



Village of Arlington Heights
Plan Commission
Board Room, 3rd Floor
Arlington Heights Village Hall
33 S. Arlington Heights Road
Arlington Heights, IL 60005
June 26, 2019
7:30 PM

I. CALL TO ORDER

II. ROLL CALL

III. APPROVAL OF MINUTES

- A. Dogtopia - 6/12/19
- B. Arlington Downs - 6/12/19
- C. 1400 W. Thomas St. - 6/12/19

IV. PUBLIC HEARINGS

- A. Sigwalt 16 (37-45 S. Chestnut Ave. & 36-40 S. Highland Ave.) -
PC# 19-005
PUD, Rezoning from R-3 to R-7, Subdivision, Variations
- B. Raising Canes - 225 E. Palatine Rd. - PC# 19-006
PUD Amendment, SUP for restaurant with drive-thru

V. OTHER BUSINESS

VI. ADJOURNMENT

Persons with disabilities requiring auxiliary aids or services, such as an American Sign Language interpreter or written materials in accessible formats, should contact David Robb, Disability Services Coordinator, at 33 S. Arlington Heights Road, Arlington Heights, Illinois 60005, (847)368-5793 (Voice), (847)368-5980 (Fax) or drobb@vah.com.



**Plan Commission
6/26/2019**

Item: Dogtopia - 6/12/19

Department: Planning & Community Development

ATTACHMENTS:

Description

Dogtopia - 6/12/19

Type

Minutes

PLAN

REPORT OF THE PROCEEDINGS OF A PUBLIC HEARING
BEFORE THE VILLAGE OF ARLINGTON HEIGHTS
PLAN COMMISSION

COMMISSION

RE: DOGTOPIA - 660, 664, 668, 676 & 1000 EAST RAND ROAD - PC# 19-004
SPECIAL USE PERMIT, VARIATIONS

REPORT OF PROCEEDINGS had before the Village of
Arlington Heights Plan Commission Meeting taken at the Arlington Heights Village
Hall, 33 South Arlington Heights Road, 3rd Floor Board Room, Arlington Heights,
Illinois on the 12th day of June, 2019 at the hour of 7:00 p.m.

MEMBERS PRESENT:

TERRY ENNES, Chairman
LYNN JENSEN
MARY JO WARSKOW
JOE LORENZINI
BRUCE GREEN
SUSAN DAWSON

ALSO PRESENT:

BILL ENRIGHT, Planning & Community Development Deputy Director
JACOB SCHMIDT, Assistant Development Planner

CHAIRMAN ENNES: The Arlington Heights Plan Commission is called to order. I would like to ask you all to please rise and follow us in the Pledge of Allegiance.

(Pledge of Allegiance cited.)

CHAIRMAN ENNES: Please be seated. Okay, Jake, will you do the role?

MR. SCHMIDT: Certainly. Commissioner Cherwin.

(No response.)

MR. SCHMIDT: Commissioner Dawson.

COMMISSIONER DAWSON: Yes.

MR. SCHMIDT: Commissioner Drost.

(No response.)

MR. SCHMIDT: Commissioner Green.

COMMISSIONER GREEN: Here.

MR. SCHMIDT: Commissioner Jensen.

COMMISSIONER JENSEN: Here.

MR. SCHMIDT: Commissioner Lorenzini.

COMMISSIONER LORENZINI: Here.

MR. SCHMIDT: Commissioner Sigalos.

(No response.)

MR. SCHMIDT: Commissioner Warskow.

COMMISSIONER WARSKOW: Here.

MR. SCHMIDT: Chairman Ennes.

CHAIRMAN ENNES: Here. So, we have minutes from our last meeting on two subjects. The South Arlington Heights Road overlay zoning and the Hickory/Kensington projects. Was everyone at that meeting?

COMMISSIONER LORENZINI: I was not.

CHAIRMAN ENNES: That's here tonight.

COMMISSIONER LORENZINI: I wasn't there.

CHAIRMAN ENNES: Okay, can, I trust you all have the minutes and you had a chance to review them? Can I get a motion to approve those minutes?

COMMISSIONER JENSEN: So moved.

CHAIRMAN ENNES: And a second?

COMMISSIONER GREEN: Second.

CHAIRMAN ENNES: All in favor?

(Chorus of ayes.)

CHAIRMAN ENNES: Anyone opposed?

(No response.)

CHAIRMAN ENNES: And anyone abstaining?

COMMISSIONER LORENZINI: I abstain. I wasn't here.

CHAIRMAN ENNES: Okay, so we're good. Since projects for final plats aren't here I'm not going to move that up and we will get started with our Petitioner on Dogtopia. I would like to ask anybody that's going to talk from the Petitioner to please come forward and to swear you in.

(Witnesses sworn.)

CHAIRMAN ENNES: Okay, state your name.

MR. BARNES: Chris Barnes

MS. BARNES: Catherine Barnes.

CHAIRMAN ENNES: Okay, now what I would like you to do is to give us your presentation and when you do that, if you would please state and spell your name for our court reporter.

MS. BARNES: Yes.

CHAIRMAN ENNES: And let us hear about the project.

MS. BARNES: My name is Catherine Barnes, C-a-t-h-e-r-i-n-e, B-a-r-n-e-s.

MR. BARNES: My name is Chris Barnes, C-h-r-i-s, B-a-r-n-e-s.

MS. BARNES: We are here for a special use permit for a location at Southport, Southpoint Shopping Center. Its address is 660 through 664 East Rand Road. We are here for a specialized business of dog daycare, dog boarding, spa and training. Our services at full capacity will be about 100 dogs a day in separate play rooms based on temperament and size of the dogs. All of the dogs will be over the age of four months old and will be of age to receive all of their shots, including canine influenza. And 65 percent of our business will be dog daycare and 22 percent will be the boarding. The rest will be split between the spa, training, and a small retail. One percent will be retail.

Demographics tells us that in the area, about five miles radius of our location, that 40 percent of the households owns dogs. That means about 50,000 in the five mile radius and 20,000 in a three mile radius. And I know that there are a few dog daycares that will be in the area, but with those numbers we feel like there's enough to go around. Do you want to go over the variances?

MR. BARNES: Yeah. So, are also requesting two variances. One is for the fence height of eight foot versus a six foot that's allowable right now. Reasons for that is essentially to stop people from peering over the fence. It's going to allow us to maintain control of the outdoor play area when the dogs are out there, so canine coaches can control behavior. And then also to avoid having any distractions with the pedestrians on the sidewalk.

The second variance is for a traffic study. So, we did provide in the special use application a study that we did. Going out to a center for three hours on a Monday and also on a Saturday, just to count cars. They were coming in and out, so that's provided over to you guys. But at the shopping center the first, there's five rows of parking immediately in front of our proposal location. The first three contain 177 parking spaces, approximately. We're going to have at any given time about six to eight employee cars at the property. The rest of our car traffic is going to be mostly drop off and pick ups. So, very short time there, minus some that are going to be there for --

MS. BARNES: Evaluations.

MR. BARNES: -- evaluations for potential customers. We also have two light egresses on Rand Road and on Palatine there's two ingress/egress and one egress. So, we feel there's plenty of wait in and out in left turns. It's not going to have an impact on traffic of the roads.

CHAIRMAN ENNES: Is that it?

MS. BARNES: That's it.

MR. BARNES: That's it.

CHAIRMAN ENNES: Short and sweet, okay. Do we have any -- well, we won't get into that yet. Jake, will you give us the Staff report? Thank you, you can be seated.

MR. BARNES: Thank you.

MR. SCHMIDT: So, I would like to begin by just mentioning to the Plan Commission that all notices have been served for this project. As the Petitioner stated, they are here before the Commission tonight to seek a special use permit to open a Dogtopia facility in Arlington Heights. The Dogtopia in question will be located at 660 through 676 East Rand Road in the Southpoint Shopping Center. As well as within the courtyard at 1000 East Rand Road immediately east of the tenant spaces.

The subject property is zoned B-3, General Service, Wholesale and Motor Vehicle District, and is designated as Commercial on the Village Comprehensive Plan. The requested action more specifically put is a special use permit to allow a kennel commercial, which if approved, would be compatible with the underlying zoning and comprehensive plan designation.

Two variations are requested part of this petition. The first being a variation from Chapter 28, Section 6.12-12 of the municipal code to waive the requirement to provide a traffic and parking study from a certified traffic engineer. The second variation is from Chapter 28 as well, Section 6.13-3(b) to allow a eight foot tall fence where the maximum fence height permitted by code is six feet.

The 10 spaces are located in the center of the Southpoint Shopping Center, which is accessible from Palatine Road to the north, Rand Road to southwest, and Jane Avenue to the southeast. The four primary services provided by Dogtopia would be doggie daycare, as well as overnight boarding which is targeted to current clients, salon and grooming services, and retail sales. And maximum enrollment of the facility would have capacity for 100 dogs. Dogtopia would operate between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday and 10:00 a.m. to 5:00 p.m. on Saturdays and Sundays.

For overnight boarding operations, dogs would be monitored by a webcam which would alert staff to any issue should they arise. Once the facility reaches full operation, 15 to 20 person will be employed with a maximum of six to eight employees on site at any given time. The majority of the space, the Dogtopia facility, will be taken up by three playrooms for the dogs. Dogs will be separated based upon size and temperament. The other areas will be devoted to kennel suites, of which three are proposed. The dog spa/salon and the outdoor play area. The final design of the outdoor play area had not yet been determine, though there will be four primary design criteria incorporated into that final design. First of which is a maximum width of 45 feet. This will allow for adequate access and visibility to current and any future 10 spaces to the east of the courtyard as well as act as a visibility to the rear auxiliary parking area at the shopping center.

The second design criteria which will be incorporated in the final designs, a eight tall fence which will allow for adequate separation between the general public and the dogs in the play area. As a six foot tall fence is the maximum height permitted by code, variation is required. Staff supports this variation due to the location of the fence within the shopping center as well as the landscaping proposed by the Petitioner to screen and soften the appearance of the fence. This landscaping will be located along the south side of the fence adjacent to the parking area. It will consist of three to four foot tall shrubs at the time of planting. Lastly, the two mature trees within the courtyard will be preserved as part of the construction of the outdoor play area.

With respect to parking, parking is not a concern at this location. For Dogtopia the parking requirement is 19 spaces combined with all other uses within Southpoint.

There's a total site-wide requirement of 937 parking spaces. And Southpoint provides 1,331 spaces. There is a code required surplus of 394 parking spaces. Per Section 6.12-1 of the Village Chapter 28 of the municipal code, any special use permit application over 5,000 square feet floor area must include a traffic and parking study from a certified parking engineer. The Petitioner has requested relief from this requirement and to support this request Petitioner provided written justification, a variation criteria, flows and estimate of parking demand based upon the parking utilization and existing Dogtopia facility in Lagrange.

Staff supports this variation as well for two reasons. It's due to the relatively small magnitude of the space in comparison to the entire shopping center. Dogtopia would be approximately two percent of total PUD square footage. And secondly, Staff supports this variation due to the significant code required parking surplus at the site. With respect to bicycle parking, there are no additional bicycle parking spaces required. As the project does increase the number of code required vehicular parking spaces.

In consideration of the facts, the Staff Development Committee recommends approval of this application. The special use permit and two variations, subject to five conditions as detailed in the Staff report and on this slide. The first four deal with the final design of the outdoor play area and the fifth is, that the Applicant shall comply with all applicable federal, state, and Village codes, regulations, and policies. This concludes my presentation and if there are any questions I'm happy to answer.

CHAIRMAN ENNES: Thank you, Jake. Is there a motion to accept the Staff report?

COMMISSIONER WARSKOW: I'll make such a motion.

CHAIRMAN ENNES: Second?

COMMISSIONER DAWSON: Second.

CHAIRMAN ENNES: All in favor?

(Chorus of ayes.)

CHAIRMAN ENNES: Any oppose?

(No response.)

CHAIRMAN ENNES: Okay, so to -- any Commissioners have questions of the Petitioner?

COMMISSIONER JENSEN: Yes, I just have a couple of them, questions mainly for information worth anything. The mall that you're in is rather desolate. There's hardly anything else around there that's, that is in operation, but what concerns me more is that the parking and the roads are disastrous. I drove over there and I think I may have to replace my shock absorbers and a number of other things. So, is the landlord going to do anything about, or is there anything you are going to do about parking and roads to let people get in and out without destroying their vehicle?

MR. BARNES: This is. So, part of our lease negotiation, obviously, it's a tired shopping center. And our landlord has a pretty soft history of bringing some of these things backs, so part of our lease negotiations involve them replacing our roof, replacing our HVAC, but also a new pair of the caps. They're re-painting the eaves on the outside doing some repairs. And then we also required a mill and overlay. And that work was supposed to start May 15th, but because of some contingency until the special use is done. It hasn't started yet, but it is to be completed this year.

COMMISSIONER JENSEN: So, the road, at least the roads to your place

and parking around your place will be improved, if not throughout a larger area?

MR. BARNES: Yes.

MS. BARNES: Yes.

MR. BARNES: We actually spec'd out two-inch mill and overlay on those areas.

COMMISSIONER JENSEN: Okay, great. The other question, you provide a lot of real great services and I'm sure I'll want to take advantage of those because I have a couple dogs; but how robust is your business plan in terms of the four services you are going to offer? Can you really be competitive, especially with PetSmart, Petco, and others? Especially, you have trainers that have more education, certification, as so forth, and I don't think that's the kind of people who take care of the dogs at PetSmart, so it's hard for me to see how you're going to remain competitive in that, or the other three services.

MS. BARNES: Yep, so Dogtopia is a franchise and currently they are, we about to actually open our 100th store in Deer Park. Part of what differentiates us is the training for our canine coaches. They brought in dog specialists to actually build out a program of how to understand when the dog's temperament, understand how dogs play, when they look like they maybe getting into a fight, you know, how to break that up without actually getting hurt and injured. So, safety first. Think about safety of the dogs and safety of the team members. So, that's one thing that differentiates us.

The trainings is extensive and they go through a training on-hand before we put them into the room. We also have multiple canine coaches in one room, so one can, so they can kind of feed off each other and watch the activity of the dogs. They also have, what we like to call, you know, organized play. And it's not just letting the dogs run free and let them do their own things, but almost guiding them and training them as they are in the room with them for six to eight hours a day. There are times that the dogs will get a rest. Two hours in the middle of the day so there's time to clean and also just time to give the dogs a rest. And we also recommend that dogs only come in about three times a week because they can get agitated and they can get, you know, five days it can get, you know, kind of cranky and so fights would break out or they just may want to come home.

So, we have specialists that, were provided by Dogtopia as part of our franchise agreement we had access to, to this, you know, specialty and expertise so that our team is trained. The differentiate, also the differentiate between PetSmart and Petco is that they're more boarding and then have introduced the daycare. We are daycare, and daycare is our bread and butter. So, we have built programs around the daycare, and not necessarily just boarding the dogs. So, any dog that is actually boarded will also be part of daycare and there is, there's known studies, Dogtopia has been open since 2002. There's known studies from the franchises that have been opened longer that the dogs that have come in that have, maybe had some, some issues with maybe temperament or just being hyperactive or over-active; being in that atmosphere it actually does train them and it calms them and so they're learning while they are there. So, it's not just come in and play. We want to teach them; we want to educate, and we actually want to make it a better, safer place for the dog to be.

COMMISSIONER JENSEN: I'm very impressed with all the services, but my question goes to the economics of it. Can you over the long run remain competitive in terms of price, even though you may charge a little more because you provide more, but you're providing a lot more. Can you really stay competitive with the other providers of those services.

MS. BARNES: Yes.

MR. BARNES: We can. And we board at PetSmart ourselves. We have two dogs. Been boarding for years and years. So, if you were to look at, if you drop your dog off for the weekend; we all love them. You are going to give them the boarding plus the daycare, so they're not locked up all weekend and if you look at price points, again, PetSmart is a boarding company that has ancillary income through daycare. We're the exact opposite, but if you were to look at boarding and daycare for a full day package, we'll actually be similar price and possibly a couple dollars cheaper. And another piece of it too, being that I have work, PetSmart, we call our, we call them everyday to see how the dogs are doing. We have cameras in every room. So, if you're a pet parent and you want to see how Fluffy's doing you can actually log-on through a app on your phone and you can see your dog's playing which PetSmart does not offer.

COMMISSIONER JENSEN: Well, I'm very impressed with your proposal and I'm looking forward to you proceeding, so you have my support. I just wanted to make sure that something was going to be done with the parking and roads and that you actually can remain in business.

MS. BARNES: Yes.

COMMISSIONER JENSEN: So, that's all I have with questions.

MS. BARNES: Let me add, I can add a lot bit more about the history of Dogtopia as well. The stores that have been in business have seen a 32 percent growth year over year. As we've looked at different models, marketing, bringing different services in, and really the growth of Dogtopia. So, we're, we sign on our franchise in 2017; there were no Dogtopia's. There will be five Dogtopia's in the Chicagoland area by the time we open. So, brand recognition and it's the fastest growing franchise right now for dog daycare services. So, you'll see Dogtopia's start growing. So, when you talk about, can we stay competitive, we actually are coming up to the point where we are trying to have them be as competitive as we can be.

COMMISSIONER JENSEN: Thank you.

CHAIRMAN ENNES: Anyone else?

COMMISSIONER LORENZINI: So, you're going to put up an eight-foot fence because you don't want people peering over; so I assume it's going to be a solid fence?

MR. BARNES: It will, yes. So, the application has three potential proposed designs. We have, they're all maintenance free vinyl-based materials, so there is, a kind of your standard white vinyl fence. There's a wood-look and then also a stone-look. There is silver in Deer Park; I'm not sure what the address is, but there's a brand new Dogtopia that has that same type of fencing up. It's a maintenance free vinyl-based material.

COMMISSIONER LORENZINI: Okay, if I'm looking at the floor plan you've got so many dogs in each of the rooms, but I'm counting crates. It seems like there's only half numbers of crates as the number of dogs designated for that room.

MS. BARNES: With the boarding in the three crates --

COMMISSIONER LORENZINI: Well --

MS. BARNES: -- in the three boarding room suites?

COMMISSIONER LORENZINI: Yes, the romper, the gym and the toy, those have crates showing on them and the number of dogs, but the number of dogs exceed the number of crates shown. So, are those crates, or are they pens, or --

MS. BARNES: Well, they will be crates. So, each of the playrooms, they

do have crates because that's where there go to take their two-hour break, and that's also for boarding to be there. We will have the number of crates will match the number of dogs that we have, so there won't be, it will be even, so dogs to the number of crates.

COMMISSIONER LORENZINI: Where do dogs go to relieve themselves?

MS. BARNES: They will go inside. So, we do have an extensive cleaning program that, if an accident does happen that we have an extensive, kind of cleaning program, that will, the canine coaches will stop, clean up any mess, double bag, put the waste into a sealed bin and then all of the waste would go out in the evening. And we actually had talked about having frequency of the waste pick-up to be twice based on the waste we are putting outside.

COMMISSIONER LORENZINI: Okay, that's all I have. Thank you.

MR. BARNES: Just really quick, too, so Dogtopia has worked Ecolab to create a suite of products that they use for cleaning. They're compatible with the flooring materials and the FRP on the walls. So, they have tested these materials with the stuff that happens with the dogs just to make sure it's going to sanitize correctly.

COMMISSIONER LORENZINI: Thank you.

CHAIRMAN ENNES: Anyone else?

COMMISSIONER DAWSON: I'm going to wait for audience comment.

CHAIRMAN ENNES: Okay. I have a couple questions. You are the operators under the franchise agreement, right?

MR. BARNES: Correct.

CHAIRMAN ENNES: Do you have experience with the running or working at this type of facility?

MR. BARNES: Well, so I work in childcare myself, so --

CHAIRMAN ENNES: Okay, I'm not even going to go there.

MR. BARNES: They're, they are surprising similar businesses. So, I work at KinderCare. I oversee facilities for about 435 KinderCare locations in six states, so I spend a lot of my days with little kids and stinking diapers and those sort of things. So, I have my own dogs. I've never run a dog care business, but what I do for my career does surprisingly coincide with doggie daycare fairly well in how you treat your client and how you oversee them.

MS. BARNES: And we've both been in retail and customer service type industry most of our career. We both actually have facility background, but we do have the customer experience, I guess, experience.

MR. BARNES: Yes.

CHAIRMAN ENNES: Okay, the fence in area outside that's the only place where you really have an eight-foot fence, just in that outdoor play area?

MR. BARNES: Correct.

CHAIRMAN ENNES: Is there going to be a cover on top of that?

MR. BARNES: No, it's an open top.

CHAIRMAN ENNES: Okay. You won't have any dogs big enough that they go over an eight-foot fence?

MR. BARNES: That's why we are asking for an eight feet.

MS. BARNES: Eight feet. And they're never unattended. So, there's always a canine coach with the dogs in the rooms on the inside and the rooms on the outside. They would never be left out there by themselves.

CHAIRMAN ENNES: Okay. I just ask that because I've watched some of these amazing pet movies and you can't believe what dogs get in and out of.

MS. BARNES: Huskies are notorious escape artists, so –

CHAIRMAN ENNES: Climbers?

MS. BARNES: -- you have to watch them. Yes.

CHAIRMAN ENNES: And when you're going to be boarding dogs, is there a maximum time people can board a dog with you?

MS. BARNES: We do know that some franchise owners are allowing up to a month –

CHAIRMAN ENNES: Okay.

MS. BARNES: -- if they're traveling abroad. We haven't really discussed if there's, you know, over an extended period of time, but if someone came in and needed to board them for a month then I'm sure we can accommodate.

CHAIRMAN ENNES: Okay. With some of the other dog care facilities that we've had, what type of property is to the east of your facility there in the shopping center; that's residential right back there, right?

MR. BARNES: Well, so, directly to the east if you're in – are you talking about the same Southpoint shopping center?

CHAIRMAN ENNES: Right, right.

MR. BARNES: So, right next door to us there is, I believe, it's about 100,000 square foot building. It's a Biff's Furniture and then some vacant space which I believe right now is for sale.

CHAIRMAN ENNES: Okay.

MR. BARNES: Directly behind there's a giant beat-up parking lot that I think there's some future plans for that I'm not aware of. And then there's some residential once you cross, when you cross outside the bounds of the shopping center.

CHAIRMAN ENNES: Okay. Did Staff have concerns about possible noise and odor. How is that resolved to your satisfaction?

MR. SCHMIDT: Petitioner addressed early in the process what type of systems they'd be including. They'll be including a wall system which is sound attenuating as well as a very intense HVAC system with filtration that will eliminate odors and bacteria.

CHAIRMAN ENNES: Waste when it's taken out, is that going to be stored outdoors in a dumpster or something?

MR. BARNES: It will and then we're planning on two-time per week trash pick-up.

CHAIRMAN ENNES: Okay. You're planning on that, but you're not committed to it?

MR. BARNES: I'm committed to that.

CHAIRMAN ENNES: Okay.

MR. BARNES: I don't want to smell it either.

CHAIRMAN ENNES: Okay. That's all I have. You guys can sit down if you want.

MR. BARNES: Thank you.

CHAIRMAN ENNES: Is there anyone in the audience that would like to comment?

(No response.)

COMMISSIONER WARSKOW: I'd like to make a motion?

CHAIRMAN ENNES: Well, wait. Commissioner Dawson?

COMMISSIONER DAWSON: I was just waiting to see if anyone – I don't have any questions. We actually use Dog Play Day Care. Their website might be outdated, but they're great. And their taxi service is awesome. So, we're very, very familiar with daycares. We've got two dogs. They frequent them. Actually, their going to be put in doggie juvie right now because there was a little incident at daycare. So, now they're going to a special daycare for dogs that need to be re-trained.

CHAIRMAN ENNES: I think that's what they were talking about.

COMMISSIONER DAWSON: Oh, no, this is a different – it's like boot camp for dogs. But anyway, so I think to address what you're saying, I think there's plenty of space in Arlington Heights for another daycare. It's convenience. You know, we go to Dog Play Day Care because it's close to where we're at. We probably wouldn't head up your way, but if I lived near you I would definitely go there. It sounds like a fabulous daycare facility. I would be, I'd feel comfortable sending my dogs there if they weren't at doggie juvie.

CHAIRMAN ENNES: Okay. Mary Jo?

COMMISSIONER WARSKOW: Yes, I'll make the motion.

A motion to recommend to the Village Board of Trustees approval of PC# 19-004, a special use permit to allow a "Kennel, Commercial" on the subject property, as well as the following variations:

1. **Variation from Chapter 28, Section 6.12.1 of the municipal code, to waive the requirement to provide a traffic and parking study from a certified traffic engineer.**
2. **Variation from Chapter 28, Section 6.13-2(b), to allow an 8-foot tall fence where the maximum fence height is restricted to 6-feet.**

This recommendation shall be subject to the following conditions:

1. **The final design for the outdoor play area shall be limited to a maximum width of 45-feet, measured from the east side of the tenant space, so as to allow adequate visibility and access to the tenant spaces east of the courtyard.**
2. **The proposed fencing shall match or complement the building.**
3. **A continuous row of landscaping shall be provided along the southern outer edge of the outdoor play area fencing, in order to soften the proposed 8-foot tall fence. The landscaping must be planted approximately 3-feet on the center. The landscaping shall be a minimum height of 3 to 4-feet at time of installation.**
4. **The two existing trees within the courtyard shall remain.**
5. **The Applicant shall comply with all applicable federal, state, and Village codes, regulations, and policies.**

CHAIRMAN ENNES: Is there a second?

COMMISSIONER GREEN: Second.

CHAIRMAN ENNES: Can we get a roll call vote?

MR. SCHMIDT: Commissioner Dawson.

COMMISSIONER DAWSON: Yes.

MR. SCHMIDT: Commissioner Green.

COMMISSIONER GREEN: Yes.

MR. SCHMIDT: Commissioner Jensen.

COMMISSIONER JENSEN: Yes.

MR. SCHMIDT: Commissioner Lorenzini.

COMMISSIONER LORENZINI: Yes.

MR. SCHMIDT: Chairman Ennes.

CHAIRMAN ENNES: Yes.

MR. SCHMIDT: Commissioner Warskow.

COMMISSIONER WARSKOW: Yes.

MR. SCHMIDT: Commissioner Cherwin.

(No response.)

MR. SCHMIDT: Commissioner Drost.

(No response.)

MR. SCHMIDT: Commissioner Sigalos.

(No response.)

CHAIRMAN ENNES: Okay, so you've gotten, received 100 percent approval from the Plan Commission and you'll be hearing from Staff if you haven't already as to when you will be able to go before the Village Board.

MR. BARNES: Thank you.

MS. BARNES: Thank you.

CHAIRMAN ENNES: Okay, good luck.

(Whereupon, at 7:55 p.m., the above-mentioned petition was adjourned.)



**Plan Commission
6/26/2019**

Item: Arlington Downs - 6/12/19

Department: Planning & Community Development

ATTACHMENTS:

Description	Type
Arlington Downs - 6/12/19	Minutes

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RE: ARLINGTON DOWNS - 3400 WEST EUCLID AVENUE - PC# 18-010
FINAL PLAT OF SUBDIVISION

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BILL ENRIGHT, Planning & Community Development Deputy Director
JACOB SCHMIDT, Assistant Development Planner

CHAIRMAN ENNES: So we have two other pieces of business this evening. We have the final plat of subdivision for Arlington Downs. Is the petitioner here?

MR. PARKER: Here.

MR. ENRIGHT: I don't know if you have anything to say, but --

CHAIRMAN ENNES: Do you have anything? Any comments or --

MR. PARKER: No, I just came in case you guys did have any questions.

CHAIRMAN ENNES: Okay. Can I have a motion from the Plan Commission?

COMMISSIONER GREEN: I would like to make a motion.

A motion to recommend to the Village Board of Trustees approval of PC# 18-010, a final plat of subdivision for Arlington Downs at 3400 West Euclid Avenue.

CHAIRMAN ENNES: Is there a second?

COMMISSIONER DAWSON: Second.

CHAIRMAN ENNES: And all in favor?

(Chorus of Ayes.)

CHAIRMAN ENNES: We should have a role call on this.

MR. ENRIGHT: That's fine. Would you like role call?

CHAIRMAN ENNES: Yes.

MR. ENRIGHT: Okay. Commissioner Dawson.

COMMISSIONER DAWSON: Yes.

MR. ENRIGHT: Commissioner Green.

COMMISSIONER GREEN: Yes.

MR. ENRIGHT: Commissioner Lorenzini.

COMMISSIONER LORENZINI: Yes.

MR. ENRIGHT: Commissioner Warskow.

COMMISSIONER WARSKOW: Yes.

MR. ENRIGHT: Commissioner Jensen.

COMMISSIONER JENSEN: Yes.

MR. ENRIGHT: Chairman Ennes.

CHAIRMAN ENNES: Yes.

So, our Secretary will sign this off after the meeting?

COMMISSIONER WARSKOW: Yes.

(Whereupon, at 7:57 p.m., the above-mentioned petition was adjourned.)



**Plan Commission
6/26/2019**

Item: 1400 W. Thomas St. - 6/12/19

Department: Planning & Community Development

ATTACHMENTS:

Description	Type
1400 W. Thomas St. - 6/12/19	Minutes

PLAN

REPORT OF THE PROCEEDINGS OF A PUBLIC HEARING
BEFORE THE VILLAGE OF ARLINGTON HEIGHTS
PLAN COMMISSION

COMMISSION

RE: 1400 WEST THOMAS STREET SUBDIVISION - PC# 18-025
FINAL PLAT OF SUBDIVISION

REPORT OF PROCEEDINGS had before the Village of
Arlington Heights Plan Commission Meeting taken at the Arlington Heights Village
Hall, 33 South Arlington Heights Road, 3rd Floor Board Room, Arlington Heights,
Illinois on the 12th day of June, 2019 at the hour of 7:57 p.m.

MEMBERS PRESENT:

TERRY ENNES, Chairman
LYNN JENSEN
MARY JO WARSKOW
JOE LORENZINI
BRUCE GREEN
SUSAN DAWSON

ALSO PRESENT:

BILL ENRIGHT, Planning & Community Development Deputy Director
JACOB SCHMIDT, Assistant Development Planner

CHAIRMAN ENNES: And we have one other petition this evening and that is for approval of the final plat for 1400 West Thomas Street. Is the Petitioner here?

MR. HEIDKAMP: Yes.

MS. GLUECKERT: Yes.

CHAIRMAN ENNES: Do you have anything that you wanted to say?

MS. GLUECKERT: No.

CHAIRMAN ENNES: Okay. Then I would ask for a motion –

COMMISSIONER LORENZINI: I do have a question.

CHAIRMAN ENNES: Yes.

COMMISSIONER LORENZINI: One question. So, it says the final plat approval process, two changes were required at the time of permit. The upsizing of the sewer and incorporation of additional stormwater structure. Shouldn't they have submitted plans showing that already, before this came out?

MR. SCHMIDT: They did provide engineering plans to the satisfaction of the Public Works Department, Engineering Division. They just didn't want to have to see new plans for that stormwater, or for the storm sewer specifically.

COMMISSIONER LORENZINI: Okay.

MR. SCHMIDT: Prior to final plat approval they thought the plans were sufficient and met their needs. And then with respect to the additional stormwater infrastructure, that's to be incorporated, if necessary. The prior reason for that is full plans will have to be submitted for homes before the Engineering Department can determine if it's necessary or not. They did see ponding along Thomas and so they did want to include some type of condition or some type of stormwater infrastructure, if necessary when a new home is built. But again, it did not need to be seen at the time of final plat and the second one would definitely be needed only if determined necessary at the time of building permit.

COMMISSIONER LORENZINI: Okay, thank you.

CHAIRMAN ENNES: Okay, any other questions?

(No response.)

CHAIRMAN ENNES: Can we have a motion on this petition?

COMMISSIONER DAWSON: I can make a motion.

A motion to recommend to the Village Board of Trustees approval of PC# 18-025, a final plat of subdivision for 1400 West Thomas Street.

CHAIRMAN ENNES: Is there a second?

COMMISSIONER ENNES: Second.

CHAIRMAN ENNES: Can we have a roll call?

MR. SCHMIDT: Commissioner Dawson.

COMMISSIONER DAWSON: Yes.

MR. SCHMIDT: Chairman Ennes.

CHAIRMAN ENNES: Yes.

MR. SCHMIDT: Commissioner Green.

COMMISSIONER GREEN: Yes, with comment.

MR. SCHMIDT: Commissioner Lorenzini.

COMMISSIONER LORENZINI: Yes.

MR. SCHMIDT: Commissioner Warskow.

COMMISSIONER WARSKOW: Yes.

MR. ENRIGHT: Chairman Jensen.

COMMISSIONER JENSEN: Yes.

CHAIRMAN ENNES: Okay.

COMMISSIONER GREEN: My comment is that, I voted yes for the procedural part of this. I still think from a zoning standpoint it's wrong.

CHAIRMAN ENNES: Okay. So, you've received approval and we will get that signed. Do they have to go –

MR. ENRIGHT: The Village Board, yes.

CHAIRMAN ENNES: Okay, so you'll be getting notice for that.

MS. GLUECKERT: Okay, thank you.

MR. HEIDKAMP: Thank you.

CHAIRMAN ENNES: Okay, is there anything else on our agenda? Nothing that I see.

(No response.)

CHAIRMAN ENNES: So, can we have, can we adjourn –

COMMISSIONER DAWSON: I'll make a motion to adjourn.

COMMISSIONER WARSKOW: I'll second that motion.

CHAIRMAN ENNES: All in favor?

(Chorus of ayes.)

CHAIRMAN ENNES: Thank you ladies and gentleman. Have a great
(Whereupon, at 8:00 p.m., the above-mentioned petition was adjourned.)



Plan Commission 6/26/2019

Item: Sigwalt 16 - 37-45 S. Chestnut Ave. & 36-40 S. Highland Ave. - PC#19-005

Department: Planning & Community Development

Requested Action

1. A rezoning from R-3, One-Family Dwelling District to R-7, Multiple-Family Dwelling District.
2. A Planned Unit Development (PUD) to allow the construction of a 16-unit residential rowhome development.
3. Final Plat of Resubdivision to subdivide the subject property into individual lots for each townhome unit and for common areas.

Variations Required

1. Multiple Variations, see Appendix 1.

Recommendation

The Staff Development Committee recommends approval of a Planned Unit Development, rezoning to from R-3 (One Family Dwelling District) to R-7 (Multi Family Dwelling District), Final Plat of Subdivision and requested variations subject to the following conditions:

1. Eight feet of land shall be dedicated for additional right of way along both Highland and Chestnut Avenues.
2. The petitioner shall widen Chestnut Avenue approximately 8 feet and construct 4 on street parking spaces.
3. Brick paver sidewalks shall be required on Highland Avenue (6 feet wide) and Sigwalt Street (5 feet wide) including decorative street lights within the parkway.
4. All fees required for Final Plat approval shall be provided prior to Village Board consideration of the Final Plat.

5. An On-site Utility Management Agreement must be provided prior to building permit issuance.
6. All new above ground utility equipment, transformers, switch gear, and building mounted mechanical equipment must be appropriately located and screened. All gas and electric meters, as well as all cable and phone connections, should be routed to the rear of each unit, as feasible. Rooftop mechanicals shall be screened.
7. The petitioner shall cooperate with implementation of a parking/loading zone on Sigwalt if required.
8. Final staging and construction plans shall be provided at building permit.
9. Architectural design shall be in substantial compliance with the Design Commission recommendation of May 28, 2019.
10. Petitioner shall pay a fee of \$120,000 for affordable housing at time of building permit per the Housing Commission recommendation of June 11, 2019.
11. School, Park, and Library contributions shall be required per Village Code prior to the issuance of a building permit for each rowhome building.
12. The petitioner shall comply with all Federal, State, and Village Codes, Regulations, and Policies.

ATTACHMENTS:

Description	Type
PC Staff Report	Board or Commission Report
Legal Notice	Exhibits
CPRC Minutes - 2/27/19	Minutes
DC Minutes - 5/28/19	Minutes
DC Staff Report - 5/28/19	Board or Commission Report
Housing Commission Minutes - 6/11/19 DRAFT	Minutes
Housing Commission Staff Report - 6/11/19	Board or Commission Report
Neighborhood Meeting Summary	Exhibits
Project Narrative	Correspondence
Site Plan	Exhibits
Variation Criteria	Exhibits
Renderings	Exhibits
Elevations	Exhibits
Floor Plans	Exhibits
Final Engineering Plans	Exhibits
Plat of Survey	Exhibits
Plat of Subdivision	Exhibits
Landscape Plan	Exhibits

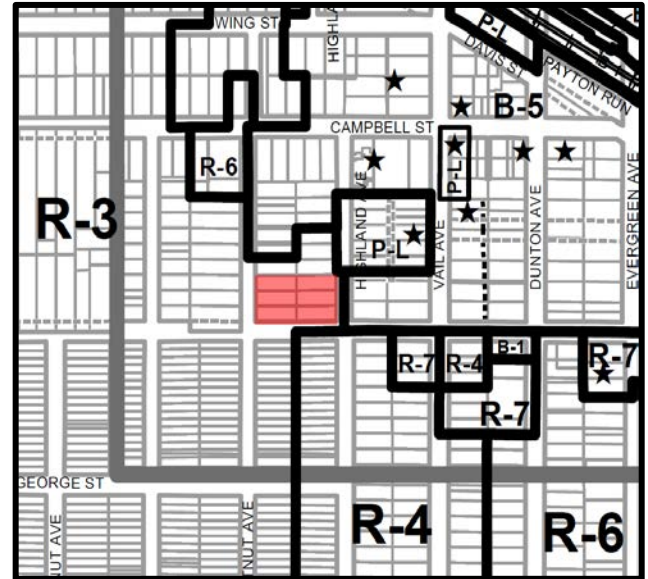
Market Study - April 2019	Exhibits
Traffic Study	Exhibits
Loading Zone Concept	Exhibits
Construction Phasing	Exhibits
Construction Schedule	Exhibits
Supplemental Variation Letter	Correspondence
Department Comments - Round 1	Exhibits
Department Comments - Round 1 - Petitioner Response	Exhibits
Department Comments - Round 2	Exhibits
Department Comments - Round 2 - Petitioner Response	Exhibits



VILLAGE OF ARLINGTON HEIGHTS STAFF DEVELOPMENT COMMITTEE REPORT

PC File Number: 19-005
Project Title: Sigwalt 16
Address: 37-45 S. Chestnut St., 36-40 S. Highland St.
PIN: 03-30-425-021 thru 023, 03-30-425-012 thru 014

To: Plan Commission
Prepared By: Bill Enright, Deputy Director Planning
Meeting Date: June 26, 2019
Date Prepared: June 20, 2019



Petitioner: Marc McLaughlin
Taylor Morrison
Address: 1834 Walden Office Square - Suite 300
Schaumburg, IL 60173

Existing Zoning: R-3: One-Family Dwelling District
Comprehensive Plan: High Density Multi-Family

SURROUNDING LAND USES

Direction	Existing Zoning	Existing Use	Comprehensive Plan
North	B-5: Downtown District	Vacant	Mixed Use
South	R-3: One-Family Dwelling District, R-4: Two-Family Dwelling District	Single Family	Single Family Attached; High Density Multi Family
East	B-5: Downtown District	Offices, Parking	Mixed Use
West	R-3: One-Family Dwelling District	Single Family	Single Family Attached

Requested Action:

1. A rezoning from R-3, One-Family Dwelling District to R-7, Multiple-Family Dwelling District
2. A Planned Unit Development (PUD) to allow the construction of a 16-unit residential rowhome development.
3. Final Plat of Resubdivision to subdivide the subject property into individual lots for each townhome unit and for common areas.

Variations Required:

1. Multiple Variations, see **Appendix 1**.

Project Background:

The subject property consists of six lots of record comprising a total of 41,987 square feet (0.96 acres) and is approximately one-fourth of the larger “Block 425” site, which is the area of land bounded by Sigwalt Street to the south, Campbell Street to the north, Highland Avenue to the east, and Chestnut Avenue to the west. Block 425 has sat vacant and undeveloped for several years. As it is an important piece of downtown, one of the Board’s 2017 Strategic Priorities is to facilitate development of Block 425. Currently, the subject property is zoned R-3, One-Family Dwelling District.

Taylor Morrison, a national homebuilder headquartered in Arizona, has the property under contract and is proposing a resubdivision of the property to accommodate the construction of a four-story 16-unit residential rowhome development consisting of three separate rowhome buildings. Each rowhome unit would include a ground floor garage and a small entry room on the first floor (and option bedroom or tandem parking space), kitchen and living room/dining room space on the second floor, three bedrooms on the third floor, and as an option a recessed fourth floor with space for a small office/den as well as an outdoor rooftop deck for each unit. Building 1 would be oriented along Highland Avenue, Building 2 along Sigwalt Street, and Building 3 along Chestnut Avenue.

Access to the site would come from Highland Avenue, which would provide entry/exit to the rear loaded garages at the back of each unit. Each unit would include a minimum of two garage parking spaces and there would be 8 guest parking spaces in the rear motor court area. Two on-street parking spaces along Highland Avenue would be removed to accommodate the driveway entrance (there are currently five on-street parking spaces along Highland Avenue adjacent to the site). In addition Chestnut Avenue will be widened for four public on street parking spaces.

The basic characteristics of the development are summarized in **Table 1** below:

Table 1: Development Characteristics

	Proposed	Code
Total Number of Units	16	-
Overall Number of Bedrooms	48	-
Max. Dwelling Units Per Acre	17.6	48.4
Required Minimum Lot Size (density)	39,587 sq. ft.	14,400 sq. ft.
Setbacks		
North (side)	8'	15'
South (exterior side)	20'	20'
East (front)	12'	25'
West (front)	17'	25'
F.A.R.	115%	200%
Building Lot Coverage	37%	55%
Height	Chestnut 42'6" Highland 43'9" Sigwalt 43'10"	60'
Number of Parking Spaces	40	24
Parking Spaces Per Unit	2.5	1.5

Zoning, Comprehensive Plan, Downtown Master Plan

The subject property is currently zoned R-3, One-Dwelling Residential District. In order to proceed with the development, the site must be rezoned to R-7, Multiple-Family Dwelling District, and obtain approval of a Planned Unit Development. Staff notes the following with regards to the proposed rezoning:

2015 Comprehensive Plan:

- The Comprehensive Plan designates this property as “High Density Multi-Family”, which is appropriate for the R-7 Multiple-Family Dwelling District classification. The proposed rezoning is therefore consistent with the Comprehensive Plan land use designation.

2007 Downtown Master Plan:

- One of the objectives of the Downtown Master Plan is to “Strengthen downtown’s residential base by encouraging additional residential development”. The proposed rezoning is consistent with this objective as it will facilitate a moderate density residential development that will strengthen the downtown residential base to a greater extent than single-family homes, which are allowed under the current R-3 zoning.
- The Downtown Master Plan calls for redevelopment of Block 425, and Recommendation #1 within the plan calls for Block 425 to be redeveloped as “mixed-use on northern three-quarters of block transitioning to 4 to 6 stories on the southern quarter of block.” The proposed 4-story building is consistent with this recommendation.

Conceptual Plan Review Committee

The Conceptual Plan Review Committee of the Plan Commission met on February 27, 2019 to discuss the proposed development and were supportive of the developer moving forward. The minutes of the meeting are included in the packet.

Neighborhood Meeting

The petitioner held a neighborhood meeting at Village Hall on April 16, 2019 to obtain early input on the development. The developer’s summary of the meeting is included in the packet.

Analysis

As outlined in this report, staff is supportive of the rezoning, PUD, Plat of Subdivision, and variations. The developer has proposed a high quality, low density rowhome concept that will compliment the varied housing types in the downtown area and is an appropriate transition from the downtown to the single family homes to the south and west. The following subsections of the project analysis address the architecture, infrastructure, parking and traffic, affordable housing, and justifications for the variations sought. Included in the recommendation are several conditions of approval to ensure a high quality development.

Architectural Design / Landscaping

The Design Commission met on May 28, 2019 and recommended approval of the architecture with several conditions. As part of the developer’s presentation at the meeting, it was stated that the fourth floor spaces would be included on the end units, but the interior units it would be optional depending on the buyer. The fourth floor is recessed 14 feet from the fronts of the buildings to reduce massing and provide a roof terrace. It should be noted that the developer has made several positive modifications to the design as a result of a preliminary review of the Design Commission and staff comments.

Landscaping for the project is extensive and provides a variety of trees, shrubs and perennials. The developer has accented the corners of the site with layers of landscaping to create very nice focal points in the front corner yards. In addition, the motor courtyard at the rear consists of permeable decorative brick pavers, which enhance the aesthetics and assist with storm water management. The staff report and minutes are included in this packet for more detailed information on the design.

Affordable Housing

The Housing Commission met on June 11, 2019 and recommended that the developer pay a fee in lieu of \$120,000, which equates to \$75,000 per affordable unit (1.60 units required; 10% of 16 total units). Since this is a for sale

development, it was determined that requiring a fee in lieu of was more beneficial. The fee is to be paid with the first building permit. The minutes of this meeting are included in the packet.

Variations

As outlined in **Appendix 1** at the end of this report, several variations are required and will be discussed throughout this report. For the requested variations, the petitioner provided written justification detailing how each variation complies with the hardship standards for variation approval as outlined below:

- **The proposed use will not alter the essential character of the locality and will be compatible with existing uses and zoning of nearby property.**
- **The plight of the owner is due to unique circumstances, which may include the length of time the subject property has been vacant as zoned.**
- **The proposed variation is in harmony with the spirit and intent of this Chapter.**
- **The variance requested is the minimum variance necessary to allow reasonable use of the property.**

The petitioners proposed development complies with the height, density, building lot coverage, floor area ratio and parking regulations of the R-7 District as outlined in Table 1. The petitioner is seeking the following setback variations for the buildings as follows:

- **Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback along Highland Avenue to be 12' where code requires a 25' setback.**
- **Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback along Chestnut Avenue to be 17' where code requires a 25' setback.**
- **Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a side yard setback (north) to be 8' where code requires a 15' setback.**

The petitioner has provided the required justification for each setback variation (included in the packet). Staff notes that 8' of ROW dedication is required along both Chestnut Avenue and Highland Avenue. There are no plans to widen Highland Avenue at this time, so although the setback along Highland will be 12', in reality the setback will appear as 20'. Chestnut will be widened by 8 feet to accommodate parking along the east side of Chestnut. The 17 foot setback for the 6 rowhomes along Chestnut will be setback five feet more than the approved setback for the Chestnut multifamily building approved to the north as part of the Block 425 development. In addition, the single family homes on the west side of Chestnut across from the development are generally setback 15 to 17 feet. Also, the fourth floor of the buildings are recessed 14 feet from the front, thus reducing the massing of the buildings.

Relative to the separation between buildings, the following variation is required:

- **Variation to Chapter 28, Section 5.1-7.10, Spacing Between Multi-Family Buildings, to allow 5' spacing between principal buildings where code requires 25' spacing.**

The 5' building separation is between the rear of the Chestnut and Highland buildings and the side of the Sigwalt building to allow for pedestrian walkways from behind to the front of the buildings. Additionally, there is nothing that would prevent the developer from attaching all of the buildings together, which would eliminate the need for this variation. This is a minor variation request that enhances the project and has no negative impacts on the surrounding properties therefore the Staff Development Committee is supportive of this variation.

In addition, the following variation is necessary for the drive aisle entrance to the rear motor court:

- **Variation to Chapter 28, Section 10.2-8, to allow a two-way driveway width of 21' where code requires a minimum of 24' for a two-way drive aisle.**

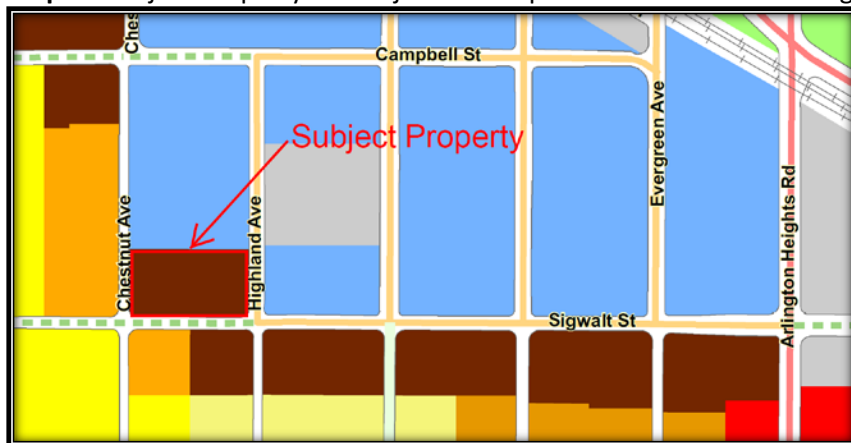
This variation is for a small portion of the driveway adjacent to the north side of the Highland building. Staff notes that the petitioner has space to increase the drive aisle entrance to 24' and comply with code, however, the reduced drive aisle width allows for additional greenspace for foundation plantings along the north side of the eastern townhome building. The drive aisle widens to 24 feet where not adjacent to the building therefore staff supports this request.

One of the required variations relates to the size of the R-7 Zoning District, which in this instance will be 1.39 acres where code requires a minimum of two acres for land within the R-7 District. Therefore, the following variation is needed:

- **Chapter 28, Section 5.1-7.3, Minimum Area for Zoning District, to allow the R-7 District to be approximately 1.39 acres where code requires a minimum of two acres for the R-7 District.**

The minimum R-7 district size is primarily intended to limit instances of spot zoning on smaller properties that may be contiguous with the B-5 District. However, the Comprehensive Plan designates the site as one part of a larger strip of R-7 zoned land that is contiguous to the subject property, and when considered in sum, this strip of potential R-7 zoning is well over two acres in size. **Map I** (below) illustrates this area, with the subject property outlined in red, the brown areas indicating properties appropriate for the R-7 District, and the blue properties as appropriate for B-5 Downtown District zoning:

Map I – Subject Property and Adjacent Comprehensive Plan Land Designations



When the vision of the Comprehensive Plan is realized, the subject property will no longer be an isolated pocket of R-7 zoning and the variation will no longer be applicable. Additionally, this property is unique in that in order to comply with the Comprehensive Plan designation of “High-Density Residential”, R-7 zoning is required and a variation is needed. Any development of this property as R-7 will require this variation. For these reasons, the Staff Development Committee is supportive of the requested variation.

Multiple Variations for Individual Townhome Lots

Since the developer is proposing to subdivide each individual rowhome into its own lot of record, additional variations are technically required. Staff supports the variations as listed in Appendix 1 as there is no impact on the adjacent properties resulting from these variations. In effect, the individual lots will mostly follow the footprint of each rowhome, creating zero lot lines for each home.

Consideration of Variations in Conjunction with a PUD

Section 9.5 of the zoning code provides the authority to grant variations if such variations will not exercise a detrimental influence on the surrounding neighborhood. Variations shall be justified when the other characteristics of the development exceed the minimum standards of the municipal code, including the provision of recreation facilities, conservation of natural resources such as wetlands, and preservation of the natural drainage and floodwater. As outlined in the responses to the variation criteria, staff agrees that the variations sought will not exercise a detrimental influence on the neighborhood. The proposed development is well under code allowances for density, heights, floor

area and building lot coverage. Traffic impact is minimal as the peak hour traffic volume is estimated at 12 trips during the PM peak hour. There are no natural resources to protect and drainage in the neighborhood is being enhanced as part of new storm sewers. Natural drainage shall be provided for on site in green areas and with permeable pavers, as and grading to provide for overland flow of water. The developer will be required to pay contribution fees for park district capital projects for each housing unit.

Market Study

In order to substantiate the market demand for rowhomes in this location, the developer provided a market assessment that analyzes the market absorption rates and suggested pricing for these types of units at this location (see attached market study). The downtown area has a minimal number of rowhome units and this development provides a housing type not common in the downtown. The base price points as recommended in the market study range from \$575,000 to \$725,000, with an absorption rate of 0.5 to 1.5 units per month.

Site Infrastructure

Site engineering plans were provided and reviewed by staff and include on-site underground storm water detention just to the north of the parking courtyard behind the buildings. In addition, permeable pavers are provided in the parking courtyard which are beneficial for storm water management and aesthetics. Storm drainage pipes are provided underground in the front yards with the overall system tying into the Village's storm water sewer to be constructed on Sigwalt Street.

The petitioner has indicated that the overhead utilities that run north south through the property will be relocated underground by Com Ed. Overhead utility wires along Sigwalt will remain due to high estimated costs to bury. However, if the Village determines that a parking and loading zone is necessary along Sigwalt in front of the building, the Village may pursue with Com Ed the possible burial of some of the overhead utilities.

The petitioner shall screen all above ground utility equipment, transformers, switch gear, and building mounted mechanical equipment and facilities should be located to the rear to the extent feasible. All gas and electric meters, as well as all cable and phone connections, should be routed to the rear of each unit.

Plat of Subdivision

The developer has proposed each townhome to be located on an individual platted lot for fee-simple ownership. Therefore the Plat includes 16 lots 1 to 16, and two outlots (outlot A for the motor court and outlot B for the common areas in front of the buildings). All utility easements as required are provided. Prior to the Final Plat approval of the Village Board, the petitioner shall pay all required fees and bonds/ escrows that are typically required for Final Plat approval.

Parking & Traffic

Chapter 28, Section 6.12, Traffic Engineering Approval, requires that planned unit developments provide a traffic and parking study from a certified traffic engineer. The study needs to assess access (location, design, and Level of Service), on-site circulation, trip generation and distribution, parking, and impacts to public streets. The petitioner provided the required study (included in the packet). Traffic volumes are estimated to be very low from this 16 unit development with only 8 trips during the peak AM hour and 12 during the PM peak hour. Other than the widening of Chestnut, no off site roadway improvements are necessary resulting from this development. The Village will monitor the intersection of Highland and Sigwalt and if and when the remainder of the block develops, install a four way stop sign at this intersection.

Relative to parking, the developer is proposing 40 on-site parking spaces, which exceed the code requirement of 24 spaces for this development (1.5 per unit). Of the 40 spaces, 8 will be for guests within the rear parking/access courtyard. The petitioner has verbally indicated that some of the interior garage spaces may be tandem spaces, which would require the following variation, to which staff does not object:

- **Variation to Chapter 28, Section 10.2-9, to allow tandem parking spaces**

Also, Section 10.2-13 Maximum Number of Spaces allows for parking on site to exceed code by no more than 50% of the required parking. Since the required parking is 24 spaces and the developer proposes 40, a variation is necessary. Staff does not object as 32 of the 40 spaces are internal therefore the additional parking beyond code does not result in large expanses of parking areas.

- **Variation to Chapter 28, Section 10.2-13 Maximum Number of Spaces to exceed code by more than 50%.**

Loading/Access

Practically, loading and deliveries will occur on street as the front doors face each of three streets. The petitioner is not proposing a separate loading area but if determined necessary, a loading zone / short term parking area could be accommodated along Sigwalt Street. A concept plan is attached as part of this packet. If deemed necessary, the Village may pursue said parking and loading zone in front of the building, which would require the relocation of certain utilities serving ComEd and others. In addition, the petitioner should note that two bicycle parking spaces shall be provided per Section 10.8-1 of the Zoning Ordinance.

RECOMMENDATION

The Staff Development Committee recommends approval of a Planned Unit Development, rezoning to from R-3 (One Family Dwelling District) to R-7 (Multi Family Dwelling District), Final Plat of Subdivision and requested variations subject to the following conditions:

1. Eight feet of land shall be dedicated for additional right of way along both Highland and Chestnut Avenues.
2. The petitioner shall widen Chestnut Avenue approximately 8 feet and construct 4 on street parking spaces.
3. Brick paver sidewalks shall be required on Highland Avenue (6 feet wide) and Sigwalt Street (5 feet wide) including decorative street lights within the parkway.
4. All fees required for Final Plat approval shall be provided prior to Village Board consideration of the Final Plat.
5. An On-site Utility Management Agreement must be provided prior to building permit issuance.
6. All new above ground utility equipment, transformers, switch gear, and building mounted mechanical equipment must be appropriately located and screened. All gas and electric meters, as well as all cable and phone connections, should be routed to the rear of each unit, as feasible. Rooftop mechanicals shall be screened.
7. The petitioner shall cooperate with implementation of a parking/loading zone on Sigwalt if required.
8. Final staging and construction plans shall be provided at building permit.
9. Architectural design shall be in substantial compliance with the Design Commission recommendation of May 28, 2019.
10. Petitioner shall pay a fee of \$120,000 for affordable housing at time of building permit per the Housing Commission recommendation of June 11, 2019.
11. School, Park, and Library contributions shall be required per Village Code prior to the issuance of a building permit for each rowhome building.
12. The petitioner shall comply with all Federal, State, and Village Codes, Regulations, and Policies.

June 20, 2019

Bill Enright, Deputy Director of Planning and Community Development

Cc: Randy Recklaus, Village Manager
All Department Heads
PC File 19-005

Appendix 1 – Required Variations

- Variation to Chapter 28, Section 5.1-7.2, Minimum Area for Zoning District, to allow the R-7 District to be approximately 1.39 acres where code requires a minimum of 2 acres for the R-7 District.
- Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback for the townhome building along Highland Avenue to be 12' where code requires a 25' setback.
- Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback for the townhome building along Chestnut Avenue to be 17' where code requires a 25' setback.
- Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a side yard setback (north) to be 8' for the building along Chestnut Avenue where code requires a 15' setback.
- Variation to Chapter 28, Section 5.1-7.10, Spacing Between Multi-Family Buildings, to allow 5' spacing between principal buildings where code requires 25' spacing.
- Variation to Chapter 28, Section 10.2-8, to allow a two-way driveway width of 21' where code requires a minimum of 24' for a two-way drive aisle.
- Variation to Chapter 28, Section 10.2-9, to allow tandem parking spaces.
- Variation to Chapter 28, Section 10.2-13 Maximum Number of Spaces to exceed code by more than 50%.
- A variation from Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback of 4.6 feet for lots 1 through 11 and 4.3 feet for lots 12 through 16 where code requires a 25-foot front yard setback for all lots.
- A variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a side yard setback of 0 feet for interior walls on lots 1, 6, and 12 where code requires a 2.6 foot side yard setback, and 0 feet for interior walls on lots 2, 3, 4, 5, 8, 9, 10, 13, 14, and 15 where code requires a 2 foot side yard setback, and 0 feet for interior walls on lots 7, 11, and 16 where code requires a 2.1 foot side yard setback.
- A variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a side yard setback of 0 feet for outer walls on lots 7, 11, and 15 where code requires a 2.1 foot side yard setback, and 4.3 feet for outer walls on lots 1 and 6 where code requires a 2.6 foot side yard setback, and 4.6 feet for outer walls on lot 12 where code requires a 2.6 foot side yard setback.
- A variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a rear yard setback of 0 feet for lots 1 through 16 where code requires a 30-foot rear yard setback.
- A variation to Chapter 28, Section 5.1-7.7, Maximum Building Lot Coverage, to allow approximately 291% building lot coverage for lots 2 and 15, approximately 290% building coverage for lots 3 and 8, approximately 287% building lot coverage for lot 16, approximately 284% building lot coverage for lots 7, 11, 13, and 14, and approximately 283% building lot coverage for lots 4, 5, 9, and 10 where code allows a maximum building lot coverage of 200% on all lots.
- A variation to Chapter 28, Section 5.1-7.11, Maximum Floor Area Ratio, to allow approximately 73% F.A.R. on lot 1, approximately 74% F.A.R. on lot 12, approximately 75% F.A.R. on lot 6, approximately 84% F.A.R. on lots 4, 5, 9, 10, and 14, approximately 85% F.A.R. on lot 13, approximately 87% F.A.R. on lots 7 and 11, approximately 88% F.A.R. on lots 2, 3, 8, and 16, and approximately 89% F.A.R. on lot 15 where code allows a maximum F.A.R. of 55% on all lots.

NOTICE OF PUBLIC HEARING
NOTICE IS HEREBY GIVEN THAT THE PLAN COMMISSION OF THE VILLAGE OF ARLINGTON HEIGHTS WILL CONDUCT A PUBLIC HEARING ON JUNE 26, 2019, AT 7:30 P.M. in the Municipal Building, 33 South Arlington Heights Road, Arlington Heights, Illinois to consider Petition No. 19-005, a Planned Unit Development to allow a 16-unit residential rowhome development, Preliminary and Final Plat of Subdivision to divide the property into 18 lots, and rezoning of the subject property from the R-3 One-Family Dwelling District to the R-7 Multiple-Family Dwelling District, said property located at 37-45 South Chestnut Street and 36-40 South Highland Street in Arlington Heights, IL, and legally described as follows: LOTS 12, 13, 14, 15, 16, AND 17 IN BLOCK 2 IN A SUBDIVISION OF LOTS 26, 27, 28, AND 29 IN ASSESSORS SUBDIVISION OF SECTION 30, TOWNSHIP 42 NORTH, RANGE 11 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN COOK COUNTY, ILLINOIS.

