TR	30.2	C			
US Route 4	NB L	13.0	B	NB	19.7	B	NB L	14.6	B	NB	11.2	B
	NB T	21.6	C				NB TR	10.4	B			
	NB R	4.5	A				NB R	-	-			
	SB L	22.2	C	SB	29.8	C	SB L	16.7	B	SB	17.9	B
	SB TR	29.9	C				SB TR	17.9	B			
OVERALL					23.5	C					15.0	B
US Route 4 & NY Route 43												
NY Route 43	EB L	38.2	D	EB	36.4	D	EB L	38.8	D	EB	37.1	D
	EB T	35.9	D				EB T	37.5	D			
	EB R	26.8	C				EB R	28.4	C			
	WB L	57.8	E	WB	56.5	E	WB L	52.7	D	WB	51.6	D
	WB T	57.6	E				WB T	52.5	D			
	WB R	51.1	D				WB R	46.6	D			
US Route 4	NB L	58.9	E	NB	40.4	D	NB L	54.5	D	NB	37.9	D
	NB T	40.7	D				NB T	37.5	D			
	NB R	34.6	C				NB R	30.7	C			
	SB L	57.0	E	SB	40.4	D	SB L	52.0	D	SB	35.9	D
	SB T	39.4	D				SB T	35.0	C			
	SB R	37.9	D				SB R	33.4	C			
OVERALL					40.7	D					38.6	D
Unsignalized Intersections												
US Route 4 & I-90 Westbound Ramps												
I-90 WB Off-Ramp	WB L	96.5	F	WB	96.5	F	WB L	-	-	WB	-	-
	WB R	96.5	F				WB R	-	-			
US Route 4	SB L	14.6	B	SB	5.0	A	SB L	-	-	SB	-	-
US Route 4 & Mannix Road												
Mannix Road	EB LTR	11.5	B	EB	11.5	B	EB LTR	13.2	B	EB	13.2	B
	WB L	13.8	B	WB	12.2	B	WB L	15.9	B	WB	14.0	B
	WB LTR	10.7	B				WB LTR	12.2	B			
US Route 4	NB LT	5.5	A	NB	4.9	A	NB LT	5.4	A	NB	5.0	A
	NB TR	4.4	A				NB TR	4.6	A			
	SB LT	8.3	A	SB	8.1	A	SB LT	10.7	B	SB	10.5	B
	SB TR	7.9	A				SB TR	10.3	B			
OVERALL					7.6	A					8.8	A
Mannix Road & Thompson Hill Road												
Mannix Road	EB L	8.5	A	EB	0.5	A	EB L	8.5	A	EB	1.0	A
Thompson Hill Road	SB LR	12.9	B	SB	12.9	B	SB LR	13.0	B	SB	13.0	B
US Route 4 & Thompson Hill Road												
Thompson Hill Road	WB LR	16.6	C	WB	16.6	C	WB LR	-	-	WB	-	-
US Route 4	SB L	10.1	B	SB	0.1	A	SB L	-	-	SB	-	-

Table 13
Capital View Casino & Resort Traffic Impact Study
2016 No-Build and Build with Mitigation Conditions
Saturday Midday

Intersection	Level of Service											
	2016 No-Build						2016 Build - Mitigation					
	Mvmt	Delay	LOS	App	Delay	LOS	Mvmt	Delay	LOS	App	Delay	LOS
Signalized Intersections												
US Route 4 & I-90 Eastbound Ramps												
I-90 EB Off-Ramp	EB L	21.0	C	EB	16.8	B	EB L	21.1	C	EB	16.5	B
	EB R	15.7	B				EB R	13.3	B			
US Route 4	NB L	5.3	A	NB	6.4	A	NB L	7.5	A	NB	9.6	A
	NB T	6.5	A				NB T	9.7	A			
	SB T	15.3	B	SB	13.2	B	SB T	15.7	B	SB	12.9	B
	SB R	6.7	A				SB R	4.8	A			
OVERALL					11.0	B					12.5	B
US Route 4 & I-90 Westbound Ramps												
I-90 WB Off-Ramp	WB L	-	-	-	-	-	WB L	10.9	B	WB	12.6	B
	WB R	-	-			-	WB R	12.9	B			
US Route 4	NB T	-	-	-	-	-	NB T	8.8	A	NB	6.3	A
	NB R	-	-			-	NB R	0.4	A			
	SB L	-	-	-	-	-	SB T	8.0	A	SB	6.3	A
	SB T	-	-			-	SB R	0.2	A			
OVERALL					-	-					7.1	A
US Route 4 & FedEx Facility/Site Access												
FedEx Facility	EB LT	32.5	C	EB	30.3	C	EB LT	42.4	D	EB	36.7	D
	EB R	29.3	C				EB R	34.2	C			
Site Access	WB L	-	-	WB	-	-	WB L	32.6	C	WB	29.0	C
	WB LT	-	-				WB LT	32.6	C			
	WB R	-	-				WB R	22.9	C			
US Route 4	NB L	1.7	A	NB	4.1	A	NB L	10.8	B	NB	12.4	B
	NB T	4.1	A				NB T	15.7	B			
	NB R	-	-				NB R	0.2	A			
	SB L	-	-	SB	4.2	A	SB L	12.9	B	SB	10.4	A
	SB TR	4.2	A				SB TR	10.0	B			
OVERALL					4.3	A					13.3	B
US Route 4 & Walmart / Mavis												
Walmart	EB LT	33.7	C	EB	23.0	C	EB LT	33.2	C	EB	22.1	C
	EB R	17.9	B				EB R	16.8	B			
Mavis	WB LTR	24.6	C	WB	24.6	C	WB LTR	22.7	C	WB	22.7	C
US Route 4	NB L	5.7	A	NB	8.3	A	NB L	8.5	A	NB	6.9	A
	NB TR	9.3	A				NB TR	6.4	A			
	SB L	8.5	A	SB	11.7	B	SB L	8.7	A	SB	13.4	B
	SB TR	11.8	B				SB TR	13.5	B			
OVERALL					12.2	B					11.9	B
US Route 4 & 3rd Avenue Ext												
3rd Avenue Ext	EB L	29.8	C	EB	25.3	C	EB L	31.5	C	EB	25.6	C
	EB R	16.7	B				EB R	14.7	B			
US Route 4	NB L	15.3	B	NB	11.1	B	NB L	16.7	B	NB	8.1	A
	NB T	10.2	B				NB T	6.3	A			
	SB TR	16.8	B	SB	16.8	B	SB TR	18.3	B	SB	18.3	B
OVERALL					16.5	B					16.0	B

Table 13 Continued

Intersection	Level of Service											
	2016 No-Build						2016 Build - Mitigation					
	Mvmt	Delay	LOS	App	Delay	LOS	Mvmt	Delay	LOS	App	Delay	LOS
US Route 4 & Greenbush Commons / Grandview Drive												
Greenbush Commons	EB LT	95.8	F	EB	73.2	E	EB LT	43.0	D	EB	34.4	C
	EB R	29.3	C				EB R	17.6	B			
Grandview Drive	WB LTR	31.7	C	WB	31.7	C	WB LTR	18.6	B	WB	18.6	B
US Route 4	NB L	10.3	B	NB	27.9	C	NB L	14.0	B	NB	16.0	B
	NB TR	31.8	C				NB TR	16.5	B			
	SB L	18.6	B	SB	17.6	B	SB L	12.5	B	SB	17.5	B
	SB T	18.2	B				SB T	19.1	B			
	SB R	16.3	B				SB R	15.0	B			
OVERALL					32.4	C					20.0	B
US Route 4 & Bloomingrove Drive / Agway Drive												
Bloomingrove Drive	EB L	38.1	D	EB	21.7	C	EB L	26.3	C	EB	25.2	C
	EB T	41.4	D				EB T	27.4	C			
	EB R	19.5	B				EB R	25.0	C			
Agway Drive	WB L	33.9	C	WB	36.1	D	WB L	52.1	D	WB	48.8	D
	WB TR	39.2	D				WB TR	44.0	D			
US Route 4	NB L	12.5	B	NB	12.2	B	NB L	12.4	B	NB	8.5	A
	NB T	12.3	B				NB TR	7.4	A			
	NB R	3.4	A				NB R	-	-			
	SB L	19.4	B	SB	28.0	C	SB L	11.3	B	SB	16.0	B
	SB TR	28.0	C				SB TR	16.0	B			
OVERALL					19.9	B					14.2	B
US Route 4 & NY Route 43												
NY Route 43	EB L	34.2	C	EB	32.5	C	EB L	33.9	C	EB	32.1	C
	EB T	31.3	C				EB T	31.4	C			
	EB R	29.5	C				EB R	29.8	C			
	WB L	36.3	D	WB	35.3	D	WB L	34.4	C	WB	33.9	C
	WB T	35.4	D				WB T	34.4	C			
	WB R	32.0	C				WB R	30.3	C			
US Route 4	NB L	40.4	D	NB	25.0	C	NB L	36.1	D	NB	23.4	C
	NB T	24.7	C				NB T	22.6	C			
	NB R	21.4	C				NB R	19.5	B			
	SB L	36.4	D	SB	23.1	C	SB L	32.4	C	SB	20.5	C
	SB T	23.1	C				SB T	20.5	C			
	SB R	20.3	C				SB R	17.8	B			
OVERALL					27.7	C					26.1	C
Unsignalized Intersections												
US Route 4 & I-90 Westbound Ramps												
I-90 WB Off-Ramp	WB L	23.0	C	WB	96.5	F	WB L	-	-	WB	-	-
	WB R	23.0	C				WB R	-	-			
US Route 4	SB L	9.9	A	SB	5.0	A	SB L	-	-	SB		-
US Route 4 & Mannix Road												
Mannix Road	EB LTR	10.2	B	EB	11.5	B	EB LTR	10.9	B	EB	10.9	B
	WB L	13.1	B	WB	12.2	B	WB L	14.2	B	WB	10.9	B
	WB LTR	7.9	A				WB LTR	8.0	A			
US Route 4	NB LT	4.6	A	NB	4.9	A	NB LT	4.6	A	NB	4.5	A
	NB TR	4.2	A				NB TR	4.3	A			
	SB LT	4.7	A	SB	8.1	A	SB LT	4.8	A	SB	4.6	A
	SB TR	4.5	A				SB TR	4.5	A			
OVERALL					4.8	A					4.8	A
Mannix Road & Thompson Hill Road												
Mannix Road	EB L	7.3	A	EB	1.3	A	EB L	7.4	A	EB	2.4	A
Thompson Hill Road	SB LR	9.1	A	SB	9.1	A	SB LR	9.1	A	SB	9.1	A
US Route 4 & Thompson Hill Road												
Thompson Hill Road	WB LR	18.8	C	WB	18.8	C	WB LR	-	-	WB	-	-
US Route 4	SB L	14.0	B	SB	0.1	A	SB L	-	-	SB	-	-

In addition to the mitigation measures discussed above, additional geometric and signal timing improvements were tested but dismissed for the project area. These measures included the following:

- US Route 4 & I-90 Eastbound Ramps
  - Instead of a dual eastbound right-turn lane from the off-ramp, a dual eastbound left-turn lane was also tested to serve the site generated traffic. Although this alternative provided better LOS than No-Build, it was found that a dual right would provide better operations for the intersection than the dual left due to the heavy existing right-turn volume.
- US Route 4 & I-90 Westbound Ramps
  - A traffic signal installation was tested for this intersection with the existing geometry and ramp configuration. Due to the high estimated volume of southbound lefts, the queue for this movement is estimated to extend beyond the available storage length and back to the Mannix Road roundabout. As a result, this alternative was dismissed.
  - A roundabout was also tested for this intersection with the existing ramp configuration. Due to the high estimated volume of southbound lefts, the northbound approach would experience poor LOS and long queues. As a result, this alternative was dismissed.
  - A diamond configuration was also tested for this intersection, replacing the existing loop ramp configuration. Although this alternative would provide adequate LOS, it would require dual left-turn lanes in the northbound direction which cannot be accommodated on the bridge structure over I-90.
  - Adding an additional lane to the westbound on-ramp for the existing ramp configuration was evaluated to allow for dual southbound lefts. This alternative was dismissed because an additional ramp lane cannot be accommodated under the I-90 overpass and would otherwise require dropping the second lane on the ramp where there is a tight radius.
- US Route 4 Northbound
  - To maintain only one lane northbound on US Route 4, a coordinated signal network between the Walmart / Mavis Discount Tire intersection and NY Route 43 intersection was analyzed. Even with the coordinated network, the northbound movements were projected to encounter long queues and poor LOS. As a result, maintaining one northbound lane was ruled out.

6.0 CONCLUSION & RECOMMENDATIONS

The proposed project, Capital View Casino & Resort, consists of a 174,000 square foot casino and amenity space with 1,842 gaming positions and a 100-room hotel. The proposed primary access to the site will be located on US Route 4 opposite of the FedEx Distribution Center. The traffic impact assessment of this project is based on a site concept that is larger than is actually being proposed as a result of refinements in the site planning/programming process. The basis of analysis considered 196,000 square feet of casino and amenity space with 2,020 gaming positions, and a 151-room hotel. The estimated trip generation for the casino space is based on a compilation of data from traffic impact studies completed for other regional casino projects. Trip generation rates were calculated in these studies based on square footage of the casino space or the number of gaming positions. For the Capital View Casino & Resort trip generation, an average was taken of the number of trips calculated based on the square footage of the casino space rate and the gaming position rate from the representative traffic impact studies.

ITE's Trip Generation Manual data for LUC 310 was used for the hotel trip generation. There are 100 rooms proposed for the hotel, however, the traffic analysis was based on a larger 151-room hotel. It is assumed that 75% of the guests staying at the hotel would also be using the casino facilities and their site trips are already captured in the casino trip generation. Therefore, only 25% of the trips related to the hotel use would be considered new trips. It is estimated that the project will generate 822 total trips (435 enter, 387 exit) during the Friday PM peak hour and 636 total trips (399 enter, 237 exit) during the Saturday Midday peak hour.

Capacity analyses of the study area were conducted to estimate the operations of the adjacent roadway system with and without the project generated traffic. The addition of the project generated traffic does reduce the LOS for a number of movements at the study area intersections. As a result, geometric and signal operations improvements are proposed throughout the corridor.

The addition of a second northbound through lane on US Route 4 to match the existing capacity in the southbound direction will mitigate impacts of the site on the corridor north of the site as well improving the existing queues and delays experienced without the project. At the US Route 4 and I-90 Exit 9 interchange, the addition of a new US Route 4 southbound to I-90 westbound on-ramp will provide a free-flow condition for this major movement onto the interstate.

Specifically, the following improvements are proposed at the study area intersections:

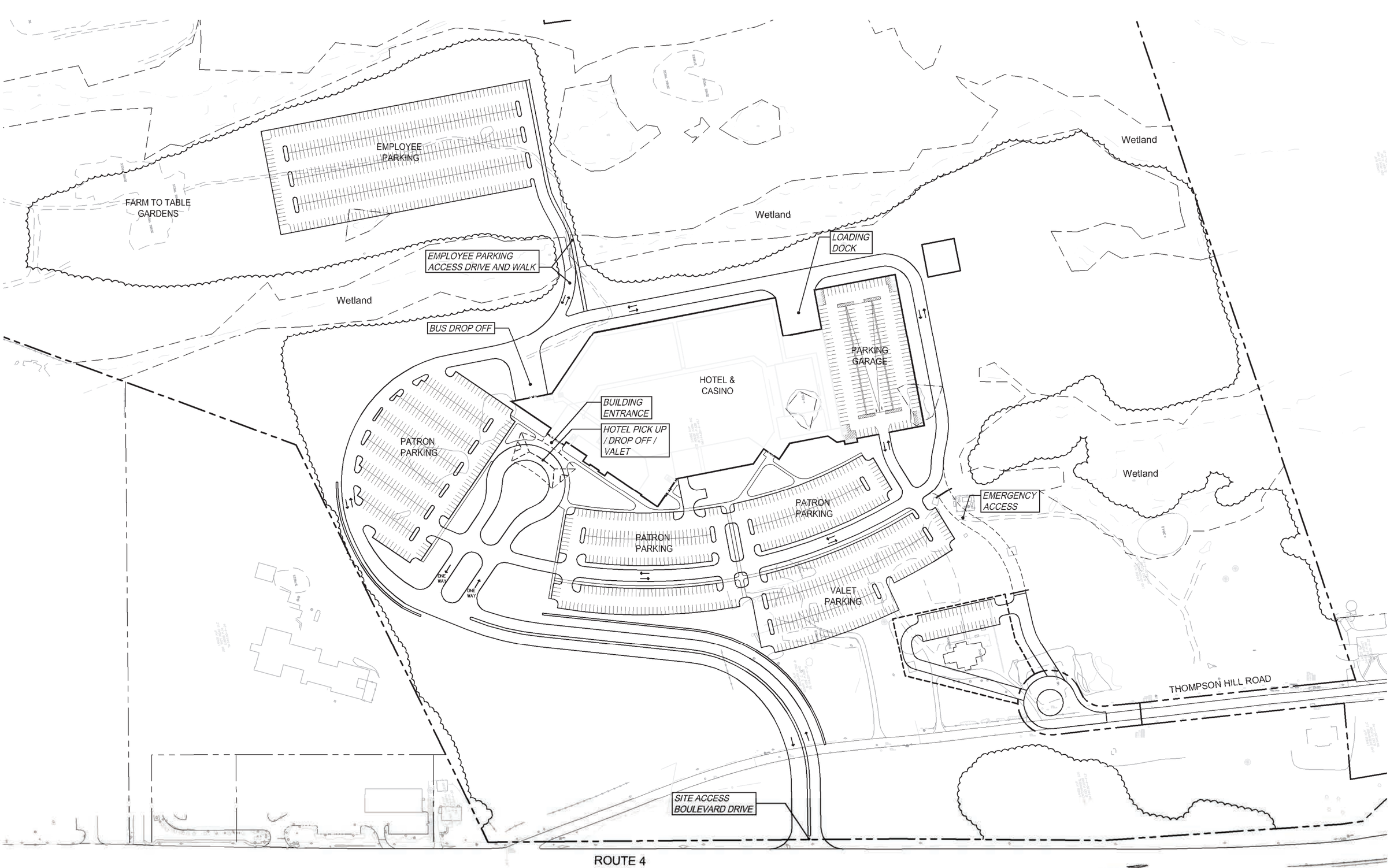
- US Route 4 & I-90 Eastbound Ramps
  - Add an eastbound right-turn lane
  - Optimize signal timings
- US Route 4 & I-90 Westbound Ramps
  - Add new westbound on-ramp from US Route 4 southbound
  - Modify existing westbound on-ramp to only allow entry from US Route 4 northbound (free flow movement)
  - Signalize the intersection with the off-ramp
- US Route 4 & FedEx Facility / Site Access
  - Add a northbound through lane
  - Use split signal phasing for eastbound/westbound movements
  - Optimize signal timings

- US Route 4 & Walmart / Mavis Discount Tires
    - Add a northbound through lane
    - Optimize signal timings
- US Route 4 & 3rd Avenue Extension
    - Add a northbound through lane
    - Optimize signal timings
- US Route 4 & Greenbush Commons / Grandview Drive
    - Add a northbound through lane
    - Optimize signal timings
- US Route 4 & Bloomingrove Drive / Agway Drive
    - Modify northbound right-turn lane to be a shared through/right-turn lane
    - Optimize signal timings
- US Route 4 & NY Route 43
    - Add a northbound left-turn lane
    - Optimize signal timings

The proposed mitigation improves the traffic operations to conditions that are the same or better than the No-Build condition with reserve capacity provided in the system. Since the traffic impact analysis and mitigation strategies are based on a facility that is larger than is actually being proposed, the identified transportation improvements will provide for higher levels of mobility and greater system reserve capacity than is described.

APPENDIX A

Site Plan



CAPITAL VIEW
CASINO & RESORT

SITE CIRCULATION PLAN

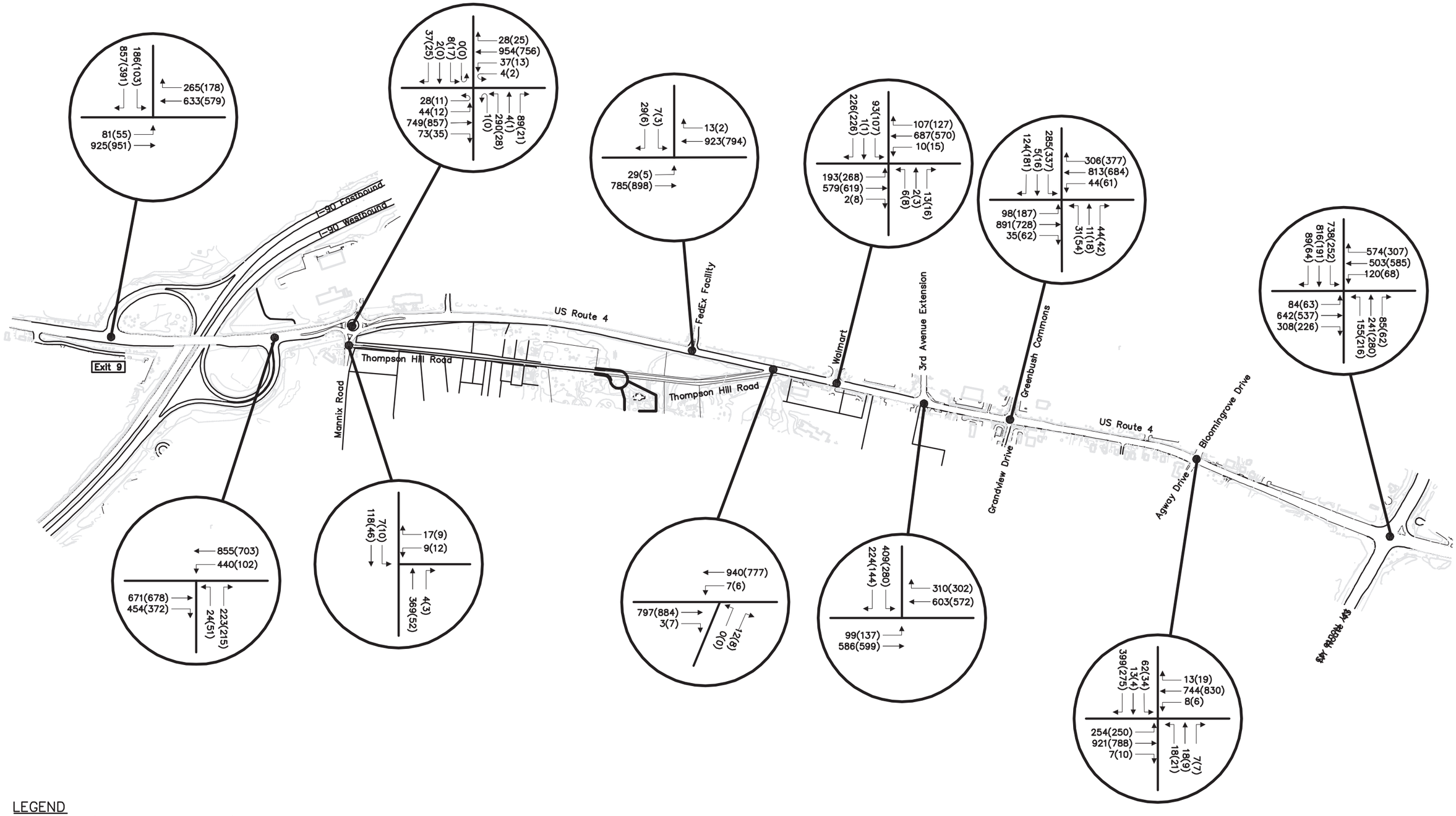
JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 100 200
Scale in feet

EXHIBIT:
FIG. 1

APPENDIX B

Figures



LEGEND
FRIDAY PM(SATURDAY MIDDAY)

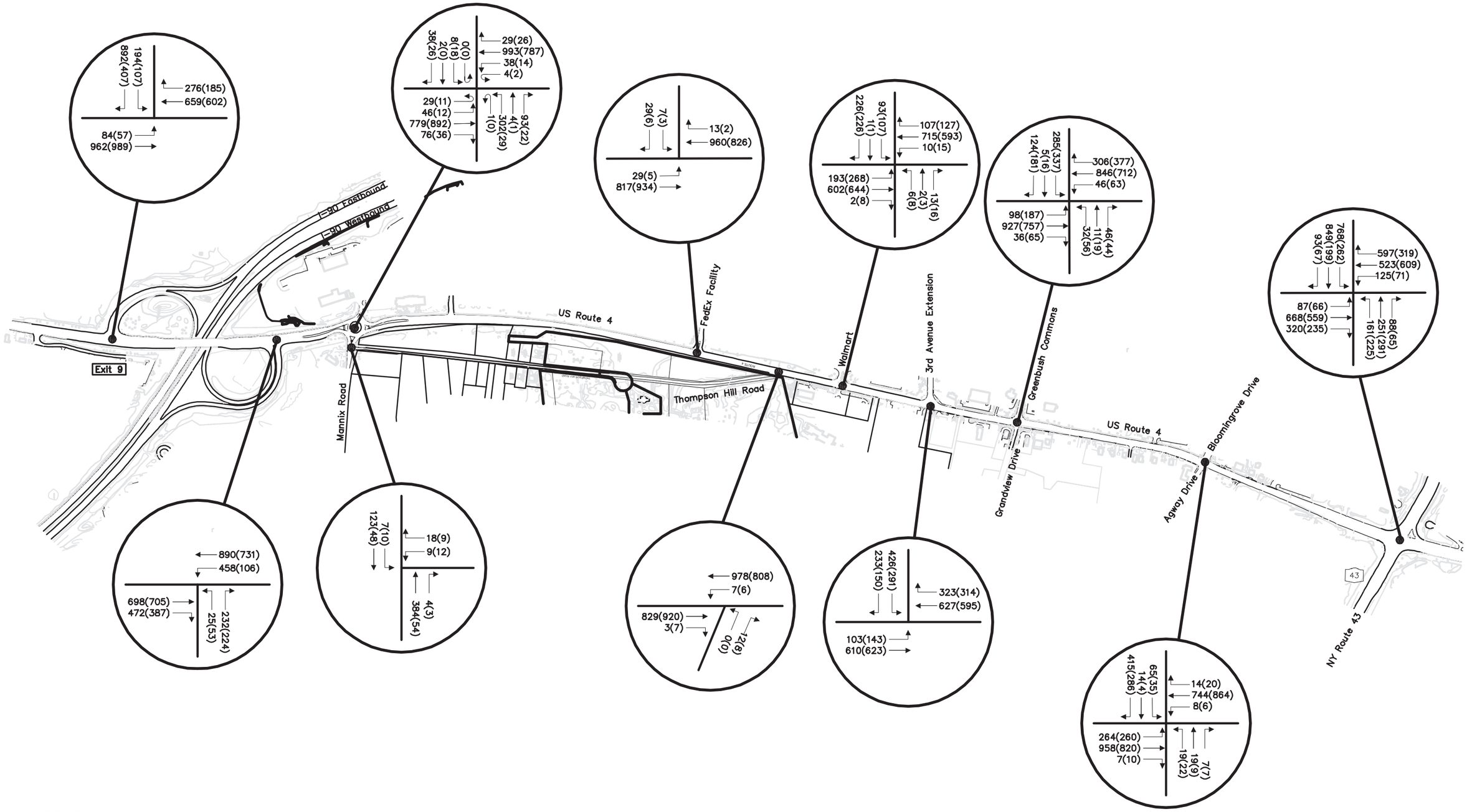
N.T.S.

CAPITAL VIEW
CASINO & RESORT

2014 EXISTING SITE VOLUMES

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

EXHIBIT: FIG. 2



LEGEND
FRIDAY PM(SATURDAY MIDDAY)

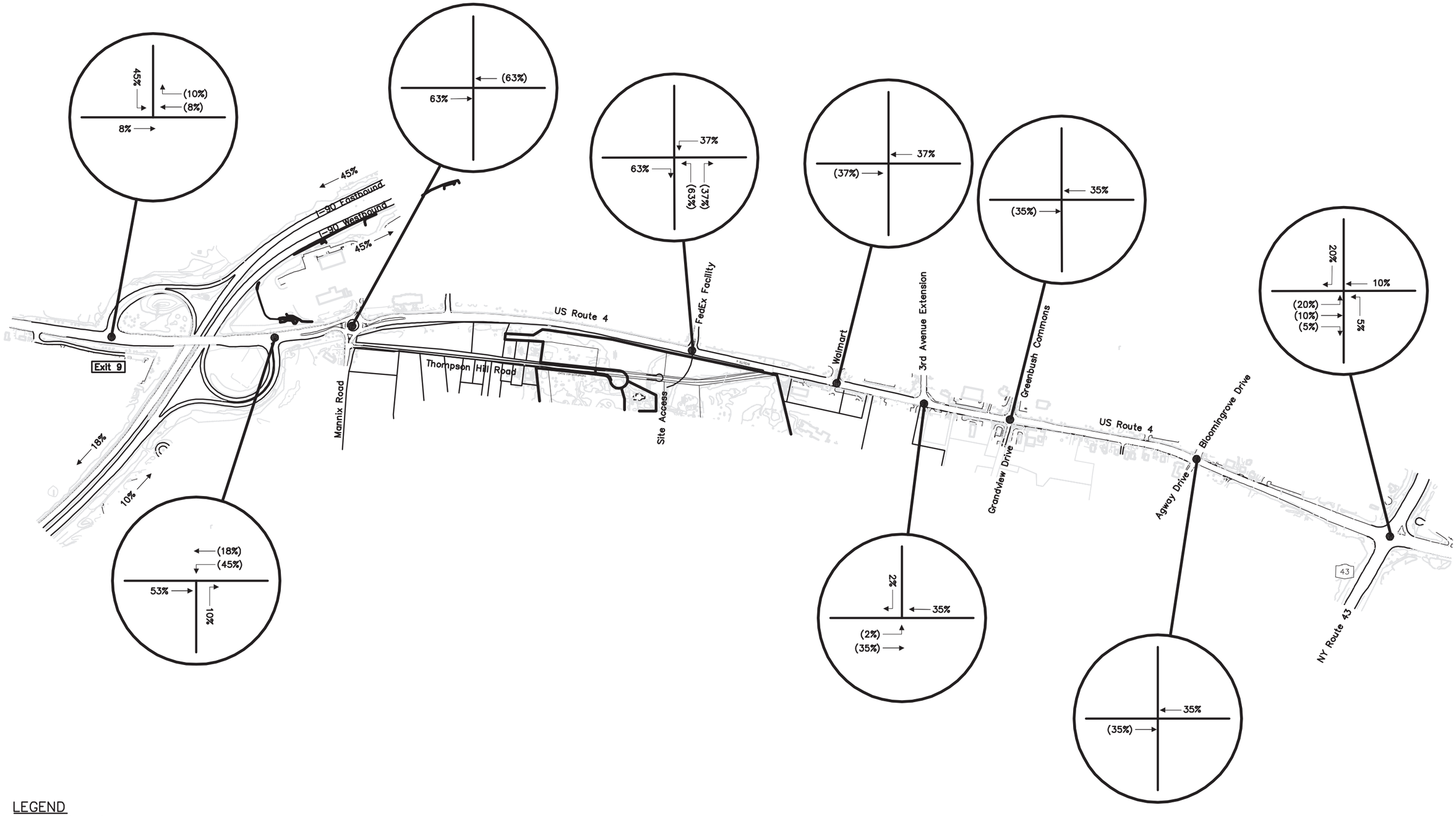
CAPITAL VIEW
CASINO & RESORT

2016 NO-BUILD TRAFFIC VOLUMES

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

N.T.S.

EXHIBIT: FIG. 3



LEGEND
ENTER (EXIT)

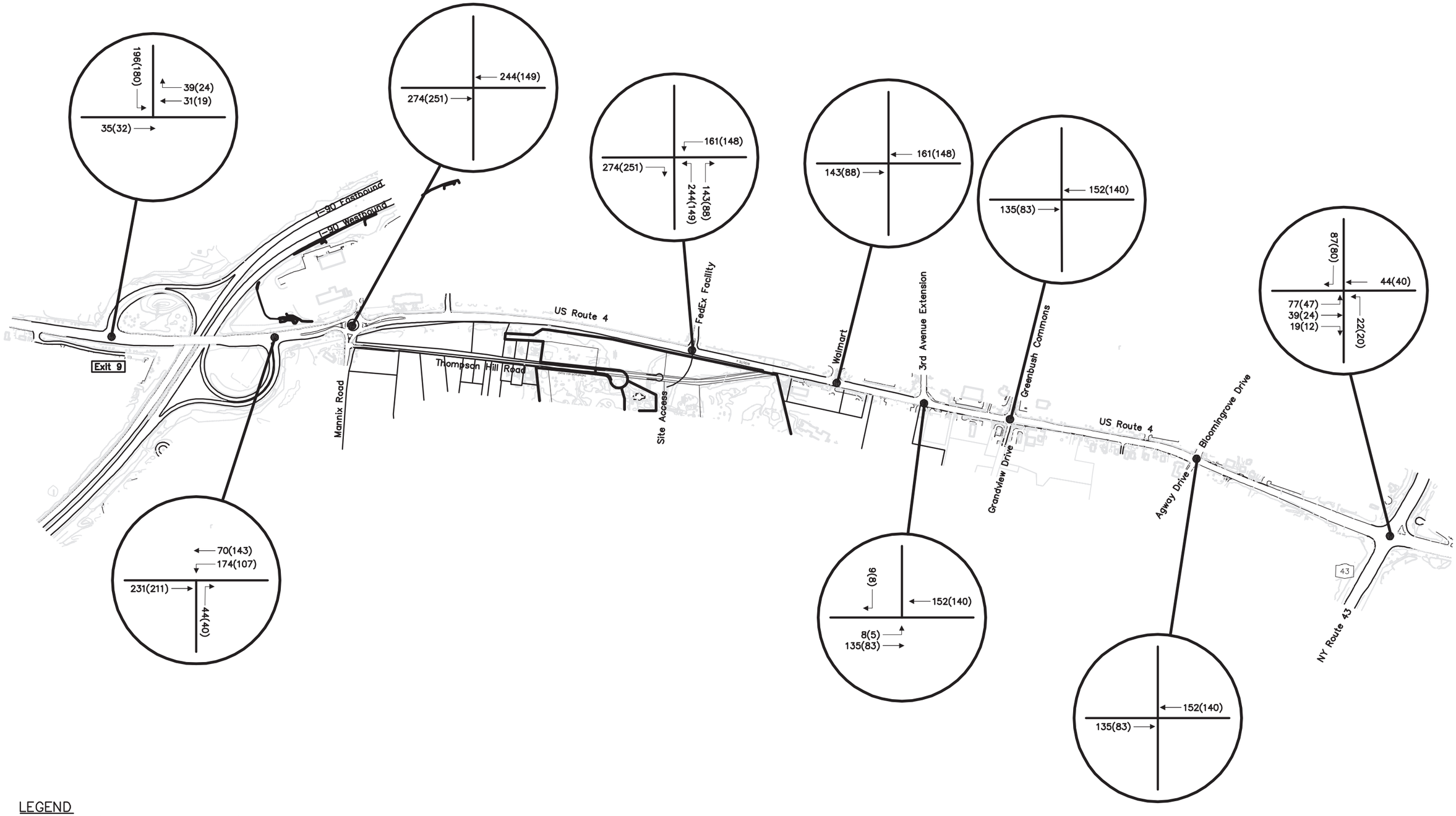
CAPITAL VIEW
CASINO & RESORT

TRIP DISTRIBUTIONS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

N.T.S.

EXHIBIT:
FIG. 4



LEGEND
FRIDAY PM(SATURDAY MIDDAY)

CAPITAL VIEW
CASINO & RESORT

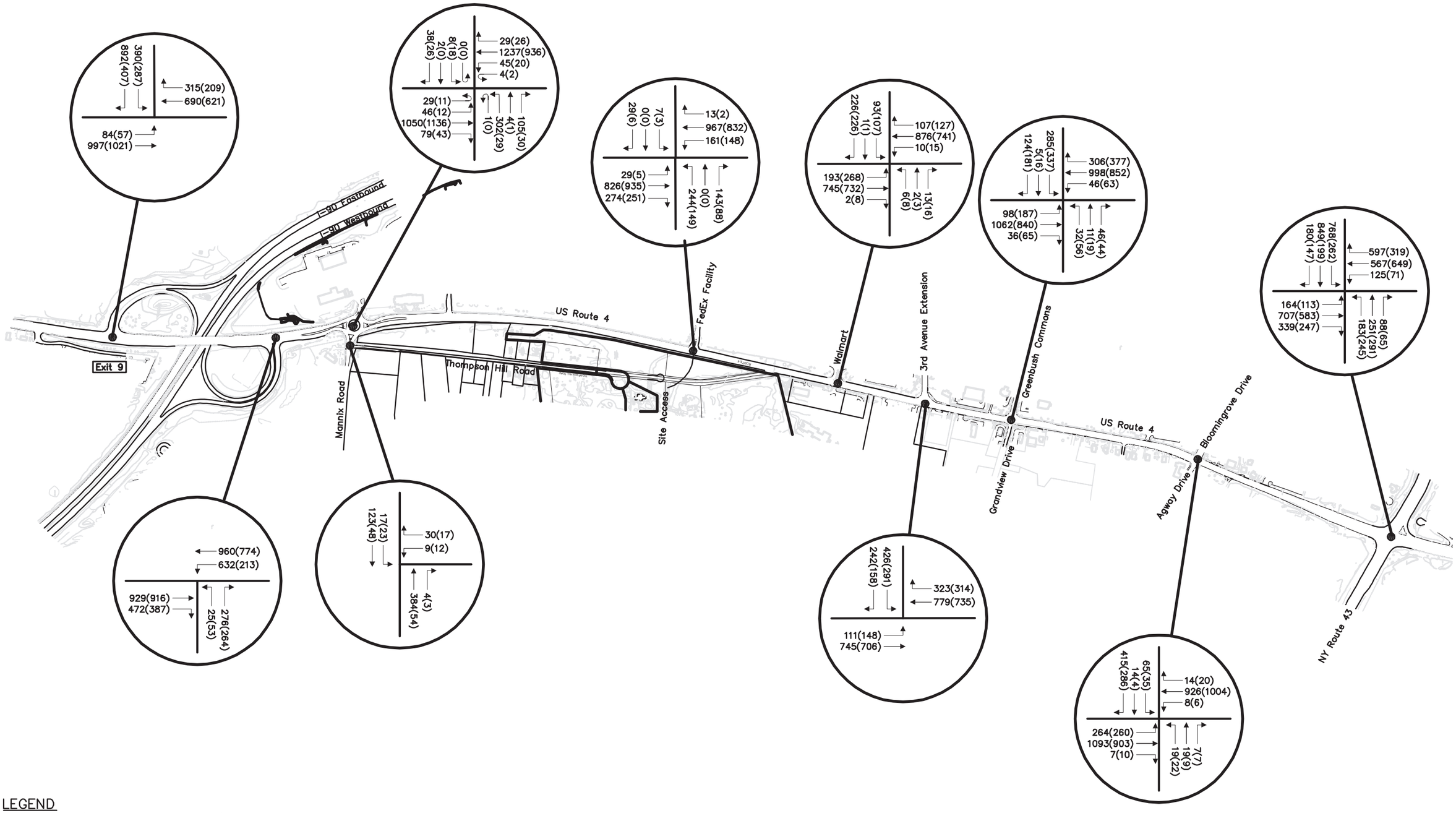
SITE TRIPS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

N

N.T.S.

EXHIBIT:
FIG. 5



LEGEND
FRIDAY PM(SATURDAY MIDDAY)

N.T.S.

CAPITAL VIEW
CASINO & RESORT

2016 BUILD TRAFFIC VOLUMES

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

EXHIBIT: FIG. 6

APPENDIX C

Traffic Volume Data

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: I-90 SB Ramps Weather: Mild/Some Rain

Location: Albany County, New York Entered by: SN

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: I-90 SB Ramps					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	62	151		0	213		211	19	0	230					0	215		33	0	248	691
4:15 - 4:30	41	135		0	176		210	16	0	226					0	180		58	0	238	640
4:30 - 4:45	73	138		0	211		239	12	0	251					0	187		28	0	215	677
4:45 - 5:00	59	167		0	226		201	17	0	218					0	232		46	0	278	722
5:00 - 5:15	78	159		0	237		249	24	0	273					0	207		42	0	249	759
5:15 - 5:30	59	149		0	208		234	21	0	255					0	220		48	0	268	731
5:30 - 5:45	68	156		0	224		233	18	0	251					0	188		35	0	223	698
5:45 - 6:00	56	129		0	185		229	17	0	246					0	142		36	0	178	609
2 Hr Totals	496	1184	0	0	1680	0	1806	144	0	1950	0	0	0	0	0	1571	0	326	0	1897	5527
1 Hr Totals																					
4:00 - 5:00	235	591	0	0	826	0	861	64	0	925	0	0	0	0	0	814	0	165	0	979	2730
4:15 - 5:15	251	599	0	0	850	0	899	69	0	968	0	0	0	0	0	806	0	174	0	980	2798
4:30 - 5:30	269	613	0	0	882	0	923	74	0	997	0	0	0	0	0	846	0	164	0	1010	2889
4:45 - 5:45	264	631	0	0	895	0	917	80	0	997	0	0	0	0	0	847	0	171	0	1018	2910
5:00 - 6:00	261	593	0	0	854	0	945	80	0	1025	0	0	0	0	0	757	0	161	0	918	2797
PEAK HOUR																					
4:45 - 5:45	264	631	0	0	895	0	917	80	0	997	0	0	0	0	0	847	0	171	0	1018	2910

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: I-90 SB Ramps Weather: Mild/Some Rain

Location: Albany County, New York Entered by: SN

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: I-90 SB Ramps					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	0	8		0	8		4	1	0	5					0	2		5	0	7	20
4:15 - 4:30	1	5		0	6		2	0	0	2					0	3		4	0	7	15
4:30 - 4:45	1	1		0	2		2	0	0	2					0	2		3	0	5	9
4:45 - 5:00	0	0		0	0		2	1	0	3					0	3		2	0	5	8
5:00 - 5:15	0	1		0	1		3	0	0	3					0	4		7	0	11	15
5:15 - 5:30	0	1		0	1		0	0	0	0					0	1		4	0	5	6
5:30 - 5:45	1	0		0	1		3	0	0	3					0	2		2	0	4	8
5:45 - 6:00	0	1		0	1		2	0	0	2					0	2		4	0	6	9
2 Hr Totals	3	17	0	0	20	0	18	2	0	20	0	0	0	0	0	19	0	31	0	50	90
1 Hr Totals																					
4:00 - 5:00	2	14	0	0	16	0	10	2	0	12	0	0	0	0	0	10	0	14	0	24	52
4:15 - 5:15	2	7	0	0	9	0	9	1	0	10	0	0	0	0	0	12	0	16	0	28	47
4:30 - 5:30	1	3	0	0	4	0	7	1	0	8	0	0	0	0	0	10	0	16	0	26	38
4:45 - 5:45	1	2	0	0	3	0	8	1	0	9	0	0	0	0	0	10	0	15	0	25	37
5:00 - 6:00	1	3	0	0	4	0	8	0	0	8	0	0	0	0	0	9	0	17	0	26	38
PEAK HOUR																					
4:45 - 5:45	1	2	0	0	3	0	8	1	0	9	0	0	0	0	0	10	0	15	0	25	37

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: I-90 SB Ramps Weather: Mild/Some Rain

Location: Albany County, New York Entered by: SN

TIME	NORTH LEG US4	SOUTH LEG US4	EAST LEG	WEST LEG I-90 SB Ramps
4:00 - 4:15	0	0	0	0
4:15 - 4:30	0	0	0	0
4:30 - 4:45	0	0	0	0
4:45 - 5:00	0	0	0	0
5:00 - 5:15	0	0	0	0
5:15 - 5:30	0	0	0	0
5:30 - 5:45	0	0	0	0
5:45 - 6:00	0	0	0	0
TOTALS	0	0	0	0

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: I-90 SB Ramps Weather: Mild/Some Rain

Location: Albany County, New York Entered by: SN

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: I-90 SB Ramps					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	62	159	0	0	221	0	215	20	0	235	0	0	0	0	0	217	0	38	0	255	711
4:15 - 4:30	42	140	0	0	182	0	212	16	0	228	0	0	0	0	0	183	0	62	0	245	655
4:30 - 4:45	74	139	0	0	213	0	241	12	0	253	0	0	0	0	0	189	0	31	0	220	686
4:45 - 5:00	59	167	0	0	226	0	203	18	0	221	0	0	0	0	0	235	0	48	0	283	730
5:00 - 5:15	78	160	0	0	238	0	252	24	0	276	0	0	0	0	0	211	0	49	0	260	774
5:15 - 5:30	59	150	0	0	209	0	234	21	0	255	0	0	0	0	0	221	0	52	0	273	737
5:30 - 5:45	69	156	0	0	225	0	236	18	0	254	0	0	0	0	0	190	0	37	0	227	706
5:45 - 6:00	56	130	0	0	186	0	231	17	0	248	0	0	0	0	0	144	0	40	0	184	618
2 Hr Totals	499	1201	0	0	1700	0	1824	146	0	1970	0	0	0	0	0	1590	0	357	0	1947	5617
1 Hr Totals																					
4:00 - 5:00	237	605	0	0	842	0	871	66	0	937	0	0	0	0	0	824	0	179	0	1003	2782
4:15 - 5:15	253	606	0	0	859	0	908	70	0	978	0	0	0	0	0	818	0	190	0	1008	2845
4:30 - 5:30	270	616	0	0	886	0	930	75	0	1005	0	0	0	0	0	856	0	180	0	1036	2927
4:45 - 5:45	265	633	0	0	898	0	925	81	0	1006	0	0	0	0	0	857	0	186	0	1043	2947
5:00 - 6:00	262	596	0	0	858	0	953	80	0	1033	0	0	0	0	0	766	0	178	0	944	2835
PEAK HOUR																					
4:45 - 5:45	265	633	0	0	898	0	925	81	0	1006	0	0	0	0	0	857	0	186	0	1043	2947

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 Date: April 26, 2014 Saturday

and: I-90 SB Ramps Weather: Mild/Rain

Location: Albany County, New York Entered by: SN

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: I-90 SB Ramps					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	43	137		0	180		213	14	0	227					0	88		15	0	103	510
11:15 - 11:30	52	131		0	183		223	11	0	234					0	83		28	0	111	528
11:30 - 11:45	37	144		0	181		275	14	0	289					0	86		32	0	118	588
11:45 - 12:00	48	162		2	212		234	6	0	240					0	109		28	0	137	589
12:00 - 12:15	49	126		0	175		218	15	1	234					0	106		18	0	124	533
12:15 - 12:30	44	143		0	187		215	18	0	233					0	90		24	0	114	534
12:30 - 12:45	53	143		0	196		215	13	0	228					0	94		28	0	122	546
12:45 - 1:00	41	135		0	176		223	11	0	234					0	91		16	0	107	517
1:00 - 1:15	53	136		0	189		200	13	0	213					0	97		26	0	123	525
1:15 - 1:30	54	128		0	182		203	15	0	218					0	89		25	0	114	514
1:30 - 1:45	55	114		0	169		229	7	0	236					0	101		21	0	122	527
1:45 - 2:00	52	144		0	196		184	16	0	200					0	106		23	0	129	525
3 Hr Totals	581	1643	0	2	2226	0	2632	153	1	2786	0	0	0	0	0	1140	0	284	0	1424	6436
1 Hr Totals																					
11:00 - 12:00	180	574	0	2	756	0	945	45	0	990	0	0	0	0	0	366	0	103	0	469	2215
11:15 - 12:15	186	563	0	2	751	0	950	46	1	997	0	0	0	0	0	384	0	106	0	490	2238
11:30 - 12:30	178	575	0	2	755	0	942	53	1	996	0	0	0	0	0	391	0	102	0	493	2244
11:45 - 12:45	194	574	0	2	770	0	882	52	1	935	0	0	0	0	0	399	0	98	0	497	2202
12:00 - 1:00	187	547	0	0	734	0	871	57	1	929	0	0	0	0	0	381	0	86	0	467	2130
12:15 - 1:15	191	557	0	0	748	0	853	55	0	908	0	0	0	0	0	372	0	94	0	466	2122
12:30 - 1:30	201	542	0	0	743	0	841	52	0	893	0	0	0	0	0	371	0	95	0	466	2102
12:45 - 1:45	203	513	0	0	716	0	855	46	0	901	0	0	0	0	0	378	0	88	0	466	2083
1:00 - 2:00	214	522	0	0	736	0	816	51	0	867	0	0	0	0	0	393	0	95	0	488	2091
PEAK HOUR																					
11:30 - 12:30	178	575	0	2	755	0	942	53	1	996	0	0	0	0	0	391	0	102	0	493	2244

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 Date: April 26, 2014 Saturday

and: I-90 SB Ramps Weather: Mild/Rain

Location: Albany County, New York Entered by: SN

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: I-90 SB Ramps					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	0	0		0	0		0	0	0	0					0	2		0	0	2	2
11:15 - 11:30	0	3		0	3		1	0	0	1					0	2		0	0	2	6
11:30 - 11:45	0	3		0	3		3	0	0	3					0	0		0	0	0	6
11:45 - 12:00	0	1		0	1		4	1	0	5					0	0		1	0	1	7
12:00 - 12:15	0	0		0	0		2	0	0	2					0	0		0	0	0	2
12:15 - 12:30	0	0		0	0		0	1	0	1					0	0		0	0	0	1
12:30 - 12:45	1	1		0	2		0	0	0	0					0	0		1	0	1	3
12:45 - 1:00	0	2		0	2		1	0	0	1					0	2		0	0	2	5
1:00 - 1:15	0	2		0	2		1	0	0	1					0	1		0	0	1	4
1:15 - 1:30	1	1		0	2		2	0	0	2					0	1		0	0	1	5
1:30 - 1:45	0	0		0	0		0	0	0	0					0	2		0	0	2	2
1:45 - 2:00	0	2		0	2		1	0	0	1					0	0		0	0	0	3
3 Hr Totals	2	15	0	0	17	0	15	2	0	17	0	0	0	0	0	10	0	2	0	12	46
1 Hr Totals																					
11:00 - 12:00	0	7	0	0	7	0	8	1	0	9	0	0	0	0	0	4	0	1	0	5	21
11:15 - 12:15	0	7	0	0	7	0	10	1	0	11	0	0	0	0	0	2	0	1	0	3	21
11:30 - 12:30	0	4	0	0	4	0	9	2	0	11	0	0	0	0	0	0	0	1	0	1	16
11:45 - 12:45	1	2	0	0	3	0	6	2	0	8	0	0	0	0	0	0	0	2	0	2	13
12:00 - 1:00	1	3	0	0	4	0	3	1	0	4	0	0	0	0	0	2	0	1	0	3	11
12:15 - 1:15	1	5	0	0	6	0	2	1	0	3	0	0	0	0	0	3	0	1	0	4	13
12:30 - 1:30	2	6	0	0	8	0	4	0	0	4	0	0	0	0	0	4	0	1	0	5	17
12:45 - 1:45	1	5	0	0	6	0	4	0	0	4	0	0	0	0	0	6	0	0	0	6	16
1:00 - 2:00	1	5	0	0	6	0	4	0	0	4	0	0	0	0	0	4	0	0	0	4	14
PEAK HOUR																					
11:30 - 12:30	0	4	0	0	4	0	9	2	0	11	0	0	0	0	0	0	0	1	0	1	16

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: I-90 SB Ramps Weather: Mild/Rain

Location: Albany County, New York Entered by: SN

TIME	NORTH LEG US4	SOUTH LEG US4	EAST LEG	WEST LEG I-90 SB Ramps
AM				
11:00 - 11:15	0	0	0	0
11:15 - 11:30	0	0	0	0
11:30 - 11:45	0	0	0	0
11:45 - 12:00	0	0	0	0
12:00 - 12:15	0	0	0	0
12:15 - 12:30	0	0	0	0
12:30 - 12:45	0	0	0	0
12:45 - 1:00	0	0	0	0
1:00 - 1:15	0	0	0	0
1:15 - 1:30	0	0	0	0
1:30 - 1:45	0	0	0	0
1:45 - 2:00	0	0	0	0
TOTALS	0	0	0	0

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: I-90 SB Ramps Weather: Mild/Rain

Location: Albany County, New York Entered by: SN

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: I-90 SB Ramps					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	43	137	0	0	180	0	213	14	0	227	0	0	0	0	0	90	0	15	0	105	512
11:15 - 11:30	52	134	0	0	186	0	224	11	0	235	0	0	0	0	0	85	0	28	0	113	534
11:30 - 11:45	37	147	0	0	184	0	278	14	0	292	0	0	0	0	0	86	0	32	0	118	594
11:45 - 12:00	48	163	0	2	213	0	238	7	0	245	0	0	0	0	0	109	0	29	0	138	596
12:00 - 12:15	49	126	0	0	175	0	220	15	1	236	0	0	0	0	0	106	0	18	0	124	535
12:15 - 12:30	44	143	0	0	187	0	215	19	0	234	0	0	0	0	0	90	0	24	0	114	535
12:30 - 12:45	54	144	0	0	198	0	215	13	0	228	0	0	0	0	0	94	0	29	0	123	549
12:45 - 1:00	41	137	0	0	178	0	224	11	0	235	0	0	0	0	0	93	0	16	0	109	522
1:00 - 1:15	53	138	0	0	191	0	201	13	0	214	0	0	0	0	0	98	0	26	0	124	529
1:15 - 1:30	55	129	0	0	184	0	205	15	0	220	0	0	0	0	0	90	0	25	0	115	519
1:30 - 1:45	55	114	0	0	169	0	229	7	0	236	0	0	0	0	0	103	0	21	0	124	529
1:45 - 2:00	52	146	0	0	198	0	185	16	0	201	0	0	0	0	0	106	0	23	0	129	528
3 Hr Totals	583	1658	0	2	2243	0	2647	155	1	2803	0	0	0	0	0	1150	0	286	0	1436	6482
1 Hr Totals																					
11:00 - 12:00	180	581	0	2	763	0	953	46	0	999	0	0	0	0	0	370	0	104	0	474	2236
11:15 - 12:15	186	570	0	2	758	0	960	47	1	1008	0	0	0	0	0	386	0	107	0	493	2259
11:30 - 12:30	178	579	0	2	759	0	951	55	1	1007	0	0	0	0	0	391	0	103	0	494	2260
11:45 - 12:45	195	576	0	2	773	0	888	54	1	943	0	0	0	0	0	399	0	100	0	499	2215
12:00 - 1:00	188	550	0	0	738	0	874	58	1	933	0	0	0	0	0	383	0	87	0	470	2141
12:15 - 1:15	192	562	0	0	754	0	855	56	0	911	0	0	0	0	0	375	0	95	0	470	2135
12:30 - 1:30	203	548	0	0	751	0	845	52	0	897	0	0	0	0	0	375	0	96	0	471	2119
12:45 - 1:45	204	518	0	0	722	0	859	46	0	905	0	0	0	0	0	384	0	88	0	472	2099
1:00 - 2:00	215	527	0	0	742	0	820	51	0	871	0	0	0	0	0	397	0	95	0	492	2105
PEAK HOUR																					
11:30 - 12:30	178	579	0	2	759	0	951	55	1	1007	0	0	0	0	0	391	0	103	0	494	2260

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: I-90 NB Ramps Weather: Mild/Some Rain