As part of said petition the applicant is requesting the following variations from the Municipal Code:

- Variation to Chapter 28, Section 5.1-7.2, Minimum Area for Zoning District, to allow the R-7 District to be approximately 1.39 acres where code requires a minimum of 2 acres for the R-7 District.
- Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback for the townhome building along Highland Avenue to be 12' where code requires a 25' setback.
- Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback for the townhome building along Chestnut Avenue to be 17' where code requires a 25' setback.
- Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a side yard setback (north) to be 8' for the building along Chestnut Avenue where code requires a 15' setback.
- Variation to Chapter 28, Section 5.1-7.10, Spacing Between Multi-Family Buildings, to allow 5' spacing between principal buildings where code requires 25' spacing.
- Variation to Chapter 28, Section 10.2-8, to allow a two-way driveway width of 21' where code requires a minimum of 24' for a two-way drive aisle.
- Variation to Chapter 28, Section 10.2-9, to allow tandem parking spaces.
- A variation from Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback of 4.6 feet for lots 1 through 11 and 4.3 feet for lots 12 through 16 where code requires a 25-foot front yard setback for all lots.
- A variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a side yard setback of 0 feet for interior walls on lots 1, 6, and 12 where code requires a 2.6 foot side yard setback, and 0 feet for interior walls on lots 2, 3, 4, 5, 8, 9, 10, 13, 14, and 15 where code requires a 2 foot side yard setback, and 0 feet for interior walls on lots 7, 11, and 16 where code requires a 2.1 foot side yard setback.
- A variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a side yard setback of 0 feet for outer walls on lots 7, 11, and 15 where code requires a 2.1 foot side yard setback, and 4.3 feet for outer walls on lots 1 and 6 where code requires a 2.6 foot side yard setback, and 4.6 feet for outer walls on lot 12 where code requires a 2.6 foot side yard setback.
- A variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a rear yard setback of 0 feet for lots 1 through 16 where code requires a 30-foot rear yard setback.
- A variation to Chapter 28, Section 5.1-7.7, Maximum Building Lot Coverage, to allow approximately 291% building lot coverage for lots 2 and 15, approximately 290% building coverage for lots 3 and 8, approximately 287% building lot coverage for lot 16, approximately 284% building lot coverage for lots 7, 11, 13, and 14, and approximately 283% building lot coverage for lots 4, 5, 9, and 10 where code allows a maximum building lot coverage of 200% on all lots.
- A variation to Chapter 28, Section 5.1-7.11, Maximum Floor Area Ratio, to allow approximately 73% F.A.R. on lot 1, approximately 74% F.A.R. on lot 12, approximately 75% F.A.R. on lot 6, approximately 84% F.A.R. on lots 4, 5, 9, 10, and 14, approximately 85% F.A.R. on lot 13, approximately 87% F.A.R. on lots 7 and 11, approximately 88% F.A.R. on lots 2, 3, 8, and 16, and approximately 89% F.A.R. on lot 15 where code allows a maximum F.A.R. of 55% on all lots. And other variations as determined necessary by the Plan Commission.

All persons desiring to be heard shall be given the opportunity to be heard. Should any individual need auxiliary aid or service, such as a sign language interpreter or materials in alternative formats, please contact the Health Department at 33 South Arlington Heights Road, Arlington Heights, Illinois 60005, (847) 368-5760, TDD# (847) 368-5794. Terry Ennes, Chairman

ARLINGTON HEIGHTS PLAN COMMISSION
Published in Daily Herald on June 11, 2019 (4526566)

CERTIFICATE OF PUBLICATION

Paddock Publications, Inc.

Daily Herald

Corporation organized and existing under and by virtue of the laws of the State of Illinois, DOES HEREBY CERTIFY that it is the publisher of the **DAILY HERALD**. That said **DAILY HERALD** is a secular newspaper and has been circulated daily in the Village(s) of Algonquin, Antioch, Arlington Heights, Aurora, North Aurora, Bannockburn, Barrington, Barrington Hills, Lake Barrington, North Barrington, South Barrington, Bartlett, Batavia, Buffalo Grove, Burlington, Campton Hills, Carpentersville, Cary, Crystal Lake, Deerfield, Deer Park, Des Plaines, Elburn, East Dundee, Elgin, South Elgin, Elk Grove Village, Fox Lake, Fox River Grove, Franklin Park, Geneva, Gilberts, Glenview, Grayslake, Green Oaks, Gurnee, Hainesville, Hampshire, Hanover Park, Hawthorn Woods, Highland Park, Highwood, Hoffman Estates, Huntley, Inverness, Island Lake, Kildeer, Lake Bluff, Lake Forest, Lake in the Hills, Lake Villa, Lake Zurich, Libertyville, Lincolnshire, Lindenhurst, Long Grove, Melrose Park, Montgomery, Morton Grove, Mt. Prospect, Mundelein, Niles, Northbrook, Northfield, Northlake, Palatine, Park Ridge, Prospect Heights, River Grove, Riverwoods, Rolling Meadows, Rosemont, Round Lake, Round Lake Beach, Round Lake Heights, Round Lake Park, Schaumburg, Schiller Park, Sleepy Hollow, St. Charles, Streamwood, Sugar Grove, Third Lake, Tower Lakes, Vernon Hills, Volo, Wadsworth, Wauconda, Waukegan, West Dundee, Wheeling, Wildwood, Wilmette

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and State of Illinois, continuously for more than one year prior to the date of the first publication of the notice hereinafter referred to and is of general circulation throughout said Village(s), County(ies) and State.

I further certify that the **DAILY HERALD** is a newspaper as defined in "an Act to revise the law in relation to notices" as amended in 1992 Illinois Compiled Statutes, Chapter 715, Act 5, Section 1 and 5. That a notice of which the annexed printed slip is a true copy, was published 11-JUN-19 in said **DAILY HERALD**.

IN WITNESS WHEREOF, the undersigned, the said **PADDOCK PUBLICATIONS, Inc.**, has caused this certificate to be signed by, this authorized agent, at Arlington Heights, Illinois.

PADDOCK PUBLICATIONS, INC.
DAILY HERALD NEWSPAPERS

BY

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Authorized Agent

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JUN 18 2019

**PLANNING & COMMUNITY
DEVELOPMENT DEPARTMENT**

REPORT OF THE PROCEEDINGS OF
THE CONCEPTUAL PLAN REVIEW COMMITTEE

OF THE VILLAGE OF ARLINGTON HEIGHTS PLAN COMMISSION

HELD AT VILLAGE HALL ON:

February 27, 2019

Project Title: Taylor Morrison Townhomes
Address: 37-45 S. Chestnut St., 36-40 S. Highland St.

Petitioner: Marc McLaughlin
Taylor Morrison
Address: 1834 Walden Office Square - Suite 300
Schaumburg, IL 60173

Requested Action:

1. A rezoning from R-3, One-Family Dwelling District into the R-7, Multiple-Family Dwelling District
2. A Planned Unit Development (PUD) to allow the construction of a 16-unit residential rowhome development.
3. Preliminary Plat of Resubdivision to subdivide the subject property into individual lots for each rowhome unit.

Variations Required:

1. Variation to Chapter 28, Section 5.1-7.2, Minimum Area for Zoning District, to allow the R-7 District to be approx. 1.39 acres where code requires a minimum of 2 acres for the R-7 District.
2. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback along Highland Avenue to be 14' where code requires a 25' setback.
3. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback along Chestnut Avenue to be 16' where code requires a 25' setback.
4. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a side yard setback (north) to be 8' where code requires a 15' setback.
5. Variation to Chapter 28, Section 5.1-7.10, Spacing Between Multi-Family Buildings, to allow 5' spacing between principal buildings where code requires 25' spacing.
6. Variation to Chapter 28, Section 10.2-8, to allow a two-way driveway width of 22' where code requires a minimum of 24' for a two-way drive aisle.
7. Variation to Chapter 28, Section 10.2-9, to allow tandem parking spaces.
8. Variations will be required for each lot based on the R-7 setback and bulk standards, although the overall development will comply with bulk standards and with most setback standards.

Attendees: Marc McLaughlin, Taylor Morrison
Scott Barenbrugge, Taylor Morrison
Mark Hopkins, HKM Architects
Jay Cherwin, Plan Commissioner
John Sigalos, Plan Commissioner
Bruce Green, Plan Commissioner
Lynn Jensen, Plan Commissioner
Sam Hubbard, Development Planner
Jake Schmidt, Assistant Planner

Project Summary:

The subject property consists of six lots of record comprising a total of 41,987 square feet (0.96 acres) and is approximately one-fourth of the larger "Block 425" site, which is the area of land bounded by Sigwalt Street to the south, Campbell Street to the north, Highland Avenue to the east, and Chestnut Avenue to the west. Block 425 has sat vacant and undeveloped for several years. As it is an important piece of downtown, one of the Board's 2017 Strategic Priorities is to facilitate development

of Block 425. Currently, the subject property is zoned R-3, One-Family Dwelling District.

Taylor Morrison, a national homebuilder headquartered in Arizona, has the property under contract and is proposing a resubdivision of the property to accommodate the construction of a four-story 16-unit residential condominium rowhome development consisting of three separate rowhome buildings. Each rowhome unit would include a ground floor garage and a small entry room on the first floor, kitchen and living room/dining room space on the second floor, three bedrooms on the third floor, and a recessed fourth floor with space for a small office/den as well as an outdoor rooftop deck for each unit.

Access to the site would come from Highland Avenue, which would provide entry/exit to the rear loaded garages at the back of each unit. Each unit would include a minimum of two garage parking spaces and there would be 12 guest parking spaces in the rear motor court area. Two on-street parking spaces along Highland Avenue would be removed to accommodate the driveway entrance (there are currently five on-street parking spaces along Highland Avenue adjacent to the site).

Meeting Discussion:

Mr. McLaughlin began by giving a brief overview of the development; a 16-unit rowhome project proposed on the southern 150 feet of "Block 425". The site would be laid out so that five units faced Chestnut, six units faced Sigwalt, and five units faced Highland. Units would be accessed via rear loaded garages and a rear motor court, accessible with a single curb cut off of Highland. They would be requesting a couple of variations.

Mr. Hopkins described the rowhome structures as three story buildings with each unit sitting on a 20' x 40' lot. The unit would each have a two-car rear loaded garage and a front entry for each unit would face the street. The units would have a partial fourth floor, however, the two corner units would be only two stories at their rear. The site was designed to provide a continuous street wall along Sigwalt that would block the view into the motor court at the rear of the property. There would be a small five-foot separation between the Sigwalt rowhome building and the two rowhome buildings on each side, which would require a variation. The reason for this separation was to provide access to the rear guest parking stalls.

The interior would feature a small room on the first floor along with the garage parking spaces at the rear. The second floor would have the main living room, dining room, kitchen, and breakfast space. The third level would have the bedrooms, either two bedrooms or three bedrooms. The fourth level would have a small den that would provide access to the rooftop deck area. Each unit would have their own private rooftop deck with a partial screen wall between each deck to provide privacy.

The variation requests were a result of trying to fit the 20' x 40' the townhome footprints onto the site. Without the setback variations they would not have enough space behind the buildings to accommodate for the rear loaded garage, and without the setback variation to the north they would have to eliminate a unit. The proposed buildings would be less than 44 feet tall, although 60 feet is allowed by code. The townhomes would be fee simple so there would be a subdivision involved. He presented the renderings and discussed some of the architectural elements of the buildings.

Mr. Hubbard stated that the subject property was currently zoned R-3 and so the petitioner would be requesting a rezoning into the R-7 district to accommodate for the development. This rezoning was consistent with the Comprehensive Plan, which designated the property as suitable for High Density Multi-Family development. The Staff Development Committee supported this rezoning. The proposed development was well below the maximum allowable density for the R-7 district and provided parking in excess of code requirements. All developments within the R-7 district were required to receive Planned Unit Development approval. Since the developer was proposing each rowhome to be on its own platted lot for fee simple ownership, a plat of subdivision would be required. This would create multiple variations for each rowhome lot, but these variations were due to how the code applied to each individual lot and did not really relate to the overall development.

The petitioner was requesting setback variations on the north side of the side, along the east side of the site abutting Highland Avenue, and along the west side of the site abutting Chestnut Avenue. These variations were fairly consistent with the previous proposal for this site from about a year ago, which had proposed a five story building. Staff was generally supportive of these setback variation requests. The requirement for eight feet of ROW dedication along both the east and west sides of the site was one of the reasons these variations were needed. The overall development appeared to conform with height

and bulk standard requirements, however, there would be certain variations required for the drive aisle width, building separation, and tandem parking spaces.

Design Commission approval would be required. The petitioner met with the Design Commission for a preliminary hearing on February 26th, and the commission was fairly supportive of the proposed architecture. As this project move forward, staff recommended that the petitioner hold a neighborhood meeting prior to appearing before the Plan Commission, and for all requested variations the petitioner would need to provide the necessary justification based on the approval criteria outlined in the Zoning Code. Overhead utility lines running through the center of the site would need to be buried. Lines that ran parallel to Sigwalt abutting the property would need to be analyzed to ensure that they wouldn't obstruct fire access to the buildings. If so, those lines would need to be buried or relocated.

A traffic and parking study would be required, as well as a market assessment. Staff will require that all utility infrastructure be appropriately sited and screened. Overall, staff was generally supportive of this project.

Commissioner Jensen asked staff how this project compared to the previous proposal on the site relative to opposition from the surrounding neighborhood.

Mr. Hubbard replied that staff would know more about neighborhood opinions as the project became more public and moved through the Plan Commission process. He noted that this project was not as tall, less dense, and provided more parking relative to code requirements in comparison to the previously proposed project on this site.

Commissioner Jensen asked the petitioner if they had any sense of neighborhood opposition at this point.

Mr. Hopkins responded that he did not. Up to this point the project had been confidential.

Commissioner Jensen asked about affordable housing.

Mr. McLaughlin replied that since these units would be for sale and would not be rental units, he anticipated paying a fee in lieu of affordable units.

Commissioner Jensen stated that the Plan Commission, and likely Village Board, would be less receptive to paying the fee in lieu of affordable units in the future.

Commissioner Sigalos said that the petitioner stated that the building would be around 42 feet tall, he asked if this was measured to the roof of the partial fourth floor or to the roof of the third floor.

Mr. Hopkins replied that the 42 foot measurement was to the top of the fourth floor. The top of the third floor would be about ten feet lower.

Commissioner Sigalos asked about pricing for the units.

Mr. McLaughlin said that with base price plus options, they expected that these units would close in the \$600,000 range.

Commissioner Sigalos stated that the previous proposal for the site was for more units and more height, and the developer at that time had stated that they could not reduce the height or unit count and still have an economically viable project. He asked the developer how confident they were in the viability of this development and said he wasn't sure if the price of the property had gone down since the last proposal.

Mr. McLaughlin replied that the price of the property had not gone down. Given their expected sale price, the proposed unit count was economically viable.

Commissioner Sigalos said that he thought that this project was great and that it was a great transitional development.

Given that the fourth floor would be setback from the street, this project would only appear like a three-story building. He thought the developer had done a nice job with this development proposal. With regards to affordable housing, he was not sure how the developer would be able to incorporate affordable units within the development given the price range that they were expecting.

Mr. McLaughlin responded that he agreed that affordable housing would be difficult to incorporate into the development and said that this is why they were looking at the fee in lieu option.

Mr. Barenbrugge stated that it was more difficult to incorporate affordable units into the development given the low number of units proposed.

Commissioner Cherwin said that he thought the site design was great and the buildings looked good too. He was glad to see some rooftop space and that this was something he usually looked for in new developments and that it would be a great selling feature. Some of the issues he had with the previous development proposed for this property did not appear to be present in this proposal. He agreed that utility infrastructure needed to be appropriately placed and screened. The fee in lieu of affordable housing made sense to him for this project.

Commissioner Green stated that he thought the developer had done a good job with their preliminary proposal and he noted that he hadn't had as many issues with the previously proposed project for this site as some of the other commissioners. The elevations were good and the five foot separation between the buildings was also a good feature. He encouraged the petitioner to move forward

RECOMMENDATION

The Conceptual Plan Review Committee advised the petitioner to proceed forward with their application.

Bruce Green, Chair
CONCEPTUAL PLAN REVIEW COMMITTEE
Sam Hubbard, Recorder

APPROVED

MINUTES OF
THE VILLAGE OF ARLINGTON HEIGHTS
DESIGN COMMISSION MEETING
HELD AT THE ARLINGTON HEIGHTS MUNICIPAL BUILDING
33 S. ARLINGTON HEIGHTS RD.
MAY 28, 2019

Chair Fitzgerald called the meeting to order at 6:30 p.m.

Members Present: John Fitzgerald, Chair
Kirsten Kingsley
Jonathan Kubow
Ted Eckhardt
Scott Seyer

Members Absent: None

Also Present: Marc McLaughlin, Taylor Morrison Illinois for *Taylor Morrison Townhomes/Sigwalt 16*
Mark Hopkins & Eden Richards, HKM Architects for *Taylor Morrison Townhomes/Sigwalt16*
Steve Hautzinger, Staff Liaison

REVIEW OF MEETING MINUTES FROM MAY 14, 2019

A MOTION WAS MADE BY COMMISSIONER SEYER, SECONDED BY COMMISSIONER KUBOW, TO APPROVE THE MEETING MINUTES OF MAY 14, 2019. ALL WERE IN FAVOR. MOTION CARRIED.

ITEM 1. MULTI-FAMILY REVIEWDC#19-034 – Taylor Morrison Townhomes / Sigwalt 16 – 37-45 S. Chestnut Ave. & 36-40 S. Highland Ave.

Marc McLaughlin, representing *Taylor Morrison of Illinois*, and Mark Hopkins and Eden Richards, representing *HKM Architects*, were present on behalf of the project.

Mr. Hautzinger presented Staff comments. The petitioner is seeking design approval for three new 4-story townhome buildings with a total of 16 units on an existing vacant site at the south end of Block 425 on the edge of the Downtown. Tonight's review is regarding aesthetics and architectural design of the buildings only. This project also requires Plan Commission review and Village Board approval for all matters pertaining to zoning. The Plan Commission meeting is tentatively scheduled for June 26, and separate public notification will be provided once that meeting date is confirmed.

Mr. Hautzinger explained that this project received a preliminary Design Commission review on February 26, 2019. At that time, Staff reported that the Village Board and neighboring residents had previously expressed their preference for a traditional style development in this location to complement the context of the adjacent single-family neighborhood. At a Committee of the Whole meeting on June 11, 2018, the Village Board expressed their preference for an example of a traditional style multi-family development on the edge of Naperville's Downtown. In order to comply with the direction from the Village Board, Staff had recommended that the modern style townhome proposal be redesigned with a more traditional aesthetic, and several design suggestions were provided. However, despite the Village Board's preference for a traditional style development, the Design Commission liked the overall modern style direction for this project, including the materials and colors. However, they did recommend the following:

- It was encouraged to enhance the appearance of the buildings as townhouses by further defining the appearance of each individual townhome.
- It was recommended to add windows to the blank wall areas facing south.
- There was a preference to omit the grids (muntins) from the windows.
- Sustainable design was encouraged, and a list of "green" design features was requested.

Based on the feedback received at the preliminary Design Commission review, the petitioner has made the following changes to the proposed design:

- Massing. The overall appearance of the design as individual townhomes instead of one large building was greatly improved by the following:
 - The three story corner "tower" element was omitted and replaced with a two-story box bay creating a clear identity for the corner townhome unit.
 - Box bays were added to all of the units, providing a very nice residential scale.
 - Scuppers and downspouts were added between each of the units, which provides a subtle visual break between each of the units.
- Brick Colors. The brick colors were revised from shades of gray to a creamy white and a reddish brown.
- South Windows. The south walls of the east and west buildings were redesigned to include three vertical rows of windows.
- Window Grids. The window grids (muntins) were omitted from the design.
- Sustainable Design. An extensive list of sustainable design features was provided.

Staff felt that overall, the proposed design is very nicely done, consistent with the Design Commission's support for a more contemporary design. The softened material palette combined with the changes to the massing helps to create a transitional style development that has a fresh modern appearance to complement the Downtown, yet has a nice scale and level of detail to fit with the adjacent traditional style single-family neighborhood.

Staff's concerns to be evaluated by the Design Commission are as follows:

- North Elevation of the Highland building. The north elevation of the Highland building is lacking detail. Although visibility of this elevation will be limited, it is recommended that additional masonry and windows be provided to enhance the appearance.
- Optional Fourth Floors. The petitioner is proposing to offer the fourth floors for all interior units as an option to potential buyers. The fourth floor for all end units will be standard, which raises concerns about the potential for a random appearance to the massing at the top of each building. To ensure a consistent appearance for the development, it is recommended that the fourth floor space either be included for all units on all buildings, or completely eliminated.

All rooftop mechanical equipment is required to be screened from public view. Air conditioning units are located on the fourth floor roof terraces, and will be fully screened by the parapet walls. Exterior wall-mounted equipment and meters must also be screened from view. The locations of these items is not yet determined, but it is recommended that they be required to be located on the back of the buildings, away from the street frontages.

Mr. Hautzinger concluded that Staff recommends approval of the proposed design for the new Sigwalt 16-Taylor Morrison Townhomes, with recommendations to provide additional masonry and windows on north elevation of the Highland building, a requirement that the fourth floor space either be included for all units on all buildings, or completely eliminated, and a requirement to locate all exterior wall-mounted mechanical equipment and meters on the back of the buildings, away from the street frontages.

Mr. McLaughlin said that a neighborhood meeting was held on April 11, 2019, where positive feedback was received from neighbors and their input was considered when the preliminary design was revised for tonight's review. There was also good discussion about the fences in the front yard, which were ultimately eliminated from the design.

Mr. Hopkins appreciated the feedback received on this very important transitional site. He felt the proposed design was more transitional than contemporary because it was a little bit cleaner than a highly detailed traditional building, but with all the allusions to traditional urban row homes without super contemporary or modernistic approaches to details. In response to Staff's concerns that the north elevation of the Highland building lacked detail, Mr. Hopkins said that this was because the windows look at the parking deck and they felt punched openings were unnecessary there. He also said that they are trying to locate all exterior wall-mounted mechanical equipment and meters on the rear of the buildings; however, there is a place on the corner units where they might not be able to do so, which he presented a diagram of, but they are committed to fully screening any meters with landscape (a total of 3 meters on each corner building).

Chair Fitzgerald asked if there was any public comment and there was response from the audience.

PUBLIC COMMENT

Gabriela Rojek, 104 S. Highland Avenue. She lives directly across the street from the site (to the south) and was at the neighborhood meeting on April 11th. She appreciated the design being presented tonight, which she felt was a lot better than the previous development that was proposed for the site. She felt the scale was better too, and she liked individual homes rather than rentals. She had concerns about the carve-outs shown on Sigwalt because of the high amount of traffic and the plows. Mr. Hopkins clarified that there was no carve-out for parking being proposed on Sigwalt, only on Chestnut. Ms. Rojek liked the design and had no further comments.

Lauree Harp, 44 N. Vail Avenue. She has lived here for 19 years and followed all of the Block 425 reviews, which she is very happy with how that development turned out. Living Downtown and seeing the development of the Downtown, she had concerns about how these buildings look, which is more industrial. She also had concerns about traffic on Sigwalt, which is a narrow street that carries a lot of traffic and travels very quickly, and felt that carving out space for cars to pull in for package delivery and such was necessary. Mr. Hautzinger explained that these comments are matters to be discussed by the Plan Commission. With regards to the design, Ms. Harp felt that the proposed buildings look like the Chestnut building, which is a downgrade of the Campbell/Vail/Wing buildings, and not as architecturally attractive as what is going in on Block 425 or the surrounding buildings. Architecturally, she felt that something could

be added to the buildings to resemble the look of Arlington Heights look, as opposed to the industrial look; the design looks very plain to her and did not add to what is existing on Chestnut.

There was no further public comment.

Commissioner Eckhardt said the current design was a great improvement from the design presented at the preliminary review, and the petitioner established each elevation of each building as a separate unit to be identified as such. He referred to the south elevation and asked for clarification on the function of the box bays. Mr. Hopkins explained that they will add interior floor space, and when the box bay is only 2-stories tall then the bedroom floor does not extend that far out. Commissioner Eckhardt felt they looked a little boxy and a little blank. In terms of the building design, when he first reviewed it he wondered if it should be similar in architecture to the future building next to it on Chestnut, but now he preferred the differences between the buildings. He felt it was a transitional design, boxy with a 4th floor walk-out setback, which he felt was a good design element. He referred to the southwest corner unit and asked why the box bay did not go all the way up; it looks a little boxy as shown. Mr. Hopkins replied that it is a result of getting the right alternation going down the street with high/low and wide/narrow box bays. If they changed the height of the corner box bays, then they would need to change other things down the rest of the elevation. Commissioner Eckhardt said that at this point he was generally in favor of the design being shown tonight, and he liked the massing. He wanted to hear comments from other commissioners before making any further comments.

Commissioner Kingsley said it was a nice project and she appreciated a lot of things the petitioner was doing on the project, and although she liked the design being shown tonight, she really liked the previous design as well. She was unsure about the box bays and the fact that units with a box bay on the second and third-floor do not get a canopy. She felt this was a little more foreboding with less light, and if the current design moves forward, then the light quality and how it will portray each door will be very important. She liked the canopies and did not mind the box bays on the ground. She understood how the scuppers make a rhythm across the building and break up the elevations; however, she felt this was contributing to the industrial look of the building, and she questioned whether there was a way to get that same rhythm by doing a reveal in the brick and then having internal drainage. She also had concerns about the downspouts being painted to match the surrounding brick. Mr. Hopkins replied that they prefer not to do internal drainage, and the current location for the downspouts was approximate.

Commissioner Kingsley asked for clarification that the window trim, when in brick, would be a cast stone material, and the window trim in a box bay or siding would be vinyl, and if all of the trim will be smooth. Mr. Hopkins reviewed the window trim details, which will break the plane and all be a clay color, the spandrel panels in the box bays will be one smooth piece in the Siding D color, all of the trim will be smooth, and the cap on the coping stone will match the cast stone. Commissioner Kingsley said that she liked the previous small roof overhang on the penthouse, which was now eliminated, and Mr. Hopkins said that it was eliminated as a result of feedback given. Commissioner Kingsley felt there should be some kind of overhang on the doors for protection, and she agreed with Staff that the fourth-floor space should either be included for all units, or completely eliminated.

Mr. McLaughlin replied to the comment about the optional fourth-floor space. After receiving feedback from Staff, input from their architect, and the competing market conditions of the starting price for these units and whether to include this element as a standard or an option, they have decided to make this fourth-floor element standard on the corner units, and an option on the interior units, in order to market the units at a particular dollar amount. Their solution to keep everything feeling like a 4-story building if buyers do not option them, is to do a faux wall just at the front of the buildings. The faux wall would be the same material across with a door, which would be visible from the front elevations. Commissioner Eckhardt asked if the faux wall would be the same height as the occupied space, 10' tall, and Mr. McLaughlin agreed, adding that they have rendered this and it looks just like it would if it was a full build-out. This is their solution to keep to the integrity of the 4-story massing, however they feel most buyers will buy this option, with it only being an issue for 1 or 2 units; however, but they cannot guarantee that. Commissioner Kingsley said she was not in favor of doing a false wall because so many people would be seeing this from above. She liked the color palette and although she felt the previous color palette was a little stronger, this color palette blends itself more with the

neighborhood and the other developments going in. She felt it would be nice to see a little more of the dark versus light siding color, the white brick is unique but felt it could be a little more white.

Commissioner Kubow commented about the tight turning radius for cars into the garages, which the petitioner acknowledged and added that the anticipation is for tenants to own a small car and use the train. In terms of the architecture, Commissioner Kubow really liked the original design, but after looking at the current architecture in Arlington Heights and what is being proposed tonight, he really liked the color palette, the materials, and the transitional design of the buildings. He is always a big proponent of seeing more contemporary housing, which this is stepping towards, and felt the petitioner, architect, developer, and the Design Commission have done a good job of working together to come up with a design that fits within Arlington Heights. So well done to everyone involved with the project. Initially, he had some concerns with the box bays, specifically that the 2 infill units were lacking an entrance there, but he felt it could be done with downlights recessed either below the box bays or below the canopies to help highlight where each entrance is. The petitioner said that recessed lighting is proposed in the bottom of the box bays and the canopies.

With regards to the fourth floor material, Commissioner Kubow liked the cornice on the previous design and felt the box protruding from the fourth floor in the current design is lacking. He recommended going back to what was previously proposed, maybe something even simpler because there needs to be some type of projecting feature at the top of the fourth floor. He also felt that a dark material for the fourth floor might be an interesting idea to consider, and the screening material could be different instead of the same as the enclosure. He said it was important for residents of the Highland building to have windows added on the north side of the building, even though it will have limited exposure. With regards to the fourth floor space, Commissioner Kubow felt that a rendering showing the space included, the space not included, and a rendering that showed the false wall from the rear would have been helpful. Mr. Hautzinger said that the petitioner did provide an updated rendering to show how the false wall would look, and it essentially looks identical as the rendering with the full fourth floor.

Commissioner Seyer did not have a lot to add to the other commissioner's comments other than he applauded the petitioner's efforts to respond to some of the comments made at the preliminary review, such as adding windows to the solid wall and improving the softscape at the entry by eliminating the fence. He agreed with Commissioner Kubow that the top of the fourth floor could use a little more of a pronounced parapet because right now it is flat going all the way up, and the little bit of articulation that was previously there was nice. He understood the intent of the downspouts, which certainly help break up the elevation in a positive way, at least in the renderings, but he questioned how it would look in real life. He explained that a paint color that looks like brick will wear differently than brick and eventually not blend. At the very least, he felt it should be the same color as the windows, to tie in with the aluminum in the windows; however, he preferred to see the downspouts go away and be replaced with a brick detail, bumped out for articulation. If this is cost prohibitive, then he said that there needs to be a lot of care into how the downspouts are treated, otherwise it will be a major aesthetic detriment to the property value and how it looks aesthetically, which is a big concern to him. Commissioner Seyer had no further comments.

Chair Fitzgerald had a big issue with the fourth floor space and the faux wall in the rear. He was unsure how it would look, other than it would look odd, especially since that part would be visible by so many people that are higher. He did not understand this detail enough to be comfortable with approving it tonight. He agreed with the comments that the fourth floor could be darker and the cap a little nicer, and he liked the colors and materials being presented. He also liked that the fencing in front of the buildings was eliminated, and he really liked the idea of adding windows or some type of architectural detail to the area on the northeast corner of the building. He pointed out the 28' wide opening there and that this is a walking neighborhood where people will see the elevation. All in all, Chair Fitzgerald liked the project, which he agreed is transitional in style, and he liked how the proposed materials were brought from the neighborhood and combined in a good way.

Commissioner Kingsley asked the petitioner if the gas meters could be located on the east and west walls between the buildings. Mr. Hopkins replied that there is only 5' of space in the pedestrian passages, which is not enough space to add meters, and they are still waiting for NICOR's response to their request on the location of the meters.

Commissioner Kingsley referred to the dark bronze color proposed for the canopies and railings, and pointed out how light the back of the building will be. She suggested a warmer color for the railings, a color in between the 'Siding A' color and the dark bronze canopy color.

Commissioner Eckhardt asked for clarification on the petitioner's intent to build the fourth floor space. Mr. McLaughlin replied that all corner or end units would be built with the fourth floor space, with a buyer option for the remaining units. Commissioner Eckhardt was concerned that the fourth floor would be out of balance and look unfinished if some units had the faux walls and some did not. Mr. McLaughlin presented a rendering that showed what they believe to be the best and worst case scenario if only some units have the fourth floor space, which would be their approach from a sales perspective. Chair Fitzgerald said that what was shown in this rendering looked okay, but if it was not balanced it would not look okay. Mr. McLaughlin replied that they are in favor of the balanced look as well. Commissioner Eckhardt said he has never seen a developer come here with a major architectural element such as this as an option, and Mr. McLaughlin suggested thinking of it as a basement option, which Commissioner Eckhardt replied was different because a basement is not visible.

Commissioner Kubow asked about the roof material for a unit where a false wall would be, and Mr. Hopkins said that roof pavers would be used where there are roof decks, and only roofing where there is a false wall. Commissioner Eckhardt asked if a buyer could option a big roof deck instead of the fourth floor space and Mr. McLaughlin said that that would not be an option because of building code issues. He reiterated that they anticipate that every buyer would option for the fourth floor space.

Mr. Hautzinger commented that having a glass patio door in a false wall would have a strange appearance if you can see the sky through the glass door. He asked if the petitioner considered spandrel glass instead. Chair Fitzgerald reiterated his concerns about the residents in Downtown buildings looking down on these buildings and seeing this odd detail of false walls; he could not visualize how this would look. Commissioner Kubow pointed out that traditional row homes have a lot more units across the building, sometimes having different character and different levels, and since there are only 5 units here, he was unsure if the false walls would look as bad architecturally and be that noticeable.

Mr. McLaughlin said that they looked at the false wall from the street; however, he understood the concerns about how it would look from above, which is why they rendered other variations of it. Commissioner Kingsley suggested meeting halfway; the commissioners really want to have the fourth floor space built on all the units, and if it cannot be done, then at a minimum on the Chestnut building, it follow both the white brick or the red brick, and the same on the Sigwalt building, so at least it makes sense with the elevations. The petitioner understood and said that they actually tried to do just that.

An audience member asked if it was too late to comment on the project. Chair Fitzgerald re-opened the public comment portion of the meeting.

PUBLIC COMMENT

Andrew Wimberly, 615 W. Haven Drive. He said that the population of Arlington Heights is decreasing, not because people are leaving but because home sizes are getting smaller due to people having less children and downsizing, etc. and he felt the 3 bedroom standard for this development was not adapting to this housing market or to the way the housing size trend is going in. Commissioner Eckhardt acknowledged the issue of this demographic, ownership of smaller units is difficult to find in town, but pointed out that smaller rental units are coming with the other development on this site. Mr. Wimberly added that 6% of the homes in downtown Arlington Heights only have 1 car, and he clarified that the 25' wide turning radius for this development is actually larger than the standard parking lot aisle which is 22' to 24'.

Gabriela Rojek asked if the developer is committed to the landscaping as shown. Mr. Hautzinger replied that the landscaping and all site design elements would be reviewed in detail as part of the Plan Commission hearing.

Commissioner Kingsley pointed out that the plans do not show lighting and she asked if this has been developed yet, specifically at the patio doors, on the fourth floor, and in the walkways between the buildings. Mr. Hopkins indicated the can lights on the canopies and under the box bays, as well as in the overhang above the garage doors; otherwise there are no surface mounted lights. Commissioner Kingsley suggested that any lights proposed in the rear of the buildings be a lamp that is shielded to not show the source of the light, and lights in the walkways be low to just light up the ground.

Commissioner Eckhardt suggested a straw vote at this time prior to a motion because there could be differing opinions about some very large elements of the buildings, particularly the top. He summarized that he was in favor of a darker tone at the top level of the buildings, and he was not in favor of the faux wall idea because the big giant block across the building makes it look like a big mechanical penthouse, which did not make sense to him. The downspouts are somewhat of an issue for him as well because they are not an attractive design element, he was okay with the color palette, he liked the bricks, he was in favor of adding windows on the northeast elevation, and he agreed with the suggestion that the railings be the same color as 'Siding A'.

Commissioner Kingsley summarized that she was not in favor of a false wall for the fourth floor, and was more in favor of following the facade so that it looks like it matches vertically. She was in support of eliminating the scuppers and doing something different in those locations, whether it be a reveal or something that projects out, although she would rather not see a projection. She was also in support of doing some kind of parapet or expression of the cornice, not in a detailed way, but just a projection on the fourth floor. She also emphasized her preference for the wall mounted mechanical equipment to be located in the rear of the buildings.

Commissioner Kubow agreed with the comments made by Commissioner Kingsley. Commissioner Seyer and Chair Fitzgerald agreed as well.

Commissioner Kubow asked the petitioner if they thought about a compromise for the fourth floor, and Mr. McLaughlin replied that if all the options for the fourth floor space could not be sold, they could work with putting them in the white brick units, as opposed to the brown brick units. Mr. Hautzinger clarified that this concept goes against the idea of having each end/corner unit as standard then, and Mr. McLaughlin said the space would remain standard on the corner units and this scenario would only apply to the interior units. Commissioner Kingsley reiterated that each elevation should make sense vertically, whether it is red brick or white brick.

A MOTION WAS MADE BY COMMISSIONER KINGSLEY, SECONDED BY COMMISSIONER KUBOW, TO RECOMMEND APPROVAL THE PROPOSED ARCHITECTURAL DESIGN FOR THE SIGWALT 16-TAYLOR MORRISON TOWNHOMES TO BE LOCATED AT 37-45 S. CHESTNUT AVENUE AND 36-40 S. HIGHLAND AVENUE. THIS RECOMMENDATION IS BASED ON AND SUBJECT TO COMPLIANCE WITH THE ARCHITECTURAL PLANS DATED AND RECEIVED 4/12/19, EXTERIOR ELEVATIONS AND RENDERINGS DATED 5/22/19 AND RECEIVED 5/24/19, DESIGN COMMISSION RECOMMENDATIONS, COMPLIANCE WITH ALL APPLICABLE FEDERAL, STATE, AND VILLAGE CODES, REGULATIONS, AND POLICIES, THE ISSUANCE OF ALL REQUIRED PERMITS, AND THE FOLLOWING:

1. A REQUIREMENT TO PROVIDE ADDITIONAL WINDOWS ON THE NORTH ELEVATION OF THE HIGHLAND BUILDING.
2. A PREFERENCE THAT THE FOURTH FLOOR BE CONTINUOUS, AND IF NOT, THAT IT FOLLOW THE LEAD OF THE FRONT FACADE SO IT READS VERTICALLY.
3. A REQUIREMENT TO LOCATE ALL EXTERIOR WALL MOUNTED MECHANICAL EQUIPMENT AND METERS ON THE BACK OF THE BUILDINGS AWAY FROM THE STREET FRONTAGES, AND IF NOT POSSIBLE, THEN REVIEWED BY STAFF AS TO HOW THEY WILL BE HIDDEN.
4. A REQUIREMENT THAT THE DOWNSPOUTS BE INTERNALIZED AND THAT THOSE DIVISIONS IN THE FACADE BE BROKEN UP BY EITHER A REVEAL OR A BRICK PROTRUSION, TO BE REVIEWED BY STAFF.
5. A REQUIREMENT TO ENHANCE THE FOURTH FLOOR COPING WITH A SIMPLE PROJECTED PROFILE.

6. A RECOMMENDATION THAT THE RAILINGS BE A WARM BROWN COLOR, AND NOT AS DARK AS THE DARK BRONZE COLOR.
7. A RECOMMENDATION THAT THE COLOR OF THE FOURTH FLOOR BE A DARKER AND RICHER COLOR, SUCH AS THE 'SIDING A' COLOR.

Commissioner Eckhardt asked for clarification on the motion regarding the fourth floor. Commissioner Kingsley explained that the motion states the commissioners' preference that all units have the fourth floor space, and if this could not be done, then it must be built as a unit, not as a false wall, and match what it is on the base of the unit. Commissioner Seyer added that the materiality of the massing divisions should be followed on the fourth floor. Mr. Hautzinger added that the fourth floor space would be standard on the end units of each building in all cases, regardless of the color of the brick.

Commissioner Seyer asked for clarification on the issue of the downspouts; do they need to be changed or eliminated in favor of a brick reveal. He also pointed out that the previous version did not have external downspouts. Ms. Richards replied that they have not fully designed the roof drainage plan yet, but drainage is needed from the roof deck because it is a flat roof deck area at the third floor, and external downspouts are preferred. Commissioner Kingsley clarified that the motion did not state how the petitioner should change the downspouts, only that it is a requirement not to see the downspouts. Commissioner Seyer was in favor of that, but expected the petitioner to have an issue with it and wondered if there should be discussion about it now. Mr. McLaughlin said he was going to propose that the downspouts be a different color and not match the brick. Chair Fitzgerald said that he and two other commissioners appear to be in favor of the downspout requirement in the motion. Commissioner Kubow said he was okay with the downspouts as proposed, which help break up the elevation. Commissioner Eckhardt said that he is used to seeing scuppers and downspouts on the back of buildings, not on the primary elevations. He was not in favor of the downspouts as proposed; they are not attractive to him, especially on the Sigwalt elevation. Mr. McLaughlin asked if the only concern is the four downspouts on the end elevations facing Sigwalt. Commissioner Eckhardt reiterated his preference that the downspouts be internal and the overflow go out the back or somehow camouflaged. He reiterated that the Sigwalt elevation is the most prominent and disturbing, and the downspouts are not as prominent on the other elevations. He was also concerned about the blank brick wall areas that will be left after the downspouts are removed.

Chair Fitzgerald asked if the commissioners were comfortable leaving the motion as is. Commissioner Kingsley asked what would happen if the petitioner determines during construction documentation that they cannot comply with this requirement. Mr. Hautzinger replied that Staff would work with the petitioner to achieve a solution that is in the spirit of what the motion states, and if it was not attainable, then the petitioner would be required to return to the Design Commission to review it.

To clarify, Mr. Hautzinger said that the motion currently includes a requirement to internalize all of the downspouts, whether they are on the front or the ends of the buildings. Commissioner Kingsley added that the motion did not specify an elevation; it just states scuppers in general. Mr. Hopkins asked about the gutters and downspouts on the rear elevations. Commissioner Seyer and Commissioner Kingsley were not concerned about the downspouts on the rear elevations because those walls are all siding. This only applies to the three main street façades.

A MOTION WAS MADE BY COMMISSIONER KINGSLEY, SECONDED BY COMMISSIONER KUBOW, TO AMEND THE MOTION AS FOLLOWS:

4. A REQUIREMENT THAT THE DOWNSPOUTS BE INTERNALIZED AND THAT THOSE DIVISIONS IN THE FACADE BE BROKEN UP BY EITHER A REVEAL OR A BRICK PROTRUSION, TO BE REVIEWED BY STAFF. THE EXPOSED DOWNSPOUTS MAY REMAIN ON NON-STREET ELEVATIONS.

Mr. Hautzinger understood that a brick detail was required on the front elevations between the units in place of the downspouts, but he asked if that detail also applied to the south elevations of the Chestnut and Highland buildings. Commissioner Kingsley replied that it did not apply in those locations.

Mr. Hautzinger also asked for clarification on item 1 of the motion, to confirm if additional masonry is required on the north elevation of the Highland building. Commissioner Kingsley replied that only the addition of windows is required.

SEYER, AYE; ECKHARDT, AYE; KINGSLEY, AYE; KUBOW, AYE; FITZGERALD,
AYE. ALL WERE IN FAVOR. MOTION CARRIED.

STAFF DESIGN COMMISSION REPORT

PROJECT INFORMATION:

Project Name: Sigwalt 16, Taylor Morrison Townhomes
Project Address: 37-45 S. Chestnut Avenue,
36-40 S. Highland Avenue

Prepared By: Steve Hautzinger
Date Prepared: May 21, 2019

PETITIONER INFORMATION:

DC Number: 19-034
Petitioner Name: Marc McLaughlin
Petitioner Address: Taylor Morrison of Illinois Inc.
1834 Walden Office Square, Suite 300
Schaumburg, IL 60173

Meeting Date: May 28, 2019

Requested Action(s):

Approval of the proposed architectural design for three new multi-family townhome buildings.

Design Commission Responsibility for Projects Being Reviewed by Plan Commission:

The subject design is being forwarded to the Design Commission for review pursuant to Chapter 6 of the Municipal Code.

This project requires Plan Commission review and Village Board approval for Rezoning, Subdivision, PUD approval, and multiple zoning variations. Because this project is going to the Plan Commission, the role of the Design Commission is limited. The Design Commission's responsibility is as outlined in Chapter 28 of the Municipal Code, Section 14.2-1, which states:

*"For developments where a public hearing is necessary before the Plan Commission or Zoning Board of Appeals, the design review process should, if feasible, be completed by the time of the public hearing. Development proposals requiring rezoning, PUD or other Plan Commission approvals, shall be reviewed by the Design Commission **for building and signage only.**"*

Summary:

The petitioner is proposing to build three new 4-story townhome buildings with a total of 16 units on an existing vacant site at the south end of Block 425 on the edge of the Downtown. Each townhome unit will have a separate entrance on the front and a private enclosed garage on the back. The top floor of each unit will be recessed approximately 14 feet to create an outdoor rooftop terrace.

Preliminary Design Commission Review:

This project received a preliminary Design Commission review on February 26, 2019. At that time, Staff reported that the Village Board and neighboring residents had previously expressed their preference for a traditional style development in this location to complement the context of the adjacent single-family neighborhood. Staff presented an image of a traditional style multi-family development on the edge of Naperville's Downtown that the Village Board expressed their preference for at a Committee of the Whole meeting on June 11, 2018. In order to comply with the direction from the Village Board, Staff recommended that the modern style townhome proposal be redesigned with a more traditional aesthetic, and several design suggestions were provided.

Despite the Village Board's preference for a traditional style development, the Design Commission liked the overall modern style direction for this project, including the materials and colors. However, they did recommend the following:

- It was encouraged to enhance the appearance of the buildings as townhouses by further defining the appearance of each individual townhome.
- It was recommended to add windows to the blank wall areas facing south.
- There was a preference to omit the grids (muntins) from the windows.
- Sustainable design was encouraged, and a list of "green" design features was requested.

Project Update:

Based on the feedback received at the preliminary Design Commission review, the petitioner has made the following changes to the proposed design:

- Massing. The overall appearance of the design as individual townhomes instead of one large building was greatly improved by the following:

- The three story corner “tower” element was omitted and replaced with a two-story box bay creating a clear identity for the corner townhome unit.
- Box bays were added to all of the units, providing a very nice residential scale.
- Scuppers and downspouts were added between each of the units, which provides a subtle visual break between each of the units.
- Brick Colors. The brick colors were revised from shades of gray to a creamy white and a reddish brown.
- South Windows. The south walls of the east and west buildings were redesigned to include three vertical rows of windows.
- Window Grids. The window grids (muntins) were omitted from the design.
- Sustainable Design. An extensive list of sustainable design features was provided.

Staff Comments:

Overall, the proposed design is very nicely done, consistent with the Design Commission’s support for a more contemporary design. The softened material palette combined with the changes to the massing helps to create a transitional style development that has a fresh modern appearance to complement the Downtown, yet has a nice scale and level of detail to fit with the adjacent traditional style single-family neighborhood.

Staff has just a couple items of concerns to be evaluated by the Design Commission:

- North Elevation of the Highland building. The north elevation of the Highland building is lacking detail. Although visibility of this elevation will be limited, it is recommended that additional masonry and windows be provided to enhance the appearance.
- Optional Fourth Floors. The petitioner is proposing to offer the fourth floors for all interior units as an option to potential buyers. The fourth floor for all end units will be standard. This raises concerns about the potential for a random appearance to the massing at the top of each building. To ensure a consistent appearance for the development, it is recommended that the fourth floor space either be included for all units on all buildings, or completely eliminated.

Mechanical Equipment, Utility Equipment, and Utility Meter Screening:

All rooftop mechanical equipment is required to be screened from public view. Air conditioning units are located on the fourth floor roof terraces, and will be fully screened by the parapet walls.

Exterior wall-mounted equipment and meters must also be screened from view. The locations of these items is not yet determined, but it is recommended that they be required to be located on the back of the buildings, away from the street frontages.

RECOMMENDATION:

It is recommended that the Design Commission **approve** the proposed architectural design for the Sigwalt 16, Taylor Morrison Townhomes to be located at 37-45 S. Chestnut Avenue and 36-40 S. Highland Avenue. This recommendation is based on, and subject to compliance with, the architectural plans dated and received 4/12/19, exterior elevations and renderings dated 5/22/19 and received 5/24/19, Design Commission recommendations, compliance with all applicable Federal, State, and Village codes regulations and policies, the issuance of all required permits, and the following:

1. Provide additional masonry and windows on north elevation of the Highland building.
2. A requirement that the fourth floor space either be included for all units on all buildings, or completely eliminated.
3. A requirement to locate all exterior wall-mounted mechanical equipment and meters on the back of the buildings, away from the street frontages.
4. This review deals with architectural design only and should not be construed to be an approval of, or to have any other impact on, any other zoning and/or land use issues or decisions that stem from zoning, sign code or building or any other reviews. In addition to the normal technical review, permit drawings will be reviewed for consistency with the Design Commission and any other Commission or Board approval conditions. It is the architect/owner/builder’s responsibility to comply with the Design Commission approval and ensure that building permit plans and sign permit plans comply with all zoning code, building code and sign code requirements.
5. All signage shall comply with Chapter 30, Sign Code.

____ May 21, 2019

Steve Hautzinger AIA, Design Planner
Department of Planning & Community Development

Cc: Charles Witherington Perkins, Director of Planning and Community Development, Bill Enright, Deputy Director of Planning and Community Development, Sam Hubbard,
Development Planner, Petitioner, DC File 19-034

DRAFT

MINUTES OF A MEETING OF
THE ARLINGTON HEIGHTS HOUSING COMMISSION
HELD AT ARLINGTON HEIGHTS VILLAGE HALL
VILLAGE OF ARLINGTON HEIGHTS, ILLINOIS
June 11, 2019

IN ATTENDANCE:

Commissioners

Present: Alex Hageli Mark Hellner
Zach Creer Andrew Tripp

Commissioners

Absent: William Delea

Staff Present: Nora Boyer, Housing Planner/Staff Liaison

On Behalf of Marc McLaughlin, Taylor Morrison
Sigwalt 16: Michael Firsel, Attorney for the Developer

I. CALL TO ORDER

The meeting was called to order at 7:00 p.m.

II. AGENDA

A motion was made by Commissioner Hageli, seconded by Commissioner Tripp to move the Sigwalt 16 item up on the start of the agenda. The motion was approved unanimously.

III. SIGWALT 16 RESPONSE TO AFFORDABLE HOUSING POLICY

Ms. Boyer explained that the proposed Sigwalt 16 project is a for-sale, 16-townhome development, in three buildings, on the south end of Block 425 in downtown Arlington Heights. She explained that the Village's affordable housing guidelines call for 10% of the units or 1.6 units (rounded up to two units) to be affordable or the guidelines provide the option for the developer to contribute a fee in lieu of providing affordable units at \$75,000 per affordable unit not provided. The original developer proposal was to pay \$25,000 for each of the two affordable units. However, after discussion with the developer, the developer has agreed to pay \$75,000 per unit for the 1.6 units.

Ms. Boyer stated that staff looked at how other suburban communities in the Chicago area apply their fee in lieu charges, and she said that the majority apply the whole plus fractional amount to the fee amount, rather

than rounding. The 1.6 times \$75,000 equals a fee in lieu equals a total of \$120,000. Ms. Boyer said that the developer has agreed to pay the fee in lieu amount of \$120,000.

Ms. Boyer stated that for-sale affordable housing units under the Village's guidelines are not recommended at this time. There have been issues with the deed restricted for-sale units at Timber Court condominiums, due to dealing with fluctuations in value, especially during the housing crash, and the percentage of units being rented at the development. She added that since the housing downturn, there are also fewer lenders willing to work with programs like this. She said that the prices of units in this development also make it difficult to apply the guidelines to this for-sale development.

She said that staff is currently doing research on the Village's affordable housing guidelines including the for-sale guidelines. Staff will be coming back to the Housing Commission with its recommendations, but the research is not to that point yet, and this project is not being held up while that work is being done.

Ms. Boyer stated that the recommendation is that the Housing Commission consider recommending to the Village Board that the Village accept from the developer a fee in lieu of providing affordable units at 1.6 times \$75,000 for a total of \$120,000

Mr. Firsel, attorney speaking on behalf of the developer, said that staff approached the developer about fully complying with the affordable housing guidelines by providing the full fee amount at \$120,000, and the developer readily agreed to do so. He said that it is not economically feasible to include two affordable units in this development with the prices of the units at between the mid-\$500,000 and the high \$700,000 - \$800,000 and be able to construct the project. He pointed out that no other for-sale developer has paid the full amount of the fee.

Commissioner Hellner asked some questions about the square footages of the units, number of stories, parking and guest parking, how the exterior grounds will be maintained, the projected construction timetable, and storm water retention. The developer responded to these questions.

The meeting was opened to comments from the public.

Cathy Motto said that she thought that if there were affordable townhomes that there is a market demand for them. She asked how affordable units are kept affordable. The response was that this is done through deed restrictions and keeps the unit affordable in perpetuity.

Keith Moens said that there is a need to get as many affordable units as town as we can get. He asked that one affordable unit be included in the development and said that he did not think that would be an undue burden since it would only be 6% of the units. He commented that staff said that there were difficulties with fluctuations in values but that's how the market works. He said there is an affordable market out there, so there is another market to go to. He asked that there be one affordable unit in the development or that the fee be set at two (for two units) times the fee in lieu amount. He said that staff can look at it, but you can never get around market volatility. Mr. Moens asked about some statements in the developer's letter. Mr. Firsel responded that the sentences to which Mr. Moens referred were in the letter were a mistake.

Mr. Firsel disputed Mr. Moen's assertions saying that he did not have any factual basis for them. Mr. Firsel further stated that in a 16-unit development where 80 units were proposed before one cannot apply of the

affordable housing guidelines to \$600,000 units and make the development work. He commented that no evidence has been provided that this can be done and still have a viable project.

Carl Becker said that he is in the affordable housing business on the rental side. He said that HUD is stressing home ownership, especially in opportunity areas like Arlington Heights. He said there is a need for affordable unit to help the working poor get ahead.

Commissioner Hellner asked Mr. Becker how he would address including an affordable units when the price point is \$600,000 - \$800,000. He asked how he would price the units. Mr. Becker responded that he is not as familiar for-sale developments than homeowner units. Commissioner Hellner said that to make a unit at this price point affordable seems an enormous challenge.

Carl Becker asked what the price for a for-sale unit is. Ms. Boyer responded that the sale price would be around \$150,000 depending on the association dues, taxes, etc. Mr. Firsel said that their estimate was around \$150,000 - \$170,000 and it is not feasible to include one or two units in the development at this price. He said that the developer is offering to fully comply with the guidelines by paying the full fee in lie in the guidelines as was suggested by staff.

Peg Lane asked where she can get precise affordable home sale price amounts. Ms. Boyer said that she can provide that information, but it would be estimates because the affordable sale prices for developments need to be based, on part, on factors such as the property taxes, association dues, etc. of the particular development. She said that under the Village's guidelines, for-sale homes are to be affordable at households at 80% of the area median income.

Commissioner Hellner said that at some point it is counter intuitive that high price housing can be affordable housing. He said that does not mean that affordable cannot be provided, but trying to make a high value unit into an affordable unit at some point does not work. He said that he does not know how to make a unit at this price point affordable. It is more readily done with rental units than for-sale units. He said at the some point the market price prevents units in the proposal from being affordable. The price write down for the affordable units would need to be spread across the market rate units, and at some point that does not work.

There was a discussion about the price a household at 80% of area median income would be able to afford. Commission Tripp confirmed that there are several variable factors and that the number is something of a moving target.

Mr. McLaughlin said that the developer ran proformas on whether one of the townhomes could be split into two affordable units under various scenarios, but none of them worked.

Peg Lane suggested that some educated professionals such as architects and funders to come up with creative solutions for affordable housing. She asked if that can happen. Ms. Boyer responded that that is the kind of research and discussion that staff is working on. Solutions

Commissioner Creer said that the \$120,000 will not go to waste. He said that the Housing Commission received requests from agencies such as the Little City Foundation for funding for group homes in the

Village. He said that using the funds for a use like this makes more sense than including an affordable unit in this type of development. He said that he was in favor of the earlier proposal for this site with 80 units, and it would have made sense to require affordable units in that type of development.

Mr. Moens suggested that the fee could be applied to the cost of a unit and would contribute to bringing down the price. He asked again that if the Housing Commission is looking at the fee that it be charged for two units and paid right away.

A motion was made by Commissioner Hageli, seconded by Commissioner Creer to recommend to the Village Board that it accept as the affordable housing component of the Sigwalt 16 development a fee-in-lieu of providing 1.6 affordable units at \$75,000 per affordable unit not provided (i.e. 1.6 units x \$75,000) for a total of \$120,000 to be paid upon the issuance of the first building permit. The motion was approved unanimously.

Peg Lane asked why the staff went down in its recommendation with regard to the Arlington 425 project from the 54 units called for in the guidelines to the 18 units. Ms. Boyer said that she would give Ms. Lane her telephone number and would be happy to answer her questions. Commissioner Hellner responded that Arlington Heights is just one of a few communities in the area with a policy of this kind. He said that since 2012, when the Village started applying the guidelines that the housing market was poor, but the Village has been more aggressive in applying the guidelines. He said that he would rather see affordable units too, but that is hard to do at the high end of the market. He pointed out that the group homes referred to by Commissioner Creer help an even more disadvantaged group than general low/moderate-income residents.

Peg Lane asked if the Housing Commission has a timeline for the use of the Trust Fund. She asked if 3 months would be enough.

Commissioner Hellner said that the Housing Commission wants to maximize the impact of allocations from the Trust Fund. Commissioner Creer said that there is more money coming into the Trust Fund in the future. He said that there was a discussion that then there is about \$500,000 in the Trust Fund, the Housing Commission determine how to use it. Commissioner Tripp commented that the Housing Commission has discussed how the Trust Fund money could be best used at a couple of Housing Commission meetings.

Keith Moens said that the Village needs to revamp the guidelines. Commissioner Hellner said that as much flexibility as has been the case may not have been as positive an idea as thought previously.

IV. MINUTES

A motion was made by Commissioner Hellner, seconded by Commissioner Tripp to approve the minutes of the April 29, 2019 and May 6, 2019 Housing Commission meetings. The motion was approved unanimously.

V. OLD BUSINESS

A. Single Family Rehab Program

Ms. Boyer reported that there is one pending case, but the homeowners have not been following up. She said that she has recently received telephone calls requesting application forms.

DRAFT

B. Group Home and Transitional Housing Acquisition and Rehab Program.

Ms. Boyer reported that the Little City project has been converted from an acquisition project to a rehab project. The work is under contract.

C. Timber Court

Ms. Boyer said that the Village is awaiting the judgement of damages from the pending lawsuit. There is a local bank that agreed to provide mortgages under the Village's for-sale affordable housing guidelines a few years ago despite the high percentage of rental units in the development. However, the lender said they could not provide mortgage with the litigation still pending. This same lender is being updated as the situation develops to determine if they continue to be willing to provide the mortgages once the litigation is resolved.

D. Substantial Amendments to 2015-2019 Consolidated Plan and Draft 2019 Annual Action Plan

Ms. Boyer said that she submitted CDBG applications for the Single Family Rehab Program and the Group Home and Transitional Housing Acquisition and Rehab Program. She asked for the same grant amounts as for the previous year. She said that the Village is developing the 2019-2020 Annual Action Plan, of which the 2019-2020 CDBG budget is a part. The Village is also proposing some amendment to the 5-year Consolidated Plan. This is the fifth year of the Consolidated Plan, and some amendments to change total allocations for goal areas and total beneficiary numbers are proposed to be changed to reflect actual allocations and beneficiary counts over the first four years under the Consolidated Plan and anticipated allocations and beneficiary numbers in the fifth year.

Commissioner Hellner asked if this means that the Village is developing a new 5-year Consolidated Plan. Ms. Boyer responded that it does.

VI. OTHER

Peg Lane asked why meeting materials are not posted until the Friday before a Housing Commission meeting. Ms. Boyer explained how the public had been provided with notice about the Consolidated Plan, Annual Action Plan and CDBG matters. It was clarified that Ms. Lane was referring to the Housing Commission packet. Ms. Boyer explained that the Village process calls for meeting packets to be posted on the Friday before meeting held the next week. The process was changed in that meeting dates and times are posted further in advance. Ms. Boyer said that sometimes it is not known what will be on agendas until into the week before a scheduled meeting and that there are factors outside staff's control regarding when information in the packets is ready to be posted. She said that the process is applied across the Village and is established by the Village Manager's office. She said that she does not have the authority to change the process.

VII. ADJOURNMENT

A motion was made by Commissioner Hageli, seconded by Commissioner Hellner, to adjourn the meeting. The motion passed unanimously. The meeting adjourned at 8:15 pm.

NEXT MEETING: July 2, 2019 7:00 pm.

Staff Report to the Housing Commission

To: The Chairman and Members of the Housing Commission
From: Nora Boyer, Housing Planner
Re: Sigwalt 16 – Response to Affordable Housing Policy
Report Prepared: June 4, 2019
Meeting Date: June 11, 2019

Background

Sigwalt 16 is a residential, rowhomes development proposed for the southern quarter of vacant Block 425 located in downtown Arlington Heights. Block 425 is bounded by Campbell Street to the north, Sigwalt Street to the south, Highland Avenue to the east, and Chestnut Avenue to the west. The proposed development is just south of the proposed Arlington 425 project.

The proposed development would involve the construction of a total of sixteen rowhomes on the site, in three buildings. The first building, located at the northeast corner of Chestnut Street and Sigwalt Street would contain six rowhomes. The second building, located at the northwest corner of Highland Avenue and Sigwalt Street would contain five rowhomes. The third building, located between the other two buildings along Sigwalt Street would contain five rowhomes. An exhibit is provided showing the site plan and a rendering in order to provide context and general understanding of the development to the Housing Commission, but site and design considerations do not fall under the purview of the Housing Commission.

Affordable Housing Guidelines

The Village's affordable housing guidelines call for a percentage of units in multi-family developments to be set aside as affordable housing. The guidelines suggest the inclusion of affordable units as a percentage of the total units. A fee in lieu of providing the affordable units in the amount of \$75,000 per required affordable unit is allowed. However, the guidelines stipulate that there is a preference for actual affordable units over the payment of fees. According to the guidelines, Sigwalt 16 with its 16 townhomes would either need to provide 10% of its units as affordable (i.e. 2 affordable units, rounded up from 1.6 units) or \$75,000 for each of the affordable unit not provided for a total of \$150,000.

Developer Proposal

The developer originally proposed to provide a fee for two units of \$25,000 per unit for a total of \$50,000. After discussions with Staff the developer has agreed to a fee in lieu of \$75,000 multiplied by 1.6 (10%) for a total of \$120,000.

Analysis

Recently, the Village Board has been requiring the inclusion of affordable units in new multi-family developments, and has permitted a combination of actual affordable units to the extent feasible in the development with the fees in lieu of units at \$25,000/unit for affordable units not provided. However, it is not recommended that actual affordable units be included "for sale" developments at this time for the following reasons:

1. The only for-sale development that included affordable, deed-restricted units to date is Timber Court condominium. Difficulties have been experienced with respect to the resale of these units due to fluctuation in values and the high proportion of rental units that resulted from the recession and decline in the suburban condominium market. Staff continues to work on these challenges, and is reluctant to recommend the inclusion of affordable for-sale units until solutions are found that resolve the difficulties at Timber Court.
2. The anticipated costs of the Sigwalt 16 units are expected to be in excess of \$600,000 per unit. Therefore, it is unrealistic to expect an affordable unit to be incorporated within this small development.