Location: Albany County, New York Entered by: SN

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: I-90 NB Ramps					TRAFFIC FROM WEST on:					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15		202	77	0	279	116	140		0	256	49		8	0	57					0	592
4:15 - 4:30		157	73	0	230	85	171		0	256	47		9	0	56					0	542
4:30 - 4:45		206	100	0	306	119	157		0	276	57		4	0	61					0	643
4:45 - 5:00		210	94	1	305	99	147		0	246	40		12	0	52					0	603
5:00 - 5:15		217	138	0	355	129	163		0	292	55		3	0	58					0	705
5:15 - 5:30		219	102	0	321	103	181		0	284	64		4	0	68					0	673
5:30 - 5:45		213	98	0	311	99	153		0	252	31		8	0	39					0	602
5:45 - 6:00		175	53	0	228	100	157		0	257	44		8	0	52					0	537
2 Hr Totals	0	1599	735	1	2335	850	1269	0	0	2119	387	0	56	0	443	0	0	0	0	0	4897
1 Hr Totals																					
4:00 - 5:00	0	775	344	1	1120	419	615	0	0	1034	193	0	33	0	226	0	0	0	0	0	2380
4:15 - 5:15	0	790	405	1	1196	432	638	0	0	1070	199	0	28	0	227	0	0	0	0	0	2493
4:30 - 5:30	0	852	434	1	1287	450	648	0	0	1098	216	0	23	0	239	0	0	0	0	0	2624
4:45 - 5:45	0	859	432	1	1292	430	644	0	0	1074	190	0	27	0	217	0	0	0	0	0	2583
5:00 - 6:00	0	824	391	0	1215	431	654	0	0	1085	194	0	23	0	217	0	0	0	0	0	2517
PEAK HOUR																					
4:30 - 5:30	0	852	434	1	1287	450	648	0	0	1098	216	0	23	0	239	0	0	0	0	0	2624

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: I-90 NB Ramps Weather: Mild/Some Rain

Location: Albany County, New York Entered by: SN

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: I-90 NB Ramps					TRAFFIC FROM WEST on:					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15		7	3	0	10	3	4		0	7	2		2	0	4					0	21
4:15 - 4:30		6	3	0	9	2	9		0	11	3		0	0	3					0	23
4:30 - 4:45		1	1	0	2	1	6		0	7	2		0	0	2					0	11
4:45 - 5:00		0	2	0	2	2	2		0	4	0		1	0	1					0	7
5:00 - 5:15		0	0	0	0	1	7		0	8	3		0	0	3					0	11
5:15 - 5:30		2	3	0	5	0	8		0	8	2		0	0	2					0	15
5:30 - 5:45		0	3	0	3	2	3		0	5	2		0	0	2					0	10
5:45 - 6:00		1	2	0	3	2	6		0	8	1		1	0	2					0	13
2 Hr Totals	0	17	17	0	34	13	45	0	0	58	15	0	4	0	19	0	0	0	0	0	111
1 Hr Totals																					
4:00 - 5:00	0	14	9	0	23	8	21	0	0	29	7	0	3	0	10	0	0	0	0	0	62
4:15 - 5:15	0	7	6	0	13	6	24	0	0	30	8	0	1	0	9	0	0	0	0	0	52
4:45 - 5:45	0	2	8	0	10	5	20	0	0	25	7	0	1	0	8	0	0	0	0	0	43
5:00 - 6:00	0	3	8	0	11	5	24	0	0	29	8	0	1	0	9	0	0	0	0	0	49
PEAK HOUR																					
4:30 - 5:30	0	3	6	0	9	4	23	0	0	27	7	0	1	0	8	0	0	0	0	0	44

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: I-90 NB Ramps Weather: Mild/Some Rain

Location: Albany County, New York Entered by: SN

TIME	NORTH LEG US4	SOUTH LEG US4	EAST LEG I-90 NB Ramps	WEST LEG
4:00 - 4:15	0	0	0	0
4:15 - 4:30	0	0	0	0
4:30 - 4:45	0	0	0	0
4:45 - 5:00	0	0	0	0
5:00 - 5:15	0	0	0	0
5:15 - 5:30	0	0	0	0
5:30 - 5:45	0	0	0	0
5:45 - 6:00	0	0	0	0
TOTALS	0	0	0	0

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: I-90 NB Ramps Weather: Mild/Some Rain

Location: Albany County, New York Entered by: SN

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: I-90 NB Ramps					TRAFFIC FROM WEST on:					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	0	209	80	0	289	119	144	0	0	263	51	0	10	0	61	0	0	0	0	0	613
4:15 - 4:30	0	163	76	0	239	87	180	0	0	267	50	0	9	0	59	0	0	0	0	0	565
4:30 - 4:45	0	207	101	0	308	120	163	0	0	283	59	0	4	0	63	0	0	0	0	0	654
4:45 - 5:00	0	210	96	1	307	101	149	0	0	250	40	0	13	0	53	0	0	0	0	0	610
5:00 - 5:15	0	217	138	0	355	130	170	0	0	300	58	0	3	0	61	0	0	0	0	0	716
5:15 - 5:30	0	221	105	0	326	103	189	0	0	292	66	0	4	0	70	0	0	0	0	0	688
5:30 - 5:45	0	213	101	0	314	101	156	0	0	257	33	0	8	0	41	0	0	0	0	0	612
5:45 - 6:00	0	176	55	0	231	102	163	0	0	265	45	0	9	0	54	0	0	0	0	0	550
2 Hr Totals	0	1616	752	1	2369	863	1314	0	0	2177	402	0	60	0	462	0	0	0	0	0	5008
1 Hr Totals																					
4:00 - 5:00	0	789	353	1	1143	427	636	0	0	1063	200	0	36	0	236	0	0	0	0	0	2442
4:15 - 5:15	0	797	411	1	1209	438	662	0	0	1100	207	0	29	0	236	0	0	0	0	0	2545
4:30 - 5:30	0	855	440	1	1296	454	671	0	0	1125	223	0	24	0	247	0	0	0	0	0	2668
4:45 - 5:45	0	861	440	1	1302	435	664	0	0	1099	197	0	28	0	225	0	0	0	0	0	2626
5:00 - 6:00	0	827	399	0	1226	436	678	0	0	1114	202	0	24	0	226	0	0	0	0	0	2566
PEAK HOUR																					
4:30 - 5:30	0	855	440	1	1296	454	671	0	0	1125	223	0	24	0	247	0	0	0	0	0	2668

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: I-90 NB Ramps Weather: Mild/Rain

Location: Albany County, New York Entered by: SN

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: I-90 NB Ramps					TRAFFIC FROM WEST on:					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15		172	20	0	192	72	129		0	201	59		8	0	67					0	460
11:15 - 11:30		169	28	0	197	86	170		0	256	53		13	0	66					0	519
11:30 - 11:45		158	18	0	176	108	180		0	288	47		16	0	63					0	527
11:45 - 12:00		197	35	0	232	86	172		1	259	60		12	0	72					0	563
12:00 - 12:15		172	20	0	192	88	148		0	236	55		10	0	65					0	493
12:15 - 12:30		178	27	0	205	90	142		0	232	70		13	0	83					0	520
12:30 - 12:45		190	27	0	217	85	156		0	241	47		5	0	52					0	510
12:45 - 1:00		157	21	0	178	82	150		0	232	58		11	0	69					0	479
1:00 - 1:15		199	19	0	218	85	140		0	225	58		11	0	69					0	512
1:15 - 1:30		165	22	1	188	93	151		0	244	56		4	0	60					0	492
1:30 - 1:45		158	29	0	187	75	170		0	245	49		11	0	60					0	492
1:45 - 2:00		181	26	0	207	84	128		0	212	60		7	0	67					0	486
3 Hr Totals	0	2096	292	1	2389	1034	1836	0	1	2871	672	0	121	0	793	0	0	0	0	0	6053
1 Hr Totals																					
11:00 - 12:00	0	696	101	0	797	352	651	0	1	1004	219	0	49	0	268	0	0	0	0	0	2069
11:15 - 12:15	0	696	101	0	797	368	670	0	1	1039	215	0	51	0	266	0	0	0	0	0	2102
11:30 - 12:30	0	705	100	0	805	372	642	0	1	1015	232	0	51	0	283	0	0	0	0	0	2103
11:45 - 12:45	0	737	109	0	846	349	618	0	1	968	232	0	40	0	272	0	0	0	0	0	2086
12:00 - 1:00	0	697	95	0	792	345	596	0	0	941	230	0	39	0	269	0	0	0	0	0	2002
12:15 - 1:15	0	724	94	0	818	342	588	0	0	930	233	0	40	0	273	0	0	0	0	0	2021
12:30 - 1:30	0	711	89	1	801	345	597	0	0	942	219	0	31	0	250	0	0	0	0	0	1993
12:45 - 1:45	0	679	91	1	771	335	611	0	0	946	221	0	37	0	258	0	0	0	0	0	1975
1:00 - 2:00	0	703	96	1	800	337	589	0	0	926	223	0	33	0	256	0	0	0	0	0	1982
PEAK HOUR																					
11:15 - 12:15	0	696	101	0	797	368	670	0	1	1039	215	0	51	0	266	0	0	0	0	0	2102

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: I-90 NB Ramps Weather: Mild/Rain

Location: Albany County, New York Entered by: SN

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: I-90 NB Ramps					TRAFFIC FROM WEST on:					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15		0	0	0	0	1	1		0	2	2		1	0	3					0	5
11:15 - 11:30		3	0	0	3	1	0		0	1	0		0	0	0					0	4
11:30 - 11:45		2	0	0	2	1	3		0	4	0		0	0	0					0	6
11:45 - 12:00		2	0	0	2	1	4		0	5	0		0	0	0					0	7
12:00 - 12:15		0	1	0	1	1	1		0	2	0		0	0	0					0	3
12:15 - 12:30		0	1	0	1	0	0		0	0	2		0	0	2					0	3
12:30 - 12:45		2	0	0	2	0	1		0	1	0		0	0	0					0	3
12:45 - 1:00		1	0	0	1	0	0		0	0	0		1	0	1					0	2
1:00 - 1:15		0	0	0	0	0	1		0	1	0		0	0	0					0	1
1:15 - 1:30		3	1	0	4	1	1		0	2	0		1	0	1					0	7
1:30 - 1:45		0	1	0	1	0	0		0	0	0		0	0	0					0	1
1:45 - 2:00		2	0	0	2	1	0		0	1	0		0	0	0					0	3
3 Hr Totals	0	15	4	0	19	7	12	0	0	19	4	0	3	0	7	0	0	0	0	0	45
1 Hr Totals																					
11:00 - 12:00	0	7	0	0	7	4	8	0	0	12	2	0	1	0	3	0	0	0	0	0	22
11:15 - 12:15	0	7	1	0	8	4	8	0	0	12	0	0	0	0	0	0	0	0	0	0	20
11:30 - 12:30	0	4	2	0	6	3	8	0	0	11	2	0	0	0	2	0	0	0	0	0	19
11:45 - 12:45	0	4	2	0	6	2	6	0	0	8	2	0	0	0	2	0	0	0	0	0	16
12:00 - 1:00	0	3	2	0	5	1	2	0	0	3	2	0	1	0	3	0	0	0	0	0	11
12:15 - 1:15	0	3	1	0	4	0	2	0	0	2	2	0	1	0	3	0	0	0	0	0	9
12:30 - 1:30	0	6	1	0	7	1	3	0	0	4	0	0	2	0	2	0	0	0	0	0	13
12:45 - 1:45	0	4	2	0	6	1	2	0	0	3	0	0	2	0	2	0	0	0	0	0	11
1:00 - 2:00	0	5	2	0	7	2	2	0	0	4	0	0	1	0	1	0	0	0	0	0	12
PEAK HOUR																					
11:15 - 12:15	0	7	1	0	8	4	8	0	0	12	0	0	0	0	0	0	0	0	0	0	20

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: I-90 NB Ramps Weather: Mild/Rain

Location: Albany County, New York Entered by: SN

TIME	NORTH LEG US4	SOUTH LEG US4	EAST LEG I-90 NB Ramps	WEST LEG
AM				
11:00 - 11:15	0	0	0	0
11:15 - 11:30	0	0	0	0
11:30 - 11:45	0	0	0	0
11:45 - 12:00	0	0	0	0
12:00 - 12:15	0	0	0	0
12:15 - 12:30	0	0	0	0
12:30 - 12:45	0	0	0	0
12:45 - 1:00	0	0	0	0
1:00 - 1:15	0	0	0	0
1:15 - 1:30	0	0	0	0
1:30 - 1:45	0	0	0	0
1:45 - 2:00	0	0	0	0
TOTALS	0	0	0	0

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: I-90 NB Ramps Weather: Mild/Rain

Location: Albany County, New York Entered by: SN

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: I-90 NB Ramps					TRAFFIC FROM WEST on:					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	0	172	20	0	192	73	130	0	0	203	61	0	9	0	70	0	0	0	0	0	465
11:15 - 11:30	0	172	28	0	200	87	170	0	0	257	53	0	13	0	66	0	0	0	0	0	523
11:30 - 11:45	0	160	18	0	178	109	183	0	0	292	47	0	16	0	63	0	0	0	0	0	533
11:45 - 12:00	0	199	35	0	234	87	176	0	1	264	60	0	12	0	72	0	0	0	0	0	570
12:00 - 12:15	0	172	21	0	193	89	149	0	0	238	55	0	10	0	65	0	0	0	0	0	496
12:15 - 12:30	0	178	28	0	206	90	142	0	0	232	72	0	13	0	85	0	0	0	0	0	523
12:30 - 12:45	0	192	27	0	219	85	157	0	0	242	47	0	5	0	52	0	0	0	0	0	513
12:45 - 1:00	0	158	21	0	179	82	150	0	0	232	58	0	12	0	70	0	0	0	0	0	481
1:00 - 1:15	0	199	19	0	218	85	141	0	0	226	58	0	11	0	69	0	0	0	0	0	513
1:15 - 1:30	0	168	23	1	192	94	152	0	0	246	56	0	5	0	61	0	0	0	0	0	499
1:30 - 1:45	0	158	30	0	188	75	170	0	0	245	49	0	11	0	60	0	0	0	0	0	493
1:45 - 2:00	0	183	26	0	209	85	128	0	0	213	60	0	7	0	67	0	0	0	0	0	489
3 Hr Totals	0	2111	296	1	2408	1041	1848	0	1	2890	676	0	124	0	800	0	0	0	0	0	6098
1 Hr Totals																					
11:00 - 12:00	0	703	101	0	804	356	659	0	1	1016	221	0	50	0	271	0	0	0	0	0	2091
11:15 - 12:15	0	703	102	0	805	372	678	0	1	1051	215	0	51	0	266	0	0	0	0	0	2122
11:30 - 12:30	0	709	102	0	811	375	650	0	1	1026	234	0	51	0	285	0	0	0	0	0	2122
11:45 - 12:45	0	741	111	0	852	351	624	0	1	976	234	0	40	0	274	0	0	0	0	0	2102
12:00 - 1:00	0	700	97	0	797	346	598	0	0	944	232	0	40	0	272	0	0	0	0	0	2013
12:15 - 1:15	0	727	95	0	822	342	590	0	0	932	235	0	41	0	276	0	0	0	0	0	2030
12:30 - 1:30	0	717	90	1	808	346	600	0	0	946	219	0	33	0	252	0	0	0	0	0	2006
12:45 - 1:45	0	683	93	1	777	336	613	0	0	949	221	0	39	0	260	0	0	0	0	0	1986
1:00 - 2:00	0	708	98	1	807	339	591	0	0	930	223	0	34	0	257	0	0	0	0	0	1994
PEAK HOUR																					
11:15 - 12:15	0	703	102	0	805	372	678	0	1	1051	215	0	51	0	266	0	0	0	0	0	2122

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: Upper Mannix Road Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: Upper Mannix Road					TRAFFIC FROM WEST on: Upper Mannix Road					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	4	237	9	1	251	15	150	7	2	174	10	0	40	0	50	7	0	6	0	13	488
4:15 - 4:30	6	202	9	1	218	21	165	17	0	203	22	0	33	0	55	3	1	6	0	10	486
4:30 - 4:45	14	219	16	0	249	24	162	14	7	207	14	0	69	1	84	9	0	2	0	11	551
4:45 - 5:00	3	242	4	1	250	21	142	5	4	172	9	0	56	0	65	9	1	2	0	12	499
5:00 - 5:15	6	248	8	1	263	4	152	11	8	175	43	4	103	0	150	6	1	2	0	9	597
5:15 - 5:30	5	236	9	2	252	15	186	9	6	216	23	0	56	0	79	13	0	2	0	15	562
5:30 - 5:45	3	227	5	0	235	14	148	9	3	174	19	3	60	0	82	18	0	3	0	21	512
5:45 - 6:00	1	181	8	0	190	12	168	4	3	187	12	0	30	0	42	10	0	2	0	12	431
2 Hr Totals	42	1792	68	6	1908	126	1273	76	33	1508	152	7	447	1	607	75	3	25	0	103	4126
1 Hr Totals																					
4:00 - 5:00	27	900	38	3	968	81	619	43	13	756	55	0	198	1	254	28	2	16	0	46	2024
4:15 - 5:15	29	911	37	3	980	70	621	47	19	757	88	4	261	1	354	27	3	12	0	42	2133
4:30 - 5:30	28	945	37	4	1014	64	642	39	25	770	89	4	284	1	378	37	2	8	0	47	2209
4:45 - 5:45	17	953	26	4	1000	54	628	34	21	737	94	7	275	0	376	46	2	9	0	57	2170
5:00 - 6:00	15	892	30	3	940	45	654	33	20	752	97	7	249	0	353	47	1	9	0	57	2102
PEAK HOUR																					
4:30 - 5:30	28	945	37	4	1014	64	642	39	25	770	89	4	284	1	378	37	2	8	0	47	2209

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: Upper Mannix Road Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: Upper Mannix Road					TRAFFIC FROM WEST on: Upper Mannix Road					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	0	8	0	0	8	0	5	0	0	5	0	0	3	0	3	0	0	0	0	0	16
4:15 - 4:30	0	9	0	0	9	0	13	0	0	13	1	0	0	0	1	0	0	0	0	0	23
4:30 - 4:45	0	2	0	0	2	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	9
4:45 - 5:00	0	2	0	0	2	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	5
5:00 - 5:15	0	0	0	0	0	0	9	0	0	9	0	0	4	0	4	0	0	0	0	0	13
5:15 - 5:30	0	5	0	0	5	1	7	0	0	8	0	0	2	0	2	0	0	0	0	0	15
5:30 - 5:45	0	3	0	0	3	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	8
5:45 - 6:00	0	1	0	0	1	0	7	0	0	7	0	0	1	0	1	0	0	0	0	0	9
2 Hr Totals	0	30	0	0	30	1	56	0	0	57	1	0	10	0	11	0	0	0	0	0	98
1 Hr Totals																					
4:00 - 5:00	0	21	0	0	21	0	28	0	0	28	1	0	3	0	4	0	0	0	0	0	53
4:15 - 5:15	0	13	0	0	13	0	32	0	0	32	1	0	4	0	5	0	0	0	0	0	50
4:30 - 5:30	0	9	0	0	9	1	26	0	0	27	0	0	6	0	6	0	0	0	0	0	42
4:45 - 5:45	0	10	0	0	10	1	24	0	0	25	0	0	6	0	6	0	0	0	0	0	41
5:00 - 6:00	0	9	0	0	9	1	28	0	0	29	0	0	7	0	7	0	0	0	0	0	45
PEAK HOUR																					
4:30 - 5:30	0	9	0	0	9	1	26	0	0	27	0	0	6	0	6	0	0	0	0	0	42

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: Upper Mannix Road Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	NORTH LEG US4	SOUTH LEG US4	EAST LEG Upper Mannix Road	WEST LEG Upper Mannix Road
4:00 - 4:15	0	0	0	0
4:15 - 4:30	0	0	0	0
4:30 - 4:45	0	0	0	0
4:45 - 5:00	0	0	0	1
5:00 - 5:15	0	0	0	0
5:15 - 5:30	0	0	0	0
5:30 - 5:45	0	0	0	0
5:45 - 6:00	0	0	0	0
TOTALS	0	0	0	1

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: Upper Mannix Road Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: Upper Mannix Road					TRAFFIC FROM WEST on: Upper Mannix Road					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	4	245	9	1	259	15	155	7	2	179	10	0	43	0	53	7	0	6	0	13	504
4:15 - 4:30	6	211	9	1	227	21	178	17	0	216	23	0	33	0	56	3	1	6	0	10	509
4:30 - 4:45	14	221	16	0	251	24	169	14	7	214	14	0	69	1	84	9	0	2	0	11	560
4:45 - 5:00	3	244	4	1	252	21	145	5	4	175	9	0	56	0	65	9	1	2	0	12	504
5:00 - 5:15	6	248	8	1	263	4	161	11	8	184	43	4	107	0	154	6	1	2	0	9	610
5:15 - 5:30	5	241	9	2	257	16	193	9	6	224	23	0	58	0	81	13	0	2	0	15	577
5:30 - 5:45	3	230	5	0	238	14	153	9	3	179	19	3	60	0	82	18	0	3	0	21	520
5:45 - 6:00	1	182	8	0	191	12	175	4	3	194	12	0	31	0	43	10	0	2	0	12	440
2 Hr Totals	42	1822	68	6	1938	127	1329	76	33	1565	153	7	457	1	618	75	3	25	0	103	4224
1 Hr Totals																					
4:00 - 5:00	27	921	38	3	989	81	647	43	13	784	56	0	201	1	258	28	2	16	0	46	2077
4:15 - 5:15	29	924	37	3	993	70	653	47	19	789	89	4	265	1	359	27	3	12	0	42	2183
4:30 - 5:30	28	954	37	4	1023	65	668	39	25	797	89	4	290	1	384	37	2	8	0	47	2251
4:45 - 5:45	17	963	26	4	1010	55	652	34	21	762	94	7	281	0	382	46	2	9	0	57	2211
5:00 - 6:00	15	901	30	3	949	46	682	33	20	781	97	7	256	0	360	47	1	9	0	57	2147
PEAK HOUR																					
4:30 - 5:30	28	954	37	4	1023	65	668	39	25	797	89	4	290	1	384	37	2	8	0	47	2251

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: Upper Mannix Road Weather: Mild, Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: Upper Mannix Road					TRAFFIC FROM WEST on: Upper Mannix Road					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	11	180	5	0	196	8	178	1	2	189	7	0	6	0	13	4	0	3	0	7	405
11:15 - 11:30	5	186	4	0	195	6	221	1	1	229	7	0	5	0	12	8	0	8	0	16	452
11:30 - 11:45	2	170	1	2	175	12	228	4	5	249	5	0	5	0	10	8	0	3	0	11	445
11:45 - 12:00	7	213	3	0	223	9	223	6	3	241	2	1	12	0	15	5	0	3	0	8	487
12:00 - 12:15	1	169	0	1	171	5	191	5	4	205	4	0	7	0	11	2	1	1	0	4	391
12:15 - 12:30	3	190	3	0	196	9	197	5	2	213	1	0	5	0	6	9	0	3	0	12	427
12:30 - 12:45	8	189	2	0	199	6	183	7	4	200	7	0	14	0	21	4	1	5	0	10	430
12:45 - 1:00	9	166	1	0	176	6	202	3	0	211	4	0	10	0	14	5	2	4	0	11	412
1:00 - 1:15	7	186	4	0	197	14	180	8	3	205	2	1	5	0	8	11	0	3	0	14	424
1:15 - 1:30	3	173	4	1	181	16	188	7	2	213	2	0	12	0	14	3	0	5	0	8	416
1:30 - 1:45	10	173	3	1	187	10	198	5	1	214	4	0	10	0	14	7	0	2	0	9	424
1:45 - 2:00	3	191	6	1	201	10	168	5	5	188	2	1	5	0	8	9	1	4	0	14	411
3 Hr Totals	69	2186	36	6	2297	111	2357	57	32	2557	47	3	96	0	146	75	5	44	0	124	5124
1 Hr Totals																					
11:00 - 12:00	25	749	13	2	789	35	850	12	11	908	21	1	28	0	50	25	0	17	0	42	1789
11:15 - 12:15	15	738	8	3	764	32	863	16	13	924	18	1	29	0	48	23	1	15	0	39	1775
11:30 - 12:30	13	742	7	3	765	35	839	20	14	908	12	1	29	0	42	24	1	10	0	35	1750
11:45 - 12:45	19	761	8	1	789	29	794	23	13	859	14	1	38	0	53	20	2	12	0	34	1735
12:00 - 1:00	21	714	6	1	742	26	773	20	10	829	16	0	36	0	52	20	4	13	0	37	1660
12:15 - 1:15	27	731	10	0	768	35	762	23	9	829	14	1	34	0	49	29	3	15	0	47	1693
12:30 - 1:30	27	714	11	1	753	42	753	25	9	829	15	1	41	0	57	23	3	17	0	43	1682
12:45 - 1:45	29	698	12	2	741	46	768	23	6	843	12	1	37	0	50	26	2	14	0	42	1676
1:00 - 2:00	23	723	17	3	766	50	734	25	11	820	10	2	32	0	44	30	1	14	0	45	1675
PEAK HOUR																					
11:00 - 12:00	25	749	13	2	789	35	850	12	11	908	21	1	28	0	50	25	0	17	0	42	1789

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: Upper Mannix Road Weather: Mild, Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: Upper Mannix Road					TRAFFIC FROM WEST on: Upper Mannix Road					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
11:15 - 11:30	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
11:30 - 11:45	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
11:45 - 12:00	0	2	0	0	2	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	6
12:00 - 12:15	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
12:15 - 12:30	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
12:30 - 12:45	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
12:45 - 1:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:00 - 1:15	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
1:15 - 1:30	0	2	0	0	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	3
1:30 - 1:45	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
1:45 - 2:00	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
3 Hr Totals	0	16	0	0	16	0	12	0	1	13	0	0	0	0	0	0	0	0	0	0	29
1 Hr Totals																					
11:00 - 12:00	0	7	0	0	7	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	14
11:15 - 12:15	0	8	0	0	8	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	14
11:30 - 12:30	0	6	0	0	6	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	13
11:45 - 12:45	0	5	0	0	5	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	12
12:00 - 1:00	0	4	0	0	4	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	7
12:15 - 1:15	0	3	0	0	3	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	6
12:30 - 1:30	0	4	0	0	4	0	2	0	1	3	0	0	0	0	0	0	0	0	0	0	7
12:45 - 1:45	0	4	0	0	4	0	2	0	1	3	0	0	0	0	0	0	0	0	0	0	7
1:00 - 2:00	0	5	0	0	5	0	2	0	1	3	0	0	0	0	0	0	0	0	0	0	8
PEAK HOUR																					
11:00 - 12:00	0	7	0	0	7	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	14

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: Upper Mannix Road Weather: Mild, Rain

Location: Albany County, New York Entered by: CG

TIME	NORTH LEG US4	SOUTH LEG US4	EAST LEG Upper Mannix Road	WEST LEG Upper Mannix Road
AM				
11:00 - 11:15	0	0	0	0
11:15 - 11:30	0	0	0	0
11:30 - 11:45	0	0	0	0
11:45 - 12:00	0	0	0	0
12:00 - 12:15	0	0	0	0
12:15 - 12:30	0	0	0	0
12:30 - 12:45	0	0	0	0
12:45 - 1:00	0	0	0	0
1:00 - 1:15	0	0	0	0
1:15 - 1:30	0	0	0	0
1:30 - 1:45	0	0	0	0
1:45 - 2:00	0	0	0	0
TOTALS	0	0	0	0

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: Upper Mannix Road Weather: Mild, Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: Upper Mannix Road					TRAFFIC FROM WEST on: Upper Mannix Road					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	11	180	5	0	196	8	180	1	2	191	7	0	6	0	13	4	0	3	0	7	407
11:15 - 11:30	5	189	4	0	198	6	221	1	1	229	7	0	5	0	12	8	0	8	0	16	455
11:30 - 11:45	2	172	1	2	177	12	229	4	5	250	5	0	5	0	10	8	0	3	0	11	448
11:45 - 12:00	7	215	3	0	225	9	227	6	3	245	2	1	12	0	15	5	0	3	0	8	493
12:00 - 12:15	1	170	0	1	172	5	192	5	4	206	4	0	7	0	11	2	1	1	0	4	393
12:15 - 12:30	3	191	3	0	197	9	198	5	2	214	1	0	5	0	6	9	0	3	0	12	429
12:30 - 12:45	8	190	2	0	200	6	184	7	4	201	7	0	14	0	21	4	1	5	0	10	432
12:45 - 1:00	9	167	1	0	177	6	202	3	0	211	4	0	10	0	14	5	2	4	0	11	413
1:00 - 1:15	7	186	4	0	197	14	181	8	3	206	2	1	5	0	8	11	0	3	0	14	425
1:15 - 1:30	3	175	4	1	183	16	188	7	3	214	2	0	12	0	14	3	0	5	0	8	419
1:30 - 1:45	10	174	3	1	188	10	199	5	1	215	4	0	10	0	14	7	0	2	0	9	426
1:45 - 2:00	3	193	6	1	203	10	168	5	5	188	2	1	5	0	8	9	1	4	0	14	413
3 Hr Totals	69	2202	36	6	2313	111	2369	57	33	2570	47	3	96	0	146	75	5	44	0	124	5153
1 Hr Totals																					
11:00 - 12:00	25	756	13	2	796	35	857	12	11	915	21	1	28	0	50	25	0	17	0	42	1803
11:15 - 12:15	15	746	8	3	772	32	869	16	13	930	18	1	29	0	48	23	1	15	0	39	1789
11:30 - 12:30	13	748	7	3	771	35	846	20	14	915	12	1	29	0	42	24	1	10	0	35	1763
11:45 - 12:45	19	766	8	1	794	29	801	23	13	866	14	1	38	0	53	20	2	12	0	34	1747
12:00 - 1:00	21	718	6	1	746	26	776	20	10	832	16	0	36	0	52	20	4	13	0	37	1667
12:15 - 1:15	27	734	10	0	771	35	765	23	9	832	14	1	34	0	49	29	3	15	0	47	1699
12:30 - 1:30	27	718	11	1	757	42	755	25	10	832	15	1	41	0	57	23	3	17	0	43	1689
12:45 - 1:45	29	702	12	2	745	46	770	23	7	846	12	1	37	0	50	26	2	14	0	42	1683
1:00 - 2:00	23	728	17	3	771	50	736	25	12	823	10	2	32	0	44	30	1	14	0	45	1683
PEAK HOUR																					
11:00 - 12:00	25	756	13	2	796	35	857	12	11	915	21	1	28	0	50	25	0	17	0	42	1803

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: Thompson Hill Road - Date: April 25, 2014 Friday

and: Upper Mannix Road Weather: Mild, Some Rain

Location: Albany County, New York Entered by: AG

TIME	TRAFFIC FROM NORTH on: Thompson Hill Road					TRAFFIC FROM SOUTH on:					TRAFFIC FROM EAST on: Upper Mannix Road					TRAFFIC FROM WEST on: Upper Mannix Road					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	1		2	0	3					0	1	52		0	53		22	3	0	25	81
4:15 - 4:30	1		3	0	4					0	1	62		0	63		25	6	0	31	98
4:30 - 4:45	3		2	0	5					0	0	89		0	89		37	2	0	39	133
4:45 - 5:00	6		2	0	8					0	1	71		0	72		23	3	0	26	106
5:00 - 5:15	6		4	0	10					0	1	141		0	142		24	0	0	24	176
5:15 - 5:30	2		1	0	3					0	2	68		0	70		32	2	0	34	107
5:30 - 5:45	3		2	0	5					0	1	68		0	69		19	1	0	20	94
5:45 - 6:00	6		1	0	7					0	0	35		0	35		21	2	0	23	65
2 Hr Totals	28	0	17	0	45	0	0	0	0	0	7	586	0	0	593	0	203	19	0	222	860
1 Hr Totals																					
4:00 - 5:00	11	0	9	0	20	0	0	0	0	0	3	274	0	0	277	0	107	14	0	121	418
4:15 - 5:15	16	0	11	0	27	0	0	0	0	0	3	363	0	0	366	0	109	11	0	120	513
4:30 - 5:30	17	0	9	0	26	0	0	0	0	0	4	369	0	0	373	0	116	7	0	123	522
4:45 - 5:45	17	0	9	0	26	0	0	0	0	0	5	348	0	0	353	0	98	6	0	104	483
5:00 - 6:00	17	0	8	0	25	0	0	0	0	0	4	312	0	0	316	0	96	5	0	101	442
PEAK HOUR																					
4:30 - 5:30	17	0	9	0	26	0	0	0	0	0	4	369	0	0	373	0	116	7	0	123	522

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: Thompson Hill Road - Date: April 25, 2014 Friday

and: Upper Mannix Road Weather: Mild, Some Rain

Location: Albany County, New York Entered by: AG

TIME	TRAFFIC FROM NORTH on: Thompson Hill Road					TRAFFIC FROM SOUTH on:					TRAFFIC FROM EAST on: Upper Mannix Road					TRAFFIC FROM WEST on: Upper Mannix Road					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	0		0	0	0					0	0	3		0	3		0	0	0	0	3
4:15 - 4:30	0		0	0	0					0	0	1		0	1		0	0	0	0	1
4:30 - 4:45	0		0	0	0					0	0	0		0	0		0	0	0	0	0
4:45 - 5:00	0		0	0	0					0	0	0		0	0		0	0	0	0	0
5:00 - 5:15	0		0	0	0					0	0	0		0	0		0	0	0	0	0
5:15 - 5:30	0		0	0	0					0	0	0		0	0		2	0	0	2	2
5:30 - 5:45	0		0	0	0					0	0	1		0	1		0	0	0	0	1
5:45 - 6:00	0		0	0	0					0	0	1		0	1		0	0	0	0	1
2 Hr Totals	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	0	2	0	0	2	8
1 Hr Totals																					
4:00 - 5:00	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	4
4:15 - 5:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:30 - 5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
4:45 - 5:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	3
5:00 - 6:00	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2	0	0	2	4
PEAK HOUR																					
4:30 - 5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: Thompson Hill Road - Date: April 25, 2014 Friday

and: Upper Mannix Road Weather: Mild, Some Rain

Location: Albany County, New York Entered by: AG

TIME	NORTH LEG Thompson Hill Road	SOUTH LEG	EAST LEG Upper Mannix Road	WEST LEG Upper Mannix Road
4:00 - 4:15	0		0	0
4:15 - 4:30	0		0	0
4:30 - 4:45	0		0	0
4:45 - 5:00	1		0	0
5:00 - 5:15	0		0	0
5:15 - 5:30	0		0	0
5:30 - 5:45	2		0	0
5:45 - 6:00	0		0	0
TOTALS	3	0	0	0

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: Thompson Hill Road - Date: April 25, 2014 Friday

and: Upper Mannix Road Weather: Mild, Some Rain

Location: Albany County, New York Entered by: AG

TIME	TRAFFIC FROM NORTH on: Thompson Hill Road					TRAFFIC FROM SOUTH on:					TRAFFIC FROM EAST on: Upper Mannix Road					TRAFFIC FROM WEST on: Upper Mannix Road					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	1	0	2	0	3	0	0	0	0	0	1	55	0	0	56	0	22	3	0	25	84
4:15 - 4:30	1	0	3	0	4	0	0	0	0	0	1	63	0	0	64	0	25	6	0	31	99
4:30 - 4:45	3	0	2	0	5	0	0	0	0	0	0	89	0	0	89	0	37	2	0	39	133
4:45 - 5:00	6	0	2	0	8	0	0	0	0	0	1	71	0	0	72	0	23	3	0	26	106
5:00 - 5:15	6	0	4	0	10	0	0	0	0	0	1	141	0	0	142	0	24	0	0	24	176
5:15 - 5:30	2	0	1	0	3	0	0	0	0	0	2	68	0	0	70	0	34	2	0	36	109
5:30 - 5:45	3	0	2	0	5	0	0	0	0	0	1	69	0	0	70	0	19	1	0	20	95
5:45 - 6:00	6	0	1	0	7	0	0	0	0	0	0	36	0	0	36	0	21	2	0	23	66
2 Hr Totals	28	0	17	0	45	0	0	0	0	0	7	592	0	0	599	0	205	19	0	224	868
1 Hr Totals																					
4:00 - 5:00	11	0	9	0	20	0	0	0	0	0	3	278	0	0	281	0	107	14	0	121	422
4:15 - 5:15	16	0	11	0	27	0	0	0	0	0	3	364	0	0	367	0	109	11	0	120	514
4:30 - 5:30	17	0	9	0	26	0	0	0	0	0	4	369	0	0	373	0	118	7	0	125	524
4:45 - 5:45	17	0	9	0	26	0	0	0	0	0	5	349	0	0	354	0	100	6	0	106	486
5:00 - 6:00	17	0	8	0	25	0	0	0	0	0	4	314	0	0	318	0	98	5	0	103	446
PEAK HOUR																					
4:30 - 5:30	17	0	9	0	26	0	0	0	0	0	4	369	0	0	373	0	118	7	0	125	524

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU
Intersection of: Thompson Hill Road - Date: April 26, 2014 Saturday
and: Upper Mannix Road Weather: Mild, Rain
Location: Albany County, New York Entered by: AG

TIME	TRAFFIC FROM NORTH on: Thompson Hill Road					TRAFFIC FROM SOUTH on:					TRAFFIC FROM EAST on: Upper Mannix Road					TRAFFIC FROM WEST on: Upper Mannix Road					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	2		2	0	4					0	1	12		0	13		10	2	0	12	29
11:15 - 11:30	2		3	0	5					0	1	10		0	11		10	1	0	11	27
11:30 - 11:45	3		1	0	4					0	0	6		0	6		13	1	0	14	24
11:45 - 12:00	4		0	0	4					0	0	11		0	11		9	3	0	12	27
12:00 - 12:15	3		1	0	4					0	0	9		0	9		7	1	0	8	21
12:15 - 12:30	4		1	0	5					0	0	7		0	7		16	1	0	17	29
12:30 - 12:45	2		4	0	6					0	1	20		0	21		5	4	0	9	36
12:45 - 1:00	3		1	0	4					0	0	11		0	11		11	0	0	11	26
1:00 - 1:15	2		3	0	5					0	0	9		0	9		13	3	0	16	30
1:15 - 1:30	2		4	0	6					0	2	12		0	14		17	3	0	20	40
1:30 - 1:45	1		3	0	4					0	0	11		0	11		13	2	0	15	30
1:45 - 2:00	0		0	0	0					0	0	8		0	8		15	2	0	17	25
3 Hr Totals	28	0	23	0	51	0	0	0	0	0	5	126	0	0	131	0	139	23	0	162	344
1 Hr Totals																					
11:00 - 12:00	11	0	6	0	17	0	0	0	0	0	2	39	0	0	41	0	42	7	0	49	107
11:15 - 12:15	12	0	5	0	17	0	0	0	0	0	1	36	0	0	37	0	39	6	0	45	99
11:30 - 12:30	14	0	3	0	17	0	0	0	0	0	0	33	0	0	33	0	45	6	0	51	101
11:45 - 12:45	13	0	6	0	19	0	0	0	0	0	1	47	0	0	48	0	37	9	0	46	113
12:00 - 1:00	12	0	7	0	19	0	0	0	0	0	1	47	0	0	48	0	39	6	0	45	112
12:15 - 1:15	11	0	9	0	20	0	0	0	0	0	1	47	0	0	48	0	45	8	0	53	121
12:30 - 1:30	9	0	12	0	21	0	0	0	0	0	3	52	0	0	55	0	46	10	0	56	132
12:45 - 1:45	8	0	11	0	19	0	0	0	0	0	2	43	0	0	45	0	54	8	0	62	126
1:00 - 2:00	5	0	10	0	15	0	0	0	0	0	2	40	0	0	42	0	58	10	0	68	125
PEAK HOUR																					
12:30 - 1:30	9	0	12	0	21	0	0	0	0	0	3	52	0	0	55	0	46	10	0	56	132

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: Thompson Hill Road - Date: April 26, 2014 Saturday

and: Upper Mannix Road Weather: Mild, Rain

Location: Albany County, New York Entered by: AG

TIME	TRAFFIC FROM NORTH on: Thompson Hill Road					TRAFFIC FROM SOUTH on:					TRAFFIC FROM EAST on: Upper Mannix Road					TRAFFIC FROM WEST on: Upper Mannix Road					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	0		0	0	0					0	0	0		0	0		0	0	0	0	0
11:15 - 11:30	0		0	0	0					0	0	0		0	0		0	0	0	0	0
11:30 - 11:45	0		0	0	0					0	0	0		0	0		0	0	0	0	0
11:45 - 12:00	0		0	0	0					0	0	0		0	0		0	0	0	0	0
12:00 - 12:15	0		0	0	0					0	0	0		0	0		0	0	0	0	0
12:15 - 12:30	0		0	0	0					0	0	0		0	0		0	0	0	0	0
12:30 - 12:45	0		0	0	0					0	0	0		0	0		0	0	0	0	0
12:45 - 1:00	0		0	0	0					0	0	0		0	0		0	0	0	0	0
1:00 - 1:15	0		0	0	0					0	0	0		0	0		0	0	0	0	0
1:15 - 1:30	0		0	0	0					0	0	0		0	0		0	0	0	0	0
1:30 - 1:45	0		0	0	0					0	0	0		0	0		0	0	0	0	0
1:45 - 2:00	0		0	0	0					0	0	0		0	0		0	0	0	0	0
3 Hr Totals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1 Hr Totals																					
11:00 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 1:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 1:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 1:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 - 2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HOUR																					
12:30 - 1:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: Thompson Hill Road - Date: April 26, 2014 Saturday

and: Upper Mannix Road Weather: Mild, Rain

Location: Albany County, New York Entered by: AG

TIME	NORTH LEG Thompson Hill Road	SOUTH LEG	EAST LEG Upper Mannix Road	WEST LEG Upper Mannix Road
AM				
11:00 - 11:15	0		0	0
11:15 - 11:30	0		0	0
11:30 - 11:45	0		0	0
11:45 - 12:00	0		0	0
12:00 - 12:15	0		0	0
12:15 - 12:30	0		0	0
12:30 - 12:45	0		0	0
12:45 - 1:00	0		0	0
1:00 - 1:15	0		0	0
1:15 - 1:30	0		0	0
1:30 - 1:45	0		0	0
1:45 - 2:00	0		0	0
TOTALS	0	0	0	0

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: Thompson Hill Road - Date: April 26, 2014 Saturday

and: Upper Mannix Road Weather: Mild, Rain

Location: Albany County, New York Entered by: AG

TIME	TRAFFIC FROM NORTH on: Thompson Hill Road					TRAFFIC FROM SOUTH on:					TRAFFIC FROM EAST on: Upper Mannix Road					TRAFFIC FROM WEST on: Upper Mannix Road					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	2	0	2	0	4	0	0	0	0	0	1	12	0	0	13	0	10	2	0	12	29
11:15 - 11:30	2	0	3	0	5	0	0	0	0	0	1	10	0	0	11	0	10	1	0	11	27
11:30 - 11:45	3	0	1	0	4	0	0	0	0	0	0	6	0	0	6	0	13	1	0	14	24
11:45 - 12:00	4	0	0	0	4	0	0	0	0	0	0	11	0	0	11	0	9	3	0	12	27
12:00 - 12:15	3	0	1	0	4	0	0	0	0	0	0	9	0	0	9	0	7	1	0	8	21
12:15 - 12:30	4	0	1	0	5	0	0	0	0	0	0	7	0	0	7	0	16	1	0	17	29
12:30 - 12:45	2	0	4	0	6	0	0	0	0	0	1	20	0	0	21	0	5	4	0	9	36
12:45 - 1:00	3	0	1	0	4	0	0	0	0	0	0	11	0	0	11	0	11	0	0	11	26
1:00 - 1:15	2	0	3	0	5	0	0	0	0	0	0	9	0	0	9	0	13	3	0	16	30
1:15 - 1:30	2	0	4	0	6	0	0	0	0	0	2	12	0	0	14	0	17	3	0	20	40
1:30 - 1:45	1	0	3	0	4	0	0	0	0	0	0	11	0	0	11	0	13	2	0	15	30
1:45 - 2:00	0	0	0	0	0	0	0	0	0	0	0	8	0	0	8	0	15	2	0	17	25
3 Hr Totals	28	0	23	0	51	0	0	0	0	0	5	126	0	0	131	0	139	23	0	162	344
1 Hr Totals																					
11:00 - 12:00	11	0	6	0	17	0	0	0	0	0	2	39	0	0	41	0	42	7	0	49	107
11:15 - 12:15	12	0	5	0	17	0	0	0	0	0	1	36	0	0	37	0	39	6	0	45	99
11:30 - 12:30	14	0	3	0	17	0	0	0	0	0	0	33	0	0	33	0	45	6	0	51	101
11:45 - 12:45	13	0	6	0	19	0	0	0	0	0	1	47	0	0	48	0	37	9	0	46	113
12:00 - 1:00	12	0	7	0	19	0	0	0	0	0	1	47	0	0	48	0	39	6	0	45	112
12:15 - 1:15	11	0	9	0	20	0	0	0	0	0	1	47	0	0	48	0	45	8	0	53	121
12:30 - 1:30	9	0	12	0	21	0	0	0	0	0	3	52	0	0	55	0	46	10	0	56	132
12:45 - 1:45	8	0	11	0	19	0	0	0	0	0	2	43	0	0	45	0	54	8	0	62	126
1:00 - 2:00	5	0	10	0	15	0	0	0	0	0	2	40	0	0	42	0	58	10	0	68	125
PEAK HOUR																					
12:30 - 1:30	9	0	12	0	21	0	0	0	0	0	3	52	0	0	55	0	46	10	0	56	132

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 Date: April 25, 2014 Friday

and: Business Access Weather: Mild, Some Rain

Location: Albany County, New York Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: Business Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	2	224		0	226		167	3	0	170					0	5		4	0	9	405
4:15 - 4:30	2	196		0	198		201	2	0	203					0	7		2	0	9	410
4:30 - 4:45	4	227		0	231		175	2	0	177					0	12		2	0	14	422
4:45 - 5:00	2	236		0	238		175	3	0	178					0	1		1	0	2	418
5:00 - 5:15	0	229		0	229		215	3	0	218					0	5		2	0	7	454
5:15 - 5:30	5	228		0	233		210	3	0	213					0	5		2	0	7	453
5:30 - 5:45	8	196		0	204		168	11	0	179					0	8		3	0	11	394
5:45 - 6:00	9	186		0	195		171	12	0	183					0	5		2	0	7	385
2 Hr Totals	32	1722	0	0	1754	0	1482	39	0	1521	0	0	0	0	0	48	0	18	0	66	3341
1 Hr Totals																					
4:00 - 5:00	10	883	0	0	893	0	718	10	0	728	0	0	0	0	0	25	0	9	0	34	1655
4:15 - 5:15	8	888	0	0	896	0	766	10	0	776	0	0	0	0	0	25	0	7	0	32	1704
4:30 - 5:30	11	920	0	0	931	0	775	11	0	786	0	0	0	0	0	23	0	7	0	30	1747
4:45 - 5:45	15	889	0	0	904	0	768	20	0	788	0	0	0	0	0	19	0	8	0	27	1719
5:00 - 6:00	22	839	0	0	861	0	764	29	0	793	0	0	0	0	0	23	0	9	0	32	1686
PEAK HOUR																					
4:30 - 5:30	11	920	0	0	931	0	775	11	0	786	0	0	0	0	0	23	0	7	0	30	1747

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 Date: April 25, 2014 Friday

and: Business Access Weather: Mild, Some Rain

Location: Albany County, New York Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: Business Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	0	9		0	9		3	6	0	9					0	0		0	0	0	18
4:15 - 4:30	3	7		0	10		3	7	0	10					0	0		0	0	0	20
4:30 - 4:45	0	0		0	0		3	4	0	7					0	2		0	0	2	9
4:45 - 5:00	1	1		0	2		1	2	0	3					0	1		0	0	1	6
5:00 - 5:15	1	0		0	1		3	7	0	10					0	2		0	0	2	13
5:15 - 5:30	0	2		0	2		3	5	0	8					0	1		0	0	1	11
5:30 - 5:45	0	2		0	2		2	3	0	5					0	1		0	0	1	8
5:45 - 6:00	1	0		0	1		1	6	0	7					0	1		0	0	1	9
2 Hr Totals	6	21	0	0	27	0	19	40	0	59	0	0	0	0	0	8	0	0	0	8	94
1 Hr Totals																					
4:00 - 5:00	4	17	0	0	21	0	10	19	0	29	0	0	0	0	0	3	0	0	0	3	53
4:15 - 5:15	5	8	0	0	13	0	10	20	0	30	0	0	0	0	0	5	0	0	0	5	48
4:30 - 5:30	2	3	0	0	5	0	10	18	0	28	0	0	0	0	0	6	0	0	0	6	39
4:45 - 5:45	2	5	0	0	7	0	9	17	0	26	0	0	0	0	0	5	0	0	0	5	38
5:00 - 6:00	2	4	0	0	6	0	9	21	0	30	0	0	0	0	0	5	0	0	0	5	41
PEAK HOUR																					
4:30 - 5:30	2	3	0	0	5	0	10	18	0	28	0	0	0	0	0	6	0	0	0	6	39

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US 4 | Date: April 25, 2014 | Friday

and: Business Access | Weather: Mild, Some Rain

Location: Albany County, New York | Entered by: AG

TIME	NORTH LEG US 4	SOUTH LEG US 4	EAST LEG	WEST LEG Business Access
4:00 - 4:15	0	0		0
4:15 - 4:30	0	0		0
4:30 - 4:45	0	0		1
4:45 - 5:00	0	0		0
5:00 - 5:15	0	0		0
5:15 - 5:30	0	0		0
5:30 - 5:45	0	0		0
5:45 - 6:00	0	0		0
TOTALS	0	0	0	1

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: April 25, 2014 — Friday

and: Business Access — Weather: Mild, Some Rain

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: Business Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	2	233	0	0	235	0	170	9	0	179	0	0	0	0	0	5	0	4	0	9	423
4:15 - 4:30	5	203	0	0	208	0	204	9	0	213	0	0	0	0	0	7	0	2	0	9	430
4:30 - 4:45	4	227	0	0	231	0	178	6	0	184	0	0	0	0	0	14	0	2	0	16	431
4:45 - 5:00	3	237	0	0	240	0	176	5	0	181	0	0	0	0	0	2	0	1	0	3	424
5:00 - 5:15	1	229	0	0	230	0	218	10	0	228	0	0	0	0	0	7	0	2	0	9	467
5:15 - 5:30	5	230	0	0	235	0	213	8	0	221	0	0	0	0	0	6	0	2	0	8	464
5:30 - 5:45	8	198	0	0	206	0	170	14	0	184	0	0	0	0	0	9	0	3	0	12	402
5:45 - 6:00	10	186	0	0	196	0	172	18	0	190	0	0	0	0	0	6	0	2	0	8	394
2 Hr Totals	38	1743	0	0	1781	0	1501	79	0	1580	0	0	0	0	0	56	0	18	0	74	3435
1 Hr Totals																					
4:00 - 5:00	14	900	0	0	914	0	728	29	0	757	0	0	0	0	0	28	0	9	0	37	1708
4:15 - 5:15	13	896	0	0	909	0	776	30	0	806	0	0	0	0	0	30	0	7	0	37	1752
4:30 - 5:30	13	923	0	0	936	0	785	29	0	814	0	0	0	0	0	29	0	7	0	36	1786
4:45 - 5:45	17	894	0	0	911	0	777	37	0	814	0	0	0	0	0	24	0	8	0	32	1757
5:00 - 6:00	24	843	0	0	867	0	773	50	0	823	0	0	0	0	0	28	0	9	0	37	1727
PEAK HOUR																					
4:30 - 5:30	13	923	0	0	936	0	785	29	0	814	0	0	0	0	0	29	0	7	0	36	1786

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 Date: April 26, 2014 Saturday

and: Business Access Weather: Mild, Rain

Location: Albany County, New York Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: Business Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	0	200		0	200		194	1	0	195					0	0		0	0	0	395
11:15 - 11:30	1	184		0	185		229	0	0	229					0	2		2	0	4	418
11:30 - 11:45	0	178		0	178		239	2	0	241					0	1		0	0	1	420
11:45 - 12:00	1	225		0	226		227	1	0	228					0	3		1	0	4	458
12:00 - 12:15	1	167		0	168		191	1	0	192					0	0		2	0	2	362
12:15 - 12:30	0	188		0	188		206	0	0	206					0	4		1	0	5	399
12:30 - 12:45	1	205		0	206		201	0	0	201					0	1		1	0	2	409
12:45 - 1:00	2	175		0	177		203	1	0	204					0	3		0	0	3	384
1:00 - 1:15	0	195		0	195		186	1	0	187					0	1		0	0	1	383
1:15 - 1:30	1	180		0	181		195	0	1	196					0	0		3	0	3	380
1:30 - 1:45	3	183		0	186		202	1	0	203					0	2		1	0	3	392
1:45 - 2:00	1	218		0	219		177	0	0	177					0	1		1	0	2	398
3 Hr Totals	11	2298	0	0	2309	0	2450	8	1	2459	0	0	0	0	0	18	0	12	0	30	4798
1 Hr Totals																					
11:00 - 12:00	2	787	0	0	789	0	889	4	0	893	0	0	0	0	0	6	0	3	0	9	1691
11:15 - 12:15	3	754	0	0	757	0	886	4	0	890	0	0	0	0	0	6	0	5	0	11	1658
11:30 - 12:30	2	758	0	0	760	0	863	4	0	867	0	0	0	0	0	8	0	4	0	12	1639
11:45 - 12:45	3	785	0	0	788	0	825	2	0	827	0	0	0	0	0	8	0	5	0	13	1628
12:00 - 1:00	4	735	0	0	739	0	801	2	0	803	0	0	0	0	0	8	0	4	0	12	1554
12:15 - 1:15	3	763	0	0	766	0	796	2	0	798	0	0	0	0	0	9	0	2	0	11	1575
12:30 - 1:30	4	755	0	0	759	0	785	2	1	788	0	0	0	0	0	5	0	4	0	9	1556
12:45 - 1:45	6	733	0	0	739	0	786	3	1	790	0	0	0	0	0	6	0	4	0	10	1539
1:00 - 2:00	5	776	0	0	781	0	760	2	1	763	0	0	0	0	0	4	0	5	0	9	1553
PEAK HOUR																					
11:00 - 12:00	2	787	0	0	789	0	889	4	0	893	0	0	0	0	0	6	0	3	0	9	1691

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: April 26, 2014 — Saturday

and: Business Access — Weather: Mild, Rain

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: Business Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	0	1		0	1		2	0	0	2					0	0		0	0	0	3
11:15 - 11:30	0	3		0	3		1	0	0	1					0	0		0	0	0	4
11:30 - 11:45	0	2		0	2		2	0	0	2					0	0		0	0	0	4
11:45 - 12:00	0	1		0	1		4	1	0	5					0	0		0	0	0	6
12:00 - 12:15	0	0		0	0		0	0	0	0					0	1		0	0	1	1
12:15 - 12:30	0	2		0	2		1	0	0	1					0	0		0	0	0	3
12:30 - 12:45	0	2		0	2		0	0	0	0					0	0		0	0	0	2
12:45 - 1:00	0	1		0	1		1	0	0	1					0	0		0	0	0	2
1:00 - 1:15	0	0		0	0		2	0	0	2					0	0		0	0	0	2
1:15 - 1:30	1	3		0	4		1	0	0	1					0	0		0	0	0	5
1:30 - 1:45	0	1		0	1		2	0	0	2					0	0		0	0	0	3
1:45 - 2:00	0	2		0	2		1	0	0	1					0	0		0	0	0	3
3 Hr Totals	1	18	0	0	19	0	17	1	0	18	0	0	0	0	0	1	0	0	0	1	38
1 Hr Totals																					
11:00 - 12:00	0	7	0	0	7	0	9	1	0	10	0	0	0	0	0	0	0	0	0	0	17
11:15 - 12:15	0	6	0	0	6	0	7	1	0	8	0	0	0	0	0	1	0	0	0	1	15
11:30 - 12:30	0	5	0	0	5	0	7	1	0	8	0	0	0	0	0	1	0	0	0	1	14
11:45 - 12:45	0	5	0	0	5	0	5	1	0	6	0	0	0	0	0	1	0	0	0	1	12
12:00 - 1:00	0	5	0	0	5	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	8
12:15 - 1:15	0	5	0	0	5	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	9
12:30 - 1:30	1	6	0	0	7	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	11
12:45 - 1:45	1	5	0	0	6	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	12
1:00 - 2:00	1	6	0	0	7	0	6	0	0	6	0	0	0	0	0	0	0	0	0	0	13
PEAK HOUR																					
11:00 - 12:00	0	7	0	0	7	0	9	1	0	10	0	0	0	0	0	0	0	0	0	0	17

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US 4 | Date: April 26, 2014 | Saturday

and: Business Access | Weather: Mild, Rain

Location: Albany County, New York | Entered by: AG

TIME	NORTH LEG US 4	SOUTH LEG US 4	EAST LEG	WEST LEG Business Access
AM				
11:00 - 11:15	0	0		1
11:15 - 11:30	0	0		0
11:30 - 11:45	0	0		0
11:45 - 12:00	0	0		0
12:00 - 12:15	0	0		0
12:15 - 12:30	0	0		0
12:30 - 12:45	0	0		0
12:45 - 1:00	0	0		0
1:00 - 1:15	0	0		0
1:15 - 1:30	0	0		0
1:30 - 1:45	0	0		0
1:45 - 2:00	0	0		0
TOTALS	0	0	0	1

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: April 26, 2014 — Saturday

and: Business Access — Weather: Mild, Rain

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: Business Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	0	201	0	0	201	0	196	1	0	197	0	0	0	0	0	0	0	0	0	0	398
11:15 - 11:30	1	187	0	0	188	0	230	0	0	230	0	0	0	0	0	2	0	2	0	4	422
11:30 - 11:45	0	180	0	0	180	0	241	2	0	243	0	0	0	0	0	1	0	0	0	1	424
11:45 - 12:00	1	226	0	0	227	0	231	2	0	233	0	0	0	0	0	3	0	1	0	4	464
12:00 - 12:15	1	167	0	0	168	0	191	1	0	192	0	0	0	0	0	1	0	2	0	3	363
12:15 - 12:30	0	190	0	0	190	0	207	0	0	207	0	0	0	0	0	4	0	1	0	5	402
12:30 - 12:45	1	207	0	0	208	0	201	0	0	201	0	0	0	0	0	1	0	1	0	2	411
12:45 - 1:00	2	176	0	0	178	0	204	1	0	205	0	0	0	0	0	3	0	0	0	3	386
1:00 - 1:15	0	195	0	0	195	0	188	1	0	189	0	0	0	0	0	1	0	0	0	1	385
1:15 - 1:30	2	183	0	0	185	0	196	0	1	197	0	0	0	0	0	0	0	3	0	3	385
1:30 - 1:45	3	184	0	0	187	0	204	1	0	205	0	0	0	0	0	2	0	1	0	3	395
1:45 - 2:00	1	220	0	0	221	0	178	0	0	178	0	0	0	0	0	1	0	1	0	2	401
3 Hr Totals	12	2316	0	0	2328	0	2467	9	1	2477	0	0	0	0	0	19	0	12	0	31	4836
1 Hr Totals																					
11:00 - 12:00	2	794	0	0	796	0	898	5	0	903	0	0	0	0	0	6	0	3	0	9	1708
11:15 - 12:15	3	760	0	0	763	0	893	5	0	898	0	0	0	0	0	7	0	5	0	12	1673
11:30 - 12:30	2	763	0	0	765	0	870	5	0	875	0	0	0	0	0	9	0	4	0	13	1653
11:45 - 12:45	3	790	0	0	793	0	830	3	0	833	0	0	0	0	0	9	0	5	0	14	1640
12:00 - 1:00	4	740	0	0	744	0	803	2	0	805	0	0	0	0	0	9	0	4	0	13	1562
12:15 - 1:15	3	768	0	0	771	0	800	2	0	802	0	0	0	0	0	9	0	2	0	11	1584
12:30 - 1:30	5	761	0	0	766	0	789	2	1	792	0	0	0	0	0	5	0	4	0	9	1567
12:45 - 1:45	7	738	0	0	745	0	792	3	1	796	0	0	0	0	0	6	0	4	0	10	1551
1:00 - 2:00	6	782	0	0	788	0	766	2	1	769	0	0	0	0	0	4	0	5	0	9	1566
PEAK HOUR																					
11:00 - 12:00	2	794	0	0	796	0	898	5	0	903	0	0	0	0	0	6	0	3	0	9	1708

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: April 25, 2014 — Friday

and: Thompson Hill Road - — Weather: Mild, Some Rain

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on: Thompson Hill Road					TRAFFIC FROM WEST on:					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15		232	6	0	238	0	169		0	169	2		0	0	2					0	409
4:15 - 4:30		195	2	0	197	0	197		0	197	2		1	0	3					0	397
4:30 - 4:45		230	3	0	233	0	182		0	182	2		0	0	2					0	417
4:45 - 5:00		232	1	0	233	1	181		0	182	5		0	0	5					0	420
5:00 - 5:15		228	4	0	232	0	208		0	208	5		0	0	5					0	445
5:15 - 5:30		252	2	0	254	0	183		0	183	2		0	0	2					0	439
5:30 - 5:45		222	0	0	222	2	218		0	220	0		0	0	0					0	442
5:45 - 6:00		199	3	1	203	0	168		0	168	1		0	0	1					0	372
2 Hr Totals	0	1790	21	1	1812	3	1506	0	0	1509	19	0	1	0	20	0	0	0	0	0	3341
1 Hr Totals																					
4:00 - 5:00	0	889	12	0	901	1	729	0	0	730	11	0	1	0	12	0	0	0	0	0	1643
4:15 - 5:15	0	885	10	0	895	1	768	0	0	769	14	0	1	0	15	0	0	0	0	0	1679
4:30 - 5:30	0	942	10	0	952	1	754	0	0	755	14	0	0	0	14	0	0	0	0	0	1721
4:45 - 5:45	0	934	7	0	941	3	790	0	0	793	12	0	0	0	12	0	0	0	0	0	1746
5:00 - 6:00	0	901	9	1	911	2	777	0	0	779	8	0	0	0	8	0	0	0	0	0	1698
PEAK HOUR																					
4:45 - 5:45	0	934	7	0	941	3	790	0	0	793	12	0	0	0	12	0	0	0	0	0	1746

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: April 25, 2014 — Friday

and: Thompson Hill Road - — Weather: Mild, Some Rain

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on: Thompson Hill Road					TRAFFIC FROM WEST on:					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15		9	0	0	9	0	4		0	4	0		0	0	0					0	13
4:15 - 4:30		10	0	0	10	0	3		0	3	0		0	0	0					0	13
4:30 - 4:45		1	0	0	1	0	7		0	7	0		0	0	0					0	8
4:45 - 5:00		2	0	0	2	0	0		0	0	0		0	0	0					0	2
5:00 - 5:15		1	0	0	1	0	2		0	2	0		0	0	0					0	3
5:15 - 5:30		2	0	0	2	0	3		0	3	0		0	0	0					0	5
5:30 - 5:45		1	0	0	1	0	2		0	2	0		0	0	0					0	3
5:45 - 6:00		2	0	0	2	0	1		0	1	0		0	0	0					0	3
2 Hr Totals	0	28	0	0	28	0	22	0	0	22	0	0	0	0	0	0	0	0	0	0	50
1 Hr Totals																					
4:00 - 5:00	0	22	0	0	22	0	14	0	0	14	0	0	0	0	0	0	0	0	0	0	36
4:15 - 5:15	0	14	0	0	14	0	12	0	0	12	0	0	0	0	0	0	0	0	0	0	26
4:30 - 5:30	0	6	0	0	6	0	12	0	0	12	0	0	0	0	0	0	0	0	0	0	18
4:45 - 5:45	0	6	0	0	6	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	13
5:00 - 6:00	0	6	0	0	6	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	14
PEAK HOUR																					
4:45 - 5:45	0	6	0	0	6	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	13

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: April 26, 2014 — Saturday

and: Thompson Hill Road - — Weather: Mild, Rain

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on: Thompson Hill Road					TRAFFIC FROM WEST on:					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15		196	0	0	196	2	185		0	187	1		0	0	1					0	384
11:15 - 11:30		193	4	0	197	2	224		0	226	5		0	0	5					0	428
11:30 - 11:45		161	0	0	161	3	231		0	234	1		0	0	1					0	396
11:45 - 12:00		221	2	0	223	0	236		0	236	1		0	0	1					0	460
12:00 - 12:15		181	1	0	182	1	193		0	194	2		0	0	2					0	378
12:15 - 12:30		189	5	0	194	0	203		0	203	1		0	0	1					0	398
12:30 - 12:45		204	4	0	208	0	213		0	213	4		0	0	4					0	425
12:45 - 1:00		176	2	0	178	0	200		0	200	0		0	0	0					0	378
1:00 - 1:15		187	3	0	190	0	191		0	191	1		0	0	1					0	382
1:15 - 1:30		175	4	0	179	1	190		0	191	3		0	0	3					0	373
1:30 - 1:45		164	5	0	169	0	211		0	211	3		0	0	3					0	383
1:45 - 2:00		196	0	0	196	0	182		0	182	2		0	0	2					0	380
3 Hr Totals	0	2243	30	0	2273	9	2459	0	0	2468	24	0	0	0	24	0	0	0	0	0	4765
1 Hr Totals																					
11:00 - 12:00	0	771	6	0	777	7	876	0	0	883	8	0	0	0	8	0	0	0	0	0	1668
11:15 - 12:15	0	756	7	0	763	6	884	0	0	890	9	0	0	0	9	0	0	0	0	0	1662
11:30 - 12:30	0	752	8	0	760	4	863	0	0	867	5	0	0	0	5	0	0	0	0	0	1632
11:45 - 12:45	0	795	12	0	807	1	845	0	0	846	8	0	0	0	8	0	0	0	0	0	1661
12:00 - 1:00	0	750	12	0	762	1	809	0	0	810	7	0	0	0	7	0	0	0	0	0	1579
12:15 - 1:15	0	756	14	0	770	0	807	0	0	807	6	0	0	0	6	0	0	0	0	0	1583
12:30 - 1:30	0	742	13	0	755	1	794	0	0	795	8	0	0	0	8	0	0	0	0	0	1558
12:45 - 1:45	0	702	14	0	716	1	792	0	0	793	7	0	0	0	7	0	0	0	0	0	1516
1:00 - 2:00	0	722	12	0	734	1	774	0	0	775	9	0	0	0	9	0	0	0	0	0	1518
PEAK HOUR																					
11:00 - 12:00	0	771	6	0	777	7	876	0	0	883	8	0	0	0	8	0	0	0	0	0	1668

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: April 26, 2014 — Saturday

and: Thompson Hill Road - — Weather: Mild, Rain

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on: Thompson Hill Road					TRAFFIC FROM WEST on:					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15		0	0	0	0	0	3		0	3	0		0	0	0					0	3
11:15 - 11:30		3	0	0	3	0	0		0	0	0		0	0	0					0	3
11:30 - 11:45		2	0	0	2	0	1		0	1	0		0	0	0					0	3
11:45 - 12:00		1	0	0	1	0	4		0	4	0		0	0	0					0	5
12:00 - 12:15		1	0	0	1	0	2		0	2	0		0	0	0					0	3
12:15 - 12:30		2	0	0	2	0	0		0	0	0		0	0	0					0	2
12:30 - 12:45		2	0	0	2	0	2		0	2	0		0	0	0					0	4
12:45 - 1:00		1	0	0	1	0	0		0	0	0		0	0	0					0	1
1:00 - 1:15		0	0	0	0	0	3		0	3	0		0	0	0					0	3
1:15 - 1:30		3	0	0	3	0	0		0	0	0		0	0	0					0	3
1:30 - 1:45		2	0	0	2	0	0		0	0	0		0	0	0					0	2
1:45 - 2:00		2	0	0	2	0	0		0	0	0		0	0	0					0	2
3 Hr Totals	0	19	0	0	19	0	15	0	0	15	0	0	0	0	0	0	0	0	0	0	34
1 Hr Totals																					
11:00 - 12:00	0	6	0	0	6	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	14
11:15 - 12:15	0	7	0	0	7	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	14
11:30 - 12:30	0	6	0	0	6	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	13
11:45 - 12:45	0	6	0	0	6	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	14
12:00 - 1:00	0	6	0	0	6	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	10
12:15 - 1:15	0	5	0	0	5	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	10
12:30 - 1:30	0	6	0	0	6	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	11
12:45 - 1:45	0	6	0	0	6	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	9
1:00 - 2:00	0	7	0	0	7	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	10
PEAK HOUR																					
11:00 - 12:00	0	6	0	0	6	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	14

PEDESTRIAN OBSERVATIONS - SUMMARY

Intersection of: US 4
and: Thompson Hill Road -
Location: Albany County, New York

Counted by: VCU
Date: April 26, 2014
Weather: Mild, Rain
Entered by: AG

Saturday

TIME	NORTH LEG US 4	SOUTH LEG US 4	EAST LEG Thompson Hill Road	WEST LEG
AM				
11:00 - 11:15	0	0	0	
11:15 - 11:30	0	0	0	
11:30 - 11:45	0	0	1	
11:45 - 12:00	0	0	0	
12:00 - 12:15	0	0	0	
12:15 - 12:30	0	0	0	
12:30 - 12:45	0	0	0	
12:45 - 1:00	0	0	0	
1:00 - 1:15	0	0	0	
1:15 - 1:30	0	0	0	
1:30 - 1:45	0	0	0	
1:45 - 2:00	0	0	0	
TOTALS	0	0	1	0

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: April 26, 2014 — Saturday

and: Thompson Hill Road - — Weather: Mild, Rain

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on: Thompson Hill Road					TRAFFIC FROM WEST on:					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	0	196	0	0	196	2	188	0	0	190	1	0	0	0	1	0	0	0	0	0	387
11:15 - 11:30	0	196	4	0	200	2	224	0	0	226	5	0	0	0	5	0	0	0	0	0	431
11:30 - 11:45	0	163	0	0	163	3	232	0	0	235	1	0	0	0	1	0	0	0	0	0	399
11:45 - 12:00	0	222	2	0	224	0	240	0	0	240	1	0	0	0	1	0	0	0	0	0	465
12:00 - 12:15	0	182	1	0	183	1	195	0	0	196	2	0	0	0	2	0	0	0	0	0	381
12:15 - 12:30	0	191	5	0	196	0	203	0	0	203	1	0	0	0	1	0	0	0	0	0	400
12:30 - 12:45	0	206	4	0	210	0	215	0	0	215	4	0	0	0	4	0	0	0	0	0	429
12:45 - 1:00	0	177	2	0	179	0	200	0	0	200	0	0	0	0	0	0	0	0	0	0	379
1:00 - 1:15	0	187	3	0	190	0	194	0	0	194	1	0	0	0	1	0	0	0	0	0	385
1:15 - 1:30	0	178	4	0	182	1	190	0	0	191	3	0	0	0	3	0	0	0	0	0	376
1:30 - 1:45	0	166	5	0	171	0	211	0	0	211	3	0	0	0	3	0	0	0	0	0	385
1:45 - 2:00	0	198	0	0	198	0	182	0	0	182	2	0	0	0	2	0	0	0	0	0	382
3 Hr Totals	0	2262	30	0	2292	9	2474	0	0	2483	24	0	0	0	24	0	0	0	0	0	4799
1 Hr Totals																					
11:00 - 12:00	0	777	6	0	783	7	884	0	0	891	8	0	0	0	8	0	0	0	0	0	1682
11:15 - 12:15	0	763	7	0	770	6	891	0	0	897	9	0	0	0	9	0	0	0	0	0	1676
11:30 - 12:30	0	758	8	0	766	4	870	0	0	874	5	0	0	0	5	0	0	0	0	0	1645
11:45 - 12:45	0	801	12	0	813	1	853	0	0	854	8	0	0	0	8	0	0	0	0	0	1675
12:00 - 1:00	0	756	12	0	768	1	813	0	0	814	7	0	0	0	7	0	0	0	0	0	1589
12:15 - 1:15	0	761	14	0	775	0	812	0	0	812	6	0	0	0	6	0	0	0	0	0	1593
12:30 - 1:30	0	748	13	0	761	1	799	0	0	800	8	0	0	0	8	0	0	0	0	0	1569
12:45 - 1:45	0	708	14	0	722	1	795	0	0	796	7	0	0	0	7	0	0	0	0	0	1525
1:00 - 2:00	0	729	12	0	741	1	777	0	0	778	9	0	0	0	9	0	0	0	0	0	1528
PEAK HOUR																					
11:00 - 12:00	0	777	6	0	783	7	884	0	0	891	8	0	0	0	8	0	0	0	0	0	1682

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: April 25, 2014 — Friday

and: Business Access - Walmart Access — Weather: Mild, Some Rain

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on: Business Access					TRAFFIC FROM WEST on: Walmart Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	36	175	2	0	213	0	116	56	0	172	4	0	3	0	7	51	0	25	0	76	468
4:15 - 4:30	31	147	4	0	182	1	142	56	0	199	3	2	2	0	7	55	0	24	0	79	467
4:30 - 4:45	22	182	3	0	207	0	142	43	0	185	2	0	1	0	3	50	0	23	0	73	468
4:45 - 5:00	25	167	2	0	194	0	127	45	0	172	4	0	2	0	6	65	0	19	0	84	456
5:00 - 5:15	29	177	1	0	207	1	157	48	0	206	4	0	1	0	5	56	1	27	0	84	502
5:15 - 5:30	33	173	1	0	207	0	123	63	0	186	4	0	2	0	6	48	1	18	0	67	466
5:30 - 5:45	22	155	1	0	178	0	146	56	0	202	2	1	1	0	4	53	0	28	0	81	465
5:45 - 6:00	38	153	2	0	193	0	141	36	0	177	1	0	0	0	1	52	0	18	0	70	441
2 Hr Totals	236	1329	16	0	1581	2	1094	403	0	1499	24	3	12	0	39	430	2	182	0	614	3733
1 Hr Totals																					
4:00 - 5:00	114	671	11	0	796	1	527	200	0	728	13	2	8	0	23	221	0	91	0	312	1859
4:15 - 5:15	107	673	10	0	790	2	568	192	0	762	13	2	6	0	21	226	1	93	0	320	1893
4:30 - 5:30	109	699	7	0	815	1	549	199	0	749	14	0	6	0	20	219	2	87	0	308	1892
4:45 - 5:45	109	672	5	0	786	1	553	212	0	766	14	1	6	0	21	222	2	92	0	316	1889
5:00 - 6:00	122	658	5	0	785	1	567	203	0	771	11	1	4	0	16	209	2	91	0	302	1874
PEAK HOUR																					
4:15 - 5:15	107	673	10	0	790	2	568	192	0	762	13	2	6	0	21	226	1	93	0	320	1893

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: April 25, 2014 — Friday

and: Business Access - Walmart Access — Weather: Mild, Some Rain

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on: Business Access					TRAFFIC FROM WEST on: Walmart Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	0	8	0	0	8	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	9
4:15 - 4:30	0	11	0	0	11	0	4	1	0	5	0	0	0	0	0	0	0	0	0	0	16
4:30 - 4:45	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	4
4:45 - 5:00	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:00 - 5:15	0	1	0	0	1	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	4
5:15 - 5:30	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	4
5:30 - 5:45	0	2	0	0	2	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	5
5:45 - 6:00	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
2 Hr Totals	0	27	0	0	27	0	18	1	0	19	0	0	0	0	0	0	0	0	0	0	46
1 Hr Totals																					
4:00 - 5:00	0	21	0	0	21	0	9	1	0	10	0	0	0	0	0	0	0	0	0	0	31
4:15 - 5:15	0	14	0	0	14	0	11	1	0	12	0	0	0	0	0	0	0	0	0	0	26
4:30 - 5:30	0	5	0	0	5	0	9	0	0	9	0	0	0	0	0	0	0	0	0	0	14
4:45 - 5:45	0	7	0	0	7	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	15
5:00 - 6:00	0	6	0	0	6	0	9	0	0	9	0	0	0	0	0	0	0	0	0	0	15
PEAK HOUR																					
4:15 - 5:15	0	14	0	0	14	0	11	1	0	12	0	0	0	0	0	0	0	0	0	0	26

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US 4 | Date: April 25, 2014 | Friday

and: Business Access - Walmart Access | Weather: Mild, Some Rain

Location: Albany County, New York | Entered by: AG

TIME	NORTH LEG US 4	SOUTH LEG US 4	EAST LEG Business Access	WEST LEG Walmart Access
4:00 - 4:15	0	0	0	0
4:15 - 4:30	2	0	0	0
4:30 - 4:45	0	0	1	0
4:45 - 5:00	1	0	0	0
5:00 - 5:15	0	0	0	0
5:15 - 5:30	0	0	0	0
5:30 - 5:45	0	0	0	0
5:45 - 6:00	1	0	0	0
TOTALS	4	0	1	0

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: April 25, 2014 — Friday

and: Business Access - Walmart Access — Weather: Mild, Some Rain

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on: Business Access					TRAFFIC FROM WEST on: Walmart Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	36	183	2	0	221	0	117	56	0	173	4	0	3	0	7	51	0	25	0	76	477
4:15 - 4:30	31	158	4	0	193	1	146	57	0	204	3	2	2	0	7	55	0	24	0	79	483
4:30 - 4:45	22	182	3	0	207	0	146	43	0	189	2	0	1	0	3	50	0	23	0	73	472
4:45 - 5:00	25	169	2	0	196	0	127	45	0	172	4	0	2	0	6	65	0	19	0	84	458
5:00 - 5:15	29	178	1	0	208	1	160	48	0	209	4	0	1	0	5	56	1	27	0	84	506
5:15 - 5:30	33	175	1	0	209	0	125	63	0	188	4	0	2	0	6	48	1	18	0	67	470
5:30 - 5:45	22	157	1	0	180	0	149	56	0	205	2	1	1	0	4	53	0	28	0	81	470
5:45 - 6:00	38	154	2	0	194	0	142	36	0	178	1	0	0	0	1	52	0	18	0	70	443
2 Hr Totals	236	1356	16	0	1608	2	1112	404	0	1518	24	3	12	0	39	430	2	182	0	614	3779
1 Hr Totals																					
4:00 - 5:00	114	692	11	0	817	1	536	201	0	738	13	2	8	0	23	221	0	91	0	312	1890
4:15 - 5:15	107	687	10	0	804	2	579	193	0	774	13	2	6	0	21	226	1	93	0	320	1919
4:30 - 5:30	109	704	7	0	820	1	558	199	0	758	14	0	6	0	20	219	2	87	0	308	1906
4:45 - 5:45	109	679	5	0	793	1	561	212	0	774	14	1	6	0	21	222	2	92	0	316	1904
5:00 - 6:00	122	664	5	0	791	1	576	203	0	780	11	1	4	0	16	209	2	91	0	302	1889
PEAK HOUR																					
4:15 - 5:15	107	687	10	0	804	2	579	193	0	774	13	2	6	0	21	226	1	93	0	320	1919

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: April 26, 2014 — Saturday

and: Business Access - Walmart Access — Weather: Mild, Rain

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on: Business Access					TRAFFIC FROM WEST on: Walmart Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	27	136	5	0	168	0	141	53	0	194	3	1	2	0	6	65	1	22	0	88	456
11:15 - 11:30	39	138	0	0	177	2	156	67	0	225	3	0	2	0	5	48	0	33	0	81	488
11:30 - 11:45	27	125	5	0	157	3	160	70	0	233	7	2	3	0	12	48	0	24	0	72	474
11:45 - 12:00	33	164	5	0	202	3	156	76	0	235	3	0	1	0	4	65	0	26	0	91	532
12:00 - 12:15	22	110	4	0	136	3	137	49	0	189	7	0	1	0	8	53	0	26	0	79	412
12:15 - 12:30	35	134	6	0	175	5	140	65	0	210	2	3	2	0	7	55	0	20	0	75	467
12:30 - 12:45	36	135	5	0	176	2	125	59	0	186	7	3	2	0	12	64	1	31	0	96	470
12:45 - 1:00	30	129	1	0	160	2	139	73	0	214	5	0	2	0	7	38	0	26	0	64	445
1:00 - 1:15	30	135	3	0	168	0	125	58	0	183	1	2	1	0	4	62	0	31	0	93	448
1:15 - 1:30	28	131	3	0	162	3	129	63	0	195	6	3	0	0	9	51	0	30	0	81	447
1:30 - 1:45	21	128	4	0	153	1	148	64	0	213	4	0	5	0	9	52	0	22	0	74	449
1:45 - 2:00	19	136	4	0	159	2	111	57	0	170	4	0	2	0	6	62	0	33	0	95	430
3 Hr Totals	347	1601	45	0	1993	26	1667	754	0	2447	52	14	23	0	89	663	2	324	0	989	5518
1 Hr Totals																					
11:00 - 12:00	126	563	15	0	704	8	613	266	0	887	16	3	8	0	27	226	1	105	0	332	1950
11:15 - 12:15	121	537	14	0	672	11	609	262	0	882	20	2	7	0	29	214	0	109	0	323	1906
11:30 - 12:30	117	533	20	0	670	14	593	260	0	867	19	5	7	0	31	221	0	96	0	317	1885
11:45 - 12:45	126	543	20	0	689	13	558	249	0	820	19	6	6	0	31	237	1	103	0	341	1881
12:00 - 1:00	123	508	16	0	647	12	541	246	0	799	21	6	7	0	34	210	1	103	0	314	1794
12:15 - 1:15	131	533	15	0	679	9	529	255	0	793	15	8	7	0	30	219	1	108	0	328	1830
12:30 - 1:30	124	530	12	0	666	7	518	253	0	778	19	8	5	0	32	215	1	118	0	334	1810
12:45 - 1:45	109	523	11	0	643	6	541	258	0	805	16	5	8	0	29	203	0	109	0	312	1789
1:00 - 2:00	98	530	14	0	642	6	513	242	0	761	15	5	8	0	28	227	0	116	0	343	1774
PEAK HOUR																					
11:00 - 12:00	126	563	15	0	704	8	613	266	0	887	16	3	8	0	27	226	1	105	0	332	1950

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: April 26, 2014 — Saturday

and: Business Access - Walmart Access — Weather: Mild, Rain

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on: Business Access					TRAFFIC FROM WEST on: Walmart Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	1	1	0	0	2	0	1	1	0	2	0	0	0	0	0	0	0	1	0	1	5
11:15 - 11:30	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4
11:30 - 11:45	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
11:45 - 12:00	0	1	0	0	1	0	4	1	0	5	0	0	0	0	0	0	0	0	0	0	6
12:00 - 12:15	1	1	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
12:15 - 12:30	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:30 - 12:45	0	2	0	0	2	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	4
12:45 - 1:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
1:00 - 1:15	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
1:15 - 1:30	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	3
1:30 - 1:45	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
1:45 - 2:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3 Hr Totals	2	15	0	0	17	0	10	3	0	13	0	0	0	0	0	2	0	2	0	4	34
1 Hr Totals																					
11:00 - 12:00	1	7	0	0	8	0	6	2	0	8	0	0	0	0	0	0	0	2	0	2	18
11:15 - 12:15	1	7	0	0	8	0	6	1	0	7	0	0	0	0	0	0	0	1	0	1	16
11:30 - 12:30	1	5	0	0	6	0	6	1	0	7	0	0	0	0	0	0	0	0	0	0	13
11:45 - 12:45	1	5	0	0	6	0	6	2	0	8	0	0	0	0	0	0	0	0	0	0	14
12:00 - 1:00	1	4	0	0	5	0	2	1	0	3	0	0	0	0	0	1	0	0	0	1	9
12:15 - 1:15	0	3	0	0	3	0	2	1	0	3	0	0	0	0	0	1	0	0	0	1	7
12:30 - 1:30	0	4	0	0	4	0	2	1	0	3	0	0	0	0	0	2	0	0	0	2	9
12:45 - 1:45	0	3	0	0	3	0	2	0	0	2	0	0	0	0	0	2	0	0	0	2	7
1:00 - 2:00	0	4	0	0	4	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	7
PEAK HOUR																					
11:00 - 12:00	1	7	0	0	8	0	6	2	0	8	0	0	0	0	0	0	0	2	0	2	18

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US 4 | Date: April 26, 2014 | Saturday

and: Business Access - Walmart Access | Weather: Mild, Rain

Location: Albany County, New York | Entered by: AG

TIME	NORTH LEG US 4	SOUTH LEG US 4	EAST LEG Business Access	WEST LEG Walmart Access
AM				
11:00 - 11:15	0	0	0	0
11:15 - 11:30	0	0	0	0
11:30 - 11:45	0	0	0	0
11:45 - 12:00	0	0	0	0
12:00 - 12:15	0	0	0	0
12:15 - 12:30	2	0	2	0
12:30 - 12:45	0	0	0	0
12:45 - 1:00	0	1	0	0
1:00 - 1:15	0	0	0	0
1:15 - 1:30	1	0	0	0
1:30 - 1:45	1	0	0	0
1:45 - 2:00	0	0	0	0
TOTALS	4	1	2	0

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: April 26, 2014 — Saturday

and: Business Access - Walmart Access — Weather: Mild, Rain

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on: Business Access					TRAFFIC FROM WEST on: Walmart Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	28	137	5	0	170	0	142	54	0	196	3	1	2	0	6	65	1	23	0	89	461
11:15 - 11:30	39	141	0	0	180	2	156	67	0	225	3	0	2	0	5	48	0	34	0	82	492
11:30 - 11:45	27	127	5	0	159	3	161	70	0	234	7	2	3	0	12	48	0	24	0	72	477
11:45 - 12:00	33	165	5	0	203	3	160	77	0	240	3	0	1	0	4	65	0	26	0	91	538
12:00 - 12:15	23	111	4	0	138	3	138	49	0	190	7	0	1	0	8	53	0	26	0	79	415
12:15 - 12:30	35	135	6	0	176	5	140	65	0	210	2	3	2	0	7	55	0	20	0	75	468
12:30 - 12:45	36	137	5	0	178	2	126	60	0	188	7	3	2	0	12	64	1	31	0	96	474
12:45 - 1:00	30	129	1	0	160	2	139	73	0	214	5	0	2	0	7	39	0	26	0	65	446
1:00 - 1:15	30	135	3	0	168	0	126	58	0	184	1	2	1	0	4	62	0	31	0	93	449
1:15 - 1:30	28	133	3	0	164	3	129	63	0	195	6	3	0	0	9	52	0	30	0	82	450
1:30 - 1:45	21	129	4	0	154	1	149	64	0	214	4	0	5	0	9	52	0	22	0	74	451
1:45 - 2:00	19	137	4	0	160	2	111	57	0	170	4	0	2	0	6	62	0	33	0	95	431
3 Hr Totals	349	1616	45	0	2010	26	1677	757	0	2460	52	14	23	0	89	665	2	326	0	993	5552
1 Hr Totals																					
11:00 - 12:00	127	570	15	0	712	8	619	268	0	895	16	3	8	0	27	226	1	107	0	334	1968
11:15 - 12:15	122	544	14	0	680	11	615	263	0	889	20	2	7	0	29	214	0	110	0	324	1922
11:30 - 12:30	118	538	20	0	676	14	599	261	0	874	19	5	7	0	31	221	0	96	0	317	1898
11:45 - 12:45	127	548	20	0	695	13	564	251	0	828	19	6	6	0	31	237	1	103	0	341	1895
12:00 - 1:00	124	512	16	0	652	12	543	247	0	802	21	6	7	0	34	211	1	103	0	315	1803
12:15 - 1:15	131	536	15	0	682	9	531	256	0	796	15	8	7	0	30	220	1	108	0	329	1837
12:30 - 1:30	124	534	12	0	670	7	520	254	0	781	19	8	5	0	32	217	1	118	0	336	1819
12:45 - 1:45	109	526	11	0	646	6	543	258	0	807	16	5	8	0	29	205	0	109	0	314	1796
1:00 - 2:00	98	534	14	0	646	6	515	242	0	763	15	5	8	0	28	228	0	116	0	344	1781
PEAK HOUR																					
11:00 - 12:00	127	570	15	0	712	8	619	268	0	895	16	3	8	0	27	226	1	107	0	334	1968

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: 3rd Avenue Extension Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: 3rd Avenue Extension					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	70	131	0	0	201	0	108	30	0	138	0	0	0	0	0	66	0	106	0	172	511
4:15 - 4:30	66	157	0	0	223	0	142	23	0	165	0	0	0	0	0	43	0	94	0	137	525
4:30 - 4:45	78	135	0	0	213	0	147	22	0	169	0	0	0	0	0	64	0	100	0	164	546
4:45 - 5:00	88	139	0	0	227	0	139	22	0	161	0	0	0	0	0	67	0	110	0	177	565
5:00 - 5:15	66	163	0	0	229	0	155	26	0	181	0	0	0	0	0	45	0	94	0	139	549
5:15 - 5:30	70	152	0	0	222	0	125	22	0	147	0	0	0	0	0	50	0	99	0	149	518
5:30 - 5:45	59	146	0	0	205	0	158	31	0	189	0	0	0	0	0	43	0	84	0	127	521
5:45 - 6:00	88	162	0	0	250	0	134	21	0	155	0	0	0	0	0	31	0	98	0	129	534
2 Hr Totals	585	1185	0	0	1770	0	1108	197	0	1305	0	0	0	0	0	409	0	785	0	1194	4269
1 Hr Totals																					
4:00 - 5:00	302	562	0	0	864	0	536	97	0	633	0	0	0	0	0	240	0	410	0	650	2147
4:15 - 5:15	298	594	0	0	892	0	583	93	0	676	0	0	0	0	0	219	0	398	0	617	2185
4:30 - 5:30	302	589	0	0	891	0	566	92	0	658	0	0	0	0	0	226	0	403	0	629	2178
4:45 - 5:45	283	600	0	0	883	0	577	101	0	678	0	0	0	0	0	205	0	387	0	592	2153
5:00 - 6:00	283	623	0	0	906	0	572	100	0	672	0	0	0	0	0	169	0	375	0	544	2122
PEAK HOUR																					
4:15 - 5:15	298	594	0	0	892	0	583	93	0	676	0	0	0	0	0	219	0	398	0	617	2185

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: 3rd Avenue Extension Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: 3rd Avenue Extension					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	5	5	0	0	10	0	2	0	0	2	0	0	0	0	0	2	0	1	0	3	15
4:15 - 4:30	3	7	0	0	10	0	2	2	0	4	0	0	0	0	0	4	0	3	0	7	21
4:30 - 4:45	2	0	0	0	2	0	1	2	0	3	0	0	0	0	0	0	0	4	0	4	9
4:45 - 5:00	4	1	0	0	5	0	0	0	0	0	0	0	0	0	0	1	0	2	0	3	8
5:00 - 5:15	3	1	0	0	4	0	0	2	0	2	0	0	0	0	0	0	0	2	0	2	8
5:15 - 5:30	3	1	0	0	4	0	2	1	0	3	0	0	0	0	0	1	0	3	0	4	11
5:30 - 5:45	4	1	0	0	5	0	0	1	0	1	0	0	0	0	0	1	0	3	0	4	10
5:45 - 6:00	10	1	0	0	11	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	13
2 Hr Totals	34	17	0	0	51	0	7	9	0	16	0	0	0	0	0	9	0	19	0	28	95
1 Hr Totals																					
4:00 - 5:00	14	13	0	0	27	0	5	4	0	9	0	0	0	0	0	7	0	10	0	17	53
4:15 - 5:15	12	9	0	0	21	0	3	6	0	9	0	0	0	0	0	5	0	11	0	16	46
4:30 - 5:30	12	3	0	0	15	0	3	5	0	8	0	0	0	0	0	2	0	11	0	13	36
4:45 - 5:45	14	4	0	0	18	0	2	4	0	6	0	0	0	0	0	3	0	10	0	13	37
5:00 - 6:00	20	4	0	0	24	0	2	5	0	7	0	0	0	0	0	2	0	9	0	11	42
PEAK HOUR																					
4:15 - 5:15	12	9	0	0	21	0	3	6	0	9	0	0	0	0	0	5	0	11	0	16	46

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: 3rd Avenue Extension Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	NORTH LEG US4	SOUTH LEG US4	EAST LEG	WEST LEG 3rd Avenue Extension
4:00 - 4:15	0	0	0	0
4:15 - 4:30	0	0	0	0
4:30 - 4:45	0	0	0	0
4:45 - 5:00	0	0	0	0
5:00 - 5:15	0	0	0	0
5:15 - 5:30	0	0	0	0
5:30 - 5:45	0	0	0	0
5:45 - 6:00	0	0	0	0
TOTALS	0	0	0	0

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: 3rd Avenue Extension Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: 3rd Avenue Extension					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	75	136	0	0	211	0	110	30	0	140	0	0	0	0	0	68	0	107	0	175	526
4:15 - 4:30	69	164	0	0	233	0	144	25	0	169	0	0	0	0	0	47	0	97	0	144	546
4:30 - 4:45	80	135	0	0	215	0	148	24	0	172	0	0	0	0	0	64	0	104	0	168	555
4:45 - 5:00	92	140	0	0	232	0	139	22	0	161	0	0	0	0	0	68	0	112	0	180	573
5:00 - 5:15	69	164	0	0	233	0	155	28	0	183	0	0	0	0	0	45	0	96	0	141	557
5:15 - 5:30	73	153	0	0	226	0	127	23	0	150	0	0	0	0	0	51	0	102	0	153	529
5:30 - 5:45	63	147	0	0	210	0	158	32	0	190	0	0	0	0	0	44	0	87	0	131	531
5:45 - 6:00	98	163	0	0	261	0	134	22	0	156	0	0	0	0	0	31	0	99	0	130	547
2 Hr Totals	619	1202	0	0	1821	0	1115	206	0	1321	0	0	0	0	0	418	0	804	0	1222	4364
1 Hr Totals																					
4:00 - 5:00	316	575	0	0	891	0	541	101	0	642	0	0	0	0	0	247	0	420	0	667	2200
4:15 - 5:15	310	603	0	0	913	0	586	99	0	685	0	0	0	0	0	224	0	409	0	633	2231
4:30 - 5:30	314	592	0	0	906	0	569	97	0	666	0	0	0	0	0	228	0	414	0	642	2214
4:45 - 5:45	297	604	0	0	901	0	579	105	0	684	0	0	0	0	0	208	0	397	0	605	2190
5:00 - 6:00	303	627	0	0	930	0	574	105	0	679	0	0	0	0	0	171	0	384	0	555	2164
PEAK HOUR																					
4:15 - 5:15	310	603	0	0	913	0	586	99	0	685	0	0	0	0	0	224	0	409	0	633	2231

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: - 3rd Avenue Extension Weather: Mild, Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: 3rd Avenue Extension					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	68	137	0	0	205	0	127	35	0	162	0	0	0	0	0	30	0	67	0	97	464
11:15 - 11:30	84	147	0	0	231	0	167	27	0	194	0	0	0	0	0	34	0	57	0	91	516
11:30 - 11:45	77	129	0	0	206	0	144	47	0	191	0	0	0	0	0	32	0	72	0	104	501
11:45 - 12:00	69	151	0	0	220	0	155	26	0	181	0	0	0	0	0	47	0	80	0	127	528
12:00 - 12:15	63	111	0	0	174	0	139	27	0	166	0	0	0	0	0	33	0	78	0	111	451
12:15 - 12:30	76	128	0	0	204	0	127	28	0	155	0	0	0	0	0	42	0	77	0	119	478
12:30 - 12:45	80	149	0	0	229	0	150	32	0	182	0	0	0	0	0	40	0	70	0	110	521
12:45 - 1:00	72	132	0	0	204	0	132	28	0	160	0	0	0	0	0	29	0	75	0	104	468
1:00 - 1:15	64	142	1	0	207	0	135	24	0	159	1	0	0	0	1	35	0	66	0	101	468
1:15 - 1:30	61	127	0	0	188	0	132	28	0	160	0	0	0	0	0	39	0	74	0	113	461
1:30 - 1:45	73	126	0	0	199	0	151	20	0	171	0	0	0	0	0	32	0	66	0	98	468
1:45 - 2:00	80	146	0	0	226	0	134	24	0	158	0	0	0	0	0	33	0	74	0	107	491
3 Hr Totals	867	1625	1	0	2493	0	1693	346	0	2039	1	0	0	0	1	426	0	856	0	1282	5815
1 Hr Totals																					
11:00 - 12:00	298	564	0	0	862	0	593	135	0	728	0	0	0	0	0	143	0	276	0	419	2009
11:15 - 12:15	293	538	0	0	831	0	605	127	0	732	0	0	0	0	0	146	0	287	0	433	1996
11:30 - 12:30	285	519	0	0	804	0	565	128	0	693	0	0	0	0	0	154	0	307	0	461	1958
11:45 - 12:45	288	539	0	0	827	0	571	113	0	684	0	0	0	0	0	162	0	305	0	467	1978
12:00 - 1:00	291	520	0	0	811	0	548	115	0	663	0	0	0	0	0	144	0	300	0	444	1918
12:15 - 1:15	292	551	1	0	844	0	544	112	0	656	1	0	0	0	1	146	0	288	0	434	1935
12:30 - 1:30	277	550	1	0	828	0	549	112	0	661	1	0	0	0	1	143	0	285	0	428	1918
12:45 - 1:45	270	527	1	0	798	0	550	100	0	650	1	0	0	0	1	135	0	281	0	416	1865
1:00 - 2:00	278	541	1	0	820	0	552	96	0	648	1	0	0	0	1	139	0	280	0	419	1888
PEAK HOUR																					
11:00 - 12:00	298	564	0	0	862	0	593	135	0	728	0	0	0	0	0	143	0	276	0	419	2009

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: - 3rd Avenue Extension Weather: Mild, Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: 3rd Avenue Extension					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	0	2	0	0	2	0	1	1	0	2	0	0	0	0	0	0	0	1	0	1	5
11:15 - 11:30	1	2	0	0	3	0	1	0	0	1	0	0	0	0	0	1	0	1	0	2	6
11:30 - 11:45	1	2	0	0	3	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	5
11:45 - 12:00	2	2	0	0	4	0	3	1	0	4	0	0	0	0	0	0	0	1	0	1	9
12:00 - 12:15	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	5
12:15 - 12:30	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	0	2	3
12:30 - 12:45	2	1	0	0	3	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	5
12:45 - 1:00	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	3
1:00 - 1:15	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	0	0	1	0	1	4
1:15 - 1:30	2	3	0	0	5	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	6
1:30 - 1:45	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	1	0	2	0	3	5
1:45 - 2:00	2	2	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	6
3 Hr Totals	13	15	0	0	28	0	12	3	0	15	0	0	0	0	0	4	0	15	0	19	62
1 Hr Totals																					
11:00 - 12:00	4	8	0	0	12	0	6	2	0	8	0	0	0	0	0	1	0	4	0	5	25
11:15 - 12:15	6	6	0	0	12	0	6	1	0	7	0	0	0	0	0	1	0	5	0	6	25
11:30 - 12:30	5	4	0	0	9	0	6	1	0	7	0	0	0	0	0	1	0	5	0	6	22
11:45 - 12:45	6	3	0	0	9	0	6	1	0	7	0	0	0	0	0	1	0	5	0	6	22
12:00 - 1:00	4	1	0	0	5	0	4	0	0	4	0	0	0	0	0	1	0	6	0	7	16
12:15 - 1:15	2	2	0	0	4	0	5	0	0	5	0	0	0	0	0	1	0	5	0	6	15
12:30 - 1:30	4	5	0	0	9	0	4	0	0	4	0	0	0	0	0	1	0	4	0	5	18
12:45 - 1:45	3	4	0	0	7	0	3	1	0	4	0	0	0	0	0	2	0	5	0	7	18
1:00 - 2:00	5	6	0	0	11	0	2	1	0	3	0	0	0	0	0	2	0	5	0	7	21
PEAK HOUR																					
11:00 - 12:00	4	8	0	0	12	0	6	2	0	8	0	0	0	0	0	1	0	4	0	5	25

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: - 3rd Avenue Extension Weather: Mild, Rain

Location: Albany County, New York Entered by: CG

TIME	NORTH LEG US4	SOUTH LEG US4	EAST LEG	WEST LEG 3rd Avenue Extension
AM				
11:00 - 11:15	0	1	0	0
11:15 - 11:30	0	0	0	0
11:30 - 11:45	0	0	0	0
11:45 - 12:00	0	0	0	0
12:00 - 12:15	0	0	0	0
12:15 - 12:30	0	0	0	0
12:30 - 12:45	0	0	0	0
12:45 - 1:00	0	0	0	0
1:00 - 1:15	0	0	0	0
1:15 - 1:30	0	0	0	0
1:30 - 1:45	0	0	0	0
1:45 - 2:00	0	0	0	0
TOTALS	0	1	0	0

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: - 3rd Avenue Extension Weather: Mild, Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on:					TRAFFIC FROM WEST on: 3rd Avenue Extension					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	68	139	0	0	207	0	128	36	0	164	0	0	0	0	0	30	0	68	0	98	469
11:15 - 11:30	85	149	0	0	234	0	168	27	0	195	0	0	0	0	0	35	0	58	0	93	522
11:30 - 11:45	78	131	0	0	209	0	145	47	0	192	0	0	0	0	0	32	0	73	0	105	506
11:45 - 12:00	71	153	0	0	224	0	158	27	0	185	0	0	0	0	0	47	0	81	0	128	537
12:00 - 12:15	65	111	0	0	176	0	140	27	0	167	0	0	0	0	0	33	0	80	0	113	456
12:15 - 12:30	76	128	0	0	204	0	128	28	0	156	0	0	0	0	0	43	0	78	0	121	481
12:30 - 12:45	82	150	0	0	232	0	151	32	0	183	0	0	0	0	0	40	0	71	0	111	526
12:45 - 1:00	72	132	0	0	204	0	133	28	0	161	0	0	0	0	0	29	0	77	0	106	471
1:00 - 1:15	64	143	1	0	208	0	137	24	0	161	1	0	0	0	1	35	0	67	0	102	472
1:15 - 1:30	63	130	0	0	193	0	132	28	0	160	0	0	0	0	0	40	0	74	0	114	467
1:30 - 1:45	74	126	0	0	200	0	151	21	0	172	0	0	0	0	0	33	0	68	0	101	473
1:45 - 2:00	82	148	0	0	230	0	134	24	0	158	0	0	0	0	0	33	0	76	0	109	497
3 Hr Totals	880	1640	1	0	2521	0	1705	349	0	2054	1	0	0	0	1	430	0	871	0	1301	5877
1 Hr Totals																					
11:00 - 12:00	302	572	0	0	874	0	599	137	0	736	0	0	0	0	0	144	0	280	0	424	2034
11:15 - 12:15	299	544	0	0	843	0	611	128	0	739	0	0	0	0	0	147	0	292	0	439	2021
11:30 - 12:30	290	523	0	0	813	0	571	129	0	700	0	0	0	0	0	155	0	312	0	467	1980
11:45 - 12:45	294	542	0	0	836	0	577	114	0	691	0	0	0	0	0	163	0	310	0	473	2000
12:00 - 1:00	295	521	0	0	816	0	552	115	0	667	0	0	0	0	0	145	0	306	0	451	1934
12:15 - 1:15	294	553	1	0	848	0	549	112	0	661	1	0	0	0	1	147	0	293	0	440	1950
12:30 - 1:30	281	555	1	0	837	0	553	112	0	665	1	0	0	0	1	144	0	289	0	433	1936
12:45 - 1:45	273	531	1	0	805	0	553	101	0	654	1	0	0	0	1	137	0	286	0	423	1883
1:00 - 2:00	283	547	1	0	831	0	554	97	0	651	1	0	0	0	1	141	0	285	0	426	1909
PEAK HOUR																					
11:00 - 12:00	302	572	0	0	874	0	599	137	0	736	0	0	0	0	0	144	0	280	0	424	2034

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: May 2, 2014 — Friday

and: Grand View Drive - Shopping Ctr Access — Weather: Clear, Cool

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on: Grand View Drive					TRAFFIC FROM WEST on: Shopping Ctr Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	84	168	23	0	275	11	181	19	0	211	14	0	9	0	23	32	5	70	0	107	616
4:15 - 4:30	81	188	18	0	287	10	216	28	0	254	6	4	9	0	19	38	2	64	0	104	664
4:30 - 4:45	77	165	20	0	262	16	186	21	0	223	14	6	26	0	46	37	2	64	0	103	634
4:45 - 5:00	80	207	14	0	301	11	226	25	0	262	9	4	10	0	23	35	3	70	0	108	694
5:00 - 5:15	85	175	16	0	276	3	198	22	0	223	10	3	9	0	22	26	2	78	0	106	627
5:15 - 5:30	71	209	6	0	286	12	221	24	0	257	10	3	6	0	19	26	0	65	0	91	653
5:30 - 5:45	68	192	8	0	268	9	240	27	0	276	15	1	6	0	22	34	0	70	0	104	670
5:45 - 6:00	82	195	8	0	285	16	216	24	0	256	11	2	5	0	18	36	0	54	0	90	649
2 Hr Totals	628	1499	113	0	2240	88	1684	190	0	1962	89	23	80	0	192	264	14	535	0	813	5207
1 Hr Totals																					
4:00 - 5:00	322	728	75	0	1125	48	809	93	0	950	43	14	54	0	111	142	12	268	0	422	2608
4:15 - 5:15	323	735	68	0	1126	40	826	96	0	962	39	17	54	0	110	136	9	276	0	421	2619
4:30 - 5:30	313	756	56	0	1125	42	831	92	0	965	43	16	51	0	110	124	7	277	0	408	2608
4:45 - 5:45	304	783	44	0	1131	35	885	98	0	1018	44	11	31	0	86	121	5	283	0	409	2644
5:00 - 6:00	306	771	38	0	1115	40	875	97	0	1012	46	9	26	0	81	122	2	267	0	391	2599
PEAK HOUR																					
4:45 - 5:45	304	783	44	0	1131	35	885	98	0	1018	44	11	31	0	86	121	5	283	0	409	2644

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: May 2, 2014 — Friday

and: Grand View Drive - Shopping Ctr Access — Weather: Clear, Cool

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on: Grand View Drive					TRAFFIC FROM WEST on: Shopping Ctr Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	3	11	0	0	14	0	5	1	0	6	0	0	0	0	0	0	0	1	0	1	21
4:15 - 4:30	1	11	0	0	12	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	15
4:30 - 4:45	0	6	0	0	6	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	10
4:45 - 5:00	0	10	0	0	10	0	1	0	0	1	0	0	0	0	0	1	0	1	0	2	13
5:00 - 5:15	1	4	0	0	5	0	2	0	0	2	0	0	0	0	0	2	0	0	0	2	9
5:15 - 5:30	1	6	0	0	7	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	9
5:30 - 5:45	0	10	0	0	10	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	12
5:45 - 6:00	0	6	0	0	6	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	8
2 Hr Totals	6	64	0	0	70	0	19	1	0	20	0	0	0	0	0	4	0	3	0	7	97
1 Hr Totals																					
4:00 - 5:00	4	38	0	0	42	0	12	1	0	13	0	0	0	0	0	2	0	2	0	4	59
4:15 - 5:15	2	31	0	0	33	0	9	0	0	9	0	0	0	0	0	4	0	1	0	5	47
4:30 - 5:30	2	26	0	0	28	0	8	0	0	8	0	0	0	0	0	3	0	2	0	5	41
4:45 - 5:45	2	30	0	0	32	0	6	0	0	6	0	0	0	0	0	3	0	2	0	5	43
5:00 - 6:00	2	26	0	0	28	0	7	0	0	7	0	0	0	0	0	2	0	1	0	3	38
PEAK HOUR																					
4:45 - 5:45	2	30	0	0	32	0	6	0	0	6	0	0	0	0	0	3	0	2	0	5	43

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US 4 | Date: May 2, 2014 | Friday

and: Grand View Drive - Shopping Ctr Access | Weather: Clear, Cool

Location: Albany County, New York | Entered by: AG

TIME	NORTH LEG US 4	SOUTH LEG US 4	EAST LEG Grand View Drive	WEST LEG Shopping Ctr Access
PM				
4:00 - 4:15	0	0	2	0
4:15 - 4:30	0	1	0	1
4:30 - 4:45	0	6	3	4
4:45 - 5:00	0	1	2	0
5:00 - 5:15	0	0	1	3
5:15 - 5:30	0	0	0	0
5:30 - 5:45	0	0	0	0
5:45 - 6:00	0	1	2	0
TOTALS	0	9	10	8

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: May 2, 2014 — Friday

and: Grand View Drive - Shopping Ctr Access — Weather: Clear, Cool

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on: Grand View Drive					TRAFFIC FROM WEST on: Shopping Ctr Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	87	179	23	0	289	11	186	20	0	217	14	0	9	0	23	32	5	71	0	108	637
4:15 - 4:30	82	199	18	0	299	10	218	28	0	256	6	4	9	0	19	39	2	64	0	105	679
4:30 - 4:45	77	171	20	0	268	16	190	21	0	227	14	6	26	0	46	37	2	64	0	103	644
4:45 - 5:00	80	217	14	0	311	11	227	25	0	263	9	4	10	0	23	36	3	71	0	110	707
5:00 - 5:15	86	179	16	0	281	3	200	22	0	225	10	3	9	0	22	28	2	78	0	108	636
5:15 - 5:30	72	215	6	0	293	12	222	24	0	258	10	3	6	0	19	26	0	66	0	92	662
5:30 - 5:45	68	202	8	0	278	9	242	27	0	278	15	1	6	0	22	34	0	70	0	104	682
5:45 - 6:00	82	201	8	0	291	16	218	24	0	258	11	2	5	0	18	36	0	54	0	90	657
2 Hr Totals	634	1563	113	0	2310	88	1703	191	0	1982	89	23	80	0	192	268	14	538	0	820	5304
1 Hr Totals																					
4:00 - 5:00	326	766	75	0	1167	48	821	94	0	963	43	14	54	0	111	144	12	270	0	426	2667
4:15 - 5:15	325	766	68	0	1159	40	835	96	0	971	39	17	54	0	110	140	9	277	0	426	2666
4:30 - 5:30	315	782	56	0	1153	42	839	92	0	973	43	16	51	0	110	127	7	279	0	413	2649
4:45 - 5:45	306	813	44	0	1163	35	891	98	0	1024	44	11	31	0	86	124	5	285	0	414	2687
5:00 - 6:00	308	797	38	0	1143	40	882	97	0	1019	46	9	26	0	81	124	2	268	0	394	2637
PEAK HOUR																					
4:45 - 5:45	306	813	44	0	1163	35	891	98	0	1024	44	11	31	0	86	124	5	285	0	414	2687