Since the Multi-Family Affordable Housing Guidelines for For-Sale developments has been implemented, units and fees have been approved for developments as follows:

<u>Affordable Housing Guidelines Applied to For-Sale Developments</u>							
<u>Year</u>	<u>Development</u>	<u>Guideline Requirement</u>	<u>Units Provided</u>	<u>Fee per Affordable Unit</u>	<u>Total Fee</u>	<u>Fee Across All Units</u>	<u>Public Assistance Provided</u>
2004	Timber Court Condos Total: 72 Units	20% - 14 units	14 Deed Restricted	0	0	0	VAH \$100,000
2012	Arbor Lane Townhomes Total: 16 Units	12% - 2 units	0	\$15,189/unit	\$30,378	\$1,898/unit	\$0
2016	Lexington Townhomes 48 townhomes	15% - 7 units	0	\$17,142/unit	\$120,000	\$2,500/unit	\$0
2019 Original Proposal	Sigwalt 16	10% - 2 units	0	\$25,000/unit	\$50,000	\$3,125/unit	\$0
Guideline Requirement	Sigwalt 16 Rounded Up	10% - 2 units	0	\$75,000	\$150,000	\$9,375/unit	\$0
	Sigwalt 16 Not Rounded	10% - 1.6 units	0	\$75,000	\$120,000	\$7,500/unit	\$0

If the Housing Commission concurs with the recommendation that this for-sale development not be required to include actual affordable housing units, the Housing Commission will need to determine the appropriate fee.

In the majority of suburban Chicago communities with inclusionary housing programs (i.e. the communities of Highland Park, St. Charles, and Lake Forest), when the calculation number of required affordable units includes a fractional number, that number is rounded up or down for the number of affordable units required. However, the whole number and (non-rounded) fractional number are used when calculating the fee-in-lieu amount. It is recommended that Arlington Heights calculate the fee-in-lieu amount in this manner. The non-rounded requirement for Sigwalt 16 (10% of 16 units) of 1.6 units multiplied by the \$75,000 fee per affordable units not provided totals \$120,000.

Recommendation

It is recommended that the Housing Commission recommend to the Village Board that a fee-in-lieu of providing affordable be accepted for the Sigwalt 16 project in the amount of \$120,000 (1.6 units x \$75,000) to be paid upon the issuance of the first building permit.

Date: April 26, 2019
To: Village of Arlington Heights, Sam Hubbard
From: Taylor Morrison, Marc McLaughlin, AICP, GISP
Subject: Sigwalt 16 Neighborhood Meeting

The Chicago Division of Taylor Morrison held an informational open house (neighborhood meeting) for our proposed development, Sigwalt 16, on Thursday April 11, 2019 at 7:30pm in the Buechner Room at Arlington Heights Village Hall. Approximately 70 invitations were mailed to property owners within 250' of the subject property inviting them to the neighborhood meeting. A sign-in sheet and comment cards were utilized.

The event was an open house with boards on display around the room and a member of the development team at each board. The boards consisted of the landscape plan, elevation renderings, floor plans, neighborhood building heights, and Taylor Morrison information. Refreshments of coffee, pop and water were served. At 7:45 Taylor Morrison gave a brief introduction of the development team and project overview. The remainder of the open house the development team answered all questions and addressed any perceived concerns from the neighbors.

In summary, the attendees appreciated that Taylor Morrison studied the meeting minutes of the previous proposal on the property and presented a product and architectural design that fits the neighborhood. All of the attendees voiced their general support of this development.

In attendance from the development team:

Rick Champine, Taylor Morrison
Scott Barenbrugge, Taylor Morrison
Marc McLaughlin, Taylor Morrison
Eden Richards, HKM Architects
Maureen Mulligan, RWG Engineering
Julie Workman, Levenfeld Pearlstein
Mike Firsell, Firsell Ross

In attendance from the community:

Donald Meersman, 202 S Highland Avenue
Catherine Meersman, 202 S Highland Avenue
Dan Thomas, 1623 N Mitchell Avenue
Gabriela Rojek, 104 S Highland Avenue





MICHAEL D. FIRSEL
MICHAEL E. ROSS
CHRISTINE S. BOLGER
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April 12, 2019

Mr. Terrence Ennes and
Members of the Plan Commission of the
Village of Arlington Heights
33 S. Arlington Heights Road
Arlington Heights, IL 60005-1403

**Re: Request of Taylor Morrison of Illinois, Inc. ("Petitioner") for Plan Commission
Hearing and Recommendation – Sigwalt 16 – Proposed Rowhome Development
in Downtown Arlington Heights**

Dear Chairman Ennes and Plan Commission Members:

Please consider this letter the formal request of Taylor Morrison of Illinois, Inc., on behalf of SSO Arlington, LLC, the owner of the property referenced herein, to present Petitioner's proposed project known as "**Sigwalt 16**" before the Plan Commission of the Village of Arlington Heights for review and recommendation to the Village Board.

Petitioner is proposing a new "Class A" rowhome residential development on the 41,939 square foot parcel of vacant land identified as the southern portion of "Block 425" in the Village Downtown Master Plan (the "**Property**"), located between Sigwalt Street on the south, Highland Avenue on the east, and Chestnut Avenue on the west. The Property is south of and directly adjacent to the proposed "Arlington 425" development. The undersigned has been authorized to submit this letter to the Village for and on behalf of the Owner/Petitioner of the Sigwalt 16 project (the "**Project**").

The Project will involve the construction of three new residential rowhome buildings on the currently vacant Property. Each will be a four-story, rowhome style residential building containing 2-3 car rear-loaded garages. Each building will also have balconies on the top floor adjacent to the public streets, thereby reducing the mass of the fourth floor of the buildings.

The first building, located at the northeast corner of Chestnut Street and Sigwalt Street (the "**Chestnut Building**"), will contain six rowhomes. The second building, located at the northwest corner of Highland Avenue and Sigwalt Street (the "**Highland Building**"), will contain five rowhomes. The third building located between the Chestnut Building and Highland Building along Sigwalt Street (the "**Sigwalt Building**"), will contain five rowhomes. The total number of rowhomes in this development is sixteen, evoked by the subdivision name: "Sigwalt 16". Each building will include tastefully landscaped grass front yards ranging in size from twelve to twenty feet from the property line following required additional right-of-way dedications on Chestnut and Highland.



Mr. Terrence Ennes, et.al.
April 12, 2019
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Sidewalks will be constructed on the border of the entire development to provide for easier foot transportation and access for pedestrians.

It is currently contemplated that the Project will be constructed in three phases, with the first phase to include the five unit Highland Building as well as all onsite improvements. Petitioner hopes to break ground early fall of 2019.

Taylor Morrison is very responsive to the many environmental issues connected with new construction and development, and the need to use sustainable elements in its developments whenever and wherever possible. Attached to this letter are many of the presently contemplated sustainable elements of Sigwalt 16. Wherever possible additional sustainable elements will be added.

The parcel on which the Project is located currently consists of 6 lots, all of which are zoned R-3. Petitioner is seeking to consolidate the 6 lots into a Planned Unit Development initially containing four lots, all with R-7 as the underlying zoning for the entire Property. The four lots will consist of the three phases of buildings referenced above, and the fourth lot will be the common area of the project. As each residence phase is completed it will be divided into separate townhome fee simple lots for each unit so that each owner has its own indefeasible fee simple interest in the residence.

Petitioner is seeking very few variances to the Village's Zoning Code, each of which Petitioner vetted carefully with Village Staff, and believes are justified and necessary. Please see Petitioner's **"Written Justification for Land Use Variations"** for a more in-depth explanation of the necessity of these variances.

Petitioner is not seeking any height, density or parking variances. Based on the number and type of residential units being proposed, 24 parking spaces are required for the Project. Petitioner currently plans to provide a minimum of 40 parking spaces with 2 spaces (plus a possible third tandem space) in each garage and 8 surface parking spaces. The surplus of 16 spaces is well in excess of code requirements, and does not include the optional third-car tandem garage space, which may be selected by prospective homebuyers.

Petitioner looks forward to presenting this project before the Village Plan Commission and Board of Trustees for review and approval.

Sincerely,

A handwritten signature in blue ink that reads 'Michael D. Firsell'. The signature is fluid and cursive, with the first name 'Michael' being the most prominent part.

Michael D. Firsell

Sigwalt 16 – Proposed Sustainable Elements
4/12/19

Location and Transportation

- Avoiding environmentally sensitive land (farmland, wetlands, etc.).
- Infill development to avoid dependency on vehicles.
- Compact development to conserve land.
- Proximity to community resources, stores, restaurants, services, public amenities.
- Walkable access to mass transit.

Sustainable Sites

- Construction activity pollution prevention via erosion and sedimentation control
- Multiple trees and native landscape plantings along exterior streets and the internal courtyard, all as depicted in Petitioner's landscape plans;
- Rainwater management through use of water-efficient landscaping, permeable pavers, and detention system to allow infiltration and control volume of rainwater runoff from site.
- The siding of all buildings will be LP SmartSide which is pest resistant which goes through an extensive energy seal process that includes, sealing all exterior penetrations via flashing, non-expansive foam, approved drainage plane tape, penetration flashing as well as window and door flashing.

Water Efficiency

- Indoor water use reduction through use of high-efficiency/low-flow plumbing fixtures.
- Outdoor water use reduction with efficient landscape design and no irrigation system.

Energy and Atmosphere

- Inherently energy efficient building style of rowhomes with shared walls for greatly reduced heat loss.
- Exterior joints and penetrations sealed against air leakage for an energy efficient building envelope. We will execute an extensive energy seal process that includes, sealing all exterior penetrations via flashing, non-expansive foam, approved drainage plane tape, penetration flashing as well as window and door flashing.
- Favorable wall-to-window ratio, thermally broken windows, insulated low-E glass.
- Majority of appliance options offered will be ENERGY STAR qualified.
- High-efficiency HVAC systems.
- Programmable thermostats and/or smart home system will be offered. A programmable thermostat will be included as well as the option to buy the Alarm.com package which will enable the homeowner to create a "Smart Home".
- No CFC-based refrigerants in HVAC systems.

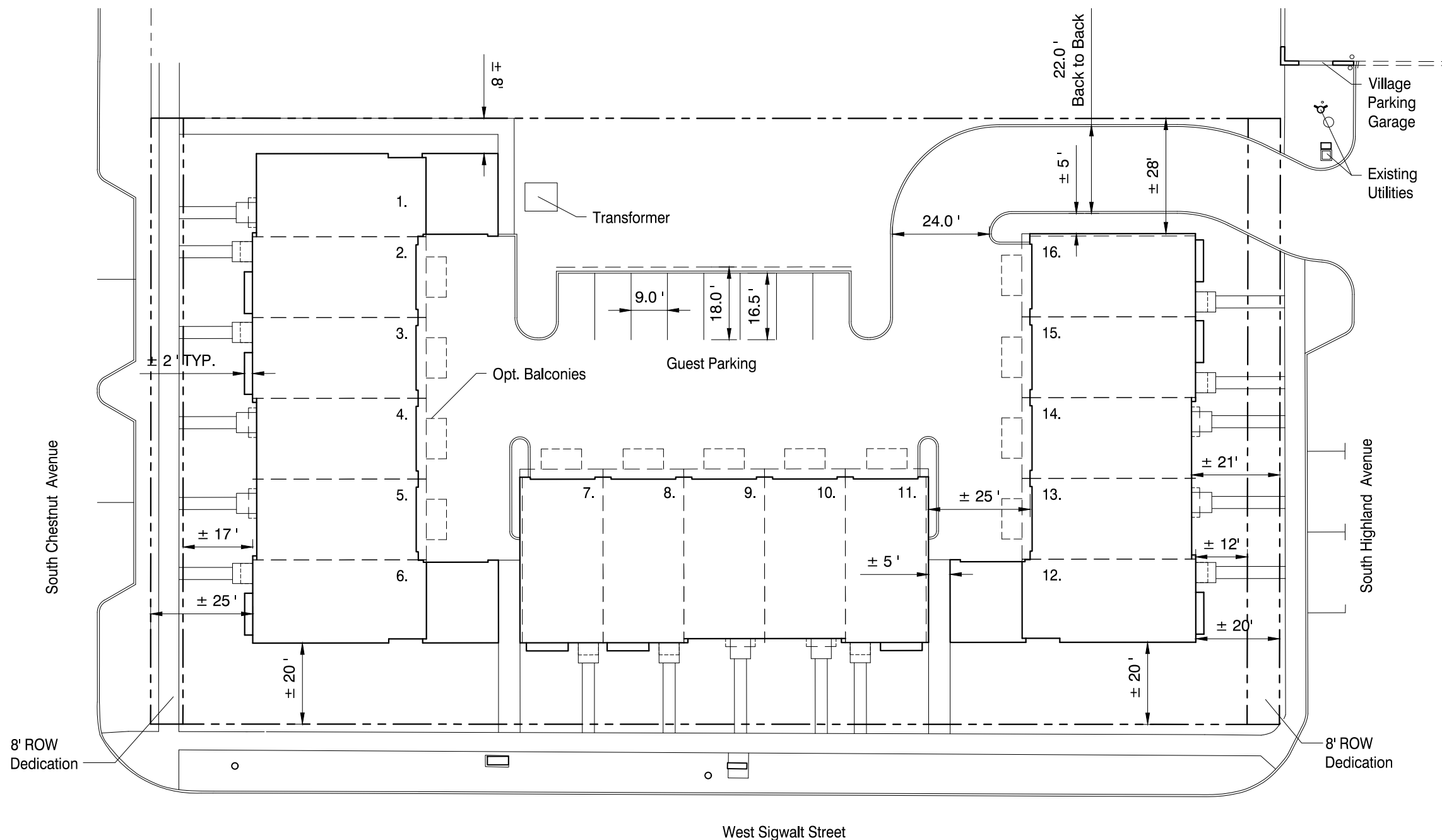
- LED light fixtures will be used interior and exterior to reduce energy consumption and extend lifespan of fixtures;

Materials and Resources

- Environmentally preferable products, no tropical wood or materials from endangered forest areas.
- Durable building enclosure to prevent water infiltration with low-maintenance, long-life exterior cladding materials and minimized areas of painting to reduce on-going material waste. The majority of the façades will be masonry. The small sections of the exterior cladding that is not masonry will be LP SmartSide.
- Indoor moisture control with water-resistant building materials at sensitive areas. All tile locations will be installed with the Schluter drainage plane system.
- Construction waste reduction with material-efficient, panelized and prefabricated structural components, and recycling construction debris when possible. Roofs and floor systems will be built with premanufactured floor trusses. Over 95% of the waste removed from the site will be recycled.
- Building materials with sustainable attributes.
- Developer will continue to promote and implement green features and sustainable design elements during the final planning and design process.
- All required above-ground utilities will be properly screened;

Indoor Environmental Quality

- Ventilation with outdoor air to improve indoor air quality. Developer will either install a continuous ventilation system or use a mechanical damper at the furnace to ensure indoor air quality.
- Carbon monoxide monitoring.
- Reduce exposure to indoor pollutants by weather-stripping doors between the garage and conditioned spaces.
- Air filters with minimum MERV 8.
- Low-emitting (low-VOC) materials.
- Windows will meet minimum U-factors per the energy code;



Project Data		R-7
	Provided	Required
Site		
Site Area (Gross, prior to Dedication)	± 41,939 sf	
Site Area (Net, after Dedication)	± 39,539 sf	14,400 sf (Per Unit Count)
Lot Size (Gross, prior to Dedication)	± 150' x ± 280'	
Lot Size (Net, after Dedication)	± 150' x ± 264'	
East (front) Setback (after 8' Ded.)	± 12'	25'
West (front) Setback (after 8' Ded.)	± 17'	25'
North (side) Setback	± 8'	15'
South (exterior side) Setback	± 20'	20'
Residential Site Data		
Dwelling Units	16	
Three Bedroom Min. sf	2400 sf	900 sf
Building Footprint	± 14,540 sf	
Gross Building Area	± 51,830 sf	
Building Area (Not Including Parking)	± 45,430 sf	
% Building Lot Coverage (Building Footprint / Net Site Area)	± 37%	55%
Floor Area Ratio (FAR) (Building Area / Net Site Area)	± 1.15	2.00
Parking	32 to 40	24
Stalls/Unit	2.0 to 2.5	1.5





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April 12, 2019

Mr. Terrence Ennes and Members of
the Plan Commission of the
Village of Arlington Heights
33 S. Arlington Heights Rd.
Arlington Heights, IL 60005-1403

**Re: Sigwalt 16 / Taylor Morrison of Illinois, Inc. – Proposed Rowhome
Development in Downtown Arlington Heights**

VARIATION CRITERIA

A. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a 12' setback along a front yard lot line (eastern lot line) for the building along Highland Avenue ("Highland Building") where code requires a 25' setback.

- 1. The proposed use will not alter the essential character of the locality and will be compatible with existing uses and zoning of nearby property.*

Correct. The property is bordered by residential districts on the west and south, and a commercial district on the east. The property is intended to be a transitional area in downtown Arlington Heights between existing residential and commercial uses. To develop the property in the most beneficial fashion, consistent with its location on the edge of downtown, this variation is required; specifically, due to the imposition of the eight foot right-of-way required dedication along Highland Avenue, which severely impacts this property.

- 2. The plight of the owner is due to unique circumstances, which may include the length of time the subject property has been vacant as zoned.*

The property has been vacant for a long time. To develop the property in the most beneficial fashion, consistent with its location on the edge of downtown, this variation is required; specifically, due to the imposition of the eight foot right-of-way required

Mr. Terrence Ennes and Members of
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dedication along Highland Avenue, which severely impacts this property. In an effort to minimize the variation on Chestnut, which is adjacent to residential uses, Petitioner has been required to move all buildings further east on the property, increasing the magnitude of the required variation.

3. *The proposed variation is in harmony with the spirit and intent of this Chapter.*

Correct. It is the intention of the Village Zoning Code “[t]o protect the character and stability of the residential, business and manufacturing areas within the Village and to promote the orderly and beneficial development of such areas.” This project promotes the orderly and beneficial development consistent with the unique nature of this and the neighboring properties.

4. *The variance requested is the minimum variance necessary to allow reasonable use of the property.*

Correct. In order to accommodate the proper and orderly development of the property, the requested setback is the minimum required.

B. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a 17’ setback along a front yard lot line (western lot line) for the building along Chestnut Street (“Chestnut Building”) where code requires a 25’ setback.

1. *The proposed use will not alter the essential character of the locality and will be compatible with existing uses and zoning of nearby property.*

Correct. Petitioner’s plans shows a 17’ setback. Thus, the requested variance is a total of 8’. The property will be zoned R-7. Because the Chestnut Building will be bordered on the west by the R-3 District, this variation will not conflict with existing nearby residential uses.

2. *The plight of the owner is due to unique circumstances, which may include the length of time the subject property has been vacant as zoned.*

Correct. The property has been vacant for a long time. To develop the property in the most beneficial fashion, consistent with its location on the edge of downtown, this variation is required; specifically, due to the imposition of the eight foot right-of-way required

Mr. Terrence Ennes and Members of
the Plan Commission of the
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dedication along Chestnut Avenue, which severely impacts this property. But for the required eight foot dedication, Petitioner would not require this variance.

3. *The proposed variation is in harmony with the spirit and intent of this Chapter.*

Correct. It is the intention of the Village Zoning Code “[t]o protect the character and stability of the residential, business and manufacturing areas within the Village and to promote the orderly and beneficial development of such areas.” This project promotes the orderly and beneficial development consistent with the unique nature of this and the neighboring properties.

4. *The variance requested is the minimum variance necessary to allow reasonable use of the property.*

Correct. In order to accommodate the proper and orderly development of the property, the requested setback is the minimum required.

C. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow an 8’ setback along a side yard lot line (northern lot line) where code requires a 15’ setback.

1. *The proposed use will not alter the essential character of the locality and will be compatible with existing uses and zoning of nearby property.*

Correct. The property is bordered by the “Arlington 425” Project to the North which is or will be a B-5 zoning district. The property is meant as a transitional area in downtown Arlington Heights between existing residential and high-density residential and commercial uses. The property will be zoned R-7 as a means to accomplish this transitional purpose, and this variation will not conflict with this purpose.

2. *The plight of the owner is due to unique circumstances, which may include the length of time the subject property has been vacant as zoned.*

Correct. The property has been vacant for many years. To develop the property in the most beneficial fashion, consistent with its location on the edge of downtown, this variation is required. Petitioner seeks to maximize the use of space on its parcel.

3. *The proposed variation is in harmony with the spirit and intent of this Chapter.*

Mr. Terrence Ennes and Members of
the Plan Commission of the
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Correct. It is the intention of the Village Zoning Code “[t]o protect the character and stability of the residential, business and manufacturing areas within the Village and to promote the orderly and beneficial development of such areas.” This project promotes the orderly and beneficial development consistent with the unique nature of this and the neighboring properties.

4. *The variance requested is the minimum variance necessary to allow reasonable use of the property.*

Correct. In order to accommodate the proper and orderly development of the property, the requested setback is the minimum required.

D. Variations to Chapter 28, Section 5.1-7.10, Spacing Between Multi-Family Buildings, to allow a space of no less than 5’ between the Highland Building and the building along Sigwalt Street (“Sigwalt Building”) and the Sigwalt Building and the Chestnut Building, where Code requires 25’.

1. *The proposed use will not alter the essential character of the locality and will be compatible with existing uses and zoning of nearby property.*

Correct. Petitioner seeks to maximize the use of space on this very small parcel. Because the property is located downtown and is meant as a transitional area between residential and commercial districts, it is appropriate to construct multiple residential buildings on this parcel that utilize the space in the most efficient way possible. To most efficiently develop this parcel, this variation is required. While the 3 buildings could be connected to eliminate the variation, the +/-5.33’ pedestrian alley between the Highland Building and Sigwalt Building will allow guests to park behind the buildings and more readily access the front entrances.

2. *The plight of the owner is due to unique circumstances, which may include the length of time the subject property has been vacant as zoned.*

Correct. The property has been vacant for many years. This parcel’s downtown location calls for multiple buildings to be developed. To develop the property in the most beneficial fashion, consistent with its location on the edge of downtown, this variation is required. Petitioner seeks to maximize the use of space on its parcel.

Mr. Terrence Ennes and Members of
the Plan Commission of the
Village of Arlington Heights
April 12, 2019
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3. *The proposed variation is in harmony with the spirit and intent of this Chapter.*

Correct. It is the intention of the Village Zoning Code “[t]o protect the character and stability of the residential, business and manufacturing areas within the Village and to promote the orderly and beneficial development of such areas.” By maximizing the use of space on this parcel with residential buildings, Petitioner is providing the most effective transition possible between residential and commercial districts.

4. *The variance requested is the minimum variance necessary to allow reasonable use of the property.*

Correct. In order to accommodate the proper and orderly development of the property, the requested setback is the minimum required.

E. Variation to Chapter 28, Section 10.2-8, to allow a two-way driveway width of 22’ where Code requires a minimum of 24’ for a two-way drive aisle.

1. *The proposed use will not alter the essential character of the locality and will be compatible with existing uses and zoning of nearby property.*

Correct. Petitioner seeks to maximize the use of space on its parcel. Because the property is located downtown and is meant as a transitional residential area. Although Petitioner has space to increase the drive aisle entrance to 24’ and comply with Code, the reduced drive aisle width allows for additional greenspace for foundation plantings along the north side of the eastern townhome building. Petitioner will fully comply with the Fire Safety Division of the Building Department after its review the rear motor court area to determine if fire truck access will be necessary to the rear of the buildings. To most efficiently develop this parcel, this variation is required.

2. *The plight of the owner is due to unique circumstances, which may include the length of time the subject property has been vacant as zoned.*

Correct. The property has been vacant for many years. This parcel’s downtown location calls for multiple buildings to be developed. To develop the property in the most beneficial fashion, consistent with its location on the edge of downtown, this variation is required. Petitioner seeks to maximize the use of space on its parcel.

Mr. Terrence Ennes and Members of
the Plan Commission of the
Village of Arlington Heights
April 12, 2019
Page 6

3. *The proposed variation is in harmony with the spirit and intent of this Chapter.*

Correct. It is the intention of the Village Zoning Code “[t]o protect the character and stability of the residential, business and manufacturing areas within the Village and to promote the orderly and beneficial development of such areas.” By maximizing the use of space on this parcel with residential buildings, and providing as much greenspace as possible, Petitioner is providing the most effective transition possible between residential and commercial districts.

4. *The variance requested is the minimum variance necessary to allow reasonable use of the property.*

Correct. In order to accommodate the proper and orderly development of the property, the requested variance is the minimum required.

F. Chapter 28, Section 5.1-7.3, Minimum Area for Zoning District, to allow the R-7 District to be approximately 1.39 acres where code requires a minimum of two acres for the R-7 District.

1. *The proposed use will not alter the essential character of the locality and will be compatible with existing uses and zoning of nearby property.*

Correct. The R-7 zoning is appropriate for this property because it acts as a transitional site between the B-5 Districts downtown, and the R-3 District for single-family homes. The site is not large enough to meet the formal area requirements of the R-7 District. This subject parcel is bordered by streets on all but the north side of the property, which is or will be zoned B-5 and is not for sale, so there is no room to make the site bigger. Therefore, if it's to be developed within the R-7 guideline the variance is necessary. In addition, the Minimum Area variation request is not unique to this site and has been granted on nearby R-7 zoned properties.

2. *The plight of the owner is due to unique circumstances, which may include the length of time the subject property has been vacant as zoned.*

Correct. The vision of the Village's Comprehensive Plan and Downtown Master Plan shows the subject property as part of a larger strip of R-7 zoned land. This is a unique

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circumstance because when considered in sum, the strip of potential R-7 zoning is over 2 acres in size.

3. *The proposed variation is in harmony with the spirit and intent of this Chapter.*

Correct. The vision of the Village's Comprehensive Plan and Downtown Master Plan shows the property as R-7 zoned land. When considering the alteration of the "essential character of the locality", the Village has determined what that "essential character" is to be, and that includes the requirements and rights associated with property zoned as R-7.

4. *The variance requested is the minimum variance necessary to allow reasonable use of the property.*

Correct. In order to accommodate the proper and orderly development of the property, the requested variance is the minimum required.

G. Variation to Chapter 28, Section 10.2-9, to Allow Tandem Parking Spaces.

1. *The proposed use will not alter the essential character of the locality and will be compatible with existing uses and zoning of nearby property.*

Correct. Tandem parking is offered as an option to an owner which will take place within the garage of the townhome should an owner choose to pay for such an option. The project exceeds the require parking by 16 spaces without accounting for tandem parking. The purpose of this request is to offer yet another option to an owner as well as making certain that if an owner needs the 3 parking spaces, that they do not use public parking spaces or the guest parking to satisfy their needs. Since tandem parking spaces, if any, will be within the residence garage, such variance will not alter the essential character of the locality and will be compatible with existing uses and zoning of nearby property.

2. *The plight of the owner is due to unique circumstances, which may include the length of time the subject property has been vacant as zoned.*

Correct. The ability of the Petitioner to sell the townhomes is enhanced by offering as many life-style choices as possible, thus hastening the period of time within this long vacant parcel can be completely developed.



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3. *The proposed variation is in harmony with the spirit and intent of this Chapter.*

Correct. Due to the location of the tandem parking spaces within the garages, the proposed variation is in harmony with the spirit and intent of this Chapter

4. *The variance requested is the minimum variance necessary to allow reasonable use of the property.*

Correct. In order to accommodate the proper and orderly development of the property, the requested variance is the minimum required.

It should be noted that the property is proposed to be further subdivided into individual units for each townhome, which will require variations for each lot based on the R-7 setback and bulk standards, although the overall development will comply with bulk standards and with most setback standards as set forth in the Code, subject to the variances set forth in this letter.

Should you require and further information or clarification, please do not hesitate to contact the undersigned.

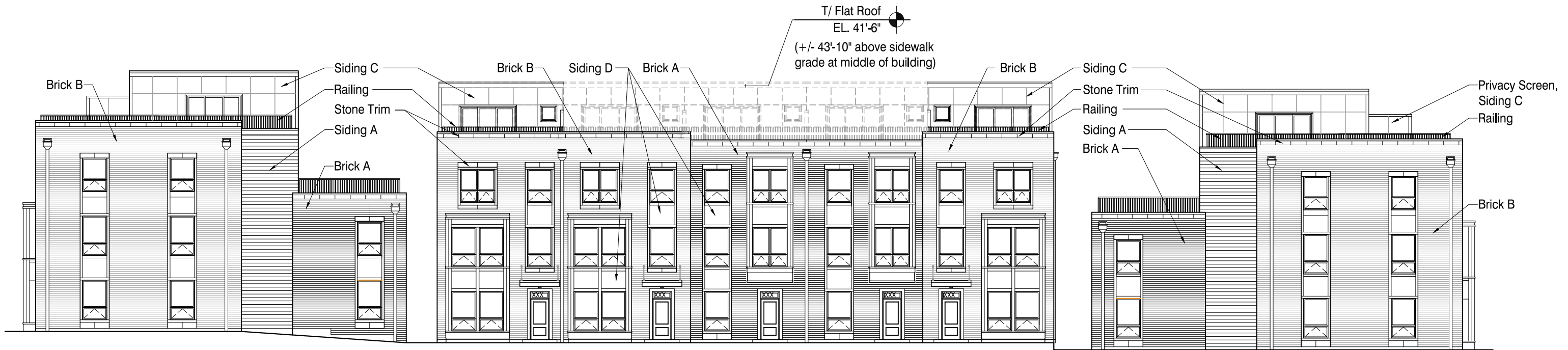
Sincerely,

A handwritten signature in blue ink that reads 'Michael D. Firsell'. The signature is fluid and cursive.

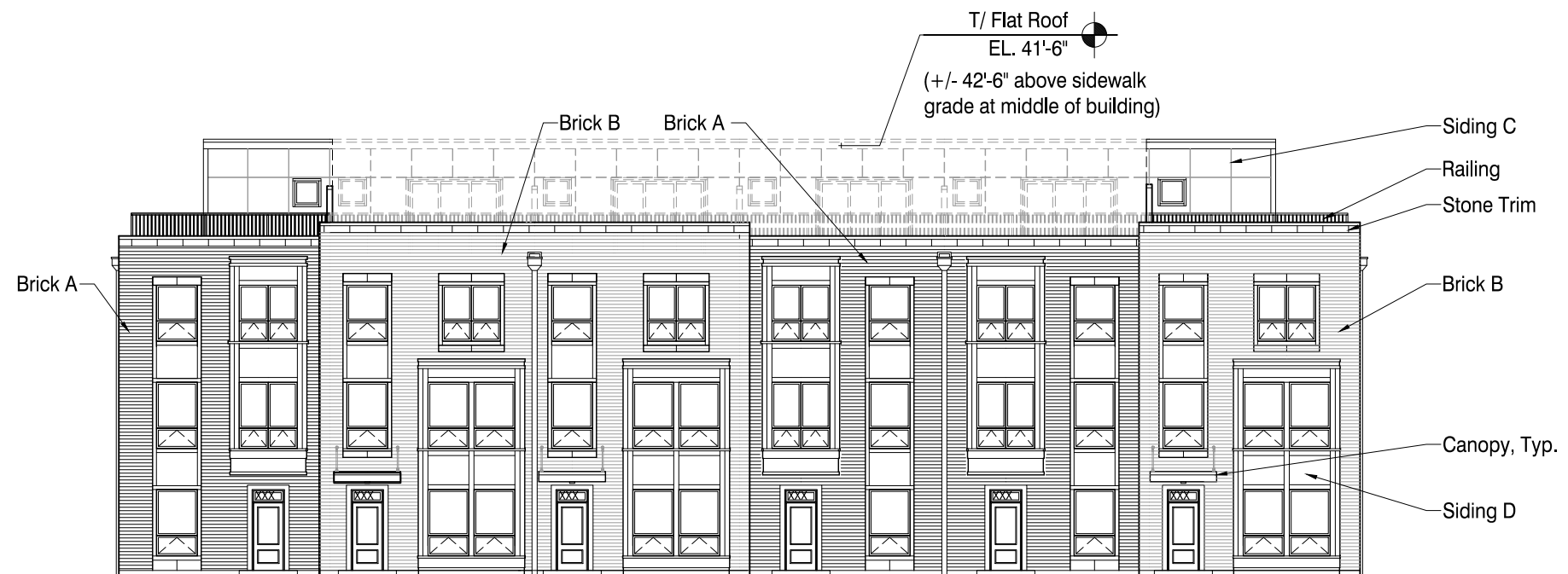
Michael D. Firsell





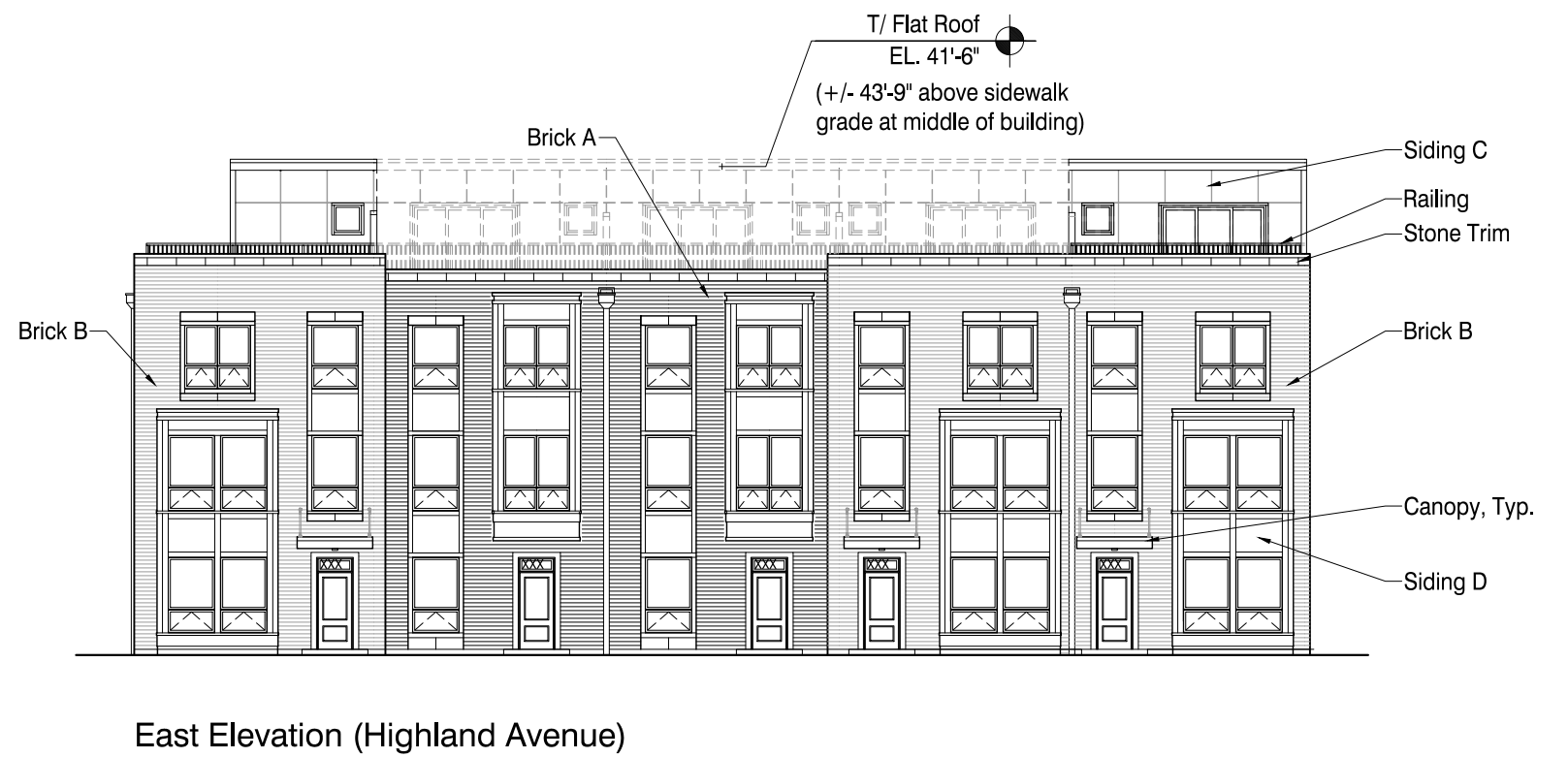
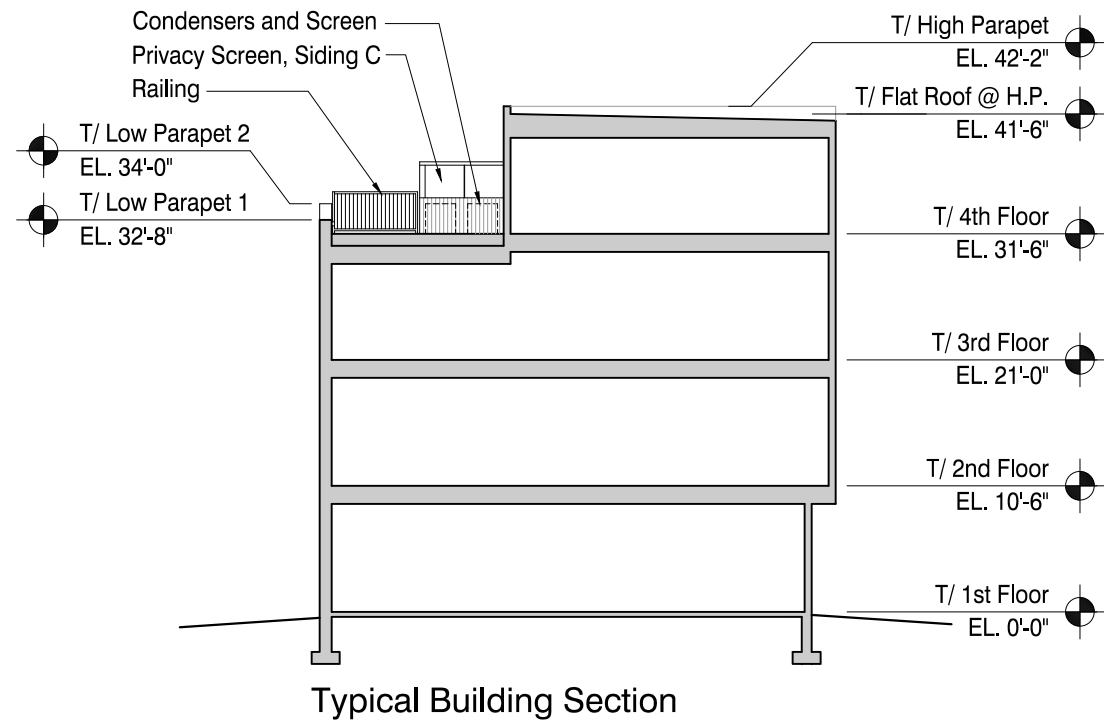


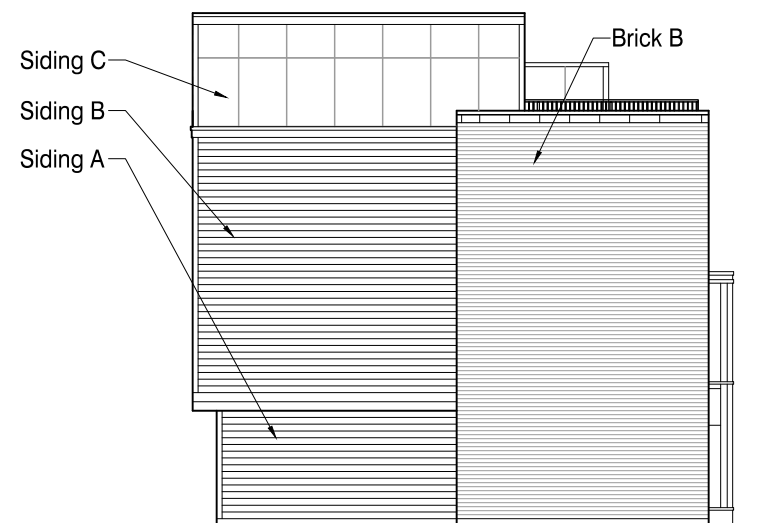
South Elevation (Sigwalt Street)



West Elevation (Chestnut Avenue)

0 8' 16' 32'

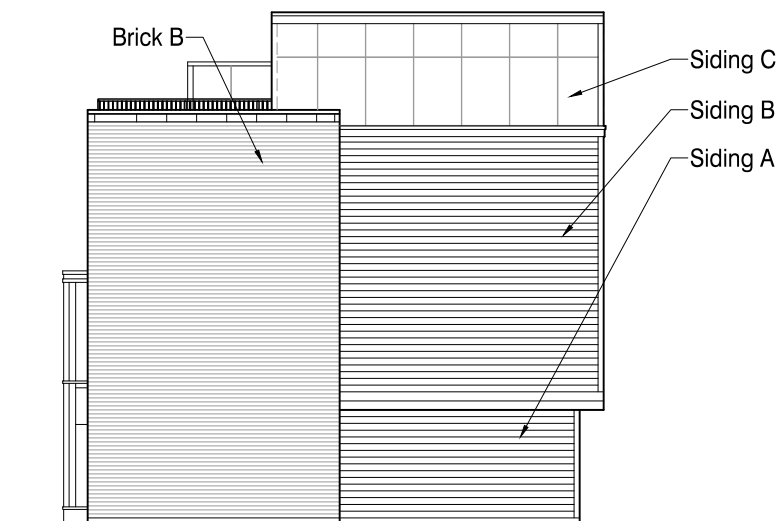




South Building (Sigwalt), West Side Elevation



West Building (Chestnut), Rear Elevation



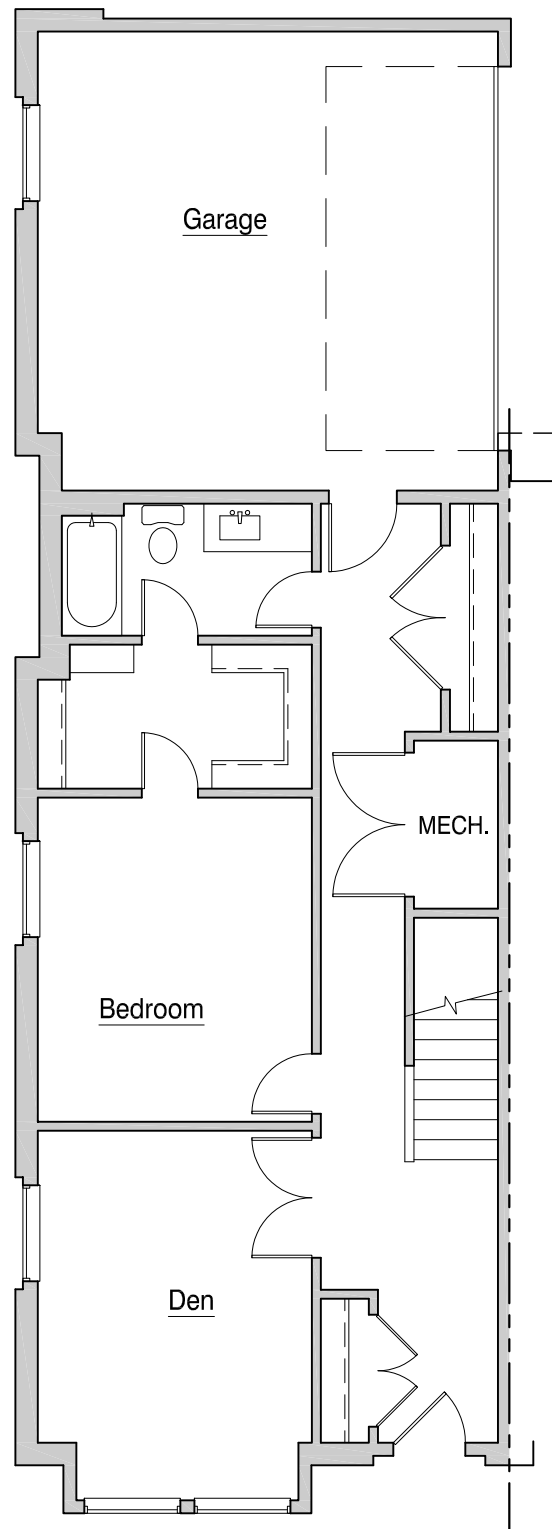
South Building (Sigwalt), East Side Elevation



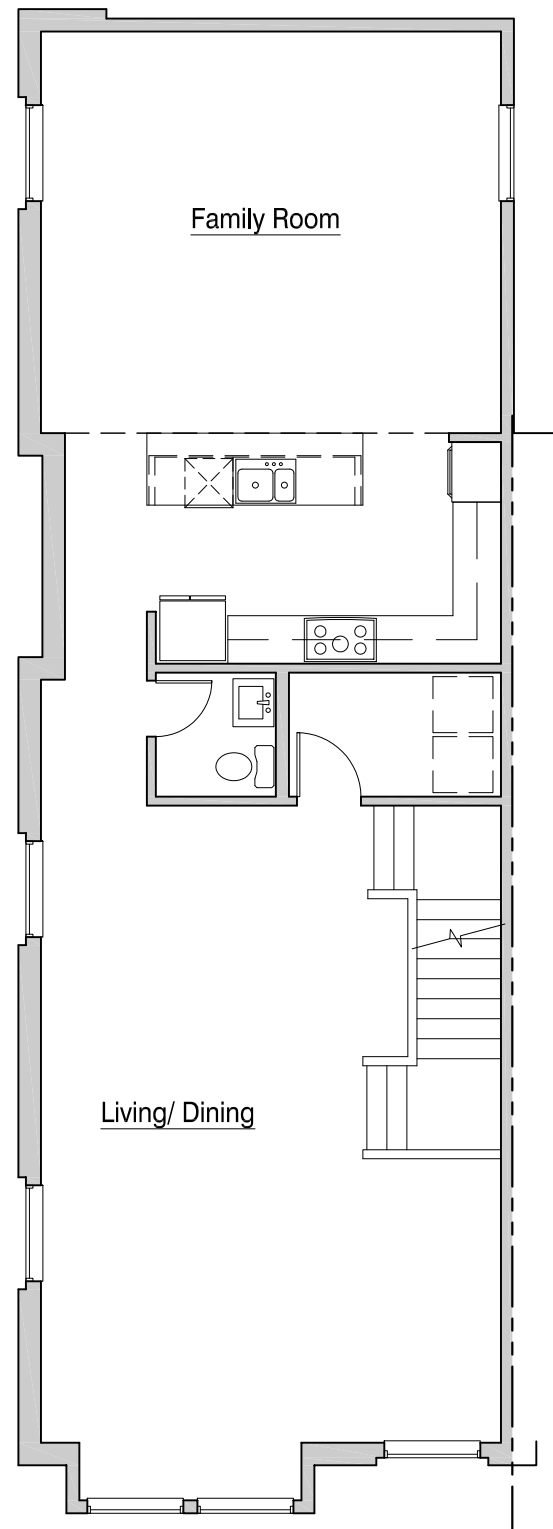
East Building (Highland), Rear Elevation



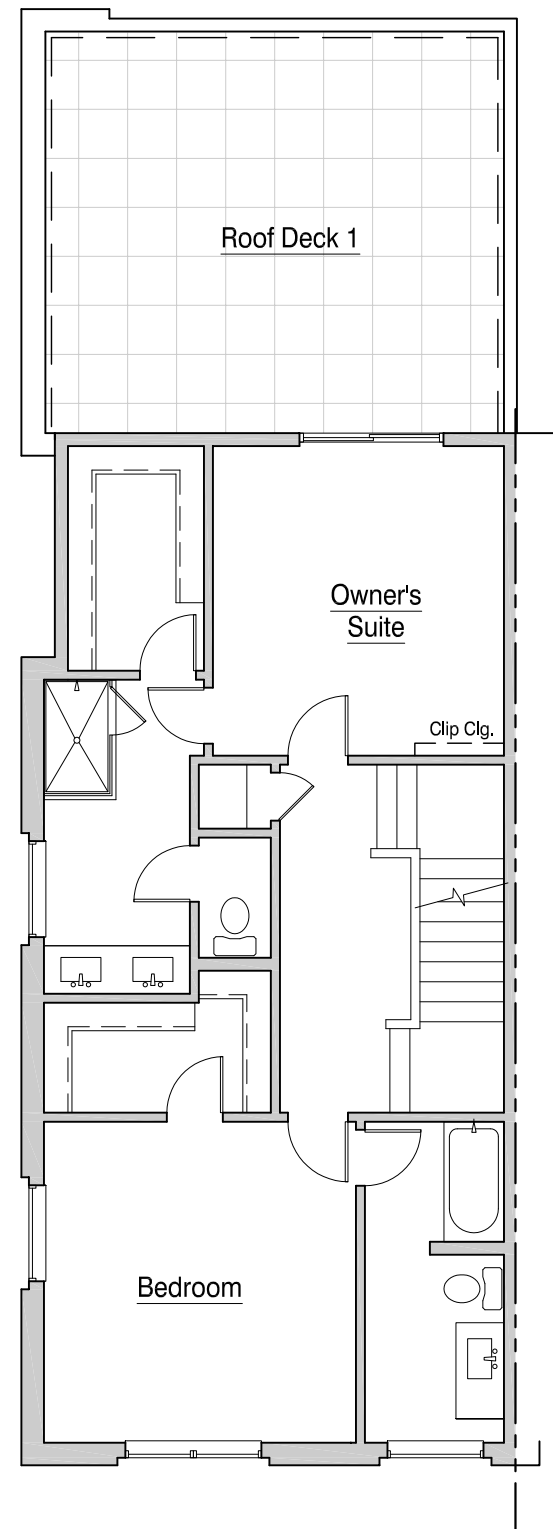




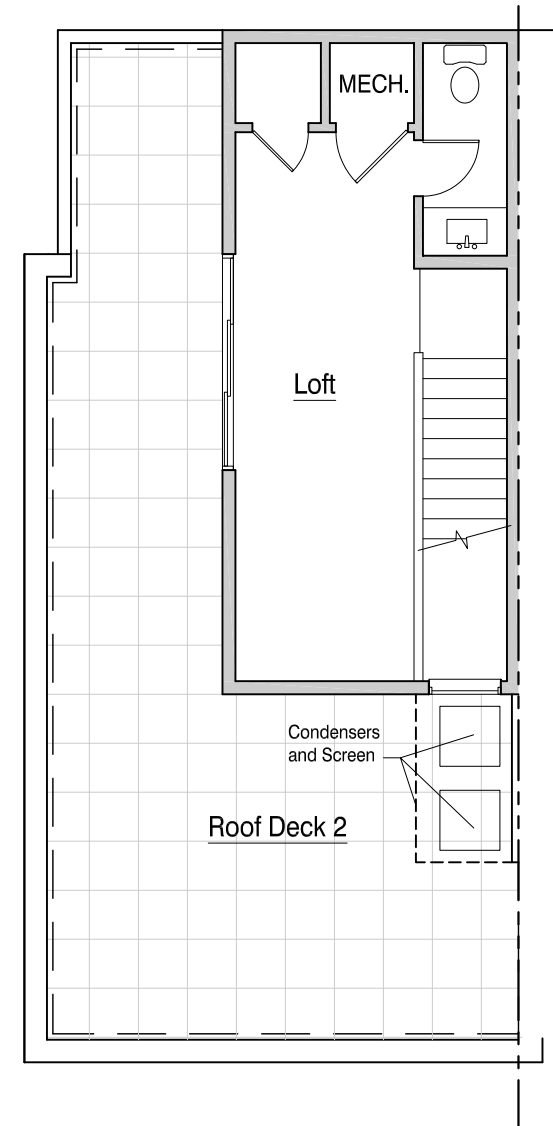
1st Floor



2nd Floor

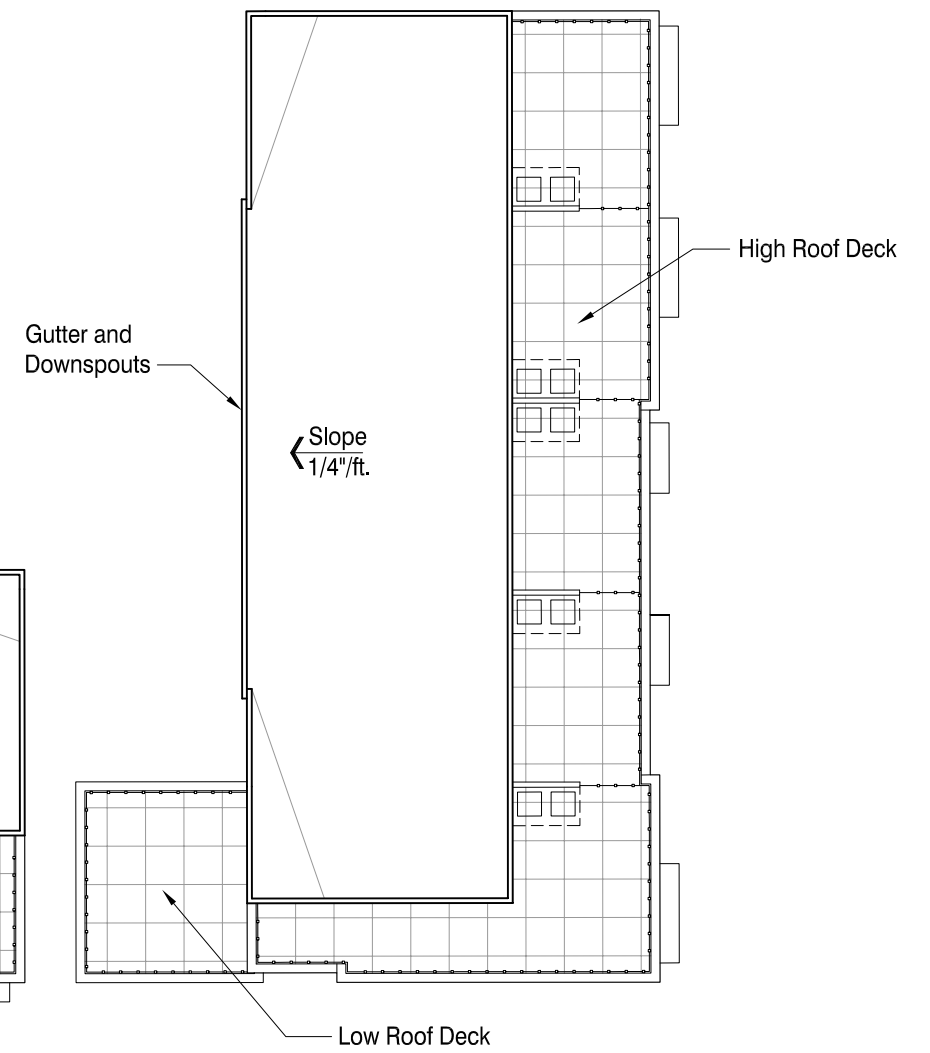
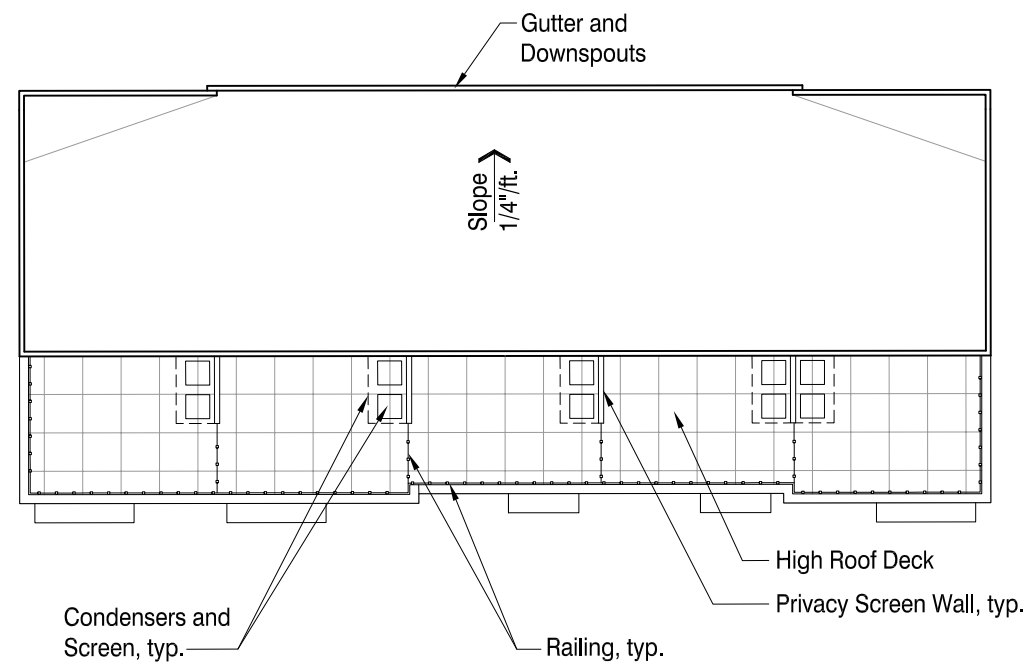
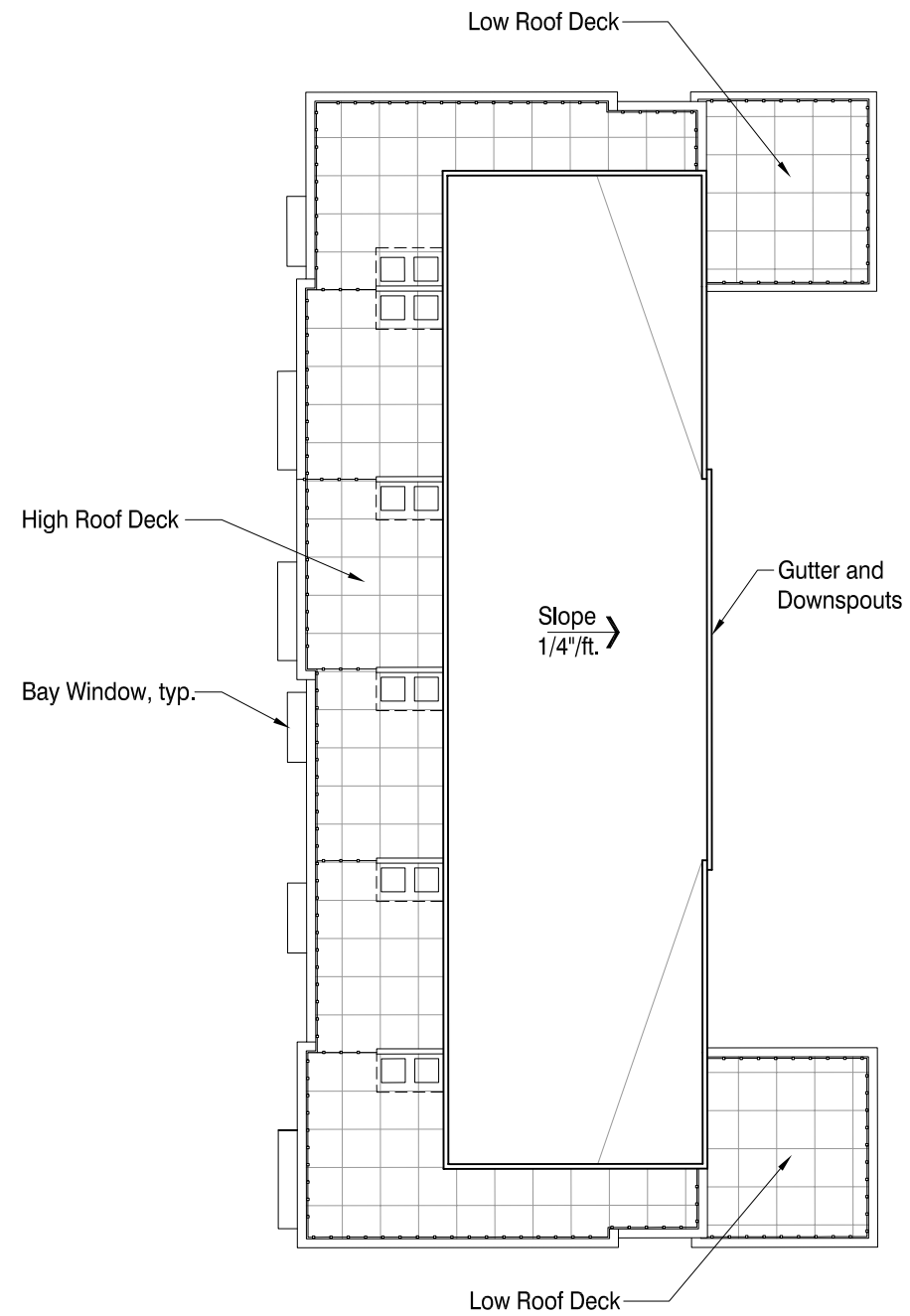


3rd Floor



4th Floor





0 10' 20' 40'

RWG ENGINEERING, LLC
CIVIL ENGINEERING — REAL ESTATE CONSULTING — PROJECT MANAGEMENT
ILLINOIS PROFESSIONAL DESIGN FIRM #184-006370
LIMITATION OF WARRANTY OF ENGINEER'S
INSTRUMENTS OF SERVICE

THE ENGINEER AND HIS CONSULTANTS DO NOT WARRANT OR GUARANTEE THE ACCURACY AND COMPLETENESS OF THE DELIVERABLES HEREIN BEYOND A REASONABLE DILIGENCE. IF ANY MISTAKES, OMISSIONS, OR DISCREPANCIES ARE FOUND TO EXIST WITHIN THE DELIVERABLES, THE ENGINEER SHALL BE PROMPTLY NOTIFIED SO THAT HE MAY HAVE THE OPPORTUNITY TO TAKE WHATEVER STEPS NECESSARY TO RESOLVE THEM. FAILURE TO PROMPTLY NOTIFY THE ENGINEER OF SUCH CONDITIONS SHALL ABSOLVE THE ENGINEER FROM ANY RESPONSIBILITY FOR THE CONSEQUENCES OF SUCH FAILURE. ACTIONS TAKEN WITHOUT THE KNOWLEDGE AND CONSENT TO THE ENGINEER OR IN CONTRADICTION TO THE ENGINEER'S DELIVERABLES OR RECOMMENDATIONS, SHALL BECOME THE RESPONSIBILITY NOT OF THE ENGINEER BUT OF THE PARTIES RESPONSIBLE FOR TAKING SUCH ACTION.