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: May 3, 2014 — Saturday

and: Grandview Drive - Shopping Ctr Access — Weather: Clear, Cool

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on: Grand View Drive					TRAFFIC FROM WEST on: Shopping Ctr Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	80	145	14	0	239	17	143	40	0	200	15	5	19	0	39	45	4	69	0	118	596
11:15 - 11:30	100	148	20	0	268	22	160	44	0	226	15	4	12	0	31	46	9	50	0	105	630
11:30 - 11:45	98	170	15	0	283	22	159	39	0	220	26	3	9	0	38	34	6	72	0	112	653
11:45 - 12:00	102	148	13	0	263	16	171	40	0	227	12	4	14	0	30	47	2	89	0	138	658
12:00 - 12:15	95	188	15	0	298	15	196	47	0	258	6	3	11	0	20	37	9	74	0	120	696
12:15 - 12:30	87	169	15	0	271	10	183	49	0	242	14	5	15	0	34	47	3	86	0	136	683
12:30 - 12:45	92	170	18	0	280	21	174	51	0	246	10	6	14	0	30	50	2	87	0	139	695
12:45 - 1:00	100	170	15	0	285	16	177	26	0	219	11	5	9	0	25	39	3	74	0	116	645
1:00 - 1:15	111	183	11	0	305	11	187	32	0	230	8	1	8	0	17	39	5	71	0	115	667
1:15 - 1:30	106	166	16	0	288	13	145	42	0	200	8	4	8	0	20	42	6	78	0	126	634
1:30 - 1:45	70	175	9	0	254	18	182	47	0	247	8	2	12	0	22	60	7	78	0	145	668
1:45 - 2:00	93	156	7	0	256	18	148	31	0	197	12	1	7	0	20	48	5	62	0	115	588
3 Hr Totals	1134	1988	168	0	3290	199	2025	488	0	2712	145	43	138	0	326	534	61	890	0	1485	7813
1 Hr Totals																					
11:00 - 12:00	380	611	62	0	1053	77	633	163	0	873	68	16	54	0	138	172	21	280	0	473	2537
11:15 - 12:15	395	654	63	0	1112	75	686	170	0	931	59	14	46	0	119	164	26	285	0	475	2637
11:30 - 12:30	382	675	58	0	1115	63	709	175	0	947	58	15	49	0	122	165	20	321	0	506	2690
11:45 - 12:45	376	675	61	0	1112	62	724	187	0	973	42	18	54	0	114	181	16	336	0	533	2732
12:00 - 1:00	374	697	63	0	1134	62	730	173	0	965	41	19	49	0	109	173	17	321	0	511	2719
12:15 - 1:15	390	692	59	0	1141	58	721	158	0	937	43	17	46	0	106	175	13	318	0	506	2690
12:30 - 1:30	409	689	60	0	1158	61	683	151	0	895	37	16	39	0	92	170	16	310	0	496	2641
12:45 - 1:45	387	694	51	0	1132	58	691	147	0	896	35	12	37	0	84	180	21	301	0	502	2614
1:00 - 2:00	380	680	43	0	1103	60	662	152	0	874	36	8	35	0	79	189	23	289	0	501	2557
PEAK HOUR																					
11:45 - 12:45	376	675	61	0	1112	62	724	187	0	973	42	18	54	0	114	181	16	336	0	533	2732

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: May 3, 2014 — Saturday

and: Grandview Drive - Shopping Ctr Access — Weather: Clear, Cool

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on: Grand View Drive					TRAFFIC FROM WEST on: Shopping Ctr Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3
11:15 - 11:30	0	3	0	0	3	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	5
11:30 - 11:45	1	3	0	0	4	0	5	1	0	6	0	0	0	0	0	0	0	0	0	0	10
11:45 - 12:00	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	2
12:00 - 12:15	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
12:15 - 12:30	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	3
12:30 - 12:45	1	4	0	0	5	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	6
12:45 - 1:00	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	3
1:00 - 1:15	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	1	0	1	0	2	4
1:15 - 1:30	0	3	0	0	3	0	3	0	0	3	0	0	0	0	0	0	0	1	0	1	7
1:30 - 1:45	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1:45 - 2:00	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
3 Hr Totals	2	24	0	0	26	0	21	1	0	22	0	0	0	0	0	2	0	3	0	5	53
1 Hr Totals																					
11:00 - 12:00	1	6	0	0	7	0	10	1	0	11	0	0	0	0	0	1	0	1	0	2	20
11:15 - 12:15	1	10	0	0	11	0	7	1	0	8	0	0	0	0	0	1	0	1	0	2	21
11:30 - 12:30	1	8	0	0	9	0	8	1	0	9	0	0	0	0	0	0	0	1	0	1	19
11:45 - 12:45	1	9	0	0	10	0	4	0	0	4	0	0	0	0	0	0	0	1	0	1	15
12:00 - 1:00	1	10	0	0	11	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	16
12:15 - 1:15	1	6	0	0	7	0	7	0	0	7	0	0	0	0	0	1	0	1	0	2	16
12:30 - 1:30	1	8	0	0	9	0	8	0	0	8	0	0	0	0	0	1	0	2	0	3	20
12:45 - 1:45	0	7	0	0	7	0	7	0	0	7	0	0	0	0	0	1	0	2	0	3	17
1:00 - 2:00	0	8	0	0	8	0	6	0	0	6	0	0	0	0	0	1	0	2	0	3	17
PEAK HOUR																					
11:45 - 12:45	1	9	0	0	10	0	4	0	0	4	0	0	0	0	0	0	0	1	0	1	15

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US 4 | Date: May 3, 2014 | Saturday

and: Grandview Drive - Shopping Ctr Access | Weather: Clear, Cool

Location: Albany County, New York | Entered by: AG

TIME	NORTH LEG US 4	SOUTH LEG US 4	EAST LEG Grand View Drive	WEST LEG Shopping Ctr. Access
AM				
11:00 - 11:15	0	0	0	3
11:15 - 11:30	0	0	0	0
11:30 - 11:45	0	0	0	1
11:45 - 12:00	0	0	0	0
12:00 - 12:15	0	0	1	0
12:15 - 12:30	0	0	0	2
12:30 - 12:45	0	1	0	0
12:45 - 1:00	0	0	2	0
1:00 - 1:15	0	0	0	0
1:15 - 1:30	0	2	0	0
1:30 - 1:45	0	0	0	1
1:45 - 2:00	0	1	0	0
TOTALS	0	4	3	7

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US 4 — Date: May 3, 2014 — Saturday

and: Grandview Drive - Shopping Ctr Access — Weather: Clear, Cool

Location: Albany County, New York — Entered by: AG

TIME	TRAFFIC FROM NORTH on: US 4					TRAFFIC FROM SOUTH on: US 4					TRAFFIC FROM EAST on: Grand View Drive					TRAFFIC FROM WEST on: Shopping Ctr Access					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	80	145	14	0	239	17	146	40	0	203	15	5	19	0	39	45	4	69	0	118	599
11:15 - 11:30	100	151	20	0	271	22	161	44	0	227	15	4	12	0	31	47	9	50	0	106	635
11:30 - 11:45	99	173	15	0	287	22	164	40	0	226	26	3	9	0	38	34	6	72	0	112	663
11:45 - 12:00	102	148	13	0	263	16	172	40	0	228	12	4	14	0	30	47	2	90	0	139	660
12:00 - 12:15	95	192	15	0	302	15	196	47	0	258	6	3	11	0	20	37	9	74	0	120	700
12:15 - 12:30	87	170	15	0	272	10	185	49	0	244	14	5	15	0	34	47	3	86	0	136	686
12:30 - 12:45	93	174	18	0	285	21	175	51	0	247	10	6	14	0	30	50	2	87	0	139	701
12:45 - 1:00	100	171	15	0	286	16	179	26	0	221	11	5	9	0	25	39	3	74	0	116	648
1:00 - 1:15	111	183	11	0	305	11	189	32	0	232	8	1	8	0	17	40	5	72	0	117	671
1:15 - 1:30	106	169	16	0	291	13	148	42	0	203	8	4	8	0	20	42	6	79	0	127	641
1:30 - 1:45	70	178	9	0	257	18	182	47	0	247	8	2	12	0	22	60	7	78	0	145	671
1:45 - 2:00	93	158	7	0	258	18	149	31	0	198	12	1	7	0	20	48	5	62	0	115	591
3 Hr Totals	1136	2012	168	0	3316	199	2046	489	0	2734	145	43	138	0	326	536	61	893	0	1490	7866
1 Hr Totals																					
11:00 - 12:00	381	617	62	0	1060	77	643	164	0	884	68	16	54	0	138	173	21	281	0	475	2557
11:15 - 12:15	396	664	63	0	1123	75	693	171	0	939	59	14	46	0	119	165	26	286	0	477	2658
11:30 - 12:30	383	683	58	0	1124	63	717	176	0	956	58	15	49	0	122	165	20	322	0	507	2709
11:45 - 12:45	377	684	61	0	1122	62	728	187	0	977	42	18	54	0	114	181	16	337	0	534	2747
12:00 - 1:00	375	707	63	0	1145	62	735	173	0	970	41	19	49	0	109	173	17	321	0	511	2735
12:15 - 1:15	391	698	59	0	1148	58	728	158	0	944	43	17	46	0	106	176	13	319	0	508	2706
12:30 - 1:30	410	697	60	0	1167	61	691	151	0	903	37	16	39	0	92	171	16	312	0	499	2661
12:45 - 1:45	387	701	51	0	1139	58	698	147	0	903	35	12	37	0	84	181	21	303	0	505	2631
1:00 - 2:00	380	688	43	0	1111	60	668	152	0	880	36	8	35	0	79	190	23	291	0	504	2574
PEAK HOUR																					
11:45 - 12:45	377	684	61	0	1122	62	728	187	0	977	42	18	54	0	114	181	16	337	0	534	2747

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: Agway Drive - Bloomingrove Drive Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: Agway Drive					TRAFFIC FROM WEST on: Bloomingrove Drive					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	4	196	3	0	203	3	205	57	0	265	3	0	2	0	5	81	4	16	0	101	574
4:15 - 4:30	3	148	3	0	154	6	222	73	0	301	1	2	6	0	9	105	4	15	0	124	588
4:30 - 4:45	3	183	0	0	186	0	236	58	0	294	1	0	3	0	4	96	1	14	0	111	595
4:45 - 5:00	4	187	2	0	193	3	234	76	0	313	4	0	7	0	11	104	2	12	0	118	635
5:00 - 5:15	3	172	4	0	179	2	211	59	0	272	2	1	5	0	8	90	2	21	0	113	572
5:15 - 5:30	3	187	1	0	191	2	240	61	0	303	0	1	2	0	3	105	7	15	0	127	624
5:30 - 5:45	2	185	4	0	191	2	213	68	0	283	1	1	2	0	4	96	2	11	0	109	587
5:45 - 6:00	4	157	0	0	161	3	222	58	0	283	3	1	5	0	9	89	5	13	0	107	560
2 Hr Totals	26	1415	17	0	1458	21	1783	510	0	2314	15	6	32	0	53	766	27	117	0	910	4735
1 Hr Totals																					
4:00 - 5:00	14	714	8	0	736	12	897	264	0	1173	9	2	18	0	29	386	11	57	0	454	2392
4:15 - 5:15	13	690	9	0	712	11	903	266	0	1180	8	3	21	0	32	395	9	62	0	466	2390
4:30 - 5:30	13	729	7	0	749	7	921	254	0	1182	7	2	17	0	26	395	12	62	0	469	2426
4:45 - 5:45	12	731	11	0	754	9	898	264	0	1171	7	3	16	0	26	395	13	59	0	467	2418
5:00 - 6:00	12	701	9	0	722	9	886	246	0	1141	6	4	14	0	24	380	16	60	0	456	2343
PEAK HOUR																					
4:30 - 5:30	13	729	7	0	749	7	921	254	0	1182	7	2	17	0	26	395	12	62	0	469	2426

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: Agway Drive - Bloomingrove Drive Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: Agway Drive					TRAFFIC FROM WEST on: Bloomingrove Drive					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	0	12	0	0	12	0	0	0	0	0	0	3	0	0	3	2	0	0	0	2	17
4:15 - 4:30	0	7	0	0	7	1	0	0	0	1	1	5	1	0	7	2	0	0	0	2	17
4:30 - 4:45	0	3	1	0	4	0	0	0	0	0	0	7	0	0	7	1	1	0	0	2	13
4:45 - 5:00	0	3	0	0	3	0	0	0	0	0	0	2	1	0	3	1	0	0	0	1	7
5:00 - 5:15	0	6	0	0	6	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	9
5:15 - 5:30	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	2	0	0	0	2	9
5:30 - 5:45	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	9
5:45 - 6:00	0	12	0	0	12	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	16
2 Hr Totals	0	50	1	0	51	1	0	0	0	1	1	32	2	0	35	9	1	0	0	10	97
1 Hr Totals																					
4:00 - 5:00	0	25	1	0	26	1	0	0	0	1	1	17	2	0	20	6	1	0	0	7	54
4:15 - 5:15	0	19	1	0	20	1	0	0	0	1	1	17	2	0	20	4	1	0	0	5	46
4:30 - 5:30	0	15	1	0	16	0	0	0	0	0	0	16	1	0	17	4	1	0	0	5	38
4:45 - 5:45	0	16	0	0	16	0	0	0	0	0	0	14	1	0	15	3	0	0	0	3	34
5:00 - 6:00	0	25	0	0	25	0	0	0	0	0	0	15	0	0	15	3	0	0	0	3	43
PEAK HOUR																					
4:30 - 5:30	0	15	1	0	16	0	0	0	0	0	0	16	1	0	17	4	1	0	0	5	38

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: Agway Drive - Bloomingrove Drive Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	NORTH LEG US4	SOUTH LEG US4	EAST LEG Agway Drive	WEST LEG Bloomingrove Drive
4:00 - 4:15	0	0	0	6
4:15 - 4:30	0	0	0	2
4:30 - 4:45	0	0	0	0
4:45 - 5:00	0	0	0	0
5:00 - 5:15	0	0	0	3
5:15 - 5:30	0	0	0	0
5:30 - 5:45	0	0	0	0
5:45 - 6:00	0	0	0	0
TOTALS	0	0	0	11

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: Agway Drive - Bloomingrove Drive Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: Agway Drive					TRAFFIC FROM WEST on: Bloomingrove Drive					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	4	208	3	0	215	3	205	57	0	265	3	3	2	0	8	83	4	16	0	103	591
4:15 - 4:30	3	155	3	0	161	7	222	73	0	302	2	7	7	0	16	107	4	15	0	126	605
4:30 - 4:45	3	186	1	0	190	0	236	58	0	294	1	7	3	0	11	97	2	14	0	113	608
4:45 - 5:00	4	190	2	0	196	3	234	76	0	313	4	2	8	0	14	105	2	12	0	119	642
5:00 - 5:15	3	178	4	0	185	2	211	59	0	272	2	4	5	0	11	90	2	21	0	113	581
5:15 - 5:30	3	190	1	0	194	2	240	61	0	303	0	5	2	0	7	107	7	15	0	129	633
5:30 - 5:45	2	189	4	0	195	2	213	68	0	283	1	6	2	0	9	96	2	11	0	109	596
5:45 - 6:00	4	169	0	0	173	3	222	58	0	283	3	4	5	0	12	90	5	13	0	108	576
2 Hr Totals	26	1465	18	0	1509	22	1783	510	0	2315	16	38	34	0	88	775	28	117	0	920	4832
1 Hr Totals																					
4:00 - 5:00	14	739	9	0	762	13	897	264	0	1174	10	19	20	0	49	392	12	57	0	461	2446
4:15 - 5:15	13	709	10	0	732	12	903	266	0	1181	9	20	23	0	52	399	10	62	0	471	2436
4:30 - 5:30	13	744	8	0	765	7	921	254	0	1182	7	18	18	0	43	399	13	62	0	474	2464
4:45 - 5:45	12	747	11	0	770	9	898	264	0	1171	7	17	17	0	41	398	13	59	0	470	2452
5:00 - 6:00	12	726	9	0	747	9	886	246	0	1141	6	19	14	0	39	383	16	60	0	459	2386
PEAK HOUR																					
4:30 - 5:30	13	744	8	0	765	7	921	254	0	1182	7	18	18	0	43	399	13	62	0	474	2464

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 — Date: April 26, 2014 — Saturday

and: Agway Drive - Bloomingrove Drive — Weather: Mild, Some Rain

Location: Albany County, New York — Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: Agway Drive					TRAFFIC FROM WEST on: Bloomingrove Drive					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	2	176	8	0	186	2	166	54	0	222	3	1	2	0	6	60	4	9	0	73	487
11:15 - 11:30	3	218	3	0	224	2	190	60	0	252	5	5	12	0	22	74	0	10	0	84	582
11:30 - 11:45	7	204	2	0	213	2	185	59	0	246	1	2	4	0	7	68	1	7	0	76	542
11:45 - 12:00	6	200	1	0	207	3	207	67	0	277	1	1	4	0	6	62	2	11	0	75	565
12:00 - 12:15	3	200	0	0	203	3	198	64	0	265	0	1	1	0	2	67	1	6	0	74	544
12:15 - 12:30	7	186	3	0	196	2	171	57	0	230	1	1	2	0	4	75	2	5	0	82	512
12:30 - 12:45	2	207	1	0	210	4	166	69	0	239	0	0	5	0	5	74	2	10	0	86	540
12:45 - 1:00	5	191	1	0	197	0	220	53	0	273	1	0	3	0	4	80	2	7	0	89	563
1:00 - 1:15	6	179	2	0	187	3	167	57	0	227	0	0	1	0	1	80	1	8	0	89	504
1:15 - 1:30	3	155	6	0	164	5	190	56	0	251	1	3	2	0	6	65	1	10	0	76	497
1:30 - 1:45	4	161	3	0	168	1	184	58	0	243	2	3	3	0	8	71	1	9	0	81	500
1:45 - 2:00	1	179	2	0	182	3	192	57	0	252	6	0	6	0	12	73	3	9	0	85	531
3 Hr Totals	49	2256	32	0	2337	30	2236	711	0	2977	21	17	45	0	83	849	20	101	0	970	6367
1 Hr Totals																					
11:00 - 12:00	18	798	14	0	830	9	748	240	0	997	10	9	22	0	41	264	7	37	0	308	2176
11:15 - 12:15	19	822	6	0	847	10	780	250	0	1040	7	9	21	0	37	271	4	34	0	309	2233
11:30 - 12:30	23	790	6	0	819	10	761	247	0	1018	3	5	11	0	19	272	6	29	0	307	2163
11:45 - 12:45	18	793	5	0	816	12	742	257	0	1011	2	3	12	0	17	278	7	32	0	317	2161
12:00 - 1:00	17	784	5	0	806	9	755	243	0	1007	2	2	11	0	15	296	7	28	0	331	2159
12:15 - 1:15	20	763	7	0	790	9	724	236	0	969	2	1	11	0	14	309	7	30	0	346	2119
12:30 - 1:30	16	732	10	0	758	12	743	235	0	990	2	3	11	0	16	299	6	35	0	340	2104
12:45 - 1:45	18	686	12	0	716	9	761	224	0	994	4	6	9	0	19	296	5	34	0	335	2064
1:00 - 2:00	14	674	13	0	701	12	733	228	0	973	9	6	12	0	27	289	6	36	0	331	2032
PEAK HOUR																					
11:15 - 12:15	19	822	6	0	847	10	780	250	0	1040	7	9	21	0	37	271	4	34	0	309	2233

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: Agway Drive - Bloomingrove Drive Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: Agway Drive					TRAFFIC FROM WEST on: Bloomingrove Drive					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	0	1	0	0	1	0	3	0	0	3	0	0	0	0	0	1	0	0	0	1	5
11:15 - 11:30	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	3
11:30 - 11:45	0	2	0	0	2	0	4	0	0	4	0	0	0	0	0	2	0	0	0	2	8
11:45 - 12:00	0	2	0	0	2	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	5
12:00 - 12:15	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	4
12:15 - 12:30	0	1	0	0	1	0	2	2	0	4	0	0	0	0	0	0	1	1	0	2	7
12:30 - 12:45	0	3	0	0	3	0	2	0	0	2	0	0	0	0	0	1	0	1	0	2	7
12:45 - 1:00	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3
1:00 - 1:15	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	2
1:15 - 1:30	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	4
1:30 - 1:45	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	1	0	0	0	1	4
1:45 - 2:00	0	3	0	0	3	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	5
3 Hr Totals	0	19	0	0	19	1	24	2	0	27	0	0	0	0	0	8	1	2	0	11	57
1 Hr Totals																					
11:00 - 12:00	0	7	0	0	7	0	10	0	0	10	0	0	0	0	0	4	0	0	0	4	21
11:15 - 12:15	0	8	0	0	8	0	8	0	0	8	0	0	0	0	0	4	0	0	0	4	20
11:30 - 12:30	0	7	0	0	7	0	10	2	0	12	0	0	0	0	0	3	1	1	0	5	24
11:45 - 12:45	0	8	0	0	8	0	8	2	0	10	0	0	0	0	0	2	1	2	0	5	23
12:00 - 1:00	0	6	0	0	6	0	8	2	0	10	0	0	0	0	0	2	1	2	0	5	21
12:15 - 1:15	0	4	0	0	4	1	8	2	0	11	0	0	0	0	0	1	1	2	0	4	19
12:30 - 1:30	0	6	0	0	6	1	6	0	0	7	0	0	0	0	0	2	0	1	0	3	16
12:45 - 1:45	0	3	0	0	3	1	7	0	0	8	0	0	0	0	0	2	0	0	0	2	13
1:00 - 2:00	0	6	0	0	6	1	6	0	0	7	0	0	0	0	0	2	0	0	0	2	15
PEAK HOUR																					
11:15 - 12:15	0	8	0	0	8	0	8	0	0	8	0	0	0	0	0	4	0	0	0	4	20

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: Agway Drive - Bloomingrove Drive Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	NORTH LEG US4	SOUTH LEG US4	EAST LEG Agway Drive	WEST LEG Bloomingrove Drive
AM				
11:00 - 11:15	0	0	0	0
11:15 - 11:30	0	0	0	0
11:30 - 11:45	0	0	0	2
11:45 - 12:00	0	0	0	0
12:00 - 12:15	0	0	0	0
12:15 - 12:30	0	0	0	0
12:30 - 12:45	0	0	0	0
12:45 - 1:00	0	0	0	0
1:00 - 1:15	0	0	0	0
1:15 - 1:30	0	0	0	0
1:30 - 1:45	0	0	0	0
1:45 - 2:00	0	0	0	0
TOTALS	0	0	0	2

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: Agway Drive - Bloomingrove Drive Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: Agway Drive					TRAFFIC FROM WEST on: Bloomingrove Drive					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	2	177	8	0	187	2	169	54	0	225	3	1	2	0	6	61	4	9	0	74	492
11:15 - 11:30	3	220	3	0	226	2	190	60	0	252	5	5	12	0	22	75	0	10	0	85	585
11:30 - 11:45	7	206	2	0	215	2	189	59	0	250	1	2	4	0	7	70	1	7	0	78	550
11:45 - 12:00	6	202	1	0	209	3	210	67	0	280	1	1	4	0	6	62	2	11	0	75	570
12:00 - 12:15	3	202	0	0	205	3	199	64	0	266	0	1	1	0	2	68	1	6	0	75	548
12:15 - 12:30	7	187	3	0	197	2	173	59	0	234	1	1	2	0	4	75	3	6	0	84	519
12:30 - 12:45	2	210	1	0	213	4	168	69	0	241	0	0	5	0	5	75	2	11	0	88	547
12:45 - 1:00	5	191	1	0	197	0	223	53	0	276	1	0	3	0	4	80	2	7	0	89	566
1:00 - 1:15	6	179	2	0	187	4	168	57	0	229	0	0	1	0	1	80	1	8	0	89	506
1:15 - 1:30	3	158	6	0	167	5	190	56	0	251	1	3	2	0	6	66	1	10	0	77	501
1:30 - 1:45	4	161	3	0	168	1	187	58	0	246	2	3	3	0	8	72	1	9	0	82	504
1:45 - 2:00	1	182	2	0	185	3	194	57	0	254	6	0	6	0	12	73	3	9	0	85	536
3 Hr Totals	49	2275	32	0	2356	31	2260	713	0	3004	21	17	45	0	83	857	21	103	0	981	6424
1 Hr Totals																					
11:00 - 12:00	18	805	14	0	837	9	758	240	0	1007	10	9	22	0	41	268	7	37	0	312	2197
11:15 - 12:15	19	830	6	0	855	10	788	250	0	1048	7	9	21	0	37	275	4	34	0	313	2253
11:30 - 12:30	23	797	6	0	826	10	771	249	0	1030	3	5	11	0	19	275	7	30	0	312	2187
11:45 - 12:45	18	801	5	0	824	12	750	259	0	1021	2	3	12	0	17	280	8	34	0	322	2184
12:00 - 1:00	17	790	5	0	812	9	763	245	0	1017	2	2	11	0	15	298	8	30	0	336	2180
12:15 - 1:15	20	767	7	0	794	10	732	238	0	980	2	1	11	0	14	310	8	32	0	350	2138
12:30 - 1:30	16	738	10	0	764	13	749	235	0	997	2	3	11	0	16	301	6	36	0	343	2120
12:45 - 1:45	18	689	12	0	719	10	768	224	0	1002	4	6	9	0	19	298	5	34	0	337	2077
1:00 - 2:00	14	680	13	0	707	13	739	228	0	980	9	6	12	0	27	291	6	36	0	333	2047
PEAK HOUR																					
11:15 - 12:15	19	830	6	0	855	10	788	250	0	1048	7	9	21	0	37	275	4	34	0	313	2253

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: SR 43 Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: SR 43					TRAFFIC FROM WEST on: SR 43					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	123	139	22	0	284	64	136	20	0	220	14	66	30	0	110	8	165	149	0	322	936
4:15 - 4:30	99	105	33	0	237	53	162	14	0	229	16	60	41	0	117	14	180	199	0	393	976
4:30 - 4:45	145	126	26	0	297	85	152	21	0	258	9	51	29	0	89	18	169	173	0	360	1004
4:45 - 5:00	136	105	25	0	266	79	161	23	0	263	18	50	46	0	114	18	212	194	0	424	1067
5:00 - 5:15	170	143	28	0	341	72	164	17	0	253	26	60	35	0	121	16	178	179	0	373	1088
5:15 - 5:30	119	124	41	0	284	68	161	17	0	246	32	72	41	0	145	25	247	187	0	459	1134
5:30 - 5:45	111	135	26	0	272	59	154	17	0	230	20	73	36	0	129	15	166	131	0	312	943
5:45 - 6:00	96	111	25	0	232	52	165	17	0	234	17	60	45	0	122	12	95	132	0	239	827
2 Hr Totals	999	988	226	0	2213	532	1255	146	0	1933	152	492	303	0	947	126	1412	1344	0	2882	7975
1 Hr Totals																					
4:00 - 5:00	503	475	106	0	1084	281	611	78	0	970	57	227	146	0	430	58	726	715	0	1499	3983
4:15 - 5:15	550	479	112	0	1141	289	639	75	0	1003	69	221	151	0	441	66	739	745	0	1550	4135
4:30 - 5:30	570	498	120	0	1188	304	638	78	0	1020	85	233	151	0	469	77	806	733	0	1616	4293
4:45 - 5:45	536	507	120	0	1163	278	640	74	0	992	96	255	158	0	509	74	803	691	0	1568	4232
5:00 - 6:00	496	513	120	0	1129	251	644	68	0	963	95	265	157	0	517	68	686	629	0	1383	3992
PEAK HOUR																					
4:30 - 5:30	570	498	120	0	1188	304	638	78	0	1020	85	233	151	0	469	77	806	733	0	1616	4293

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: SR 43 Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: SR 43					TRAFFIC FROM WEST on: SR 43					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	0	4	0	0	4	1	2	0	0	3	0	1	1	0	2	4	6	4	0	14	23
4:15 - 4:30	1	5	0	0	6	0	0	4	0	4	0	4	1	0	5	3	4	2	0	9	24
4:30 - 4:45	0	2	0	0	2	2	2	4	0	8	0	1	2	0	3	2	4	2	0	8	21
4:45 - 5:00	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	4	2	1	0	7	10
5:00 - 5:15	2	1	0	0	3	1	0	0	0	1	0	4	0	0	4	4	2	1	0	7	15
5:15 - 5:30	2	1	0	0	3	1	2	2	0	5	0	2	1	0	3	2	2	1	0	5	16
5:30 - 5:45	0	1	0	0	1	0	0	3	0	3	0	0	0	0	0	5	1	0	0	6	10
5:45 - 6:00	1	2	0	0	3	2	1	0	0	3	0	1	2	0	3	10	1	2	0	13	22
2 Hr Totals	6	17	0	0	23	7	7	13	0	27	0	14	8	0	22	34	22	13	0	69	141
1 Hr Totals																					
4:00 - 5:00	1	12	0	0	13	3	4	8	0	15	0	7	5	0	12	13	16	9	0	38	78
4:15 - 5:15	3	9	0	0	12	3	2	8	0	13	0	10	4	0	14	13	12	6	0	31	70
4:30 - 5:30	4	5	0	0	9	4	4	6	0	14	0	8	4	0	12	12	10	5	0	27	62
4:45 - 5:45	4	4	0	0	8	2	2	5	0	9	0	7	2	0	9	15	7	3	0	25	51
5:00 - 6:00	5	5	0	0	10	4	3	5	0	12	0	7	3	0	10	21	6	4	0	31	63
PEAK HOUR																					
4:30 - 5:30	4	5	0	0	9	4	4	6	0	14	0	8	4	0	12	12	10	5	0	27	62

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: SR 43 Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	NORTH LEG US4	SOUTH LEG US4	EAST LEG SR 43	WEST LEG SR 43
4:00 - 4:15	0	0	0	0
4:15 - 4:30	0	0	0	4
4:30 - 4:45	0	0	0	0
4:45 - 5:00	0	0	0	1
5:00 - 5:15	0	0	0	1
5:15 - 5:30	0	0	0	0
5:30 - 5:45	0	0	0	0
5:45 - 6:00	0	0	0	2
TOTALS	0	0	0	8

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 25, 2014 Friday

and: SR 43 Weather: Mild, Some Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: SR 43					TRAFFIC FROM WEST on: SR 43					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
PM																					
4:00 - 4:15	123	143	22	0	288	65	138	20	0	223	14	67	31	0	112	12	171	153	0	336	959
4:15 - 4:30	100	110	33	0	243	53	162	18	0	233	16	64	42	0	122	17	184	201	0	402	1000
4:30 - 4:45	145	128	26	0	299	87	154	25	0	266	9	52	31	0	92	20	173	175	0	368	1025
4:45 - 5:00	136	106	25	0	267	79	161	23	0	263	18	51	47	0	116	22	214	195	0	431	1077
5:00 - 5:15	172	144	28	0	344	73	164	17	0	254	26	64	35	0	125	20	180	180	0	380	1103
5:15 - 5:30	121	125	41	0	287	69	163	19	0	251	32	74	42	0	148	27	249	188	0	464	1150
5:30 - 5:45	111	136	26	0	273	59	154	20	0	233	20	73	36	0	129	20	167	131	0	318	953
5:45 - 6:00	97	113	25	0	235	54	166	17	0	237	17	61	47	0	125	22	96	134	0	252	849
2 Hr Totals	1005	1005	226	0	2236	539	1262	159	0	1960	152	506	311	0	969	160	1434	1357	0	2951	8116
1 Hr Totals																					
4:00 - 5:00	504	487	106	0	1097	284	615	86	0	985	57	234	151	0	442	71	742	724	0	1537	4061
4:15 - 5:15	553	488	112	0	1153	292	641	83	0	1016	69	231	155	0	455	79	751	751	0	1581	4205
4:30 - 5:30	574	503	120	0	1197	308	642	84	0	1034	85	241	155	0	481	89	816	738	0	1643	4355
4:45 - 5:45	540	511	120	0	1171	280	642	79	0	1001	96	262	160	0	518	89	810	694	0	1593	4283
5:00 - 6:00	501	518	120	0	1139	255	647	73	0	975	95	272	160	0	527	89	692	633	0	1414	4055
PEAK HOUR																					
4:30 - 5:30	574	503	120	0	1197	308	642	84	0	1034	85	241	155	0	481	89	816	738	0	1643	4355

CARS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: SR 43 Weather: Mild, Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: SR 43					TRAFFIC FROM WEST on: SR 43					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	78	126	15	0	219	52	129	11	0	192	10	72	57	0	139	8	41	50	0	99	649
11:15 - 11:30	74	156	15	0	245	66	116	18	0	200	18	74	45	0	137	11	52	49	0	112	694
11:30 - 11:45	87	133	16	0	236	51	118	15	0	184	14	79	62	0	155	21	42	73	0	136	711
11:45 - 12:00	74	153	26	0	253	48	166	14	0	228	18	67	56	0	141	11	47	66	0	124	746
12:00 - 12:15	71	140	11	0	222	57	132	12	0	201	11	52	53	0	116	14	44	63	0	121	660
12:15 - 12:30	70	134	8	0	212	34	137	13	0	184	10	48	47	0	105	14	49	68	0	131	632
12:30 - 12:45	81	125	11	0	217	46	124	15	0	185	19	57	57	0	133	12	58	70	0	140	675
12:45 - 1:00	67	135	23	0	225	57	150	18	0	225	18	50	49	0	117	24	49	60	0	133	700
1:00 - 1:15	79	128	17	0	224	50	115	10	0	175	16	62	51	0	129	11	41	59	0	111	639
1:15 - 1:30	80	108	16	0	204	51	144	10	0	205	15	62	22	0	99	14	64	63	0	141	649
1:30 - 1:45	94	122	13	0	229	51	109	16	0	176	10	64	53	0	127	22	61	58	0	141	673
1:45 - 2:00	79	129	17	0	225	47	156	18	0	221	8	48	39	0	95	9	66	57	0	132	673
3 Hr Totals	934	1589	188	0	2711	610	1596	170	0	2376	167	735	591	0	1493	171	614	736	0	1521	8101
1 Hr Totals																					
11:00 - 12:00	313	568	72	0	953	217	529	58	0	804	60	292	220	0	572	51	182	238	0	471	2800
11:15 - 12:15	306	582	68	0	956	222	532	59	0	813	61	272	216	0	549	57	185	251	0	493	2811
11:30 - 12:30	302	560	61	0	923	190	553	54	0	797	53	246	218	0	517	60	182	270	0	512	2749
11:45 - 12:45	296	552	56	0	904	185	559	54	0	798	58	224	213	0	495	51	198	267	0	516	2713
12:00 - 1:00	289	534	53	0	876	194	543	58	0	795	58	207	206	0	471	64	200	261	0	525	2667
12:15 - 1:15	297	522	59	0	878	187	526	56	0	769	63	217	204	0	484	61	197	257	0	515	2646
12:30 - 1:30	307	496	67	0	870	204	533	53	0	790	68	231	179	0	478	61	212	252	0	525	2663
12:45 - 1:45	320	493	69	0	882	209	518	54	0	781	59	238	175	0	472	71	215	240	0	526	2661
1:00 - 2:00	332	487	63	0	882	199	524	54	0	777	49	236	165	0	450	56	232	237	0	525	2634
PEAK HOUR																					
11:15 - 12:15	306	582	68	0	956	222	532	59	0	813	61	272	216	0	549	57	185	251	0	493	2811

HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: SR 43 Weather: Mild, Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: SR 43					TRAFFIC FROM WEST on: SR 43					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	0	0	0	0	0	0	0	1	0	1	0	3	2	0	5	0	1	0	0	1	7
11:15 - 11:30	0	0	0	0	0	1	1	0	0	2	0	3	0	0	3	1	1	0	0	2	7
11:30 - 11:45	0	1	0	0	1	2	1	2	0	5	0	1	0	0	1	2	0	0	0	2	9
11:45 - 12:00	1	1	0	0	2	0	2	0	0	2	1	3	0	0	4	1	1	0	0	2	10
12:00 - 12:15	0	1	0	0	1	1	1	2	0	4	0	1	0	0	1	3	4	1	0	8	14
12:15 - 12:30	4	1	0	0	5	1	1	1	0	3	0	0	0	0	0	1	0	2	0	3	11
12:30 - 12:45	1	1	0	0	2	0	1	1	0	2	1	0	0	0	1	1	0	1	0	2	7
12:45 - 1:00	0	0	0	0	0	0	0	2	0	2	0	2	0	0	2	0	2	0	0	2	6
1:00 - 1:15	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	4	3	0	8	9
1:15 - 1:30	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
1:30 - 1:45	0	0	0	0	0	0	4	1	0	5	0	1	0	0	1	0	0	0	0	0	6
1:45 - 2:00	1	2	0	0	3	0	1	0	0	1	0	1	0	0	1	2	0	2	0	4	9
3 Hr Totals	7	8	0	0	15	6	12	10	0	28	2	15	2	0	19	13	13	9	0	35	97
1 Hr Totals																					
11:00 - 12:00	1	2	0	0	3	3	4	3	0	10	1	10	2	0	13	4	3	0	0	7	33
11:15 - 12:15	1	3	0	0	4	4	5	4	0	13	1	8	0	0	9	7	6	1	0	14	40
11:30 - 12:30	5	4	0	0	9	4	5	5	0	14	1	5	0	0	6	7	5	3	0	15	44
11:45 - 12:45	6	4	0	0	10	2	5	4	0	11	2	4	0	0	6	6	5	4	0	15	42
12:00 - 1:00	5	3	0	0	8	2	3	6	0	11	1	3	0	0	4	5	6	4	0	15	38
12:15 - 1:15	5	2	0	0	7	2	2	4	0	8	1	2	0	0	3	3	6	6	0	15	33
12:30 - 1:30	1	2	0	0	3	1	1	3	0	5	1	2	0	0	3	3	6	4	0	13	24
12:45 - 1:45	0	1	0	0	1	1	4	3	0	8	0	3	0	0	3	2	6	3	0	11	23
1:00 - 2:00	1	3	0	0	4	1	5	1	0	7	0	2	0	0	2	4	4	5	0	13	26
PEAK HOUR																					
11:15 - 12:15	1	3	0	0	4	4	5	4	0	13	1	8	0	0	9	7	6	1	0	14	40

PEDESTRIAN OBSERVATIONS - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: SR 43 Weather: Mild, Rain

Location: Albany County, New York Entered by: CG

TIME	NORTH LEG US4	SOUTH LEG US4	EAST LEG SR 43	WEST LEG SR 43
AM				
11:00 - 11:15	0	0	0	0
11:15 - 11:30	0	0	0	0
11:30 - 11:45	0	0	0	0
11:45 - 12:00	0	0	0	0
12:00 - 12:15	0	0	0	0
12:15 - 12:30	0	0	0	0
12:30 - 12:45	0	0	0	0
12:45 - 1:00	0	0	0	0
1:00 - 1:15	0	0	0	0
1:15 - 1:30	0	0	0	0
1:30 - 1:45	0	0	0	0
1:45 - 2:00	0	0	0	0
TOTALS	0	0	0	0

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: US4 Date: April 26, 2014 Saturday

and: SR 43 Weather: Mild, Rain

Location: Albany County, New York Entered by: CG

TIME	TRAFFIC FROM NORTH on: US4					TRAFFIC FROM SOUTH on: US4					TRAFFIC FROM EAST on: SR 43					TRAFFIC FROM WEST on: SR 43					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
11:00 - 11:15	78	126	15	0	219	52	129	12	0	193	10	75	59	0	144	8	42	50	0	100	656
11:15 - 11:30	74	156	15	0	245	67	117	18	0	202	18	77	45	0	140	12	53	49	0	114	701
11:30 - 11:45	87	134	16	0	237	53	119	17	0	189	14	80	62	0	156	23	42	73	0	138	720
11:45 - 12:00	75	154	26	0	255	48	168	14	0	230	19	70	56	0	145	12	48	66	0	126	756
12:00 - 12:15	71	141	11	0	223	58	133	14	0	205	11	53	53	0	117	17	48	64	0	129	674
12:15 - 12:30	74	135	8	0	217	35	138	14	0	187	10	48	47	0	105	15	49	70	0	134	643
12:30 - 12:45	82	126	11	0	219	46	125	16	0	187	20	57	57	0	134	13	58	71	0	142	682
12:45 - 1:00	67	135	23	0	225	57	150	20	0	227	18	52	49	0	119	24	51	60	0	135	706
1:00 - 1:15	79	128	17	0	224	51	115	10	0	176	16	62	51	0	129	12	45	62	0	119	648
1:15 - 1:30	80	109	16	0	205	51	144	10	0	205	15	62	22	0	99	15	64	63	0	142	651
1:30 - 1:45	94	122	13	0	229	51	113	17	0	181	10	65	53	0	128	22	61	58	0	141	679
1:45 - 2:00	80	131	17	0	228	47	157	18	0	222	8	49	39	0	96	11	66	59	0	136	682
3 Hr Totals	941	1597	188	0	2726	616	1608	180	0	2404	169	750	593	0	1512	184	627	745	0	1556	8198
1 Hr Totals																					
11:00 - 12:00	314	570	72	0	956	220	533	61	0	814	61	302	222	0	585	55	185	238	0	478	2833
11:15 - 12:15	307	585	68	0	960	226	537	63	0	826	62	280	216	0	558	64	191	252	0	507	2851
11:30 - 12:30	307	564	61	0	932	194	558	59	0	811	54	251	218	0	523	67	187	273	0	527	2793
11:45 - 12:45	302	556	56	0	914	187	564	58	0	809	60	228	213	0	501	57	203	271	0	531	2755
12:00 - 1:00	294	537	53	0	884	196	546	64	0	806	59	210	206	0	475	69	206	265	0	540	2705
12:15 - 1:15	302	524	59	0	885	189	528	60	0	777	64	219	204	0	487	64	203	263	0	530	2679
12:30 - 1:30	308	498	67	0	873	205	534	56	0	795	69	233	179	0	481	64	218	256	0	538	2687
12:45 - 1:45	320	494	69	0	883	210	522	57	0	789	59	241	175	0	475	73	221	243	0	537	2684
1:00 - 2:00	333	490	63	0	886	200	529	55	0	784	49	238	165	0	452	60	236	242	0	538	2660
PEAK HOUR																					
11:15 - 12:15	307	585	68	0	960	226	537	63	0	826	62	280	216	0	558	64	191	252	0	507	2851

APPENDIX D

Trip Generation Backup Data

Trips Based on Various Independent Variable Methods

Independent Variable Method	Friday PM			Saturday PM			Saturday Midday [2]		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
Casino Trip Rate per 1,000 SF of Casino Space	408	363	771	435	347	782	320	188	508
Hotel - ITE LUC 310 (75% Internal)	12	11	23	15	12	27	15	12	27
TOTAL	**419**	**374**	**793**	**450**	**359**	**809**	**335**	**200**	**535**
Casino Trip Rate per Gaming Position	439	389	828	549	542	1,091	447	262	709
Hotel - ITE LUC 310 (75% Internal)	12	11	23	15	12	27	15	12	27
TOTAL	**450**	**400**	**851**	**564**	**554**	**1,118**	**462**	**274**	**736**

Preferred Trip Generation Method

Use	Friday PM			Saturday Midday [2]		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Casino [1]	423	376	799	384	225	609
Hotel - ITE LUC 310 (75% Internal)	12	11	23	15	12	27
TOTAL	**435**	**387**	**822**	**399**	**237**	**636**

[1] Casino trips based on an average of rates per 1,000 SF of casino space and per gaming position.

[2] Saturday Midday Casino rates developed based on a 35% reduction of the Saturday Evening peak hour. Directional distribution is 63% enter, 37% exit.

Capitol View Resort Casino Program		
Use	**Size**	**Unit**
Saratoga - Rensselaer Casino		
Casino	2020	GP
	196	k SF
Hotel	151	Rooms

Resulting Casino Trip Rates:	*Friday PM*	*Saturday PM*	*Saturday Midday*
Per 1,000 SF of Casino Space	*4.08*	*4.78*	*3.11*
Per Gaming Position	*0.40*	*0.46*	*0.30*

Sample Casino Trip Generation Rates

Program			Day/Peak Period	Casino Trip Rate per 1,000 SF of Casino Space		
Use	Size	Unit		IN	OUT	TOTAL
Project First Light [1]						
Casino	*324*	*k SF*	Friday PM	2.08	1.85	3.93
Hotel	*900*	*Rooms*	Saturday PM	2.22	1.77	3.99
Water Park	*25*	*k SF*	Daily Friday	29.60	29.60	59.19
			Daily Saturday	32.88	32.88	65.76
MGM Springfield [2]						
Casino	*432.7*	*k SF*	Friday PM	2.08	1.85	3.93
Hotel	*294*	*Rooms*	Saturday PM	2.22	1.77	3.99
Residential	*54*	*Apts*	Daily Friday			
Separate Retail/Entertainment	*140*	*k SF*	Daily Saturday			
Average						
Casino	***378.35***	***k SF***	**Friday PM**	**2.08**	**1.85**	**3.93**
Hotel	***597***	***Rooms***	**Saturday PM**	**2.22**	**1.77**	**3.99**
			Daily Friday	**29.60**	**29.60**	**59.19**
			Daily Saturday	**32.88**	**32.88**	**65.76**

Program			Day/Peak Period	Casino Trip Rate per Gaming Position		
Use	Size	Unit		IN	OUT	TOTAL
Hollywood Casino-Philadelphia[3]						
Casino	*3817*	*GP*	Friday PM	0.217	0.193	0.410
Hotel	*500*	*Rooms*	Saturday PM	0.278	0.302	0.580
			Daily Friday			
			Daily Saturday			
Casino Revolution[4]						
Casino	*3130*	*GP*	Friday PM	0.217	0.193	0.410
Hotel	*250*	*Rooms*	Saturday PM	0.265	0.235	0.500
			Daily Friday			
			Daily Saturday			
Average						
Casino	***3473.5***	***GP***	**Friday PM**	**0.217**	**0.193**	**0.410**
Hotel	***375***	***Rooms***	**Saturday PM**	**0.272**	**0.268**	**0.540**
			Daily Friday			
			Daily Saturday			

[1] *Project First Light, Transportation Study;* City of Taunton, MA; Howard/Stein-Hudson Associates, Inc.; May 21, 2012.

[2] *Traffic Impact and Access Study, MGM Springfield;* Springfield, MA; TEC, Inc.; December 17, 2012.

[3] *Transportation Impact Study, Hollywood Casino;* Philadelphia, PA; Pennoni Associates, Inc; November 20, 2013

[4] *Transportation Impact Study, Casino Revolution;* Philadelphia, PA; Langan Engineering & Environmental Services, Inc.; November 21, 2013

Project First Light

Transportation Study

Prepared for

City of Taunton, Massachusetts

Prepared by

Howard/Stein-Hudson Associates, Inc.

May 21, 2012

Howard/Stein-Hudson Associates, Inc.

CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

Casino

For the casino, separate trip rates were determined for patrons and employees. The patron and visitor trip rates were based on actual daily and hourly traffic counts collected over multiple days at the Phase 1 Mohegan Sun casino in Uncasville, Connecticut, as reported in the *Draft Environmental Impact Statement, Proposed Mashpee Wampanoag Initial Reservation and Destination Resort Casino,* October 17, 2008, pages 7-69 to 7-72. These counts were conducted on days when performances were held in the on-site performance venue. After a review of Institute of Transportation Engineers (ITE) trip rates and published literature on other casino projects, it was concluded that the Mohegan Sun data represented the situation closest to the proposed facility in terms of both geographic location and size. In addition, only these data were differentiated for employee and patron trips as well as peak hour trips. The count data revealed the following peak hours:

- Monday through Thursday morning peak hour is 8:00 to 9:00 AM
- Friday afternoon peak hour is 4:00 to 5:00 PM
- Saturday evening peak hour is 8:00 to 9:00 PM and
- Sunday afternoon peak hour is 4:00 to 5:00 PM

As noted in the October 2008 EIS, total trip rates were first established from the Mohegan Sun count data, after which data related to the numbers and work-hours for employees were developed. Then, the employee trip rates were subtracted from the total trip rates to yield patron trip rates. Sundays were not selected for analysis as the peak trip rates on Sundays combined with Sunday afternoon background traffic are lower than the Friday or Saturday PM peak hour counts. And, although Saturday peak period of trip generation for the casino is from 8:00 to 9:00 P.M., the peak casino volumes were instead superimposed on Saturday midday peak volumes (which are higher as background traffic) as a worst case estimate. Trip rates used in the analysis are presented in **Table 14.**

Table 14. Class III Casino Trip Generation Rates (based on Mohegan Sun Counts)

Day of Week	Trip Generation Rates			
		Morning Peak Hour (8-9 AM)		
Monday through Thursday	Daily	In	Out	Total
Casino patrons	49.30	0.86	0.53	1.39
Casino employees	3.76	0.14	0.05	0.19
Total	53.06	1.00	0.58	1.58
		Afternoon Peak Hr. (4-5 P.M.)		
Friday	Daily	In	Out	Total
Casino patrons	54.89	2.00	1.64	3.64
Casino employees	4.30	0.08	0.21	0.29
Total	59.19	2.08	1.85	3.93
		Evening Peak Hour (8 - 9 P.M.)		
Saturday	Daily	In	Out	Total
Casino patrons	60.86	2.20	1.64	3.84
Casino employees	4.90	0.02	0.13	0.15
Total	65.76	2.22	1.77	3.99
		Afternoon Peak Hr. (4-5 P.M.)		
Sunday	Daily	In	Out	Total
Casino patrons	57.74	1.77	2.06	3.83
Casino employees	4.52	0.05	0.14	0.19
Total	62.26	1.82	2.20	4.02

Source: *Draft Environmental Impact Statement: Proposed Mashpee Wampanoag Initial Reservation and Resort Casino* October 17 2008 P. 7-70

Bus trips – roughly 50 entering and 50 exiting per day – were included in the overall patron trip generation numbers. Per the *Environmental Impact Statement* cited above, "during the week, the bulk of the buses will enter the site during the morning hours. Bus trips will be more evenly spread out on weekends. It is estimated that buses could generate between 20 and 30 trips during the weekend peak hours." (P. 7-72).

Hotel

Hotel trip rates were based on ITE's Trip Generation manual, 8th edition (2008), Land Use Code 310. As stated in the Environmental Impact Statement referenced above, "it is likely that most, if not all the traffic generated by the hotel will be shared trips with the casino. However, to present a conservative analysis, twenty percent of the total trips generated by the … hotel are assumed to be 'new' trips." (p. 7-71) Thus, 20% of the hotel trips were assumed to be new trips independent of casino trips.

Indoor Water Park

Because indoor water parks are a relatively new concept there is little data available upon which to base estimates of daily or peak hour trips. The study team found daily and peak hour traffic volume data that was recorded on the site of an existing 55,000 sf "Coco Keys" indoor water park in Mount Laurel, New Jersey. A trip rate for the proposed 25,000 sf facility was developed based on the rates for the larger Mount Laurel water park.

The resulting total, casino patron, and casino employee vehicle trips generated by the casino, the hotels, and the water park by land use and time period are presented in **Table 15.** A detailed trip generation spreadsheet is provided in **Appendix E.**

Table 15. Summary of Vehicle Trips by Land Use

Time of Day/Land Use	Square Feet	Direction	Trip Rate (Trips/ksf or unit)	Unadjusted Vehicle Trips	"New" (Unshared) Trips	Adjusted Vehicle Trips
Daily (Friday)						
Casino/Restaurants	324.00	Total	59.19	19,178	100%	19,178
	KSF	In	29.60	9,589	100%	9,589
		Out	29.60	9,589	100%	9,589
Hotel	900	Total	8.92	8,028	20%	1,606
	rooms	In	4.46	4,014	20%	803
		Out	4.46	4,014	20%	803
Water Park	25.00 KSF			N/A		N/A
TOTAL		Total		27,206		20,784
		In		13,603		10 392
		Out		13,603		10,392

AM Peak Hour						
Casino/Restaurants	324.00	Total	1.58	512	100%	512
	KSF	In	1.00	324	100%	324
		Out	0.58	188	100%	188
Hotel	900	Total	0.67	603	20%	121
	rooms	In	0.39	350	20%	70
		Out	0.28	253	20%	51
Water Park			N/A			N/A
Total		Total		1,115		633
		In		674		394
		Out		441		239
Friday PM Peak Hour						
Casino/Restaurants	324.00	Total	3.93	1,273	100%	1,273
	KSF	In	2.08	674	100%	674
		Out	1.85	599	100%	599
Hotel	900	Total	0.70	630	20%	126
	rooms	In	0.34	306	20%	61
		Out	0.36	324	20%	65
Water Park	25.00 KSF	Total	1.22	31		
		In	0.64	16		16
		Out	0.58	15		15
Total		Total		1,934		1,415
		In		996		751
		Out		938		679
Saturday Peak Hour						
Casino/Restaurants	324.00	Total	3.99	1,293	100%	1,293
	KSF	In	2.22	719	100%	719
		Out	1.77	573	100%	573
Hotel	900	Total	0.70	630	20%	126
	rooms	In	0.34	309	20%	62
		Out	0.36	321	20%	64
Water Park	25.00 KSF	Total	0.95	24		24
		In	0.60	15		15
		Out	0.35	9		9
Total		Total		1,947		1,443
		In		1,043		796
		Out		904		647

The breakdown of casino patron and employee trips is provided in **Table 16.**

Land Uses	Table 16. Patron and Employee Vehicle Trips by Time Period							
	Daily		AM Peak Hour		Friday PM Peak Hr.		Sat. Midday Peak Hr.	
	In	Out	In	Out	In	Out	In	Out
Casino Patron Vehicle Trips	8,892	8,892	279	172	648	531	713	531
Casino Employee Vehicle Trips	697	697	45	16	26	68	6	42
Total Casino Vehicle Trips	9,589	9,589	324	188	674	599	719	573

Project Site

The current, occupied land uses on the Project site include a 22,840 sf fitness center (Workout World) and 44,100 sf of office space at 50 O'Connell Way, along with two 175,200 sf warehouse buildings at the Crossroads Commerce Center in the Liberty Union Industrial Park Phase 2. These uses are slated to remain on the site after the casino and hotels are built. Only a vacant 137,000 sf industrial/office building is expected to be replaced by the casino project. For this reason, all of the trips generated by existing land uses, as reflected in the existing traffic counts, were retained in the traffic network for Build conditions.

Trip Distribution

In the 2008 *Environmental Impact Statement* for the proposed casino at Middleborough, trip distribution patterns were developed independently for patron trips and employee trips. The methodology incorporated population data from the Year 2000 U.S. Census. The same methodology, as described below, was adopted for this Project, although population estimates have been updated to the Year 2010 Census. Detailed trip distribution worksheets are found in **Appendix E.**

Patron Trips

For patron trips, market studies have shown that two hours is the maximum time that patrons will spend driving to a resort casino. Therefore, population data were gathered for communities within a two-hour drive of the proposed site. The population figures were modified by distance factors based on market studies, as follows:

- Those within a 30-minute drive would make 3.2 more visits to the resort than patrons located within a 1-2 hour drive.
- Those within a 30 to 60 minute drive would make 1.6 times as many visits to the resort than patrons located within a 1-2 hour drive.

Thus, population of communities within 30 minutes was multiplied by 3.2 and population of communities within 30-60 minutes was multiplied by 1.6.

A second factor, called a "competition factor", was developed to represent the proximity of the communities to competing casinos – i.e., Mohegan Sun, Foxwoods, Twin Rivers and several facilities in Maine. . (A high

Traffic Impact and Access Study
MGM Springfield

Prepared for:
MGM Resorts International Global Gaming Development, LLC

Prepared by:
TEC, Inc.
65 Glenn Street
Lawrence, Massachusetts 01843

December 17, 2012

Pedestrian, Shuttle, & Trolley Access (See Figure 6)

- A significant majority of the pedestrian trips are expected along the Main Street corridor as patrons visit other establishments in the downtown. The traffic signals along Main Street have exclusive pedestrian phasing that allows pedestrians to enter the intersection while motor vehicle traffic is stopped.
- Other pedestrian and bicycle connections will be made to the Connecticut Riverwalk and Bikeway, the Basketball Hall of Fame, and other parks along the Connecticut River.
- Once the new parking garage is completed, the employees and visitors to the District Courthouse will be permitted to use the MGM parking facility and walk across State Street as they do today. The conceptual design of off-site improvements includes the creation of a median refuge island that will enable pedestrians to cross one lane of State Street at a time.

Site Generated Traffic

The project consists of the following floor areas and uses:

- ±592,700 SF casino resort that includes space for back of the house (BOH), retail / restaurant uses, and banquet / function facilities in addition to the gaming space, of which 432,700 SF is active employee, patron, and guest space
- 294-room multi-story hotel
- 54 residential apartment units
- 4,800-stall multi-story parking garage
- ±140,000 SF retail and entertainment center known as Armory Square which will include multiple retail tenants, restaurants, a small event plaza, a multi-screen cinema, and a bowling alley.

The methodology utilized to calculate the proposed trip generation is described below.

Trip Generation Methodology

In order to estimate the trips generated by the proposed casino and hotel and the adjacent Armory Square retail and entertainment center, TEC first estimated the trips that would be generated by each use separately and then assumed a shared-trip credit between each use. A detailed description of the methodology is provided below.

Casino Trips

TEC reviewed a number of sources to estimate the trip generation of the casino / retail / restaurant / banquet facilities contained within the proposed casino area. These sources included trip generation data from multiple other casinos, such as:

- Mohegan Sun and Foxwoods, Connecticut
- Tulalip Tribal Casino, Muckleshoot Indian Tribe Casino, Emerald Queen Casino, Washington
- Spirit Mountain Casino and Chinook Winds Casino, Oregon
- Jamul Indian Village Casino and Enterprise Rancheria Casino-Hotel, California
- Harvey's Casino, Ameristar Casino, and Bluffs Run Casino, Iowa
- Casino Queen, Illinois
- St. Charles Casino, Missouri

The Mohegan Sun site was determined to be the most analogous to the proposed Springfield casino in terms on location, size, and other amenities provided such as retail, restaurants, hotel, and convention center. TEC obtained trip rates for the Mohegan Sun resort-casino utilizing the *Project First Light Transportation Study* prepared by Howard/Stein-Hudson in May 2012 for a proposed resort-casino by the Mashpee Wampanoag tribe in Taunton, Massachusetts. The background studies and data are provided in Appendix G.

The trip rates were based on the number of patrons and the number of employees entering and exiting the resort-casino during each hour of the day. Trip rates per 1,000 SF of active floor area for both patrons and employees were tabulated within the May 2012 study. All of the trips generated by the casino were considered to be "new" trips. The retail and convention floor area that was included in these calculations consisted of only the retail, restaurant, and convention space that is enclosed within the proposed casino area. This did not include the retail and restaurant space proposed within "Armory Square" or trips associated with the proposed hotel.

The trip rate is applied to the entire active floor area for the casino (432,700 SF) that is used by employees, patrons, and guests. Although the "back of the house" floor area is more closely associated with employee and vendor vehicle trips, TEC included this active square footage to present an analysis that is consistent with other current permitting documents for casinos in Massachusetts. The remaining 160,000 SF of basement storage and utility "plant" space was excluded from the calculations as these areas are not part of the active trip-generating portion of the floor area. Based on other record data from Mohegan Sun, the employee trips account for approximately 10 percent of the total trip generation for a casino use.

Hotel Trips

For the hotel portion of the site, TEC estimated the site-generated trips using standard trip rates published in the (ITE publication *Trip Generation, 8th Edition* for LUC 310 – Hotel based on 294 rooms within the hotel. TEC anticipates that the majority of the patrons staying at the hotel will also utilize the casino or other retail and restaurants on the site. As such, TEC assumed an 80 percent shared-trip credit between the hotel and the casino. This methodology is consistent with that used by Howard/Stein-Hudson in the May 2012 traffic study for Project First Light in Taunton, Massachusetts.

Residential Trips

The plans call for 54 units of residential apartment space. TEC estimated the site-generated trips using standard trip rates published in the ITE publication *Trip Generation, 8th Edition* for LUC 220 – Apartment. TEC anticipates that these non-casino based trips to/from residential uses will have access to the general parking garage structure. No shared-trip credit was taken between casino and residential trips.

Armory Square Trips

For the retail, restaurant, and entertainment space that is included within Armory Square, TEC estimated the site-generated trips using standard ITE trip generation rates for LUC 820 (Shopping Center) based on 165,000 SF of gross floor area. However, since the time of TEC's detailed analysis, the development program for the Armory has been reduced to 140,000 SF. Therefore, the enclosed analysis presents a conservative assessment of the traffic impacts. TEC anticipates that some local

residents will shop and dine at Armory Square as many of the shops and restaurants share Main Street and Union Street frontage, but a large portion of the trips will be shared with the casino and hotel. TEC assumed a 40 percent shared-trip credit between the casino and Armory Square.

Pass-by Trips (for Armory Square only)

Many of the retail and restaurant trips associated with the Armory Square shopping and entertainment center are already present in the existing traffic flow passing by the Project Area. For example, some vehicles that are already on the roadways may decide to visit a retail shop on their way to another destination. These vehicle trips are known as "pass-by" trips and are subtracted from the total trips to calculate the total primary (or "new") trips that affect the volume of traffic within the study area away from the Project Area. Based on information contained in the ITE publication *Trip Generation Handbook, 2nd Edition*, approximately 26 to 34 percent of the traffic generated by retail uses typically represents pass-by traffic. The retail land uses proposed within Armory Square contain a cinema and bowling alley, which typically experience lower pass-by percentages. In order to provide a conservative (worst case) analysis scenario based on a lower expectation of pass-by trip usage, only 10 percent of the Project-generated traffic from retail uses was assumed to be pass-by trips.

Trip Generation Estimate

Table 4 on the following page provides a summary of the trips generated by the proposed development for the Full Build scenario. In order to provide a conservative analysis scenario, no credit was taken for trips generated by other existing land uses on the site. Due to the sites proximity to bus transit services, TEC applied a 5-percent transit trip credit for all land uses.

As shown in Table 4, the proposed casino resort development and Armory Square retail is anticipated to generate approximately 1,677 new vehicle trips (891 entering and 786 exiting) during the Friday evening peak hour and approximately 1,718 vehicle trips (992 entering and 726 exiting) during the Saturday evening peak hour.

Trip Generation Comparison

MGM provided TEC with trip generation information from another MGM casino in Detroit, Michigan within a memorandum entitled *MGM Springfield Visitation Analysis, Performed for use in Traffic Study* dated November 2012. A copy of this memorandum is included an Appendix H. This document provides daily footfall (entering walk-in patron traffic) information collected at entry points into the facility for each hour of each day of the year. The information is compiled to provide average footfall information for each day of the week, which has been separated by number of patrons and number of employees. The footfall information is then converted to number of vehicle trips based on percentages of patrons and employees traveling by car, taxi, charter bus, public transportation, or walking. The MGM data includes only arrivals to the facility and does not account for trips leaving the facility.

Based on the data and information provided by MGM, which indicated that the average employee shift is approximately 8 hours and the average patron stay in the casino is 3 to 4 hours, TEC estimated departing trips for employees based on arrivals 8 hours prior to the designated time period and estimated departing trips for patrons based on arrivals 3 hours prior to the designated time period. TEC's detailed trip generation calculations using information from MGM's Detroit casino are included in Appendix H.

Table 4. Trip Generation Summary

Time Period	Casino Trips	Hotel Trips	Armory Square Trips	Resident Trips	Total Trips	Multi-use Trips	5% Transit Trips	Pass-by Trips	New Primary Trips
Friday Evening									
Entering	902	92	436	30	**1,460**	495	49	25	**891**
Exiting	799	81	454	16	**1,350**	495	44	25	**786**
Total	1,701	173	890	46	**2,810**	990	93	50	**1,677**
Saturday Evening									
Entering	967	116	617	21	**1,721**	641	54	34	**992**
Exiting	760	91	570	20	**1,441**	641	40	34	**726**
Total	1,727	207	1,187	41	**3,162**	1,282	94	68	**1,718**

TRANSPORTATION IMPACT STUDY

Hollywood Casino

THE CITY OF PHILADELPHIA
Pennsylvania

PENN NATIONAL GAMING INC.

Prepared For:
Penn National Gaming, Inc.
825 Berkshire Boulevard, Suite
Wyomissing, PA 19610

Prepared By:
Pennoni Associates, Inc.
3001 Market Street, Suite 200
Philadelphia, PA 19104
(215) 222-3000

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
DEBRA ANN FERRARO
ENGINEER
No. PE048404E

Debra Ferraro
PENNA. REG. P.E. NO. 048404E

Brian Williams
PENNA. REG. P.E. NO. 078240

Spencer Slack

Created: November 14, 2012
Revised: November 20, 2013

TRIP GENERATION

Developing the Trip Generation Rates

The standard reference utilized to estimate traffic generated by new developments is the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9th Edition*. However, the *Trip Generation Manual* provides limited information for full service casinos. The *Trip Generation Manual* provides a trip generation rate for Land Use Code (LUC) 472 "Casino/Video Lottery Establishment" derived from gaming sites in South Dakota that do not provide full-service food. The data provided by the *Trip Generation Manual* does not sufficiently represent an urban full-service casino, which includes food service and entertainment, as proposed at the Hollywood Casino site.

As such, in order to develop an accurate estimate of trips generated by a proposed gaming facility, the trips generated at the following facilities, which have similar demographic and geographic environments, were examined:

- Sugarhouse Casino, Philadelphia Pennsylvania
- Rivers Casino, Pittsburgh, Pennsylvania
- St. Charles Casino, St. Louis, Missouri

In September, 2010, the Sugarhouse Casino was opened on Delaware Avenue approximately 4 miles north of the proposed Hollywood Casino site. The Sugarhouse Casino includes full-service food and bar facilities with 2010 gaming positions. Manual traffic counts were conducted on Friday May 31, 2013 and Saturday June 8, 2013 during the Friday Commuter Peak (5:00 to 6:00 PM), Friday Evening Casino Peak (8:00 to11:00 PM) and the Saturday Casino Peak (8:00 to 11:00 PM).

The Rivers Casino was opened in August, 2009, and is located adjacent to Heinz Field and less than a mile from PNC Park on the North Shore in Pittsburgh, PA. The Rivers Casino includes full-service food and bar facilities, a 10,000 square foot meeting room, and a 1,000 seat amphitheater with 3810 gaming positions. Manual traffic counts were conducted on Friday June 7, 2013 and Saturday June 8, 2013 during the Friday Commuter Peak (5:00 to 6:00 PM), Friday Evening Casino Peak (8:00 to 11:00 PM) and the Saturday Casino Peak (8:00 to 11:00 PM).

The St. Charles Casino is located along the Missouri River in the City of St. Charles, Missouri. Traffic data was collected on a Friday and Saturday in 1998 for the article *Trip Generation Characteristics of Small to Medium Sized Casinos* [4] for the site which, at the time, had seven dining and entertainment venues, a retail shop, a video arcade and 2477 gaming positions.

The Institute of Transportation Engineers (ITE) article *Gaming Casino Traffic* [5] identifies monthly variations in casino traffic based on economic reports. The article identified May, July, and August as peak gaming months for St. Louis casinos and provided multipliers to expand to seasonal peak volumes. The article indicated that Casino volumes may vary from as much as 30% from month to month depending on the type of facility and its location. The 2012/2013 monthly revenue reports for the Sugarhouse Casino and the Rivers Casino indicates that activity at both the Sugarhouse and Rivers casino does not vary by more than 10% from the average, with the exception of March which at both casinos is over 15% above average monthly revenue. Therefore, the calculated trip rates were not adjusted for monthly variations at any of the casinos.

Employees and patrons of the Sugarhouse Casino and Rivers Casino utilizing alternate forms of transportation such as public transit or walking are not included in the data used to generate the Casino trip generation rate. Patrons utilizing taxis and casino buses are accounted for in the calculated trip rates noted above as those vehicles were recorded entering/exiting the casinos. Modal split data is not available for the Casino St. Charles counts.

[4] *Trip Generation Characteristics of Small to Medium Sized Casinos*, Michael Trueblood and Tara Gude, published ITE 2001 Annual Meeting, August 2001

[5] *Gaming Casino Traffic*, Paul Box and William Bunte, published ITE Journal March 1998

The summary of the peak traffic volumes in and out of the casinos, the average trip rates, and the direction distribution for all three sites and the average of the sites are summarized in Table 1 below:

TABLE 1
Casino Trip Rate Calculation

Peak Hour	Casino	Enter	Exit	Total	# of Gaming Positions	Average Trip Generation Rate (1)	Directional Distribution	
Friday Commuter Peak 5:00 - 6:00 PM	SugarHouse, Philadelphia PA	449	431	880	2010	0.44	0.51	0.49
	Rivers, Pittsburgh PA	816	509	1325	3810	0.35	0.62	0.38
	St Charles, St Louis Mo	475	600	1075	2477	0.43	0.44	0.56
	Total	**1740**	**1540**	**3280**	**8297**	**0.41**	**0.53**	**0.47**
Friday Casino Peak 8:00 - 11:00 PM	SugarHouse, Philadelphia PA	423	492	915	2010	0.46	0.46	0.54
	Rivers, Pittsburgh PA	555	879	1434	3810	0.38	0.39	0.61
	St Charles, St Louis Mo	725	625	1350	2477	0.55	0.54	0.46
	Total	**1703**	**1996**	**3699**	**8297**	**0.46**	**0.46**	**0.54**
Saturday Casino Peak 8:00 - 11:00 PM	SugarHouse, Philadelphia PA	469	508	977	2010	0.49	0.48	0.52
	Rivers, Pittsburgh PA	1015	1317	2332	3810	0.61	0.44	0.56
	St Charles, St Louis Mo	850	750	1600	2477	0.65	0.53	0.47
	Total	**2334**	**2575**	**4909**	**8297**	**0.58**	**0.48**	**0.52**

(1) - Trip generation rate per number of gaming positions

Traffic Generated by Existing Site Uses

The parcel is currently occupied by office, industrial, and commercial uses including: an office of the Pennsylvania Lottery Commission, Verifone Transportation Systems (a company that maintains meters in taxi cabs), Packer Avenue Foods, and the Philadelphia Turf Club (which offers off-track betting with food services and a bar). The site is fenced with access on 7th Street and Darien Street. Traffic counts were performed during the following peak periods:

- Friday evening commuter peak hour (between 4:00 – 7:00 PM)
- Friday evening with pre-Phillies event peak hour (between 5:00 – 7:30 PM)
- Friday casino peak hour (between 7:00 – 10:00 PM)
- Saturday casino peak hour (between 8:00 – 11:00 PM)

The proposed casino will replace the existing uses. The site trips generated by the existing site uses will be deducted from the proposed site trip generation and have been redistributed through the roadway network to/from the proposed driveways on 7th Street and Darien Street in the 2016, 2021, and 2026 Build Scenarios. Additionlly, during the pre-phillies event peak, the site was observed to be utilized for event parking. The trips for the patrons destined to park at the site will be redistributed to the proposed garage driveway on 7th Street.

Modal Split, Transit Facility and Charter Bus Utilization

The proposed Hollywood Casino Project is to be located near public transit services. The AT&T Station of SEPTA's Broad Street is located approximately ¾ mile from the site. In addition, several bus routes, including the G route which has stops at 7th and Packer, run in close proximity to the site. Casino and Franchise buses are commonly utilized by many casinos. Although it is not anticipated that charter buses would figure significantly in the operation of the Hollywood Casino Project.

The Philadelphia Gaming Advisory Task Force prepared a report in 2007[6] which estimated that approximately 16% of gamers visiting a South Delaware Avenue site will arrive and depart utilizing alternative modes of transportation as follows:

[6] *Interim Report of Findings*, Philadelphia Gaming Advisory Task Force, unpublished

TRANSPORTATION IMPACT STUDY

CASINO REVOLUTION
FRONT STREET AND PATTISON AVENUE
PHILADELPHIA, PA

Prepared For:

PHL Gaming, LLC
c/o O'Riordan Law Firm
1601 Market Street
Suite 2600
Philadelphia, PA 19103

Prepared By:

Langan Engineering & Environmental Services, Inc.
30 South 17th Street, Suite 1300
Philadelphia, Pennsylvania 19103

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
WILLIAM GEORGE LOTHIAN
ENGINEER
NO. 026817-E

William Lothian, P.E.
Professional Engineer License No. 026817-E

Daniel D. Disario, P.E., PTOE

Revised 21 November 2013
13 September 2013
220057201

LANGAN
ENGINEERING & ENVIRONMENTAL SERVICES

Site Generated Trips

Typically, trip generation is estimated by using trip rates contained within the ninth edition of Trip Generation, published by the Institute of Transportation Engineers (ITE). The ITE does not have any trip rates for a casino like the one proposed, so we reviewed trip rates established for three comparable casinos located in metropolitan areas. The trip rates at the three casinos were then averaged to determine the resultant trip rates for the proposed casino. We reviewed trip rates for the following three casinos:

- Casino St. Charles (St. Louis, MO)
- SugarHouse Caisno (Philadelphia, PA)
- Parx Casino (Bensalem, PA)

We determined the average trip rates (trips per gaming position) for the above three casinos are 0.43 for the Friday Casino Peak Hour, 0.50 for the Saturday Casino Peak hour, and 0.29 for the Friday Evening Commuter Peak Hour. The split for entering and exiting vehicles were also averaged and determined to be 53 percent entering and 47 percent exiting for the Friday and Saturday peak hours.

The trip rates we derived represent the peak month for gaming operations. An ITE article, *Gaming Casino Traffic* by Paul Box and William Bunte, was utilized to adjust the trip rates for the three sample casinos to the peak month. The trip rates for the Friday commuter peak hour (4pm to 6pm) were derived by reducing the trip rates for the peak casino peak hour (7pm to 10pm) based on casino visitation patterns by time of day identified in the Philadelphia Gaming Advisory Task Force's Executive Summary of the Interim Report of Findings. All trip generation calculations and supplemental information is contained in Appendix F.

Based on the latest October 28, 2013 comment letter and subsequent discussions with Orth-Rodgers & Associates, Inc. and PennDOT District 6-0, it was determined that the trip generation rate for the Friday Evening Commuter Peak Hour should be revised to be 0.41. The Friday Casino Peak rate of 0.43 and Saturday Casino Peak rate of 0.50 were deemed to be acceptable. All applicable correspondence with reviewing agencies regarding trip generation rates is contained in Appendix F. This Transportation Impact Study has been revised accordingly based on the new Friday Evening Commuter Peak Hour rate of 0.41.

The Philadelphia Gaming Advisory Task Force report identifies the assumed modal split for proposed casino locations within the City of Philadelphia. The report identifies the following breakdown for a casino location on a South Delaware Avenue site: Drive = 84%, Public Transit = 2%, Casino Bus = 8%, Taxi = 6%, and Pedestrian = 0%. For purposes of our trip generation calculations, we assumed a conservative overall trip rate reduction of 2% for public transit (assuming buses). Additional modal split reductions were not utilized in our trip generation calculations.

The following table shows the trip rates used for the four separate peak hours, the trip rates include a 2 percent reduction for public transit:

Table 2 – Casino Trip Rates (Trips/Gaming Position)

Friday Evening Commuter Peak Hour		Friday Pre-Phillies Peak Hour		Friday Evening Casino Peak Hour		Saturday Evening Peak Hour	
Enter	0.2120	Enter	0.1558	Enter	0.2226	Enter	0.2597
Exit	0.1880	Exit	0.1382	Exit	0.1974	Exit	0.2303
Total	0.40	Total	0.294	Total	0.42	Total	0.49

The proposed casino will have 2,400 slot machines, 80 gaming tables and 25 poker tables. We assumed that the gaming tables can accommodate up to six players and the poker tables can accommodate up to ten players. Accordingly, the total of 3,130 players that can be accommodated on the casino floor was used to estimate the trip generation. The Casino Revolution will provide ancillary components including bars, restaurants, entertainment space, etc. These ancillary casino uses are considered to function as part of the casino and will not generate additional traffic on their own. The three casinos that were used to develop the trip generation rates all have comparable ancillary components to the Casino Revolution site and therefore the ancillary trips are already accounted for in the calculated trip rates.

During event times at the Philadelphia Sports Complex, we have accounted for some trip generation reductions. As cited in the Philadelphia Sports Complex Parking and Traffic Management Plan report, during event times entertainment venues in and around the Philadelphia Sports Complex will experience trip generation reductions. Trip generation reductions are attributed to linked trips, which are made by event patrons coming to the

Philadelphia Sports Complex who also go to an entertainment venue while at the complex. Trip generation reductions are also attributed to a stay-away factor, which involves potential entertainment venue patrons who stay away during an event at the Philadelphia Sports Complex. The linked trips and the stay away factor could reduce the casino and hotel trip generation by as much as 50%; however, to perform a conservative analysis we have assumed a 30% reduction in trip generation to account for mass transit usage, linked trips and the stay-away factor during event times. The Friday Pre-Phillies peak hour accounts for this 30% reduction.

The following table shows the casino trip generation estimates for the four separate peak hours:

Table 3 – Estimated Casino Trip Generation

Friday Evening Commuter Peak Hour		Friday Pre-Phillies Peak Hour		Friday Evening Casino Peak Hour		Saturday Evening Casino Peak Hour	
Enter	664	Enter	488	Enter	697	Enter	813
Exit	588	Exit	432	Exit	618	Exit	721
Total	1,252	Total	920	Total	1,315	Total	1,534

We assumed that 15% of the casino trip generation would use valet parking and the remaining 85% would park either in surface parking lot B or the parking garage.

The hotel will largely be used by casino patrons and will not necessarily generate its own traffic. We assumed a 70% internalization reduction for the hotel trip generation which is a more conservative estimate than what was used in the approved SugarHouse Traffic Impact Study which assumed 80% internalization for the hotel. We used ITE hotel trip rates to estimate trip generation for the proposed 250-room hotel as shown in Table 4.

Table 4 – Estimated Hotel Trip Generation

Friday Evening Peak Hours		Saturday Evening Peak Hour	
Enter	23	Enter	30
Exit	22	Exit	24
Total	45	Total	54

Table 5 shows the combined total estimated trip generation for the proposed casino and hotel.

Table 5 – Estimated Casino and Hotel Trip Generation

Friday Evening Commuter Peak Hour		Friday Pre-Phillies Peak Hour		Friday Evening Casino Peak Hour		Saturday Evening Peak Hour	
Enter	687	Enter	511	Enter	720	Enter	843
Exit	610	Exit	454	Exit	640	Exit	745
Total	1,297	Total	965	Total	1,360	Total	1,588

Trip Distribution

Langan prepared a gravity model to determine the trip distribution of site generated trips. The gravity model was based on the anticipated market area of the new casino, assuming a 20 mile radius around the site. The population for each county within the anticipated market area was identified through the 2010 Census Data. Based on the travel time and population of each county in the market area, we developed a gravity model to establish trip distribution. We determined that 10 counties fall within the 20 mile radius. We divided Philadelphia County into four sections. Philadelphia West is anything in the county located west of the Schuylkill River, Philadelphia South Central is anything in the county south of Route 676 and between the two rivers, Philadelphia North Central is anything in the county north of Route 676 between the Schuylkill and Front Street, and Philadelphia North East is the remaining area east of Front Street and to the northeast part of the city limits.

We used the results of the gravity model to assign site generated trips onto the adjacent road network. We assigned these trips based on the location of primary arterial roads, major signalized intersections and interchanges. The following table outlines the resulting trip distribution within the study area for site generated trips based on the trip assignment. The gravity model backup data has been included in Appendix E. The general trip distribution percentages as identified in the Table 6 below are also illustrated in Figure 2.

APPENDIX E

Capacity Analysis Worksheets

2014 Existing

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	186	857	81	925	633	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1671	1599	1787	3574	3574	1599
Flt Permitted	0.95	1.00	0.19	1.00	1.00	1.00
Satd. Flow (perm)	1671	1599	365	3574	3574	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	196	902	85	974	666	279
RTOR Reduction (vph)	0	36	0	0	0	151
Lane Group Flow (vph)	196	866	85	974	666	128
Heavy Vehicles (%)	8%	1%	1%	1%	1%	1%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	3	1	1	5	2	3
Permitted Phases		3	5			2
Actuated Green, G (s)	17.7	53.0	68.8	68.8	27.5	45.2
Effective Green, g (s)	17.7	53.0	68.8	68.8	27.5	45.2
Actuated g/C Ratio	0.18	0.54	0.70	0.70	0.28	0.46
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.5	3.0	3.0	5.0	5.0	3.5
Lane Grp Cap (vph)	300	957	764	2496	997	831
v/s Ratio Prot	0.12	c0.32	0.04	0.27	c0.19	0.03
v/s Ratio Perm		0.22	0.04			0.05
v/c Ratio	0.65	0.90	0.11	0.39	0.67	0.15
Uniform Delay, d1	37.5	20.5	6.4	6.2	31.5	15.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.3	11.7	0.1	0.2	2.3	0.1
Delay (s)	42.8	32.2	6.5	6.4	33.7	15.6
Level of Service	D	C	A	A	C	B
Approach Delay (s)	34.1			6.4	28.4	
Approach LOS	C			A	C	

Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	98.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	7	29	29	785	923	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Grade (%)	2%			-3%	1%	
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1321	1093	1909	3577	
Flt Permitted	0.95	1.00	0.22	1.00	1.00	
Satd. Flow (perm)	1787	1321	259	1909	3577	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	7	30	30	818	961	14
RTOR Reduction (vph)	0	28	0	0	0	0
Lane Group Flow (vph)	7	2	30	818	975	0
Heavy Vehicles (%)	0%	21%	62%	1%	0%	15%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8	6			
Actuated Green, G (s)	1.0	3.9	40.0	40.0	31.1	
Effective Green, g (s)	1.0	3.9	40.0	40.0	31.1	
Actuated g/C Ratio	0.02	0.07	0.75	0.75	0.59	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	2.0	2.0	4.0	4.0	
Lane Grp Cap (vph)	33	246	241	1440	2098	
v/s Ratio Prot	c0.00	0.00	0.01	c0.43	0.27	
v/s Ratio Perm		0.00	0.09			
v/c Ratio	0.21	0.01	0.12	0.57	0.46	
Uniform Delay, d1	25.6	22.8	2.4	2.8	6.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.2	0.0	0.1	0.6	0.2	
Delay (s)	28.8	22.8	2.5	3.4	6.4	
Level of Service	C	C	A	A	A	
Approach Delay (s)	23.9			3.4	6.4	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	5.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	53.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	1	226	6	2	13	193	579	2	10	687	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12	11	11	12	11	11	11
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	0.95	
Frt		1.00	0.85		0.91		1.00	1.00		1.00	0.98	
Flt Protected		0.95	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1810	1561		1713		1728	1800		1745	3361	
Flt Permitted		0.71	1.00		0.89		0.24	1.00		0.43	1.00	
Satd. Flow (perm)		1353	1561		1553		445	1800		789	3361	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	98	1	238	6	2	14	203	609	2	11	723	113
RTOR Reduction (vph)	0	0	101	0	12	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	99	137	0	10	0	203	611	0	11	826	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	2%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	1		8		1	6		5	2	
Permitted Phases	4		4	8			6			2		
Actuated Green, G (s)		7.6	15.0		7.6		42.7	37.0		31.0	30.3	
Effective Green, g (s)		7.6	15.0		7.6		42.7	37.0		31.0	30.3	
Actuated g/C Ratio		0.13	0.25		0.13		0.71	0.61		0.51	0.50	
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0	2.0		2.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)		170	517		195		472	1104		416	1688	
v/s Ratio Prot			c0.03				0.05	c0.34		0.00	0.25	
v/s Ratio Perm		c0.07	0.06		0.01		0.25			0.01		
v/c Ratio		0.58	0.27		0.05		0.43	0.55		0.03	0.49	
Uniform Delay, d1		24.9	18.2		23.2		4.1	6.8		7.2	9.9	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.3	0.1		0.0		0.2	1.0		0.0	0.5	
Delay (s)		28.1	18.3		23.2		4.3	7.8		7.2	10.4	
Level of Service		C	B		C		A	A		A	B	
Approach Delay (s)		21.2			23.2			7.0			10.3	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	10.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	60.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	58.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	409	224	99	586	603	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11
Grade (%)	3%			0%	0%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1669	1508	1646	1818	3246	
Flt Permitted	0.95	1.00	0.20	1.00	1.00	
Satd. Flow (perm)	1669	1508	343	1818	3246	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	422	231	102	604	622	320
RTOR Reduction (vph)	0	83	0	0	51	0
Lane Group Flow (vph)	422	148	102	604	891	0
Heavy Vehicles (%)	3%	2%	6%	1%	1%	4%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	3	6	6	1	5	
Permitted Phases		3	1			
Actuated Green, G (s)	28.0	36.6	50.7	50.7	37.1	
Effective Green, g (s)	28.0	36.6	50.7	50.7	37.1	
Actuated g/C Ratio	0.32	0.41	0.57	0.57	0.42	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	5.0	5.0	
Lane Grp Cap (vph)	526	707	322	1039	1357	
v/s Ratio Prot	c0.25	0.02	0.03	c0.33	c0.27	
v/s Ratio Perm		0.08	0.15			
v/c Ratio	0.80	0.21	0.32	0.58	0.66	
Uniform Delay, d1	27.8	16.7	19.4	12.2	20.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.1	0.1	0.2	1.3	1.6	
Delay (s)	36.0	16.8	19.6	13.5	22.3	
Level of Service	D	B	B	B	C	
Approach Delay (s)	29.2			14.4	22.3	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	88.7	Sum of lost time (s)	15.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	285	5	124	31	11	44	98	891	35	44	813	306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	12	11	11	11	11	11	12
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	0.95	1.00
Frt		1.00	0.85		0.93		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1784	1575		1681		1745	1809		1745	3355	1599
Flt Permitted		0.68	1.00		0.73		0.25	1.00		0.07	1.00	1.00
Satd. Flow (perm)		1266	1575		1247		458	1809		127	3355	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	300	5	131	33	12	46	103	938	37	46	856	322
RTOR Reduction (vph)	0	0	78	0	28	0	0	1	0	0	0	153
Lane Group Flow (vph)	0	305	53	0	63	0	103	974	0	46	856	169
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	0%	1%	0%	0%	4%	1%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		7			3		5	2		1	6	
Permitted Phases	7		7	3			2			6		6
Actuated Green, G (s)		30.1	30.1		30.1		67.1	60.1		62.3	57.7	57.7
Effective Green, g (s)		30.1	30.1		30.1		67.1	60.1		62.3	57.7	57.7
Actuated g/C Ratio		0.27	0.27		0.27		0.61	0.55		0.57	0.53	0.53
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0		2.0		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)		347	431		341		361	990		139	1763	840
v/s Ratio Prot							c0.02	c0.54		0.01	0.26	
v/s Ratio Perm		c0.24	0.03		0.05		0.16			0.17		0.11
v/c Ratio		0.88	0.12		0.18		0.29	0.98		0.33	0.49	0.20
Uniform Delay, d1		38.1	29.9		30.5		10.0	24.4		23.1	16.6	13.8
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		20.9	0.0		0.1		0.2	24.7		0.5	0.4	0.2
Delay (s)		59.0	30.0		30.6		10.2	49.1		23.6	17.0	14.1
Level of Service		E	C		C		B	D		C	B	B
Approach Delay (s)		50.3			30.6			45.4			16.5	
Approach LOS		D			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	109.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	13	399	18	18	7	254	921	7	8	744	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	12	11	11	11	11	11	11
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0	5.0	5.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1745	1701	1546	1646	1068		1745	1837	1561	1544	3413	
Flt Permitted	0.82	1.00	1.00	1.00	1.00		0.22	1.00	1.00	0.16	1.00	
Satd. Flow (perm)	1499	1701	1546	1733	1068		406	1837	1561	262	3413	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	65	14	416	19	19	7	265	959	7	8	775	14
RTOR Reduction (vph)	0	0	200	0	7	0	0	0	2	0	1	0
Lane Group Flow (vph)	65	14	216	19	19	0	265	959	5	8	788	0
Heavy Vehicles (%)	0%	8%	1%	6%	89%	0%	0%	0%	0%	13%	2%	0%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	4	7	2	8	3		2	5	8	6	1	
Permitted Phases	7		7	3			5		5	1		
Actuated Green, G (s)	10.7	4.9	32.7	8.5	3.8		58.6	51.7	56.4	25.7	24.8	
Effective Green, g (s)	10.7	4.9	32.7	8.5	3.8		58.6	51.7	56.4	25.7	24.8	
Actuated g/C Ratio	0.13	0.06	0.39	0.10	0.05		0.70	0.62	0.68	0.31	0.30	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0	5.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	4.0	2.0	2.0	4.0	
Lane Grp Cap (vph)	209	100	607	172	48		733	1141	1058	94	1017	
v/s Ratio Prot	c0.02	0.01	c0.12	0.01	0.02		c0.12	c0.52	0.00	0.00	0.23	
v/s Ratio Perm	0.02		0.02	0.01			0.13		0.00	0.03		
v/c Ratio	0.31	0.14	0.36	0.11	0.40		0.36	0.84	0.00	0.09	0.78	
Uniform Delay, d1	32.8	37.2	17.8	33.9	38.6		12.2	12.5	4.3	22.6	26.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	0.2	0.1	0.1	2.0		0.1	6.0	0.0	0.1	4.0	
Delay (s)	33.1	37.4	17.9	34.0	40.6		12.3	18.4	4.3	22.7	30.6	
Level of Service	C	D	B	C	D		B	B	A	C	C	
Approach Delay (s)		20.5			37.8			17.0			30.6	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	83.2	Sum of lost time (s)	21.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	738	816	89	155	241	85	84	642	308	120	503	574
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-2%			0%			0%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3432	3539	1415	3434	3540	1631	1687	3574	1599	3502	3574	1599
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3432	3539	1415	3434	3540	1631	1687	3574	1599	3502	3574	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	777	859	94	163	254	89	88	676	324	126	529	604
RTOR Reduction (vph)	0	0	43	0	0	79	0	0	209	0	0	434
Lane Group Flow (vph)	777	859	51	163	254	10	88	676	115	126	529	170
Heavy Vehicles (%)	1%	1%	13%	3%	3%	0%	7%	1%	1%	0%	1%	1%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		2	5		6	1	
Permitted Phases			7			3			5			1
Actuated Green, G (s)	43.8	47.0	47.0	11.0	14.2	14.2	12.4	37.6	37.6	10.2	35.4	35.4
Effective Green, g (s)	43.8	47.0	47.0	11.0	14.2	14.2	12.4	37.6	37.6	10.2	35.4	35.4
Actuated g/C Ratio	0.35	0.37	0.37	0.09	0.11	0.11	0.10	0.30	0.30	0.08	0.28	0.28
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	2.0	2.0	2.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)	1194	1322	528	300	399	184	166	1068	477	283	1005	449
v/s Ratio Prot	0.23	c0.24		0.05	c0.07		c0.05	c0.19		0.04	0.15	
v/s Ratio Perm			0.04			0.01			0.07			0.11
v/c Ratio	0.65	0.65	0.10	0.54	0.64	0.05	0.53	0.63	0.24	0.45	0.53	0.38
Uniform Delay, d1	34.6	32.6	25.6	55.0	53.3	49.8	53.9	38.1	33.3	55.1	38.1	36.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4	1.2	0.1	1.1	2.4	0.0	1.6	1.7	0.6	0.4	1.0	1.1
Delay (s)	36.0	33.8	25.7	56.1	55.8	49.9	55.6	39.8	33.9	55.5	39.1	37.5
Level of Service	D	C	C	E	E	D	E	D	C	E	D	D
Approach Delay (s)		34.4			54.8			39.3			40.0	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	39.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	125.8	Sum of lost time (s)	20.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	24	223	671	454	440	855
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	26	240	722	488	473	919
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		8				
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2127	361			722	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2127	361			722	
tC, single (s)	6.9	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	62			46	
cM capacity (veh/h)	19	633			883	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	266	361	361	488	473	460	460
Volume Left	26	0	0	0	473	0	0
Volume Right	240	0	0	488	0	0	0
cSH	199	1700	1700	1700	883	1700	1700
Volume to Capacity	1.34	0.21	0.21	0.29	0.54	0.27	0.27
Queue Length 95th (ft)	375	0	0	0	81	0	0
Control Delay (s)	72.0	0.0	0.0	0.0	13.7	0.0	0.0
Lane LOS	F				B		
Approach Delay (s)	72.0	0.0			4.6		
Approach LOS	F						

Intersection Summary			
Average Delay	8.9		
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

LANE SUMMARY

Site: Capital View Casino & Resort - Existing Friday PM

US Route 4 & Mannix Road
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: US Route 4													
Lane 1	483	3.4	1252	0.386	100	5.5	LOS A	2.9	75.0	Full	1600	0.0	0.0
Lane 2[d]	489	3.7	1269	0.386	100	4.4	LOS A	2.9	75.3	Full	1600	0.0	0.0
Approach	972	3.5		0.386		4.9	LOS A	2.9	75.3				
East: Mannix Road													
Lane 1	202	2.0	683	0.295	100	13.6	LOS B	1.2	31.5	Full	1600	0.0	0.0
Lane 2[d]	216	1.1	731	0.295	100	10.6	LOS B	1.3	31.7	Full	1600	0.0	0.0
Approach	417	1.5		0.295		12.0	LOS B	1.3	31.7				
North: US Route 4													
Lane 1	556	0.9	921	0.604	100	7.9	LOS A	4.4	110.4	Full	1600	0.0	0.0
Lane 2[d]	556	0.9	921	0.604	100	7.4	LOS A	4.4	110.5	Full	1600	0.0	0.0
Approach	1112	0.9		0.604		7.7	LOS A	4.4	110.5				
West: Mannix Road													
Lane 1[d]	52	0.0	400	0.130	100	11.2	LOS B	0.5	13.2	Full	1600	0.0	0.0
Approach	52	0.0		0.130		11.2	LOS B	0.5	13.2				
Intersection	2553	2.0		0.604		7.4	LOS A	4.4	110.5				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	7	118	369	4	9	17
Sign Control		Free	Free		Stop	
Grade		3%	-3%		-3%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	9	159	499	5	12	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	504				680	501
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	504				680	501
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	96
cM capacity (veh/h)	1071				417	574

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	9	159	504	35
Volume Left	9	0	0	12
Volume Right	0	0	5	23
cSH	1071	1700	1700	508
Volume to Capacity	0.01	0.09	0.30	0.07
Queue Length 95th (ft)	1	0	0	6
Control Delay (s)	8.4	0.0	0.0	12.6
Lane LOS	A			B
Approach Delay (s)	0.5		0.0	12.6
Approach LOS				B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	29.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	12	797	3	7	940
Sign Control	Stop		Free			Free
Grade	-7%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	12	813	3	7	959
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			710			499
pX, platoon unblocked	0.83	0.76			0.76	
vC, conflicting volume	1309	815			816	
vC1, stage 1 conf vol	815					
vC2, stage 2 conf vol	494					
vCu, unblocked vol	650	600			602	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			99	
cM capacity (veh/h)	384	342			750	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2	SB 3
Volume Total	12	816	7	480	480
Volume Left	0	0	7	0	0
Volume Right	12	3	0	0	0
cSH	342	1700	750	1700	1700
Volume to Capacity	0.04	0.48	0.01	0.28	0.28
Queue Length 95th (ft)	3	0	1	0	0
Control Delay (s)	15.9	0.0	9.8	0.0	0.0
Lane LOS	C		A		
Approach Delay (s)	15.9	0.0	0.1		
Approach LOS	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	SEB	Freeway/Dir of Travel	Eastbound Off-Ramp
Agency or Company	CHA	Junction	Exit 9 Off-Ramp
Date Performed	5/20/2014	Jurisdiction	East Greenbush
Analysis Time Period	Friday PM	Analysis Year	2014 Existing

Project Description Capital View Casino & Resort

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	350
Freeway Volume, V_F	3334
Ramp Volume, V_R	1043
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	40.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 980 ft
V_D = 346 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3334	0.92	Level	2	0	0.990	1.00	3660
Ramp	1043	0.92	Level	2	0	0.990	1.00	1145
UpStream								
DownStream	346	0.85	Level	1	0	0.995	1.00	409

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)
S_R = mph (Exhibit 13-11)
S_0 = mph (Exhibit 13-11)
S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.616 using Equation (Exhibit 13-7)
V_{12} = 2694 pc/h
V_3 or V_{av34} 966 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3660	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	2515	Exhibit 13-8	7050	No
V_R	1145	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2694	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 24.3 (pc/mi/ln)
LOS = C (Exhibit 13-2)

Speed Determination

D_s = 0.466 (Exhibit 13-12)
S_R = 54.3 mph (Exhibit 13-12)
S_0 = 71.3 mph (Exhibit 13-12)
S = 57.9 mph (Exhibit 13-13)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	SEB	Freeway/Dir of Travel	Eastbound On-Ramp
Agency or Company	CHA	Junction	Exit 9
Date Performed	5/20/2014	Jurisdiction	East Greenbush
Analysis Time Period	Friday PM	Analysis Year	2014 Existing

Project Description: Capital View Casino & Resort

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 3	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 980 ft	Acceleration Lane Length, L_A: 850	L_{down} = ft
V_u = 1043 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 2291	
	Ramp Volume, V_R: 346	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 30.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2291	0.85	Level	2	0	0.990	1.00	2722
Ramp	346	0.85	Level	1	0	0.995	1.00	409
UpStream	1043	0.92	Level	2	0	0.990	1.00	1145
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 214.03 (Equation 13-6 or 13-7)

P_{FM} = 0.601 using Equation (Exhibit 13-6)

V_{12} = 1637 pc/h

V_3 or V_{av34} 1085 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 1637 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3131	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2046	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 15.9 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

M_S = 0.300 (Exibit 13-11)

S_R= 58.1 mph (Exhibit 13-11)

S_0= 62.9 mph (Exhibit 13-11)

S = 59.7 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	SEB	Freeway/Dir of Travel	Westbound Off-Ramp
Agency or Company	CHA	Junction	Exit 9 Off-Ramp
Date Performed	5/20/2014	Jurisdiction	East Greenbush
Analysis Time Period	Friday PM	Analysis Year	2014 Existing

Project Description Capital View Casino & Resort

Inputs

Upstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off; L_{up} = ft; V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	540
Freeway Volume, V_F	1756
Ramp Volume, V_R	247
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	40.0

Downstream Adj Ramp: ☑ Yes ☑ On ☐ No ☐ Off; L_{down} = 1155 ft; V_D = 894 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	1756	0.88	Level	2	0	0.990	1.00	2015
Ramp	247	0.88	Level	3	0	0.985	1.00	285
UpStream								
DownStream	894	0.83	Level	1	0	0.995	1.00	1082

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.697 using Equation (Exhibit 13-7)

V_{12} = 1490 pc/h

V_3 or V_{av34} 525 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	2015	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	1730	Exhibit 13-8	7050	No
V_R	285	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	1490	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 12.2 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

D_s = 0.389 (Exhibit 13-12)

S_R = 56.1 mph (Exhibit 13-12)

S_0 = 71.3 mph (Exhibit 13-12)

S = 59.4 mph (Exhibit 13-13)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	SEB	Freeway/Dir of Travel	Westbound On-Ramp
Agency or Company	CHA	Junction	Exit 9
Date Performed	5/20/2014	Jurisdiction	East Greenbush
Analysis Time Period	Friday PM	Analysis Year	2014 Existing

Project Description: Capital View Casino & Resort

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 3	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 1155 ft	Acceleration Lane Length, L_A: 1450	L_{down} = ft
V_u = 247 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 1509	
	Ramp Volume, V_R: 894	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 30.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	1509	0.83	Level	2	0	0.990	1.00	1836
Ramp	894	0.83	Level	1	0	0.995	1.00	1082
UpStream	247	0.88	Level	3	0	0.985	1.00	285
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 434.85 (Equation 13-6 or 13-7)

P_{FM} = 0.618 using Equation (Exhibit 13-6)

V_{12} = 1135 pc/h

V_3 or V_{av34} 701 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 1135 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	2918	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2217	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 13.2 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

M_S = 0.270 (Exibit 13-11)

S_R = 58.8 mph (Exhibit 13-11)

S_0 = 64.3 mph (Exhibit 13-11)

S = 60.0 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	103	391	55	951	579	178
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1615	1736	3574	3574	1615
Flt Permitted	0.95	1.00	0.29	1.00	1.00	1.00
Satd. Flow (perm)	1787	1615	529	3574	3574	1615
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	108	412	58	1001	609	187
RTOR Reduction (vph)	0	68	0	0	0	89
Lane Group Flow (vph)	108	344	58	1001	609	98
Heavy Vehicles (%)	1%	0%	4%	1%	1%	0%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	3	1	1	5	2	3
Permitted Phases		3	5			2
Actuated Green, G (s)	9.7	17.6	32.6	32.6	18.7	28.4
Effective Green, g (s)	9.7	17.6	32.6	32.6	18.7	28.4
Actuated g/C Ratio	0.18	0.32	0.60	0.60	0.34	0.52
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.5	3.0	3.0	5.0	5.0	3.5
Lane Grp Cap (vph)	319	701	493	2145	1230	1023
v/s Ratio Prot	0.06	c0.07	0.02	c0.28	0.17	0.02
v/s Ratio Perm		0.14	0.05			0.04
v/c Ratio	0.34	0.49	0.12	0.47	0.50	0.10
Uniform Delay, d1	19.5	14.8	5.1	6.0	14.1	6.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.5	0.1	0.3	0.7	0.0
Delay (s)	20.2	15.3	5.2	6.4	14.7	6.6
Level of Service	C	B	A	A	B	A
Approach Delay (s)	16.3			6.3	12.8	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	54.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	3	6	5	898	794	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Grade (%)	2%			-3%	1%	
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1476	1909	3555	
Flt Permitted	0.95	1.00	0.28	1.00	1.00	
Satd. Flow (perm)	1787	1599	437	1909	3555	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	7	5	976	863	2
RTOR Reduction (vph)	0	7	0	0	0	0
Lane Group Flow (vph)	3	0	5	976	865	0
Heavy Vehicles (%)	0%	0%	20%	1%	1%	0%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8	6			
Actuated Green, G (s)	0.8	1.4	46.9	46.9	40.3	
Effective Green, g (s)	0.8	1.4	46.9	46.9	40.3	
Actuated g/C Ratio	0.01	0.02	0.79	0.79	0.68	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	2.0	2.0	4.0	4.0	
Lane Grp Cap (vph)	23	198	353	1499	2399	
v/s Ratio Prot	c0.00	0.00	0.00	c0.51	0.24	
v/s Ratio Perm		0.00	0.01			
v/c Ratio	0.13	0.00	0.01	0.65	0.36	
Uniform Delay, d1	29.1	28.5	1.7	2.8	4.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.6	0.0	0.0	1.1	0.1	
Delay (s)	31.7	28.5	1.7	3.9	4.3	
Level of Service	C	C	A	A	A	
Approach Delay (s)	29.4			3.9	4.3	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	4.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	1	226	8	3	16	268	619	8	15	570	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12	11	11	12	11	11	11
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	0.95	
Frt		1.00	0.85		0.92		1.00	1.00		1.00	0.97	
Flt Protected		0.95	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1775	1561		1720		1728	1815		1745	3360	
Flt Permitted		0.71	1.00		0.88		0.26	1.00		0.39	1.00	
Satd. Flow (perm)		1315	1561		1545		478	1815		712	3360	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	118	1	248	9	3	18	295	680	9	16	626	140
RTOR Reduction (vph)	0	0	127	0	16	0	0	0	0	0	17	0
Lane Group Flow (vph)	0	119	121	0	14	0	295	689	0	16	749	0
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	1%	1%	0%	0%	1%	1%
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	1		8		1	6		5	2	
Permitted Phases	4		4	8			6			2		
Actuated Green, G (s)		8.9	18.7		8.9		45.6	39.9		31.5	30.8	
Effective Green, g (s)		8.9	18.7		8.9		45.6	39.9		31.5	30.8	
Actuated g/C Ratio		0.14	0.29		0.14		0.71	0.62		0.49	0.48	
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0	2.0		2.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)		181	573		213		527	1122		358	1604	
v/s Ratio Prot			0.03				c0.08	c0.38		0.00	0.22	
v/s Ratio Perm		c0.09	0.05		0.01		0.31			0.02		
v/c Ratio		0.66	0.21		0.07		0.56	0.61		0.04	0.47	
Uniform Delay, d1		26.4	17.3		24.2		4.7	7.6		8.5	11.3	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		6.4	0.1		0.0		0.7	1.4		0.0	0.5	
Delay (s)		32.8	17.4		24.2		5.4	9.0		8.5	11.8	
Level of Service		C	B		C		A	A		A	B	
Approach Delay (s)		22.4			24.2			7.9			11.7	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	64.5	Sum of lost time (s)	15.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	280	144	137	599	572	302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11
Grade (%)	3%			0%	0%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1702	1523	1728	1818	3276	
Flt Permitted	0.95	1.00	0.23	1.00	1.00	
Satd. Flow (perm)	1702	1523	419	1818	3276	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	295	152	144	631	602	318
RTOR Reduction (vph)	0	99	0	0	51	0
Lane Group Flow (vph)	295	53	144	631	869	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	3	6	6	1	5	
Permitted Phases		3	1			
Actuated Green, G (s)	18.2	24.7	43.8	43.8	32.3	
Effective Green, g (s)	18.2	24.7	43.8	43.8	32.3	
Actuated g/C Ratio	0.25	0.34	0.61	0.61	0.45	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	5.0	5.0	
Lane Grp Cap (vph)	430	628	373	1105	1469	
v/s Ratio Prot	c0.17	0.01	0.03	c0.35	0.27	
v/s Ratio Perm		0.03	0.20			
v/c Ratio	0.69	0.08	0.39	0.57	0.59	
Uniform Delay, d1	24.3	16.0	13.3	8.5	14.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.6	0.0	0.2	1.1	1.0	
Delay (s)	27.9	16.0	13.6	9.6	15.9	
Level of Service	C	B	B	A	B	
Approach Delay (s)	23.9			10.3	15.9	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	72.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	337	16	181	54	18	42	187	728	62	61	684	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	12	11	11	11	11	11	12
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	0.95	1.00
Frt		1.00	0.85		0.95		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1804	1607		1704		1745	1799		1745	3455	1615
Flt Permitted		0.66	1.00		0.53		0.29	1.00		0.13	1.00	1.00
Satd. Flow (perm)		1245	1607		930		524	1799		244	3455	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	344	16	185	55	18	43	191	743	63	62	698	385
RTOR Reduction (vph)	0	0	91	0	16	0	0	2	0	0	0	204
Lane Group Flow (vph)	0	360	94	0	100	0	191	804	0	62	698	181
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		7			3		5	2		1	6	
Permitted Phases	7		7	3			2			6		6
Actuated Green, G (s)		30.6	30.6		30.6		63.6	53.9		53.8	49.0	49.0
Effective Green, g (s)		30.6	30.6		30.6		63.6	53.9		53.8	49.0	49.0
Actuated g/C Ratio		0.29	0.29		0.29		0.61	0.52		0.52	0.47	0.47
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0		2.0		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)		365	471		272		433	929		194	1623	758
v/s Ratio Prot							c0.04	c0.45		0.01	0.20	
v/s Ratio Perm		c0.29	0.06		0.11		0.23			0.15		0.11
v/c Ratio		0.99	0.20		0.37		0.44	0.86		0.32	0.43	0.24
Uniform Delay, d1		36.6	27.7		29.2		10.2	22.0		17.7	18.4	16.5
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		43.0	0.1		0.3		0.3	9.2		0.3	0.4	0.3
Delay (s)		79.6	27.7		29.5		10.5	31.2		18.1	18.8	16.9
Level of Service		E	C		C		B	C		B	B	B
Approach Delay (s)		62.0			29.5			27.2			18.1	
Approach LOS		E			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	104.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	34	4	275	21	9	7	250	788	10	6	830	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0	5.0	5.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1745	1837	1546	1745	1716		1745	1818	1561	1745	3444	
Flt Permitted	1.00	1.00	1.00	1.00	1.00		0.19	1.00	1.00	0.15	1.00	
Satd. Flow (perm)	1837	1837	1546	1837	1716		349	1818	1561	280	3444	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	35	4	286	22	9	7	260	821	10	6	865	20
RTOR Reduction (vph)	0	0	186	0	7	0	0	0	3	0	1	0
Lane Group Flow (vph)	35	4	100	22	9	0	260	821	7	6	884	0
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	4	7	2	8	3		2	5	8	6	1	
Permitted Phases	7		7	3			5		5	1		
Actuated Green, G (s)	4.8	1.1	28.3	8.4	2.9		59.4	52.2	57.7	27.4	26.2	
Effective Green, g (s)	4.8	1.1	28.3	8.4	2.9		59.4	52.2	57.7	27.4	26.2	
Actuated g/C Ratio	0.06	0.01	0.35	0.10	0.04		0.73	0.64	0.71	0.34	0.32	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0	5.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	4.0	2.0	2.0	4.0	
Lane Grp Cap (vph)	104	24	540	184	61		724	1171	1111	116	1113	
v/s Ratio Prot	c0.02	0.00	0.06	0.01	c0.01		c0.12	c0.45	0.00	0.00	0.26	
v/s Ratio Perm	0.00		0.00	0.00			0.14		0.00	0.02		
v/c Ratio	0.34	0.17	0.19	0.12	0.15		0.36	0.70	0.01	0.05	0.79	
Uniform Delay, d1	36.6	39.5	18.3	33.0	37.9		11.8	9.3	3.4	19.8	24.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	1.2	0.1	0.1	0.4		0.1	2.1	0.0	0.1	4.2	
Delay (s)	37.3	40.7	18.4	33.1	38.3		11.9	11.4	3.4	19.9	29.2	
Level of Service	D	D	B	C	D		B	B	A	B	C	
Approach Delay (s)		20.7			35.3			11.4			29.1	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	252	191	64	216	280	62	63	537	226	68	585	307
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-2%			0%			0%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3467	3470	1440	3537	3540	1599	1703	3574	1583	3502	3574	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3467	3470	1440	3537	3540	1599	1703	3574	1583	3502	3574	1615
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	268	203	68	230	298	66	67	571	240	72	622	327
RTOR Reduction (vph)	0	0	55	0	0	56	0	0	161	0	0	211
Lane Group Flow (vph)	268	203	13	230	298	10	67	571	79	72	622	116
Heavy Vehicles (%)	0%	3%	11%	0%	3%	2%	6%	1%	2%	0%	1%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		2	5		6	1	
Permitted Phases			7			3			5			1
Actuated Green, G (s)	15.0	17.0	17.0	11.7	13.7	13.7	7.2	28.5	28.5	9.5	30.8	30.8
Effective Green, g (s)	15.0	17.0	17.0	11.7	13.7	13.7	7.2	28.5	28.5	9.5	30.8	30.8
Actuated g/C Ratio	0.17	0.20	0.20	0.13	0.16	0.16	0.08	0.33	0.33	0.11	0.36	0.36
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	2.0	2.0	2.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)	599	680	282	477	559	252	141	1174	520	383	1269	573
v/s Ratio Prot	c0.08	0.06		0.07	c0.08		c0.04	0.16		0.02	c0.17	
v/s Ratio Perm			0.01			0.01			0.05			0.07
v/c Ratio	0.45	0.30	0.05	0.48	0.53	0.04	0.48	0.49	0.15	0.19	0.49	0.20
Uniform Delay, d1	32.1	29.8	28.3	34.7	33.6	30.9	37.9	23.3	20.6	35.1	21.8	19.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.3	0.1	0.3	0.5	0.0	0.9	0.7	0.3	0.1	0.6	0.4
Delay (s)	32.9	30.1	28.4	35.0	34.1	31.0	38.9	23.9	20.8	35.2	22.4	19.8
Level of Service	C	C	C	C	C	C	D	C	C	D	C	B
Approach Delay (s)		31.3			34.1			24.2			22.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	86.7	Sum of lost time (s)	20.0
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	51	215	678	372	102	703
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	55	231	729	400	110	756
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		8				
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1326	365			729	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1326	365			729	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	58	64			87	
cM capacity (veh/h)	131	638			877	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	286	365	365	400	110	378	378
Volume Left	55	0	0	0	110	0	0
Volume Right	231	0	0	400	0	0	0
cSH	682	1700	1700	1700	877	1700	1700
Volume to Capacity	0.42	0.21	0.21	0.24	0.13	0.22	0.22
Queue Length 95th (ft)	52	0	0	0	11	0	0
Control Delay (s)	21.0	0.0	0.0	0.0	9.7	0.0	0.0
Lane LOS	C				A		
Approach Delay (s)	21.0	0.0			1.2		
Approach LOS	C						