LEGEND

	EXISTING	PROPOSED
SANITARY MANHOLE	⊙	⊙
STORM MANHOLE	⊙	⊙
CATCH BASIN	□	■
INLET	□	■
PRECAST FLARED END SECTION	▽	▶
CONCRETE HEADWALL	⌋	⌋
VALVE VAULT	⊗	⊗
VALVE BOX	⊗	⊗
FIRE HYDRANT	⌋	⌋
BUFFALO BOX	⊙	⊙
CLEANOUT	⊙	⊙
SANITARY SEWER	—	—
FORCE MAIN	—	—
STORM SEWER	—	—
WATER MAIN	—	—
CONSTRUCT WATER MAIN UNDER SEWER	—	—
GRANULAR TRENCH BACKFILL	—	—
STREET LIGHT	⊙	⊙
ELECTRICAL CABLE	—	—
2" CONDUIT ENCASEMENT	—	—
ELECTRICAL TRANSFORMER OR PEDESTAL	⊙	⊙
POWER POLE	⊙	⊙
STREET SIGN	⊙	⊙
GAS MAIN	—	—
TELEPHONE LINE	—	—
CONTOUR	—	—
SPOT ELEVATION	× (750.00)	× 750.00
WETLANDS	—	—
FLOODWAY	—	—
FLOODPLAIN	—	—
HIGH WATER LEVEL (HWL)	—	—
NORMAL WATER LEVEL (NWL)	—	—
DIRECTION OF SURFACE FLOW	—	—
DITCH OR SWALE	—	—
OVERFLOW RELIEF ROUTING	—	—
SLOPE BANK	—	—
TREE WITH TRUNK SIZE	⊙	⊙
SOIL BORING	⊙	⊙
TOPSOIL PROBE	⊙	⊙
FENCE LINE, WIRE OR SILT	—	—
FENCE LINE, CHAIN LINK OR IRON	—	—
FENCE LINE, WOOD OR PLASTIC	—	—
CONCRETE SIDEWALK	—	—
CURB AND GUTTER	—	—
DEPRESSED CURB	—	—
REVERSE PITCH CURB & GUTTER	—	—
EASEMENT LINE	—	—

ABBREVIATIONS

BL	BASE LINE	NWL	NORMAL WATER LEVEL
C	LONG CHORD OF CURVE	PC	POINT OF CURVATURE
C & G	CURB AND GUTTER	PT	POINT OF TANGENCY
CB	CATCH BASIN	PVI	POINT OF VERTICAL INTERSECTION
CL	CENTERLINE	R	RADIUS
D	DEGREE OF CURVE	ROW	RIGHT-OF-WAY
EP	EDGE OF PAVEMENT	SAN	SANITARY SEWER
FF	FINISHED FLOOR	ST	STORM SEWER
FG	FINISHED GRADE	T	TANGENCY OF CURVE
FL	FLOW LINE	TOB	TOP OF BANK
FP	FLOODPLAIN	TC	TOP OF CURB
FR	FRAME	TF	TOP OF FOUNDATION
FW	FLOODWAY	TP	TOP OF PIPE
HWL	HIGH WATER LEVEL	TS	TOP OF SIDEWALK
INV	INVERT	TW	TOP OF WALK
L	LENGTH OF CURVE	WM	WATER MAIN
MH	MANHOLE	Δ	INTERSECTION ANGLE

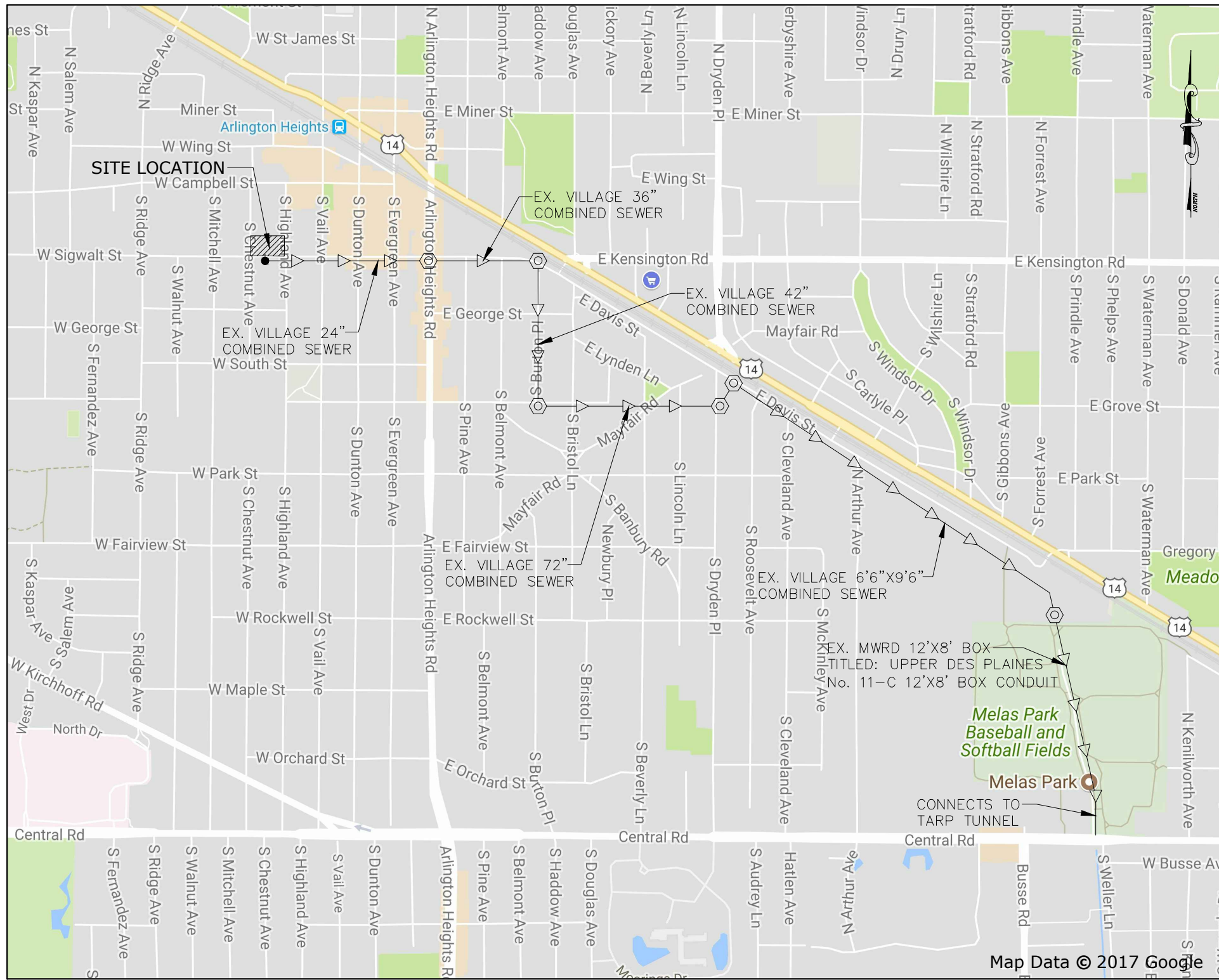


Know what's below.
Call before you dig.

Formerly JULIE 1-800-892-0123

FINAL ENGINEERING PLANS FOR SIGWALT 16 45 S. CHESTNUT AVE ARLINGTON HEIGHTS, ILLINOIS

LOCATION MAP



CONTACTS

VILLAGE OF ARLINGTON HEIGHTS
Community Development: (847) 368-5200
Address
City, State ZIP
Public Works Department: (847) 368-5800
222 N. Ridge Ave
Arlington Heights, IL 60005

JULIE
Underground Utility Locations
1-800-892-0123
811

GENERAL NOTES

- The contractor shall notify the following governmental agencies at least two working days prior to commencement of construction:
 - Village of Arlington Heights Public Works Department (847-368-5800)
 - MWRD Local Sewer System Sections Field Office (708-588-4055)
- The contractor shall notify all utility companies and arrange for their facilities to be located prior to work in any easement, right-of-way, or suspected utility location. Repair of any damage to existing facilities shall be the responsibility of the contractor. Utility locations shown herein are for graphic illustration only and are not to be relied upon.
- Prior to commencement of any offsite construction, the contractor shall secure written authorization that all offsite easements have been secured, and that permission has been granted to enter onto private property.
- Elevations shown herein reflect NAVD 1988 datum.
- The boundary and topographic survey data for this project is based on a field survey prepared by Professional Associated Survey, Inc., dated February 13, 2017, and updated boundary survey prepared by Thomson Surveying, Ltd, dated 3-11-19. The contractor shall verify existing conditions prior to commencing construction and shall immediately notify the engineer in writing of any differing conditions.
- RWG Engineering, LLC, its employees and agents are not responsible for the safety of any party at or on the construction site. Safety is the sole responsibility of the contractor, and any other entity performing work at the site. Neither the owner nor the engineer assumes any responsibility for job site safety or for the means, methods or sequences of construction.
- Except where modified by the contract documents, all work proposed hereon shall be in accordance with the following specifications, which are hereby made a part hereof:
 - "Standard Specifications for Road and Bridge Construction in Illinois," as prepared by I.D.O.T. latest edition.
 - "Standard Specifications for Water and Sewer Main Construction in Illinois," latest edition.
 - "Illinois Recommended Standards for Sewage Works," as published by the I.E.P.A., latest edition.
 - The subdivision and development codes and standards of the Village of Arlington Heights, as published by the Municipality.
 - "Illinois Accessibility Code" as published by the State of Illinois Capital Development Board, effective April 24, 1997.
 - The National Electric Code.
 - "Illinois Urban Manual" as prepared by the U.S. Dept. of Agriculture latest edition.
 - The Village of Arlington Heights Development Ordinance shall take precedence if a conflict in project specifications occurs.

PLANS PREPARED FOR

TAYLOR MORRISON

1834 WALDEN OFFICE SQUARE, SUITE 300
SCHAUMBURG, ILLINOIS 60173
(847) 925-1400

INDEX OF SHEETS

- TITLE SHEET
- EXISTING CONDITIONS PLAN
- DEMOLITION PLAN
- SITE GEOMETRIC AND PAVING PLAN
- SOIL EROSION AND SEDIMENT CONTROL (SESC) PLAN
- GRADING PLAN
- UTILITY PLAN
- PROJECT NOTES AND SPECIFICATIONS
- CONSTRUCTION DETAILS AND STANDARDS
- CONSTRUCTION DETAILS AND STANDARDS

NOTE:
COORDINATES AT LOT CORNERS SHOWN HEREON ARE REFERENCED TO ILLINOIS STATE PLANE SYSTEM COORDINATES, EAST ZONE. ESTABLISHED THROUGH VRS TRIMBLE NETWORK.

NORTHWEST CORNER:
N 1972496.90, E 1078414.44
SOUTHWEST CORNER:
N 1972346.89, E 1078414.32
NORTHEAST CORNER:
N 1972496.83, E 1078678.07
SOUTHEAST CORNER:
N 1972346.82, E 1078677.83

"TO THE BEST OF OUR KNOWLEDGE AND BELIEF, THE DRAINAGE OF SURFACE WATERS WILL NOT BE CHANGED BY THE CONSTRUCTION OF THIS PROJECT, OR, THAT IF DRAINAGE WILL BE CHANGED, REASONABLE PROVISION HAS BEEN MADE FOR COLLECTION AND DIVERSION OF SUCH SURFACE WATERS INTO PUBLIC AREAS, OR DRAINS APPROVED FOR USE BY THE VILLAGE, AND THAT SUCH SURFACE WATERS ARE PLANNED FOR IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRACTICES SO AS TO REDUCE THE LIKELIHOOD OF DAMAGE TO ADJOINING PROPERTIES BECAUSE OF THE CONSTRUCTION OF THIS PROJECT."



Maureen R. Mulligan
REGISTERED PROFESSIONAL ENGINEER

EXPIRATION DATE: 11/30/19

BENCHMARKS

SOURCE BENCHMARK:

ALTA/NSPS LAND TITLE SURVEY PROVIDED BY PROFESSIONALS ASSOCIATED SURVEY, INC.
7100 N. TRIP AVENUE, LINCOLNWOOD, IL. 60712

SITE BENCHMARK:

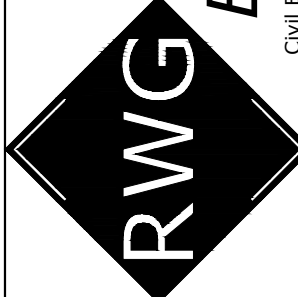
FIRE HYDRANT ON N.W. CORNER OF SIGWALT STREET AND S. HIGHLAND AVENUE. N.W. BOLT ON FIRE HYDRANT ELEV.= 692.99



EXPIRATION DATE: 11/30/19

SIGWALT 16
ARLINGTON HEIGHTS, ILLINOIS
TITLE SHEET

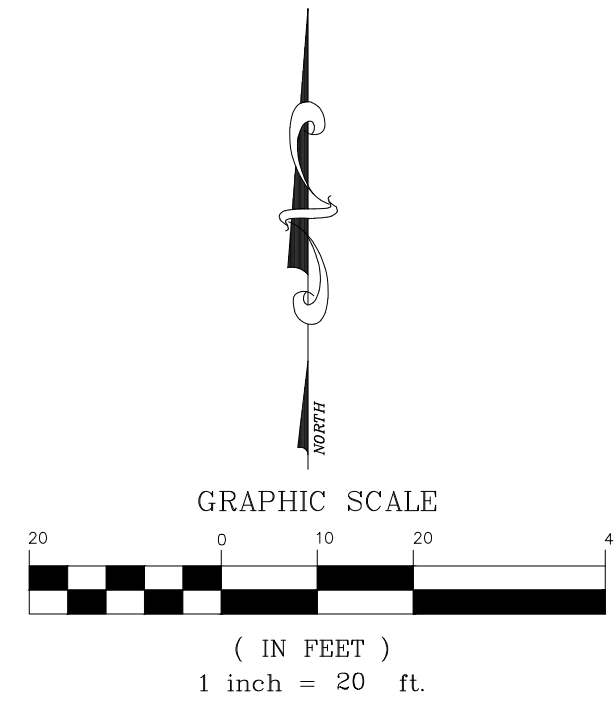
975 E. 22nd St, Suite 400
Wheaton, IL 60189
630.480.7889
www.rwg-engineering.com
Civil Engineering • Real Estate Consulting • Project Management



PROJECT NO. 42905219
DATE 04/12/19
SCALE NONE
PROJ. MGR. RWG
PROJ. ASSOC. MRM
DRAWN BY TLM

SHEET

1 OF 10

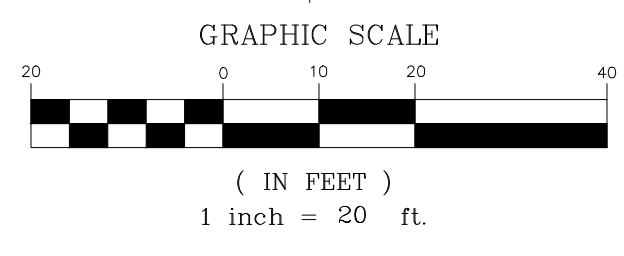
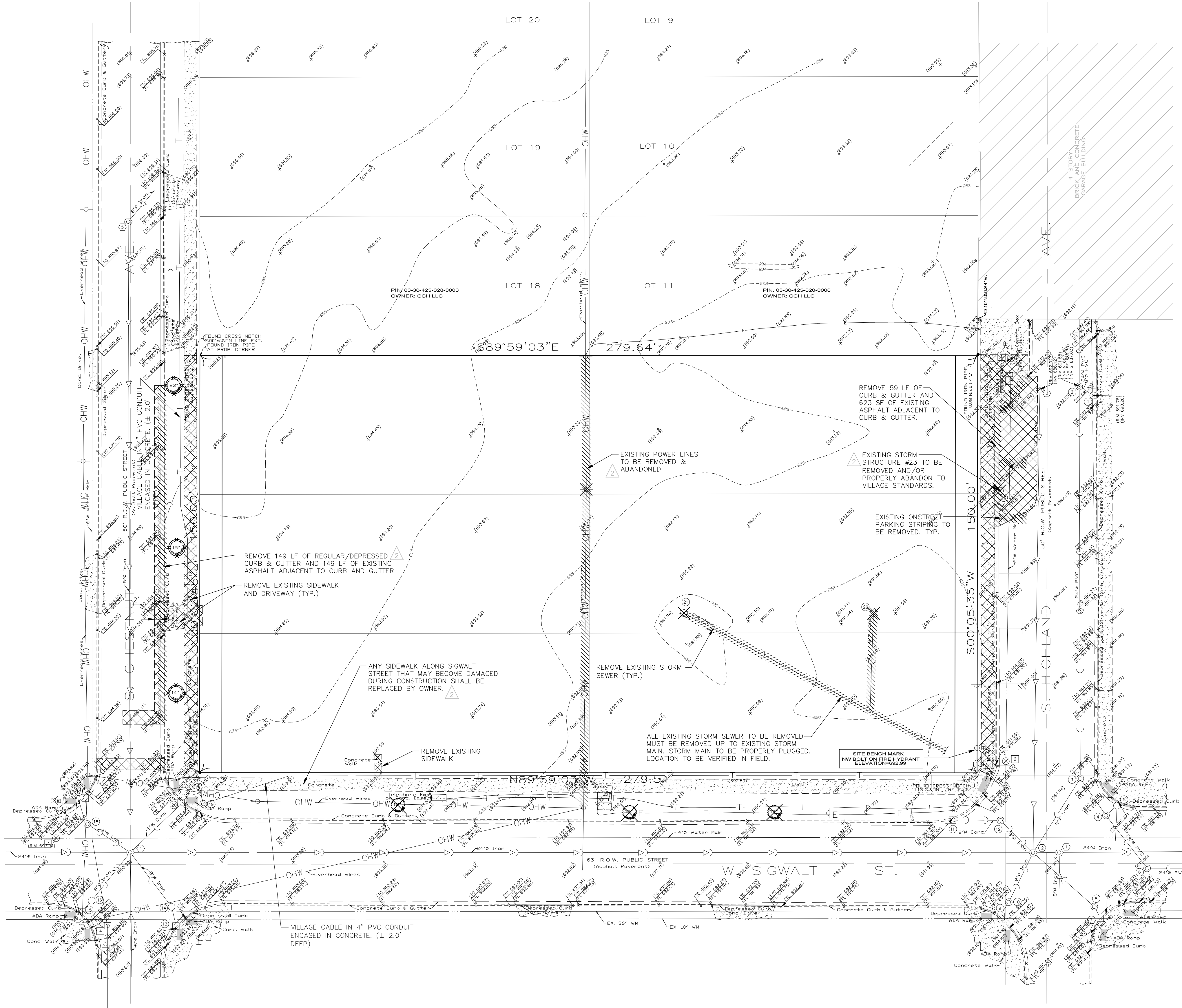


5	EX CLEANOUT RIM= 693.55 T/P= 688.35
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June 05, 2019 12:20:35 p.m. AcadVer: 22.0s (LMS Tech)
 \42905219 - SIGNAL TOWNHOMES\300_ENGINEERING\310_CADD\FINAL\429_BASE.DWG

2 OF 10

PROJECT NO. 42905219
DATE 04/12/19
SCALE 1" = 20'
PROJ. MGR. RWG
PROJ. ASSOC. MRM
DRAWN BY TLM



ABBREVIATIONS LEGEND (IN ADDITION TO TITLE SHEET LEGEND)	
EX	= EXISTING
PR	= PROPOSED
BC	= BACK OF CURB
FC	= FACE OF CURB
EP	= EDGE OF PAVEMENT
PL	= PROPERTY LINE
FB	= FACE OF BUILDING
EC	= EDGE OF CONCRETE
RW	= RETAINING WALL
ROW	= RIGHT OF WAY
BC/BC	= BACK OF CURB TO BACK OF CURB
SW	= SIDEWALK
R	= RADIUS
(TYP)	= TYPICAL

2	SANITARY STRUCTURE NUMBER
11	STORM STRUCTURE NUMBER
5	WATERMAIN STRUCTURE NUMBER

EXISTING UTILITY STRUCTURE SCHEDULE	
SANITARY SEWER STRUCTURES	
1 EX SAN M.H. RIM= 691.91 INV= 684.56 (8" S) INV= 684.26 (24" W) INV= 684.21 (24" E)	2 EX SAN M.H. RIM= 691.94 INV= 686.99 (8" NE) INV= 687.04 (8" SE) INV= 688.49 (8" SW) INV= 688.84 (8" NW) INV= 684.39 (24" W) INV= 684.29 (24" E)
3 EX SAN M.H. RIM= 692.02 INV= 686.12 (12" S)	4 EX SAN M.H. RIM= 693.95 INV= 689.85 (8" SE) INV= 685.75 (8" S) INV= 689.43 (8" SW) INV= 689.55 (8" NW) INV= 687.25 (8" N) INV= 690.00 (8" NE) INV= 685.60 (24" W) INV= 685.40 (24" E)
5 EX SAN M.H. RIM= 696.21 INV= 690.76 (8" NE) INV= 688.73 (8" S)	

DEMOLITION LEGEND	
	REMOVE EXISTING PAVEMENT/SIDEWALK/STRUCTURE/C&G (INCL SAWCUT)
	TREE/BUSH/STRUCTURE REMOVAL
	TREE PROTECTION FENCE
	REMOVE EXISTING UTILITY LINE
	REMOVE EXISTING CURB AND GUTTER

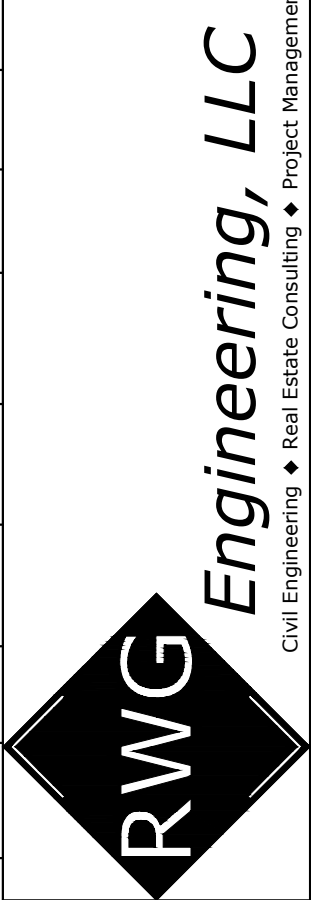
- DEMOLITION NOTES:
- EROSION CONTROL INSTALLATION SHALL BE DONE PRIOR TO COMMENCEMENT OF ANY DEMOLITION ACTIVITY
 - EXISTING ELECTRICAL AND PHONE CABLES MAY BE LOCATED WITHIN THE PROPOSED IMPROVEMENT AREA. APPROXIMATE KNOWN LOCATIONS ARE SHOWN HEREON. THE CONTRACTOR SHALL ARRANGE FOR PRECISE LOCATION OF EXISTING CABLE SERVICES AND EXERCISE EXTREME CARE WHEN WORKING AROUND THE SAME.
 - ALL STRUCTURAL PAVEMENT MATERIALS (ASPHALT, CONCRETE SIDEWALK, CURB/GUTTER) THAT CANNOT BE CRUSHED TO AN APPROVED IDOT SPECIFICATION FOR USE AS STRUCTURAL FILL SHALL BE DISPOSED OF BY THE CONTRACTOR AT AN OFFSITE LOCATION. RE-USE OF MILLED ASPHALT AND PROPERLY CRUSHED CONCRETE AS STRUCTURAL FILL IS ACCEPTABLE AND ENCOURAGED.
 - THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT DAMAGE TO EXISTING AMENITIES SCHEDULED TO REMAIN. PROPER SAWCUTTING SHALL BE ACCOMPLISHED AT ALL POINTS OF CONNECTION OR INTERFACE BETWEEN EXISTING AND PROPOSED IMPROVEMENTS.
 - CONTRACTOR SHALL BE RESPONSIBLE TO HAVE ALL UNDERGROUND UTILITIES (EVEN IF NOT SHOWN ON THESE PLANS) LOCATED PRIOR TO DEMOLITION WORK. SANITARY SERVICE, WATERMAIN SERVICE, GAS, ELECTRIC, ETC SHALL BE CUT-OFF. CONTRACTOR TO COORDINATE WITH RESPECTIVE MUNICIPAL AGENCY TO ARRANGE FOR DISCONNECT.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE DONE TO EXISTING UTILITIES, STREET LIGHTS, SIGNS, ETC. THAT ARE NOT INTENDED TO BE PERMANENTLY REMOVED.
 - CONTRACTOR SHALL NOTIFY THE PUBLIC WORKS DEPARTMENT, ALL UTILITY COMPANIES, AND THE FIRE DEPARTMENT PRIOR TO START UP.
 - ON-SITE DISTURBED AREAS TO REMAIN AS GREENSPACE SHALL BE RESTORED WITH MINIMUM 4" TOPSOIL AND SEED, OR RESTORED IN ACCORDANCE WITH THE LANDSCAPE PLAN (SEE BY OTHERS).
 - DISTURBED AREAS OF PUBLIC PARKWAYS SHALL BE RESTORED WITH MINIMUM 4" TOPSOIL AND SEED.
 - ALL EXISTING DRIVEWAY APRONS SHALL BE SAWCUT ALONG WITH REMOVAL OF ANY EXISTING DEPRESSED CURB AND GUTTER, AND NEW BARRIER CURB AND GUTTER (SIZED TO MEET EXISTING ADJACENT CONDITIONS) SHALL BE INSTALLED AND DOWELED INTO THE EXISTING ADJOINING CURB AND GUTTER.
 - UTILITY LINES SCHEDULED FOR REMOVAL SHALL BE PROPERLY DISCONNECTED FROM FACILITIES THAT ARE TO REMAIN, SECURELY PLUGGED AT ALL CONNECTION POINTS, AND EITHER REMOVED OR FILLED WITH FLOWABLE FILL (LEAN CONCRETE MIXTURE) AND ABANDONED IN PLACE (REMOVE IF LOCATED UNDER NEW BUILDING PAD AREAS). IN THE CASE OF STRUCTURE ABANDONMENT, CASTINGS AND TOP SLABS AND CONE SECTIONS SHALL BE REMOVED PRIOR TO FILLING THE STRUCTURE (UNLESS THE STRUCTURE IS EASIER TO COMPLETELY REMOVE).

STORM SEWER STRUCTURES	
1 EX STM C.B. RIM= 691.76 INV= 690.26 (8" NW)	2 EX STM M.H. RIM= 691.88 INV= 687.08 (24" N) INV= 689.30 (8" E) INV= 687.03 (24" S)
3 EX STM M.H. RIM= 691.49 INV= 686.67 (24" SE) INV= 686.09 (8" SW) INV= 686.59 (24" N)	4 EX STM M.H. RIM= 691.33 INV= 686.73 (24" NW) INV= 686.53 (24" SE)
5 EX STM C.B. RIM= 691.07 INV= 688.97 (24" SW) INV= 688.91 (24" S)	6 EX STM M.H. RIM= 691.83 INV= 687.03 (24" E) INV= 688.83 (24" NW)
7 EX STM INLET RIM= 691.26 INV= 688.40 (8" NW)	8 EX STM M.H. RIM= 691.55 INV= 688.50 (8" SE) INV= 688.30 (8" NW)
9 EX STM INLET RIM= 691.34 INV= 688.54 (8" NE)	10 EX STM M.H. RIM= 691.53 INV= 688.51 (8" NE)
11 EX STM INLET RIM= 690.97 INV= 688.27 (8" E)	12 EX STM M.H. RIM= 691.48 INV= 688.03 (8" W,SE)
13 EX STM INLET RIM= 692.87 INV= 689.97 (8" N)	14 EX STM C.B. RIM= 693.24 INV= 690.04 (8" SE) INV= 689.84 (8" NW)
15 EX STM INLET RIM= 693.28 INV= 690.48 (8" NE)	16 EX STM C.B. RIM= 693.50 INV= 690.40 (8" SW) INV= 690.20 (8" NE)
17 EX STM INLET RIM= 693.30 INV= 691.05 (8" S)	18 EX STM M.H. RIM= 693.68 WATER FILLED T/WATER= 690.03
19 EX STM M.H. RIM= 693.70 INV= 690.40 (8" NE)	20 EX STM INLET RIM= 693.44 END OF PIPE SEALED
21 EX STM C.B. RIM= 691.68 UNABLE TO OPEN INV= 688.88 (8" SE)	22 EX STM C.B. RIM= 691.50 UNABLE TO OPEN INV= 688.85 (8" S)
23 EX STM C.B. RIM= 691.52 WATER FILLED T/WATER= 687.67	

WATERMAIN STRUCTURES	
1 EX VALVE VAULT RIM= 692.67 T/P= 688.02	2 EX WATER M.H. RIM= 691.18 WATER FILLED T/WATER= 689.18
3 EX VALVE VAULT RIM= 693.91	4 EX CLEANOUT RIM= 693.53 T/P= 688.38
5 EX CLEANOUT RIM= 693.55 T/P= 688.35	

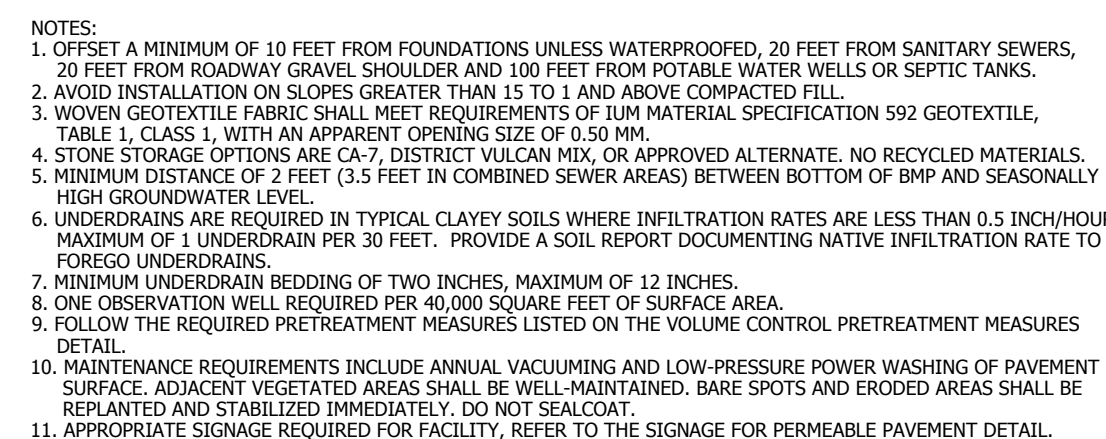
SIGWALT 16
ARLINGTON HEIGHTS, ILLINOIS
DEMOLITION PLAN

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DATE 04/12/19
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5. SIDEWALK RAMPS WITH DETECTABLE WARNINGS AND DEPRESSED CURBS SHALL BE INSTALLED AT ALL SIDEWALK CROSSINGS. SEE CONSTRUCTION STANDARDS FOR SPECIFIC DETAILS.
6. UNLESS OTHERWISE NOTED ON THE PLAN, ALL DIMENSIONS ARE TO THE BACK OF CURB, FACE OF CURB, FACE OF BUILDING, OR PROPERTY LINE.
7. UNLESS OTHERWISE NOTED, ALL CURB AND GUTTER SHALL BE B6.1 CONCRETE CURB AND GUTTER.
8. UNLESS OTHERWISE NOTED, ALL CURB RADII ARE 4' TO BACK OF CURB. ALL SIDEWALK DIMENSIONS ARE TO BE BASED ON THE SUBDIVISION (OR SITE) PLAN PREPARED BY THOMSON SURVEYING LTD. AND DATED 03/11/19.
9. BUILDING DIMENSIONS HAVE BEEN INDICATED HEREIN BASED UPON THE ELECTRICAL INSPECTION REPORT AS OF THE BASE DATE OF THE PLAN PREPARATION. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR PRECISE BUILDING DIMENSIONS AND ADVISE THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES FOR CORRECTION.
10. THE LOCATION OF TRUCK DOCKS, IF SHOWN (SUCH AS TRUCK DOCKS, RETAINING WALLS, SIDEWALKS, CURBING, FENCING, CANOPS, RAMPS, HANDICAP ACCESS, PLANTERS, DUMPSTERS, TRANSFORMERS, BOLLARDS, ETC.) HAVE BEEN SHOWN FOR APPROXIMATE LOCATION ONLY. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS, SPECIFICATIONS AND DETAILS.
11. THE LOCATION OF PRIVATE SIDEWALKS SHALL BE COORDINATED WITH PROPOSED DOORWAYS. CONTRACTOR TO VERIFY ACTUAL DOORWAY LOCATION WITH ARCHITECTURAL PLANS PRIOR TO CONSTRUCTING SIDEWALKS.
12. UPON COMPLETION OF PAVING OPERATIONS, THE CONTRACTOR SHALL INSTALL THE PAVEMENT MARKING STRIPES AS SHOWN ON THE PAVING PLANS, ETC. AS SHOWN ON THE PLAN AND ON SIGNAGE AND STRIPING PLAN. PARKING SLAT (EXCEPT FOR HC) MARKING COLOR IS WHITE. ALL ASPHALT PAVEMENT MARKINGS AND STRIPES SHALL BE PAINTED WITH DOT SPECIFICATION PAVEMENT PAINT. PARKING SLAT STRIPES SHALL BE 4" WIDE. ALL PAVEMENT MARKINGS SHALL BE PAINTED YELLOW AND SIGNED PER FEDERAL, STATE AND LOCAL REQUIREMENTS.
13. PRIOR TO OPENING TO THE PUBLIC, ALL TRAFFIC CONTROL SIGNAGE SHALL BE INSTALLED AS INDICATED. SIGNS SHALL BE INSTALL WITH 3" MINIMUM SETBACK FROM THE BACK OF CURB. ALL SIGNAGE SHALL BE SET INTO CONCRETE PIER AND SHALL INCLUDE A POST CAP.
14. ALL ROADWAY PATCHES SHALL HAVE SURFACE ASPHALT LAYER EXTENDED 2' BEYOND EDGE OF TRENCH.
15. ALL SIDEWALKS SHALL BE CONCRETE. SIDEWALK SHALL NOT AFFECT THE ADA COMPLIANCE OF THE PUBLIC WALK.

	DATE	REVISIONS	DRAWN BY
1.	05/01/19	IN OFFICE/CLIENT REVIEW	TLM
2.	05/17/19	VILLAGE REVIEW #1	TLM
3.	06/06/19	VILLAGE REVIEW #2	ZRN

SIGWALT 16
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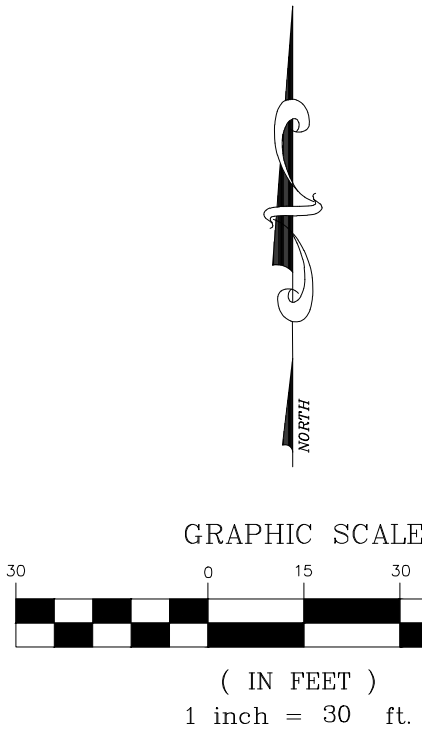
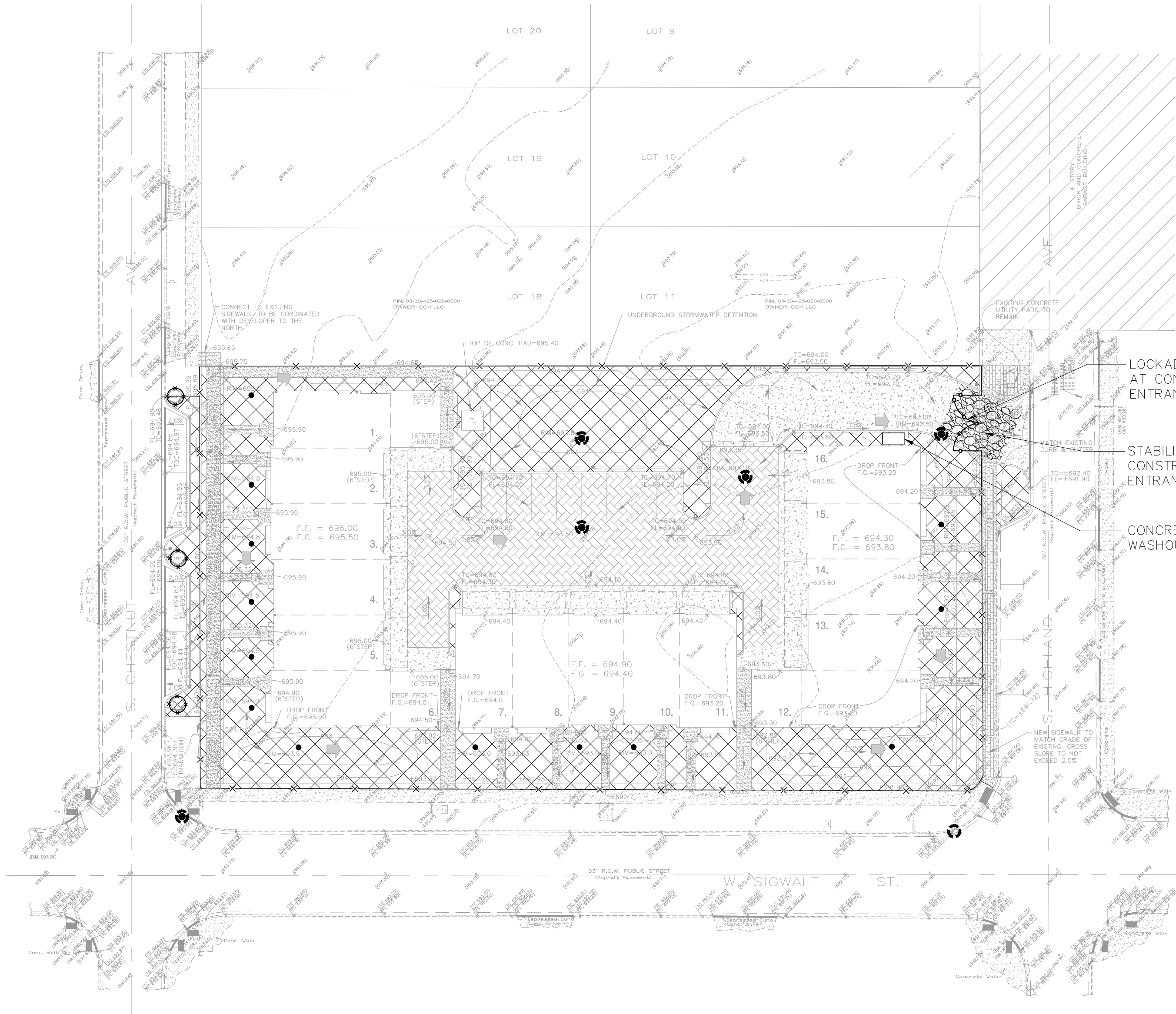


PROJECT NO. 42905219
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SPECIAL CONCRETE WASHOUT NOTE:
CONCRETE WASHOUT SHALL BE CONTAINED AT ALL TIMES. WASHOUT MATERIAL SHALL NOT BE ALLOWED TO ENTER STORM SEWERS OR LEACH INTO THE SOIL UNDER ANY CIRCUMSTANCES. ALL WASTE SHALL BE DISPOSED OF PROPERLY AND THE LOCATION OF THE WASHOUT SHALL BE DESIGNATED WITH PROPER SIGNAGE (SEE PLAN).

- EROSION CONTROL LEGEND**
- STORM DRAINAGE STRUCTURE
 - INLET PROTECTION
 - TREE PROTECTION FENCE
 - SILT FENCE & CHAIN-LINK FENCE
 - TEMPORARY SEEDING AND EROSION CONTROL BLANKET (LANDSCAPING/SOD TO FOLLOW)

- PLAN ABBREVIATION LEGEND**
(IN ADDITION TO TITLE SHEET)
- P = PAVEMENT
 - R = RIM (OR RADIUS)
 - TC = TOP OF CURB
 - SW = WALK (OR TOP OF WALK)
 - FF = FINISHED FLOOR
 - EP = EDGE OF PAVEMENT
 - FL = FLOW LINE
 - TW = TOP OF WALL ELEV
 - SW = BOTTOM OF WALL (GRADE) ELEV
 - TPC = TOP OF DEPRESSION CURB

DATE		REVISIONS		DRAWN BY	
1.	05/07/19	IN OFFICE/CLIENT REVIEW	TLW	TLW	
2.	05/17/19	VILLAGE REVIEW #1	ZRN		
3.	06/06/19	VILLAGE REVIEW #2			

SILT FENCE

2"x2"x36" FENCE POSTS 10' O/C WITH WOVEN WIRE FENCE (14 1/2 GAGE VIN. MAX. 6" MESH SPACING) OR 5' O/C WITHOUT WIRE FENCE.

FLOW
UNDISTURBED GROUND
20"
16"
12"
EMBED FILTER CLOTH MIN. 8" INTO GROUND

SILT FENCE SHALL BE INSTALLED AND INSPECTED BY HANOVER PARK ENGINEERING DEPARTMENT PERSONNEL PRIOR TO ANY OTHER CONSTRUCTION.
WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.
TOPSOIL STOCKPILES SHALL HAVE DIVERSION DITCHES PLACED AROUND THEM WITH A SILT TRAP BUILT AT THE LOW POINT OF THE DITCHES.
SILT FENCE TO BE PROVIDED AROUND ENTIRE PERIMETER OF ALL WETLAND AREAS PRIOR TO MASS EARTHWORK START.
MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN SILT FENCE.

SOIL EROSION CONTROL CONSTRUCTION SCHEDULE:

1. INSTALL SEDIMENT CONTROL MEASURES
INLET BASKETS/BARRIER FILTERS
2. SITE DEMOLITION WORK
SAWOUT/REMOVE PAVEMENT/SIDEWALKS/CURBS/CONCRETE SLABS
3. SITE CONSTRUCTION WORK
INSTALL BUILDING EXPANSION FOUNDATION/WALLS
INSTALL CANOPY UNDERDRAIN SYSTEM & OUTFALL SEWER
PREPARE SUBGRADE FOR BLDG FLOOR SLAB & PAVT AREAS
INSTALL BASE COURSE MATERIALS
INSTALL NEW CURB/SIDEWALK/CANOPY CONCRETE SLABS
INSTALL NEW ASPHALT PAVEMENT
REPAIR & SEALCOAT EXISTING ASPHALT PAVEMENT & RE-STRIPE
PERMANENT VEGETATIVE STABILIZATION OF DISTURBED GREENSPACE
SPREAD TOPSOIL IN NEW ISLAND
MULCH/SEED AS SPECIFIED
5. CLEANUP/RESTORATION
REMOVE INLET BASKETS/BARRIER FILTERS

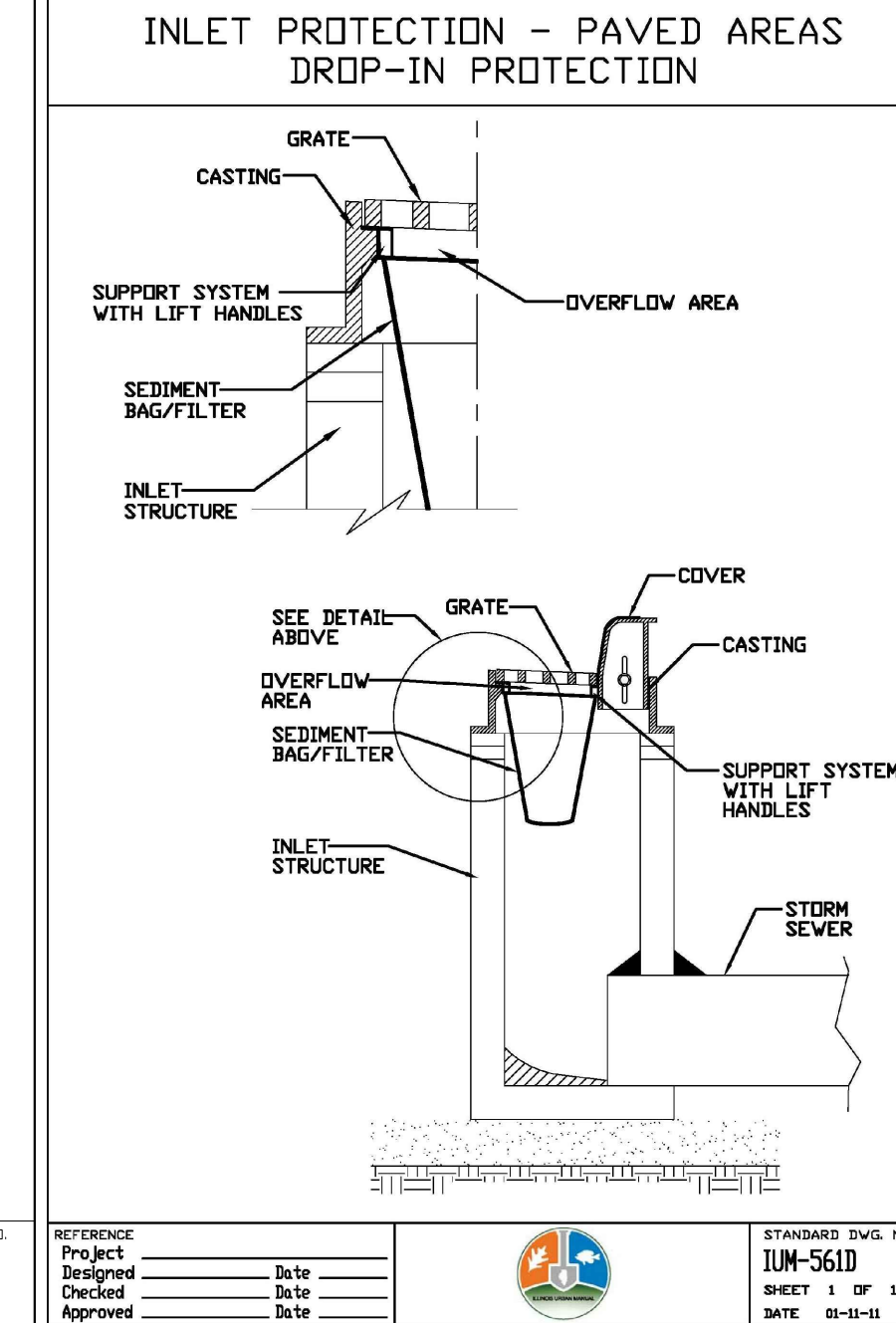
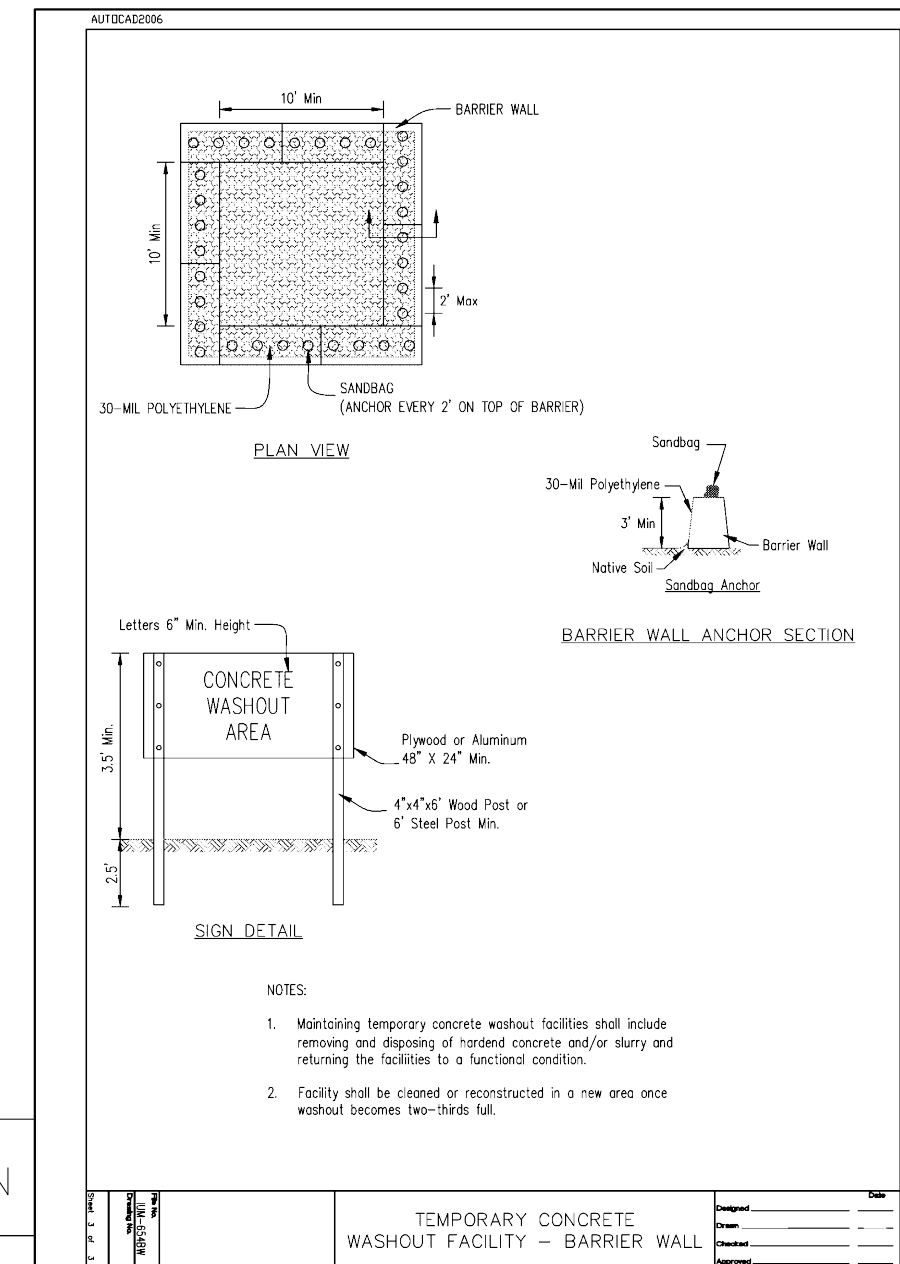
SESC INSPECTION SCHEDULE:

1. DIVERSION AND STRUCTURAL MEASURES - WILL BE INSPECTED AT 7 DAY INTERVALS AND AFTER EVERY 1/2" RAIN.
2. SEDIMENT BASINS AND PONDS - WILL BE CHECKED AFTER EACH MAJOR PHASE OF THE DEVELOPMENT FOR SEDIMENT ACCUMULATION.
3. VEGETATIVE PLANTINGS - SPRING PLANTINGS WILL BE CHECKED DURING SUMMER OR EARLY FALL.
4. REPAIRS - ANY EROSION CONTROL MEASURES, STRUCTURAL MEASURES OR OTHER RELATED ITEMS IN NEED OF REPAIR WILL BE MADE WITHIN 15 DAYS, OR EARLIER IF POSSIBLE BASE ON FIELD CONDITIONS.
5. MAINTENANCE - DRAINAGEWAYS, DITCHES AND OTHER AREAS THAT SUPPORT A DESIGNATED FLOW OF WATER WILL BE MAINTAINED REGULARLY TO MAINTAIN THAT FLOW.
6. FERTILIZATION - SEEDING AREAS WHERE THE SEED HAS NOT PRODUCED A GOOD COVER WILL BE INSPECTED AND FERTILIZED IF NECESSARY.

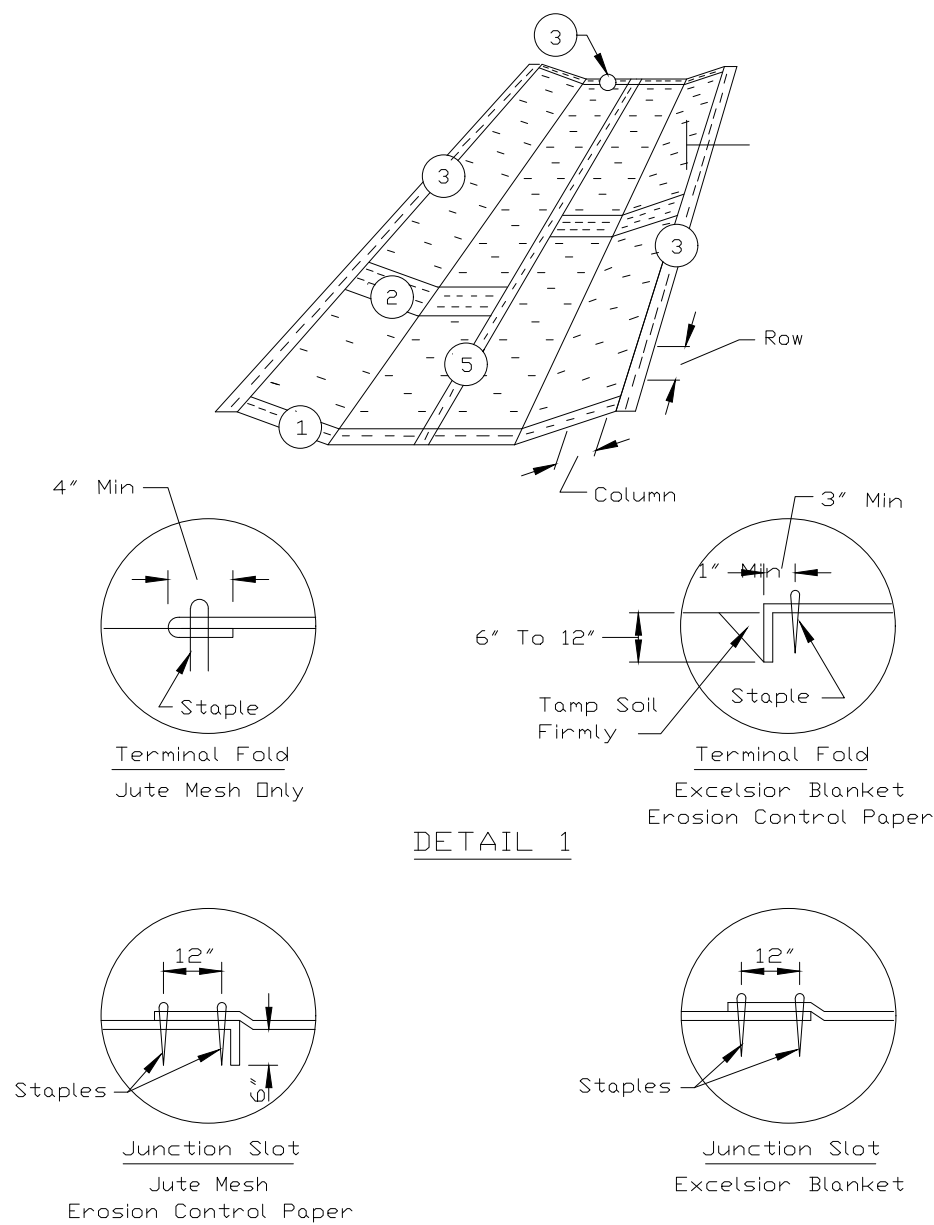
SOIL EROSION AND SEDIMENT CONTROL NOTES:

1. VEGETATIVE AND STRUCTURAL EROSION CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH SPECIFICATIONS AS OUTLINED IN THE "ILLINOIS URBAN MANUAL."
2. EROSION CONTROL MEASURES SHALL BE MAINTAINED AND FUNCTIONAL THROUGHOUT THE CONSTRUCTION PROJECT (MAINTENANCE AND/OR REPLACEMENT COST IS INCIDENTAL).
3. EROSION CONTROL MEASURES SHALL BE INSTALLED IN STRICT COMPLIANCE WITH CONSTRUCTION SEQUENCE (SEE SCHEDULE).
4. ALL SITE RUNOFF SHALL BE ROUTED THROUGH TRAPS AND SILTATION CONTROL DEVICES PRIOR TO DISCHARGE DOWNSTREAM/OFFSITE.
5. INLET PROTECTION FILTER BASKETS SHALL BE INSTALLED UNDER THE GRATING OF EACH DRAINAGE STRUCTURE.
6. ALL DEWATERING OPERATIONS SHALL BE DISCHARGED INTO SEDIMENT BASINS OR SILT TRAPS. DEWATERING DISCHARGE DIRECTLY INTO FIELD TILE OR STORM SEWER IS PROHIBITED.
7. DUST CONTROL SHALL BE PERFORMED ON A DAILY BASIS USING EQUIPMENT SPECIFICALLY DESIGNED FOR THAT PURPOSE.
8. SEDIMENT REACHING A PUBLIC ROAD SHALL BE REMOVED ON A DAILY BASIS.
9. LOOSE MATERIAL DEPOSITED IN THE FLOW LINE OF ANY GUTTER OR DRAINAGE DITCH SHALL BE REMOVED ON A DAILY BASIS.
10. THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES AT LEAST ONCE EVERY SEVEN (7) DAYS AND WITHIN 24 HOURS AFTER A STORM EVENT OF 0.5 INCHES OR GREATER (OR THE EQUIVALENT SNOWFALL). REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF SAID MEASURES SHALL BE IMMEDIATE.
12. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH JURISDICTIONAL GOVERNMENTAL AGENCY REQUIREMENTS WITHIN THIRTY (30) DAYS OF FINAL SITE STABILIZATION.