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		

LANE SUMMARY

Site: Capital View Casino & Resort - Existing Saturday Midday

US Route 4 & Mannix Road
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: US Route 4													
Lane 1	499	0.9	1314	0.380	100	4.6	LOS A	2.7	69.1	Full	1600	0.0	0.0
Lane 2[d]	507	0.9	1335	0.380	100	4.2	LOS A	2.7	69.2	Full	1600	0.0	0.0
Approach	1005	0.9		0.380		4.4	LOS A	2.7	69.2				
East: Mannix Road													
Lane 1	27	0.0	700	0.039	100	13.0	LOS B	0.1	3.5	Full	1600	0.0	0.0
Lane 2[d]	29	0.0	742	0.039	100	7.8	LOS A	0.1	3.6	Full	1600	0.0	0.0
Approach	56	0.0		0.039		10.3	LOS B	0.1	3.6				
North: US Route 4													
Lane 1	437	1.0	1189	0.368	100	4.7	LOS A	2.1	53.0	Full	1600	0.0	0.0
Lane 2[d]	437	0.9	1189	0.368	100	4.4	LOS A	2.1	53.0	Full	1600	0.0	0.0
Approach	875	0.9		0.368		4.6	LOS A	2.1	53.0				
West: Mannix Road													
Lane 1[d]	48	0.0	598	0.081	100	10.1	LOS B	0.3	7.3	Full	1600	0.0	0.0
Approach	48	0.0		0.081		10.1	LOS B	0.3	7.3				
Intersection	1985	0.9		0.380		4.8	LOS A	2.7	69.2				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	10	46	52	3	12	9
Sign Control		Free	Free		Stop	
Grade		3%	-3%		-3%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	12	55	63	4	14	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	66				144	64
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	66				144	64
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				98	99
cM capacity (veh/h)	1548				847	1005

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	12	55	66	25
Volume Left	12	0	0	14
Volume Right	0	0	4	11
cSH	1548	1700	1700	908
Volume to Capacity	0.01	0.03	0.04	0.03
Queue Length 95th (ft)	1	0	0	2
Control Delay (s)	7.3	0.0	0.0	9.1
Lane LOS	A			A
Approach Delay (s)	1.3		0.0	9.1
Approach LOS				A

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	8	884	7	6	777
Sign Control	Stop		Free			Free
Grade	-7%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	9	982	8	7	863
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			710			499
pX, platoon unblocked	0.67	0.62			0.62	
vC, conflicting volume	1431	986			990	
vC1, stage 1 conf vol	986					
vC2, stage 2 conf vol	445					
vCu, unblocked vol	770	668			674	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			99	
cM capacity (veh/h)	287	251			572	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2	SB 3
Volume Total	9	990	7	432	432
Volume Left	0	0	7	0	0
Volume Right	9	8	0	0	0
cSH	251	1700	572	1700	1700
Volume to Capacity	0.04	0.58	0.01	0.25	0.25
Queue Length 95th (ft)	3	0	1	0	0
Control Delay (s)	19.9	0.0	11.4	0.0	0.0
Lane LOS	C		B		
Approach Delay (s)	19.9	0.0	0.1		
Approach LOS	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		

2016 No-Build

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	194	892	84	962	659	276
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1671	1599	1787	3574	3574	1599
Flt Permitted	0.95	1.00	0.19	1.00	1.00	1.00
Satd. Flow (perm)	1671	1599	348	3574	3574	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	204	939	88	1013	694	291
RTOR Reduction (vph)	0	33	0	0	0	154
Lane Group Flow (vph)	204	906	88	1013	694	137
Heavy Vehicles (%)	8%	1%	1%	1%	1%	1%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	3	1	1	5	2	3
Permitted Phases		3	5			2
Actuated Green, G (s)	18.5	54.0	70.6	70.6	29.1	47.6
Effective Green, g (s)	18.5	54.0	70.6	70.6	29.1	47.6
Actuated g/C Ratio	0.18	0.53	0.70	0.70	0.29	0.47
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.5	3.0	3.0	5.0	5.0	3.5
Lane Grp Cap (vph)	305	948	748	2495	1028	847
v/s Ratio Prot	0.12	c0.34	0.04	0.28	c0.19	0.03
v/s Ratio Perm		0.23	0.04			0.06
v/c Ratio	0.67	0.96	0.12	0.41	0.68	0.16
Uniform Delay, d1	38.4	22.4	6.7	6.4	31.8	15.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.7	19.2	0.1	0.2	2.3	0.1
Delay (s)	44.1	41.6	6.8	6.6	34.1	15.4
Level of Service	D	D	A	A	C	B
Approach Delay (s)	42.0			6.7	28.6	
Approach LOS	D			A	C	

Intersection Summary			
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	101.1	Sum of lost time (s)	18.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	7	29	29	817	960	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Grade (%)	2%			-3%	1%	
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1321	1093	1909	3577	
Flt Permitted	0.95	1.00	0.21	1.00	1.00	
Satd. Flow (perm)	1787	1321	245	1909	3577	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	7	30	30	851	1000	14
RTOR Reduction (vph)	0	28	0	0	0	0
Lane Group Flow (vph)	7	2	30	851	1014	0
Heavy Vehicles (%)	0%	21%	62%	1%	0%	15%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8	6			
Actuated Green, G (s)	1.0	4.0	40.7	40.7	31.7	
Effective Green, g (s)	1.0	4.0	40.7	40.7	31.7	
Actuated g/C Ratio	0.02	0.07	0.76	0.76	0.59	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	2.0	2.0	4.0	4.0	
Lane Grp Cap (vph)	33	245	233	1446	2111	
v/s Ratio Prot	c0.00	0.00	0.01	c0.45	0.28	
v/s Ratio Perm		0.00	0.09			
v/c Ratio	0.21	0.01	0.13	0.59	0.48	
Uniform Delay, d1	26.0	23.0	2.5	2.8	6.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.2	0.0	0.1	0.7	0.2	
Delay (s)	29.2	23.0	2.6	3.6	6.5	
Level of Service	C	C	A	A	A	
Approach Delay (s)	24.2			3.5	6.5	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	53.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	1	226	6	2	13	193	602	2	10	715	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12	11	11	12	11	11	11
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	0.95	
Frt		1.00	0.85		0.91		1.00	1.00		1.00	0.98	
Flt Protected		0.95	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1810	1561		1713		1728	1800		1745	3363	
Flt Permitted		0.71	1.00		0.89		0.24	1.00		0.41	1.00	
Satd. Flow (perm)		1353	1561		1554		428	1800		753	3363	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	98	1	238	6	2	14	203	634	2	11	753	113
RTOR Reduction (vph)	0	0	92	0	12	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	99	146	0	10	0	203	636	0	11	856	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	2%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	1		8		1	6		5	2	
Permitted Phases	4		4	8			6			2		
Actuated Green, G (s)		7.7	15.2		7.7		44.0	38.3		32.2	31.5	
Effective Green, g (s)		7.7	15.2		7.7		44.0	38.3		32.2	31.5	
Actuated g/C Ratio		0.12	0.25		0.12		0.71	0.62		0.52	0.51	
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0	2.0		2.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)		168	511		193		463	1117		404	1716	
v/s Ratio Prot			c0.03				0.05	c0.35		0.00	0.25	
v/s Ratio Perm		c0.07	0.06		0.01		0.26			0.01		
v/c Ratio		0.59	0.29		0.05		0.44	0.57		0.03	0.50	
Uniform Delay, d1		25.5	18.8		23.8		4.2	6.9		7.1	9.9	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.4	0.1		0.0		0.2	1.1		0.0	0.5	
Delay (s)		28.9	19.0		23.8		4.4	8.0		7.1	10.4	
Level of Service		C	B		C		A	A		A	B	
Approach Delay (s)		21.9			23.8			7.1			10.4	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	61.7	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	426	233	103	610	627	323
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11
Grade (%)	3%			0%	0%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1669	1508	1646	1818	3246	
Flt Permitted	0.95	1.00	0.18	1.00	1.00	
Satd. Flow (perm)	1669	1508	312	1818	3246	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	439	240	106	629	646	333
RTOR Reduction (vph)	0	75	0	0	51	0
Lane Group Flow (vph)	439	165	106	629	928	0
Heavy Vehicles (%)	3%	2%	6%	1%	1%	4%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	3	6	6	1	5	
Permitted Phases		3	1			
Actuated Green, G (s)	30.1	39.5	53.2	53.2	38.8	
Effective Green, g (s)	30.1	39.5	53.2	53.2	38.8	
Actuated g/C Ratio	0.32	0.42	0.57	0.57	0.42	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	5.0	5.0	
Lane Grp Cap (vph)	538	719	312	1036	1349	
v/s Ratio Prot	c0.26	0.02	0.03	c0.35	c0.29	
v/s Ratio Perm		0.09	0.16			
v/c Ratio	0.82	0.23	0.34	0.61	0.69	
Uniform Delay, d1	29.1	17.2	22.0	13.2	22.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.8	0.1	0.2	1.5	1.9	
Delay (s)	37.9	17.2	22.2	14.7	24.2	
Level of Service	D	B	C	B	C	
Approach Delay (s)	30.6			15.8	24.2	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	285	5	124	32	11	46	98	927	36	46	846	306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	12	11	11	11	11	11	12
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	0.95	1.00
Frt		1.00	0.85		0.93		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1784	1575		1680		1745	1809		1745	3355	1599
Flt Permitted		0.67	1.00		0.72		0.24	1.00		0.07	1.00	1.00
Satd. Flow (perm)		1257	1575		1232		433	1809		127	3355	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	300	5	131	34	12	48	103	976	38	48	891	322
RTOR Reduction (vph)	0	0	78	0	29	0	0	1	0	0	0	153
Lane Group Flow (vph)	0	305	53	0	65	0	103	1013	0	48	891	169
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	0%	1%	0%	0%	4%	1%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		7			3		5	2		1	6	
Permitted Phases	7		7	3			2			6		6
Actuated Green, G (s)		30.1	30.1		30.1		67.3	60.3		62.5	57.9	57.9
Effective Green, g (s)		30.1	30.1		30.1		67.3	60.3		62.5	57.9	57.9
Actuated g/C Ratio		0.27	0.27		0.27		0.61	0.55		0.57	0.53	0.53
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0		2.0		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)		343	430		337		348	991		139	1765	841
v/s Ratio Prot							c0.02	c0.56		0.01	0.27	
v/s Ratio Perm		c0.24	0.03		0.05		0.16			0.18		0.11
v/c Ratio		0.89	0.12		0.19		0.30	1.02		0.35	0.50	0.20
Uniform Delay, d1		38.3	30.0		30.6		10.2	24.9		24.1	16.8	13.8
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		22.7	0.0		0.1		0.2	34.4		0.5	0.5	0.2
Delay (s)		61.0	30.1		30.7		10.4	59.2		24.7	17.3	14.1
Level of Service		E	C		C		B	E		C	B	B
Approach Delay (s)		51.7			30.7			54.7			16.7	
Approach LOS		D			C			D			B	

Intersection Summary			
HCM 2000 Control Delay	37.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	14	415	19	19	7	264	958	7	8	774	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	12	11	11	11	11	11	11
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0	5.0	5.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1745	1701	1546	1646	1064		1745	1837	1561	1544	3413	
Flt Permitted	0.80	1.00	1.00	1.00	1.00		0.21	1.00	1.00	0.15	1.00	
Satd. Flow (perm)	1469	1701	1546	1733	1064		389	1837	1561	248	3413	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	68	15	432	20	20	7	275	998	7	8	806	15
RTOR Reduction (vph)	0	0	201	0	7	0	0	0	2	0	1	0
Lane Group Flow (vph)	68	15	231	20	20	0	275	998	5	8	820	0
Heavy Vehicles (%)	0%	8%	1%	6%	89%	0%	0%	0%	0%	13%	2%	0%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	4	7	2	8	3		2	5	8	6	1	
Permitted Phases	7		7	3			5		5	1		
Actuated Green, G (s)	11.0	5.0	32.0	8.6	3.8		59.2	51.9	56.7	27.5	26.2	
Effective Green, g (s)	11.0	5.0	32.0	8.6	3.8		59.2	51.9	56.7	27.5	26.2	
Actuated g/C Ratio	0.13	0.06	0.38	0.10	0.05		0.70	0.62	0.68	0.33	0.31	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0	5.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	4.0	2.0	2.0	4.0	
Lane Grp Cap (vph)	212	101	588	172	48		710	1135	1053	101	1064	
v/s Ratio Prot	c0.02	0.01	c0.13	0.01	0.02		0.12	c0.54	0.00	0.00	0.24	
v/s Ratio Perm	0.02		0.02	0.01			0.15		0.00	0.02		
v/c Ratio	0.32	0.15	0.39	0.12	0.42		0.39	0.88	0.00	0.08	0.77	
Uniform Delay, d1	33.0	37.5	18.9	34.3	39.0		12.8	13.4	4.4	22.0	26.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	0.2	0.2	0.1	2.2		0.1	8.2	0.0	0.1	3.7	
Delay (s)	33.3	37.7	19.1	34.4	41.2		13.0	21.6	4.5	22.2	29.9	
Level of Service	C	D	B	C	D		B	C	A	C	C	
Approach Delay (s)		21.5			38.3			19.7			29.8	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	84.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	768	849	93	161	251	88	87	668	320	125	523	597
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-2%			0%			0%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3432	3539	1415	3434	3540	1631	1687	3574	1599	3502	3574	1599
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3432	3539	1415	3434	3540	1631	1687	3574	1599	3502	3574	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	808	894	98	169	264	93	92	703	337	132	551	628
RTOR Reduction (vph)	0	0	43	0	0	82	0	0	207	0	0	445
Lane Group Flow (vph)	808	894	55	169	264	11	92	703	130	132	551	183
Heavy Vehicles (%)	1%	1%	13%	3%	3%	0%	7%	1%	1%	0%	1%	1%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		2	5		6	1	
Permitted Phases			7			3			5			1
Actuated Green, G (s)	44.5	47.9	47.9	11.4	14.8	14.8	12.4	39.4	39.4	10.6	37.6	37.6
Effective Green, g (s)	44.5	47.9	47.9	11.4	14.8	14.8	12.4	39.4	39.4	10.6	37.6	37.6
Actuated g/C Ratio	0.34	0.37	0.37	0.09	0.11	0.11	0.10	0.30	0.30	0.08	0.29	0.29
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	2.0	2.0	2.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)	1181	1311	524	302	405	186	161	1089	487	287	1039	464
v/s Ratio Prot	0.24	c0.25		0.05	c0.07		c0.05	c0.20		0.04	0.15	
v/s Ratio Perm			0.04			0.01			0.08			0.11
v/c Ratio	0.68	0.68	0.11	0.56	0.65	0.06	0.57	0.65	0.27	0.46	0.53	0.39
Uniform Delay, d1	36.4	34.3	26.7	56.5	54.8	51.0	55.9	38.9	34.0	56.6	38.4	36.7
Progression 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
Incremental Delay, d2	1.8	1.6	0.1	1.3	2.9	0.0	3.0	1.8	0.6	0.4	1.0	1.2
Delay (s)	38.2	35.9	26.8	57.8	57.6	51.1	58.9	40.7	34.6	57.0	39.4	37.9
Level of Service	D	D	C	E	E	D	E	D	C	E	D	D
Approach Delay (s)		36.4			56.5			40.4			40.4	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	129.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	25	232	698	472	458	890
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	27	249	751	508	492	957
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		8				
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2214	375			751	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2214	375			751	
tC, single (s)	6.9	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	60			43	
cM capacity (veh/h)	16	619			861	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	276	375	375	508	492	478	478
Volume Left	27	0	0	0	492	0	0
Volume Right	249	0	0	508	0	0	0
cSH	160	1700	1700	1700	861	1700	1700
Volume to Capacity	1.73	0.22	0.22	0.30	0.57	0.28	0.28
Queue Length 95th (ft)	495	0	0	0	93	0	0
Control Delay (s)	96.5	0.0	0.0	0.0	14.6	0.0	0.0
Lane LOS	F				B		
Approach Delay (s)	96.5	0.0			5.0		
Approach LOS	F						

Intersection Summary			
Average Delay	11.4		
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

LANE SUMMARY

Site: Capital View Casino & Resort - No-Build Friday PM

US Route 4 & Mannix Road
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: US Route 4													
Lane 1	502	3.4	1249	0.402	100	5.5	LOS A	3.1	80.2	Full	1600	0.0	0.0
Lane 2[d]	509	3.7	1267	0.402	100	4.4	LOS A	3.1	80.6	Full	1600	0.0	0.0
Approach	1011	3.5		0.402		4.9	LOS A	3.1	80.6				
East: Mannix Road													
Lane 1	209	2.0	667	0.314	100	13.8	LOS B	1.3	34.1	Full	1600	0.0	0.0
Lane 2[d]	225	1.1	717	0.314	100	10.7	LOS B	1.4	34.2	Full	1600	0.0	0.0
Approach	435	1.5		0.314		12.2	LOS B	1.4	34.2				
North: US Route 4													
Lane 1	578	0.9	911	0.635	100	8.3	LOS A	4.9	122.9	Full	1600	0.0	0.0
Lane 2[d]	578	0.9	910	0.635	100	7.9	LOS A	4.9	122.9	Full	1600	0.0	0.0
Approach	1157	0.9		0.635		8.1	LOS A	4.9	122.9				
West: Mannix Road													
Lane 1[d]	53	0.0	382	0.140	100	11.5	LOS B	0.6	14.2	Full	1600	0.0	0.0
Approach	53	0.0		0.140		11.5	LOS B	0.6	14.2				
Intersection	2655	2.0		0.635		7.6	LOS A	4.9	122.9				

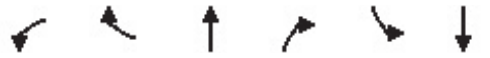
Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	7	123	384	4	9	18
Sign Control		Free	Free		Stop	
Grade		3%	-3%		-3%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	9	166	519	5	12	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	524				707	522
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	524				707	522
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	96
cM capacity (veh/h)	1053				402	559

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	9	166	524	36
Volume Left	9	0	0	12
Volume Right	0	0	5	24
cSH	1053	1700	1700	495
Volume to Capacity	0.01	0.10	0.31	0.07
Queue Length 95th (ft)	1	0	0	6
Control Delay (s)	8.5	0.0	0.0	12.9
Lane LOS	A			B
Approach Delay (s)	0.5		0.0	12.9
Approach LOS				B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	12	829	3	7	978
Sign Control	Stop		Free			Free
Grade	-7%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	12	846	3	7	998
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			710			499
pX, platoon unblocked	0.81	0.74			0.74	
vC, conflicting volume	1361	847			849	
vC1, stage 1 conf vol	847					
vC2, stage 2 conf vol	513					
vCu, unblocked vol	662	619			621	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	96			99	
cM capacity (veh/h)	365	324			718	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2	SB 3
Volume Total	12	849	7	499	499
Volume Left	0	0	7	0	0
Volume Right	12	3	0	0	0
cSH	324	1700	718	1700	1700
Volume to Capacity	0.04	0.50	0.01	0.29	0.29
Queue Length 95th (ft)	3	0	1	0	0
Control Delay (s)	16.6	0.0	10.1	0.0	0.0
Lane LOS	C		B		
Approach Delay (s)	16.6	0.0	0.1		
Approach LOS	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	SEB	Freeway/Dir of Travel	Eastbound Off-Ramp
Agency or Company	CHA	Junction	Exit 9 Off-Ramp
Date Performed	5/20/2014	Jurisdiction	East Greenbush
Analysis Time Period	Friday PM	Analysis Year	2016 No-Build

Project Description Capital View Casino & Resort

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 3	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 980 ft
V_u = veh/h	Deceleration Lane Length L_D: 350	V_D = 360 veh/h
	Freeway Volume, V_F: 3469	
	Ramp Volume, V_R: 1086	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 40.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3469	0.92	Level	2	0	0.990	1.00	3808
Ramp	1086	0.92	Level	2	0	0.990	1.00	1192
UpStream								
DownStream	360	0.85	Level	1	0	0.995	1.00	426

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.610 using Equation (Exhibit 13-7)

V_{12} = 2788 pc/h

V_3 or V_{av34} 1020 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3808	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	2616	Exhibit 13-8	7050	No
V_R	1192	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2788	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 25.1 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

D_s = 0.470 (Exhibit 13-12)

S_R = 54.2 mph (Exhibit 13-12)

S_0 = 71.2 mph (Exhibit 13-12)

S = 57.9 mph (Exhibit 13-13)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	SEB	Freeway/Dir of Travel	Eastbound On-Ramp
Agency or Company	CHA	Junction	Exit 9
Date Performed	5/20/2014	Jurisdiction	East Greenbush
Analysis Time Period	Friday PM	Analysis Year	2016 No-Build

Project Description Capital View Casino & Resort

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 980 ft
V_u = 1086 veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	850
Deceleration Lane Length L_D	
Freeway Volume, V_F	2383
Ramp Volume, V_R	360
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	30.0

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2383	0.85	Level	2	0	0.990	1.00	2832
Ramp	360	0.85	Level	1	0	0.995	1.00	426
UpStream	1086	0.92	Level	2	0	0.990	1.00	1192
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 241.21 (Equation 13-6 or 13-7)
P_{FM} = 0.601 using Equation (Exhibit 13-6)
V_{12} = 1703 pc/h
V_3 or V_{av34} 1129 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 1703 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3258	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2129	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 16.6 (pc/mi/ln)
LOS = B (Exhibit 13-2)

Speed Determination

M_S = 0.303 (Exibit 13-11)
S_R= 58.0 mph (Exhibit 13-11)
S_0= 62.7 mph (Exhibit 13-11)
S = 59.6 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = using Equation (Exhibit 13-7)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)
S_R= mph (Exhibit 13-12)
S_0= mph (Exhibit 13-12)
S = mph (Exhibit 13-13)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	SEB	Freeway/Dir of Travel	Westbound Off-Ramp
Agency or Company	CHA	Junction	Exit 9 Off-Ramp
Date Performed	5/20/2014	Jurisdiction	East Greenbush
Analysis Time Period	Friday PM	Analysis Year	2016 No-Build

Project Description Capital View Casino & Resort

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	540
Freeway Volume, V_F	1827
Ramp Volume, V_R	257
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	40.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1155 ft
V_D = 930 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	1827	0.88	Level	2	0	0.990	1.00	2097
Ramp	257	0.88	Level	3	0	0.985	1.00	296
UpStream								
DownStream	930	0.83	Level	1	0	0.995	1.00	1126

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)
S_R = mph (Exhibit 13-11)
S_0 = mph (Exhibit 13-11)
S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.694 using Equation (Exhibit 13-7)
V_{12} = 1546 pc/h
V_3 or V_{av34} 551 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	2097	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	1801	Exhibit 13-8	7050	No
V_R	296	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	1546	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$
D_R = 12.7 (pc/mi/ln)
LOS = B (Exhibit 13-2)

Speed Determination

D_s = 0.390 (Exhibit 13-12)
S_R = 56.0 mph (Exhibit 13-12)
S_0 = 71.3 mph (Exhibit 13-12)
S = 59.4 mph (Exhibit 13-13)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	SEB	Freeway/Dir of Travel	Westbound On-Ramp
Agency or Company	CHA	Junction	Exit 9
Date Performed	5/20/2014	Jurisdiction	East Greenbush
Analysis Time Period	Friday PM	Analysis Year	2016 No-Build

Project Description Capital View Casino & Resort

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 3	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 1155 ft	Acceleration Lane Length, L_A: 1450	L_{down} = ft
V_u = 257 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 1570	
	Ramp Volume, V_R: 930	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 30.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	1570	0.83	Level	2	0	0.990	1.00	1910
Ramp	930	0.83	Level	1	0	0.995	1.00	1126
UpStream	257	0.88	Level	3	0	0.985	1.00	296
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 460.10 (Equation 13-6 or 13-7)

P_{FM} = 0.618 using Equation (Exhibit 13-6)

V_{12} = 1181 pc/h

V_3 or V_{av34} 729 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 1181 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3036	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2307	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 13.9 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

M_S = 0.273 (Exibit 13-11)

S_R= 58.7 mph (Exhibit 13-11)

S_0= 64.2 mph (Exhibit 13-11)

S = 59.9 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	107	407	57	989	602	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1615	1736	3574	3574	1615
Flt Permitted	0.95	1.00	0.28	1.00	1.00	1.00
Satd. Flow (perm)	1787	1615	505	3574	3574	1615
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	113	428	60	1041	634	195
RTOR Reduction (vph)	0	61	0	0	0	93
Lane Group Flow (vph)	113	367	60	1041	634	102
Heavy Vehicles (%)	1%	0%	4%	1%	1%	0%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	3	1	1	5	2	3
Permitted Phases		3	5			2
Actuated Green, G (s)	10.0	18.6	34.0	34.0	19.4	29.4
Effective Green, g (s)	10.0	18.6	34.0	34.0	19.4	29.4
Actuated g/C Ratio	0.18	0.33	0.61	0.61	0.35	0.52
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.5	3.0	3.0	5.0	5.0	3.5
Lane Grp Cap (vph)	319	709	495	2169	1238	1020
v/s Ratio Prot	0.06	c0.08	0.02	c0.29	0.18	0.02
v/s Ratio Perm		0.15	0.05			0.05
v/c Ratio	0.35	0.52	0.12	0.48	0.51	0.10
Uniform Delay, d1	20.2	15.1	5.1	6.1	14.5	6.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.6	0.1	0.4	0.7	0.1
Delay (s)	21.0	15.7	5.3	6.5	15.3	6.7
Level of Service	C	B	A	A	B	A
Approach Delay (s)	16.8			6.4	13.2	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	56.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	3	6	5	934	826	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12
Grade (%)	2%			-3%	1%	
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	1.00	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1787	1599	1476	1909	3555	
Flt Permitted	0.95	1.00	0.27	1.00	1.00	
Satd. Flow (perm)	1787	1599	421	1909	3555	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	7	5	1015	898	2
RTOR Reduction (vph)	0	7	0	0	0	0
Lane Group Flow (vph)	3	0	5	1015	900	0
Heavy Vehicles (%)	0%	0%	20%	1%	1%	0%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	8	1	1	6	2	
Permitted Phases		8	6			
Actuated Green, G (s)	0.8	1.4	48.6	48.6	42.0	
Effective Green, g (s)	0.8	1.4	48.6	48.6	42.0	
Actuated g/C Ratio	0.01	0.02	0.79	0.79	0.68	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	2.0	2.0	4.0	4.0	
Lane Grp Cap (vph)	23	192	343	1511	2431	
v/s Ratio Prot	c0.00	0.00	0.00	c0.53	0.25	
v/s Ratio Perm		0.00	0.01			
v/c Ratio	0.13	0.00	0.01	0.67	0.37	
Uniform Delay, d1	30.0	29.3	1.7	2.8	4.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.6	0.0	0.0	1.3	0.1	
Delay (s)	32.5	29.3	1.7	4.1	4.2	
Level of Service	C	C	A	A	A	
Approach Delay (s)	30.3			4.1	4.2	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	4.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	61.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	1	226	8	3	16	268	644	8	15	593	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12	11	11	12	11	11	11
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	0.95	
Frt		1.00	0.85		0.92		1.00	1.00		1.00	0.97	
Flt Protected		0.95	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1775	1561		1720		1728	1815		1745	3364	
Flt Permitted		0.71	1.00		0.89		0.25	1.00		0.36	1.00	
Satd. Flow (perm)		1315	1561		1546		463	1815		670	3364	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	118	1	248	9	3	18	295	708	9	16	652	140
RTOR Reduction (vph)	0	0	118	0	16	0	0	0	0	0	15	0
Lane Group Flow (vph)	0	119	130	0	14	0	295	717	0	16	777	0
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	1%	1%	0%	0%	1%	1%
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	1		8		1	6		5	2	
Permitted Phases	4		4	8			6			2		
Actuated Green, G (s)		9.0	18.8		9.0		46.5	40.8		32.4	31.7	
Effective Green, g (s)		9.0	18.8		9.0		46.5	40.8		32.4	31.7	
Actuated g/C Ratio		0.14	0.29		0.14		0.71	0.62		0.49	0.48	
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0	2.0		2.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)		180	567		212		517	1130		342	1628	
v/s Ratio Prot			0.03				c0.09	c0.39		0.00	0.23	
v/s Ratio Perm		c0.09	0.05		0.01		0.32			0.02		
v/c Ratio		0.66	0.23		0.07		0.57	0.63		0.05	0.48	
Uniform Delay, d1		26.8	17.8		24.6		4.8	7.7		8.5	11.3	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		6.9	0.1		0.0		0.9	1.6		0.0	0.5	
Delay (s)		33.7	17.9		24.6		5.7	9.3		8.5	11.8	
Level of Service		C	B		C		A	A		A	B	
Approach Delay (s)		23.0			24.6			8.3			11.7	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	65.5	Sum of lost time (s)	15.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	291	150	143	623	595	314
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11
Grade (%)	3%			0%	0%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1702	1523	1728	1818	3276	
Flt Permitted	0.95	1.00	0.21	1.00	1.00	
Satd. Flow (perm)	1702	1523	390	1818	3276	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	306	158	151	656	626	331
RTOR Reduction (vph)	0	90	0	0	50	0
Lane Group Flow (vph)	306	68	151	656	907	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	3	6	6	1	5	
Permitted Phases		3	1			
Actuated Green, G (s)	19.4	26.5	46.4	46.4	34.3	
Effective Green, g (s)	19.4	26.5	46.4	46.4	34.3	
Actuated g/C Ratio	0.26	0.35	0.61	0.61	0.45	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	5.0	5.0	
Lane Grp Cap (vph)	435	632	364	1112	1482	
v/s Ratio Prot	c0.18	0.01	0.04	c0.36	0.28	
v/s Ratio Perm		0.03	0.22			
v/c Ratio	0.70	0.11	0.41	0.59	0.61	
Uniform Delay, d1	25.6	16.7	15.0	8.9	15.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.2	0.0	0.3	1.2	1.1	
Delay (s)	29.8	16.7	15.3	10.2	16.8	
Level of Service	C	B	B	B	B	
Approach Delay (s)	25.3			11.1	16.8	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	75.8	Sum of lost time (s)	15.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	337	16	181	56	19	44	187	757	65	63	712	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	12	11	11	11	11	11	12
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	0.95	1.00
Frt		1.00	0.85		0.95		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1804	1607		1704		1745	1798		1745	3455	1615
Flt Permitted		0.65	1.00		0.50		0.28	1.00		0.12	1.00	1.00
Satd. Flow (perm)		1228	1607		871		513	1798		223	3455	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	344	16	185	57	19	45	191	772	66	64	727	385
RTOR Reduction (vph)	0	0	92	0	16	0	0	2	0	0	0	198
Lane Group Flow (vph)	0	360	93	0	105	0	191	836	0	64	727	187
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		7			3		5	2		1	6	
Permitted Phases	7		7	3			2			6		6
Actuated Green, G (s)		30.4	30.4		30.4		66.5	56.9		57.1	52.2	52.2
Effective Green, g (s)		30.4	30.4		30.4		66.5	56.9		57.1	52.2	52.2
Actuated g/C Ratio		0.28	0.28		0.28		0.62	0.53		0.53	0.49	0.49
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0		2.0		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)		348	455		247		428	954		188	1682	786
v/s Ratio Prot							c0.04	c0.46		0.02	0.21	
v/s Ratio Perm		c0.29	0.06		0.12		0.24			0.17		0.12
v/c Ratio		1.03	0.20		0.43		0.45	0.88		0.34	0.43	0.24
Uniform Delay, d1		38.4	29.2		31.3		10.0	22.1		18.2	17.9	16.0
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		57.4	0.1		0.4		0.3	9.8		0.4	0.4	0.3
Delay (s)		95.8	29.3		31.7		10.3	31.8		18.6	18.2	16.3
Level of Service		F	C		C		B	C		B	B	B
Approach Delay (s)		73.2			31.7			27.9			17.6	
Approach LOS		E			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	107.2	Sum of lost time (s)	15.0
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	4	286	22	9	7	260	820	10	6	864	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0	5.0	5.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1745	1837	1546	1745	1716		1745	1818	1561	1745	3444	
Flt Permitted	1.00	1.00	1.00	1.00	1.00		0.18	1.00	1.00	0.14	1.00	
Satd. Flow (perm)	1837	1837	1546	1837	1716		336	1818	1561	261	3444	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	4	298	23	9	7	271	854	10	6	900	21
RTOR Reduction (vph)	0	0	198	0	7	0	0	0	3	0	1	0
Lane Group Flow (vph)	36	4	100	23	9	0	271	854	7	6	920	0
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	4	7	2	8	3		2	5	8	6	1	
Permitted Phases	7		7	3			5		5	1		
Actuated Green, G (s)	4.9	1.1	27.8	8.3	2.8		60.9	53.2	58.7	29.9	28.2	
Effective Green, g (s)	4.9	1.1	27.8	8.3	2.8		60.9	53.2	58.7	29.9	28.2	
Actuated g/C Ratio	0.06	0.01	0.34	0.10	0.03		0.74	0.64	0.71	0.36	0.34	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0	5.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	4.0	2.0	2.0	4.0	
Lane Grp Cap (vph)	104	24	520	178	58		704	1172	1110	125	1177	
v/s Ratio Prot	c0.02	0.00	0.06	0.01	c0.01		c0.12	c0.47	0.00	0.00	0.27	
v/s Ratio Perm	0.00		0.00	0.00			0.16		0.00	0.02		
v/c Ratio	0.35	0.17	0.19	0.13	0.16		0.38	0.73	0.01	0.05	0.78	
Uniform Delay, d1	37.3	40.2	19.4	33.8	38.7		12.4	9.8	3.4	19.4	24.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	1.2	0.1	0.1	0.5		0.1	2.5	0.0	0.1	3.6	
Delay (s)	38.1	41.4	19.5	33.9	39.2		12.5	12.3	3.4	19.4	28.0	
Level of Service	D	D	B	C	D		B	B	A	B	C	
Approach Delay (s)		21.7			36.1			12.2			28.0	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	82.5	Sum of lost time (s)	21.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	262	199	67	225	291	65	66	559	235	71	609	319
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-2%			0%			0%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3467	3470	1440	3537	3540	1599	1703	3574	1583	3502	3574	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3467	3470	1440	3537	3540	1599	1703	3574	1583	3502	3574	1615
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	279	212	71	239	310	69	70	595	250	76	648	339
RTOR Reduction (vph)	0	0	55	0	0	58	0	0	167	0	0	217
Lane Group Flow (vph)	279	212	16	239	310	11	70	595	83	76	648	122
Heavy Vehicles (%)	0%	3%	11%	0%	3%	2%	6%	1%	2%	0%	1%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		2	5		6	1	
Permitted Phases			7			3			5			1
Actuated Green, G (s)	15.6	17.7	17.7	12.3	14.4	14.4	7.5	30.0	30.0	10.0	32.5	32.5
Effective Green, g (s)	15.6	17.7	17.7	12.3	14.4	14.4	7.5	30.0	30.0	10.0	32.5	32.5
Actuated g/C Ratio	0.17	0.20	0.20	0.14	0.16	0.16	0.08	0.33	0.33	0.11	0.36	0.36
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	2.0	2.0	2.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)	600	682	283	483	566	255	141	1191	527	389	1290	583
v/s Ratio Prot	c0.08	0.06		0.07	c0.09		c0.04	0.17		0.02	c0.18	
v/s Ratio Perm			0.01			0.01			0.05			0.08
v/c Ratio	0.47	0.31	0.06	0.49	0.55	0.04	0.50	0.50	0.16	0.20	0.50	0.21
Uniform Delay, d1	33.4	30.9	29.4	36.0	34.8	32.0	39.4	24.0	21.1	36.3	22.4	19.9
Progression 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
Incremental Delay, d2	0.8	0.4	0.1	0.3	0.6	0.0	1.0	0.7	0.3	0.1	0.6	0.4
Delay (s)	34.2	31.3	29.5	36.3	35.4	32.0	40.4	24.7	21.4	36.4	23.1	20.3
Level of Service	C	C	C	D	D	C	D	C	C	D	C	C
Approach Delay (s)		32.5			35.3			25.0			23.1	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	53	224	705	387	106	731
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	57	241	758	416	114	786
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		8				
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1379	379			758	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1379	379			758	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	52	61			87	
cM capacity (veh/h)	120	625			856	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	298	379	379	416	114	393	393
Volume Left	57	0	0	0	114	0	0
Volume Right	241	0	0	416	0	0	0
cSH	625	1700	1700	1700	856	1700	1700
Volume to Capacity	0.48	0.22	0.22	0.24	0.13	0.23	0.23
Queue Length 95th (ft)	64	0	0	0	11	0	0
Control Delay (s)	23.0	0.0	0.0	0.0	9.9	0.0	0.0
Lane LOS	C				A		
Approach Delay (s)	23.0	0.0			1.2		
Approach LOS	C						

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

LANE SUMMARY

Site: Capital View Casino & Resort - No-Build Saturday Midday

US Route 4 & Mannix Road
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: US Route 4													
Lane 1	518	1.0	1311	0.395	100	4.6	LOS A	2.9	73.5	Full	1600	0.0	0.0
Lane 2[d]	527	0.9	1332	0.395	100	4.2	LOS A	2.9	73.6	Full	1600	0.0	0.0
Approach	1045	0.9		0.395		4.4	LOS A	2.9	73.6				
East: Mannix Road													
Lane 1	28	0.0	683	0.041	100	13.1	LOS B	0.2	3.8	Full	1600	0.0	0.0
Lane 2[d]	30	0.0	728	0.041	100	7.9	LOS A	0.2	3.8	Full	1600	0.0	0.0
Approach	58	0.0		0.041		10.5	LOS B	0.2	3.8				
North: US Route 4													
Lane 1	455	1.0	1187	0.384	100	4.7	LOS A	2.2	56.5	Full	1600	0.0	0.0
Lane 2[d]	456	0.9	1187	0.384	100	4.5	LOS A	2.2	56.5	Full	1600	0.0	0.0
Approach	911	0.9		0.384		4.6	LOS A	2.2	56.5				
West: Mannix Road													
Lane 1[d]	51	0.0	587	0.086	100	10.2	LOS B	0.3	7.8	Full	1600	0.0	0.0
Approach	51	0.0		0.086		10.2	LOS B	0.3	7.8				
Intersection	2065	0.9		0.395		4.8	LOS A	2.9	73.6				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	10	48	54	3	12	9
Sign Control		Free	Free		Stop	
Grade		3%	-3%		-3%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	12	58	65	4	14	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	69				149	67
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	69				149	67
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				98	99
cM capacity (veh/h)	1545				842	1002

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	12	58	69	25
Volume Left	12	0	0	14
Volume Right	0	0	4	11
cSH	1545	1700	1700	904
Volume to Capacity	0.01	0.03	0.04	0.03
Queue Length 95th (ft)	1	0	0	2
Control Delay (s)	7.3	0.0	0.0	9.1
Lane LOS	A			A
Approach Delay (s)	1.3		0.0	9.1
Approach LOS				A

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	17.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	8	920	7	6	808
Sign Control	Stop		Free			Free
Grade	-7%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	9	1022	8	7	898
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			710			499
pX, platoon unblocked	0.31	0.25			0.25	
vC, conflicting volume	1488	1026			1030	
vC1, stage 1 conf vol	1026					
vC2, stage 2 conf vol	462					
vCu, unblocked vol	0	0			0	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	97			98	
cM capacity (veh/h)	249	270			405	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2	SB 3
Volume Total	9	1030	7	449	449
Volume Left	0	0	7	0	0
Volume Right	9	8	0	0	0
cSH	270	1700	405	1700	1700
Volume to Capacity	0.03	0.61	0.02	0.26	0.26
Queue Length 95th (ft)	3	0	1	0	0
Control Delay (s)	18.8	0.0	14.0	0.0	0.0
Lane LOS	C		B		
Approach Delay (s)	18.8	0.0	0.1		
Approach LOS	C				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		

2016 Build

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	390	892	84	997	690	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1671	1599	1787	3574	3574	1599
Flt Permitted	0.95	1.00	0.16	1.00	1.00	1.00
Satd. Flow (perm)	1671	1599	296	3574	3574	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	411	939	88	1049	726	332
RTOR Reduction (vph)	0	27	0	0	0	146
Lane Group Flow (vph)	411	912	88	1049	726	186
Heavy Vehicles (%)	8%	1%	1%	1%	1%	1%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	3	1	1	5	2	3
Permitted Phases		3	5			2
Actuated Green, G (s)	33.3	68.5	75.3	75.3	34.1	67.4
Effective Green, g (s)	33.3	68.5	75.3	75.3	34.1	67.4
Actuated g/C Ratio	0.28	0.57	0.62	0.62	0.28	0.56
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.5	3.0	3.0	5.0	5.0	3.5
Lane Grp Cap (vph)	461	987	620	2231	1010	973
v/s Ratio Prot	0.25	c0.27	0.04	0.29	c0.20	0.05
v/s Ratio Perm		0.30	0.05			0.06
v/c Ratio	0.89	0.92	0.14	0.47	0.72	0.19
Uniform Delay, d1	41.9	23.7	11.5	12.0	38.9	13.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.4	13.8	0.1	0.3	3.1	0.1
Delay (s)	61.3	37.5	11.6	12.4	42.0	13.2
Level of Service	E	D	B	B	D	B
Approach Delay (s)	44.7			12.3	33.0	
Approach LOS	D			B	C	

Intersection Summary			
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	84.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	0	29	244	0	143	29	826	274	161	967	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	12	12	12	12	12
Grade (%)		2%			0%			-3%			1%	
Total Lost time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1752	1321	1681	1681	1583	1093	1909	1607	1761	3577	
Flt Permitted		0.67	1.00	0.75	0.75	1.00	0.24	1.00	1.00	0.11	1.00	
Satd. Flow (perm)		1238	1321	1333	1333	1583	272	1909	1607	205	3577	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	7	0	30	254	0	149	30	860	285	168	1007	14
RTOR Reduction (vph)	0	0	24	0	0	52	0	0	135	0	1	0
Lane Group Flow (vph)	0	7	6	127	127	97	30	860	150	168	1020	0
Heavy Vehicles (%)	2%	0%	21%	2%	2%	2%	62%	1%	2%	2%	0%	15%
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	1		8	5	1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		
Actuated Green, G (s)		11.8	14.1	11.8	11.8	15.8	39.9	37.6	37.6	43.3	39.3	
Effective Green, g (s)		11.8	14.1	11.8	11.8	15.8	39.9	37.6	37.6	43.3	39.3	
Actuated g/C Ratio		0.17	0.20	0.17	0.17	0.22	0.56	0.53	0.53	0.61	0.55	
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0	2.0	3.0	3.0	3.0	2.0	4.0	4.0	3.0	4.0	
Lane Grp Cap (vph)		204	371	220	220	483	178	1005	846	211	1968	
v/s Ratio Prot			0.00			0.01	0.01	c0.45		c0.04	0.29	
v/s Ratio Perm		0.01	0.00	c0.10	0.10	0.05	0.09		0.09	0.44		
v/c Ratio		0.03	0.02	0.58	0.58	0.20	0.17	0.86	0.18	0.80	0.52	
Uniform Delay, d1		25.0	23.1	27.5	27.5	22.7	7.4	14.6	8.8	12.9	10.1	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1	0.0	3.6	3.6	0.2	0.2	7.5	0.1	18.5	0.3	
Delay (s)		25.1	23.1	31.1	31.1	22.9	7.6	22.1	9.0	31.3	10.4	
Level of Service		C	C	C	C	C	A	C	A	C	B	
Approach Delay (s)		23.5			28.1			18.5			13.4	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	71.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	1	226	6	2	13	193	745	2	10	876	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12	11	11	12	11	11	11
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	0.95	
Frt		1.00	0.85		0.91		1.00	1.00		1.00	0.98	
Flt Protected		0.95	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1810	1561		1713		1728	1800		1745	3372	
Flt Permitted		0.71	1.00		0.90		0.19	1.00		0.31	1.00	
Satd. Flow (perm)		1353	1561		1560		342	1800		568	3372	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	98	1	238	6	2	14	203	784	2	11	922	113
RTOR Reduction (vph)	0	0	56	0	12	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	99	182	0	10	0	203	786	0	11	1028	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	2%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	1		8		1	6		5	2	
Permitted Phases	4		4	8			6			2		
Actuated Green, G (s)		8.2	16.4		8.2		50.8	45.1		38.3	37.6	
Effective Green, g (s)		8.2	16.4		8.2		50.8	45.1		38.3	37.6	
Actuated g/C Ratio		0.12	0.24		0.12		0.74	0.65		0.56	0.54	
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0	2.0		2.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)		160	484		185		416	1176		327	1837	
v/s Ratio Prot			c0.04				0.06	c0.44		0.00	0.30	
v/s Ratio Perm		c0.07	0.07		0.01		0.30			0.02		
v/c Ratio		0.62	0.38		0.05		0.49	0.67		0.03	0.56	
Uniform Delay, d1		28.9	22.0		27.0		5.0	7.4		7.1	10.3	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.9	0.2		0.0		0.3	1.9		0.0	0.6	
Delay (s)		33.8	22.2		27.0		5.3	9.3		7.2	10.9	
Level of Service		C	C		C		A	A		A	B	
Approach Delay (s)		25.6			27.0			8.5			10.9	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	426	242	111	745	779	323
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11
Grade (%)	3%			0%	0%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1669	1508	1646	1818	3275	
Flt Permitted	0.95	1.00	0.13	1.00	1.00	
Satd. Flow (perm)	1669	1508	219	1818	3275	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	439	249	114	768	803	333
RTOR Reduction (vph)	0	43	0	0	34	0
Lane Group Flow (vph)	439	206	114	768	1102	0
Heavy Vehicles (%)	3%	2%	6%	1%	1%	4%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	3	6	6	1	5	
Permitted Phases		3	1			
Actuated Green, G (s)	32.1	44.6	62.2	62.2	44.7	
Effective Green, g (s)	32.1	44.6	62.2	62.2	44.7	
Actuated g/C Ratio	0.31	0.43	0.60	0.60	0.43	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	5.0	5.0	
Lane Grp Cap (vph)	513	717	301	1084	1403	
v/s Ratio Prot	c0.26	0.03	0.05	c0.42	c0.34	
v/s Ratio Perm		0.10	0.18			
v/c Ratio	0.86	0.29	0.38	0.71	0.79	
Uniform Delay, d1	33.9	19.5	29.0	14.7	25.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.7	0.1	0.3	2.7	3.4	
Delay (s)	46.6	19.6	29.3	17.4	29.1	
Level of Service	D	B	C	B	C	
Approach Delay (s)	36.8			18.9	29.1	
Approach LOS	D			B	C	

Intersection Summary			
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	104.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	285	5	124	32	11	46	98	1062	36	46	998	306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	12	11	11	11	11	11	12
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	0.95	1.00
Frt		1.00	0.85		0.93		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1784	1575		1680		1745	1810		1745	3355	1599
Flt Permitted		0.67	1.00		0.72		0.18	1.00		0.07	1.00	1.00
Satd. Flow (perm)		1256	1575		1227		331	1810		126	3355	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	300	5	131	34	12	48	103	1118	38	48	1051	322
RTOR Reduction (vph)	0	0	78	0	29	0	0	1	0	0	0	152
Lane Group Flow (vph)	0	305	53	0	65	0	103	1155	0	48	1051	170
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	0%	1%	0%	0%	4%	1%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		7			3		5	2		1	6	
Permitted Phases	7		7	3			2			6		6
Actuated Green, G (s)		30.1	30.1		30.1		67.7	60.7		62.9	58.3	58.3
Effective Green, g (s)		30.1	30.1		30.1		67.7	60.7		62.9	58.3	58.3
Actuated g/C Ratio		0.27	0.27		0.27		0.61	0.55		0.57	0.53	0.53
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0		2.0		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)		342	429		334		292	995		139	1771	844
v/s Ratio Prot							c0.02	c0.64		0.01	0.31	
v/s Ratio Perm		c0.24	0.03		0.05		0.19			0.18		0.11
v/c Ratio		0.89	0.12		0.19		0.35	1.16		0.35	0.59	0.20
Uniform Delay, d1		38.6	30.2		30.8		11.2	24.9		24.2	17.9	13.8
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		23.5	0.0		0.1		0.3	83.7		0.5	0.8	0.2
Delay (s)		62.1	30.3		30.9		11.4	108.5		24.8	18.7	14.0
Level of Service		E	C		C		B	F		C	B	B
Approach Delay (s)		52.5			30.9			100.6			17.9	
Approach LOS		D			C			F			B	

Intersection Summary			
HCM 2000 Control Delay	55.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	110.4	Sum of lost time (s)	15.0
Intersection Capacity Utilization	96.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	14	415	19	19	7	264	1093	7	8	926	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	12	11	11	11	11	11	11
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0	5.0	5.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1745	1701	1546	1646	1064		1745	1837	1561	1544	3414	
Flt Permitted	0.44	1.00	1.00	0.78	1.00		0.16	1.00	1.00	0.12	1.00	
Satd. Flow (perm)	807	1701	1546	1359	1064		294	1837	1561	198	3414	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	68	15	432	20	20	7	275	1139	7	8	965	15
RTOR Reduction (vph)	0	0	187	0	7	0	0	0	3	0	1	0
Lane Group Flow (vph)	68	15	245	20	20	0	275	1139	4	8	979	0
Heavy Vehicles (%)	0%	8%	1%	6%	89%	0%	0%	0%	0%	13%	2%	0%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	4	7	2	8	3		2	5	8	6	1	
Permitted Phases	7		7	3			5		5	1		
Actuated Green, G (s)	15.3	9.1	35.6	7.3	5.1		65.4	56.7	58.9	35.6	32.9	
Effective Green, g (s)	15.3	9.1	35.6	7.3	5.1		65.4	56.7	58.9	35.6	32.9	
Actuated g/C Ratio	0.17	0.10	0.39	0.08	0.06		0.71	0.62	0.64	0.39	0.36	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0	5.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	4.0	2.0	2.0	4.0	
Lane Grp Cap (vph)	198	168	600	115	59		628	1135	1002	116	1224	
v/s Ratio Prot	c0.02	0.01	c0.12	0.00	0.02		c0.13	c0.62	0.00	0.00	0.29	
v/s Ratio Perm	0.03		0.04	0.01			0.19		0.00	0.02		
v/c Ratio	0.34	0.09	0.41	0.17	0.35		0.44	1.00	0.00	0.07	0.80	
Uniform Delay, d1	33.2	37.5	20.4	39.3	41.7		16.3	17.5	5.9	21.8	26.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	0.1	0.2	0.3	1.3		0.2	27.6	0.0	0.1	4.1	
Delay (s)	33.6	37.6	20.6	39.6	43.0		16.5	45.1	5.9	21.9	30.5	
Level of Service	C	D	C	D	D		B	D	A	C	C	
Approach Delay (s)		22.8			41.5			39.3			30.4	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	33.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	91.7	Sum of lost time (s)	21.0
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	768	849	180	183	251	88	164	707	339	125	567	597
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-2%			0%			0%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3432	3539	1415	3434	3540	1631	1687	3574	1599	3502	3574	1599
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3432	3539	1415	3434	3540	1631	1687	3574	1599	3502	3574	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	808	894	189	193	264	93	173	744	357	132	597	628
RTOR Reduction (vph)	0	0	45	0	0	83	0	0	206	0	0	399
Lane Group Flow (vph)	808	894	144	193	264	10	173	744	151	132	597	229
Heavy Vehicles (%)	1%	1%	13%	3%	3%	0%	7%	1%	1%	0%	1%	1%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		2	5		6	1	
Permitted Phases			7			3			5			1
Actuated Green, G (s)	45.2	48.0	48.0	12.9	15.7	15.7	19.6	44.1	44.1	17.7	42.2	42.2
Effective Green, g (s)	45.2	48.0	48.0	12.9	15.7	15.7	19.6	44.1	44.1	17.7	42.2	42.2
Actuated g/C Ratio	0.32	0.34	0.34	0.09	0.11	0.11	0.14	0.31	0.31	0.12	0.30	0.30
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	2.0	2.0	2.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)	1087	1190	475	310	389	179	231	1104	494	434	1056	472
v/s Ratio Prot	0.24	c0.25		0.06	c0.07		c0.10	c0.21		0.04	0.17	
v/s Ratio Perm			0.10			0.01			0.09			0.14
v/c Ratio	0.74	0.75	0.30	0.62	0.68	0.06	0.75	0.67	0.31	0.30	0.57	0.48
Uniform Delay, d1	43.6	42.0	35.0	62.6	61.1	56.9	59.2	43.0	37.6	56.9	42.5	41.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	2.9	0.5	2.8	3.7	0.0	11.0	2.1	0.7	0.1	1.1	1.6
Delay (s)	46.5	44.9	35.5	65.3	64.8	56.9	70.2	45.2	38.4	57.0	43.6	42.9
Level of Service	D	D	D	E	E	E	E	D	D	E	D	D
Approach Delay (s)		44.7			63.6			46.7			44.6	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	47.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	142.7	Sum of lost time (s)	20.0
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	25	276	929	472	632	960
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	27	297	999	508	680	1032
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		8				
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2874	499			999	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2874	499			999	
tC, single (s)	6.9	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	42			2	
cM capacity (veh/h)	0	514			695	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	324	499	499	508	680	516	516
Volume Left	27	0	0	0	680	0	0
Volume Right	297	0	0	508	0	0	0
cSH	3	1700	1700	1700	695	1700	1700
Volume to Capacity	98.68	0.29	0.29	0.30	0.98	0.30	0.30
Queue Length 95th (ft)	Err	0	0	0	376	0	0
Control Delay (s)	Err	0.0	0.0	0.0	53.3	0.0	0.0
Lane LOS	F				F		
Approach Delay (s)	Err	0.0			21.2		
Approach LOS	F						

Intersection Summary			
Average Delay	923.9		
Intersection Capacity Utilization	74.0%	ICU Level of Service	D
Analysis Period (min)	15		

LANE SUMMARY

Site: Capital View Casino & Resort - Build Friday PM

US Route 4 & Mannix Road
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: US Route 4													
Lane 1	649	3.5	1233	0.527	100	5.4	LOS A	5.0	129.0	Full	1600	0.0	0.0
Lane 2[d]	659	3.7	1252	0.527	100	4.6	LOS A	5.0	129.6	Full	1600	0.0	0.0
Approach	1309	3.6		0.527		5.0	LOS A	5.0	129.6				
East: Mannix Road													
Lane 1	210	2.0	537	0.390	100	15.9	LOS B	1.8	46.8	Full	1600	0.0	0.0
Lane 2[d]	238	1.0	610	0.390	100	12.2	LOS B	1.9	48.0	Full	1600	0.0	0.0
Approach	448	1.5		0.390		14.0	LOS B	1.9	48.0				
North: US Route 4													
Lane 1	715	0.9	904	0.790	100	10.7	LOS B	8.7	218.2	Full	1600	0.0	0.0
Lane 2[d]	715	1.0	904	0.790	100	10.3	LOS B	8.7	218.2	Full	1600	0.0	0.0
Approach	1429	0.9		0.790		10.5	LOS B	8.7	218.2				
West: Mannix Road													
Lane 1[d]	53	0.0	295	0.181	100	13.2	LOS B	0.8	19.3	Full	1600	0.0	0.0
Approach	53	0.0		0.181		13.2	LOS B	0.8	19.3				
Intersection	3239	2.1		0.790		8.8	LOS A	8.7	218.2				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	17	123	384	4	9	30
Sign Control		Free	Free		Stop	
Grade		3%	-3%		-3%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	23	166	519	5	12	41
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	524				734	522
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	524				734	522
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				97	93
cM capacity (veh/h)	1053				382	559

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	23	166	524	53
Volume Left	23	0	0	12
Volume Right	0	0	5	41
cSH	1053	1700	1700	505
Volume to Capacity	0.02	0.10	0.31	0.10
Queue Length 95th (ft)	2	0	0	9
Control Delay (s)	8.5	0.0	0.0	13.0
Lane LOS	A			B
Approach Delay (s)	1.0		0.0	13.0
Approach LOS				B

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	SEB	Freeway/Dir of Travel	Eastbound Off-Ramp
Agency or Company	CHA	Junction	Exit 9 Off-Ramp
Date Performed	06/11/2014	Jurisdiction	East Greenbush
Analysis Time Period	Friday PM	Analysis Year	2016 Build