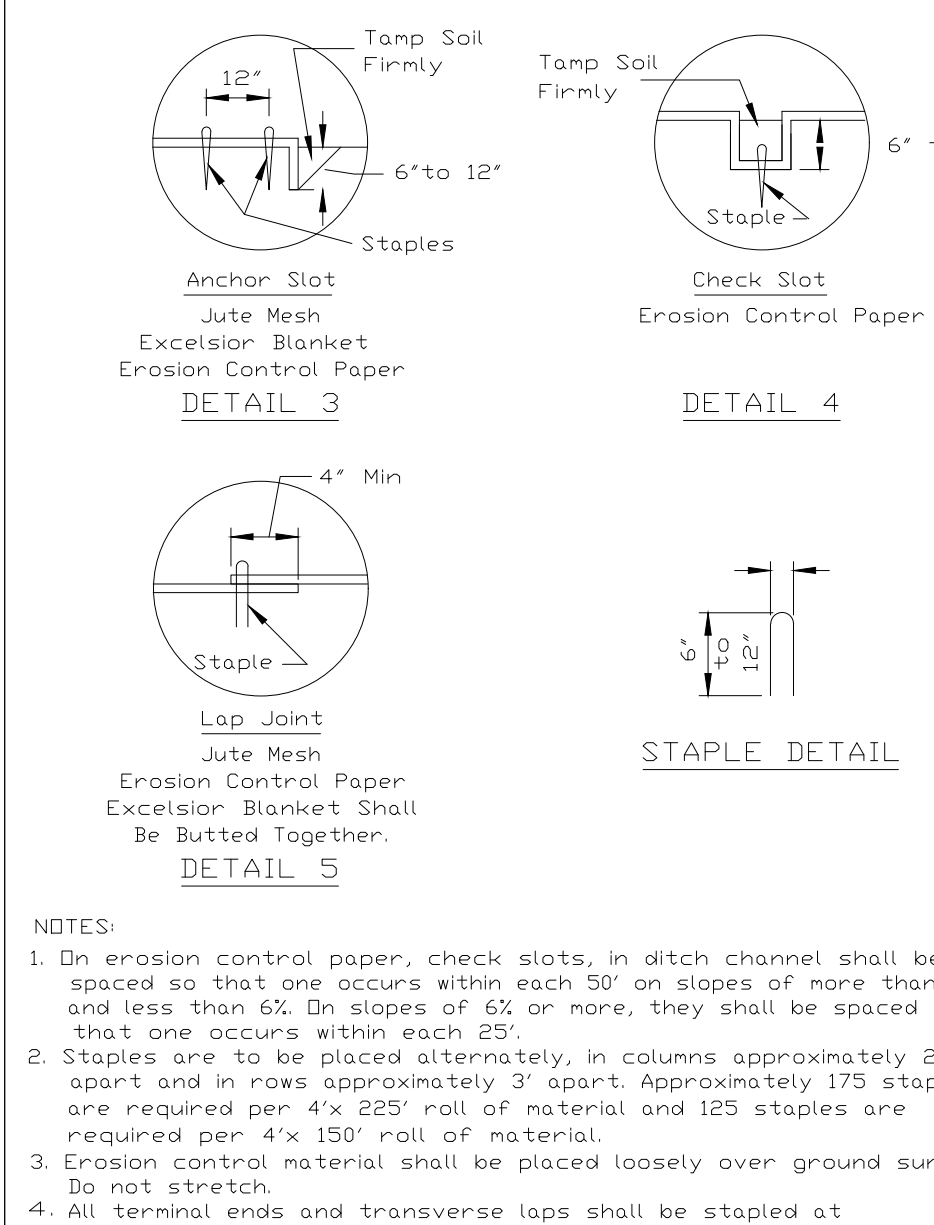
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June 05, 2019 12:24:11 p.m. AcadVer:22.0a (LMS Tech)



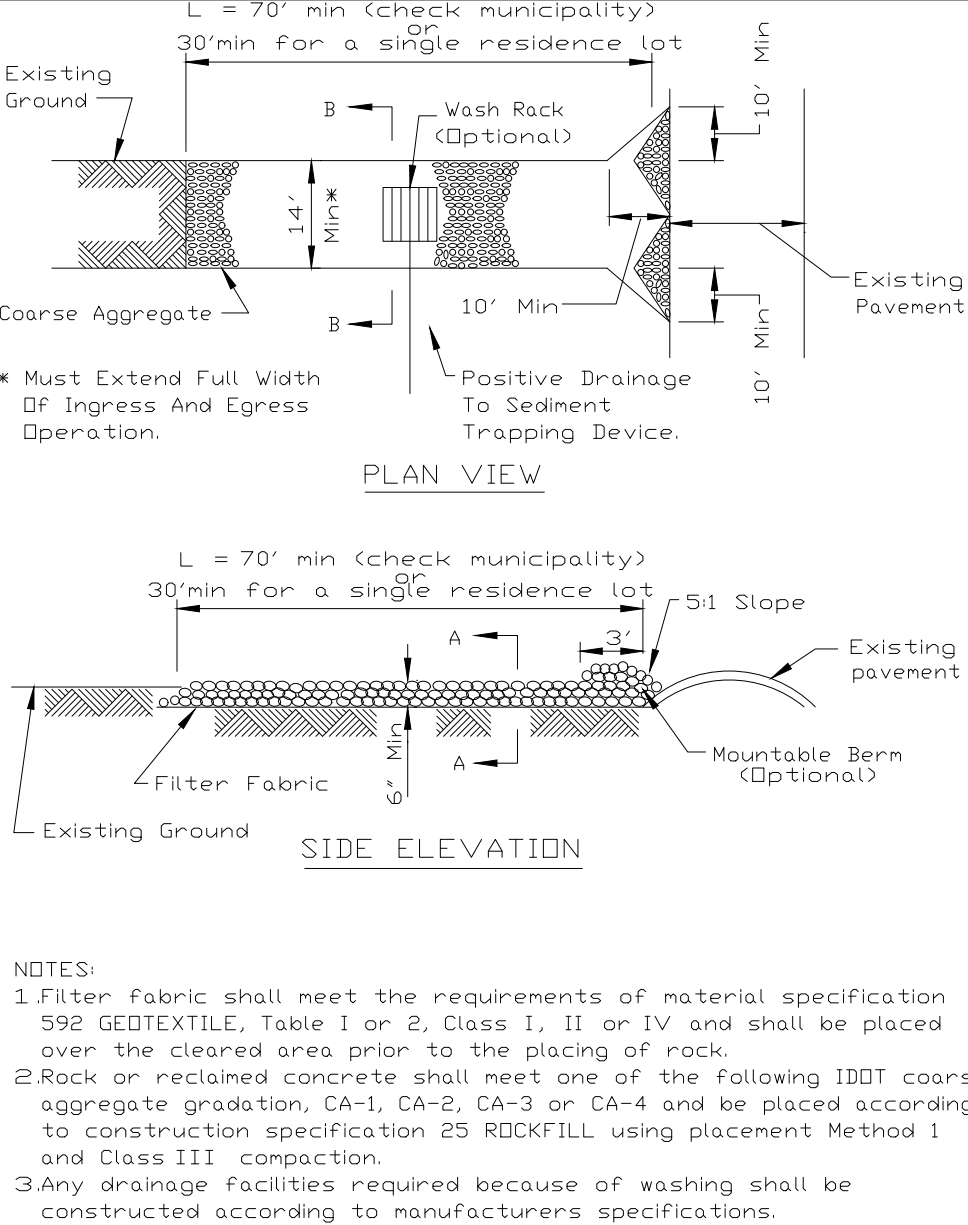
EROSION BLANKET PLAN



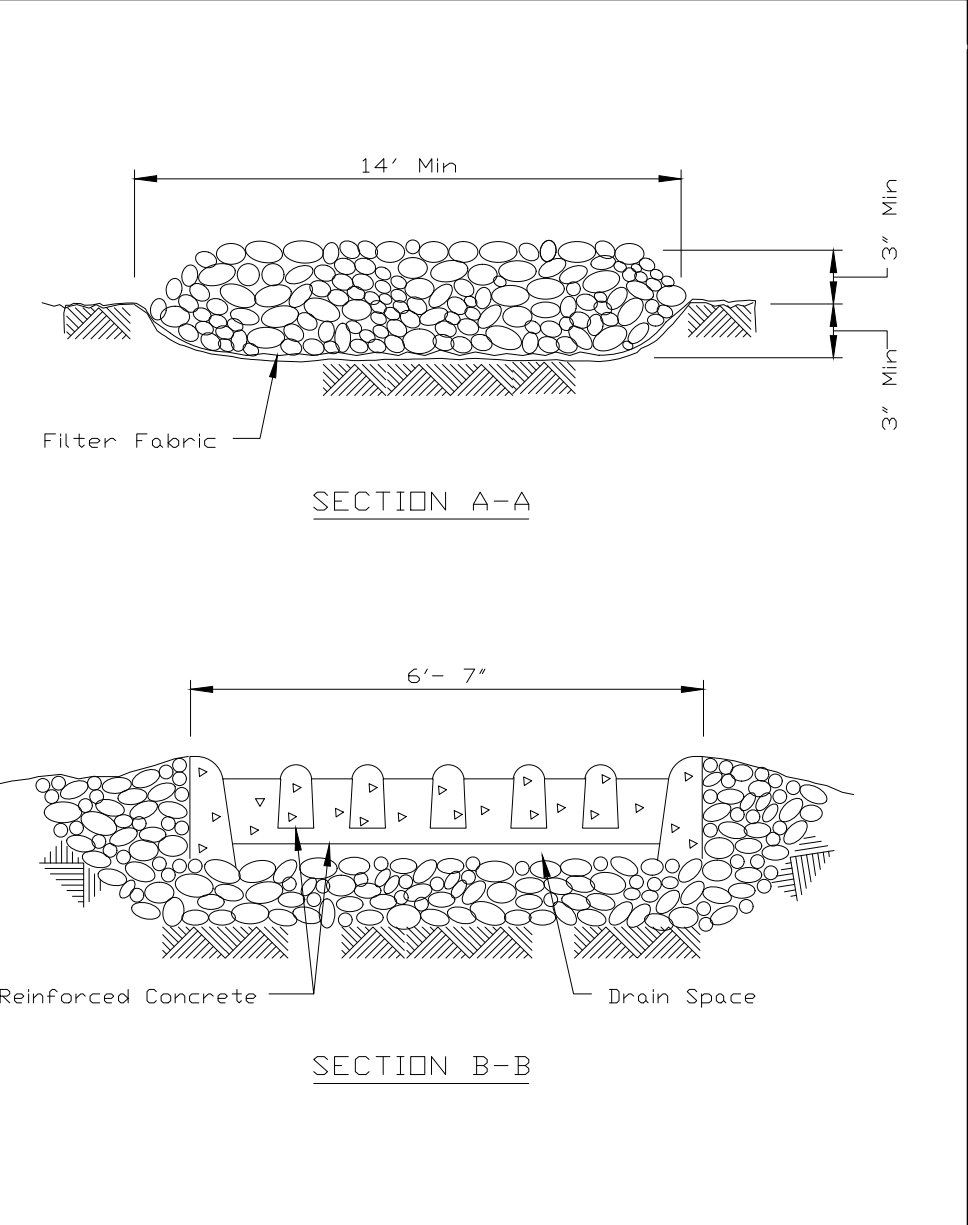
EROSION BLANKET PLAN



STABILIZED CONSTRUCTION ENTRANCE PLAN



STABILIZED CONSTRUCTION ENTRANCE PLAN



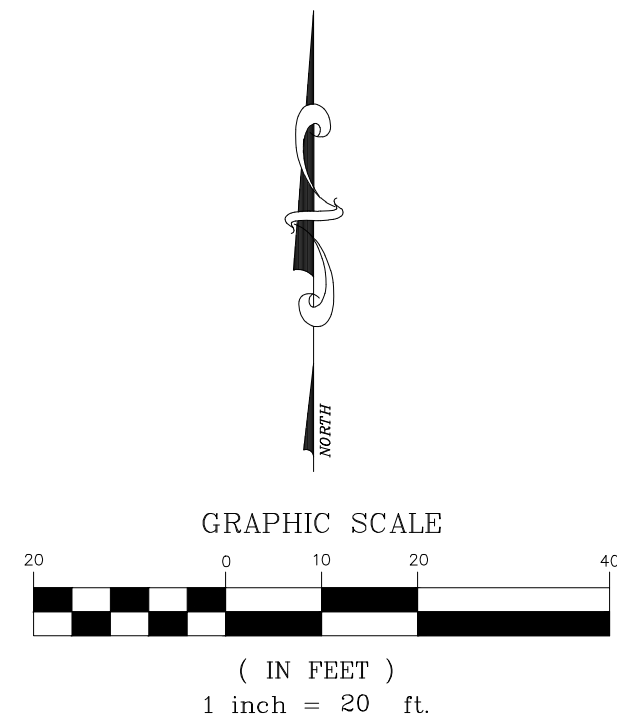
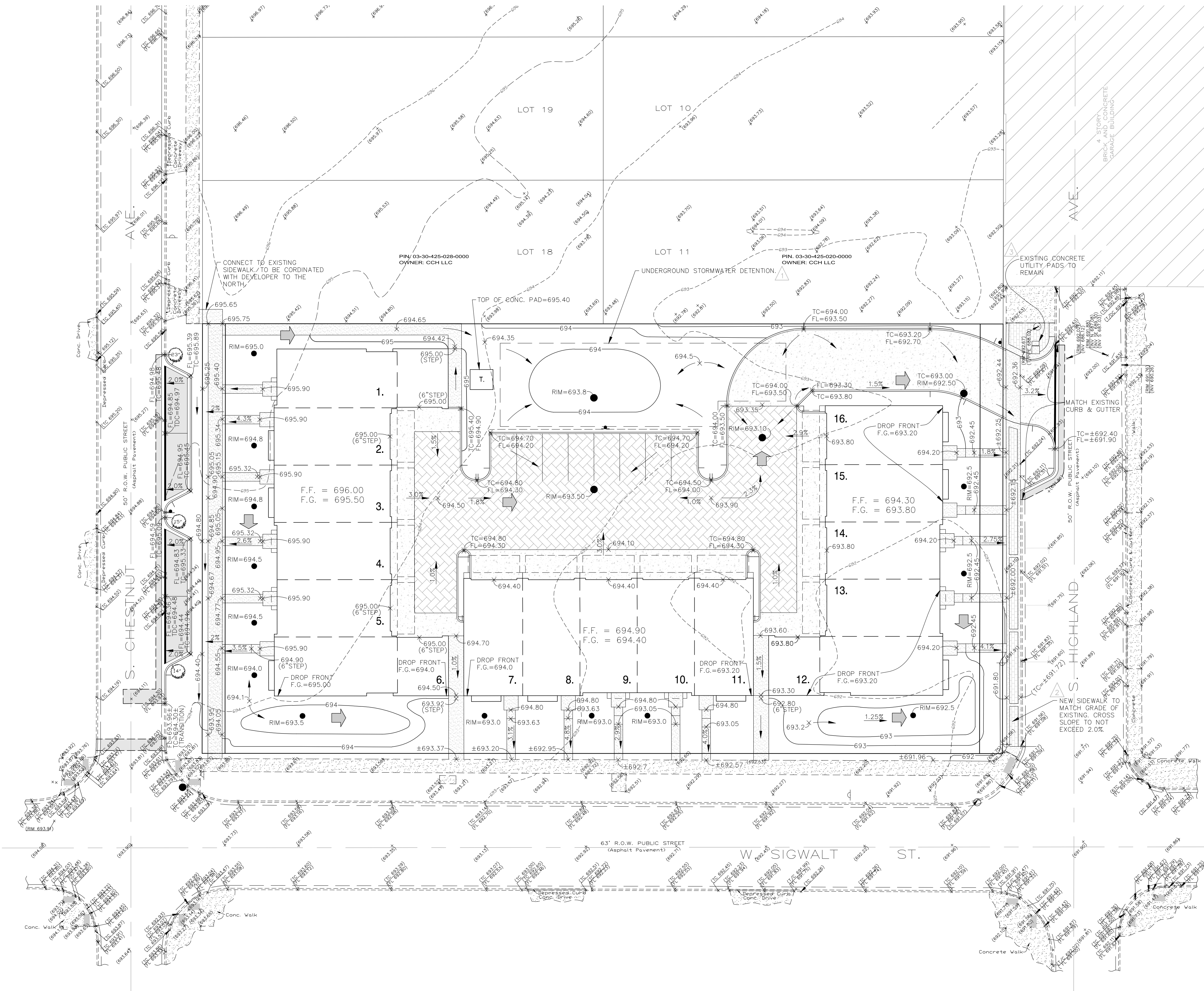
SIGWALT 16 ARLINGTON HEIGHTS, ILLINOIS SOIL EROSION AND SEDIMENT CONTROL (SESC) PLAN

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DATE 04/12/19
SCALE 1"=30'
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GRADING LEGEND

	EXISTING	PROPOSED
CONCRETE HEADWALL	—	—
PRECAST FLARED END SECTION	—	—
STORM DRAINAGE STRUCTURE	—	—
RETAINING WALL	—	—
CONTOUR	—	—
5' CONTOUR	—	—
SPOT ELEVATION	—	—
DIRECTION OF SURFACE FLOW	—	—
DITCH OR SWALE	—	—
OVERFLOW RELIEF ROUTING	—	—
SLOPE BANK	—	—
RR-3 ROCK RIP-RAP	—	—

GRADING NOTES:

1. PAVEMENT SLOPES WITHIN HANDICAP ACCESSIBLE PARKING AREAS SHALL NOT EXCEED 2.00% IN ANY DIRECTION.
2. HANDICAP RAMPS SHALL BE CONSTRUCTED WITH A CROSS SLOPE NOT TO EXCEED 2.00%.
3. UNLESS SPECIFICALLY INDICATED OTHERWISE, EXISTING GRADES ARE TO BE MET AT PROJECT PERIMETER LINES.
4. THE CONTRACTOR SHALL REFER TO THE SOIL EROSION AND SEDIMENT CONTROL PLANS AND DETAILS (AND SWPPP DOCUMENTS IF APPLICABLE) FOR THE INSTALLATION OF EROSION CONTROL MEASURES PRIOR TO BEGINNING GRADING OPERATIONS.
5. UNLESS OTHERWISE NOTED, SPOT ELEVATIONS AND PROPOSED CONTOURS REFLECT THE FINISHED PAVEMENT SURFACE GRADE, TOP OF CURB GRADE, OR FINISHED GROUND ELEVATION AS APPLICABLE.
6. RIM GRADES FOR DRAINAGE STRUCTURES REFLECT THE FLOW LINE ELEVATION OF THE GUTTER, PAVEMENT OR DRAINAGE SWALE (AS APPLICABLE).
7. WHEREVER THE DESIGN FOR SURFACE FLOW OF DRAINAGE IS DIRECTED AWAY FROM A CURB, THE CONTRACTOR SHALL INSTALL REVERSE GUTTER PITCH.
8. ALL STEPS 7" UNLESS CALLED OUT OTHERWISE.

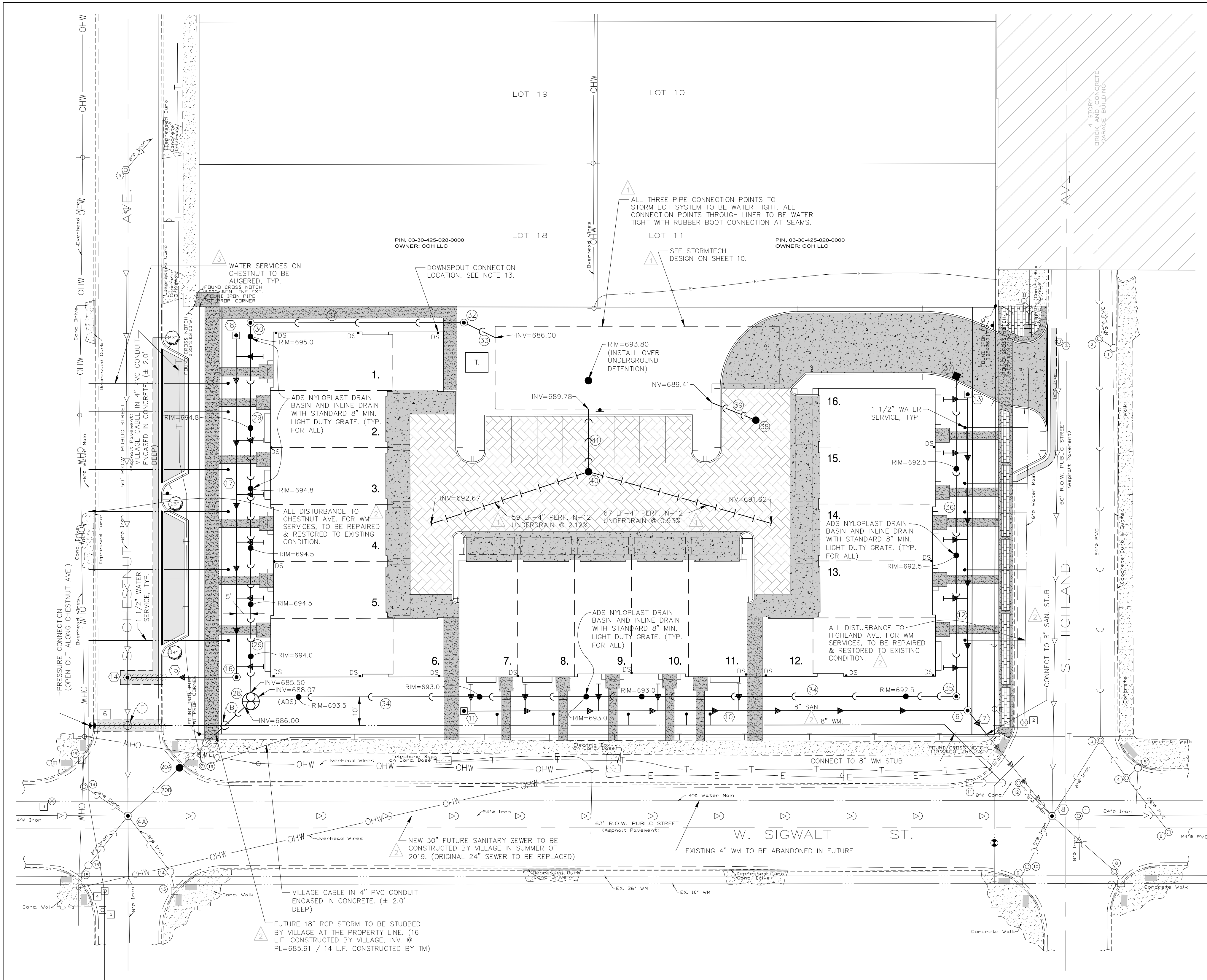
DATE	REVISIONS	DRAWN BY
05/07/19	IN OFFICE/CLIENT REVIEW	TLN
05/17/19	VILLAGE REVIEW #1	TLN
06/06/19	VILLAGE REVIEW #2	ZRN

SIGWALT 16
ARLINGTON HEIGHTS, ILLINOIS
GRADING PLAN

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PROJECT NO.	42905219
DATE	04/12/19
SCALE	1"=20'
PROJ. MGR.	RWC
PROJ. ASSOC.	MRM
DRAWN BY	TLN

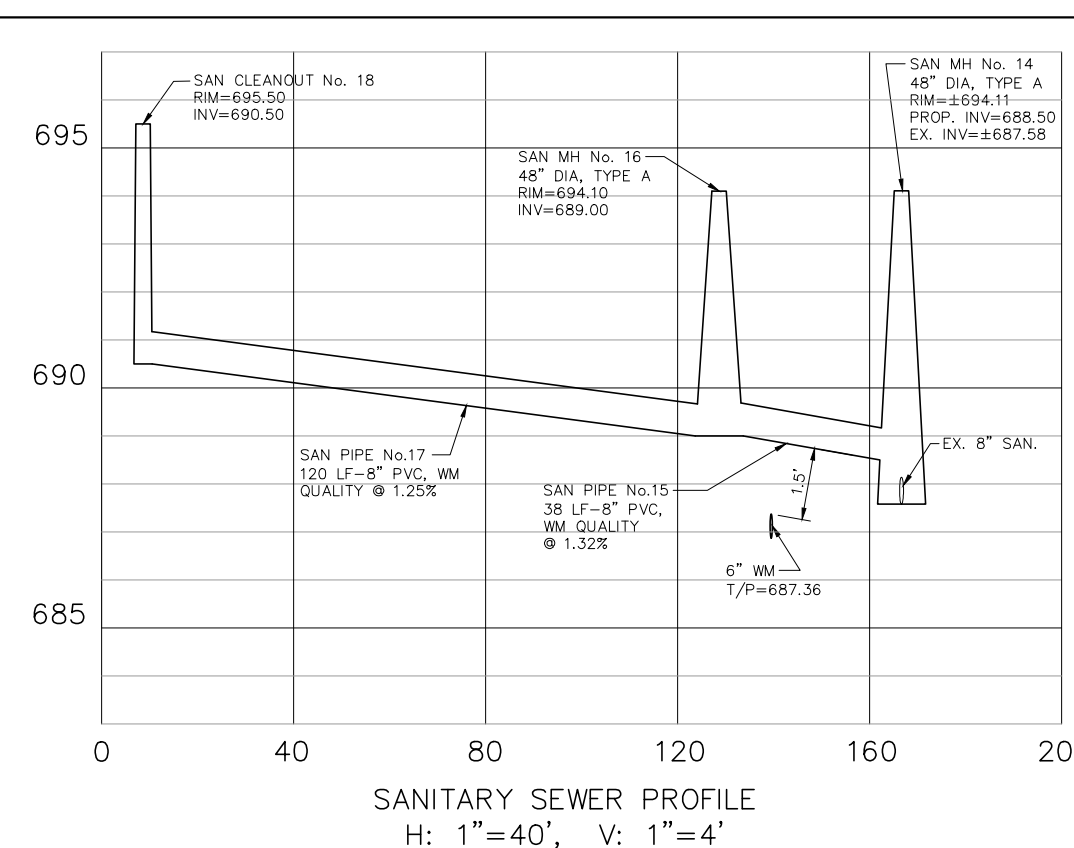
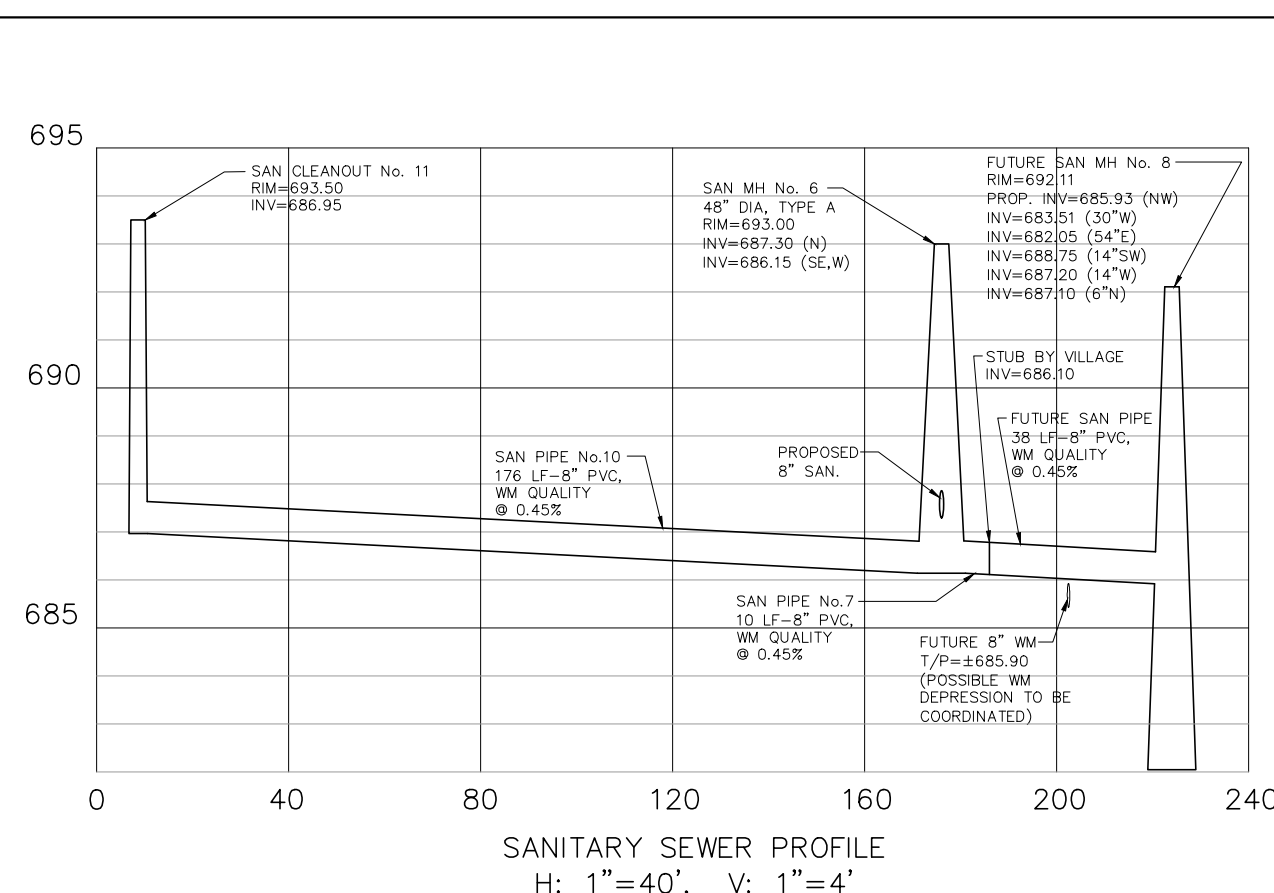
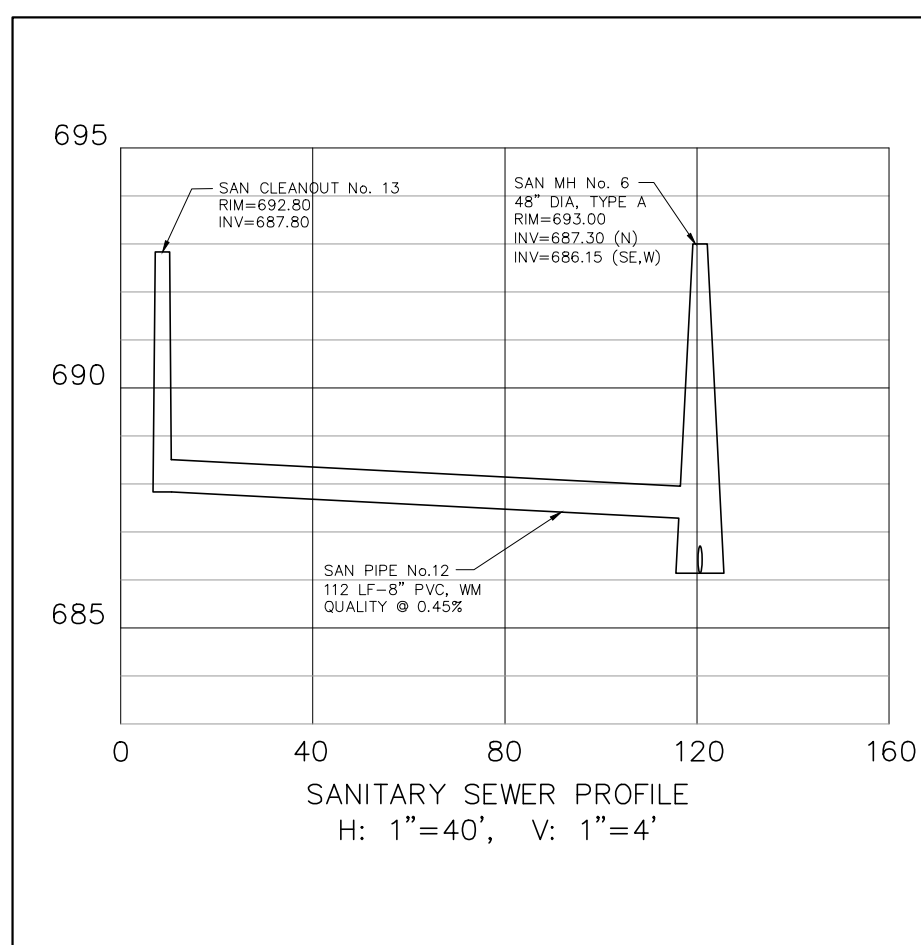


UTILITY NOTES:

- RIM GRADES FOR DRAINAGE STRUCTURES REFLECT THE FLOW LINE ELEVATIONS OF THE GUTTER, PAVEMENT, OR DRAINAGE SWALE (AS APPLICABLE).
- UNLESS OTHERWISE NOTED, ALL UTILITY DIMENSIONS ARE CENTER TO CENTER OF STRUCTURES (OR TO END OF FLARED END SECTION INCLUDING LENGTH OF FLARED END SECTION).
- THE CONTRACTOR SHALL ADJUST RIM ELEVATIONS OF ALL EXISTING STRUCTURES TO THE PROPOSED GRADES AS INDICATED ON THE PLANS.
- CONNECTIONS TO EXISTING SEWERS OR WATERMANS (OR EXISTING SERVICE STUDIES) AT POINTS OTHER THAN VISIBLE STRUCTURES ARE APPROXIMATE. THE CONTRACTOR SHALL EXCAVATE AND VERIFY EXISTING SEWER OR WATERMAN LOCATIONS, SIZES, ELEVATIONS, AND PIPE CONDITIONS AT PROPOSED CONNECTION POINTS PRIOR TO CONSTRUCTING UTILITY EXTENSIONS, AND NOTIFY THE ENGINEER AND OWNER OF ANY CONFLICT OR DISCREPANCIES.
- EXISTING UNDERGROUND PIPE, CONDUIT AND/OR CABLES (LIGHTING, ELECTRIC, GAS, CABLE, ETC) ARE SHOWN FROM RECORD INFORMATION AND ARE APPROXIMATE IN NATURE. THE CONTRACTOR SHALL VERIFY EXACT LOCATION IN THE FIELD AND NOTIFY THE ENGINEER AND OWNER OF ANY CONFLICT.
- SELECT GRANULAR TRENCH BACKFILL IS REQUIRED FOR ALL UTILITY TRENCHES UNDER EXISTING OR PROPOSED PAVEMENT, DRIVEWAYS, PARKING LOTS, AND SIDEWALKS, AND EXTENDED A MINIMUM OF 2' EACH SIDE OF SAME. GRANULAR TRENCH BACKFILL SHALL BE COMPACTED IN PLACE IN ACCORDANCE WITH THE SPECIFICATIONS.
- BUILDING DIMENSIONS AND ADJACENT UTILITY SERVICE LOCATIONS HAVE BEEN PREPARED BASED UPON ARCHITECTURAL INFORMATION CURRENT AT THE TIME OF DRAWING PREPARATION. SUBSEQUENT ARCHITECTURAL CHANGES MAY EXIST. THE CONTRACTOR SHALL REFER TO THE CURRENT ARCHITECTURAL PLANS FIRST, FOR PRECISE BUILDING DIMENSIONS AND UTILITY SERVICE CONNECTION LOCATIONS AND NOTIFY THE ENGINEER AND ARCHITECT OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
- ROUTING OF GAS, ELECTRIC, TELEPHONE AND OTHER CABLE SERVICES (IF SHOWN) ARE APPROXIMATE AND SUBJECT TO MODIFICATION BY THE RESPECTIVE UTILITY COMPANY AND/OR DEVELOPER. THE CONTRACTOR SHALL COORDINATE THE FINAL UTILITY SERVICE LOCATION WITH EACH UTILITY COMPANY PRIOR TO CONSTRUCTION.
- ALL METHODS OF CONSTRUCTION AND MATERIALS MUST CONFORM TO THE MOST RECENT VERSION (DATED PRIOR TO THE APPROVAL DATE OF THIS PLAN SET) OF "A MANUAL OF PRACTICE FOR THE DESIGN OF PUBLIC AND PRIVATE IMPROVEMENTS" AS PUBLISHED BY THE VILLAGE OF ARLINGTON HEIGHTS ENGINEERING DEPARTMENT.
- THE WATERMAIN SHOULD BE ZINC COATED D.I.P. AND SHOULD BE WRAPPED IN "V-BIO" POLY ETHYLENE WRAPPING.
- ALL WATERMAIN QUALITY PIPE SHALL BE:
 - IF RCP: USE ASTM C443 JOINTS
 - IF PVC: USE AWWA C900 WITH GASKETS MEETING ASTM F477 AND JOINTS IN COMPLIANCE WITH ASTM D3139.
- ALL SANITARY SERVICES TO BE 6" PVC SDR26 SANITARY PIPE, UNLESS OTHERWISE NOTED.
- ALL DOWNSPOUT LOCATIONS SHOWN ARE TO BE DIRECTLY CONNECTED TO ADS STORM SEWER SYSTEM. DOWNSPOUT PIPE SIZE TO BE 6" MIN. DOWNSPOUT LOCATIONS AT BACK GARAGES OF UNITS (NOT SHOWN ON PLAN) ALL SPLASH TO GRADE.
- ALL ADS N-12 HDPE STORM SEWER PIPE TO BE WATER TIGHT (WT) OPTION WITH ASTM D3212 JOINTS.

UTILITY CROSSING SCHEDULE

CROSSING	SIZE (IN.)	MATERIAL	UTILITY	BOTTOM OF PIPE	TOP OF PIPE	CLEARANCE
(B)	18"	RCP	STM	685.94	684.44	1.50' DEPRESS WM
	8"	DIP	WM	685.94	684.44	1.50' DEPRESS WM
(F)	8"	IRON PIPE	EX. SAN	687.45	685.95	1.50' DEPRESS WM
	8"	DIP	WM	687.45	685.95	1.50' DEPRESS WM



UTILITY STRUCTURE SCHEDULE		
SANITARY SEWER STRUCTURES		
1 EX SAN M.H. RIM= 691.91 INV= 684.56 (8" S) INV= 684.26 (24" W) INV= 684.21 (24" E)	2 EX SAN M.H. RIM= 691.94 INV= 686.99 (8" NE) INV= 687.04 (8" SE) INV= 688.49 (8" SW) INV= 686.84 (8" NW) INV= 684.39 (24" W) INV= 684.29 (24" E)	3 EX SAN M.H. RIM= 692.02 INV= 686.12 (12" S)
4 EX SAN M.H. (OLD) RIM= 693.95 INV= 689.85 (8" SE) INV= 685.75 (8" S) INV= 688.13 (8" SW) INV= 689.55 (8" NW) INV= 687.25 (8" N) INV= 690.00 (8" NE) INV= 685.60 (24" W) INV= 685.40 (24" E)	4A FUTURE SAN M.H. 30" INV= 684.00 (E, W) 21" INV= 685.67 (NE) 14" INV= 688.90 (N) 14" INV= 689.70 (SW) 14" INV= 688.90 (SE)	5 EX SAN M.H. RIM= 695.21 INV= 690.76 (8" NE) INV= 688.73 (8" S)
6 SAN M.H. 48" DIA. TYP. A RIM= 693.00 INV= 687.30 (N) INV= 686.15 (SE, W)	7 10 LF - 8" PVC, WM QUALITY SAN @ 0.45%	8 FUTURE SAN M.H. RIM= 692.11 PROP. INV= 685.93 (NW)
9 SAN M.H. 60" DIA. TYP. A RIM= 693.50 INV= 688.29 (24" W)	10 176 LF - 8" PVC, WM QUALITY SAN @ 0.45%	11 SANITARY CLEANOUT RIM= 693.50 INV= 686.95
12 112 LF - 8" PVC, WM QUALITY SAN @ 0.45%	13 SANITARY CLEANOUT RIM= 692.80 INV= 687.80	14 SAN M.H. 48" DIA. TYP. A RIM= 694.11 INV= 688.50 EX INV= 687.58
15 38 LF - 8" PVC, WM QUALITY SAN @ 1.32%	16 SAN INSPECTION MH. 48" DIA. TYP. A RIM= 694.10 INV= 688.00	
17 120 LF - 8" PVC, WM QUALITY SAN @ 1.25%	18 SANITARY CLEANOUT RIM= 695.50 INV= 690.50	
STORM SEWER STRUCTURES		
1 EX STM C.B. RIM= 691.76 INV= 690.26 (8" NW)	2 EX STM M.H. RIM= 691.88 INV= 687.08 (24" N) INV= 689.30 (8" E) INV= 687.03 (24" S)	3 EX STM M.H. RIM= 691.49 INV= 686.67 (24" SE) INV= 686.09 (8" SW) INV= 686.59 (24" N)
4 EX STM M.H. RIM= 691.33 INV= 686.73 (24" NW) INV= 686.53 (24" SE)	5 EX STM C.B. RIM= 691.07 INV= 688.97 (24" SW) INV= 688.91 (24" S)	6 EX STM M.H. RIM= 691.83 INV= 687.03 (24" E) INV= 686.83 (24" NW)
7 EX STM INLET RIM= 691.26 INV= 688.40 (8" NW)	8 EX STM M.H. RIM= 691.55 INV= 688.50 (8" SE) INV= 688.30 (8" NW)	9 EX STM INLET RIM= 691.54 INV= 688.54 (8" NE)
10 EX STM M.H. RIM= 691.53 INV= 688.51 (8" NE)	11 EX STM INLET RIM= 690.97 INV= 688.27 (8" E)	12 EX STM M.H. (OPEN LID) RIM= 691.48 INV= 688.03 (8" W, SE, N)
13 EX STM INLET RIM= 692.87 INV= 689.97 (8" N)	14 EX STM C.B. RIM= 693.24 INV= 690.04 (8" SE) INV= 689.54 (8" NW)	15 EX STM INLET RIM= 693.28 INV= 690.48 (8" NE)
16 EX STM C.B. RIM= 693.30 INV= 690.40 (8" SW) INV= 690.20 (8" NE)	17 EX STM INLET RIM= 693.30 INV= 691.05 (8" S)	18 EX STM M.H. RIM= 693.68 WATER FILLED T/WATER= 690.03
19 EX STM M.H. RIM= 693.70	20 EX STM INLET (OLD) UNABLE TO OPEN END OF PIPE SEALED	21 EX STM C.B. RIM= 691.44 UNABLE TO OPEN INV= 688.88 (8" SE)
22 EX STM C.B. RIM= 691.50 UNABLE TO OPEN INV= 688.85 (8" S)	23 EX STM C.B. RIM= 691.52 WATER FILLED T/WATER= 687.67	27 30 LF - 18" RCP STORM SEWER @ 0.67% W/ ASTM C443 JOINTS. (PORTION STUBBED BY VILLAGE)
28 SPECIAL RESTRICTOR STRUCTURE, SEE DETAIL 72" DIA. TYP. C RIM= 694.00 INV= 685.50 (N) INV= 688.07 (E) INV= 686.00 (S) *SEE CHECK VALVE DETAIL, INSTALLED ON DOWNSIDE PIPE	29 130 LF - 18" ADS N-12 HDPE STM @ 0.23%	30 STM M.H. 48" DIA., TYPE C RIM= 695.10 INV= 685.60
33 13 LF - 18" ADS N-12 HDPE STM @ 0.23%	34 245 LF - 12" ADS N-12 HDPE STM @ 0.40%	35 STM M.H. 48" DIA., TYPE C RIM= 692.75 INV= 689.05
36 113 LF - 12" ADS N-12 HDPE STM @ 0.40%	37 STM INLET 24" DIA., TYPE A RIM= 692.50 INV= 689.50	38 STM C.B. 48" DIA., TYPE C RIM= 693.10 INV= 689.60
39 19 LF - 12" ADS N-12 HDPE STM @ 1.00%	40 STM C.B. 48" DIA., TYPE C RIM= 693.50 INV= 691.00 (4" PVC SE) INV= 691.42 (4" PVC SW) INV= 690.00 (12" N)	41 22 LF - 12" ADS N-12 HDPE STM @ 1.00%
20A FUTURE STM C.B. 48" DIA., TYPE C RIM= 693.61 INV= 685.80 (18" NE) INV= 685.80 (21" SW)	20B FUTURE 25 LF - 21" RCP STORM SEWER W/ RUBBER GASKET @ 0.50%	
WATERMAIN STRUCTURES		
1 EX VALVE VAULT RIM= 692.67 T/P= 688.02	2 EX WATER M.H. RIM= 691.18 WATER FILLED T/WATER= 689.18	3 EX VALVE VAULT RIM= 693.91
4 EX CLEANOUT RIM= 693.53 T/P= 688.38	5 EX CLEANOUT RIM= 693.55 T/P= 688.35	6 8" VALVE IN 60" VAULT PRESSURE CONNECTION TO EXISTING 6" WM. RIM= 693.75
7 8" VALVE IN 60" VAULT PRESSURE CONNECTION TO EXISTING 6" WM. RIM= 692.00	8 6" DUCTILE IRON WM. CL. WITH 6" SERVICE VALVE @ 0.50% (DOMESTIC SUPPLY LINE) RIM= 693.80	
STORM SEWER DRAINAGE STRUCTURE LEGEND		
EXISTING □	PROPOSED ■	STORM INLET - OPEN GRATE
○	●	STORM CATCH BASIN - OPEN GRATE
⊙	●	STORM MANHOLE - CLOSED LID
2	SANITARY STRUCTURE NUMBER	
11	STORM STRUCTURE NUMBER	
5	WATERMAIN STRUCTURE NUMBER	

PROJECT NO. 42905219

DATE 04/12/19

SCALE 1"=20'

PROJ. MGR. RWG

PROJ. ASSOC. MRM

DRAWN BY TLM

SHEET

7 OF 10

SIGWALT 16

ARLINGTON HEIGHTS, ILLINOIS

UTILITY PLAN

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RWG

Engineering, LLC

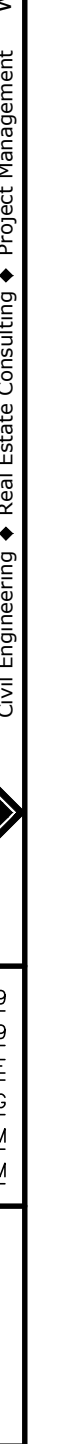
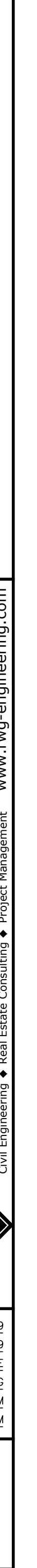
Civil Engineering • Real Estate Consulting • Project Management

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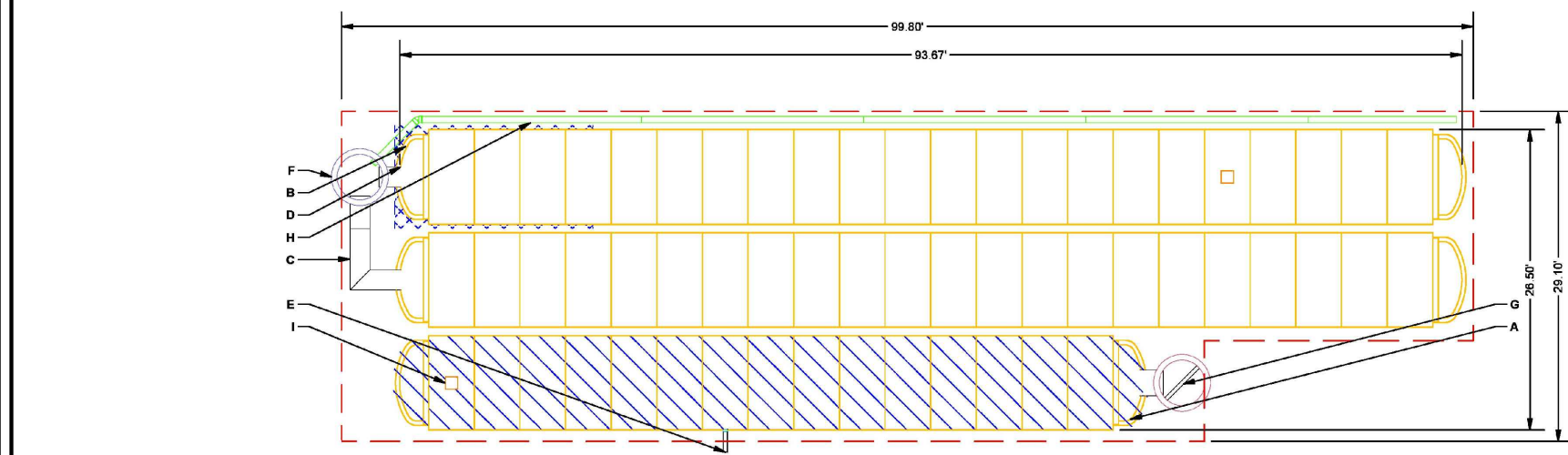
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RWG ENGINEERING, LLC PROJECT SPECIFICATIONS			SIGNALT 16 ARLINGTON HEIGHTS, ILLINOIS PROJECT NOTES AND SPECIFICATIONS			DRAWN BY TLM
GENERAL CONDITIONS						
CONTRACT DOCUMENTS						
The Standard Specifications listed on the title sheet, these Improvement Plans, the Special Provisions, General Conditions, and Subsequent Details are all part of the Contract Documents. Incidental Items or accessories necessary to complete the work may not be specifically noted, but are to be considered a part of the contract.						
USE OF IMPROVEMENT PLANS						
No Improvement Plans shall be used for construction unless specifically marked "For Construction". Prior to commencement of construction, the contractor shall verify all dimensions and conditions affecting their work with the actual conditions at the job site. If there are discrepancies from what is shown on the construction plans, the contractor shall immediately report same to the engineer before doing any work, otherwise the contractor assumes full responsibility. In the event of disagreement between the construction plans, standard specifications, and/or special details, the contractor shall secure written instructions from the engineer prior to proceeding with any part of the work impacted by omissions or discrepancies. Failure to receive clarification from the engineer prior to proceeding with the work shall be the owner's risk and expense. In the event of any doubt or question with respect to the true meaning of the construction plans or specifications, the decision of the engineer shall be final and conclusive.						
HIGHWAY/ROADWAY CONSTRUCTION PERMITS						
The contractor shall be responsible for obtaining all required permits for construction along or across existing streets or highways, including the use and access to existing streets. The contractor shall make arrangements for proper signage, lighting, and other required protection of all roadways before and during construction begins. The contractor shall be responsible for any damage to streets or roadways and associated structures, and shall make repairs as necessary to the satisfaction of the engineer and applicable governmental agency.						
EXISTING UTILITIES						
Assessments for existing utilities within public right-of-way are shown on the plans according to available records. The contractor shall be responsible for determining the exact location in the field of such utility lines and their protection from damage during construction. If existing utility lines of any nature are encountered which conflict in location or elevation with new construction, the contractor shall notify the engineer immediately so that the conflict may be resolved.						
PROJECT IMPROVEMENTS AND QUANTITIES						
The contractor shall review the construction documents and determine all required improvements and verify all quantities as may be provided by the engineer or owner for bidding purposes, and report any discrepancies to the engineer. The contract price submitted by the contractor shall be considered as a lump sum for the completed project unless there is a plan revision or written change to the scope of work.						
INCIDENTAL CONSTRUCTION						
Whenever the performance of work is indicated on the plans and no item is included in the contract for payment, the work shall be considered incidental to the contract and no additional compensation will be provided.						
MAINTENANCE OF SITE DRAINAGE						
During construction operations any loose material that is deposited in the flow line of gutters, drainage structures, ditches, etc. and obstructs the natural drainage flow line shall be removed at the close of each working day by the responsible party. The contractor shall insure positive site drainage at the close of each work day. Drainage may be achieved by ditching, piping, or any other applicable method. Failure to provide positive drainage will preclude any possible added compensation requested due to delays or unsuitable materials created as a result thereof. In the event of construction operations which cause drainage structures and flow lines shall be free from dirt and debris. This work shall be considered incidental to the contract.						
TRAFFIC CONTROL						
The contractor is responsible for the installation and maintenance of adequate signage, traffic control, and warning devices to inform and protect the public during all phases of construction. All barricades and warning signs shall be provided in accordance with the IDOT Standard Specifications. Adequate lighting shall be maintained from dusk to dawn at all locations where construction operations warrant, or as designated by the engineer or applicable governmental agency. Traffic control items shall be in accordance with the IDOT Manual on Uniform Traffic Control Devices.						
PAVEMENT REMOVAL/REPLACEMENT						
Existing permanent type pavements or other permanent improvements which abut or otherwise interfere with proposed improvements and must be removed shall be saw cut full depth prior to removal. Items to be removed shall be replaced with similar construction material to original condition or better. Payment for saw cutting shall be included in the removal cost and replacement will be paid under the respective item in the contract, unless otherwise indicated. Removed pavement, sidewalk, curb, etc. shall be disposed of by the contractor at his own expense at an offsite dump site.						
TREE PROTECTION						
Existing trees not scheduled for removal shall be protected from damage. Trimming and sealing shall be in accordance with IDOT Standard Specifications.						
EXISTING SIGNAGE & MAIL BOXES						
Existing signage and mail boxes that interfere with construction shall be removed, stored, and repaired/replaced by the contractor at his expense. Temporary mailbox facilities shall be provided as incidental cost.						
EXISTING FIELD TILE						
Field tile encountered during construction shall be connected to proposed storm sewer or extended to outlet into a proposed drainage way. If tile is not possible, then existing tile shall be required with new pipe of same size and material (or better) and restored in acceptable operating condition at the original grade. Records of location and elevation shall be made by the contractor and furnished to the engineer upon project completion.						
CONSTRUCTION DEBRIS CLEAN-UP						
The contractor is responsible for removal and disposal of all excess material and debris resulting from his construction operations except for no expense to the owner.						
CONSTRUCTION RECORD						
The contractor shall keep a set of approved construction plans on the jobsite, and shall maintain a legible record on said plans of field tile encountered, modifications/alterations to alignment/installation of proposed improvements, etc. Upon completion of the contractor's work, said record documents shall be provided to the engineer. Final payments shall not come due until this information is provided to the engineer.						
SAFETY & CONSTRUCTION EXECUTION						
The contractor shall comply with the rules and regulations of OSHA and appropriate authorities regarding jobsite safety provisions. The engineer and owner are not responsible for the construction means, methods, techniques, sequencing or procedures, the for performance, programs, or for any safety precautions used by the contractor. The contractor is solely responsible for execution of his work in accordance with the contract documents.						
INSURANCE						
Contractors responsible for construction shall purchase insurance for the benefit of the engineer, naming RWG Engineering, LLC as an additional insured to cover claims and expenses, including cost of defense, asserted against engineer, its agents, employees, or subcontractors for injury, sickness, disease or death caused by any negligent act or omission of the contractor, any subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be held responsible. The contractor shall state that "The coverage afforded the additional insured's shall be primary insurance for the additional insured with respect to claims arising out of operations performed by or on behalf of the contractor". A certificate shall be issued to the engineer prior to the start of work. Applicable insurance maintained by RWG Engineering, LLC shall be considered secondary and on an excess or contingent basis.						
PROJECT SPECIFICATIONS						
I. SOIL EROSIONS AND SEDIMENT CONTROL						
GENERAL STANDARDS						
Unless specifically notified below, all soil erosion and sediment control work shall be done in accordance with NPDES General Permit No. ILR02 and the Illinois Urban Manual. The contractor shall conform to all requirements of this general permit including maintenance and inspection of erosion control measures and filing applicable certifications and reports. A copy of the notification of coverage letter shall be posted at the site in a prominent place for public viewing. Any control measures in addition to those outlined in these plans which are deemed necessary by the owner, engineer, or applicable governmental agency shall be immediately implemented by the contractor. Maintenance and replacement of erosion control items shall be considered incidental.						
SWPPP						
A copy of the Stormwater Pollution Prevention Plan (SWPPP) shall be kept onsite with all supplemental material as required per NPDES General Permit No. ILR02. Construction operations shall conform to permit requirements.						
SITE PREPARATION						
Prior to clearing and grading, perimeter silt fence shall be installed, and onsite sediment control measures shall be constructed and functional per the soil erosion and sediment control plan. The contractor shall construct ditches, swales, sediment traps, and siltation control measures to intercept surface waters prior to conveyance onto adjacent properties, routing surface flow to onsite treatment facilities.						
STABILIZED CONSTRUCTION ENTRANCE						
Temporary gravel construction entrances shall be installed and maintained to prevent sediment from being tracked offsite. Sediment resulting a public road shall be removed by shoveling or street sweeping at the end of each work day. Loose material deposited in the flow line of any gutter or drainage structure shall be removed at the end of each work day.						
TOPSOIL STOCKPILES						
Topsoil stockpiles shall be seeded within seven (7) calendar days of completion for erosion control, unless they will be distributed within fourteen (14) calendar days. Stockpiles shall be encompassed with a silt fence.						
DUST CONTROL						
Dust control shall be performed on a daily basis using water dispersed from a truck mounted tank with a standard discharge header for uniform application rate.						
DE-WATERING						
During dewatering operations water shall be pumped into sediment basins or silt traps. Dewatering directly into field tile or stormwater structures is not permitted. Water pumped during construction operations shall be filtered.						
STABILIZATION						
Disturbed areas shall be stabilized by seeding within seven (7) days of completion of disturbance unless the area will be disturbed within fourteen (14) days. Temporary seed mixtures shall be applied at a rate of 64 lbs./acre.						
SEDIMENT BASINS						
Sedimentation is routed through proposed detention basins to allow for settlement of suspended silt and debris, the basins shall be constructed at the start of the project. Basins shall be sufficiently over-excavated to provide appropriate volume for sediment collection.						
STRUCTURE FILTER FABRIC						
Filter fabric or inlet protection devices shall be installed in each onsite drainage structure. Fabric shall be cut large enough so that the entire grate is covered with a 24" minimum "basket" to collect sediment.						
DRAINAGE SYSTEM MAINTENANCE						
All storm sewers, catch basins, pumps, and detention basins provided with this project shall be cleaned at construction completion and prior to final acceptance. Clearing may also be required during construction if the traps are not functioning properly.						
INSPECTIONS						
The contractor shall inspect all erosion control measures at least once every seven (7) calendar days, and within 24 hours of a storm event of 0.5 inches or greater (or equivalent snowfall) and in accordance with NPDES guidelines. Necessary repairs or clean up to maintain the effectiveness of the control measures shall be done immediately.						
CLEANUP						
All erosion and sediment control measures shall be removed and disposed of in accordance with applicable governmental agency requirements within 30 days of final site stabilization.						
II. EXCAVATION AND GRADING - (EARTHWORK)						
GENERAL STANDARDS						
Unless specifically notified below, all excavation and grading - (earthwork) shall be done in accordance with the applicable sections of the "Standard Specifications for Road and Bridge Construction in Illinois," as published by IDOT, Latest Edition.						
SITE PREPARATIONS						
Prior to onset of operations, the contractor shall become familiar with the soil erosion control specifications. The establishment of erosion control procedures and the placement of filter fencing, etc. to protect adjacent property shall occur before mass grading begins, and in accordance with the implementation schedule.						
Tree protection						
Fencing shall be placed around any trees designated to be preserved within the construction zone. Fencing shall be placed in a circle centered around the tree, such that the entire strip zone (extent of furthest extended branches) shall be within the fence lines. The existing grade within the fenced area shall remain undisturbed.						
DEMOLITION						
Demolition of existing structures, pavements, curbs, flatwork, utilities, etc. shall be disposed of at an offsite dump site provided by the contractor. Existing water wells shall be closed and capped in accordance with the Illinois Water Well Construction Code, as published by the Department of Public Health. Existing septic tanks and grease traps shall have all liquid and solids removed by a licensed waste hauler prior to structure removal or filling by the contractor.						
CLEARING AND GRUBBING						
Unless noted for preservation, all vegetative growth including trees and tree stumps shall be removed from the construction area.						
TOPSOIL REMOVAL						
Topsoil shall be stripped from all roadway, driveway, parking area, right-of-way, building pad and other designated structural areas. Stockpiling of topsoil for spread shall be at locations as directed by the owner. Topsoil stockpiled for future use shall be free from large roots, sticks, weeds, brush, stones larger than one inch diameter, and other litter or waste products not conducive to plant growth. Failure to properly sequence stockpiling operations shall not constitute a claim for additional compensation. No material shall be stockpiled in front yards, drainage swales, flood routing areas, utility locations, utility easements or right-of-way.						
UNDESIRABLE MATERIAL						
Undesirable subgrade material shall be removed from roadway, driveway, parking lot, building pad, and any other designated areas. Obviously soft underlying soil shall be removed from all structural improvement areas. Failure to remove clay fill and other materials not conducive to structural improvement shall be the contractor's risk and expense. In the event of any doubt or question with respect to the true meaning of the construction plans or specifications, the decision of the engineer shall be final and conclusive.						
EXCAVATION AND EMBANKMENT						
Upon completion of topsoil removal, the contractor shall perform excavation and embankment (fill) operations in accordance with the improvement plans.						
Structural embankment material shall be placed in level uniform layers so that the compacted thickness is approximately six inches. Each layer shall be thoroughly mixed during spreading to insure uniformity.						
Embarkment material within roadway, driveway, parking areas, and other structural clay fill areas shall be compacted to a minimum of ninety percent (90%) of maximum density (modified proctor method), or to such other density as determined appropriate by the soils engineer. Embankment for building pads shall be compacted to a minimum of ninety-five percent (95%) of maximum density (modified proctor method), or to such other density as determined appropriate by the soils engineer.						
Embarkment material within non-structural fill areas (random fill) shall be compacted to a minimum of ninety percent (90%) of maximum density (modified proctor method), or to such other density as determined appropriate by the soils engineer.						
Embarkment material within non-structural fill areas (random fill) required to raise the ground surface to or above the base (100 year) flood elevation shall be compacted to a minimum of ninety percent (90%) of maximum density (modified proctor method).						
All subgrades for proposed street and pavement areas shall be proof-rolled by the contractor and any unstable areas shall be removed and replaced as directed by the soils engineer.						
BACKFILLING CURBS, PAVEMENT, ETC.						
Cuts, pavements, sidewalks, etc. shall be backfilled by the contractor after installation in accordance with the improvement plan details.						
TOPSOIL RESPREAD						
During construction operations, any loose material that is deposited in the flow line of gutters, drainage structures, ditches, etc., and obstructs the natural drainage flow line shall be removed at the close of each working day by the responsible party. The contractor shall respread a minimum six (6) inch layer of topsoil on all designated open space, parkway, landscape, and other non-structural areas.						
EXCESS MATERIAL						
Unless otherwise approved by the owner, the contractor shall remove from the site any excess or unsuitable material from the construction area.						
SEEDING						
Upon completion of topsoil respread, the contractor shall install seed and fertilizer as indicated on these improvement plans or as previously provided landscape plans.						
INSPECTION BY THE SOILS ENGINEER						
The owner provided soils engineer shall closely supervise and inspect the grading operations, particularly during the removal and replacement of materials and the construction of embankments or building pads, etc. The testing, inspection and supervision of embankment quality, unsuitable removal and replacement, and other soils related operations shall be entirely the responsibility of the soils engineer.						
GRADING TOLERANCES						
Grades and elevations, subgrades for pavement, driveways and sidewalks, and all yard/open space areas shall be completed within a tolerance of plus or minus 0.1 foot of design subgrade elevations.						
UTILITY INSTALLATION PREPARATION						
Prior to utility construction, proposed pavement areas, building pads, driveway and sidewalk areas, and yard/open space areas shall be rough graded to plus or minus one foot of design subgrade elevations.						
NOTE REGARDING PLAN GRADES						
Grades elevations shown on the improvement plans are finished grades. Pavement and/or topsoil respread thickness shall be subtracted to determine subgrade elevations.						
SITE DRAINAGE MAINTENANCE						
During construction, the contractor shall provide positive site drainage. All areas adjacent to improvements shall be graded to provide positive site drainage.						
SILT RAP MATERIAL						
Stone Rip-Rap material provided shall conform to IDOT specification criteria.						
SUBGRADE DESIGN CRITERIA						
Subgrade shall have a minimum IIR of 3.0 as determined by the soils engineer. The proposed pavement design shall be based on a minimum IIR of 3.0. If areas of pavement subgrade are encountered which do not meet the minimum IIR requirement, subgrade removal and replacement shall be required by the owner to obtain equivalent pavement strength.						
III. UNDERGROUND UTILITIES - UNIVERSAL						
GENERAL STANDARDS						
Underground utility construction shall include trenching or augering, installation of pipe, structures and manholes, and elevations, subgrades for pavement, driveways and sidewalks, and all yard/open space areas shall be completed within a tolerance of plus or minus 0.1 foot of design subgrade elevations.						
GENERAL WORK SCOPE						
Underground utility construction shall include trenching or augering, installation of pipe, structures and manholes, and elevations, subgrades for pavement, driveways and sidewalks, and all yard/open space areas shall be completed within a tolerance of plus or minus 0.1 foot of design subgrade elevations.						
GRADE PREPARATION						
Rough grading to within one foot of finished subgrade shall be completed by the earthwork contractor prior to commencement of underground utility construction.						
DE-WATERING						
The contractor is responsible for dewatering any excavation for the installation of sewer or water structures. Dewatering will be considered incidental to the respective underground utility construction.						
SHEETING AND BRACING						
Any anticipated costs for sheeting and bracing shall be reflected in the contract amounts. Additional costs for sheeting and bracing will not be allowed.						
SELECT GRANULAR BACKFILL						
Utility trenches, trenches existing or proposed pavement, driveways and sidewalks, and existing or proposed structures (ie. crossings), and for a distance of three (3) feet either side of same (or more for deeper utilities as noted on the plans), and/or wherever they show on the plans shall be backfilled with compact granular material and firmly compacted in accordance with the construction standard details.						
EXCESS TRENCH MATERIAL						
Topsoil shall be stripped from all roadway, driveway, parking area, right-of-way, building pad and other designated structural areas. Stockpiling of topsoil for spread shall be at locations as directed by the owner. Topsoil stockpiled for future use shall be free from large roots, sticks, weeds, brush, stones larger than one inch diameter, and other litter or waste products not conducive to plant growth. Failure to properly sequence stockpiling operations shall not constitute a claim for additional compensation. No material shall be stockpiled in front yards, drainage swales, flood routing areas, utility locations, utility easements or right-of-way.						
DISTILLABLE MATERIALS/PIPE CONNECTIONS						
"Band-Seal" or similar flexible type couplings shall be used when connecting sewer pipes of dissimilar materials. When connecting to an existing sewer main by means other than an existing eye, tee, or an existing structure, one of the following methods shall be used: • Clean cutting of sewer main with proper tools ("Shear-Tap" machine or similar) and installation of hub-type or hub-less saddle. • Banding entire section of pipe (breaking only the top of one bell) and replace with precast eye or tee branch section. • Using a pipe cutter, neatly and accurately cut desired length of pipe for insertion of proper fitting, using a non-shear mission coupling to hold assembly firmly in place.						
UTILITY STRUCTURE SELECT BACKFILL						
Where structure is grouted, bedding and backfill is required around utility structures, the cost for same shall be included in the contract amount. Backfill shall be compacted to a minimum of ninety percent (90%) of maximum density (modified proctor method).						
STRUCTURE CASTINGS						
Frames and lids (or grates) for sanitary, water main and storm sewer structures shall be as indicated on the plans, and the cost of same shall be integrated into the respective structure cost.						
ADJUSTING RINGS						
All structures shall incorporate a minimum of three (3) inches and a maximum of eight (8) inches of adjusting rings (two (2) rings maximum).						
STRUCTURE ADJUSTMENT						
All top of frames for utility structures (including B-boxes) shall be adjusted to meet final finished grade upon completion of finished grading and final inspection (cost incidental). The contractor shall insure that roadway, curb, and pavement (frames and grates) are at finished grade.						
HORIZONTAL AND VERTICAL SEPARATION OF WATER AND SEWER MAINS						
Horizontal and vertical separation between water and sewer mains shall be maintained in accordance with the Standard Specifications for Water and Sewer Main Construction in Illinois and said specifications standard drawings 18, 19, 20, 21, 22, 23, and 24.						
FLOOR DRAINS AND FOOTING DRAINS						
Floor drains and footing drains shall discharge into the sanitary sewer. All downspouts, footing drains and subsurface stormwater shall discharge into the storm sewer or onto the ground - not into the sanitary sewer.						
RIP-RAP MATERIAL						
Rip-Rap material provided in conjunction with underground utility improvements shall conform to IDOT specification criteria.						
IV. UNDERGROUND UTILITIES - SANITARY SEWER						
SANITARY SEWER PIPE						
Sanitary sewers and services (or combined sewers in combined sewer areas) shall be constructed of one or more of the following materials as specified on the plans: • PVC gravity sewer pipe conforming to ASTM D-3034 for pipe diameters of 4 inch to 15 inch, or conforming to ASTM F-679 for pipe diameters of 18 inch to 48 inch, with minimum SDR of 26, and with Elongation of not less than 8 inches per foot. • Cast-iron pipe conforming to ASTM D-3026. • Sanitary services shall conform to ASTM D-2680 and D-2751 with solvent cement welded joints conforming to same. • Cement-lined ductile iron pipe class 52, conforming to AWWA C-151 (ANSI 2151) with push-on joints conforming to AWWA C-111 (ANSI A211).						
SANITARY SEWER BEDDING						
Sanitary sewers shall be installed on compacted granular crushed stone bedding, 1/4 inch to 3/4 inch in size (IDOT gradation CA-6), with a minimum thickness of one fourth of the outside pipe diameter, but not less than 4 inches nor more than 8 inches deep. Bedding shall extend to one foot over the top of pipe for all sanitary sewer and services. Cost for bedding shall be merged into final footage cost for the respective sewer pipe.						
SANITARY PIPE MANHOLE CONNECTIONS						
Sanitary sewer manhole connections shall be made with a flexible water-tight boot precast into the structure (see construction standard details). Refer to ASTM C-923.						
SERVICE CONNECTIONS TO MAINLINE SEWER						
Service connections to mainline sewer shall be done with pre-cast eyes or tees manufactured for that purpose, and shall be of the same material as the mainline sewer.						
SANITARY SERVICES						
Services shall be laid to a minimum grade of 1.0 percent. The end of the service shall be sealed with a water-tight plug.						
SERVICE LOCATIONS						
Sanitary services shall be installed in a separate trench from water services, with a minimum horizontal separation of 10 feet.						
V. UNDERGROUND UTILITIES - WATER MAIN						
WATER MAIN PIPE						
Water main shall be cement-lined ductile iron pipe class 52 conforming to AWWA C-151 (ANSI A215). Rubber gaskets shall be used on all joints. Water main shall conform to AWWA C-111 (ANSI A211). Ductile iron pipe shall incorporate "Tree Load" baskets" by U.S. Pipe or Series 770 Mega-Loc. Ductile iron fittings shall conform to AWWA C-110 (ANSI A210). Cement-lined ductile iron pipe shall conform to AWWA C-104 (ANSI A214). Protective wrapping is required. It shall conform to AWWA C105-99, minimum thickness 8 mil polyethylene tube such as class Type F-191 or equal, and shall completely encase and seal the main, fittings, and accessories per manufacturer's directions.						
FITTINGS						
Water main fittings (bends, elbows, tees, increasers, reducers, etc.) may or may not be specifically referenced on the plans and quantities - if not, they shall be considered incidental and included in the material quantities for the water main.						
DEPTH OF COVER - MAIN AND SERVICES						
Minimum depth of cover from finished grade to top of water main or water service pipe shall be six (6) inches (1/2 the pipe diameter). Cost for bedding shall be merged into final footage cost for the water main.						
THURST BLOCKING						
Water services shall be installed with water mains at all bends, tees, elbows, etc. (see construction standard details). Retainer glands or neoprene fittings may be substituted if permitted by the applicable governmental agency. Cost of either to be merged into final footage cost for the water main.						
WATER MAIN BEDDING						
Water main shall be installed on compacted granular crushed stone bedding, 1/4 inch to 3/4 inch in size (IDOT gradation CA-6), with a minimum of 4 inches below the bottom of the pipe and extending upward to the springline (1/2 the pipe diameter). Cost for bedding shall be merged into final footage cost for the water main.						
WATER VALVES						
Water services shall be noted otherwise, gate valves in accordance with the applicable governmental standard shall be used wherever valves are called for. Valves shall be iron body, bronze mounted, parallel resilient seat valves per AWA C-509. Valves shall be rated for 300 psi test pressure and 200 psi working pressure.						
VALVE VAULTS						
Valve vaults shall be used at all valve locations. Vaults shall be precast reinforced concrete vaults, structure, diameter as noted on the plans. Vaults shall include appropriate frames and lids (see construction standard details).						
PRESSURE TAPS						
Where indicated on the plan, pressure tap operations shall be done while maintaining system pressure in the existing main. The existing main shall be cleaned prior to installation of the tapping device. Tapping pipe shall conform to AWWA C-500. Valves, supports, frame, and lid shall conform to the construction standard detail.						
FIRE HYDRANTS						
Fire hydrants shall be of the manufacture and equipped with auxiliary valves and valve boxes in accordance with the applicable governmental agency's standard. Hydrants shall be equipped with two 1/2 inch hose nozzle connections. Fire hydrants shall be installed in accordance with the applicable governmental agency's standard. Hydrants shall open left (counter-clockwise). Hydrants shall generally be located three (3) feet clear of the back of curb.						
SERVICE LOCATIONS						
Water services shall be installed in a separate trench from sanitary (or storm) services, with a minimum horizontal separation of 10 feet.						
TESTING AND INSPECTION						
Water services shall be subject to a pressure test by the contractor. Hydrostatic pressure test and leakage shall be based on 150 psi for 2 hours. Chlorination for disinfection shall be in accordance with the applicable governmental agency's standard. Disinfection shall be performed in accordance with the applicable governmental agency's standard. In the event that pressure testing of existing mains fail, and the engineer or applicable governmental agency requires the contractor to perform a pressure test, the contractor is entitled to additional payment to correct the deficiencies in the existing system.						
VI. UNDERGROUND UTILITIES - STORM SEWER						
STORM SEWER PIPE						
Storm sewers and services shall be constructed of one or more of the following materials as specified on the plans: • Reinforced concrete pipe of the class as indicated on the plans, conforming to ASTM C-76 with trowel applied bituminous mastic compound per ASTM C-76. Where noted on the plans the joints and pipe shall incorporate flexible gaskets conforming to ASTM C-443 or ASTM C-551 with push-on joints conforming to AWWA C-111 (ANSI A211). • Cement-lined ductile iron pipe class 52, conforming to AWWA C-151 (ANSI 2151) with push-on joints conforming to AWWA C-111 (ANSI A211). • PVC gravity sewer pipe conforming to ASTM D-3034 for pipe diameters of 4 inch to 15 inch, or conforming to ASTM F-679 for pipe diameters of 18 inch to 48 inch. All pipe shall be SDR 35 or stiffer. • Elastomeric gasket joints conforming to ASTM D-3212.						
STORM SEWER BEDDING						
Storm sewers shall be installed on compacted granular crushed stone bedding, 1/4 inch to 3/4 inch in size (IDOT gradation CA-6), with a minimum thickness of one fourth of the outside pipe diameter, but not less than 4 inches nor more than 8 inches deep. Bedding shall extend to one foot over the top of pipe for PVC pipe and CMP pipe. Cost for bedding shall be merged into final footage cost for the respective sewer pipe.						
INLETS, CATCH BASINS, AND MANHOLES						
All structures shall be pre-cast reinforced concrete (see construction standard details). Structure frames and manhole frames shall be precast reinforced concrete. Structures shall be constructed of one or more of the following materials as specified on the plans: • Reinforced concrete pipe of the class as indicated on the plans, conforming to ASTM C-76 with trowel applied bituminous mastic compound per ASTM C-76. Where noted on the plans the joints and pipe shall incorporate flexible gaskets conforming to ASTM C-443 or ASTM C-551 with push-on joints conforming to AWWA C-111 (ANSI A211). • Cement-lined ductile iron pipe class 52, conforming to AWWA C-151 (ANSI 2151) with push-on joints conforming to AWWA C-111 (ANSI A211). • PVC gravity sewer pipe conforming to ASTM D-3034 for pipe diameters of 4 inch to 15 inch, or conforming to ASTM F-679 for pipe diameters of 18 inch to 48 inch. All pipe shall be SDR 35 or stiffer. • Elastomeric gasket joints conforming to ASTM D-3212.						
FLARED END SECTIONS						
End sections shall be pre-cast reinforced concrete flared end sections with an end blocking fitting in accordance with the construction standard details (or CMP end section as appropriate). Flared end sections for sewers 12 inches or greater shall include a safety grating per the construction standard details.						
SPECIAL STRUCTURES						
If called for on the plans, special structures (headwalls, boxes, etc.) shall be in accordance with the construction standard details.						
VIII. MWR GENERAL NOTES						
A. REFERENCED SPECIFICATIONS						
All construction shall be in accordance with the applicable sections of the following, except as modified: • HANDBOOK ON PLANS • STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION), BY THE ILLINOIS DEPARTMENT OF TRANSPORTATION (IDOT) 331 FOR ALL IMPROVEMENTS EXCEPT SANITARY SEWER AND WATER MAIN CONSTRUCTION. • STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS, LATEST EDITION (SSW) • STANDARD SPECIFICATIONS FOR WATER MAIN CONSTRUCTION • VILLAGE OF ARLINGTON HEIGHTS MUNICIPAL CODE • ILLINOIS DEPARTMENT OF TRANSPORTATION (IDOT) 331 FOR ALL IMPROVEMENTS EXCEPT SANITARY SEWER AND WATER MAIN CONSTRUCTION. • ORDINANCE AND TECHNICAL GUIDANCE MANUAL • PRECEDENCE AND SHALL CONTROL ALL CONSTRUCTION.						
B. NOTIFICATIONS						
1. THE MWR LOCAL SEWER SYSTEMS SECTION FIELD OFFICE MUST BE NOTIFIED AT LEAST TWO (2) WORKING DAYS PRIOR TO THE COMMENCEMENT OF ANY WORK (CALL 708-808-4055).						
2. THE VILLAGE OF ARLINGTON HEIGHTS ENGINEERING DEPARTMENT AND PUBLIC MUST BE NOTIFIED AT LEAST 24 HOURS PRIOR TO THE START OF CONSTRUCTION PRIOR TO EACH PHASE OF WORK. CONTRACTORS SHALL DETERMINE TIMES REQUIRING INSPECTION PRIOR TO START OF CONSTRUCTION OR EACH WORK PHASE.						
3. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO BEGINNING CONSTRUCTION FOR THE EXACT LOCATIONS OF UTILITIES AND FOR THEIR PROTECTION DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING UTILITIES AND FOR THE PROTECTION OF EXISTING UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF EXISTING UTILITIES. 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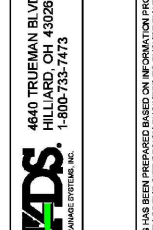
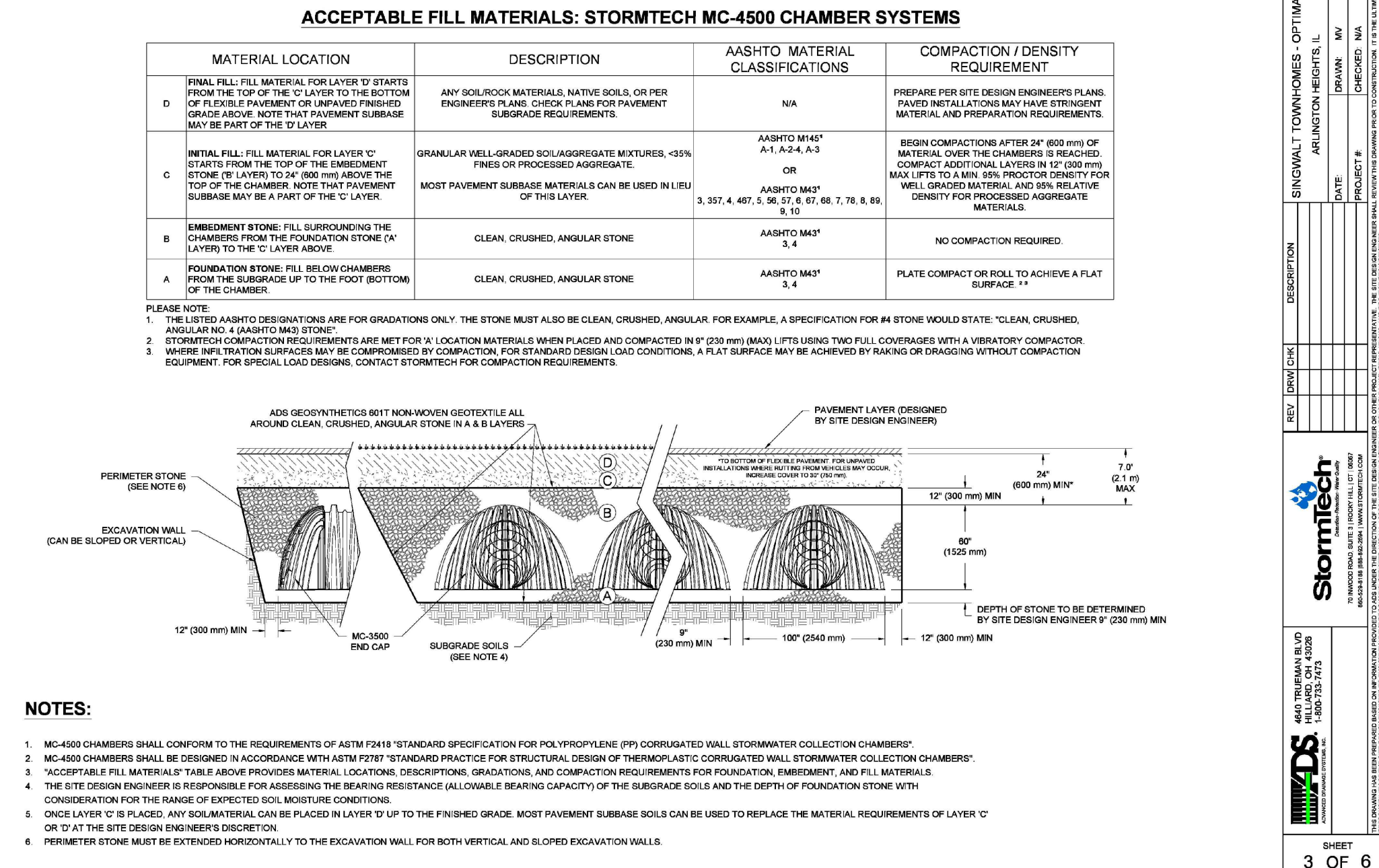




2. STORMTRENCH M-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTRENCH M-3500M-4500 CONSTRUCTION GUIDE".
3. THE USE OF EQUIPMENT OVER M-4500 CHAMBERS IS LIMITED:
a. NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
b. NO RUBBER TRED (LOADER, DUMP TRUCK OR EXCAVATORS) ARE ALLOWED UNLESS PROPER FLIP DECKS ARE REACHED IN ACCORDANCE WITH THE "STORMTRENCH M-3500M-4500 CONSTRUCTION GUIDE".
c. MEDIAN LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTRENCH M-3500M-4500 CONSTRUCTION GUIDE".
4. FULL 3" (90mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAILER OR DUMPING.
5. USE OF A DOZER TO PLACEMENT EMBANKMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND FILL" METHOD ARE NOT COVERED UNDER THE STORMTRENCH STANDARD WARRANTY.
- CONTACT STORMTRENCH AT 1-888-912-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR VOLUME LIMITS FOR CONSTRUCTION EQUIPMENT.

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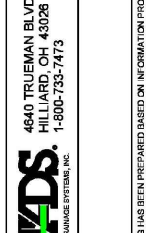
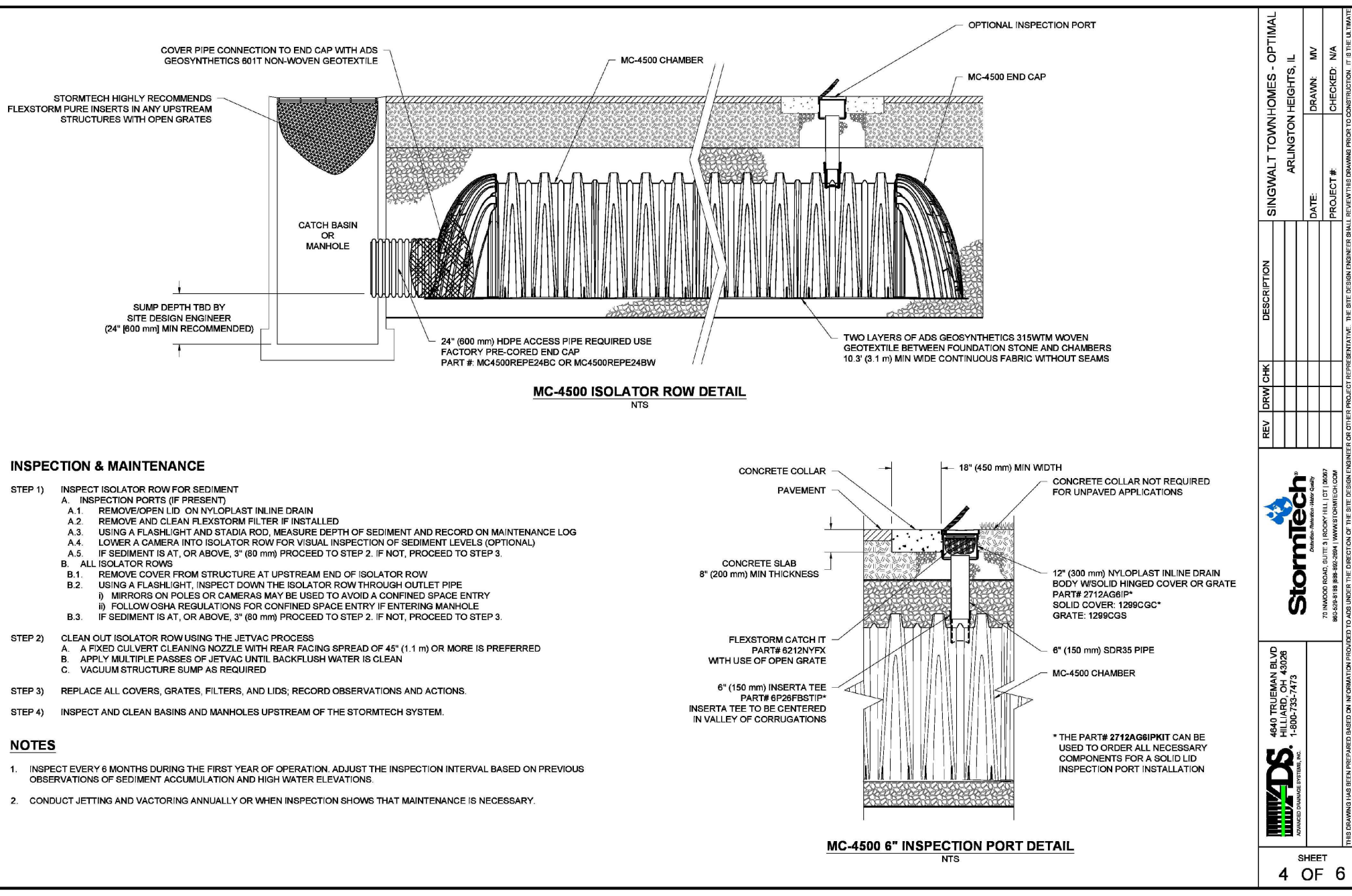
- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH SHEET #7 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.



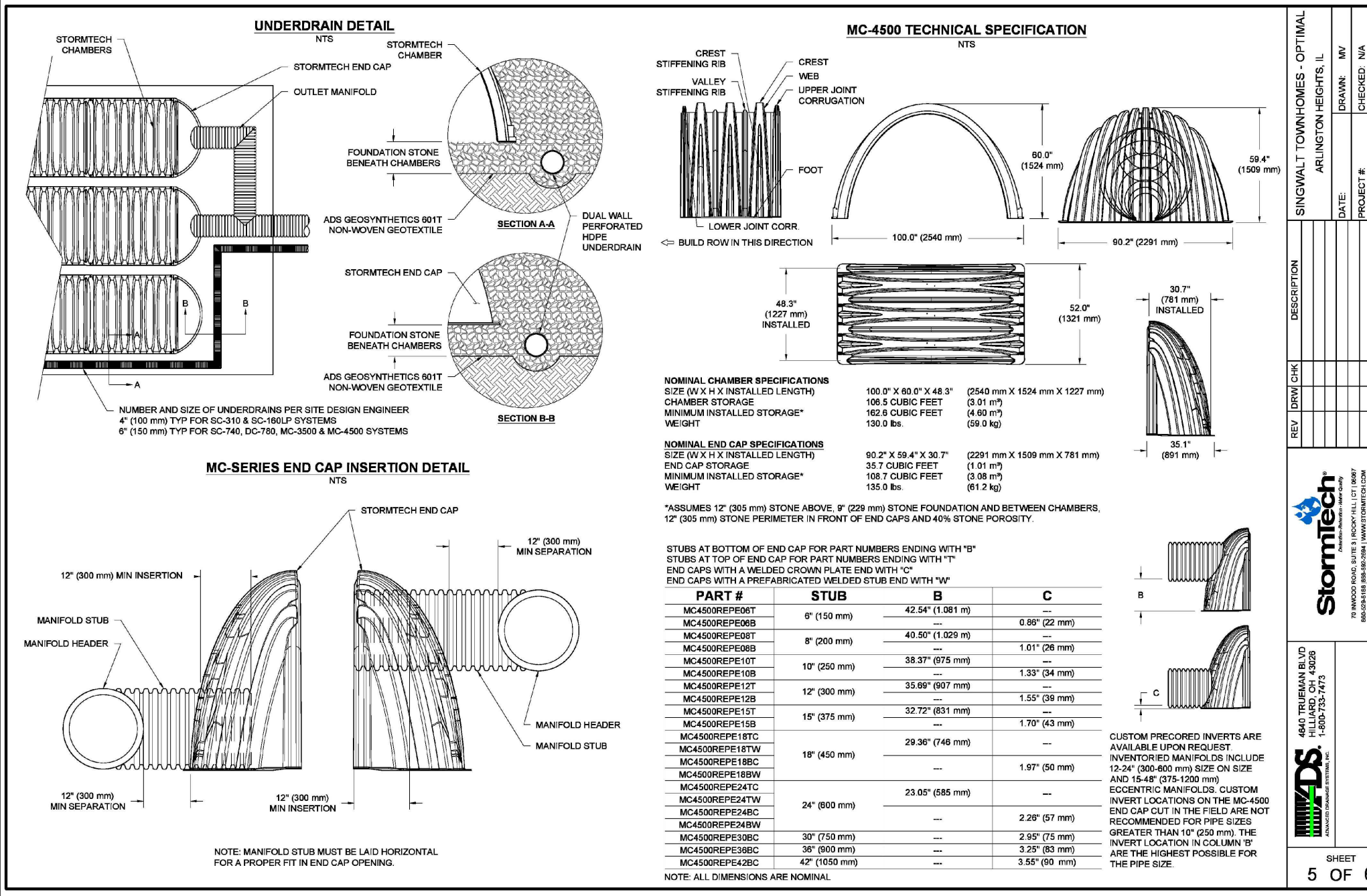
SHEET
3 OF 6

REVISIONS		DRAWN BY
DATE	IN OFFICE/CLIENT REVIEW	
1.	05/01/19	TLM
2.	05/17/19	TLM
3.	06/06/19	ZRN
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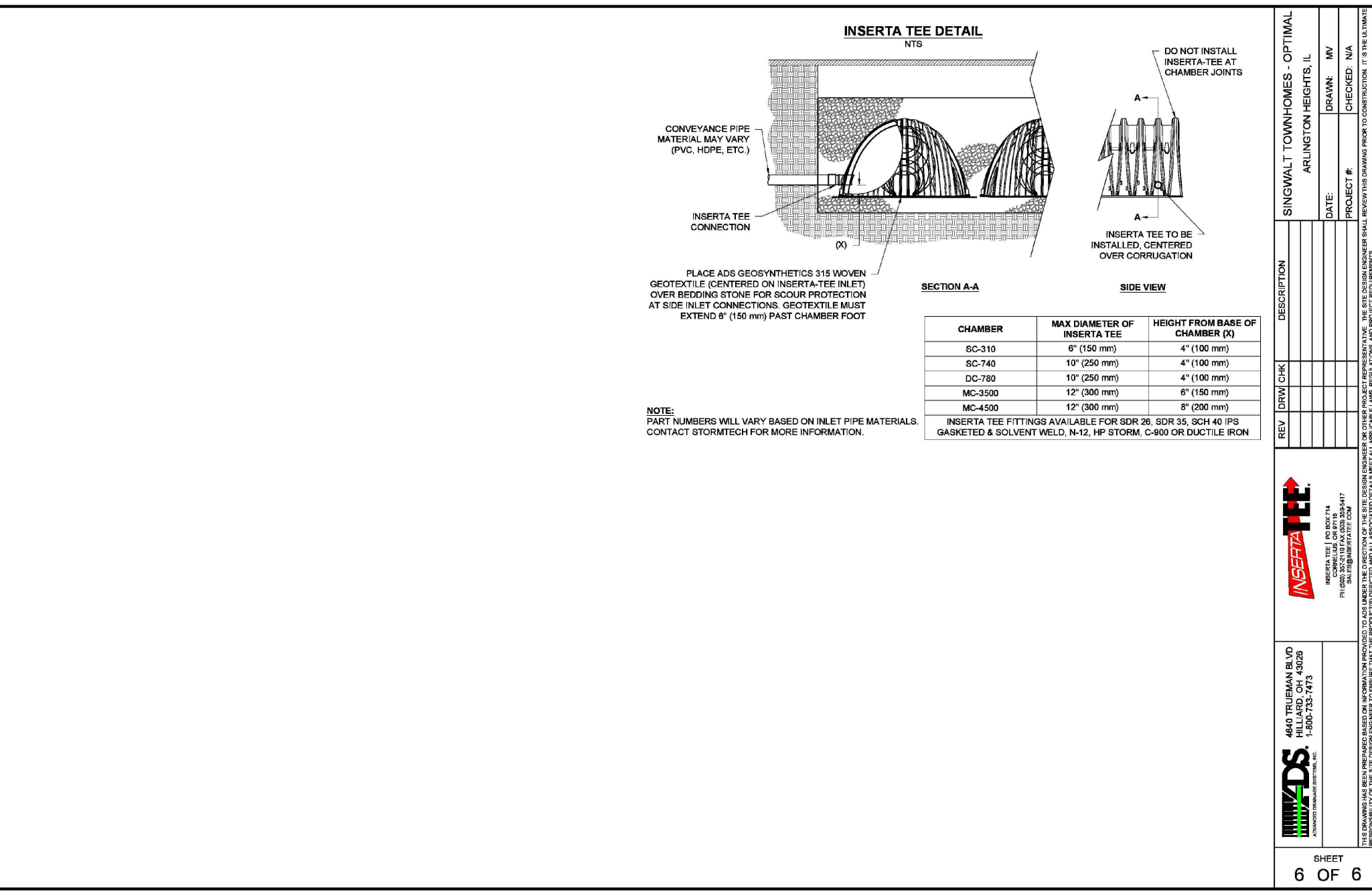
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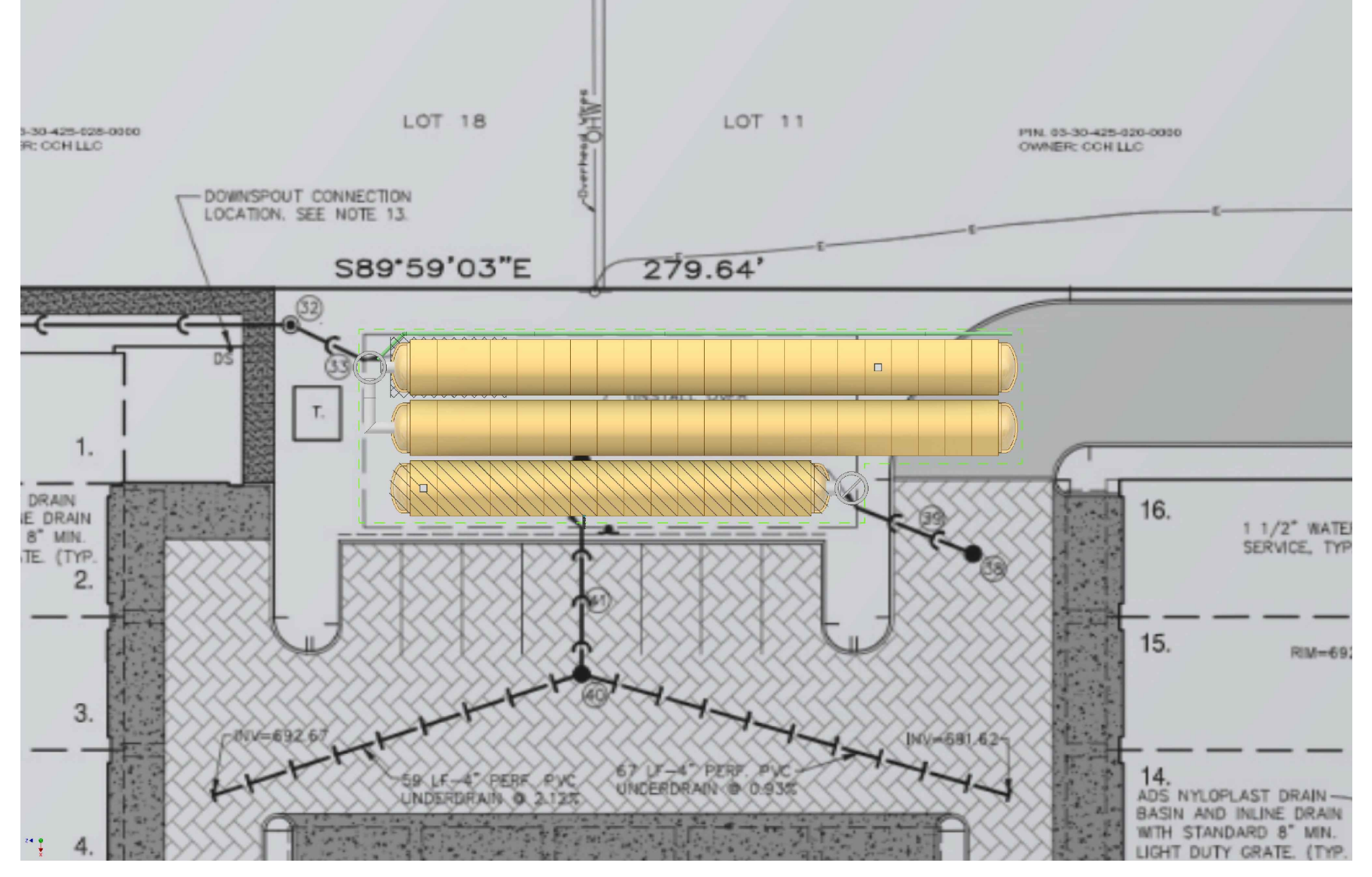
SHEET
4 OF 6



SHEET
5 OF 1

115 TRUENMA
LLARD, OH
06-733-7477

22nd St, Suite 400 Wheaton, IL 60189 630.480.7889 www.sigwalt-engineering.com	SIGWALT 16 ARLINGTON HEIGHTS, ILLINOIS CONSTRUCTION DETAILS AND SPECIFICATIONS
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DESCRIPTION	BLACK 16 X 16 COUNT PER INCH	
FABRICATION & WAREHOUSE	PRINEVILLE, OREGON	
WEIGHT	18.5 OZ./SQ. YD. (+/-5%)	ASTM D751
THICKNESS	40 MIL (+/-10%)	ASTM D1777
COATING THICKNESS	2.5 MIL EACH (+/-5%)	
TENSILE STRENGTH (GRAB METHOD)	MD 680 LBS. TD 680 LBS.	ASTM D5034
(STRIP METHOD)	MD 460 LBS. TD 460 LBS.	ASTM D5035
TEAR STRENGTH (TONGUE METHOD)	MD 140 LBS. TD 135 LBS.	ASTM D5884
BURSTING STRENGTH (MULLEN BURST)	1300 PSI	ASTM D3786
MVTR	0.31 g/m ² - 24hr (0.04 perms)	ASTM E96
HYDROSTATIC RESISTANCE	68PSI	ASTM D751
PUNCTURE RESISTANCE	350 LBS	ASTM D4833
CBR STATIC RESISTANCE	2356 LB (10,461 N)	ASTM D6621
LOW TEMPERATURE COLD CRACK	-85F F	ASTM D2136
PERMEABILITY	<2.65 x 10 ⁻⁶ CM/SQ	ASTM D4981
CARBON BLACK CONTENT	3.1%	ASTM D4419
DIMENSIONAL STABILITY	MD -3.8% TD -1.8%	ASTM D1204
HP-GIT	3048 minutes	ASTM D5885
UV RESISTANCE	>90% STRENGTH RETAINED AFTER 2000 HRS	ASTM G-154

ALL DATA IS DRAWN FROM U.S. TESTING AND PRECISION LABORATORIES, AVAILABLE ON REQUEST.



*NOTE: STORMTECH SYSTEM TO BE WATERTIGHT. USE OF BTL LINER IS REQUIRED.

3451 SW Empire Drive, Prineville, OR 97754 | 800.280.0712 | p 541.447.0712 | f 541.447.0759 | BTLLINERS.COM

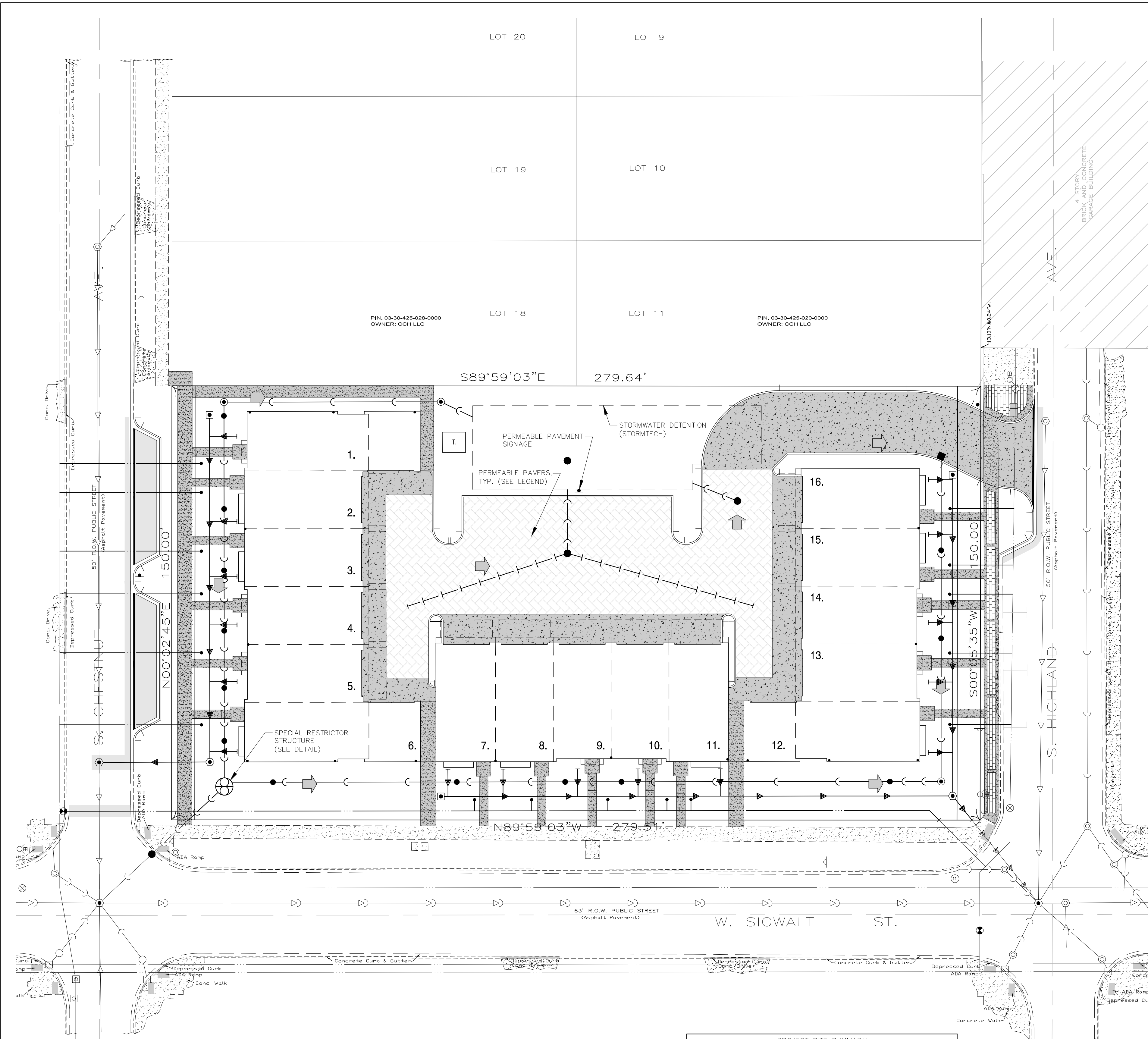
June 04, 2019 3:26:01 p.m. AcadVer:22.0s (LMS Tech)
Drawing: S:\42905219 - SIOUX FALLS TOWNHOMES\310_ENGINEERING\310_CADD\FINAL\429_BASE.DWG



PROJECT NO. 42905219
DATE 04/12/19
SCALE NONE
PROJ. MGR. RWG
PROJ. ASSOC. MRM
DRAWN BY TLM

SHEET

10 OF 10



PROJECT SITE SUMMARY

PROPERTY LEGAL DESCRIPTION: SEE NOTE ON PLAN
PROPERTY ADDRESS: 45 SOUTH CHESTNUT AVENUE, ARLINGTON HEIGHTS, IL
PROPERTY INDEX NUMBER(S): SEE NOTE ON PLAN
TOTAL CONTIGUOUS OWNERSHIP: 0.908 ACRES
PROJECT AREA: 0.908 ACRES

DETENTION AND VOLUME CONTROL SUMMARY			
	EXISTING (AC-FT)	PROPOSED (AC-FT)	PROVIDED (AC-FT)
VOLUME CONTROL	0	0.0408	* 0.0652
DETENTION	0.26	0.0	0.26

* EXCESS 0.0244 AC-FT OF VOLUME CONTROL APPLIED TO VILLAGE DETENTION REQUIREMENT.

UTILITY LEGEND

	EXISTING	PROPOSED
SANITARY MANHOLE	⊙	⊙
STORM MANHOLE	⊙	⊙
CATCH BASIN	○	●
INLET	□	■
PRECAST FLARED END SECTION	▷	▷
SANITARY SEWER	—	—
STORM SEWER	—	—

SURFACE IMPROVEMENT LEGEND:

- PERMEABLE PAVERS (SEE DETAIL)
- VILLAGE STANDARD BRICK PAVEMENT (SEE DETAIL)
- CONCRETE DRIVEWAY APRONS (GARAGE ENTRY)
- 6" PCC PAVEMENT WITH 4"x4" No. 6 WELDED WIRE MESH
- 6" AGGREGATE BASE COURSE CA-6, TYPE B
- CONCRETE SIDEWALKS (PUBLIC AND/OR PRIVATE)
- 5" PCC SIDEWALK
- 4" AGGREGATE BASE COURSE TYPE B, CA-6
- EX. CURB AND GUTTER
- CURB AND GUTTER (86.12) SEE DETAIL SHEET
- REVERSED PITCH CURB AND GUTTER
- DEPRESSED CURB AND GUTTER
- ADA CURB RAMP WITH DETECTABLE WARNING

GRAPHIC SCALE
1 inch = 20 ft

RESTRICTOR IN CATCH BASIN No. 28

PERMEABLE PAVEMENT AREA
ENVIRONMENTALLY FRIENDLY PARKING LOT
BENEFITS OF THIS TECHNOLOGY INCLUDE:
* REDUCES STORMWATER RUNOFF * IMPROVES WATER QUALITY
* CLEANS AND FILTERS STORMWATER

MAINTAIN WITH CARE:
NO STORAGE OR DISPERSING OF GRANULAR MATERIALS
DO NOT SEAL COAT

TECHNICAL GUIDANCE MANUAL
TYPICAL SIGNAGE FOR PERMEABLE PAVEMENT AREA

PERMEABLE PAVER SECTION

NOTES:
1. OFFSET A MINIMUM OF 10 FEET FROM FOUNDATIONS UNLESS WATERPROOFED, 20 FEET FROM SANITARY SEWERS, 20 FEET FROM ROADWAY GRAVEL SHOULDER AND 100 FEET FROM POTABLE WATER WELLS OR SEPTIC TANKS.
2. AVOID INSTALLATION ON SLOPES GREATER THAN 1:1 AND ABOVE COMPACTED FILL.
3. WOVEN GEOTEXTILE FABRIC SHALL MEET REQUIREMENTS OF LUM MATERIAL SPECIFICATION 592 GEOTEXTILE, TABLE 1, CLASS 1, WITH AN APPARENT OPENING SIZE OF 0.50 MM.
4. STONE STORAGE OPTIONS ARE CA-7, DISTRICT VULCAN MIX, OR APPROVED ALTERNATE, NO RECYCLED MATERIALS.
5. MINIMUM DISTANCE OF 2 FEET (3.5 FEET IN COMBINED SEWER AREAS) BETWEEN BOTTOM OF BMP AND SEASONALLY HIGH GROUNDWATER LEVEL.
6. UNDERDRAINS ARE REQUIRED IN TYPICAL CLAYEY SOILS WHERE INFILTRATION RATES ARE LESS THAN 0.5 INCH/HOUR. MAXIMUM OF 1 UNDERDRAIN PER 30 FEET. PROVIDE A SOIL REPORT DOCUMENTING NATIVE INFILTRATION RATE TO FOREGO UNDERDRAINS.
7. MINIMUM UNDERDRAIN BEDDING OF TWO INCHES, MAXIMUM OF 12 INCHES.
8. ONE OBSERVATION WELL REQUIRED PER 40,000 SQUARE FEET OF SURFACE AREA.
9. FOLLOW THE REQUIRED PRETREATMENT MEASURES LISTED ON THE VOLUME CONTROL PRETREATMENT MEASURES DETAIL.
10. MAINTENANCE REQUIREMENTS INCLUDE ANNUAL VACUUMING AND LOW-PRESSURE POWER WASHING OF PAVEMENT SURFACE. ADJACENT VEGETATED AREAS SHALL BE WELL-MAINTAINED. BARE SPOTS AND ERODED AREAS SHALL BE REPLANTED AND STABILIZED IMMEDIATELY. DO NOT SEAL COAT.
11. APPROPRIATE SIGNAGE REQUIRED FOR FACILITY, REFER TO THE SIGNAGE FOR PERMEABLE PAVEMENT DETAIL.

SITE DATA:
EXISTING ZONING: VC-PD (VILLAGE CENTER - PLANNED DEVELOPMENT)
TOTAL PROPERTY SIZE BEFORE DEDICATED ROW= 41,939 S.F. (0.963 AC)
TOTAL PROPERTY SIZE AFTER DEDICATED ROW= 39,539 S.F. (0.908 AC)

PROPOSED SITE CONDITIONS:
IMPERVIOUS:
PROPOSED BUILDING IMPERVIOUS FOOTPRINT = 14,356 S.F.
SIDEWALK/CURB/PAVED AREAS = 7,000 S.F.
TOTAL IMPERVIOUS AREA = 21,356 S.F. (54%)
PERVIOUS:
PERMEABLE PAVEMENT AREA = 5,920 S.F.
PROPOSED GREENSPACE = 12,263 S.F.
TOTAL PERVIOUS AREA = 18,183 S.F. (46%)

PROPOSED PARKING SUMMARY: (ONSITE AND ADJACENT ROW)
REGULAR STALLS (ON-SITE) = 8
REGULAR STALLS (ADJACENT ROW) = 3
TOTAL STALLS PROVIDED = 11

MAINTENANCE PLAN
THE OWNER OF THE SIGWALT 16, 550 ARLINGTON, LLC WITH FACILITIES AS SHOWN ON THIS EXHIBIT (EXHIBIT R), SHALL ASSUME RESPONSIBILITY FOR THE FOLLOWING PERPETUAL MAINTENANCE ACTIVITIES:

1. General
Regular inspections and routine maintenance of general areas shall be performed on a monthly or as-needed basis. Specific items of concern include:
Litter and debris shall be controlled
Landscaped areas shall be maintained with regular mowing and restored with appropriate seeding/vegetation as necessary
Accumulated sediment shall be disposed of properly, along with any wastes generated during maintenance operations
Riprap areas shall be repaired with the addition of new riprap, as necessary, of similar size and shape
Roads shall be swept, vacuumed and/or washed on a regular basis

2. Stormwater Management Facilities
All components of the stormwater management facilities shall be checked monthly between March and November and maintained as necessary to ensure proper performance. It is critical that all inlets and outflows to the detention facility shall also be maintained. Inspections for the following specific items should be conducted monthly between March and November:
Side Slopes/Embankment/Emergency Overflow Structure
Inspect embankments for settlement and erosion
Remove woody growth from the embankment
Any breaks, hire Registered Professional Engineer for design resolution
Seed and sod any eroded areas
Signs of piping (leakage) or seepage, repair
Stabilize emergency overflow structure if erosion observed
Remove obstructions blocking emergency overflow spillway

Vegetated Areas
Regular mowing to control vegetation, no cutting of native vegetation
Need for planting, reseeding or sodding. Supplement alternative native vegetation if a significant portion has not established (50% of the surface area).
Reseed with alternative grass species if original grass cover has not successfully established
Evidence of grazing, motorbikes or other vehicles, repair
Check for invasive vegetation, remove where possible
All vegetation must be maintained per the approved planting plan

Outlet Control Structure
Inspect restrictor and remove debris if clogged or discharge reduced
Remove accumulated sediment at outlet
Scour and erosion at outlet, repair and reseed
Any ice damage to outlet of pipe, repair if necessary
Condition of trash racks, remove debris
Outlet channel conditions downstream

Access for Maintenance Equipment
Remove any obstructions placed in maintenance easements

Safety Features
Access controls to hazardous areas
Fences
Loose or damaged posts
Loose or broken wires
Condition of gates
Signs

Detention Volume
Inspect all stormwater detention facilities to ensure that the constructed volume for detention is maintained. No sediment, topsoil, or other dumping into the facility shall be allowed. Specific locations in the stormwater management system, designed to accumulate sediment, shall be dredged as necessary to prevent sediment from reaching the invert of any gravity outlet pipe.

3. Volume Control Facility
Routine inspections and maintenance of volume control facilities shall be performed by the Owner on a yearly or as-needed basis. Specific items of concern include:
Facility shall be inspected yearly using the monitoring well to verify the system is functioning properly.
Surface of permeable pavement shall be cleaned with low-pressure power washer.
Accumulated sediment from surface shall be vacuumed out and disposed of properly.
Appropriate signage shall be repaired if damaged or illegible.

4. Stormwater Collection System
The Owner shall perform monthly inspections of all components of the stormwater collection system. The monthly inspection shall occur between March and November and include the following specific areas of concern:
Storm Inlets/Manholes
Remove accumulated leaves and other debris from grates
Reset covers/lids on as-needed basis
Remove accumulated sediment from manhole bottom when 50% of sump is filled
Storm Sewers/Culverts
Visually inspect pipes by removing manhole lids, make repairs as necessary
Storm sewers and culverts shall be checked for siltation deposits at inlets, outlets, and within the conduit, clean out as necessary
Restore riprap at outfalls if erosion observed
Restore riprap at outfalls
Replant and reseed any eroded areas
Overland Flow Routes (Ditches/Swales)
Annual visual inspections shall be performed that verify the design capacity of the overland flow routes is maintained. The slope and cross-sectional area of the ditch/swale shall be verified during this inspection
Remove any obstructions that have been placed in the drainage path
Seed and sod any eroded areas
Restore riprap as necessary
Regrade to provide positive drainage as necessary
Regular mowing to control vegetation

5. Qualified Sewer Construction
Perform manhole inspections once every five years, make repairs as necessary.
Perform sewer inspections once every five years, make repairs as necessary.
Perform regular cleaning so that each sewer segment is cleaned once every five years.
Remove any obstructions placed in maintenance easements that may impede maintenance equipment access.

6. Stormtech Inspection and Maintenance Plan
(Step 1) Inspect Isolator row for sediment
A. Inspection ports (if present)
A.1. Remove/Open lid on nyloplast inline drain
A.2. Remove and clean flexform filter if installed
A.3. Using a flashlight and stadia rod, measure depth of sediment and record on maintenance log
A.4. Lower a camera into Isolator row for visual inspection of sediment levels (optional)
A.5. If sediment is at, or above, 3" (80 mm) proceed to step 2, if not, proceed to step 3.
(Step 2) Clean out Isolator row using the jetvac process
A. fixed culvert cleaning nozzle with rear facing spread of 45" (1.1m) or more is preferred
A. Apply multiple passes of jetvac until backflow water is clean
B. Vacuum structure sump as required
(Step 3) Replace all covers, Grates, Filters, and Lids; record observations and actions.
(Step 4) Inspect and clean basins and manholes upstream of the stormtech system.

NOTES:
1. Inspect every 6 months during the first year of operation. Adjust the inspection interval based on previous observations of sediment accumulation and high water elevations.
2. Conduct jetting and vacuuming annually or when inspection shows that maintenance is necessary.

PROJECT NO. 42905219
DATE 04/05/19
SCALE 1"=20'
PROJ. MGR. RWG
PROJ. ASSOC. MRM
DRAWN BY TLM

Engineering, LLC
Civil Engineering • Real Estate Consulting • Project Management
975 E. 22nd St., Suite 400
Wheaton, IL 60189
630.480.7889
www.rwg-engineering.com

1 OF 1

CONTAINING 41,939 SQUARE FEET OR 0.96 ACRES, MORE OR LESS

- BOLLARD
- UTILITY POLE

P. I. N. # 03-30-425-012-0000 (LOT 17)
P. I. N. # 03-30-425-013-0000 (LOT 16)
P. I. N. # 03-30-425-014-0000 (LOT 15)
P. I. N. # 03-30-425-021-0000 (LOT 12)
P. I. N. # 03-30-425-022-0000 (LOT 13)
P. I. N. # 03-30-425-023-0000 (LOT 23)

1. BEARINGS BASED UPON STATE PLANE COORDINATES
ILLINOIS EAST ZONE.
2. FIELD WORK COMPLETED 3-7-2019
3. ALL UTILITIES AS SHOWN ARE APPROXIMATE
LOCATIONS DERIVED FROM ACTUAL MEASUREMENTS.
THEY SHOULD NOT BE INTERPRETED TO BE EXACT
LOCATION NOR SHOULD IT BE ASSUMED THAT THEY
ARE THE ONLY UTILITIES IN THE AREA.

THIS PROFESSIONAL SERVICE CONFORMS TO THE CURRENT
ILLINOIS MINIMUM STANDARDS FOR A BOUNDARY SURVEY.
WALTER J. LUTZ
ILLINOIS PROFESSIONAL LAND SURVEYOR NO. 3576
MY LICENSE EXPIRES NOVEMBER 30, 2020
DESIGN FIRM LICENSE EXPIRES APRIL 30, 2021

Thomson Surveying Ltd.
9575 W. Higgins Road, Suite 850
Rosemont, IL. 60018
TEL:(847)318-9790
FAX:(847)318-9792
wutz@thomsonltd.com

§

LEGEND

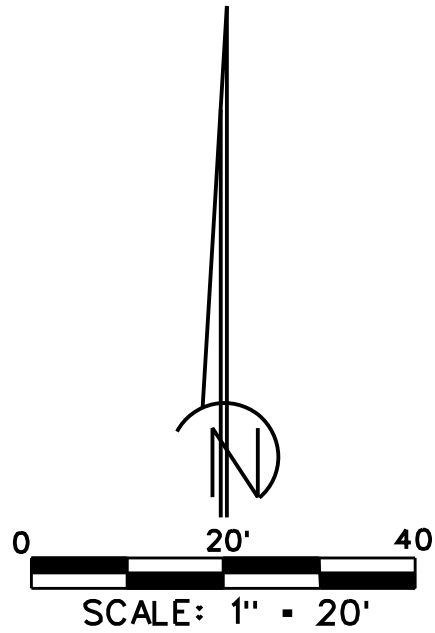
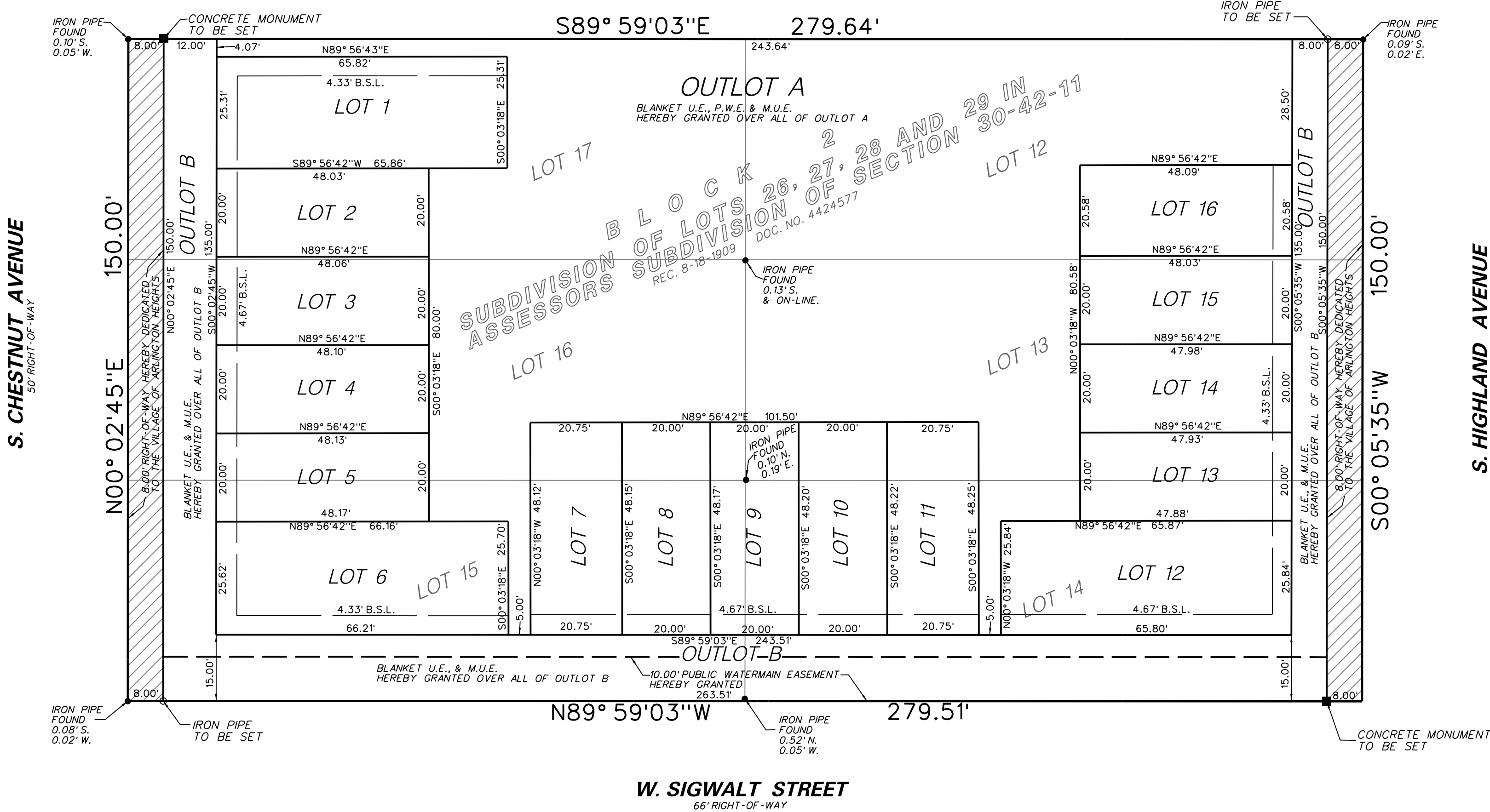
U.E. • GENERAL PUBLIC UTILITY EASEMENT
P.W.E. • PUBLIC WATERMAIN EASEMENT
M.U.E. • MUNICIPAL UTILITY EASEMENT
B.S.L. • BUILDING SETBACK LINE

FINAL PLAT OF RESUBDIVISION
SIGWALT 16 SUBDIVISION

BEING A RESUBDIVISION OF LOTS 12, 13, 14, 15, 16 AND 17 IN BLOCK 2 IN A SUBDIVISION
OF LOTS 26, 27, 28 AND 29 IN ASSESSORS SUBDIVISION OF SECTION 30, TOWNSHIP
42 NORTH, RANGE 11 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN COOK COUNTY,
ILLINOIS.

PROPOSED SUBDIVISION
"ARLINGTON 425"

AREA TABLE		
	SQ. FT.	ACRES
LOT 1	1,666	0.038
LOT 2	961	0.022
LOT 3	962	0.022
LOT 4	962	0.022
LOT 5	963	0.022
LOT 6	1,698	0.039
LOT 7	999	0.023
LOT 8	963	0.022
LOT 9	964	0.022
LOT 10	964	0.022
LOT 11	1,001	0.023
LOT 12	1,704	0.039
LOT 13	958	0.022
LOT 14	959	0.022
LOT 15	960	0.022
LOT 16	989	0.023
OUTLOT A	15,212	0.349
OUTLOT B	6,654	0.153
CHESTNUT AVE. DEDICATION	1,200	0.027
SIGWALT ST. DEDICATION	1,200	0.027
TOTAL	41,939 +/-	0.96 +/-



PROJECT NO. 5451

SHEET 1 OF 2

DRAWING NO. 5451-PLN.DGN

TITLE:

SIGWALT 16 SUBDIVISION

ARLINGTON HEIGHTS, ILLINOIS

DATE: 5-8-2019

SCALE: 1" = 20'

CHKD.

DATE:

NO.

DATE:

NATURE OF REVISION

DSGN.

DWN.

CHKD.

SCALE:

DATE:

WJL

DMS

1" = 20'

CLIENT:

TAYLOR MORRISON OF ILLINOIS, INC.

1834 WALDEN OFFICE SQUARE

SUITE 300

SCHAUMBURG, ILLINOIS 60173

Thomson Surveying Ltd.

9575 W. Higgins Road, Suite 850

Skokie, IL 60076

TEL: (847) 318-9799

FAX: (847) 318-9792

wj@thomsonltd.com

FINAL PLAT OF RESUBDIVISION

SIGWALT 16 SUBDIVISION

BEING A RESUBDIVISION OF LOTS 12, 13, 14, 15, 16 AND 17 IN BLOCK 2 IN A SUBDIVISION OF LOTS 26, 27, 28 AND 29 IN ASSESSORS SUBDIVISION OF SECTION 30, TOWNSHIP 42 NORTH, RANGE 11 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN COOK COUNTY, ILLINOIS.