Project Description Capital View Casino & Resort

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	350
Freeway Volume, V_F	3812
Ramp Volume, V_R	1282
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	40.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 980 ft
V_D = 399 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3812	0.92	Level	2	0	0.990	1.00	4185
Ramp	1282	0.92	Level	2	0	0.990	1.00	1407
UpStream								
DownStream	399	0.85	Level	1	0	0.995	1.00	472

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)
S_R = mph (Exhibit 13-11)
S_0 = mph (Exhibit 13-11)
S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.591 using Equation (Exhibit 13-7)
V_{12} = 3048 pc/h
V_3 or V_{av34} 1137 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	4185	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	2778	Exhibit 13-8	7050	No
V_R	1407	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3048	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$
D_R = 27.3 (pc/mi/ln)
LOS = C (Exhibit 13-2)

Speed Determination

D_s = 0.490 (Exhibit 13-12)
S_R = 53.7 mph (Exhibit 13-12)
S_0 = 70.8 mph (Exhibit 13-12)
S = 57.5 mph (Exhibit 13-13)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	SEB	Freeway/Dir of Travel	Eastbound On-Ramp
Agency or Company	CHA	Junction	Exit 9
Date Performed	6/11/2014	Jurisdiction	East Greenbush
Analysis Time Period	Friday PM	Analysis Year	2016 Build

Project Description Capital View Casino & Resort

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 3	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 980 ft	Acceleration Lane Length, L_A: 850	L_{down} = ft
V_u = 1282 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 2530	
	Ramp Volume, V_R: 399	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 30.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2530	0.85	Level	2	0	0.990	1.00	3006
Ramp	399	0.85	Level	1	0	0.995	1.00	472
UpStream	1282	0.92	Level	2	0	0.990	1.00	1407
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 288.29 (Equation 13-6 or 13-7)

P_{FM} = 0.601 using Equation (Exhibit 13-6)

V_{12} = 1808 pc/h

V_3 or V_{av34} 1198 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 1808 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3478	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2280	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 17.7 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

M_S = 0.308 (Exibit 13-11)

S_R= 57.9 mph (Exhibit 13-11)

S_0= 62.5 mph (Exhibit 13-11)

S = 59.4 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	SEB	Freeway/Dir of Travel	Westbound Off-Ramp
Agency or Company	CHA	Junction	Exit 9 Off-Ramp
Date Performed	06/11/2014	Jurisdiction	East Greenbush
Analysis Time Period	Friday PM	Analysis Year	2016 Build

Project Description: Capital View Casino & Resort

Inputs

Upstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off; L_{up} = ft; V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	540
Freeway Volume, V_F	1903
Ramp Volume, V_R	301
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	40.0

Downstream Adj Ramp: ☑ Yes ☑ On ☐ No ☐ Off; L_{down} = 1155 ft; V_D = 1104 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	1903	0.88	Level	2	0	0.990	1.00	2184
Ramp	301	0.88	Level	3	0	0.985	1.00	347
UpStream								
DownStream	1104	0.83	Level	1	0	0.995	1.00	1337

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.689 using Equation (Exhibit 13-7)

V_{12} = 1613 pc/h

V_3 or V_{av34} 571 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	2184	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	1837	Exhibit 13-8	7050	No
V_R	347	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	1613	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 13.3 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

D_s = 0.394 (Exhibit 13-12)

S_R = 55.9 mph (Exhibit 13-12)

S_0 = 71.3 mph (Exhibit 13-12)

S = 59.3 mph (Exhibit 13-13)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	SEB	Freeway/Dir of Travel	Westbound On-Ramp
Agency or Company	CHA	Junction	Exit 9
Date Performed	06/11/2014	Jurisdiction	East Greenbush
Analysis Time Period	Friday PM	Analysis Year	2016 Build

Project Description Capital View Casino & Resort

Inputs

Upstream Adj Ramp: ☑ Yes ☐ On ☐ No ☑ Off

L_{up} = 1155 ft

V_u = 301 veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	1450
Deceleration Lane Length L_D	
Freeway Volume, V_F	1602
Ramp Volume, V_R	1104
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	30.0

Downstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	1602	0.83	Level	2	0	0.990	1.00	1949
Ramp	1104	0.83	Level	1	0	0.995	1.00	1337
UpStream	301	0.88	Level	3	0	0.985	1.00	347
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 513.60 (Equation 13-6 or 13-7)

P_{FM} = 0.618 using Equation (Exhibit 13-6)

V_{12} = 1205 pc/h

V_3 or V_{av34} 744 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3286	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2542	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 15.6 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

M_S = 0.284 (Exibit 13-11)

S_R = 58.5 mph (Exhibit 13-11)

S_0 = 64.1 mph (Exhibit 13-11)

S = 59.7 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	287	407	57	1021	621	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	1615	1736	3574	3574	1615
Flt Permitted	0.95	1.00	0.26	1.00	1.00	1.00
Satd. Flow (perm)	1787	1615	477	3574	3574	1615
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	302	428	60	1075	654	220
RTOR Reduction (vph)	0	51	0	0	0	83
Lane Group Flow (vph)	302	377	60	1075	654	137
Heavy Vehicles (%)	1%	0%	4%	1%	1%	0%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	3	1	1	5	2	3
Permitted Phases		3	5			2
Actuated Green, G (s)	18.4	25.9	37.0	37.0	23.5	41.9
Effective Green, g (s)	18.4	25.9	37.0	37.0	23.5	41.9
Actuated g/C Ratio	0.27	0.38	0.55	0.55	0.35	0.62
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.5	3.0	3.0	5.0	5.0	3.5
Lane Grp Cap (vph)	487	764	401	1961	1246	1147
v/s Ratio Prot	c0.17	0.05	0.02	c0.30	0.18	0.03
v/s Ratio Perm		0.18	0.07			0.05
v/c Ratio	0.62	0.49	0.15	0.55	0.52	0.12
Uniform Delay, d1	21.4	15.8	8.0	9.8	17.5	5.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6	0.5	0.2	0.6	0.8	0.1
Delay (s)	24.0	16.3	8.1	10.4	18.3	5.3
Level of Service	C	B	A	B	B	A
Approach Delay (s)	19.5			10.2	15.0	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	0	6	149	0	88	5	935	251	148	832	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	12	12	12	12	12
Grade (%)		2%			0%			-3%			1%	
Total Lost time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1752	1599	1681	1681	1583	1476	1909	1607	1761	3555	
Flt Permitted		0.70	1.00	0.76	0.76	1.00	0.31	1.00	1.00	0.11	1.00	
Satd. Flow (perm)		1294	1599	1338	1338	1583	489	1909	1607	207	3555	
Peak-hour factor, PHF	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)	3	0	7	162	0	96	5	1016	273	161	904	2
RTOR Reduction (vph)	0	0	6	0	0	66	0	0	86	0	0	0
Lane Group Flow (vph)	0	3	1	81	81	30	5	1016	187	161	906	0
Heavy Vehicles (%)	2%	0%	0%	2%	2%	2%	20%	1%	2%	2%	1%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	1		8	5	1	6		5	2	
Permitted Phases	4		4	8		8	6		6	2		
Actuated Green, G (s)		9.0	9.7	9.0	9.0	14.0	60.1	59.4	59.4	68.7	63.7	
Effective Green, g (s)		9.0	9.7	9.0	9.0	14.0	60.1	59.4	59.4	68.7	63.7	
Actuated g/C Ratio		0.10	0.11	0.10	0.10	0.15	0.66	0.65	0.65	0.75	0.70	
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0	2.0	3.0	3.0	3.0	2.0	4.0	4.0	3.0	4.0	
Lane Grp Cap (vph)		127	274	131	131	346	329	1240	1044	240	2477	
v/s Ratio Prot			0.00			0.00	0.00	c0.53		c0.04	0.25	
v/s Ratio Perm		0.00	0.00	c0.06	0.06	0.01	0.01		0.12	0.47		
v/c Ratio		0.02	0.00	0.62	0.62	0.09	0.02	0.82	0.18	0.67	0.37	
Uniform Delay, d1		37.2	36.5	39.6	39.6	33.2	5.4	12.0	6.3	15.3	5.6	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.1	0.0	8.4	8.4	0.1	0.0	4.6	0.1	7.2	0.1	
Delay (s)		37.3	36.5	48.0	48.0	33.3	5.4	16.6	6.5	22.5	5.8	
Level of Service		D	D	D	D	C	A	B	A	C	A	
Approach Delay (s)		36.8			42.5			14.4			8.3	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	91.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	1	226	8	3	16	268	732	8	15	741	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12	11	11	12	11	11	11
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	0.95	
Frt		1.00	0.85		0.92		1.00	1.00		1.00	0.98	
Flt Protected		0.95	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1775	1561		1720		1728	1816		1745	3379	
Flt Permitted		0.71	1.00		0.89		0.21	1.00		0.30	1.00	
Satd. Flow (perm)		1315	1561		1551		375	1816		549	3379	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	118	1	248	9	3	18	295	804	9	16	814	140
RTOR Reduction (vph)	0	0	74	0	16	0	0	0	0	0	11	0
Lane Group Flow (vph)	0	119	174	0	14	0	295	813	0	16	943	0
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	1%	1%	0%	0%	1%	1%
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	1		8		1	6		5	2	
Permitted Phases	4		4	8			6			2		
Actuated Green, G (s)		9.6	19.9		9.6		53.5	47.7		39.0	38.2	
Effective Green, g (s)		9.6	19.9		9.6		53.5	47.7		39.0	38.2	
Actuated g/C Ratio		0.13	0.27		0.13		0.73	0.65		0.53	0.52	
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0	2.0		2.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)		172	531		203		465	1184		305	1765	
v/s Ratio Prot			0.05				c0.09	c0.45		0.00	0.28	
v/s Ratio Perm		c0.09	0.07		0.01		0.37			0.03		
v/c Ratio		0.69	0.33		0.07		0.63	0.69		0.05	0.53	
Uniform Delay, d1		30.3	21.3		27.8		5.9	8.0		8.3	11.6	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		9.3	0.1		0.1		2.1	2.1		0.0	0.6	
Delay (s)		39.6	21.4		27.9		8.0	10.1		8.3	12.1	
Level of Service		D	C		C		A	B		A	B	
Approach Delay (s)		27.3			27.9			9.6			12.1	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	73.1	Sum of lost time (s)	15.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	291	158	148	706	735	314
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11
Grade (%)	3%			0%	0%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1702	1523	1728	1818	3300	
Flt Permitted	0.95	1.00	0.16	1.00	1.00	
Satd. Flow (perm)	1702	1523	298	1818	3300	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	306	166	156	743	774	331
RTOR Reduction (vph)	0	54	0	0	33	0
Lane Group Flow (vph)	306	112	156	743	1072	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	3	6	6	1	5	
Permitted Phases		3	1			
Actuated Green, G (s)	20.9	29.8	53.8	53.8	39.9	
Effective Green, g (s)	20.9	29.8	53.8	53.8	39.9	
Actuated g/C Ratio	0.25	0.35	0.64	0.64	0.47	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	5.0	5.0	
Lane Grp Cap (vph)	419	625	339	1154	1554	
v/s Ratio Prot	c0.18	0.02	0.05	c0.41	c0.32	
v/s Ratio Perm		0.05	0.24			
v/c Ratio	0.73	0.18	0.46	0.64	0.69	
Uniform Delay, d1	29.3	19.0	19.8	9.5	17.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.6	0.1	0.4	1.7	1.7	
Delay (s)	34.9	19.0	20.1	11.2	19.2	
Level of Service	C	B	C	B	B	
Approach Delay (s)	29.3			12.8	19.2	
Approach LOS	C			B	B	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	84.7	Sum of lost time (s)	15.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	337	16	181	56	19	44	187	840	65	63	852	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	12	11	11	11	11	11	12
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	0.95	1.00
Frt		1.00	0.85		0.95		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1804	1607		1704		1745	1800		1745	3455	1615
Flt Permitted		0.65	1.00		0.46		0.23	1.00		0.08	1.00	1.00
Satd. Flow (perm)		1220	1607		804		423	1800		139	3455	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	344	16	185	57	19	45	191	857	66	64	869	385
RTOR Reduction (vph)	0	0	94	0	16	0	0	2	0	0	0	189
Lane Group Flow (vph)	0	360	91	0	105	0	191	921	0	64	869	196
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		7			3		5	2		1	6	
Permitted Phases	7		7	3			2			6		6
Actuated Green, G (s)		30.1	30.1		30.1		70.6	61.1		61.8	56.7	56.7
Effective Green, g (s)		30.1	30.1		30.1		70.6	61.1		61.8	56.7	56.7
Actuated g/C Ratio		0.27	0.27		0.27		0.63	0.55		0.56	0.51	0.51
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0		2.0		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)		329	434		217		381	988		150	1760	822
v/s Ratio Prot							c0.04	c0.51		0.02	0.25	
v/s Ratio Perm		c0.30	0.06		0.13		0.28			0.22		0.12
v/c Ratio		1.09	0.21		0.48		0.50	0.93		0.43	0.49	0.24
Uniform Delay, d1		40.6	31.4		34.1		10.5	23.2		20.9	17.9	15.2
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		77.3	0.1		0.6		0.4	15.5		0.7	0.5	0.3
Delay (s)		117.9	31.5		34.7		10.9	38.7		21.6	18.4	15.6
Level of Service		F	C		C		B	D		C	B	B
Approach Delay (s)		88.5			34.7			33.9			17.7	
Approach LOS		F			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	36.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	111.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	4	286	22	9	7	260	903	10	6	1004	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0	5.0	5.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1745	1837	1546	1745	1716		1745	1818	1561	1745	3446	
Flt Permitted	1.00	1.00	1.00	1.00	1.00		0.16	1.00	1.00	0.11	1.00	
Satd. Flow (perm)	1837	1837	1546	1837	1716		288	1818	1561	203	3446	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	4	298	23	9	7	271	941	10	6	1046	21
RTOR Reduction (vph)	0	0	211	0	7	0	0	0	3	0	1	0
Lane Group Flow (vph)	36	4	87	23	9	0	271	941	7	6	1066	0
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA	
Protected Phases	4	7	2	8	3		2	5	8	6	1	
Permitted Phases	7		7	3			5		5	1		
Actuated Green, G (s)	4.9	1.1	25.6	7.9	2.6		66.7	57.8	63.1	39.1	36.2	
Effective Green, g (s)	4.9	1.1	25.6	7.9	2.6		66.7	57.8	63.1	39.1	36.2	
Actuated g/C Ratio	0.06	0.01	0.29	0.09	0.03		0.76	0.66	0.72	0.44	0.41	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0	5.0	5.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	4.0	2.0	2.0	4.0	
Lane Grp Cap (vph)	98	22	449	159	50		623	1192	1118	140	1415	
v/s Ratio Prot	c0.02	0.00	0.05	0.01	c0.01		c0.12	c0.52	0.00	0.00	0.31	
v/s Ratio Perm	0.00		0.00	0.00			0.21		0.00	0.02		
v/c Ratio	0.37	0.18	0.19	0.14	0.18		0.43	0.79	0.01	0.04	0.75	
Uniform Delay, d1	40.2	43.1	23.5	37.0	41.7		14.6	10.8	3.6	17.9	22.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	1.4	0.1	0.2	0.6		0.2	3.8	0.0	0.0	2.5	
Delay (s)	41.0	44.5	23.6	37.2	42.4		14.7	14.6	3.6	17.9	24.6	
Level of Service	D	D	C	D	D		B	B	A	B	C	
Approach Delay (s)		25.7			39.3			14.5			24.6	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	88.1	Sum of lost time (s)	21.0
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	262	199	147	245	291	65	113	583	247	71	649	319
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-2%			0%			0%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3467	3470	1440	3537	3540	1599	1703	3574	1583	3502	3574	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3467	3470	1440	3537	3540	1599	1703	3574	1583	3502	3574	1615
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	279	212	156	261	310	69	120	620	263	76	690	339
RTOR Reduction (vph)	0	0	84	0	0	59	0	0	169	0	0	219
Lane Group Flow (vph)	279	212	72	261	310	10	120	620	94	76	690	120
Heavy Vehicles (%)	0%	3%	11%	0%	3%	2%	6%	1%	2%	0%	1%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		2	5		6	1	
Permitted Phases			7			3			5			1
Actuated Green, G (s)	16.3	17.8	17.8	13.5	15.0	15.0	14.3	36.3	36.3	13.9	35.9	35.9
Effective Green, g (s)	16.3	17.8	17.8	13.5	15.0	15.0	14.3	36.3	36.3	13.9	35.9	35.9
Actuated g/C Ratio	0.16	0.18	0.18	0.13	0.15	0.15	0.14	0.36	0.36	0.14	0.35	0.35
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	2.0	2.0	2.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)	556	608	252	470	523	236	239	1278	566	479	1264	571
v/s Ratio Prot	c0.08	0.06		0.07	c0.09		c0.07	0.17		0.02	c0.19	
v/s Ratio Perm			0.05			0.01			0.06			0.07
v/c Ratio	0.50	0.35	0.29	0.56	0.59	0.04	0.50	0.49	0.17	0.16	0.55	0.21
Uniform Delay, d1	38.9	36.8	36.3	41.2	40.4	37.1	40.3	25.3	22.3	38.6	26.3	22.9
Progression 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
Incremental Delay, d2	1.0	0.5	0.9	0.8	1.2	0.0	0.6	0.6	0.3	0.1	0.9	0.4
Delay (s)	39.9	37.2	37.2	42.0	41.6	37.1	40.9	25.9	22.6	38.7	27.1	23.3
Level of Service	D	D	D	D	D	D	D	C	C	D	C	C
Approach Delay (s)		38.4			41.3			26.8			26.7	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	101.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	53	264	916	387	213	774
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	57	284	985	416	229	832
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		8				
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1859	492			985	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1859	492			985	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	0	46			67	
cM capacity (veh/h)	45	527			703	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	341	492	492	416	229	416	416
Volume Left	57	0	0	0	229	0	0
Volume Right	284	0	0	416	0	0	0
cSH	268	1700	1700	1700	703	1700	1700
Volume to Capacity	1.27	0.29	0.29	0.24	0.33	0.24	0.24
Queue Length 95th (ft)	419	0	0	0	35	0	0
Control Delay (s)	78.1	0.0	0.0	0.0	12.6	0.0	0.0
Lane LOS	F				B		
Approach Delay (s)	78.1	0.0			2.7		
Approach LOS	F						

Intersection Summary			
Average Delay	10.5		
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

LANE SUMMARY

Site: Capital View Casino & Resort - Build Saturday Midday

US Route 4 & Mannix Road
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: US Route 4													
Lane 1	655	1.0	1302	0.503	100	4.6	LOS A	4.3	108.1	Full	1600	0.0	0.0
Lane 2[d]	666	0.9	1324	0.503	100	4.3	LOS A	4.3	108.2	Full	1600	0.0	0.0
Approach	1321	0.9		0.503		4.5	LOS A	4.3	108.2				
East: Mannix Road													
Lane 1	32	0.0	575	0.055	100	14.2	LOS B	0.2	5.2	Full	1600	0.0	0.0
Lane 2[d]	35	0.0	642	0.055	100	8.0	LOS A	0.2	5.3	Full	1600	0.0	0.0
Approach	67	0.0		0.055		10.9	LOS B	0.2	5.3				
North: US Route 4													
Lane 1	541	1.0	1186	0.456	100	4.8	LOS A	3.0	75.0	Full	1600	0.0	0.0
Lane 2[d]	541	0.9	1187	0.456	100	4.5	LOS A	3.0	75.0	Full	1600	0.0	0.0
Approach	1081	1.0		0.456		4.6	LOS A	3.0	75.0				
West: Mannix Road													
Lane 1[d]	51	0.0	536	0.094	100	10.9	LOS B	0.3	8.6	Full	1600	0.0	0.0
Approach	51	0.0		0.094		10.9	LOS B	0.3	8.6				
Intersection	2520	0.9		0.503		4.8	LOS A	4.3	108.2				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	23	48	54	3	12	17
Sign Control		Free	Free		Stop	
Grade		3%	-3%		-3%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	28	58	65	4	14	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	69				180	67
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	69				180	67
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				98	98
cM capacity (veh/h)	1545				800	1002

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	28	58	69	35
Volume Left	28	0	0	14
Volume Right	0	0	4	20
cSH	1545	1700	1700	907
Volume to Capacity	0.02	0.03	0.04	0.04
Queue Length 95th (ft)	1	0	0	3
Control Delay (s)	7.4	0.0	0.0	9.1
Lane LOS	A			A
Approach Delay (s)	2.4		0.0	9.1
Approach LOS				A

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	17.9%	ICU Level of Service	A
Analysis Period (min)	15		

2016 Build - Mitigation

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	390	892	84	997	690	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.88	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1671	2814	1787	3574	3574	1599
Flt Permitted	0.95	1.00	0.19	1.00	1.00	1.00
Satd. Flow (perm)	1671	2814	351	3574	3574	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	411	939	88	1049	726	332
RTOR Reduction (vph)	0	32	0	0	0	132
Lane Group Flow (vph)	411	907	88	1049	726	200
Heavy Vehicles (%)	8%	1%	1%	1%	1%	1%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	3	1	1	5	2	3
Permitted Phases		3	5			2
Actuated Green, G (s)	21.3	30.4	35.0	35.0	19.9	41.2
Effective Green, g (s)	21.3	30.4	35.0	35.0	19.9	41.2
Actuated g/C Ratio	0.31	0.45	0.51	0.51	0.29	0.60
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.5	3.0	3.0	5.0	5.0	3.5
Lane Grp Cap (vph)	521	1499	371	1831	1041	1105
v/s Ratio Prot	c0.25	0.08	0.03	c0.29	c0.20	0.06
v/s Ratio Perm		0.24	0.09			0.07
v/c Ratio	0.79	0.60	0.24	0.57	0.70	0.18
Uniform Delay, d1	21.4	14.4	10.0	11.5	21.5	6.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.0	0.7	0.3	0.7	2.6	0.1
Delay (s)	29.4	15.1	10.3	12.2	24.1	6.1
Level of Service	C	B	B	B	C	A
Approach Delay (s)	19.5			12.0	18.5	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	68.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	25	0	276	0	929	472	0	960	632
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0		5.0		5.0	4.0		5.0	4.0
Lane Util. Factor				1.00		1.00		0.95	1.00		0.95	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1736		1568		3505	1599		3610	1583
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1736		1568		3505	1599		3610	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.92	0.93	0.92	0.93	0.93	0.93	0.93	0.92
Adj. Flow (vph)	0	0	0	27	0	297	0	999	508	0	1032	687
RTOR Reduction (vph)	0	0	0	0	0	53	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	27	0	244	0	999	508	0	1032	687
Heavy Vehicles (%)	2%	2%	2%	4%	2%	3%	2%	3%	1%	1%	0%	2%
Turn Type				Prot		Perm		NA	Free		NA	Free
Protected Phases				8				2			6	
Permitted Phases						8			Free			Free
Actuated Green, G (s)				13.0		13.0		20.0	43.0		20.0	43.0
Effective Green, g (s)				13.0		13.0		20.0	43.0		20.0	43.0
Actuated g/C Ratio				0.30		0.30		0.47	1.00		0.47	1.00
Clearance Time (s)				5.0		5.0		5.0			5.0	
Vehicle Extension (s)				3.0		3.0		3.0			3.0	
Lane Grp Cap (vph)				524		474		1630	1599		1679	1583
v/s Ratio Prot				0.02				0.29			c0.29	
v/s Ratio Perm						0.16			0.32			c0.43
v/c Ratio				0.05		0.51		0.61	0.32		0.61	0.43
Uniform Delay, d1				10.6		12.4		8.6	0.0		8.6	0.0
Progression Factor				1.00		1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2				0.0		0.9		0.7	0.5		0.7	0.9
Delay (s)				10.7		13.3		9.3	0.5		9.3	0.9
Level of Service				B		B		A	A		A	A
Approach Delay (s)		0.0			13.1			6.3			5.9	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	43.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	7	0	29	244	0	143	29	826	274	161	967	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	12	12	12	12	12
Grade (%)		2%			-2%			-3%			1%	
Total Lost time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1752	1321	1698	1698	1599	1093	3628	1607	1761	3577	
Flt Permitted		0.95	1.00	0.95	0.95	1.00	0.28	1.00	1.00	0.17	1.00	
Satd. Flow (perm)		1752	1321	1698	1698	1599	323	3628	1607	314	3577	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	7	0	30	254	0	149	30	860	285	168	1007	14
RTOR Reduction (vph)	0	0	28	0	0	108	0	0	0	0	1	0
Lane Group Flow (vph)	0	7	2	127	127	41	30	860	285	168	1020	0
Heavy Vehicles (%)	2%	0%	21%	2%	2%	2%	62%	1%	2%	2%	0%	15%
Turn Type	Split	NA	pm+ov	Split	NA	pm+ov	pm+pt	NA	Free	pm+pt	NA	
Protected Phases	4	4	1	3	3	5	1	6		5	2	
Permitted Phases			4			3	6		Free	2		
Actuated Green, G (s)		0.6	3.6	10.4	10.4	19.2	26.6	26.6	70.4	32.4	32.4	
Effective Green, g (s)		0.6	3.6	10.4	10.4	19.2	26.6	26.6	70.4	32.4	32.4	
Actuated g/C Ratio		0.01	0.05	0.15	0.15	0.27	0.38	0.38	1.00	0.46	0.46	
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0	2.0	3.0	3.0	3.0	2.0	4.0		3.0	4.0	
Lane Grp Cap (vph)		14	67	250	250	436	154	1370	1607	325	1646	
v/s Ratio Prot		0.00	0.00	c0.07	0.07	0.01	0.01	c0.24		0.06	c0.29	
v/s Ratio Perm			0.00			0.01	0.06		c0.18	0.17		
v/c Ratio		0.50	0.02	0.51	0.51	0.09	0.19	0.63	0.18	0.52	0.62	
Uniform Delay, d1		34.8	31.7	27.6	27.6	19.1	15.0	17.9	0.0	13.3	14.3	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		25.4	0.1	1.6	1.6	0.1	0.2	1.0	0.2	1.4	0.8	
Delay (s)		60.2	31.8	29.3	29.3	19.2	15.2	18.9	0.2	14.7	15.2	
Level of Service		E	C	C	C	B	B	B	A	B	B	
Approach Delay (s)		37.1			25.5			14.3			15.1	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	70.4	Sum of lost time (s)	24.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	1	226	6	2	13	193	745	2	10	876	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12	11	11	12	11	11	11
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.91		1.00	1.00		1.00	0.98	
Flt Protected		0.95	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1810	1561		1713		1728	3420		1745	3372	
Flt Permitted		0.71	1.00		0.88		0.17	1.00		0.35	1.00	
Satd. Flow (perm)		1353	1561		1535		315	3420		651	3372	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	98	1	238	6	2	14	203	784	2	11	922	113
RTOR Reduction (vph)	0	0	24	0	12	0	0	0	0	0	10	0
Lane Group Flow (vph)	0	99	214	0	10	0	203	786	0	11	1025	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	1%	2%	0%	0%	2%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	1		8		1	6		5	2	
Permitted Phases	4		4	8			6			2		
Actuated Green, G (s)		6.7	12.9		6.7		38.6	32.9		28.1	27.4	
Effective Green, g (s)		6.7	12.9		6.7		38.6	32.9		28.1	27.4	
Actuated g/C Ratio		0.12	0.23		0.12		0.70	0.59		0.51	0.50	
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0	2.0		2.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)		163	505		185		378	2034		344	1670	
v/s Ratio Prot			c0.05				c0.06	0.23		0.00	c0.30	
v/s Ratio Perm		c0.07	0.09		0.01		0.31			0.02		
v/c Ratio		0.61	0.42		0.05		0.54	0.39		0.03	0.61	
Uniform Delay, d1		23.1	18.0		21.5		5.1	5.9		6.7	10.1	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		4.3	0.2		0.0		0.7	0.3		0.0	1.0	
Delay (s)		27.4	18.2		21.5		5.8	6.1		6.7	11.1	
Level of Service		C	B		C		A	A		A	B	
Approach Delay (s)		20.9			21.5			6.1			11.0	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	55.3	Sum of lost time (s)	15.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	426	242	111	745	779	323
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11
Grade (%)	3%			0%	0%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1669	1508	1646	3455	3275	
Flt Permitted	0.95	1.00	0.13	1.00	1.00	
Satd. Flow (perm)	1669	1508	224	3455	3275	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	439	249	114	768	803	333
RTOR Reduction (vph)	0	36	0	0	64	0
Lane Group Flow (vph)	439	213	114	768	1072	0
Heavy Vehicles (%)	3%	2%	6%	1%	1%	4%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	3	6	6	1	5	
Permitted Phases		3	1			
Actuated Green, G (s)	20.1	26.8	37.6	37.6	25.9	
Effective Green, g (s)	20.1	26.8	37.6	37.6	25.9	
Actuated g/C Ratio	0.30	0.40	0.56	0.56	0.38	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	5.0	5.0	
Lane Grp Cap (vph)	495	708	265	1918	1252	
v/s Ratio Prot	c0.26	0.03	0.04	c0.22	c0.33	
v/s Ratio Perm		0.11	0.20			
v/c Ratio	0.89	0.30	0.43	0.40	0.86	
Uniform Delay, d1	22.7	14.0	20.8	8.6	19.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	16.8	0.1	0.4	0.3	6.5	
Delay (s)	39.5	14.1	21.2	8.9	25.7	
Level of Service	D	B	C	A	C	
Approach Delay (s)	30.3			10.5	25.7	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	15.0
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	285	5	124	32	11	46	98	1062	36	46	998	306
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	12	11	11	11	11	11	12
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt		1.00	0.85		0.93		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1784	1575		1680		1745	3439		1745	3355	1599
Flt Permitted		0.73	1.00		0.82		0.16	1.00		0.14	1.00	1.00
Satd. Flow (perm)		1374	1575		1402		299	3439		257	3355	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	300	5	131	34	12	48	103	1118	38	48	1051	322
RTOR Reduction (vph)	0	0	94	0	34	0	0	3	0	0	0	179
Lane Group Flow (vph)	0	305	37	0	60	0	103	1153	0	48	1051	143
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	0%	1%	0%	0%	4%	1%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		7			3		5	2		1	6	
Permitted Phases	7		7	3			2			6		6
Actuated Green, G (s)		18.7	18.7		18.7		33.0	30.0		31.4	29.2	29.2
Effective Green, g (s)		18.7	18.7		18.7		33.0	30.0		31.4	29.2	29.2
Actuated g/C Ratio		0.28	0.28		0.28		0.50	0.46		0.48	0.44	0.44
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0		2.0		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)		389	446		397		215	1565		172	1486	708
v/s Ratio Prot							c0.02	c0.34		0.01	0.31	
v/s Ratio Perm		c0.22	0.02		0.04		0.22			0.12		0.09
v/c Ratio		0.78	0.08		0.15		0.48	0.74		0.28	0.71	0.20
Uniform Delay, d1		21.7	17.3		17.7		10.1	14.7		10.6	14.9	11.2
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		9.2	0.0		0.1		0.6	2.2		0.3	2.0	0.3
Delay (s)		30.9	17.3		17.7		10.7	17.0		10.9	16.8	11.5
Level of Service		C	B		B		B	B		B	B	B
Approach Delay (s)		26.9			17.7			16.5			15.4	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	65.9	Sum of lost time (s)	15.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	14	415	19	19	7	264	1093	7	8	926	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	1701	1546	1646	1064		1745	3486		1544	3414	
Flt Permitted	0.49	1.00	1.00	1.00	1.00		0.21	1.00		0.16	1.00	
Satd. Flow (perm)	907	1701	1546	1733	1064		378	3486		266	3414	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	68	15	432	20	20	7	275	1139	7	8	965	15
RTOR Reduction (vph)	0	0	27	0	7	0	0	0	0	0	1	0
Lane Group Flow (vph)	68	15	405	20	20	0	275	1146	0	8	979	0
Heavy Vehicles (%)	0%	8%	1%	6%	89%	0%	0%	0%	0%	13%	2%	0%
Turn Type	pm+pt	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	7	2		3		2	5		6	1	
Permitted Phases	7		7	3			5			1		
Actuated Green, G (s)	11.6	11.6	21.4	3.1	3.1		40.3	33.5		25.3	24.5	
Effective Green, g (s)	11.6	11.6	21.4	3.1	3.1		40.3	33.5		25.3	24.5	
Actuated g/C Ratio	0.19	0.19	0.35	0.05	0.05		0.65	0.54		0.41	0.40	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	217	318	659	86	53		462	1886		125	1351	
v/s Ratio Prot	0.02	0.01	c0.10		0.02		c0.09	0.33		0.00	c0.29	
v/s Ratio Perm	0.04		0.16	0.01			0.29			0.03		
v/c Ratio	0.31	0.05	0.61	0.23	0.38		0.60	0.61		0.06	0.72	
Uniform Delay, d1	21.4	20.6	16.8	28.3	28.5		13.2	9.7		16.6	15.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.0	1.2	0.5	1.7		1.4	0.6		0.1	2.1	
Delay (s)	21.7	20.6	18.0	28.8	30.2		14.6	10.4		16.7	17.9	
Level of Service	C	C	B	C	C		B	B		B	B	
Approach Delay (s)		18.6			29.6			11.2			17.9	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	61.9	Sum of lost time (s)	21.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	768	849	180	183	251	88	164	707	339	125	567	597
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-2%			0%			0%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3432	3539	1415	3434	3540	1631	3273	3574	1599	3502	3574	1599
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3432	3539	1415	3434	3540	1631	3273	3574	1599	3502	3574	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	808	894	189	193	264	93	173	744	357	132	597	628
RTOR Reduction (vph)	0	0	82	0	0	82	0	0	246	0	0	433
Lane Group Flow (vph)	808	894	107	193	264	11	173	744	111	132	597	195
Heavy Vehicles (%)	1%	1%	13%	3%	3%	0%	7%	1%	1%	0%	1%	1%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		2	5		6	1	
Permitted Phases			7			3			5			1
Actuated Green, G (s)	37.8	40.1	40.1	11.5	13.8	13.8	10.4	36.9	36.9	10.0	36.5	36.5
Effective Green, g (s)	37.8	40.1	40.1	11.5	13.8	13.8	10.4	36.9	36.9	10.0	36.5	36.5
Actuated g/C Ratio	0.32	0.34	0.34	0.10	0.12	0.12	0.09	0.31	0.31	0.08	0.31	0.31
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	2.0	2.0	2.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)	1094	1197	478	333	412	189	287	1112	497	295	1100	492
v/s Ratio Prot	0.24	c0.25		0.06	c0.07		0.05	c0.21		0.04	c0.17	
v/s Ratio Perm			0.08			0.01			0.07			0.12
v/c Ratio	0.74	0.75	0.22	0.58	0.64	0.06	0.60	0.67	0.22	0.45	0.54	0.40
Uniform Delay, d1	35.9	34.7	28.1	51.2	50.0	46.6	52.1	35.5	30.2	51.6	34.1	32.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	2.8	0.3	1.5	2.5	0.0	2.4	2.0	0.5	0.4	1.0	1.1
Delay (s)	38.8	37.5	28.4	52.7	52.5	46.6	54.5	37.5	30.7	52.0	35.0	33.4
Level of Service	D	D	C	D	D	D	D	D	C	D	D	C
Approach Delay (s)		37.1			51.6			37.9			35.9	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	38.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	118.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

LANE SUMMARY

Site: Capital View Casino & Resort - Build Friday PM

US Route 4 & Mannix Road
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: US Route 4													
Lane 1	649	3.5	1233	0.527	100	5.4	LOS A	5.0	129.0	Full	1600	0.0	0.0
Lane 2[d]	659	3.7	1252	0.527	100	4.6	LOS A	5.0	129.6	Full	1600	0.0	0.0
Approach	1309	3.6		0.527		5.0	LOS A	5.0	129.6				
East: Mannix Road													
Lane 1	210	2.0	537	0.390	100	15.9	LOS B	1.8	46.8	Full	1600	0.0	0.0
Lane 2[d]	238	1.0	610	0.390	100	12.2	LOS B	1.9	48.0	Full	1600	0.0	0.0
Approach	448	1.5		0.390		14.0	LOS B	1.9	48.0				
North: US Route 4													
Lane 1	715	0.9	904	0.790	100	10.7	LOS B	8.7	218.2	Full	1600	0.0	0.0
Lane 2[d]	715	1.0	904	0.790	100	10.3	LOS B	8.7	218.2	Full	1600	0.0	0.0
Approach	1429	0.9		0.790		10.5	LOS B	8.7	218.2				
West: Mannix Road													
Lane 1[d]	53	0.0	295	0.181	100	13.2	LOS B	0.8	19.3	Full	1600	0.0	0.0
Approach	53	0.0		0.181		13.2	LOS B	0.8	19.3				
Intersection	3239	2.1		0.790		8.8	LOS A	8.7	218.2				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	17	123	384	4	9	30
Sign Control		Free	Free		Stop	
Grade		3%	-3%		-3%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	23	166	519	5	12	41
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	524				734	522
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	524				734	522
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				97	93
cM capacity (veh/h)	1053				382	559

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	23	166	524	53
Volume Left	23	0	0	12
Volume Right	0	0	5	41
cSH	1053	1700	1700	505
Volume to Capacity	0.02	0.10	0.31	0.10
Queue Length 95th (ft)	2	0	0	9
Control Delay (s)	8.5	0.0	0.0	13.0
Lane LOS	A			B
Approach Delay (s)	1.0		0.0	13.0
Approach LOS				B

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	SEB	Freeway/Dir of Travel	Westbound Off-Ramp
Agency or Company	CHA	Junction	Exit 9 Off-Ramp
Date Performed	06/11/2014	Jurisdiction	East Greenbush
Analysis Time Period	Friday PM	Analysis Year	2016 Build - Mitigation

Project Description: Capital View Casino & Resort

Inputs

Upstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off; L_{up} = ft; V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	540
Freeway Volume, V_F	1903
Ramp Volume, V_R	301
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	40.0

Downstream Adj Ramp: ☑ Yes ☑ On ☐ No ☐ Off; L_{down} = 1155 ft; V_D = 472 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	1903	0.88	Level	2	0	0.990	1.00	2184
Ramp	301	0.88	Level	3	0	0.985	1.00	347
UpStream								
DownStream	472	0.83	Level	1	0	0.995	1.00	572

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.689 using Equation (Exhibit 13-7)

V_{12} = 1613 pc/h

V_3 or V_{av34} 571 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	2184	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	1837	Exhibit 13-8	7050	No
V_R	347	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	1613	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 13.3 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

D_s = 0.394 (Exhibit 13-12)

S_R = 55.9 mph (Exhibit 13-12)

S_0 = 71.3 mph (Exhibit 13-12)

S = 59.3 mph (Exhibit 13-13)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	SEB	Freeway/Dir of Travel	Westbound On-Ramp From US 4 NB
Agency or Company	CHA	Junction	Exit 9
Date Performed	06/11/2014	Jurisdiction	East Greenbush
Analysis Time Period	Friday PM	Analysis Year	2016 Build - Mitigation

Project Description Capital View Casino & Resort

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 3	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A: 775	L_{down} = 800 ft
V_u = veh/h	Deceleration Lane Length L_D:	V_D = 632 veh/h
	Freeway Volume, V_F: 1602	
	Ramp Volume, V_R: 472	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 30.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	1602	0.83	Level	2	0	0.990	1.00	1949
Ramp	472	0.83	Level	1	0	0.995	1.00	572
UpStream								
DownStream	632	0.83	Level	2	0	0.990	1.00	769

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 0.599 using Equation (Exhibit 13-6)

V_{12} = 1168 pc/h

V_3 or V_{av34} 781 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 1168 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	2521	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	1740	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 13.9 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

M_S = 0.297 (Exibit 13-11)

S_R = 58.2 mph (Exhibit 13-11)

S_0 = 64.0 mph (Exhibit 13-11)

S = 59.9 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	SEB	Freeway/Dir of Travel	Westbound On-Ramp From US 4 SB
Agency or Company	CHA	Junction	Exit 9
Date Performed	06/03/2014	Jurisdiction	East Greenbush
Analysis Time Period	Friday PM	Analysis Year	2016 Build - Mitigation

Project Description Capital View Casino & Resort

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☑ On	Freeway Number of Lanes, N: 3	☐ Yes ☐ On
☐ No ☐ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 800 ft	Acceleration Lane Length, L_A: 340	L_{down} = ft
V_u = 472 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 2074	
	Ramp Volume, V_R: 632	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 30.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	2074	0.83	Level	2	0	0.990	1.00	2524
Ramp	632	0.83	Level	2	0	0.990	1.00	769
UpStream	472	0.83	Level	1	0	0.995	1.00	572
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 0.587 using Equation (Exhibit 13-6)

V_{12} = 1482 pc/h

V_3 or V_{av34} 1042 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 1482 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3293	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2251	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 20.5 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

M_S = 0.338 (Exibit 13-11)

S_R= 57.2 mph (Exhibit 13-11)

S_0= 63.0 mph (Exhibit 13-11)

S = 59.0 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	287	407	57	1021	621	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.88	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1787	2842	1736	3574	3574	1615
Flt Permitted	0.95	1.00	0.26	1.00	1.00	1.00
Satd. Flow (perm)	1787	2842	476	3574	3574	1615
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	302	428	60	1075	654	220
RTOR Reduction (vph)	0	94	0	0	0	89
Lane Group Flow (vph)	302	334	60	1075	654	131
Heavy Vehicles (%)	1%	0%	4%	1%	1%	0%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	pm+ov
Protected Phases	3	1	1	5	2	3
Permitted Phases		3	5			2
Actuated Green, G (s)	14.2	18.2	28.2	28.2	18.2	32.4
Effective Green, g (s)	14.2	18.2	28.2	28.2	18.2	32.4
Actuated g/C Ratio	0.26	0.33	0.52	0.52	0.33	0.60
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.5	3.0	3.0	5.0	5.0	3.5
Lane Grp Cap (vph)	466	1264	339	1852	1195	1140
v/s Ratio Prot	c0.17	0.02	0.01	c0.30	0.18	0.03
v/s Ratio Perm		0.10	0.08			0.05
v/c Ratio	0.65	0.26	0.18	0.58	0.55	0.11
Uniform Delay, d1	17.9	13.2	7.3	9.0	14.7	4.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	0.1	0.3	0.7	0.9	0.1
Delay (s)	21.1	13.3	7.5	9.7	15.7	4.8
Level of Service	C	B	A	A	B	A
Approach Delay (s)	16.5			9.6	12.9	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	54.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	54.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	53	0	264	0	916	387	0	774	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				5.0		5.0		5.0	4.0		5.0	4.0
Lane Util. Factor				1.00		1.00		0.95	1.00		0.95	1.00
Frt				1.00		0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				1805		1615		3574	1599		3574	1583
Flt Permitted				0.95		1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				1805		1615		3574	1599		3574	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.92	0.93	0.92	0.93	0.93	0.93	0.93	0.92
Adj. Flow (vph)	0	0	0	57	0	284	0	985	416	0	832	232
RTOR Reduction (vph)	0	0	0	0	0	56	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	57	0	228	0	985	416	0	832	232
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	1%	1%	1%	1%	2%
Turn Type				Prot		Perm		NA	Free		NA	Free
Protected Phases				8				2			6	
Permitted Phases						8			Free			Free
Actuated Green, G (s)				12.4		12.4		19.6	42.0		19.6	42.0
Effective Green, g (s)				12.4		12.4		19.6	42.0		19.6	42.0
Actuated g/C Ratio				0.30		0.30		0.47	1.00		0.47	1.00
Clearance Time (s)				5.0		5.0		5.0			5.0	
Vehicle Extension (s)				3.0		3.0		3.0			3.0	
Lane Grp Cap (vph)				532		476		1667	1599		1667	1583
v/s Ratio Prot				0.03				c0.28			0.23	
v/s Ratio Perm						c0.14			0.26			0.15
v/c Ratio				0.11		0.48		0.59	0.26		0.50	0.15
Uniform Delay, d1				10.8		12.2		8.2	0.0		7.8	0.0
Progression Factor				1.00		1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2				0.1		0.8		0.6	0.4		0.2	0.2
Delay (s)				10.9		12.9		8.8	0.4		8.0	0.2
Level of Service				B		B		A	A		A	A
Approach Delay (s)		0.0			12.6			6.3			6.3	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	0	6	149	0	88	5	935	251	148	832	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	11	12	12	12	12	12
Grade (%)		2%			-2%			-3%			1%	
Total Lost time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1752	1599	1698	1698	1599	1476	3628	1607	1761	3555	
Flt Permitted		0.95	1.00	0.95	0.95	1.00	0.31	1.00	1.00	0.13	1.00	
Satd. Flow (perm)		1752	1599	1698	1698	1599	489	3628	1607	248	3555	
Peak-hour factor, PHF	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)	3	0	7	162	0	96	5	1016	273	161	904	2
RTOR Reduction (vph)	0	0	7	0	0	77	0	0	0	0	0	0
Lane Group Flow (vph)	0	3	0	81	81	19	5	1016	273	161	906	0
Heavy Vehicles (%)	2%	0%	0%	2%	2%	2%	20%	1%	2%	2%	1%	0%
Turn Type	Split	NA	pm+ov	Split	NA	pm+ov	pm+pt	NA	Free	pm+pt	NA	
Protected Phases	4	4	1	3	3	5	1	6		5	2	
Permitted Phases			4			3	6		Free	2		
Actuated Green, G (s)		0.6	1.2	6.9	6.9	14.3	31.9	31.9	70.8	38.7	38.7	
Effective Green, g (s)		0.6	1.2	6.9	6.9	14.3	31.9	31.9	70.8	38.7	38.7	
Actuated g/C Ratio		0.01	0.02	0.10	0.10	0.20	0.45	0.45	1.00	0.55	0.55	
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0	2.0	3.0	3.0	3.0	2.0	4.0		3.0	4.0	
Lane Grp Cap (vph)		14	27	165	165	322	228	1634	1607	293	1943	
v/s Ratio Prot		0.00	0.00	c0.05	0.05	0.01	0.00	c0.28		0.06	c0.25	
v/s Ratio Perm			0.00			0.01	0.01		c0.17	0.24		
v/c Ratio		0.21	0.00	0.49	0.49	0.06	0.02	0.62	0.17	0.55	0.47	
Uniform Delay, d1		34.9	34.2	30.3	30.3	22.8	10.8	14.8	0.0	10.8	9.8	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		7.6	0.0	2.3	2.3	0.1	0.0	0.8	0.2	2.1	0.2	
Delay (s)		42.4	34.2	32.6	32.6	22.9	10.8	15.7	0.2	12.9	10.0	
Level of Service		D	C	C	C	C	B	B	A	B	B	
Approach Delay (s)		36.7			29.0			12.4			10.4	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	70.8	Sum of lost time (s)	24.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	1	226	8	3	16	268	732	8	15	741	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	11	12	12	12	11	11	12	11	11	11
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85		0.92		1.00	1.00		1.00	0.98	
Flt Protected		0.95	1.00		0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1775	1561		1720		1728	3450		1745	3379	
Flt Permitted		0.71	1.00		0.88		0.18	1.00		0.34	1.00	
Satd. Flow (perm)		1315	1561		1529		329	3450		633	3379	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	118	1	248	9	3	18	295	804	9	16	814	140
RTOR Reduction (vph)	0	0	21	0	16	0	0	1	0	0	15	0
Lane Group Flow (vph)	0	119	227	0	14	0	295	812	0	16	939	0
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	1%	1%	0%	0%	1%	1%
Turn Type	Perm	NA	pm+ov	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4	1		8		1	6		5	2	
Permitted Phases	4		4	8			6			2		
Actuated Green, G (s)		7.9	17.7		7.9		41.7	36.0		27.6	26.9	
Effective Green, g (s)		7.9	17.7		7.9		41.7	36.0		27.6	26.9	
Actuated g/C Ratio		0.13	0.30		0.13		0.70	0.60		0.46	0.45	
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		2.0	2.0		2.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)		174	594		202		460	2083		306	1525	
v/s Ratio Prot			c0.06				c0.11	0.24		0.00	0.28	
v/s Ratio Perm		c0.09	0.08		0.01		c0.34			0.02		
v/c Ratio		0.68	0.38		0.07		0.64	0.39		0.05	0.62	
Uniform Delay, d1		24.7	16.6		22.6		6.2	6.1		8.7	12.4	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		8.5	0.1		0.1		2.3	0.3		0.0	1.1	
Delay (s)		33.2	16.8		22.7		8.5	6.4		8.7	13.5	
Level of Service		C	B		C		A	A		A	B	
Approach Delay (s)		22.1			22.7			6.9			13.4	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	59.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	291	158	148	706	735	314
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11
Grade (%)	3%			0%	0%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1702	1523	1728	3455	3300	
Flt Permitted	0.95	1.00	0.16	1.00	1.00	
Satd. Flow (perm)	1702	1523	284	3455	3300	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	306	166	156	743	774	331
RTOR Reduction (vph)	0	49	0	0	64	0
Lane Group Flow (vph)	306	117	156	743	1041	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	pm+ov	pm+pt	NA	NA	
Protected Phases	3	6	6	1	5	
Permitted Phases		3	1			
Actuated Green, G (s)	14.7	21.8	38.9	38.9	26.8	
Effective Green, g (s)	14.7	21.8	38.9	38.9	26.8	
Actuated g/C Ratio	0.23	0.34	0.61	0.61	0.42	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	
Vehicle Extension (s)	2.0	2.0	2.0	5.0	5.0	
Lane Grp Cap (vph)	393	641	334	2113	1390	
v/s Ratio Prot	c0.18	0.02	c0.05	0.22	c0.32	
v/s Ratio Perm		0.06	0.23			
v/c Ratio	0.78	0.18	0.47	0.35	0.75	
Uniform Delay, d1	22.9	14.7	16.4	6.1	15.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.6	0.1	0.4	0.2	2.7	
Delay (s)	31.5	14.7	16.7	6.3	18.3	
Level of Service	C	B	B	A	B	
Approach Delay (s)	25.6			8.1	18.3	
Approach LOS	C			A	B	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	63.6	Sum of lost time (s)	15.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	337	16	181	56	19	44	187	840	65	63	852	377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	12	11	11	11	11	11	12
Grade (%)		1%			0%			0%			0%	
Total Lost time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.95		1.00	0.95	1.00
Frt		1.00	0.85		0.95		1.00	0.99		1.00	1.00	0.85
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1804	1607		1704		1745	3420		1745	3455	1615
Flt Permitted		0.69	1.00		0.63		0.19	1.00		0.24	1.00	1.00
Satd. Flow (perm)		1303	1607		1097		349	3420		436	3455	1615
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	344	16	185	57	19	45	191	857	66	64	869	385
RTOR Reduction (vph)	0	0	127	0	30	0	0	7	0	0	0	234
Lane Group Flow (vph)	0	360	58	0	91	0	191	916	0	64	869	151
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		7			3		5	2		1	6	
Permitted Phases	7		7	3			2			6		6
Actuated Green, G (s)		22.3	22.3		22.3		37.4	31.3		30.8	28.0	28.0
Effective Green, g (s)		22.3	22.3		22.3		37.4	31.3		30.8	28.0	28.0
Actuated g/C Ratio		0.31	0.31		0.31		0.52	0.44		0.43	0.39	0.39
Clearance Time (s)		5.0	5.0		5.0		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)		2.0	2.0		2.0		2.0	5.0		2.0	5.0	5.0
Lane Grp Cap (vph)		406	501		342		302	1499		239	1354	633
v/s Ratio Prot							c0.05	0.27		0.01	0.25	
v/s Ratio Perm		c0.28	0.04		0.08		c0.28			0.10		0.09
v/c Ratio		0.89	0.12		0.27		0.63	0.61		0.27	0.64	0.24
Uniform Delay, d1		23.3	17.5		18.4		10.8	15.4		12.3	17.6	14.6
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2		19.6	0.0		0.2		3.2	1.1		0.2	1.4	0.4
Delay (s)		43.0	17.6		18.6		14.0	16.5		12.5	19.1	15.0
Level of Service		D	B		B		B	B		B	B	B
Approach Delay (s)		34.4			18.6			16.0			17.5	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	71.4	Sum of lost time (s)	15.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	4	286	22	9	7	260	903	10	6	1004	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	11	11	11	11	11	11
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1745	1837	1546	1745	1716		1745	3450		1745	3446	
Flt Permitted	1.00	1.00	1.00	1.00	1.00		0.19	1.00		0.26	1.00	
Satd. Flow (perm)	1837	1837	1546	1837	1716		345	3450		475	3446	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	36	4	298	23	9	7	271	941	10	6	1046	21
RTOR Reduction (vph)	0	0	89	0	7	0	0	0	0	0	1	0
Lane Group Flow (vph)	36	4	209	23	9	0	271	951	0	6	1066	0
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	4	7	2	8	3		2	5		6	1	
Permitted Phases	7		7	3			5			1		
Actuated Green, G (s)	4.2	2.1	12.1	1.2	0.6		40.9	33.9		25.9	24.9	
Effective Green, g (s)	4.2	2.1	12.1	1.2	0.6		40.9	33.9		25.9	24.9	
Actuated g/C Ratio	0.07	0.04	0.21	0.02	0.01		0.70	0.58		0.44	0.42	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	128	65	319	36	17		479	1995		231	1464	
v/s Ratio Prot	c0.01	0.00	c0.11	0.01	0.01		0.10	0.28		0.00	c0.31	
v/s Ratio Perm	0.01		0.02	0.01			0.30			0.01		
v/c Ratio	0.28	0.06	0.66	0.64	0.53		0.57	0.48		0.03	0.73	
Uniform Delay, d1	25.8	27.3	21.3	27.9	28.9		11.5	7.2		11.3	14.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.1	3.7	24.2	15.1		0.9	0.2		0.0	2.0	
Delay (s)	26.3	27.4	25.0	52.1	44.0		12.4	7.4		11.3	16.0	
Level of Service	C	C	C	D	D		B	A		B	B	
Approach Delay (s)		25.2			48.8			8.5			16.0	
Approach LOS		C			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	58.6	Sum of lost time (s)	21.0
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	262	199	147	245	291	65	113	583	247	71	649	319
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		2%			-2%			0%			0%	
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3467	3470	1440	3537	3540	1599	3303	3574	1583	3502	3574	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3467	3470	1440	3537	3540	1599	3303	3574	1583	3502	3574	1615
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	279	212	156	261	310	69	120	620	263	76	690	339
RTOR Reduction (vph)	0	0	130	0	0	59	0	0	174	0	0	211
Lane Group Flow (vph)	279	212	26	261	310	10	120	620	89	76	690	128
Heavy Vehicles (%)	0%	3%	11%	0%	3%	2%	6%	1%	2%	0%	1%	0%
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	7		8	3		2	5		6	1	
Permitted Phases			7			3			5			1
Actuated Green, G (s)	12.3	13.4	13.4	10.9	12.0	12.0	7.1	27.9	27.9	10.3	31.1	31.1
Effective Green, g (s)	12.3	13.4	13.4	10.9	12.0	12.0	7.1	27.9	27.9	10.3	31.1	31.1
Actuated g/C Ratio	0.15	0.16	0.16	0.13	0.15	0.15	0.09	0.34	0.34	0.12	0.38	0.38
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Vehicle Extension (s)	4.0	4.0	4.0	2.0	2.0	2.0	2.0	5.0	5.0	2.0	5.0	5.0
Lane Grp Cap (vph)	516	563	233	467	514	232	284	1208	535	437	1347	608
v/s Ratio Prot	c0.08	0.06		0.07	c0.09		0.04	c0.17		0.02	c0.19	
v/s Ratio Perm			0.02			0.01			0.06			0.08
v/c Ratio	0.54	0.38	0.11	0.56	0.60	0.04	0.42	0.51	0.17	0.17	0.51	0.21
Uniform Delay, d1	32.5	30.8	29.5	33.5	33.0	30.3	35.8	21.9	19.1	32.3	19.8	17.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.5	0.6	0.3	0.8	1.4	0.0	0.4	0.7	0.3	0.1	0.7	0.4
Delay (s)	33.9	31.4	29.8	34.4	34.4	30.3	36.1	22.6	19.5	32.4	20.5	17.8
Level of Service	C	C	C	C	C	C	D	C	B	C	C	B
Approach Delay (s)		32.1			33.9			23.4			20.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	82.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