SEND TAX BILLS TO:
TAYLOR MORRISON OF ILLINOIS, INC.
1834 WALDEN OFFICE SQUARE
SUITE 300
SCHAUMBURG, ILLINOIS 60173

RETURN TO:

BOX 111
VILLAGE OF ARLINGTON HEIGHTS
33 SOUTH ARLINGTON HEIGHTS ROAD
ARLINGTON HEIGHTS, IL 60005

P.I.N.s:
03-30-425-012-0000 (LOT 17)
03-30-425-013-0000 (LOT 16)
03-30-425-014-0000 (LOT 15)
03-30-425-021-0000 (LOT 12)
03-30-425-022-0000 (LOT 13)
03-30-425-023-0000 (LOT 14)

PROPERTY DESCRIPTION:

LOTS 12, 13, 14, 15, 16 AND 17 IN BLOCK 2 IN A SUBDIVISION OF LOTS 26, 27, 28 AND 29 IN ASSESSORS SUBDIVISION OF SECTION 30, TOWNSHIP 42 NORTH, RANGE 11 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN COOK COUNTY, ILLINOIS.

SPACE RESERVED FOR COUNTY CLERK'S STAMP

SPACE RESERVED FOR COUNTY RECORDER'S STAMP

EASEMENT PROVISIONS

ELECTRIC AND COMMUNICATIONS EASEMENT PROVISIONS

An easement for serving the subdivision and other property with electric and communication service is hereby reserved for and granted to

Commonwealth Edison Company
and
SBC Telephone Company, Grantees.

their respective licensees, successors, and assigns, jointly and severally, to construct, modify, maintain, modify, reconstruct, replace, supplement, relocate and remove, from time to time, poles, guys, anchors, wires, cables, conduits, manholes, transformers, pedestals, equipment cabinets or other facilities used in connection with overhead and underground transmission and distribution of electricity, communications, sounds and signals in, over, under, across, along and upon the surface of the property shown within the dashed or dotted lines (or similar designation) on the plat and marked "Easement", "Utility Easement", "Public Utility Easement", "PU" (or similar designation), the property designated in the Declaration of Condominium and/or on this plat as "Common Elements", and the property designated on the plat as "common area or areas", and the property designated on the plat for streets and alleys, whether public or private, together with the rights to install required service connections over or under the surface of each lot and common area or areas to serve improvements thereon, or on adjacent lots, and common area or areas, the right to cut, trim or remove trees, bushes, roots and saplings and to clear obstructions from the surface and subsurface as maybe reasonably required incident to the rights herein given, and the right to enter upon the subdivided property for all such purposes. Obstructions shall not be placed over Grantees' facilities or in, upon or over the property within the dashed or dotted lines (or similar designation) marked "Easement", "Utility Easement", "Public Utility Easement", "PU" (or similar designation) without the prior written consent of Grantees. After installation of any such facilities, the grade of the subdivided property shall not be altered in a manner so as to interfere with the proper operation and maintenance thereof.

The term "Common Elements" shall have the meaning set forth for such term in the "Condominium Property Act", Chapter 765 ILCS 605/2, as amended from time to time.

The term "common area or areas" is defined as a lot, parcel or area of real property, the beneficial use and enjoyment of which is reserved in whole or as an appurtenance to the separately owned lots, parcels or areas within the planned development, even though such be otherwise designated on the plat by terms such as "outlots", "common elements", "open space", "open area", "common ground", "parking" and "common area". The term "common area or areas", and "Common Elements" include real property surfaced with interior driveways and walkways, but excludes real property physically occupied by a building, Service Business District or structures such as a pool, retention pond or mechanical equipment.

Relocation of facilities will be done by Grantees at cost of the Grantor/Lot Owner, upon written request.

APPROVED: _____ DATE: _____
COMMONWEALTH EDISON

APPROVED: _____ DATE: _____
AMERITECH / SBC

DEED DEDICATION CERTIFICATE

WE, THE UNDERSIGNED, _____, OWNERS OF THE REAL ESTATE SHOWN AND DESCRIBED HEREIN, DO HEREBY LAY OFF, PLAT AND SUBDIVIDE SAID REAL ESTATE IN ACCORDANCE WITH THE WITHIN PLAT. THIS SUBDIVISION SHALL BE KNOWN AND DESIGNATED AS SIGWALT 16 SUBDIVISION, AN ADDITION TO THE VILLAGE OF ARLINGTON HEIGHTS, COOK COUNTY, ALL STREETS AND ALLEYS AND PUBLIC OPEN SPACES SHOWN AND NOT HERETOFORE DEDICATED ARE HEREBY DEDICATED TO THE PUBLIC. FRONT AND SIDE YARD BUILDING SETBACK LINES ARE ESTABLISHED AS SHOWN ON THIS PLAT, BETWEEN WHICH LINES AND THE PROPERTY LINES OF THE STREETS, THERE SHALL BE ERRECTED OR MAINTAINED NO BUILDING OR STRUCTURE. THERE ARE FURTHER DIMENSIONED FEET IN WIDTH, AS SHOWN ON THIS PLAT AND MARKED "EASEMENT" RESERVED FOR THE USE OF PUBLIC UTILITIES FOR THE INSTALLATION OF WATER AND SEWER MAINS, POLES, DUCTS, LINES AND WIRES, SUBJECT AT ALL TIMES TO THE PROPER AUTHORITIES AND TO THE EASEMENT HEREIN RESERVED, NO PERMANENT OR OTHER STRUCTURES ARE TO BE ERRECTED OR MAINTAINED UPON THESE STRIPS OF LAND, BUT OWNERS OF LOTS IN THIS SUBDIVISION SHALL TAKE THEIR TITLES SUBJECT TO THE RIGHTS OF THE PUBLIC UTILITIES, AND TO THE RIGHTS OF THE OWNERS OF OTHER LOTS IN THIS SUBDIVISION.

ALL OF THE PROPERTY INCLUDED IN THIS SUBDIVISION SHALL BE HELD, TRANSFERRED AND CONVEYED SUBJECT TO THAT CERTAIN "DECLARATION OF COVENANTS, CONDITIONS, RESTRICTIONS AND EASEMENTS" TO BE RECORDED AND AMENDED FROM TIME TO TIME.

EASEMENTS SHOWN AND GRANTED ON THIS PLAT FOR THE PRIVATE INGRESS/EGRESS EASEMENTS, ENTRANCE, TREATMENT EASEMENT AREA, PUBLIC PEDESTRIAN INGRESS/EGRESS EASEMENT AND FENCE EASEMENT ARE FURTHER DEFINED IN AND GOVERNED BY THE DECLARATION OF CCR'S.

SAID DECLARATION OF CCR'S SHALL GRANT CROSS ACCESS AND SHARED PARKING EASEMENTS OVER THE ENTIRE PROPERTY. SAID EASEMENTS BOTH BENEFIT AND BURDEN THE SUBDIVIDED PROPERTY. FOR PARTICULARS SEE DOCUMENT.

THE RIGHT TO ENFORCE THESE PROVISIONS BY INJUNCTION, TOGETHER WITH THE RIGHT TO CAUSE THE REMOVAL, BY DUE PROCESS OF LAW, OF ANY STRUCTURE OR PLAT THEREOF ERRECTED OR MAINTAINED IN VIOLATION, IS HEREBY DEDICATED TO THE PUBLIC, AND RESERVED TO THE SEVERAL OWNERS OF THE SEVERAL LOTS IN THIS SUBDIVISION AND TO THEIR HEIRS AND ASSIGNS.

WITNESS OUR HANDS AND SEALS THIS _____ DAY OF _____, A.D. 2019.

By: _____

NOTARY PUBLIC CERTIFICATE

STATE OF ILLINOIS)
COUNTY OF) SS

BEFORE ME, THE UNDERSIGNED NOTARY PUBLIC, IN AND FOR THE COUNTY AND STATE AFORESAID, PERSONALLY APPEARED _____, EACH SEPARATELY AND SEVERALLY ACKNOWLEDGED THE EXECUTION OF THE FOREGOING INSTRUMENT AS HIS OR HER VOLUNTARY ACT AND DEED, FOR THE PURPOSES THEREIN EXPRESSED.

WITNESS MY HAND AND NOTARIAL SEAL THIS _____ DAY OF _____, A.D. 2019.

NOTARY PUBLIC

PUBLIC WATERMAIN EASEMENT PROVISIONS (P.W.E.)

A NON-EXCLUSIVE EASEMENT FOR SERVING THE SUBDIVISION AND OTHER PROPERTY WITH SANITARY SEWER, WATER AND STORM SEWER IS HEREBY RESERVED FOR AND GRANTED TO THE HOMEOWNERS ASSOCIATION AND OWNERS AND OCCUPANTS OF SAID PROPERTY AND THEIR SUCCESSORS AND ASSIGNS, JOINTLY AND SEVERALLY, TO INSTALL, OPERATE, MAINTAIN AND REMOVE, FROM TIME TO TIME, SANITARY SEWER, WATER AND STORM SEWER FACILITIES UNDER AND UPON THE SURFACE OF THE PROPERTY DESIGNATED ON THIS PLAT AS "SEWER AND WATER EASEMENT" OR "S.W.E.", TOGETHER WITH THE RIGHT TO INSTALL REQUIRED SERVICE CONNECTIONS UNDER THE SURFACE OF SUCH AREA TO SERVE IMPROVEMENTS THEREON, THE RIGHT TO CUT, TRIM OR REMOVE TREES, BUSHES, AND ROOTS AS MAY BE REASONABLY REQUIRED INCIDENT TO THE RIGHTS HEREIN GIVEN, AND THE RIGHT TO ENTER UPON THE SUBDIVIDED PROPERTY FOR ALL SUCH PURPOSES. OBSTRUCTIONS, EXCEPT FOR PAVED PARKING, DRIVEWAYS, SIDEWALKS, PATIOS, MONUMENT SIGNS AND LANDSCAPING SHALL NOT BE PLACED OVER GRANTEE'S FACILITIES OR IN, UPON OR OVER THE PROPERTY WITHIN SAID EASEMENT AREAS WITHOUT THE PRIOR WRITTEN CONSENT OF GRANTEES. AFTER INSTALLATION OF ANY FACILITIES, THE GRADE OF THE SUBDIVIDED PROPERTY SHALL NOT BE ALTERED IN ANY MANNER SO AS TO UNREASONABLY INTERFERE PRIOR TO WRITTEN CONSENT OF THE OWNERS OF THE PROPERTY.

THE VILLAGE OF ARLINGTON HEIGHTS SHALL HAVE THE RIGHT, BUT NOT THE OBLIGATION, TO REPAIR OR MAINTAIN SAID SEWER, WATER MAINS AND DRAINAGE FACILITIES IN THE EVENT THE OWNERS OF THE SUBJECT PROPERTY FAIL TO PROPERLY MAINTAIN SAME.

NOTWITHSTANDING ANY OF THE FOREGOING EASEMENT PROVISIONS SET FORTH ON THIS PLAT: (1) THE INSTALLATIONS OF ANY AND ALL UTILITY FACILITIES AND OTHER IMPROVEMENTS OF ANY KIND BY ANY GRANTEE HEREUNDER SHALL BE SUBJECT TO THE PRIOR WRITTEN APPROVAL OF THE OWNERS OF THE SUBJECT PROPERTY AS TO LOCATION, WHICH APPROVAL SHALL NOT BE UNREASONABLY WITHHELD; AND (2) TO OVERHEAD LINES OR OTHER ABOVE-GROUND UTILITY FACILITIES OR IMPROVEMENTS WILL BE LOCATED ON OR AT THE PLATTED PROPERTY WITHOUT THE PRIOR WRITTEN APPROVAL OF THE OWNERS OF THE SUBJECT PROPERTY.

MUNICIPAL UTILITY EASEMENT PROVISIONS (M.U.E.)

AN EASEMENT IS HEREBY RESERVED AND GRANTED OVER AND UNDER THE PLATTED AREAS HEREON NOTED AS "MUNICIPAL UTILITY EASEMENT" TO THE VILLAGE OF ARLINGTON HEIGHTS, TOGETHER WITH THEIR RESPECTIVE SUCCESSORS AND ASSIGNS, TO INSTALL, LAY, CONSTRUCT, RENEW, OPERATE AND MAINTAIN WATERMAINS, ABOVE AND UNDERGROUND, WITH ALL NECESSARY MANHOLES, WATER VALVES AND OTHER EQUIPMENT FOR THE PURPOSE OF SERVING THE SAID REAL ESTATE AND ADJOINING LANDS WITH WATER SERVICE. ALSO THERE IS HEREBY GRANTED THE RIGHT TO ENTER UPON THE SAID REAL ESTATE AT ALL TIMES TO INSTALL, LAY, CONSTRUCT, RENEW, OPERATE AND MAINTAIN WITHIN THE SAID REAL ESTATE SAID MANHOLES, WATER VALVES, PIPES AND OTHER EQUIPMENT; NO PERMANENT BUILDINGS SHALL HEREAFTER BE PLACED ON THE SAID EASEMENT, AS DETERMINED, BUT THE SAME MAY BE USED FOR GARDENS, SHRUBS, LANDSCAPING AND SUCH OTHER PURPOSES THAT THEN OR LATER DO NOT UNREASONABLY INTERFERE WITH THE USES OR THE RIGHTS HEREIN GRANTED.

GENERAL PUBLIC UTILITY EASEMENT PROVISIONS (U.E.)

A NON-EXCLUSIVE EASEMENT FOR SERVING THE SUBDIVISION AND OTHER PROPERTY WITH COMMUNICATIONS AND GAS IS HEREBY RESERVED FOR AND GRANTED TO THOSE PUBLIC UTILITY COMPANIES OPERATING UNDER FRANCHISE FROM THE VILLAGE OF ARLINGTON HEIGHTS, INCLUDING, BUT NOT LIMITED TO NORTHERN ILLINOIS GAS COMPANY, COMCAST AND WIDE OPEN WEST, THEIR RESPECTIVE SUCCESSORS AND ASSIGNS, JOINTLY AND SEVERALLY, TO INSTALL, OPERATE, MAINTAIN AND REMOVE, FROM TIME TO TIME, FACILITIES USED IN CONNECTION WITH UNDERGROUND TRANSMISSION AND DISTRIBUTION OF SOUNDS AND SIGNALS AND GAS MAINS UNDER THE SURFACE OF THE PROPERTY DESIGNATED ON THIS PLAT AS "UTILITY EASEMENT" OR "U.E." TOGETHER WITH THE RIGHT TO INSTALL REQUIRED SERVICE CONNECTIONS UNDER THE SURFACE OF SUCH AREA TO SERVE IMPROVEMENTS THEREON, THE RIGHT TO CUT, TRIM OR REMOVE TREES, BUSHES, AND ROOTS AS MAY BE REASONABLY REQUIRED INCIDENT TO THE RIGHTS HEREIN GIVEN, AND THE RIGHT TO ENTER UPON THE SUBDIVIDED PROPERTY FOR ALL SUCH PURPOSES, OBSTRUCTIONS, EXCEPT FOR PAVED PARKING, DRIVEWAYS, SIDEWALKS, PATIOS AND LANDSCAPING SHALL NOT BE PLACED OVER GRANTEE'S FACILITIES OR IN, UPON OR OVER THE PROPERTY WITHIN SAID EASEMENT AREAS WITHOUT THE PRIOR WRITTEN CONSENT OF GRANTEES. AFTER INSTALLATION OF ANY FACILITIES, THE GRADE OF THE SUBDIVIDED PROPERTY SHALL NOT BE ALTERED IN ANY MANNER SO AS TO UNREASONABLY INTERFERE PRIOR TO WRITTEN CONSENT OF THE OWNERS OF THE PROPERTY.

APPROVED: _____ DATE: _____
NORTHERN IL GAS CO

APPROVED: _____ DATE: _____
COMCAST

APPROVED: _____ DATE: _____
WIDE OPEN WEST

NICOR GAS COMPANY PLAT STAMP

AN EASEMENT IS HEREBY RESERVED FOR AND GRANTED TO NORTHERN ILLINOIS GAS COMPANY, AN ILLINOIS CORPORATION, DOING BUSINESS AS NICOR GAS COMPANY, ITS SUCCESSORS AND ASSIGNS ("NICOR") TO INSTALL, OPERATE, MAINTAIN, REPAIR, REPLACE AND REMOVE, FACILITIES USED IN CONNECTION WITH THE TRANSMISSION AND DISTRIBUTION OF NATURAL GAS IN, OVER, UNDER, ACROSS, ALONG AND UPON THE SURFACE OF THE PROPERTY SHOWN ON THIS PLAT MARKED "NICOR EASEMENT", TOGETHER WITH REASONABLE RIGHT OF ACCESS THERETO AND THE RIGHT TO INSTALL REQUIRED SERVICE CONNECTIONS TO SERVE IMPROVEMENTS THEREON, OR ON ADJACENT LOTS AND TO SERVE OTHER PROPERTY, ADJACENT OR OTHERWISE, AND THE RIGHT TO REMOVE OBSTRUCTIONS, INCLUDING BUT NOT LIMITED TO, TREES, BUSHES, ROOTS AND FENCES, AS MAY BE REASONABLY REQUIRED INCIDENT TO THE RIGHTS HEREIN GIVEN, AND THE RIGHT TO ENTER UPON THE PROPERTY FOR ALL SUCH PURPOSES. OBSTRUCTIONS SHALL NOT BE PLACED OVER NICOR FACILITIES OR IN, UPON OR OVER THE PROPERTY IDENTIFIED ON THIS PLAT FOR UTILITY PURPOSES WITHOUT THE PRIOR WRITTEN CONSENT OF NICOR. AFTER INSTALLATION OF ANY SUCH FACILITIES, THE GRADE OF THE PROPERTY SHALL NOT BE ALTERED IN A MANNER SO AS TO INTERFERE WITH THE PROPER OPERATION AND MAINTENANCE THEREOF.

OWNER'S CERTIFICATE

STATE OF ILLINOIS)
COUNTY OF) SS

I, _____ DO HEREBY CERTIFY THAT I AM THE LEGAL OWNER OF THE PROPERTY DESCRIBED HEREON AND THAT I HAVE CAUSED THE SAID PROPERTY TO BE SURVEYED AND SUBDIVIDED AS SOWN HEREON. ADDITIONALLY, I HEREBY CERTIFY THAT THE PROPERTY HEREON DESCRIBED IS LOCATED WITHIN THE BOUNDARIES OF:

ELEMENTARY SCHOOL DISTRICT: CONSOLIDATED COMMUNITY SCHOOL DISTRICT #25
HIGH SCHOOL DISTRICT: TOWNSHIP HIGH SCHOOL DISTRICT #214
HARPER COMMUNITY COLLEGE DISTRICT #512

DATED THIS _____ DAY OF _____, A.D. 2019.

OWNER SIGNATURE

NOTARY PUBLIC CERTIFICATE

STATE OF ILLINOIS)
COUNTY OF) SS

I, _____ A NOTARY PUBLIC IN AND FOR THE COUNTY AND STATE AFORESAID, DO HEREBY CERTIFY THAT

_____, TITLE _____

KNOWN TO ME TO BE THE SAME WHOSE NAME(S) IS/ARE SUBSCRIBED TO THE FOREGOING CERTIFICATE, APPEARED BEFORE ME THIS DAY IN PERSON AND ACKNOWLEDGED THAT HE/SHE/THEY DID SIGN AND DELIVER THIS INSTRUMENT AS A FREE AND VOLUNTARY ACT FOR THE USES AND PURPOSES HEREIN SET FORTH.

GIVEN UNDER MY HAND AND NOTORIAL SEAL

THIS _____ DAY OF _____, A.D. 20 _____.

NOTARY PUBLIC

VILLAGE CERTIFICATE

STATE OF ILLINOIS)
COUNTY OF COOK)

UNDER THE AUTHORITY PROVIDED BY 65 ILCS 5/11-12 AS AMENDED BY THE STATE LEGISLATURE OF THE STATE OF ILLINOIS AND ORDINANCE ADOPTED BY THE VILLAGE BOARD OF THE VILLAGE OF ARLINGTON HEIGHTS, ILLINOIS, THIS PLAT WAS GIVEN APPROVAL BY THE VILLAGE OF ARLINGTON HEIGHTS AND MUST BE RECORDED WITHIN SIX MONTHS OF THE DATE OF APPROVAL BY THE VILLAGE BOARD OTHERWISE IT IS NULL AND VOID.

APPROVED BY THE PLAN COMMISSION AT A MEETING HELD _____

CHAIRMAN

SECRETARY

APPROVED BY THE VILLAGE BOARD OF TRUSTEES AT A MEETING HELD _____

PRESIDENT

VILLAGE CLERK

APPROVED BY THE VILLAGE ENGINEER

SURFACE WATER DRAINAGE CERTIFICATE

STATE OF ILLINOIS)
COUNTY OF COOK) SS

TO THE BEST OF OUR KNOWLEDGE AND BELIEF THE DRAINAGE OF SURFACE WATERS WILL NOT BE CHANGED BY THE CONSTRUCTION OF SUCH SUBDIVISION OR ANY PART THEREOF, OR, THAT IF SUCH SURFACE WATER DRAINAGE WILL BE CHANGED, ADEQUATE PROVISION HAS BEEN MADE FOR COLLECTION AND DIVERSION OF SUCH SURFACE WATERS INTO PUBLIC AREAS OR DRAINS WHICH THE SUBDIVIDER HAS A RIGHT TO USE, AND THAT SUCH SURFACE WATERS WILL NOT BE DEPOSITED ON THE PROPERTY OF ADJOINING LAND OWNERS IN SUCH CONCENTRATIONS AS MAY CAUSE DAMAGE TO THE ADJOINING PROPERTY BECAUSE OF THE CONSTRUCTION OF THE SUBDIVISION.

DATED THIS _____ DAY OF _____, A.D. 20 _____.

OWNER(S) OR DULY AUTHORIZED ATTORNEY

REGISTERED PROFESSIONAL ENGINEER, LICENSE NO. _____

LICENSE EXPIRES: _____

CERTIFICATED AS TO SPECIAL ASSESSMENTS

STATE OF ILLINOIS)
COUNTY OF COOK) SS

I, _____, VILLAGE COLLECTOR OF THE VILLAGE OF ARLINGTON HEIGHTS DO HEREBY CERTIFY THAT THERE ARE NO DELINQUENT OR UNPAID CURRENT OF FORFEITED SPECIAL ASSESSMENTS, OR ANY DEFERRED INSTALMENTS THEREOF THAT HAVE BEEN APPORTIONED AGAINST THE TRACT OF LAND INCLUDED IN THE PLAT

GIVEN UNDER MY HAND AND SEAL THIS _____ DAY OF _____, A.D. 20 _____

VILLAGE COLLECTOR

TITLE:

PROJECT NO. 5451
SHEET 2 OF 2
DRAWING NO. 5451-PLN.DGN

SIGWALT 16 SUBDIVISION
ARLINGTON HEIGHTS, ILLINOIS

DSGN. DWN. CHKD. DATE
W/L DMS 1" = 20'
5-8-2019

REVISD PER VILLAGE COMMENTS
1. 06-05-19
2. 06-16-19
NO. DATE NATURE OF REVISION

CLIENT:
TAYLOR MORRISON OF ILLINOIS, INC.
1834 WALDEN OFFICE SQUARE
SUITE 300
SCHAUMBURG, ILLINOIS 60173

Thomson Surveying Ltd.
9575 W. Higgins Road, Suite 850
Tomball, TX 77350
TEL: 281.351.9139
FAX: 281.351.9192
wlu2@thomsonltd.com

WALTER J. LUTZ
3578 PROFESSIONAL LAND SURVEYOR STATE OF ILLINOIS
ROSEMONT, ILLINOIS

STATE OF ILLINOIS)
COUNTY OF COOK) SS

THIS IS TO CERTIFY THAT WE, THOMSON SURVEYING LTD., ILLINOIS PROFESSIONAL DESIGN FIRM NUMBER 184-002769, IN THE STATE AND COUNTY AFORESAID HAVE SURVEYED, SUBDIVIDED AND PLATTED FOR THE OWNERS THE ABOVE DESCRIBED PROPERTY. THE PLAT HEREON DRAWN CORRECTLY REPRESENTS SAID SURVEY AND SUBDIVISION. DIMENSIONS ARE GIVEN IN FEET AND DECIMAL PARTS THEREOF.

SAID PROPERTY CONTAINS 41,939 SQUARE FEET, OR 0.96 ACRES, MORE OR LESS.

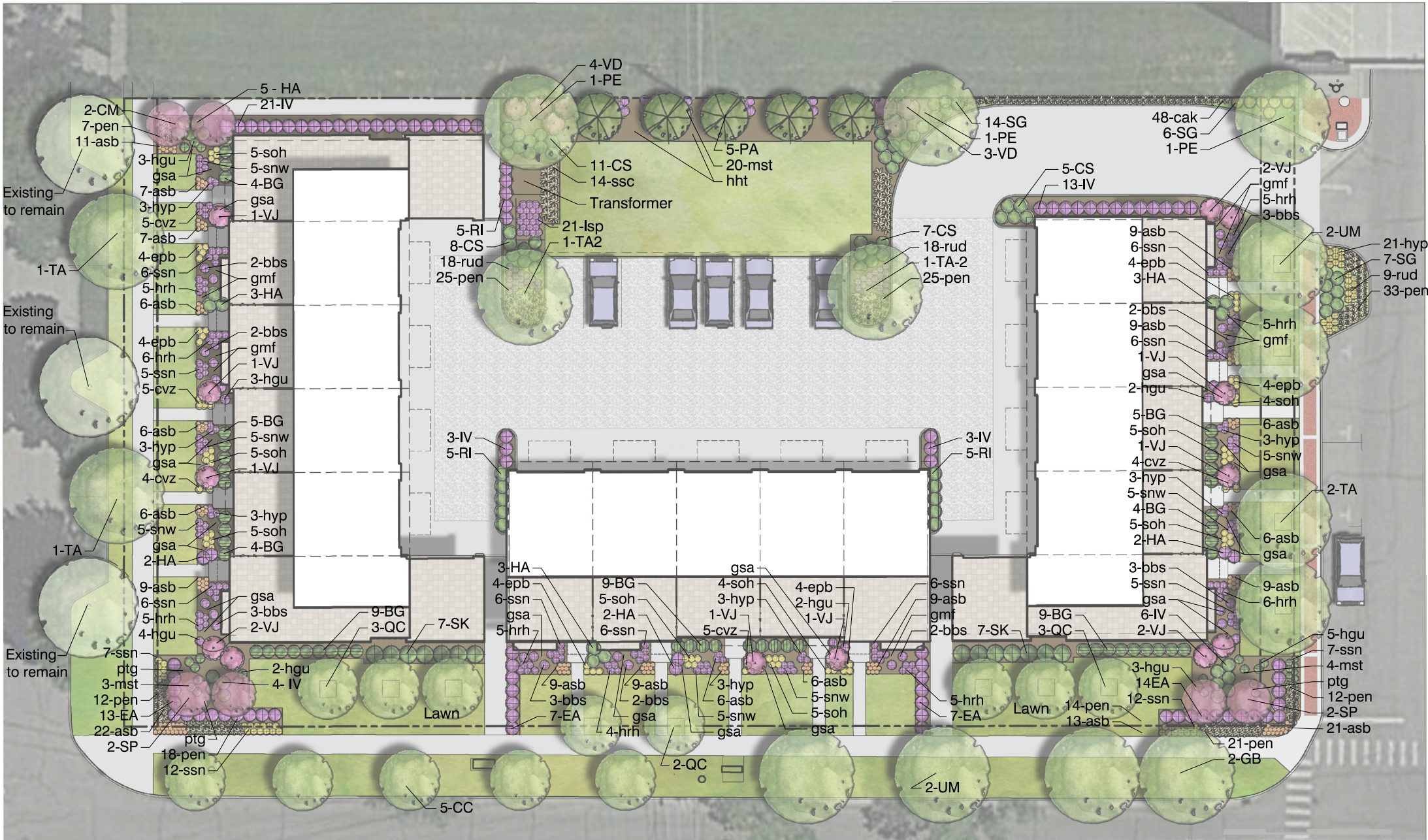
WE FURTHER DECLARE THAT THE LAND IS WITHIN THE VILLAGE OF ARLINGTON HEIGHT WHICH HAS ADOPTED A CITY COMPREHENSIVE PLAN AND MAP AND IS EXERCISING THE SPECIAL POWERS AUTHORIZED BY DIVISION 12 OF ARTICLE 11 OF THE ILLINOIS MUNICIPAL CODE AS AMENDED.

WE FURTHER DECLARE, BASED UPON A REVIEW OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 1703IC0203J, EFFECTIVE AUGUST 19, 2008, IT IS OUR CONSIDERED OPINION THAT THIS PROPERTY LIES IN ZONE X - AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN AS IDENTIFIED BY SAID F.I.R.M. MAP, SUBJECT TO MAP INTERPRETATION AND SCALING.

GIVEN UNDER MY HAND AND SEAL THIS 8th DAY OF MAY A.D., 2019, AT ROSEMONT, ILLINOIS.

DRAFT COPY
FOR REVIEW PURPOSES ONLY

WALTER J. LUTZ
ILLINOIS PROFESSIONAL LAND SURVEYOR NO. 035-003576
LICENSE EXPIRES NOVEMBER 30, 2020
THIS PROFESSIONAL SERVICE CONFORMS TO THE CURRENT ILLINOIS MINIMUM STANDARDS FOR A BOUNDARY SURVEY.



Note: Decorative streetlights to match the Village standard will be provided along Highland, Sigwalt and Chestnut at locations to be agreed upon with the Village during building permit process.

Plant List
Trees + Ornamentals

sym	Botanic Name	Common Name	Size
CC	Carpinus caroliniana	American Hornbeam	2" BB
CM	Cornus mas 'Golden Glory'	Golden Glory C. Cherry	MS 8' ht. BB
GB	Ginkgo biloba 'Autumn Gold'	Male Ginkgo	2.5" BB
PA	Picea aibes	Norway Spruce	10' ht. BB
PE	Platanus acerifolia 'Morton Circle'	Exclamation Planetree	3" BB
QC	Quercus 'Crimschmidt'	Crimson Spire Oak	2.5" BB
SP	Syringa pekinensis 'Zhang Zhiming'	Beijing Gold Tree Lilac	MS 8' ht. BB
TA	Tilia americana 'McKSentry'	Sentry Linden	3" BB
TA2	Tilia americana 'McKSentry'	Sentry Linden	4" BB
UM	Ulmus 'Frontier'	Frontier Elm	3" BB

Shrubs

sym	Botanic Name	Common Name	Size
BG	Buxus x 'Glencoe'	Glencoe Boxwood	24" BB
CS	Cornus sanguinea 'Cato'	Arctic Sun Dogwood	3" BB
EA	Euonymus alatus 'Compactus'	Dwarf Burningbush	30" BB
HA	Hydrangea arborescens 'Annabelle'	Annabelle Hydrangea	24" BB
IV	Itea virginica 'Morton'	Morton Sweetspire	24" BB
RI	Ribes alpinum 'Green Mound'	Alpine Currant	24" BB
SG	Spiraea x bumalda 'Goldflame'	Goldflame Spiraea	18" BB
SK	Syringa 'Miss Kim'	Miss Kim Lilac	36" BB
VD	Viburnum dentatum 'Ralph Senior'	Autumn Jazz Arrowwood Vib.	4" BB
VJ	Viburnum x 'Juddii'	Judd Viburnum	4" BB

Perennials

sym	Botanic Name	Common Name	Size
asb	Allium 'Summer Beauty'	Summer Beauty Onion	#1 Cont.
bbs	Baptisia 'Blueberry Sundae'	Blueberry Sundae False Indigo	#2 Cont.
cak	Calamagrostis x acutiflora 'Karl Foerster'	Feather Reed Grass	#1 Cont.
cvz	Coreopsis verticillata 'Zagreb'	Zagreb Coreopsis	#1 Cont.
epb	Euphorbia polychroma 'Bonfire'	Cushion Spurge	#1 Cont.
gmf	Geranium sanguineum 'Max Frei'	Bloody Cranesbill	#1 Cont.
gsa	Geranium sanguineum album	White Cranesbill	#1 Cont.
hht	Hedera helix 'Thorndale'	Thorndale Ivy	9" oc 4" pots
hrh	Hemerocallis 'Red Hot Returns'	Red Hot Returns Daylily	#1 Cont.
hyp	Hemerocallis 'Yellow Punch'	Yellow Punch Daylily	#1 Cont.
hgu	Hosta 'Guacamole'	Guacamole Hosta	#1 Cont.
lsp	Liriope spicata	Creeping Lilyturf	#1 Cont.
mst	Matteuccia struthiopteris	Ostrich Fern	#1 Cont.
pen	Pennisetum alopecuroides 'Hameln'	Dwarf Fountain Grass	#1 Cont.
ptg	Pachysandra terminalis 'Green Carpet'	Green Carpet Pachysandra	9" oc 4" pots
rud	Rudbeckia x 'American Gold Rush'	Gold Rush Black-eyed Susan	#1 Cont.
snw	Salvia nemorosa 'Wesuwe'	Wesuwe Salvia	#1 Cont.
soh	Stachys officinalis 'Hummelo'	Hummelo Betony	#1 Cont.
ssn	Sedum spectabile 'Neon'	Neon Sedum	#1 Cont.
ssc	Schizachyrium scoparium 'Carousel'	Carousel Little Bluestem	#1 Cont.





Sigwalt Townhomes

Prepared for Taylor Morrison

Pricing and Absorption Analysis Report

April 2019

Metrostudy-Midwest

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April 10th, 2019

Mr. Marc McLaughlin
Taylor Morrison
1834 Walden Office Square
Schaumburg, IL 60173

RE: Sigwalt Townhomes Pricing and Absorption Analysis Report—Arlington Heights, Illinois

Dear Mr. McLaughlin:

Metrostudy is pleased to present this abbreviated report to Taylor Morrison. We have evaluated the market potential for the proposed 16 single-family attached homes known as Sigwalt Townhomes. We have based our recommendations on the housing supply and demand in the surrounding CMA. This analysis was conducted by **Danielle Leach**, Midwest Regional Director, and **Maya Sachdeva**, Consultant.

Please contact us at your convenience with any comments or questions regarding this report, or any other matter relevant to your real estate market research needs.

Respectfully Submitted,
Metrostudy



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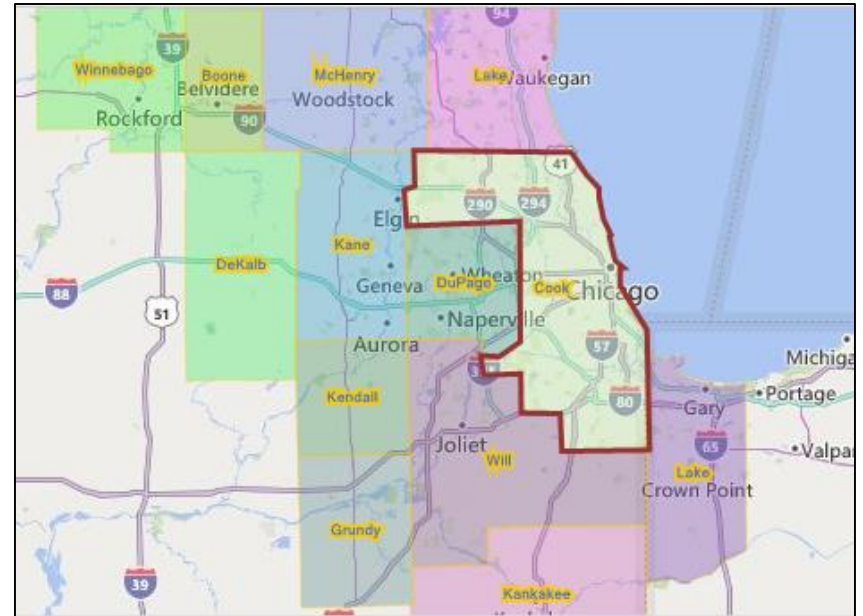
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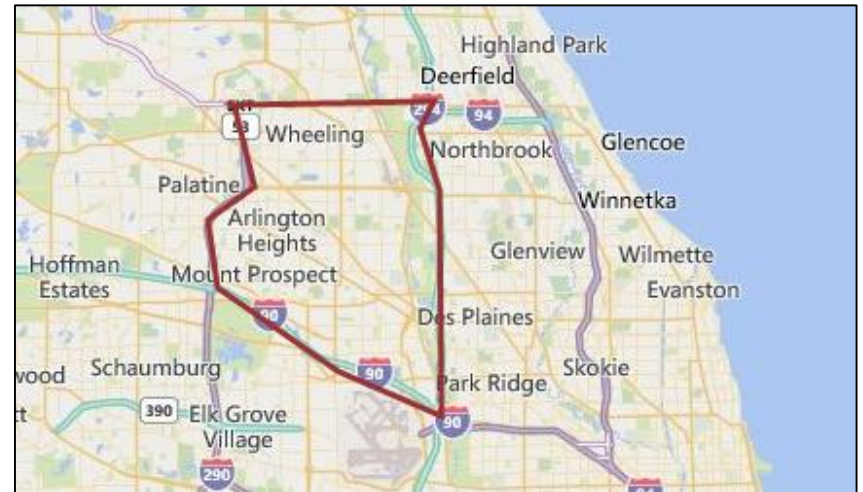
Cook County Market Map

Cook County Market: Sigwalt Townhomes is located within the larger Cook County Market.

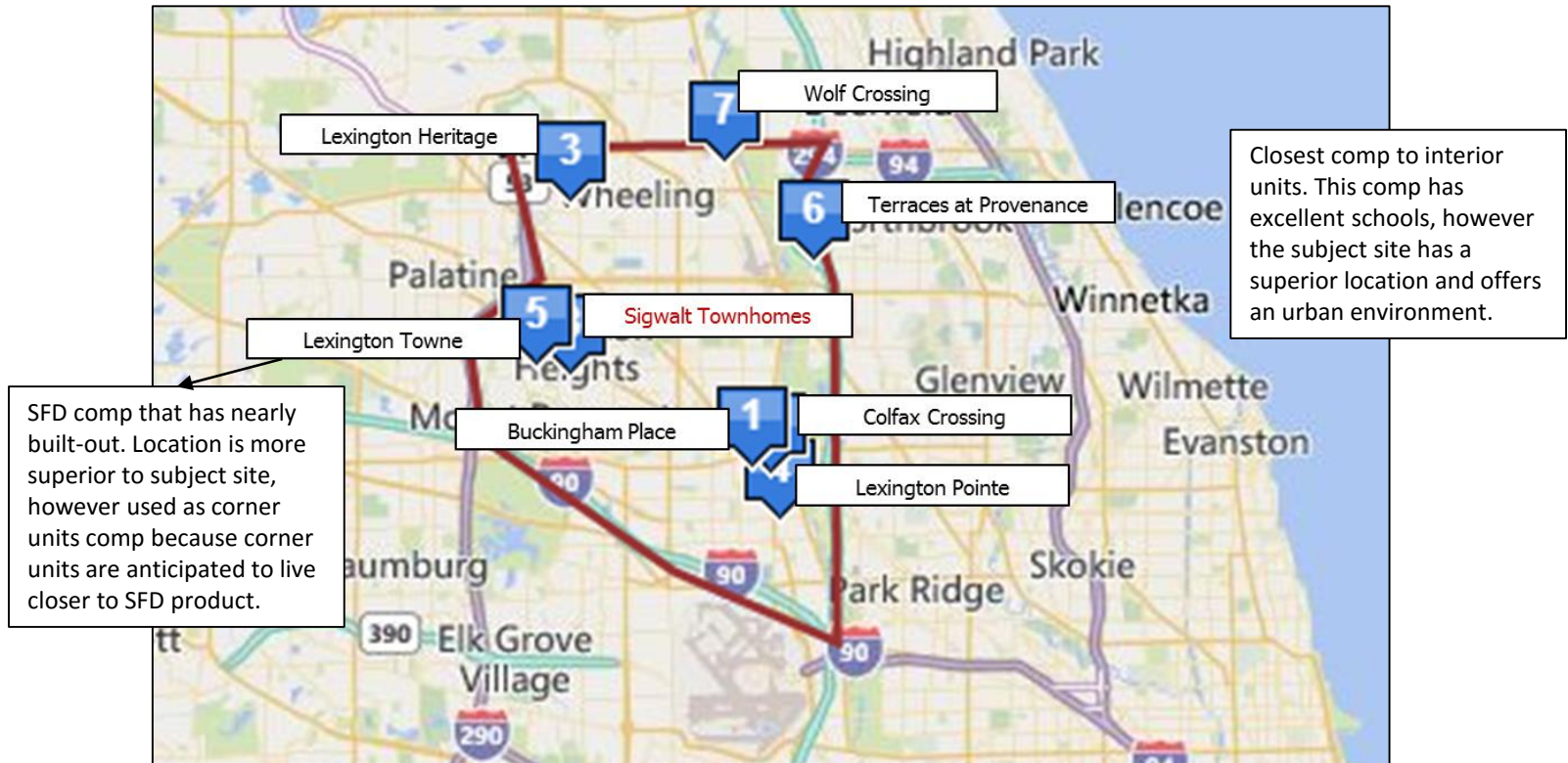


Sigwalt Townhomes CMA Map

Sigwalt Townhomes CMA: The Competitive Market Area ("CMA") has been defined to encompass a territory that includes a representative portion of the competitive new housing market in the Arlington Heights market. The boundaries are defined by major thoroughfares including 90 to the south and 53 to the west. The CMA boundary takes into account the location of other attached projects comparable to the proposed subject development, as well as other considerations such as drive time, infrastructure, high school district boundaries, and socioeconomic indicators.



Competitive Market Area. Competitive Communities



Subdivision	Active Qtr	Current Builder	Base Price	Total Lots	Ann Starts	Ann Closings	Occupied	Total Inv	VDL	Future	Built Out %
Buckingham Place	3Q17	Ryan Homes	\$311-\$329	127	46	26	26	6	77	0	20.5%
Colfax Crossing	1Q16	Taylor Morrison Homes	\$299-\$305	101	28	46	82	0	4	0	81.2%
Lexington Heritage	4Q17	Lexington Homes	\$360-\$430	47	25	9	9	9	12	0	19.1%
Lexington Pointe	3Q17	Lexington Homes	\$355-\$370	58	30	24	24	0	12	0	41.4%
Lexington Towne	4Q16	Lexington Homes	\$745-\$798	15	7	10	13	0	0	0	86.7%
Terraces at Provenance	1Q17	Red Seal Development	\$489-\$625	82	17	11	14	3	53	0	17.1%
Wolf Crossing	2Q18	D.R. Horton Homes	\$364-\$399	39	39	0	0	9	0	0	0.0%

**The proposed project has the following positive features:**

- The location off of 26 S Highland Ave is close to major thoroughfares including 90 and 294. Arlington Heights is a desirable community with local shopping, restaurants, and entertainment venues. The site is adjacent to Metropolis Performing Arts Theater, which is a notable community theater.
- Other site adjacencies include parking which is helpful for a more urban location, ranch-style single-family detached homes that appear well maintained, and a mid-rise apartment building.
- Metrostudy anticipates that Sigwalt Townhomes will appeal most to the Active Adult Feature and Location buyer as well as the Elite buyer. The AA buyer represents 16.53% of consumers in the CMA, while the Elite buyer makes up 13.83% of consumers in the CMA. Elite buyers are more likely to purchase the townhomes as they tend to have an annual household income of \$175,000 and are financially savvy, secure with investments and a 401K.
- The schools are ranked highly by Great Schools. Westgate Elementary is an 8/10, South Middle is 7/10, and Rolling Meadows is 10/10. An excellent school path is likely to see a mix of Elite consumers that have children or are recent empty-nesters seeking a walkable, lively lifestyle while downsizing.
- Attached product is dominant in the CMA. Metrostudy analyzed Lexington Towne, a single-family detached product, due to its proximity to the subject site. Lexington Towne is nearly built-out and sold at a price range between \$745,000 and \$798,000. The community is located closer to downtown Arlington Heights, however the square footage is comparable to the Sigwalt corner units and was used as the main competitor to justify that pricing. Terraces at Provenance was used as the main comparable for the interior units. Most competitive communities are anticipated to be built-out or near build-out when Sigwalt comes to market.
- Resale within the CMA is healthy. New attached product rivals resale. There have been 4,316 total resale transactions over the last year averaging \$207/SF on par with Sigwalt Townhome pricing.

Some challenges and concerns associated with the project include:

- Top employers in the area include the U.S. Government, Chicago Public Schools, City of Chicago, Cook County, and the University of Chicago. The average household income within the CMA is approximately \$95,000. A household income of at least \$120,000 is needed to qualify for a \$500,000 home. However, roughly 40% of all households make above \$120,000 within the CMA.
- Power lines run through the site and are expected to be removed and placed underground which can contribute to higher price points for the townhomes.
- Higher priced townhomes mean the community will be a margin play, with absorptions expected to be slower. For 16 units, slower absorptions are better and Metrostudy would anticipate community build-out to occur within 1 to 2 years.





Metrostudy believes Sigwalt Townhomes will have a competitive advantage in the CMA by offering new attached product in a walkable, urban market. Metrostudy suggests creating floorplans that speak to a near term empty nester buyer due to the strength of the high school. Buyers within the CMA have few new home move-up or downsizing options. Further, these buyers are better established and can afford to purchase homes north of \$500,000. These buyers are more sound consumers in the case of a housing decline. Metrostudy believes Sigwalt Townhomes should use clever marketing to primarily target empty nester buyers while modeling plans that appeal to both older and younger family buyers:

For empty nesters:

- Interior plans will be highly desirable. Open floorplans for entertaining with spacious kitchens and living rooms are necessary for this buyer. Backyard space can be limited as long as there is an option for outdoor entertaining or minimal gardening activity. The open rooftop feature qualifies as excellent outdoor space and should be merchandised to showcase outdoor living.
- Lock and leave homes with minor maintenance are ideal for these buyers. A gated community is considered an attractive amenity for lock and leave product.
- A master downstairs or a room on the ground floor is a consideration for many empty-nester buyers worrying about aging. Metrostudy would assume an empty-nester urban buyer to be okay with stairs in a home, however an elevator option is important to offer.

For a family buyer:

- Corner units provide more spacious living and could be ideal for the Elite family buyer. Metrostudy would suggest selling a few interior lots before starting a corner unit that will be a longer sell. Modeling an interior home will be important as buyers need to visualize a new product offering.
- Floorplans should include a few master down plans as well that could target both active adult and family buyers. A split dual master (one up/one down) could also be a good consideration for the area demographic. Further, most buyers will want their guests to enjoy their home which is why a dual master can be desirable especially in corner units that have more space. Guests will have their own suite preferably with a private balcony/patio, inside sitting area, and a nice private bath. Fundamentally, a room closer or on the ground floor should be considered in addition to rooms for children on a higher floor so families can see themselves growing with the home.



Competitive Market Area.

Metrostudy Recommendations



Metrostudy Recommendations

Product Description

Sigwalt Townhomes product will comprise of 16 units. The townhomes will have high-end finishes and modern exteriors. The site is proximate and walkable to downtown Arlington Heights. The units are anticipated to have four floorplans. Interior 1 and 2 which include 13 units, while Corner 1 and 2 include 3 units with an additional floor plus more square footage.

Location

The site is located within Arlington Heights, Illinois in Cook County. More specifically, the subject property is located at 26 S Highland Avenue in Arlington Heights. Mileage for retail, educational facilities, transportation, etc. is displayed below:

Grocery stores	0.2	Elementary School	3.0
Gas station	0.3	Middle School	2.1
Restaurants	0.5	High School	2.6
Shopping	0.5	Hospital	1.3
Golf course	2.3	Airport	10.9

Target Market

Predominantly elite buyers and active adult feature and location buyers, with potential from family life young children, active adult elite, and simple life affluent buyers seeking a new home option with a walkable, urban lifestyle component.

Housing Consumer Groups			
CMA Existing Households		Market Existing Households	
	Share		Share
Entry Level Suburban	6.5%	Entry Level Suburban	2.4%
Entry Level Urban	7.6%	Entry Level Urban	15.2%
Simple Life Affluent No Children	7.8%	Simple Life Affluent No Children	4.0%
Simple Life Moderate Income With Children	0.1%	Simple Life Moderate Income With Children	0.0%
Simple Life Moderate Income No children	1.3%	Simple Life Moderate Income No children	0.5%
Feature and Location	5.7%	Feature and Location	25.7%
Family Life School Age Children	4.8%	Family Life School Age Children	1.9%
Family Life Young Children	8.3%	Family Life Young Children	3.0%
Elite	13.8%	Elite	6.1%
Active Adult Entry Level	6.5%	Active Adult Entry Level	2.7%
Active Adult Feature and Location	16.5%	Active Adult Feature and Location	13.5%
Active Adult Elite	6.7%	Active Adult Elite	2.2%
Renters Near Term Buyers	6.7%	Renters Near Term Buyers	6.1%
Renters	7.7%	Renters	16.8%
	100.0%		100.0%

Base Price Recommendations

Sigwalt Townhome Product: Attached (Metrostudy Recommendation)

Plan	Bed/Bath	Fir/Pkg	Unit Size (Sq. Ft.)	Base Price (\$)	\$/Sq. Ft.
A	3/2	3/2	2,100	\$574,990	\$273.80
B	3/2.5	3/2	2,300	\$589,990	\$256.52
C	3/2.5	3/2	2,400	\$634,990	\$264.58
D	4/3	4/2	2,500	\$638,115	\$255.25
E	4/3	4/2	2,600	\$649,990	\$250.00
F	4/3	4/2	2,750	\$699,990	\$254.54
G	4/3.5	4/2	3,150	\$724,990	\$230.16

Average	2,543	\$644,722	\$253.54
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Amenity Programming

Amenity programming is limited within the CMA and fairly nonexistent for most projects. The subject property's location is considered the largest amenity in being walkable to downtown Arlington Heights.

Subdivision	Builder	Ann HOAs	Note
Buckingham Place	Ryan Homes	\$232	none
Colfax Crossing	TM Homes	\$171	none
Lexington Heritage	Lexington Homes	\$307	none
Lexington Pointe	Lexington Homes	\$236	none
Provenance	Red Seal	\$294	none
Wolf Crossing	DR Horton	\$246	none
Combined Average		\$248	

Absorption

Metrostudy believes that Sigwalt Townhomes should be able to achieve an absorption of about 0.5 to 1.5 homes total per month, in the present market. This absorption pace is due to a niche townhome offering that is higher-end and can bring demand from various market areas. This absorption pace is contingent upon product/pricing differentiation, offering a lifestyle component, and strong execution in marketing the community. Absorptions could possibly increase if pricing is lowered or if amenities are heightened. Absorptions could decrease with Metrostudy expecting a decline in housing starts into 2020 coupled with higher interest rates later into the year.



Competitive Market Area. CMA Housing Competitors



CMA Market Rate Competitive Positioning - Single-Family Attached & Detached Product Details

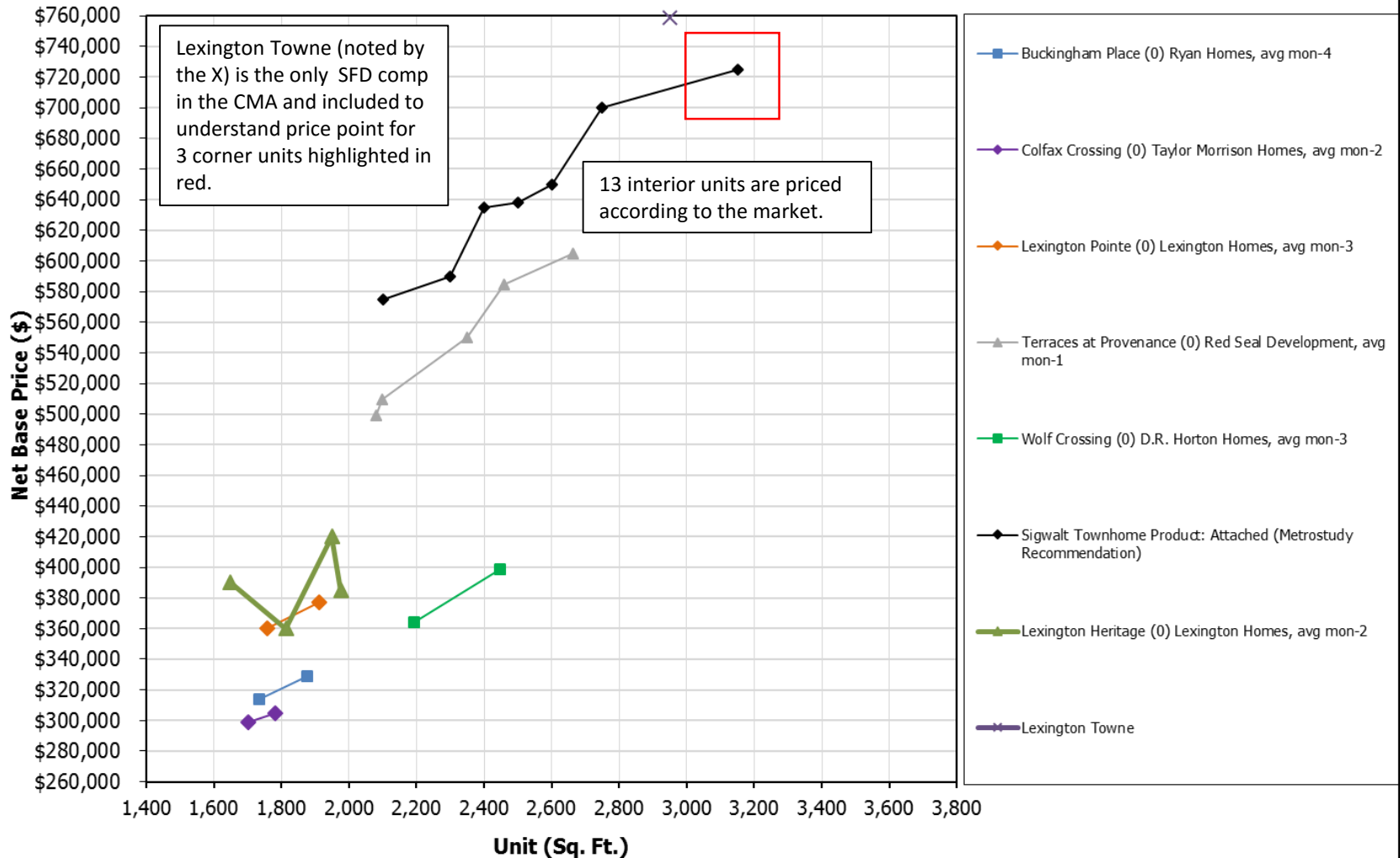
				Unit									
Project Name/Community Area/Lot Size/Builder		Planned Units	Occ.	Annual Starts / Annual Closings	Plan Name	Bed- Bath	Floors- Parking	Size (Sq.Ft.)	Base Price	Incen's	Ann. HOA	Net Base Price	Price / Sq.Ft.
1	Buckingham Place	127	26	3.8	Mozart	3 - 2.5	3 - 1	1,734	\$313,990	(\$5,000)	\$232	\$308,990	\$178
	Townhouse		20.5%	46	Mendelssohn	3 - 2.5	3 - 2	1,876	\$328,990	(\$5,000)	\$232	\$323,990	\$173
	Ryan Homes			2.2									
				26									
					Averages			1,805	\$321,490	(\$5,000)	\$232	\$316,490	\$175
2	Colfax Crossing	101	82	2.3	Swarthmore	3 - 2.5	3 - 2	1,703	\$298,990		\$171	\$298,990	\$176
	Townhouse		81.2%	28	Bryn Mawr	3 - 2.5	3 - 2	1,782	\$304,990		\$171	\$304,990	\$171
	Taylor Morrison Homes			3.8									
				46									
					Averages			1,743	\$301,990		\$171	\$301,990	\$173
3	Lexington Heritage	47	9	2.1	Berkley	3 - 2.5	3 - 2	1,649	\$389,990		\$307	\$389,990	\$237
	Townhouse		19.1%	25	Warrington	2 - 2.5	3 - 2	1,813	\$359,990		\$307	\$359,990	\$199
	Lexington Homes			0.8	Summit	3 - 2.5	3 - 2	1,950	\$419,990		\$307	\$419,990	\$215
				9	Coventry	3 - 2.5	3 - 2	1,976	\$384,990		\$307	\$384,990	\$195
					Averages			1,847	\$388,740		\$307	\$388,740	\$211
4	Lexington Pointe	58	24	2.5	Warrington	2 - 2.5	3 - 2	1,758	\$359,990		\$236	\$359,990	\$205
	Townhouse		41.4%	30	Coventry	3 - 2.5	3 - 2	1,913	\$376,990		\$236	\$376,990	\$197
	Lexington Homes			2.0									
				24									
					Averages			1,836	\$368,490		\$236	\$368,490	\$201
5	Lexington Towne	15	13	0.6	2951	4 - 2.5	2 - 2	2,951	\$758,448		N/A	\$758,448	\$257
	SFD		86.7%	7									
	Lexington Homes			0.8									
				10									
					Averages			2,951	\$758,448			\$758,448	\$257
6	Terraces at Provenance	82	14	1.4	2081	3 - 2.5	2 - 2	2,081	\$498,900		\$294	\$498,900	\$240
	Townhouse		17.1%	17	2099	3 - 2.5	2 - 2	2,099	\$509,900		\$294	\$509,900	\$243
	Red Seal Development			0.9	2350	3 - 2.5	2 - 2	2,350	\$549,900		\$294	\$549,900	\$234
				11	2459	3 - 2.5	2 - 3	2,459	\$584,900		\$294	\$584,900	\$238
					2664	3 - 2.5	2 - 3	2,664	\$604,900		\$294	\$604,900	\$227
					Averages			2,331	\$549,700		\$294	\$549,700	\$236
7	Wolf Crossing	39	0	3.3	2193	3 - 2.5	3 - 2	2,193	\$363,990	(\$3,000)	\$246	\$360,990	\$165
	Townhouse		0.0%	39	2447	3 - 2.5	3 - 2	2,447	\$398,990	(\$3,000)	\$246	\$395,990	\$162
	D.R. Horton Homes			0.0									
				0									
					Averages			2,320	\$381,490	(\$3,000)	\$246	\$378,490	\$163

Single-Family Attached/Detached: New Activity Graph



metrostudy

Competitive Builder Floorplans Sigwalt CMA - Single-Family Attached/Detached





Appendix to Follow





Cook County Market		Annual Starts	Annual Closings	Ann Lot Delivery	VDL	Supply Mos	Fin/Vac	U/C	Inventory Models	Total	Supply Mos
Detached	4Q17	370	291	388	2,573	83.4	79	220	24	323	13.3
	4Q18	417	422	239	2,395	68.9	99	192	27	318	9.0
		↑12.7%	↑45.0%	↓-38.4%	↓-6.9%	↓-17.4%	↑25.3%	↓-12.7%	↑12.5%	↓-1.5%	↓-32.1%
Attached	4Q17	713	200	867	1,836	0.0	99	1,593	10	1,702	102.1
	4Q18	639	542	689	1,886	35.4	265	1,507	27	1,799	0.0
		↓-10.4%	↑171.0%	↓-20.5%	↑2.7%	NA	↑167.7%	↓-5.4%	↑170.0%	↑5.7%	↓100.0%
Sigwalt TH CMA											
Detached	4Q17	8	3	0	7	10.5	1	4	1	6	24.0
	4Q18	7	10	0	0	0.0	0	2	0	2	2.4
		↓-12.5%	↑233.3%	NA	#####	↓100.0%	↓100.0%	↓-50.0%	↓100.0%	↓-66.7%	↓-90.0%
Attached	4Q17	82	36	202	258	0.0	8	58	6	72	0.0
	4Q18	185	116	151	224	0.0	27	101	13	141	0.0
		↑125.6%	↑222.2%	↓-25.2%	↓13.2%	NA	↑237.5%	↑74.1%	↑116.7%	↑95.8%	NA

- New home attached construction activity in the Sigwalt Townhomes CMA has increased significantly over the last year, with annual starts increasing 125.6 percent in the past year. There were 82 annual starts as of the end of 4Q17 compared to 185 annual starts in 4Q18.
- Move-ins trended upward over the same period. There were 116 annual closings as of the end of 4Q18, a 222.2 percent increase from the 36 homes closed annually at the end of 4Q17. Annual starts exceed annual closings; finished vacant inventory levels in this CMA have increased with demand and building conditions. There are currently 13 attached models in the CMA.
- Vacant developed lot ("VDL") supplies in the CMA for attached product has decreased from 258 lots in 4Q17 to 224 lots in 4Q18. This market is mostly an attached market.



Price Distribution		\$0-\$149	\$150-\$199	\$200-\$249	\$250-\$299	\$300-\$349	\$350-\$399	\$400-\$499	\$500+
Annual Starts	4Q17	0	0	0	40	4	21	6	19
		0.0%	0.0%	0.0%	44.4%	4.4%	23.3%	6.7%	21.1%
	4Q18	0	0	0	5	69	83	12	23
		0.0%	0.0%	0.0%	2.6%	35.9%	43.2%	6.3%	12.0%
VDL	4Q17	0	0	0	91	130	17	20	7
		0.0%	0.0%	0.0%	34.3%	49.1%	6.4%	7.5%	2.6%
	4Q18	0	0	0	50	97	19	9	49
		0.0%	0.0%	0.0%	22.3%	43.3%	8.5%	4.0%	21.9%
Sigwalt Townhomes is in a higher pricing tier regarding the superior location and high-end									Subject Property

Sigwalt Townhomes is in a higher pricing tier regarding the superior location and high-end finish out of the product. Within the CMA the \$350,000 to \$399,999 pricing tier represents 43.2 percent of all annual starts and is the most active pricing tier. This is largely due to responsiveness regarding affordability.

VDL lot sizes show more product coming in the \$300,000 to \$349,999 price tier. 43.3 percent of all VDL in 4Q18 is represented in the aforementioned tier.