LANE SUMMARY

Site: Capital View Casino & Resort - Build Saturday Midday

US Route 4 & Mannix Road
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: US Route 4													
Lane 1	655	1.0	1302	0.503	100	4.6	LOS A	4.3	108.1	Full	1600	0.0	0.0
Lane 2[d]	666	0.9	1324	0.503	100	4.3	LOS A	4.3	108.2	Full	1600	0.0	0.0
Approach	1321	0.9		0.503		4.5	LOS A	4.3	108.2				
East: Mannix Road													
Lane 1	32	0.0	575	0.055	100	14.2	LOS B	0.2	5.2	Full	1600	0.0	0.0
Lane 2[d]	35	0.0	642	0.055	100	8.0	LOS A	0.2	5.3	Full	1600	0.0	0.0
Approach	67	0.0		0.055		10.9	LOS B	0.2	5.3				
North: US Route 4													
Lane 1	541	1.0	1186	0.456	100	4.8	LOS A	3.0	75.0	Full	1600	0.0	0.0
Lane 2[d]	541	0.9	1187	0.456	100	4.5	LOS A	3.0	75.0	Full	1600	0.0	0.0
Approach	1081	1.0		0.456		4.6	LOS A	3.0	75.0				
West: Mannix Road													
Lane 1[d]	51	0.0	536	0.094	100	10.9	LOS B	0.3	8.6	Full	1600	0.0	0.0
Approach	51	0.0		0.094		10.9	LOS B	0.3	8.6				
Intersection	2520	0.9		0.503		4.8	LOS A	4.3	108.2				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

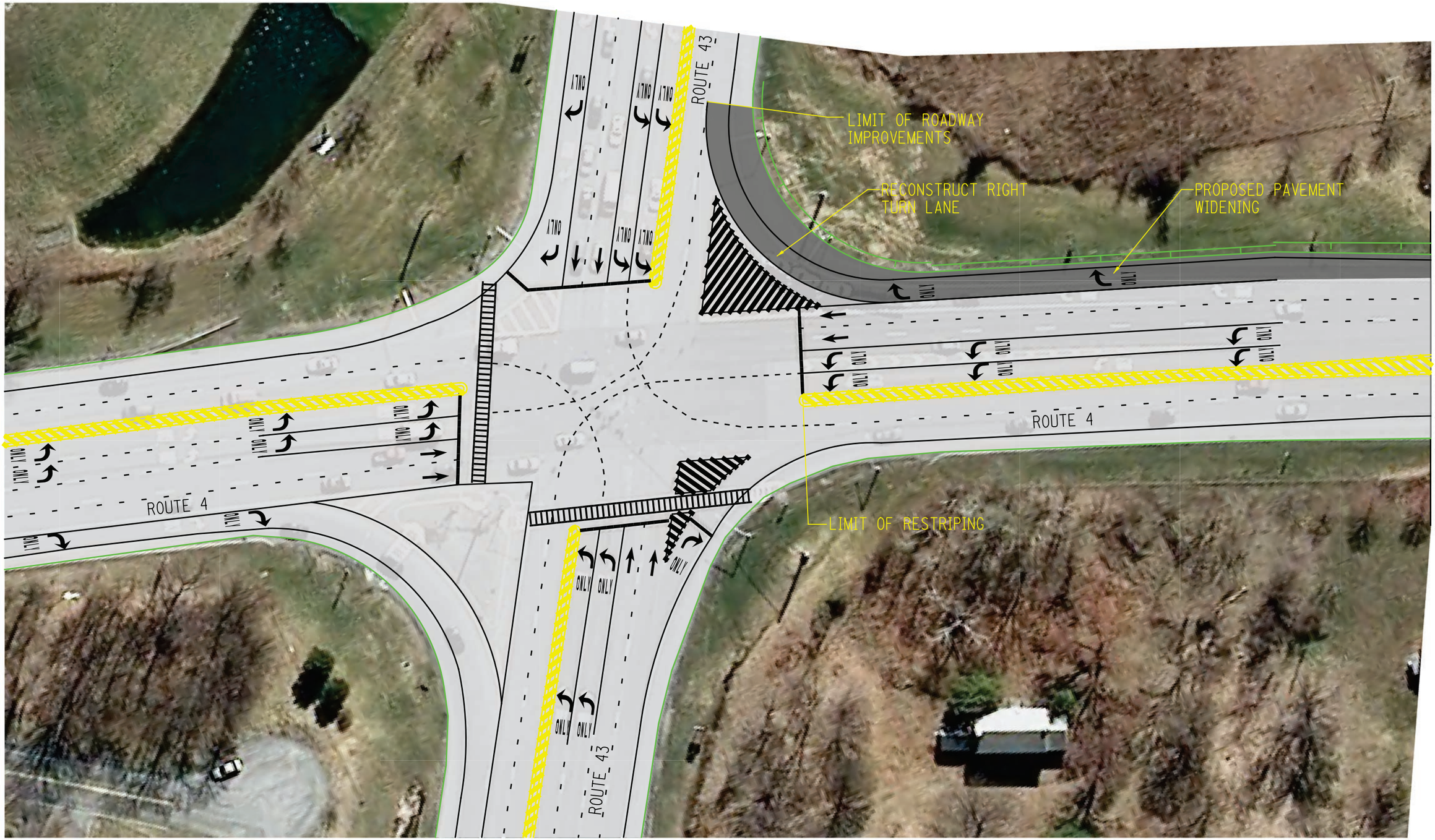
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	23	48	54	3	12	17
Sign Control		Free	Free		Stop	
Grade		3%	-3%		-3%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	28	58	65	4	14	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	69				180	67
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	69				180	67
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				98	98
cM capacity (veh/h)	1545				800	1002

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	28	58	69	35
Volume Left	28	0	0	14
Volume Right	0	0	4	20
cSH	1545	1700	1700	907
Volume to Capacity	0.02	0.03	0.04	0.04
Queue Length 95th (ft)	1	0	0	3
Control Delay (s)	7.4	0.0	0.0	9.1
Lane LOS	A			A
Approach Delay (s)	2.4		0.0	9.1
Approach LOS				A

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	17.9%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX F

Mitigation Concepts



CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

FIGURE: F-1

CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

FIGURE: F-2

CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

FIGURE: F-3

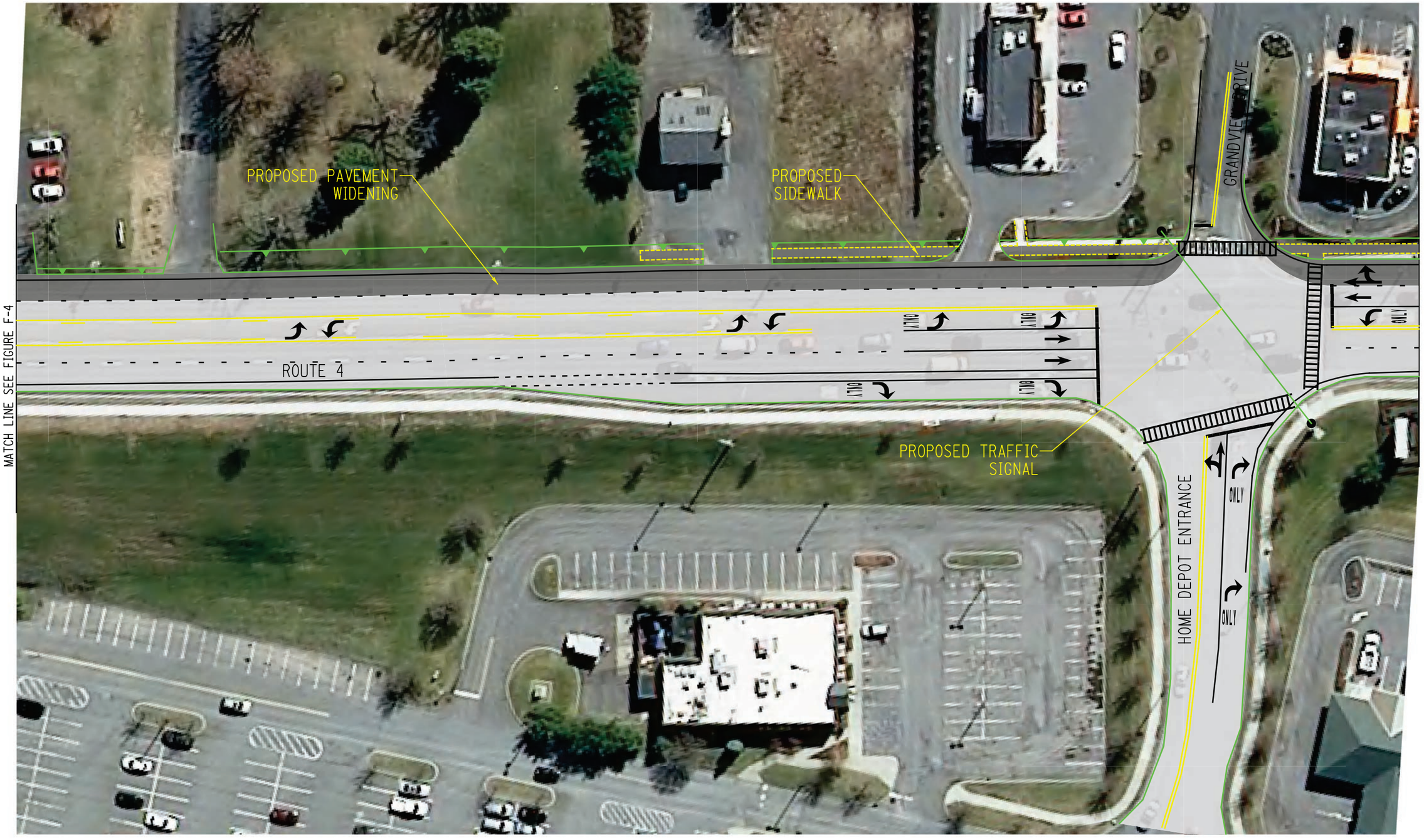
CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

FIGURE: F-4



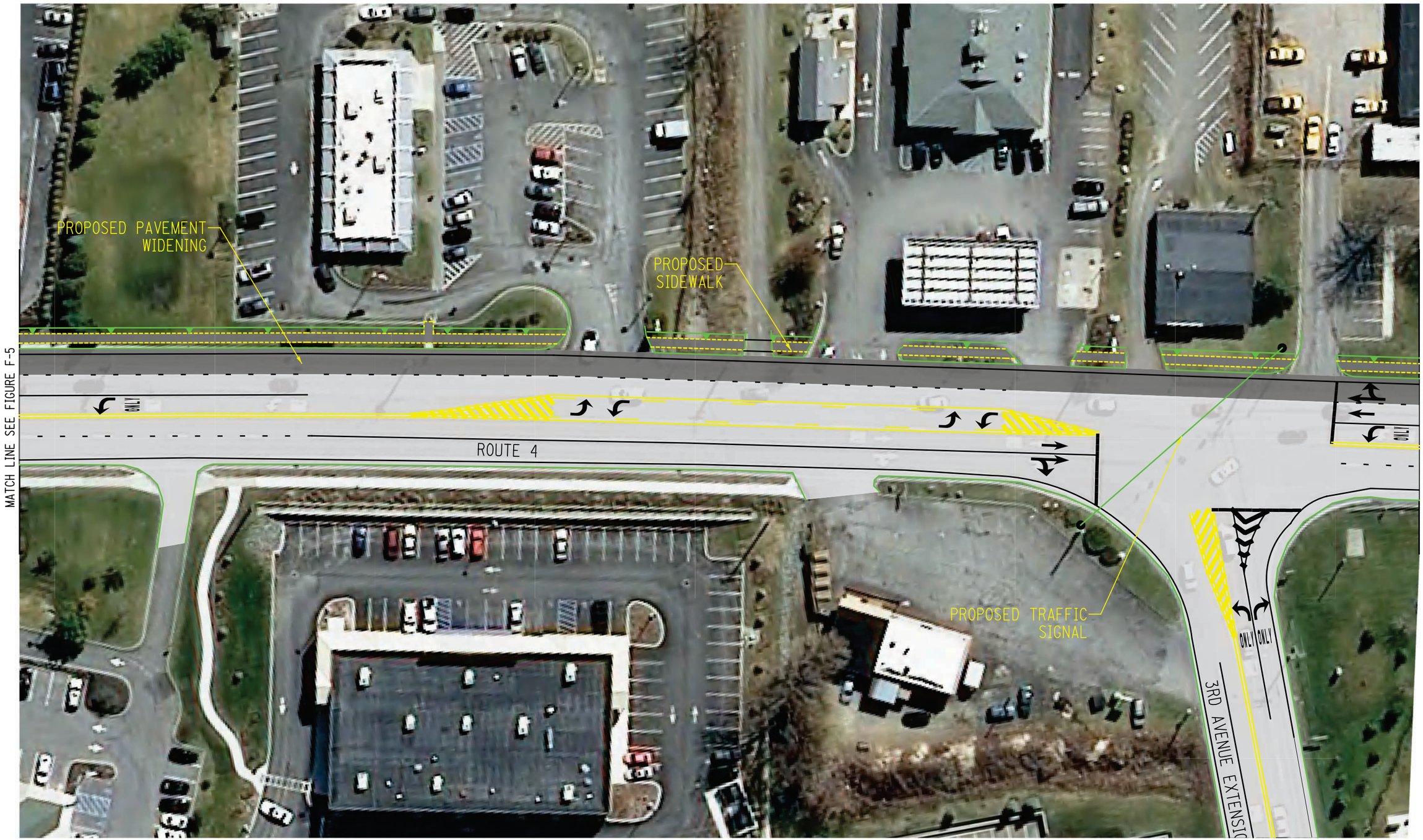
CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

FIGURE: F-5



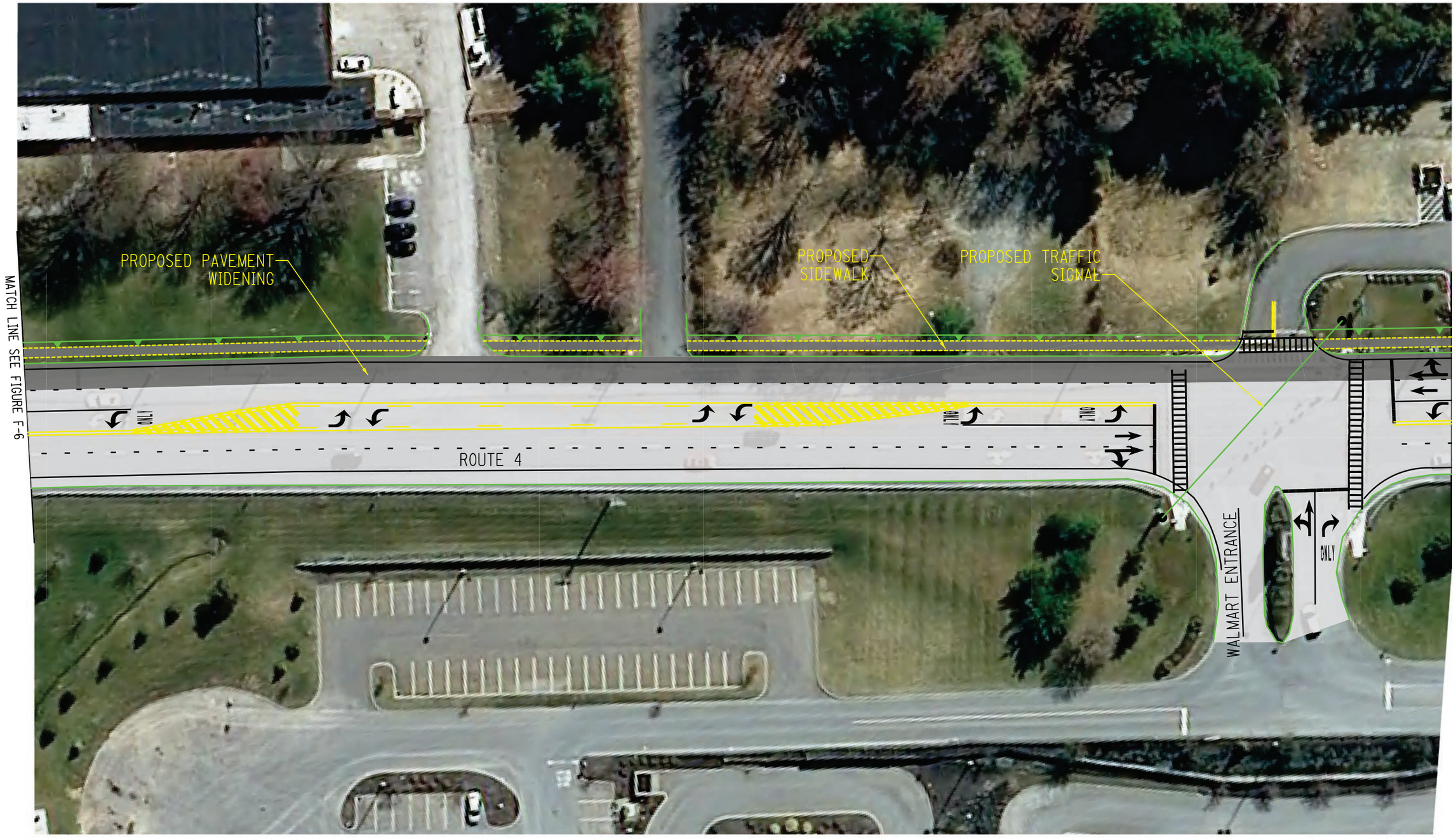
CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

FIGURE: F-6

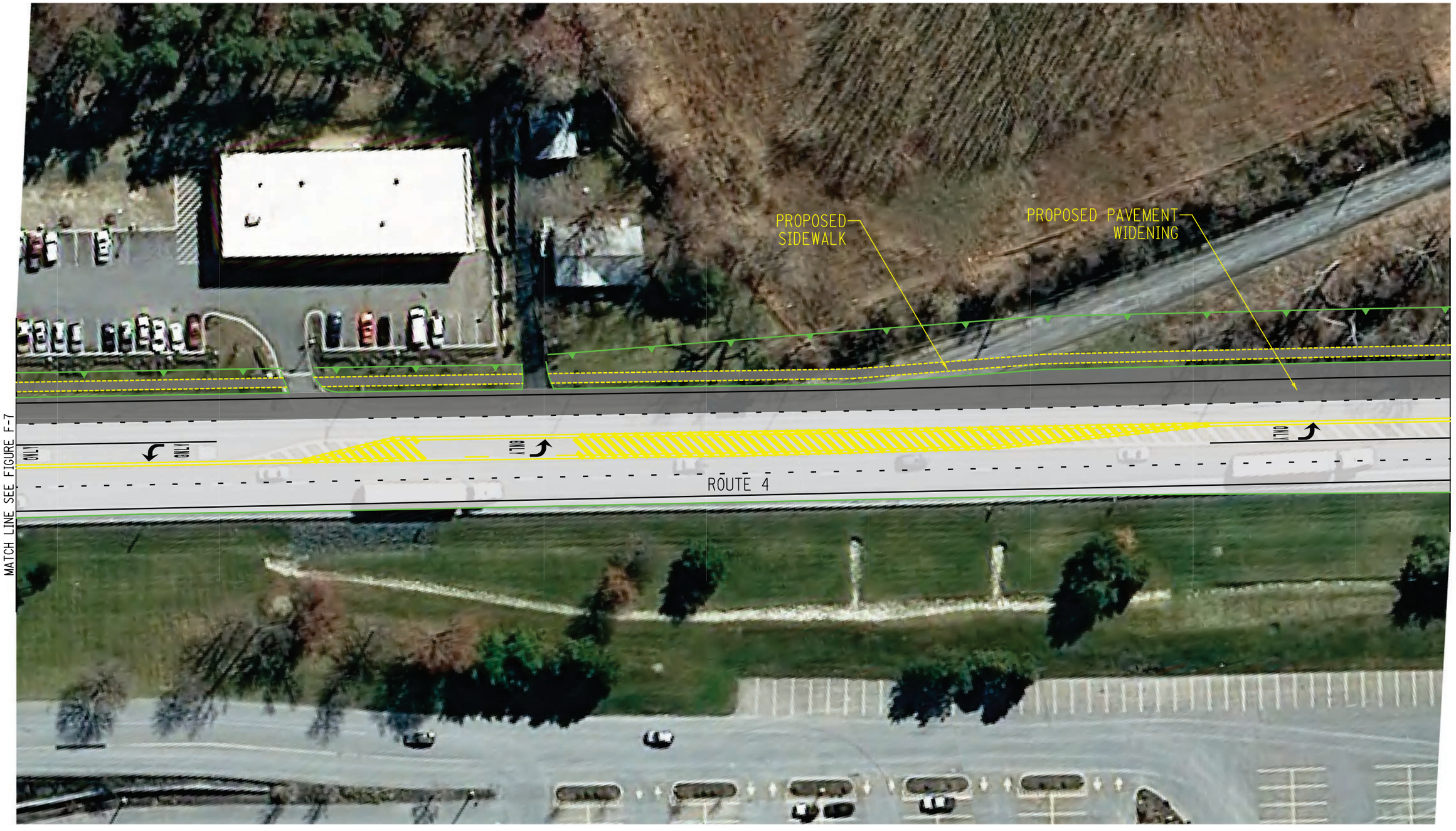


CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS
JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

FIGURE: F-7



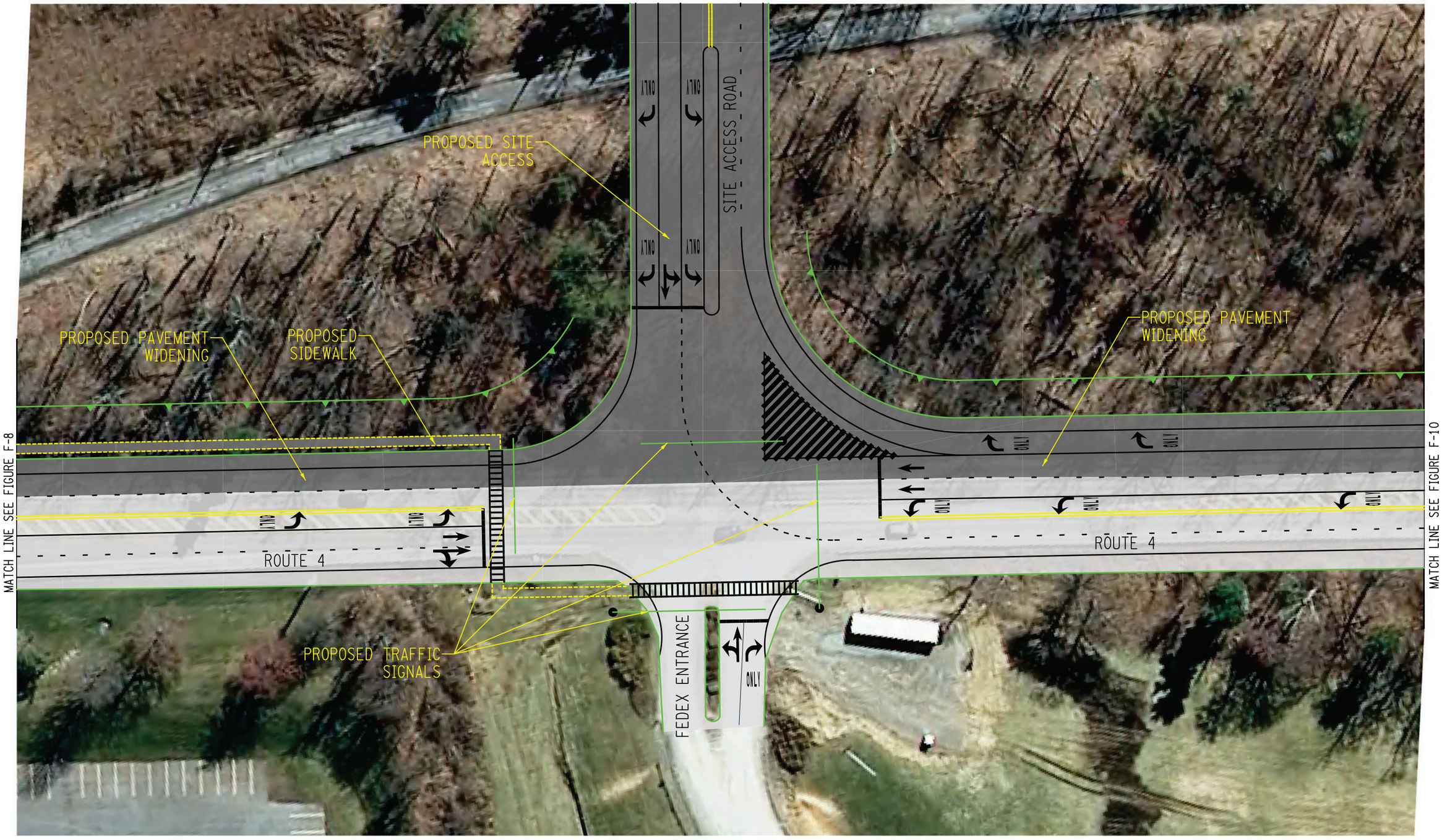
CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

FIGURE: F-8



CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

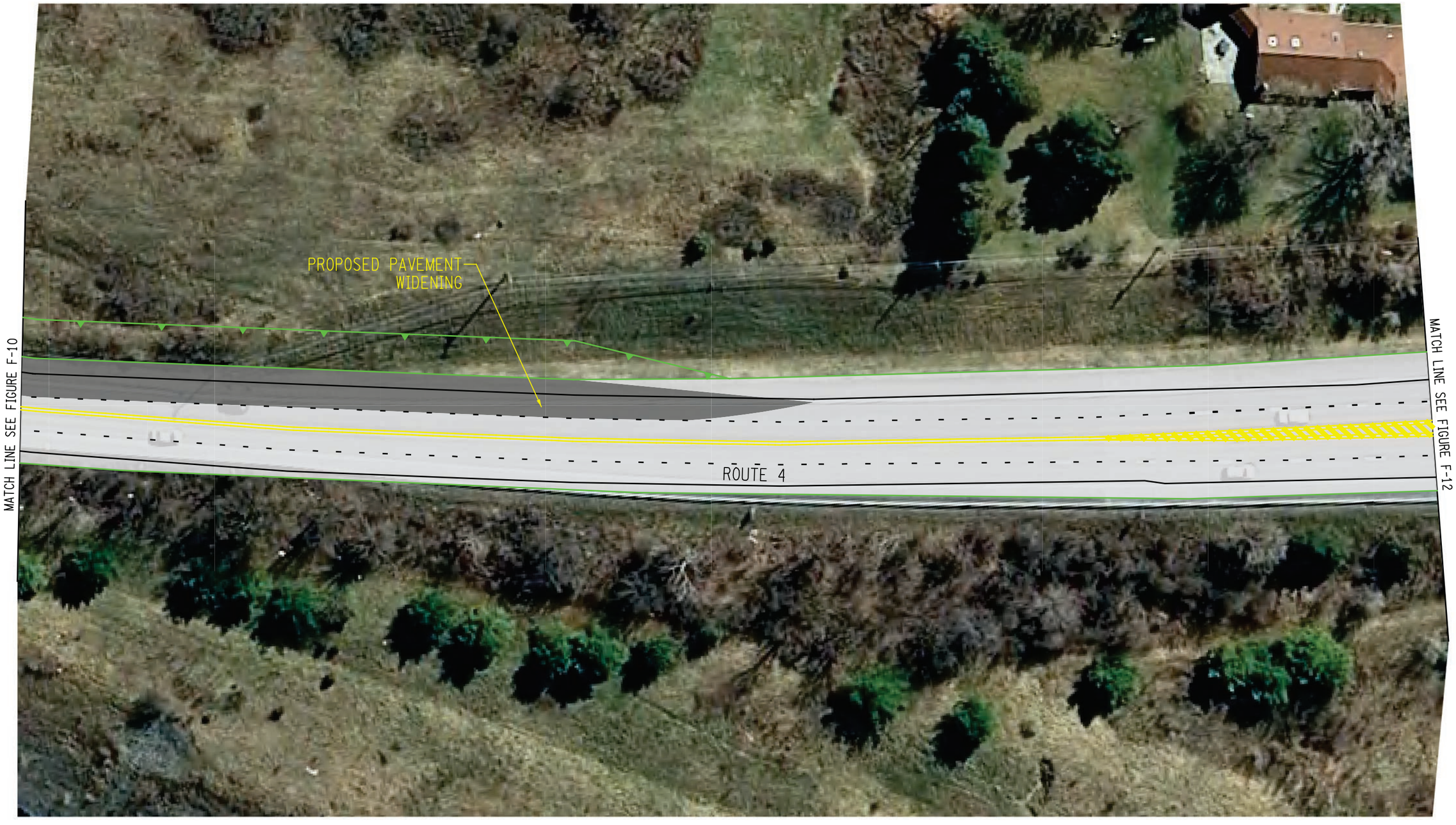
FIGURE: F-9

CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS
JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

FIGURE: F-10



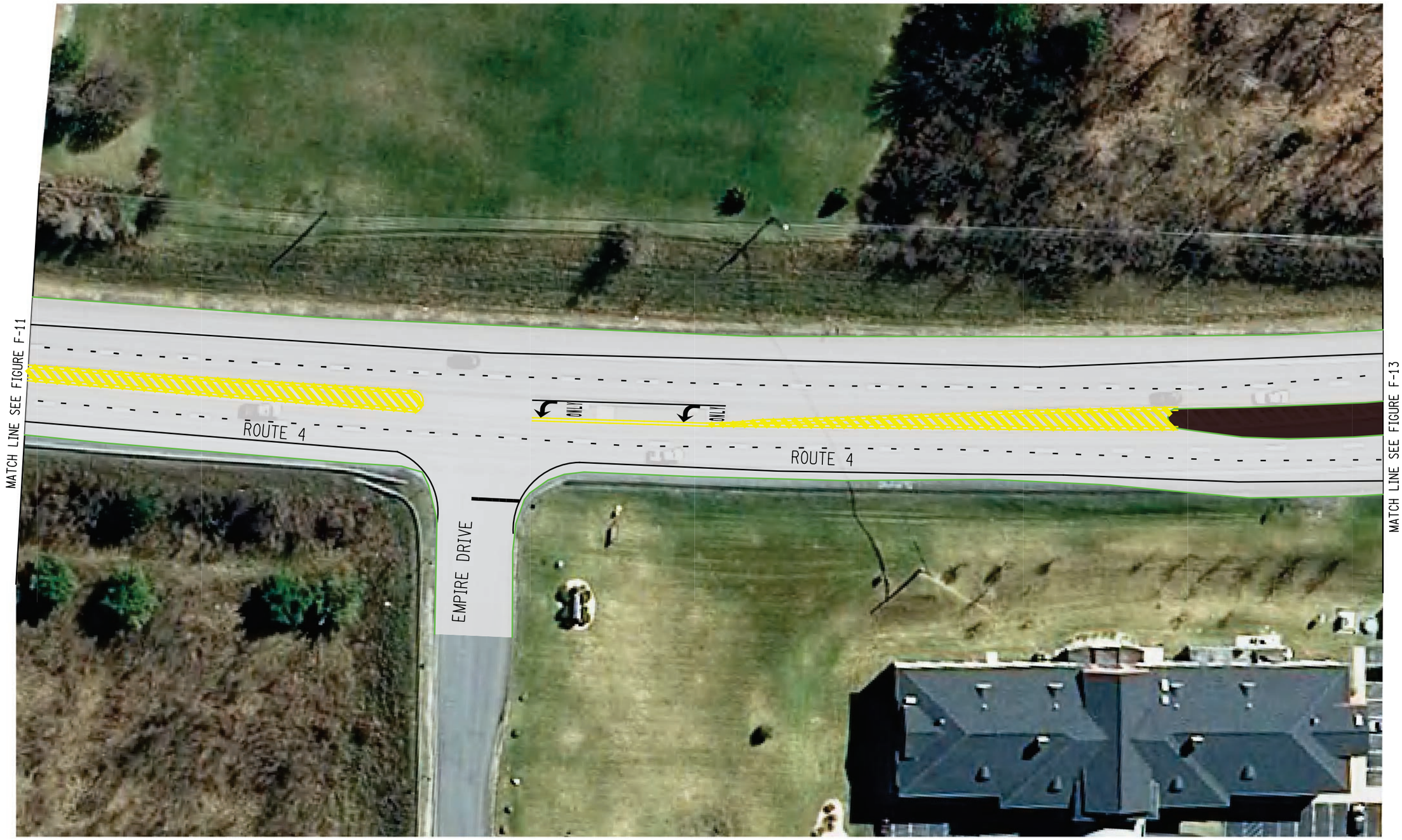
CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

FIGURE: F-11



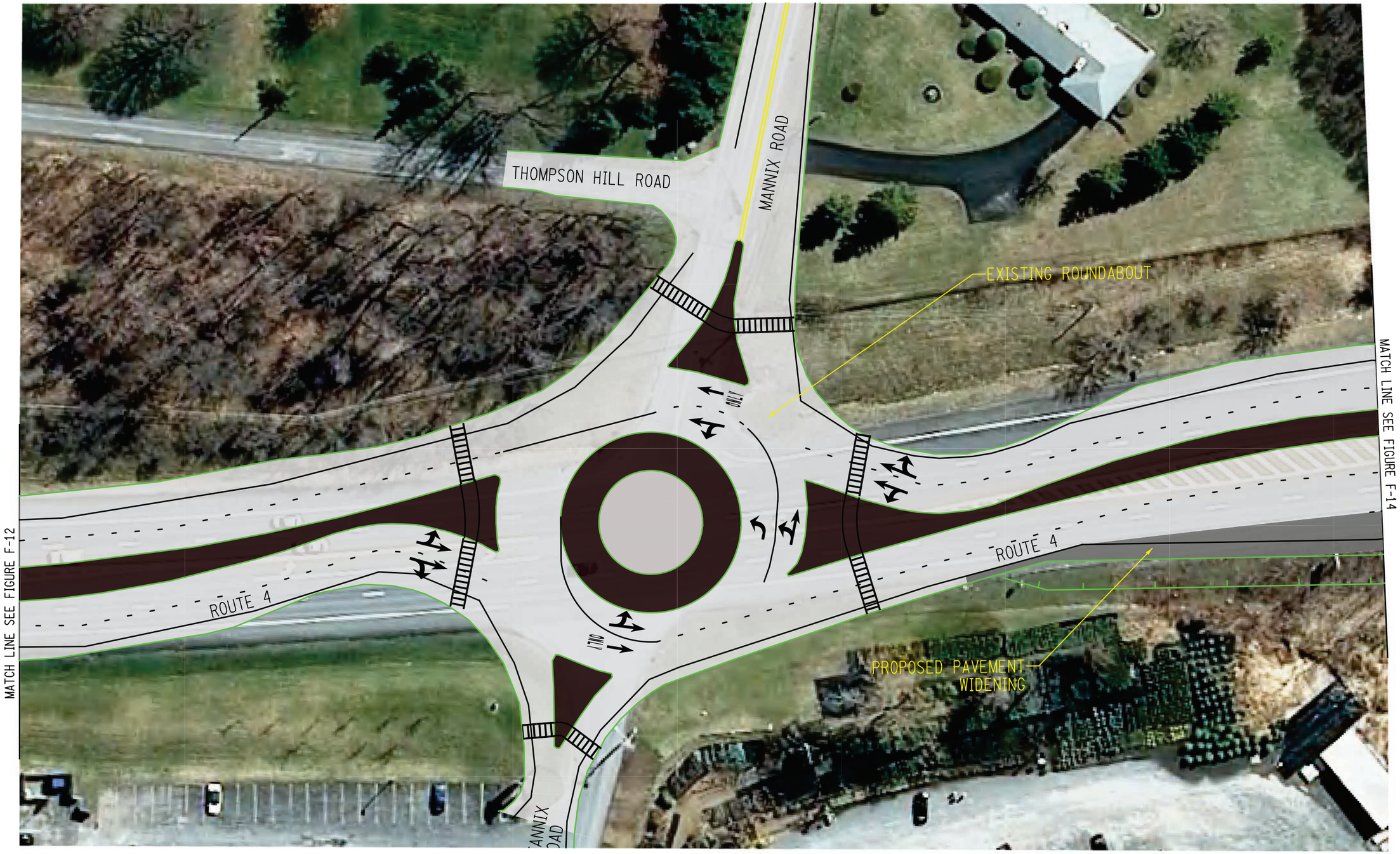
CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

FIGURE: F-12



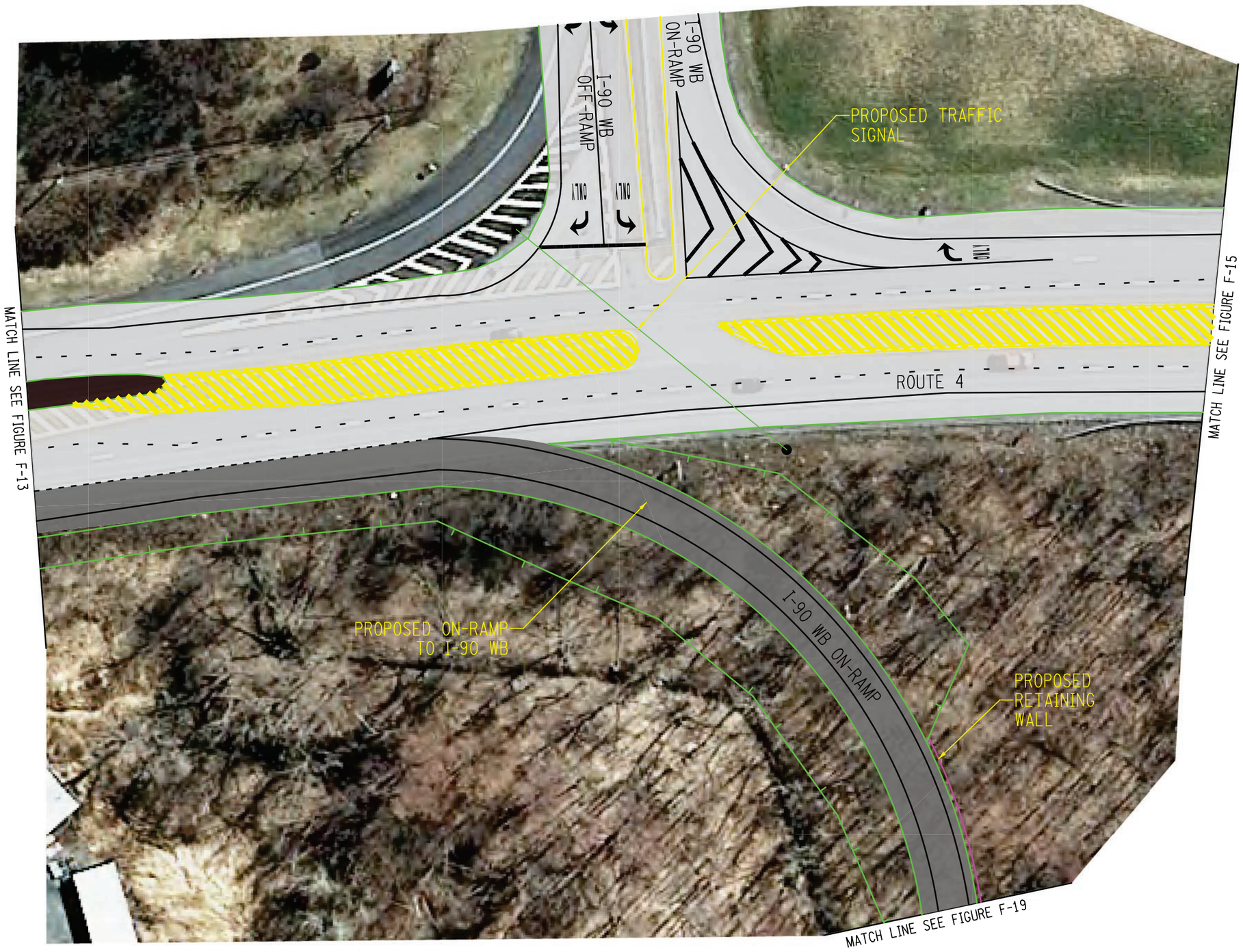
CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

FIGURE: F-13



CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

FIGURE: F-14

CAPITAL VIEW
CASINO & RESORT

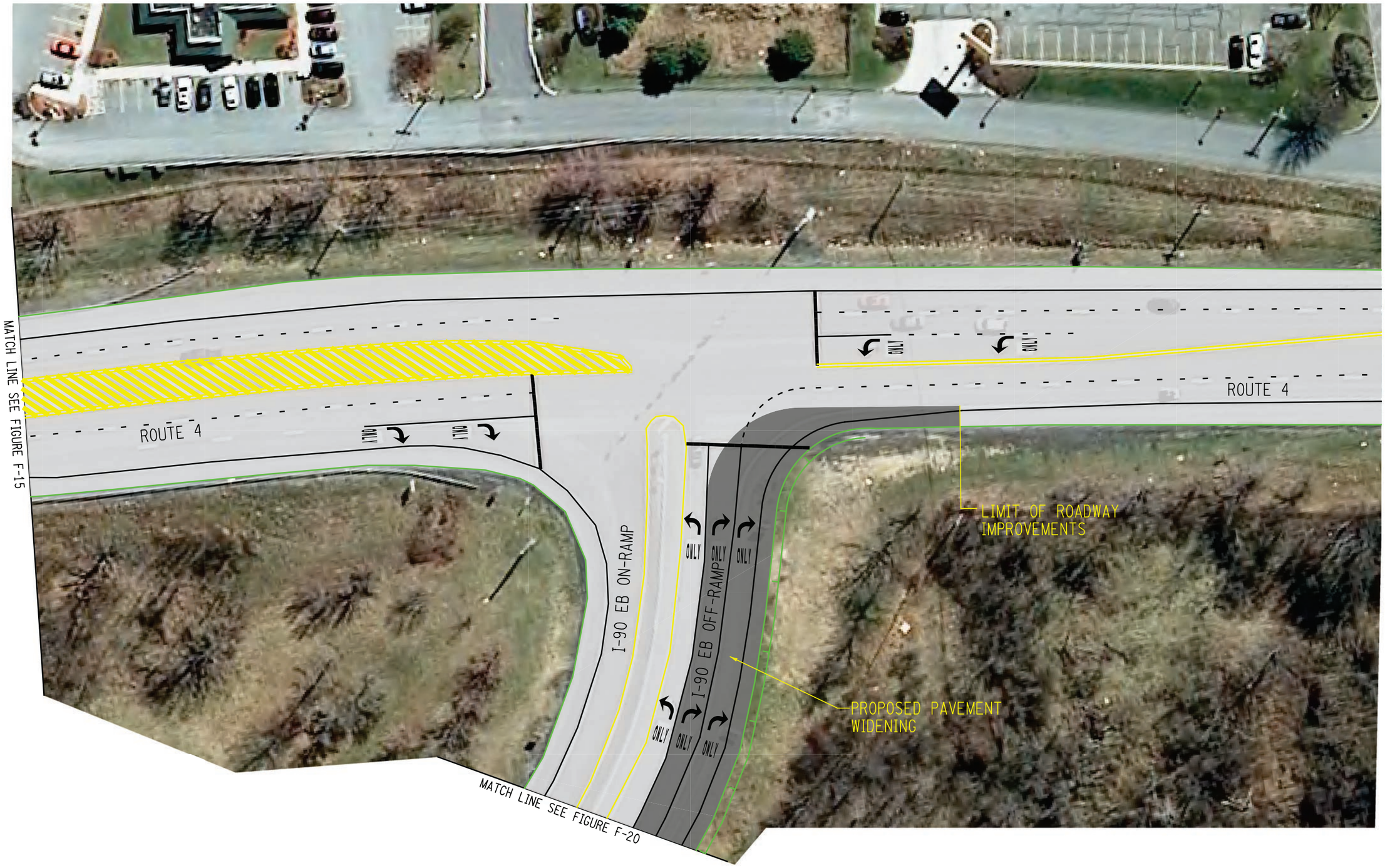
ROADWAY IMPROVEMENT PLANS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

N

0 25 50
Scale in feet

FIGURE: F-15



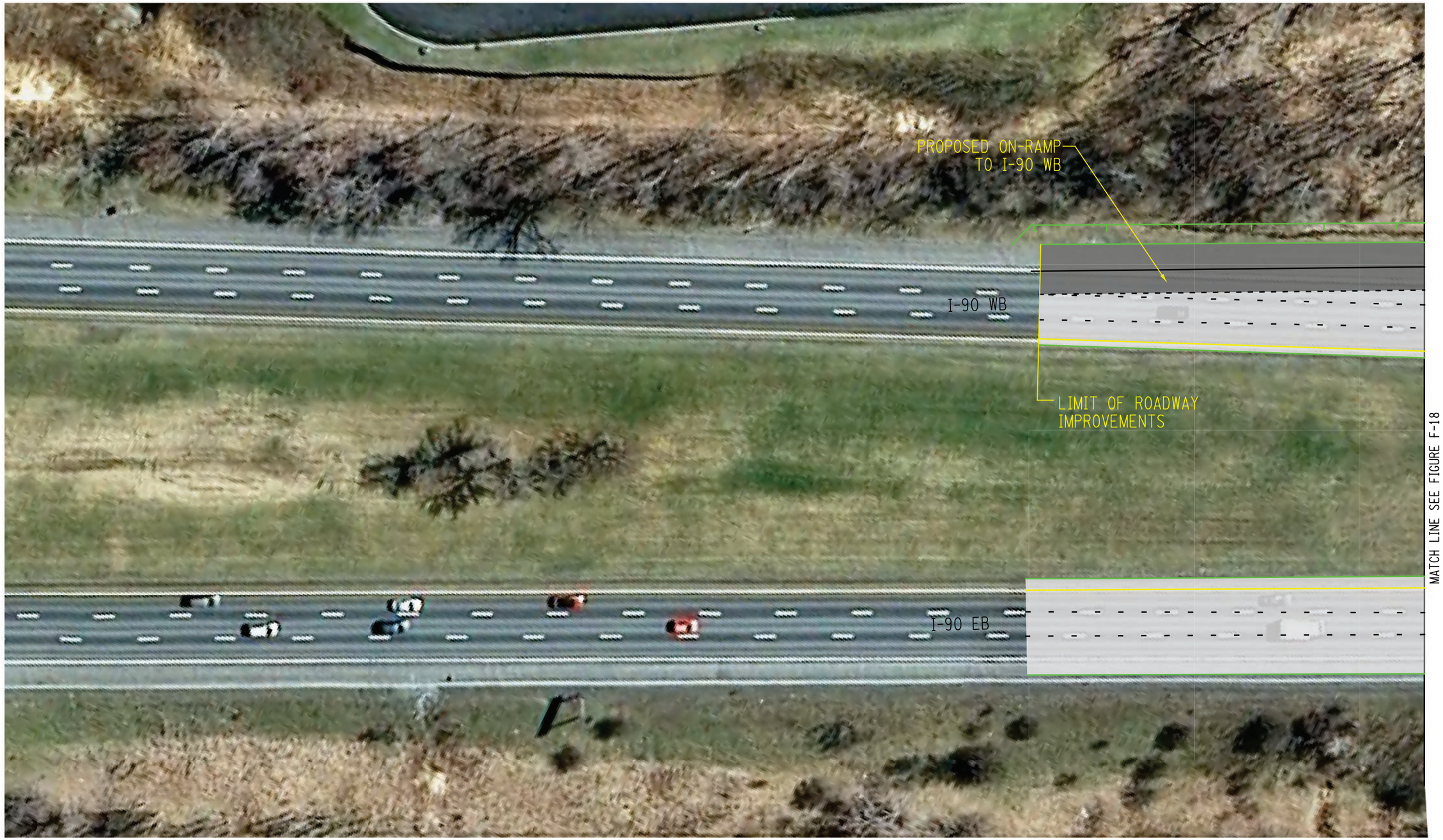
CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

FIGURE: F-16



CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

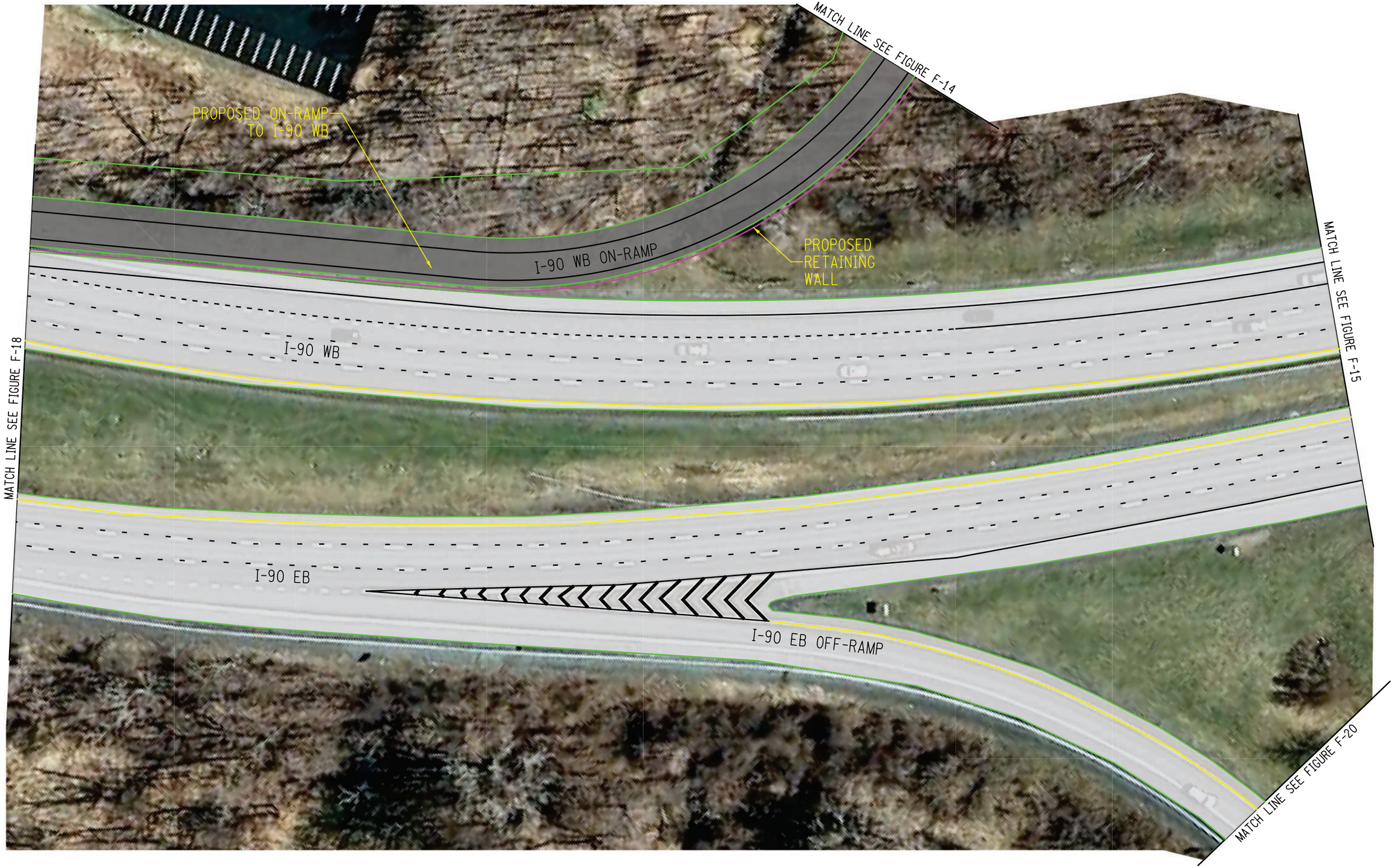
FIGURE: F-17

CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS
JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

FIGURE: F-18



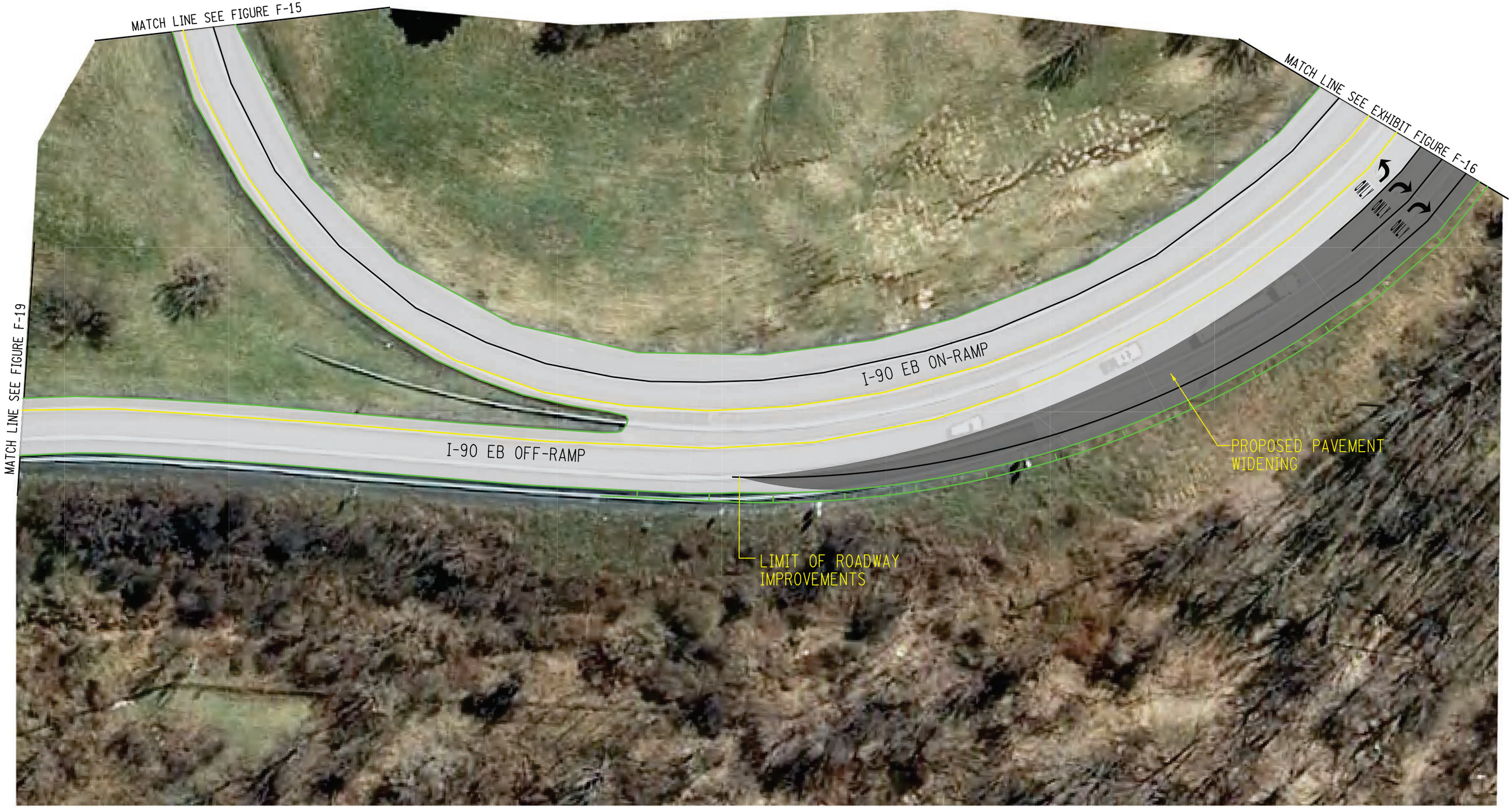
CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

0 25 50
Scale in feet

FIGURE: F-19



CAPITAL VIEW
CASINO & RESORT

ROADWAY IMPROVEMENT PLANS

JCJ ARCHITECTURE CHA COMPANIES M/E ENGINEERING DESIMONE ENGINEERS

N

0 25 50
Scale in feet

FIGURE: F-20