Chicago-Naperville-Elgin CBSA

Annual Starts Projections

2006	28,632
2007	18,095
2008	7,637
2009	4,383
2010	4,244
2011	4,145
2012	5,658
2013	7,261
2014	7,723
2015	7,676
2016	8,032
2017	8,416
2018	8,920
2019 (F)	9,370
2020 (F)	9,840
2021 (F)	9,940
2022 (F)	9,740

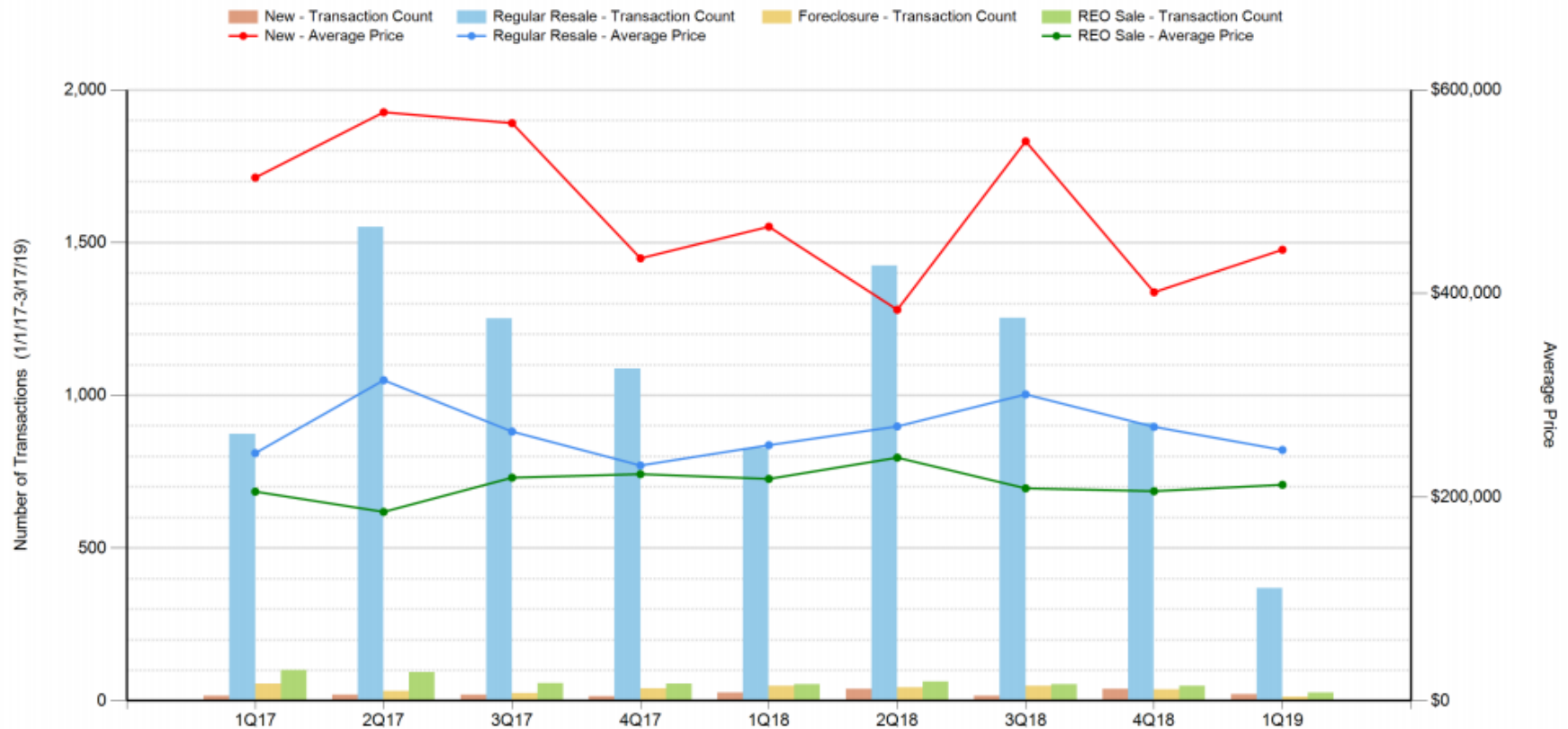
While the Chicago market generally appears to be moving in the right direction on a number of fronts, there remain some challenges:

- Potential mortgage rate increases, even if only marginally higher, may soften buyer traffic and contract activity.
- Shortages of trade labor are extending production completion timeframes.
- Rapid price increases over the past two years on new construction may suppress purchases and move unsure potential buyers back onto the sidelines. There has been minimal price appreciation on the resale side.
- Entry-level homebuyers are feeling the squeeze of rising home prices with relatively flat wage appreciation.
- Limited finished lot supplies with a slow replenishment of new lots underway.

CMA New, Resale, & Foreclosure Comparison



Date Range: 3/1/2018 - 2/28/2019																			
Transaction Type	Single Family					TH/Plex/Other				Condominium				Other/ Unknown	Total				
	Count	Avg Price	Avg SF	\$/SF	AvgLotSF	Count	Avg Price	Avg SF	\$/SF	Count	Avg Price	Avg SF	\$/SF	Count	Count	Avg Price	Avg SF	\$/SF	AvgLotSF
New	24	\$816,630	1,779	\$559.3	9,063	100	\$327,544	1,816	\$178.9	1	\$162,500			1	126	\$423,926	1,811	\$241.7	9,063
Regular Resale	2,298	\$359,939	1,682	\$224.8	10,091	237	\$256,814	1,606	\$162.2	1,759	\$163,019	1,218	\$144.6	22	4,316	\$273,997	1,607	\$207.9	10,091
Foreclosure	107	n/a	1,646		11,080	8	n/a	1,419		43	n/a	1,332		0	158	n/a	1,617		11,080
REO Sale	124	\$274,630	1,679	\$173.1	11,713	12	\$163,875	1,394	\$116.9	73	\$131,343	1,208	\$135.8	2	211	\$218,822	1,618	\$164.9	11,713
Selection Totals	2,553	\$360,436	1,681	\$225.0	10,206	357	\$272,464	1,654	\$165.2	1,876	\$161,929	1,219	\$144.4	25	4,811	\$275,562	1,615	\$207.3	10,206





	2010 Census	%	2019 Estimate	%	2024 Projection	%
Population	148,141		174,428		193,114	
Annual Pop Growth 2016 to 2021				-0.68%		
Annual Pop Growth 2010 to 2016		0.38%				
Population by Age						
Average Age	39.7		40.9		41.5	
Median Age	40.2		41.2		41.8	
Pop Age 0-4	17,188	6.06%	15,295	5.37%	16,563	5.86%
Pop Age 5-9	16,906	5.96%	15,700	5.51%	15,819	5.59%
Pop Age 10-14	16,969	5.98%	16,420	5.77%	15,757	5.57%
Pop Age 15-19	16,895	5.96%	16,255	5.71%	15,939	5.64%
Pop Age 20-24	15,160	5.34%	16,933	5.95%	16,232	5.74%
Pop Age 25-29	19,551	6.89%	20,292	7.13%	17,570	6.21%
Pop Age 30-34	19,289	6.80%	19,248	6.76%	18,680	6.61%
Pop Age 35-39	19,097	6.73%	18,203	6.39%	18,586	6.57%
Pop Age 40-44	19,535	6.89%	17,350	6.09%	17,803	6.30%
Pop Age 45-49	21,115	7.44%	18,874	6.63%	17,630	6.23%
Pop Age 50-54	22,547	7.95%	19,713	6.92%	18,115	6.41%
Pop Age 55-59	19,298	6.80%	21,046	7.39%	18,928	6.69%
Pop Age 60-64	15,902	5.61%	19,225	6.75%	18,850	6.67%
Pop Age 65-69	11,622	4.10%	15,606	5.48%	17,003	6.01%
Pop Age 70-74	9,501	3.35%	11,534	4.05%	13,697	4.84%
Pop Age 75-79	8,181	2.88%	8,408	2.95%	10,036	3.55%
Pop Age 80-84	7,324	2.58%	6,335	2.22%	6,862	2.43%
Pop Age 85+	7,557	2.66%	8,288	2.91%	8,711	3.08%





	2010 Census	%	2019 Estimate	%	2024 Projection	%
Population by Gender						
Female	145,003	51.12%	144,909	50.89%	143,591	50.78%
Male	138,634	48.88%	139,817	49.11%	139,190	49.22%
Population by Race Class						
Not Hispanic White	198,167	84.26%	185,676	82.25%	179,411	81.18%
Not Hispanic Black	5,065	2.15%	3,903	1.73%	3,503	1.59%
Not Hispanic Native American	236	0.10%	212	0.09%	186	0.08%
Not Hispanic Asian	28,448	12.10%	32,396	14.35%	34,252	15.50%
Not Hispanic Pacific Islander	58	0.02%	54	0.02%	53	0.02%
Not Hispanic Two Or More Races	3,207	1.36%	3,504	1.55%	3,594	1.63%
Hispanic White	44,384	91.60%	54,290	92.05%	56,956	92.19%
Hispanic Black	858	1.77%	914	1.55%	918	1.49%
Hispanic Native American	1,850	3.82%	2,095	3.55%	2,173	3.52%
Hispanic Asian	379	0.78%	411	0.70%	420	0.68%
Hispanic Pacific Islander	64	0.13%	116	0.20%	107	0.17%
Hispanic Two Or More Races	921	1.90%	1,154	1.96%	1,208	1.96%
Population by Education						
No High School Diploma	21,156	7.46%	21,067	7.40%	21,056	7.45%
High School Diploma	49,510	17.46%	45,090	15.84%	44,745	15.82%
Some College	50,851	17.93%	53,318	18.73%	52,851	18.69%
Bachelors Degree	50,692	17.87%	54,820	19.25%	54,282	19.20%
Advanced Degree	28,311	9.98%	29,827	10.48%	29,537	10.45%





	2010 Census	%	2019 Estimate	%	2024 Projection	%
Households and Housing Units Summary						
Households	111,372		111,606		110,794	
HH Growth 2016 to 2021				-0.73%		
HH Growth 2010 Census to 2016		0.21%				
Housing Units	118,264		119,309		120,319	
HU Growth 2016 to 2021				0.85%		
HU Growth 2010 Census to 2016		0.88%				

Total Households by Income

Average HH Income	80,831		95,014		96,400	
Median HH Income	63,031		74,865		76,174	
HH Income Below 10k	4,564	4.10%	4,190	3.75%	4,129	3.73%
HH Income 10k-15k	3,961	3.56%	3,183	2.85%	3,146	2.84%
HH Income 15k-20k	4,768	4.28%	3,744	3.35%	3,675	3.32%
HH Income 20k-25k	4,784	4.30%	4,430	3.97%	4,433	4.00%
HH Income 25k-30k	5,705	5.12%	4,409	3.95%	4,232	3.82%
HH Income 30k-35k	5,166	4.64%	4,390	3.93%	4,301	3.88%
HH Income 35k-40k	5,352	4.81%	4,277	3.83%	4,166	3.76%
HH Income 40k-45k	5,326	4.78%	4,010	3.59%	3,861	3.48%
HH Income 45k-50k	4,654	4.18%	3,633	3.26%	3,533	3.19%
HH Income 50k-60k	8,802	7.90%	8,421	7.55%	8,290	7.48%
HH Income 60k-75k	12,890	11.57%	11,215	10.05%	10,855	9.80%
HH Income 75k-100k	16,227	14.57%	16,728	14.99%	16,501	14.89%
HH Income 100k-125k	10,660	9.57%	12,635	11.32%	12,691	11.45%
HH Income 125k-150k	6,285	5.64%	7,985	7.15%	8,079	7.29%
HH Income 150k-200k	6,422	5.77%	9,529	8.54%	9,794	8.84%
HH Income Above 200k	5,807	5.21%	8,825	7.91%	9,106	8.22%



Consumer Segmentation Defined



ENTRY LEVEL— SUBURBAN

Average Annual HH Income	\$38K
Average Age (Head of HH)	50
With Children in HH	36%
Dominant Education	High School Diploma
Married	38%
Homeownership	73%

- Average credit: small savings account; need education on how to budget their money and save to buy a home
- Employed in part-time job(s)
- Not concerned with personally saving the environment
- Use the internet for shopping, work, and entertainment
- High percentage of single parent families



ENTRY LEVEL— URBAN

Average Annual HH Income	\$69K
Average Age (Head of HH)	47
With Children in HH	69%
Dominant Education	College Graduate
Married	49%
Homeownership	66%

- Good credit: have some savings including 401k and savings account
- Feel they work hard for their money and are workaholics; often self-employed
- Strong belief in sustainability; will pay more for energy efficiency and sustainability
- Read numerous magazines for news and entertainment
- Very family oriented: spend time and make decisions together; multi-generational households common



SIMPLE LIFE— AFFLUENT, NO CHILDREN

Average Annual HH Income	\$125K
Average Age (Head of HH)	50
With Children in HH	14%
Dominant Education	College Graduate
Married	68%
Homeownership	79%

- Financially stable with mortgage, checking, and savings accounts
- Work for the government, either as active military or civilian; or are entrepreneurial, own and run a small business
- Not concerned with personally saving the environment
- Use the internet for shopping, work, and entertainment
- Two-person household; grown children recently left home to work or attend college



SIMPLE LIFE— MODERATE INCOME, WITH CHILDREN

Average Annual HH Income	\$64K
Average Age (Head of HH)	39
With Children in HH	84%
Dominant Education	Some College
Married	62%
Homeownership	84%

- Some savings, but may be forced to borrow money for emergencies
- Employed by others in management, administrative work, or real estate
- Not concerned with personally saving the environment
- Heavy tablet use by all family members
- One spouse works, the other stays home with the children



SIMPLE LIFE— MODERATE INCOME, NO CHILDREN

Average Annual HH Income	\$41K
Average Age (Head of HH)	52
With Children in HH	17%
Dominant Education	High School Diploma
Married	45%
Homeownership	88%

- Equity in current home is the majority of savings; spend money as quickly as it is earned
- Non-managerial employment including truck driver, retailer, or nurse
- Only concerned about energy efficiency and sustainability if it benefits them directly
- Enjoy gadgets, but not heavily dependent on the latest technology; average smartphone and internet usage
- Male works while the female stays home



FEATURE & LOCATION

Average Annual HH Income	\$127K
Average Age (Head of HH)	40
With Children in HH	19%
Dominant Education	College Graduate
Married	52%
Homeownership	52%

- Significant savings in banks and invest in stock and money market accounts
- Own and run medium sized business; will change jobs for higher pay or better company
- Sustainability is important, but not a priority
- Conduct business and shopping on smartphone; shop primarily on the internet
- Multigenerational households common



FAMILY LIFE— YOUNG CHILDREN

Average Annual HH Income	\$109K
Average Age (Head of HH)	32
With Children in HH	95%
Dominant Education	College Graduate
Married	86%
Homeownership	95%

- Some savings; will borrow money to purchase a home
- Employed as a manager in finance, insurance, and other professional sectors
- Indifferent about sustainability; will recycle if it's easy, but won't go out of the way
- High smartphone usage; research products and shop primarily on the internet
- Both spouses work; two to three kids under age of 12



FAMILY LIFE— SCHOOL AGE CHILDREN

Average Annual HH Income	\$114K
Average Age (Head of HH)	46
With Children in HH	100%
Dominant Education	College Graduate
Married	82%
Homeownership	100%

- Financially stable and want to leave monetary legacy for kids; safe and stable investors
- Employed in education, engineering, and government
- Sustainability important because they believe it's best for their children
- Entertainment for all family members is primarily technology based
- Family focused: life revolves around children and parents put kids needs ahead of their own; two to three kids ages 12 to 18



Consumer Segmentation Defined



ACTIVE ADULT— ENTRY LEVEL



Average Annual HH Income	\$24K
Average Age (Head of HH)	74
With Children in HH	3%
Dominant Education	High School Diploma
Married	28%
Homeownership	99%

- Live on a fixed income; very budget conscious
- Retired
- Feel indifferent about sustainability; will recycle if financially beneficial
- Little to no internet usage; read magazines and newspapers
- High percentage of widows; often live alone

ACTIVE ADULT— FEATURE & LOCATION



Average Annual HH Income	\$61K
Average Age (Head of HH)	68
With Children in HH	4%
Dominant Education	College Graduate
Married	45%
Homeownership	73%

- Savings are in "safe" accounts, e.g. money market, annuities
- Retired; served in the armed forces
- Sustainability is important, but not a priority
- Read newspaper daily
- Not tech savvy; do not use internet on mobile devices
- Married; have grandchildren

ACTIVE ADULT— ELITE



Average Annual HH Income	\$91K
Average Age (Head of HH)	64
With Children in HH	2%
Dominant Education	College Graduate
Married	70%
Homeownership	99%

- Excellent credit; strictly manages money; investments include IRA, CDs, and life insurance
- Retired; highly educated
- Strong belief in sustainability; will pay more for energy efficiency and sustainability
- Read newspaper daily; don't use mobile to shop
- Married; have grandchildren

ELITE



Average Annual HH Income	\$175K
Average Age (Head of HH)	51
With Children in HH	35%
Dominant Education	College Graduate
Married	80%
Homeownership	90%

- Financially savvy and secure; high net-worth, have investments and 401k
- Employed as managerial architect, engineer, or doctor, and often self-employed
- Sustainability is important and part of their lifestyle
- Research, purchase, and conduct business primarily on the internet
- One or both adults work from home; older children of high school and college age

RENTERS—NEAR TERM BUYERS



Average Annual HH Income	\$41K
Average Age (Head of HH)	34
With Children in HH	71%
Dominant Education	High School Diploma
Married	39%
Homeownership	6%

- Little to no savings; credit challenged with limited credit history
- Employed in information systems, technical studies, managerial support, or sales
- Not concerned with personally saving the environment
- Affinity for latest technology; communicate on social media
- Engaged or living with partner; four or more children living at home

RENTERS



Average Annual HH Income	\$33K
Average Age (Head of HH)	49
With Children in HH	29%
Dominant Education	High School Diploma
Married	27%
Homeownership	6%

- Credit challenged; not financially secure
- Temporarily unemployed or collecting disability
- Not concerned with personally saving the environment
- High smartphone usage; heavily influenced by media and advertisements
- Live alone or with partner



The Metrostudy housing survey monitors the supply of attached and detached homes on a quarterly basis. Our survey tracks all condominium, townhome, duplex, and single-family construction activity in the Chicago area. The survey allows us to accurately track the size of the total market, as well as supply and demand within the sub-markets. Further, it helps us establish the depth of the market and the scope of the competition.

DEFINITIONS

Annual Starts: The number of homes started during the last four quarters. A “start” occurs when a slab or foundation is initiated.

Annual Closings: The number of homes closed during the last four quarters. A “closing” occurs when a home is moved into and occupied. Metrostudy tracks move-ins, as they are a better indicator of demand than deed deliveries.

Square Footage: All measures of a home size are in terms of air-conditioned space.

Models: Must be fully finished, furnished and decorated.

Finished Vacant: Construction is complete, the site is clean, but there is no evidence of occupancy.

Finished Vacant Months of Supply: F/V months of supply is calculated by dividing the number of F/V homes by the current annual closings pace; and then multiplying by twelve to yield months.

Vacant Developed Lots: Also referred to as “VDL” and “Finished Lots”; a lot on a recorded plat with streets and utilities in place, ready for construction of a new home.

Vacant Developed Lots Months of Supply: VDL months-of-supply is calculated by dividing the number of VDL by the current annual starts pace; and then multiplying by twelve to yield months.

Future Lots: Lots that are platted, but not yet developed.

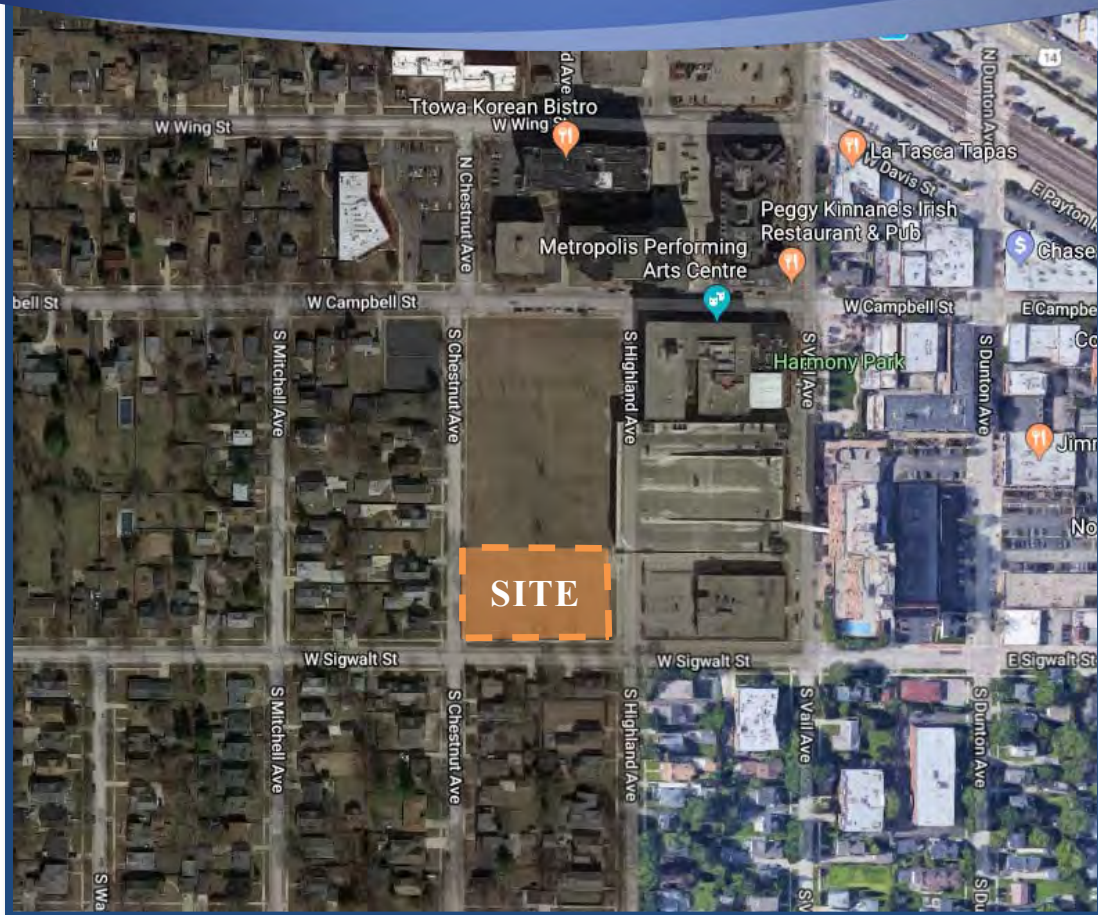
Limiting Conditions

It is understood by Taylor Morrison (“Client”) that Metrostudy can make no guarantees about the recommendations in this study. Conclusions are based on estimates, assumptions, and other information developed by Metrostudy from its independent research effort, general knowledge of the industry, and consultations with the Client and its representatives. Reasonable efforts have been made to ensure that data contained in this study is as accurate and timely as possible, and the data is believed to be reliable. There will usually be differences between projected and actual results, because events and circumstances frequently do not occur as expected. Metrostudy has no responsibility to update our report for events and circumstances occurring after the date of our report. It is understood by the Client that payment of any and all Metrostudy fees and expenses for this study is not in any way contingent upon the specific conclusions reached or the nature of the advice given in this report.



Traffic Impact Study Proposed Row Home Residential Development

Arlington Heights, Illinois



Prepared For:

TaylorMorrison



April 9, 2019

1. Introduction

This report summarizes the methodologies, results and findings of a traffic impact study conducted by Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) for the proposed residential row home development to be located in Arlington Heights, Illinois. The site is located on the north side of Sigwalt Street and is bounded by Highland Avenue on the east and Chestnut Avenue on the west.

The concept plans call for 16 row homes that will front Sigwalt Street, Chestnut Street, and Highland Avenue. Eight guest parking spaces are proposed on-site. Access to the individual row home garages and guest parking will be from a single access drive off Highland Avenue, north of Sigwalt Street.

The purpose of this study was to examine background traffic conditions, assess the impact that the proposed development will have on traffic conditions in the area, and determine if any roadway or access improvements are necessary to accommodate traffic generated by the proposed development.

Figure 1 shows the location of the site in relation to the area roadway system. **Figure 2** shows an aerial view of the site area.

The sections of this report present the following.

- Existing roadway conditions
- A description of the proposed development
- Directional distribution of the development traffic
- Vehicle trip generation for the development
- Projected base traffic conditions that includes regional growth and background developments
- Future traffic conditions including access to the development
- Traffic analyses for the weekday morning and evening peak hours
- Recommendations with respect to adequacy of the site access and adjacent roadway system

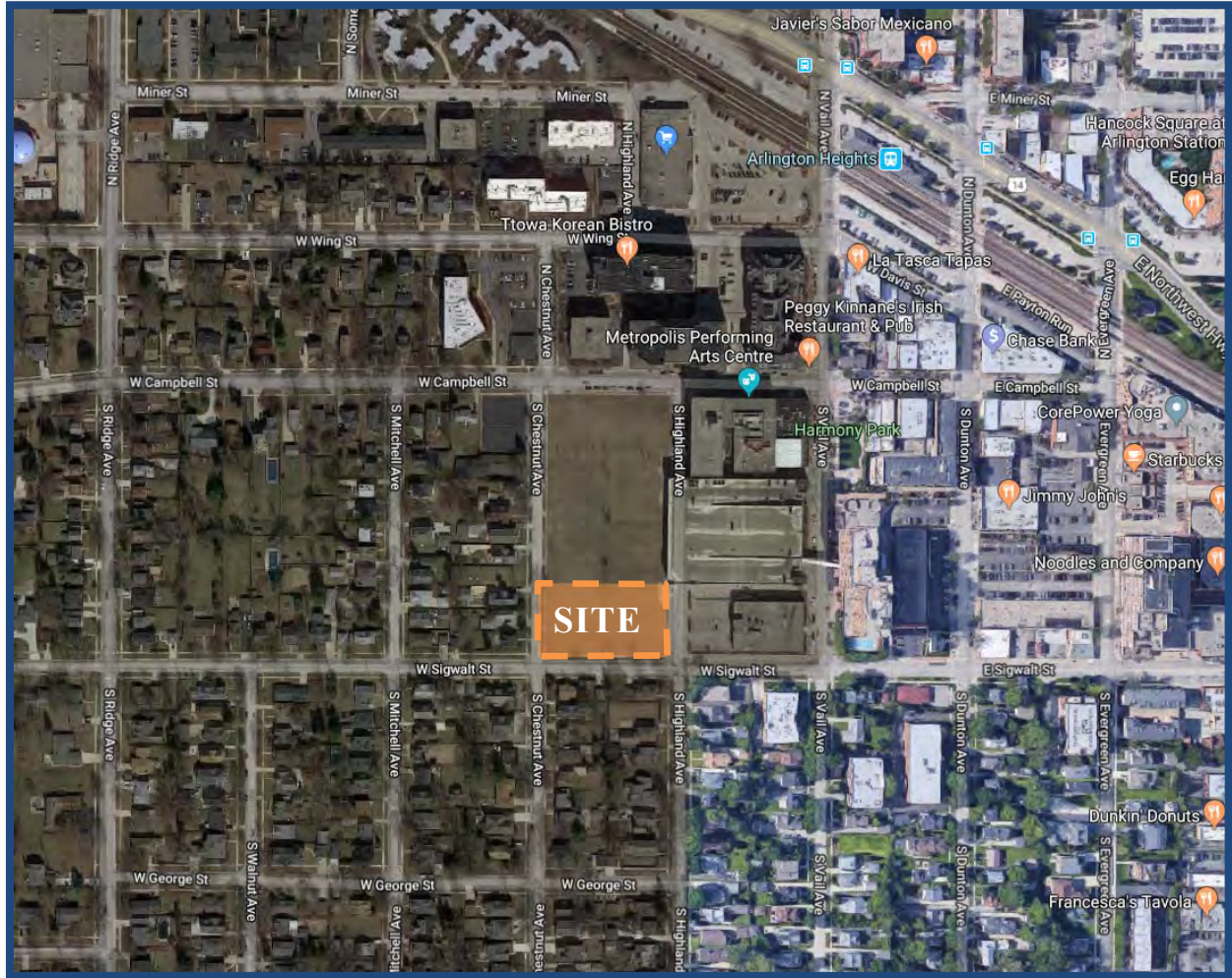
Traffic capacity analyses were conducted for the weekday morning and evening peak hours for the following conditions:

1. Existing (Year 2018/2019) Conditions - Analyzes the capacity of the existing roadway system using existing peak hour traffic volumes in the surrounding area.
2. Future (Year 2024) Conditions - The future projected traffic volumes include the existing traffic volumes, ambient area growth not attributable to any particular development, traffic estimated to be generated by the proposed Arlington 425 residential development, and the traffic estimated to be generated by the proposed subject development.



Site Location

Figure 1



Aerial View of Site Location

Figure 2

2. Existing Conditions

Existing transportation conditions in the vicinity of the site were documented based on field visits conducted by KLOA, Inc. in order to obtain a database for projecting future conditions. The following provides a description of the geographical location of the site, physical characteristics of the area roadway system including lane usage and traffic control devices and existing peak hour traffic volumes.

Site Location

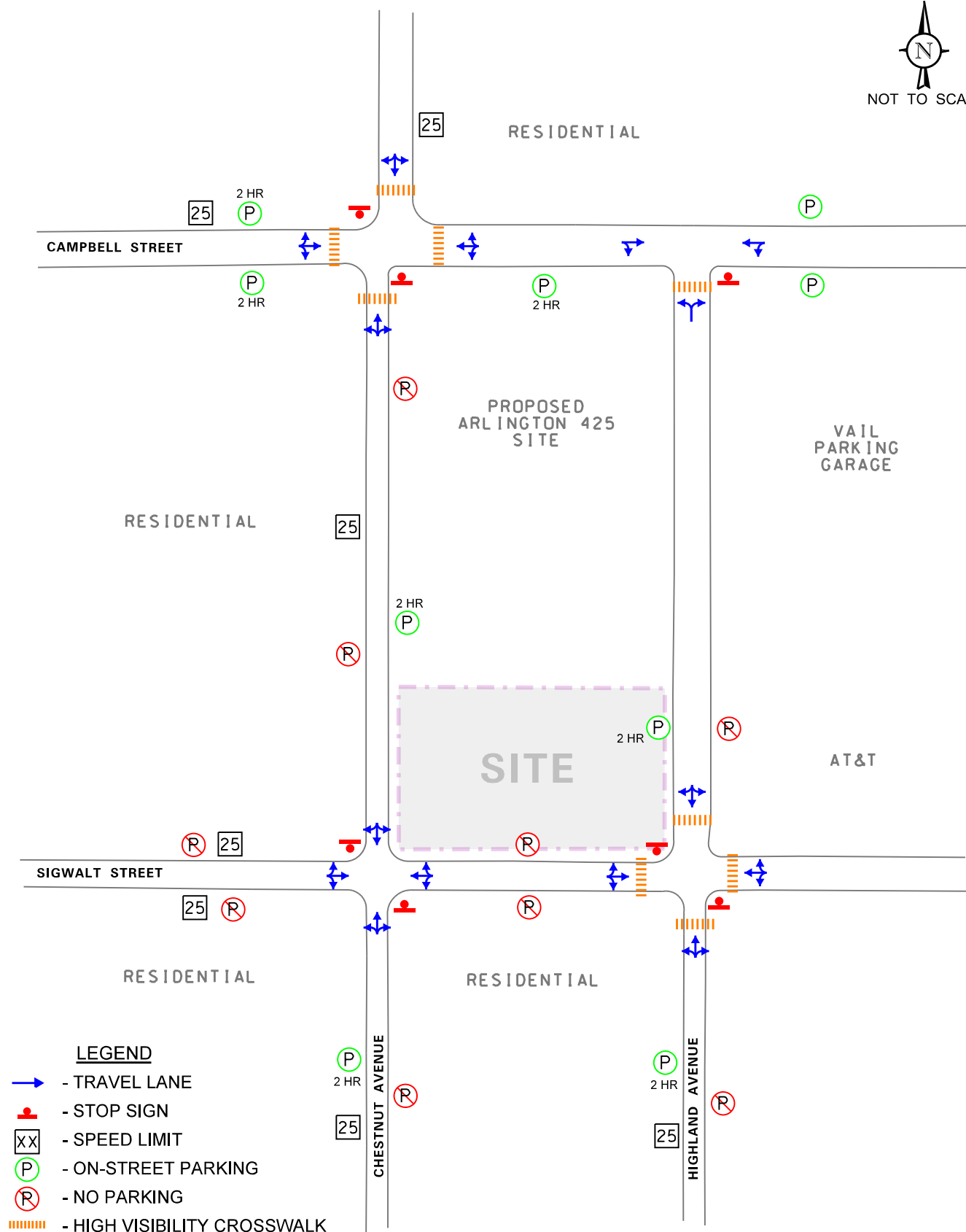
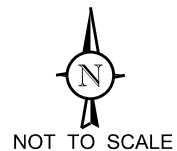
The site is located to the west of downtown Arlington Heights and is bounded by Sigwalt Street to the south, Chestnut Avenue to the west, and Highland Avenue to the east. The proposed Arlington 425 residential development borders the site to the north. The site is currently undeveloped and is within walking distance to the Arlington Heights Metra Station. Land uses in the vicinity of the site are residential to the north, west, and south and include the Arlington Heights Vail Street public parking garage and the Dunton Tower Luxury Apartments and the former AT&T development to the east.

Existing Roadway System Characteristics

The characteristics of the existing roadways near the development are described below. **Figure 3** illustrates the existing roadway characteristics. All roadways have a posted speed limit of 25 mph and are under the jurisdiction of the Village of Arlington Heights, unless otherwise noted.

Campbell Street is an east west local roadway that provides one lane in each direction and extends from Rohlwing Road to Evergreen Avenue. At its unsignalized intersection with Highland Avenue, Campbell Street provides a shared through/right-turn lane on the eastbound approach and a shared through/left-turn lane on the westbound approach. A high visibility crosswalk is planned across Campbell Street on the east leg. Parking is generally provided on both sides of the roadway and is restricted to two-hours. Campbell Street is a designated bicycle route (signage only).

Highland Avenue is a north-south local roadway that provides one lane in each direction and extends from Campbell Street south to Central Road. At its unsignalized intersection with Sigwalt Street, Highland Avenue provides a single lane approach under stop-sign control and a high visibility crosswalk on both legs. At its unsignalized intersection with Campbell Street, Highland Avenue provides a shared left/right-turn lane under stop-sign control and a high visibility crosswalk on the south leg. It should be noted that between Campbell Street and Sigwalt Street, Highland Avenue traverses through the Arlington Heights Public Parking Garage, which provides parking on the west side of Highland Avenue and has two ramp access drives off Highland Avenue. South of the garage, there is a one-way exit only alley, and two full access drives serving the former AT&T development. Parking is prohibited on the east side of the roadway and is restricted to two-hours on the west side of the roadway. There are approximately five on-street parking spaces on the west side of Highland Avenue between Sigwalt Street and the Vail parking garage.



Proposed Row
Home Development
Arlington Heights, Illinois

Existing Roadway Characteristics

Sigwalt Street is an east-west local roadway that in the vicinity of the site provides one lane in each direction. Parking is prohibited on both sides of the roadway between Highland Avenue and Chestnut Avenue.

Existing Traffic Volumes

In order to determine current traffic conditions in the vicinity of the site, KLOA, Inc. conducted manual peak period vehicle, pedestrian, and bicycle traffic counts using Miovision Scout Collection Units during the weekday morning (7:00 A.M. to 9:00 A.M.) and weekday evening (4:00 P.M. to 6:00 P.M.) peak periods at the following four (4) intersections:

1. Highland Avenue and Campbell Street (AM – June 26, 2018; PM – February 7, 2019)
2. Highland Avenue and Sigwalt Street (AM – June 26, 2018; PM – February 7, 2019)
3. Highland Avenue and North Garage Ramp (June 27, 2018)
4. Highland Avenue and South Garage Ramp (June 27, 2018)

The results of the traffic counts showed that the weekday morning peak hour of traffic generally occurs from 8:00 A.M. to 9:00 A.M. and the weekday evening peak hour of traffic generally occurs from 5:00 P.M. to 6:00 P.M.

Figure 4 illustrates the existing peak hour vehicle traffic volumes.

Figure 5 illustrates the existing peak hour pedestrian and bicycle traffic volumes.

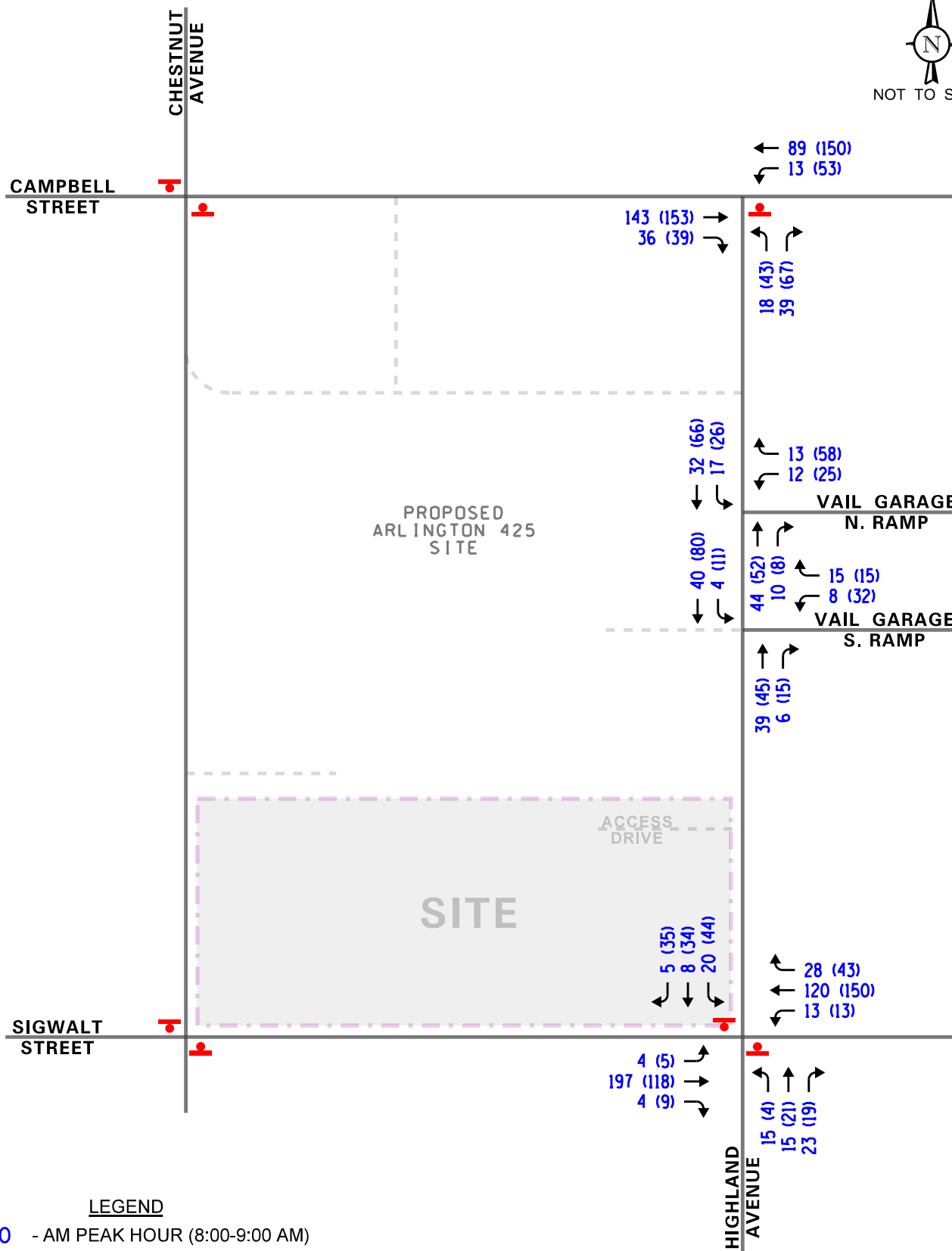
Accident Analysis

KLOA, Inc. obtained accident data from the Village of Arlington Heights and IDOT for the most recent available five years (2012 to 2016) for the studied intersections. **Table 1** summarizes the accident data for the intersections¹. A review of the data showed that the intersections are not high accident locations and that no fatalities were reported.

Table 1
ACCIDENT DATA SUMMARY

Intersection	Year				
	2012	2013	2014	2015	2016
Highland Avenue with Campbell Street	0	4	1	0	2
Highland Avenue with Sigwalt Street	1	1	1	0	1

¹ Disclaimer: The motor vehicle crash data referenced herein was partly provided by the Illinois Department of Transportation. The author is responsible for any data analyses and conclusions drawn.

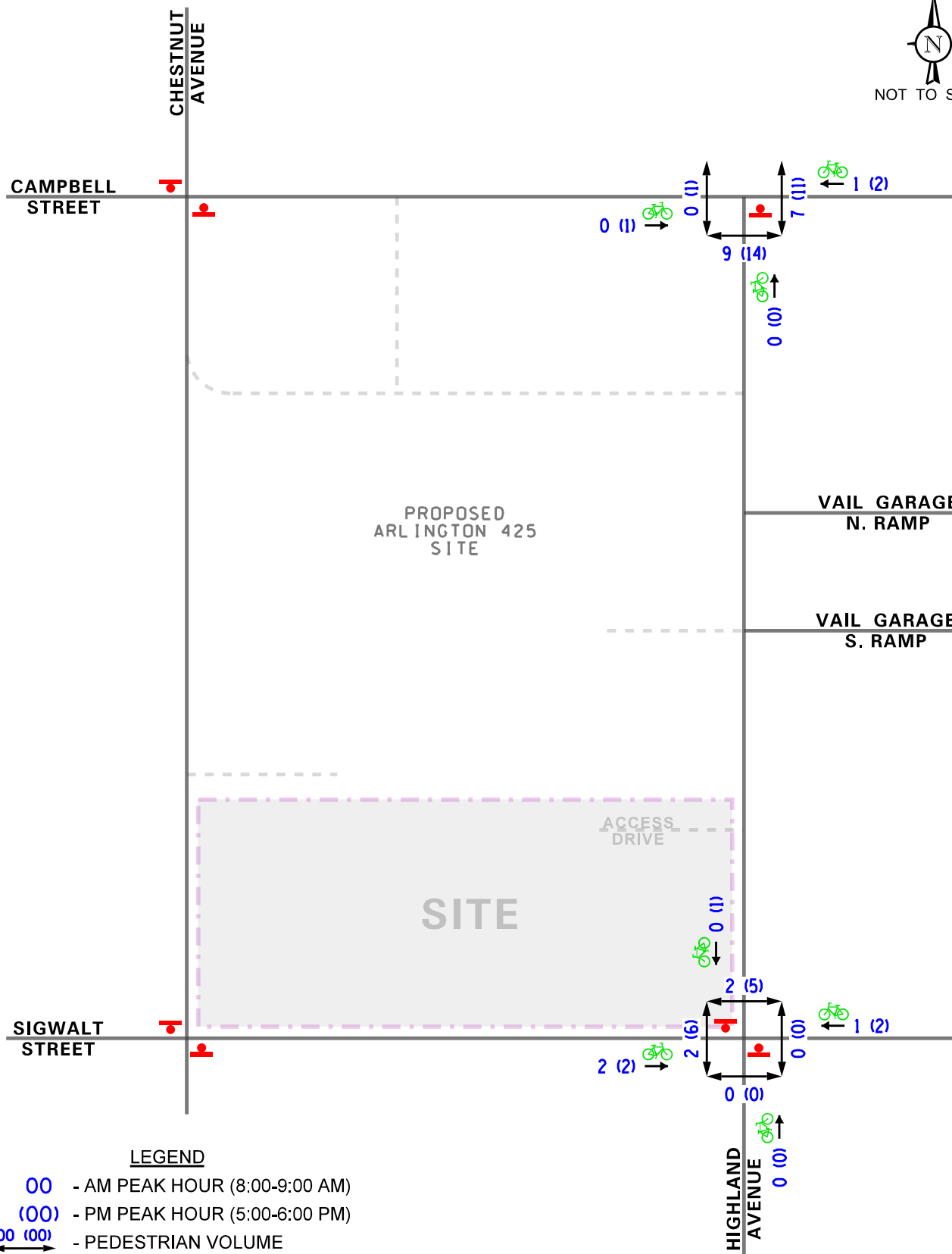


LEGEND
 00 - AM PEAK HOUR (8:00-9:00 AM)
 (00) - PM PEAK HOUR (5:00-6:00 PM)

Proposed Row
 Home Development
 Arlington Heights, Illinois

Existing Traffic Volumes

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 Kenig, Lindgren, O'Hara, Aboona, Inc.
 Job No: 19-063 Figure: 4



Proposed Row
Home Development
Arlington Heights, Illinois

Existing Pedestrian and Bicycle
Traffic Volumes

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Kenig, Lindgren, O'Hara, Aboona, Inc.
Job No: 19-063 Figure: 5

Public Transportation

Sidewalks are provided on the surrounding roadway network and high-visibility or standard crosswalks are generally provided, as noted above. The intersection of Chestnut Avenue with Sigwalt Street does not provide crosswalks. Furthermore, the site is located approximately one-third of a mile walking distance from the Arlington Heights UP-NW Metra Station which offers daily service between Harvard/McHenry and Chicago.

The site is also within the vicinity of Pace Bus Route 696 (Randhurst/Woodfield/Harper College) which provides weekday service from Mt. Prospect to Palatine. Service operates from Randhurst Mall to Harper College. Rush hour service runs every 30 minutes and mid-day service runs every hour. This bus route serves the following major destinations: Randhurst Mall, Prospect H.S., Metra Union Pacific Northwest Line (Arlington Heights), Cook County Courthouse, Rolling Meadows Shopping Center, East Park, Mallard Cove, Woodfield Gardens, Motorola Headquarters, Schaumburg Convention Center, IKEA, Roosevelt University, Woodfield Mall, Pace Northwest Transportation Center, and Harper College.

3. Traffic Characteristics of the Proposed Development

To evaluate the impact of the subject development on the area roadway system, it was necessary to quantify the number of vehicle trips the overall development will generate during the weekday morning and the weekday evening peak hours and then determine the directions from which this traffic will approach and depart the individual sites.

Proposed Development Plan

The concept plans call for 16 row homes that will front Sigwalt Street, Chestnut Street, and Highland Avenue.

Vehicle Access

Access to the individual row home garages and guest parking will be from a single access drive off Highland Avenue, located approximately 125 feet north of Sigwalt Street and approximately 155 feet south of the southerly ramp serving the Vail garage. The access will provide one lane inbound and one lane outbound allowing both left- and right-turning exiting movements. The outbound lane will be under stop sign control.

Parking

Each row home will provide individual garages and approximately eight guest parking spaces are proposed on-site.

Refuse

Refuse vehicles will serve the site from the proposed internal surface parking lot accessed from the proposed drive off Highland Avenue.

Directional Distribution

The directions from which vehicles will approach and depart the overall site were estimated based on existing travel patterns, as determined from the traffic counts, as well as the type and location of the access drives proposed to serve the development. **Figure 6** illustrates the directional distribution of the development generated traffic. Figure 6 also shows the distance, in feet, between existing and proposed roadways.

Estimated Site Traffic Generation

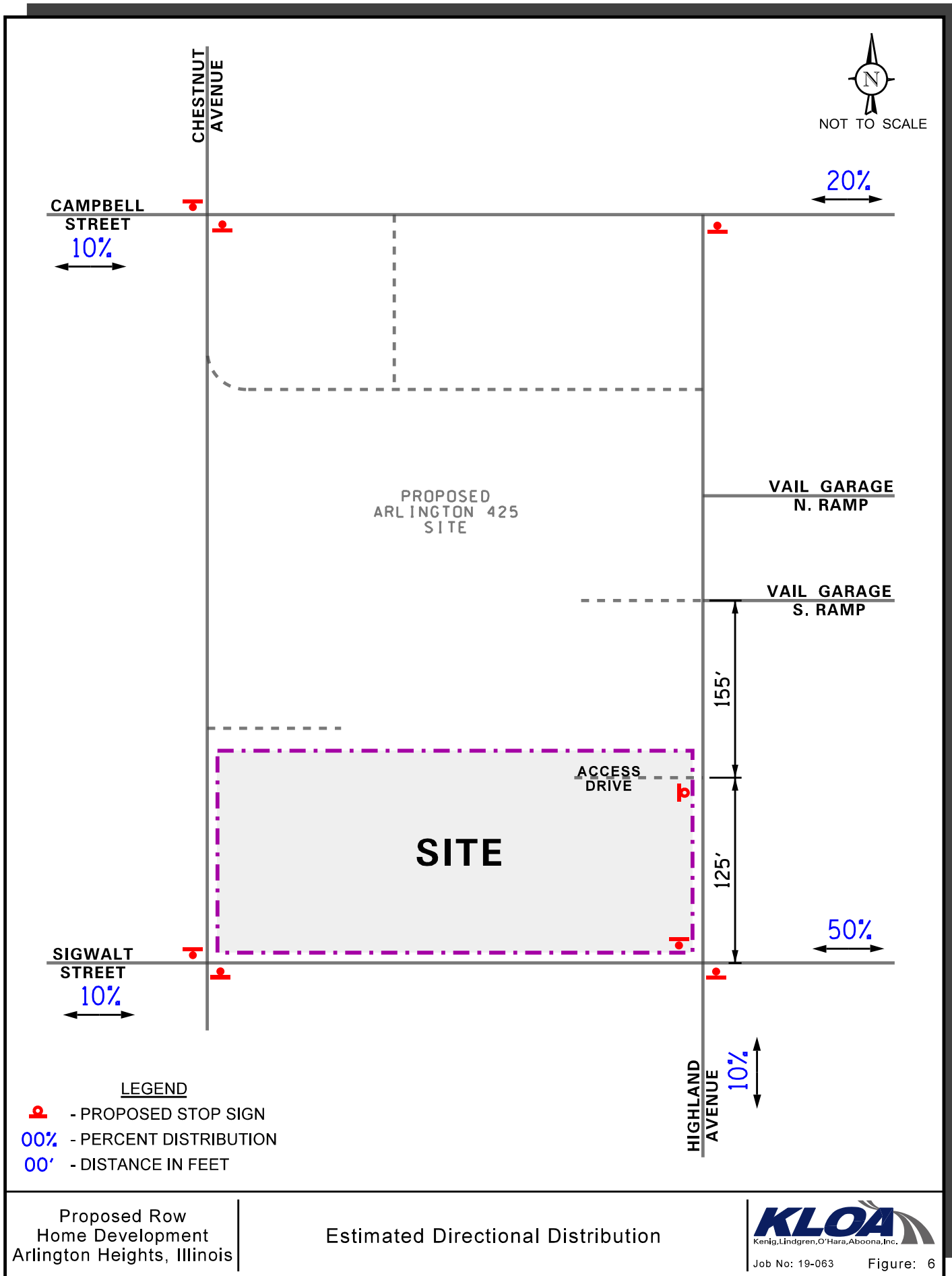
The estimates of vehicle traffic to be generated by the development are based upon the proposed land use types and sizes. The volume of traffic generated was estimated using data published in the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 10th Edition.

Table 2 tabulates the total trips anticipated from this proposed development for the weekday morning and weekday evening peak hours, as well as the daily (two-way) traffic volumes. As shown, the development is estimated to generate a low volume of vehicle trips during peak commuting hours. It is further important to note that based on a review of the census data, approximately 15 percent of the residents located within one-quarter mile of the Metra station utilize alternative modes of transportation to get to work. As a result, the estimated number of generated trips may be further reduced. However, no reductions were applied to the trip generation shown in Table 2 to provide for a conservative study.

Table 2

ESTIMATED VEHICLE TRIP GENERATION FOR THE PROPOSED DEVELOPMENT

Development/Size	Weekday Morning Peak Hour		Weekday Evening Peak Hour		Weekday Daily Trips
	In	Out	In	Out	
LUC 220 – 16 row home units	2	6	7	5	80



4. Projected Traffic Conditions

The total projected traffic volumes include the existing traffic volumes increased by ambient growth, background traffic estimated to be generated by the proposed Arlington 425 residential development, and the traffic estimated to be generated by the proposed subject development.

Development Traffic Assignment

The estimated weekday morning and evening peak hour traffic volumes that will be generated by the proposed development were assigned to the roadway system in accordance with the previously described directional distribution (Figure 6). The traffic assignment is illustrated in **Figure 7**.

Background Traffic Conditions

The background traffic volumes include regional growth in traffic and traffic estimated to be generated by planned developments in the area, as described below.

Regional Growth

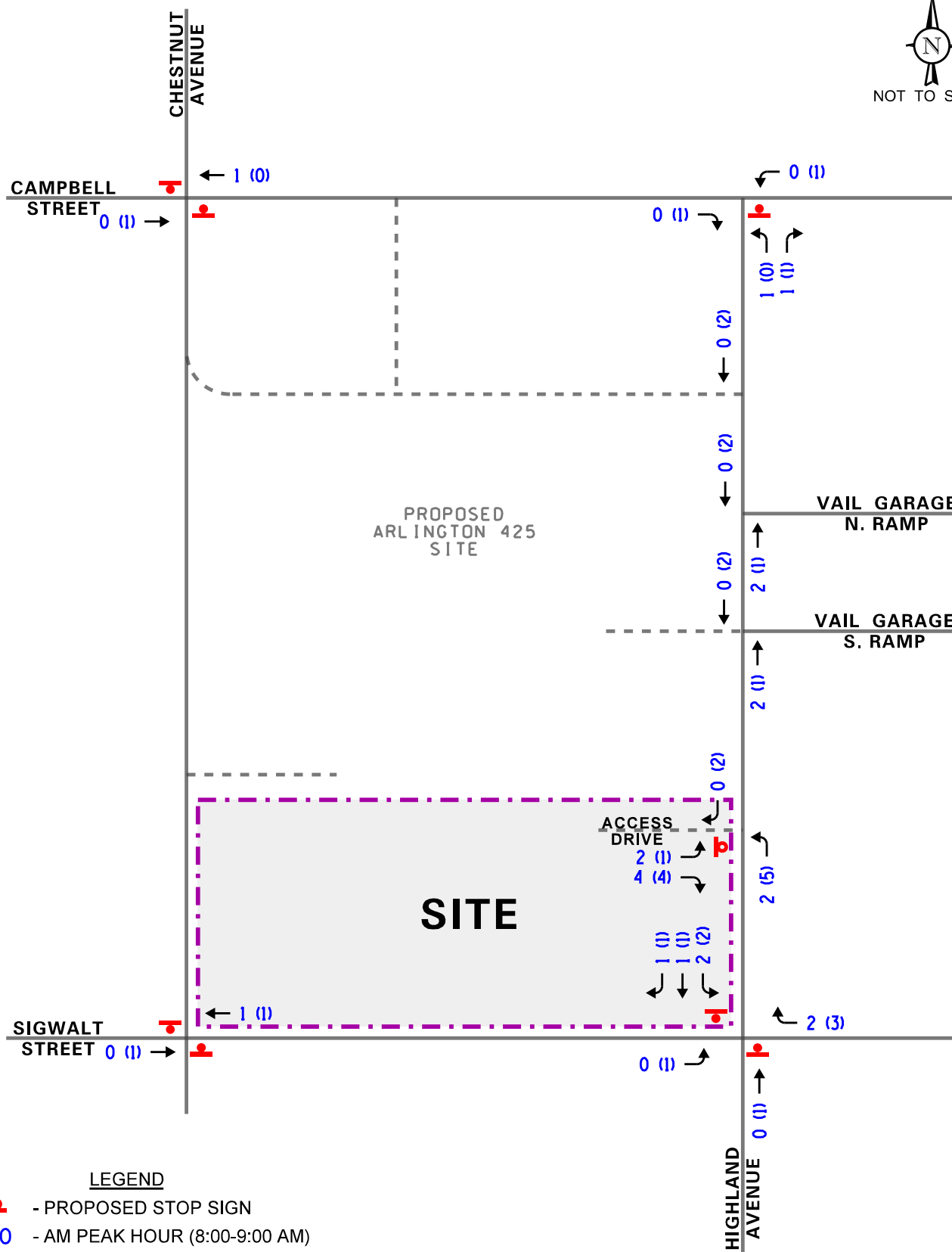
The existing traffic volumes (Figure 4) were increased by a regional growth factor to account for the increase in existing traffic related to regional growth in the area (i.e., not attributable to any particular planned development). Based on the Village of Arlington Heights 2015 Comprehensive Plan, an increase of one-half percent per year over six years (three percent total) was applied to the existing peak hour traffic volumes to project Year 2024 conditions.

Planned Background Development

The traffic from the proposed Arlington 425 residential development was included in the Year 2024 base condition. The Arlington 425 residential development proposes an inbound only access drive and a residential access drive off Highland Avenue, located north of the access drive serving the proposed row home development. Further, access is proposed from Campbell Street and two access drives off Chestnut Avenue. Traffic assignment for the overall Arlington 425 development is included as **Figure A** and is located in the Appendix of this report. **Figure 8** shows the Year 2024 Base (No-Build) traffic volumes, which includes the regional growth in traffic and the traffic estimated to be generated by the proposed Arlington 425 residential development.

Total Projected Traffic Volumes

Total projected traffic volumes include the Year 2024 Base traffic volumes (Figure 8) and the traffic estimated to be generated by the proposed development (Figure 7). It is important to note that the existing pedestrian and bicycle traffic volumes (Figure 5) were increased to account for projected pedestrian activity in this area. **Figure 9** shows the total projected vehicle traffic volumes.

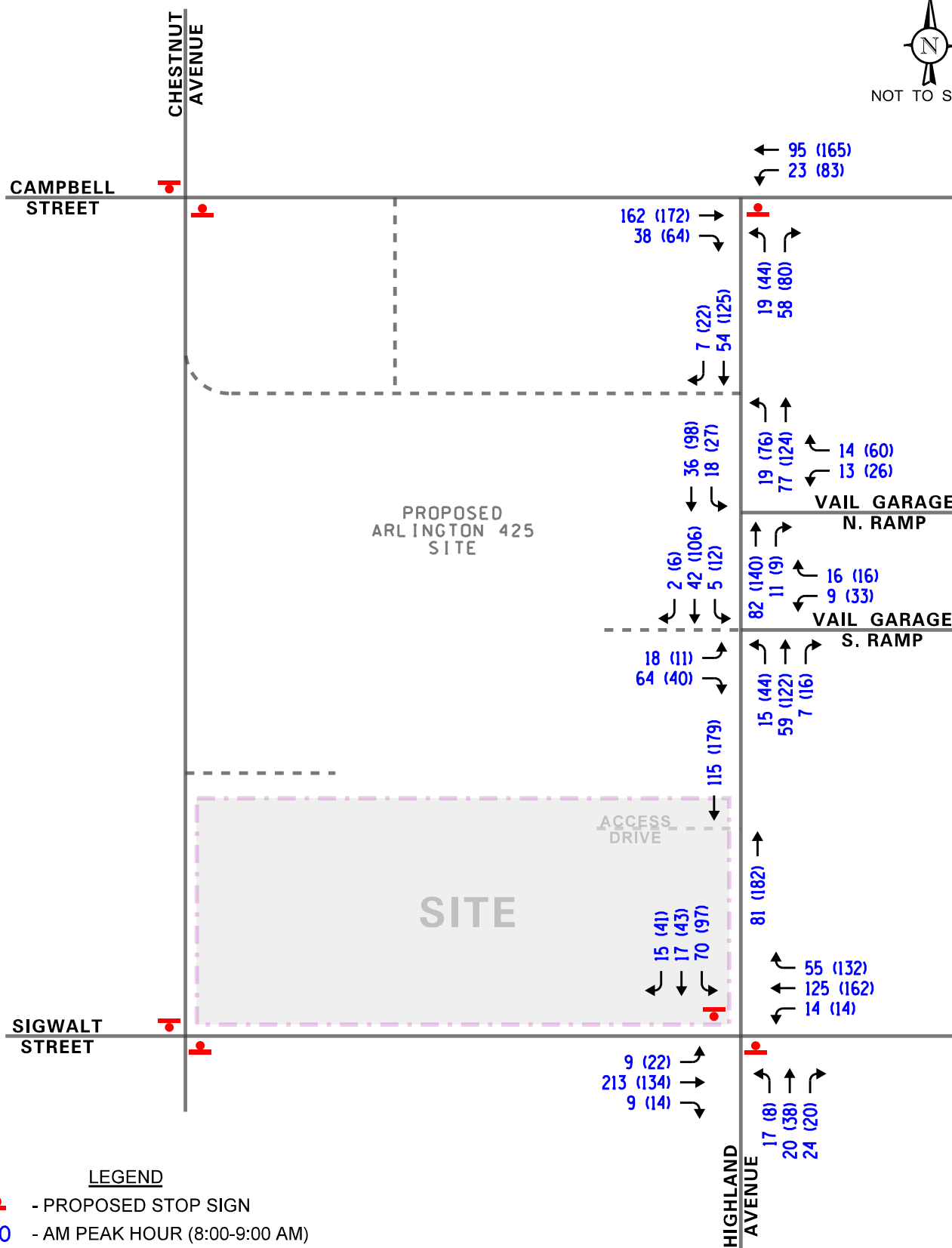
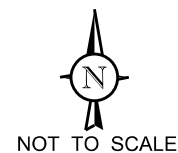


LEGEND

- PROPOSED STOP SIGN
- 00 - AM PEAK HOUR (8:00-9:00 AM)
- (00) - PM PEAK HOUR (5:00-6:00 PM)

Proposed Row
Home Development
Arlington Heights, Illinois

Estimated Site-Generated
Traffic Volumes



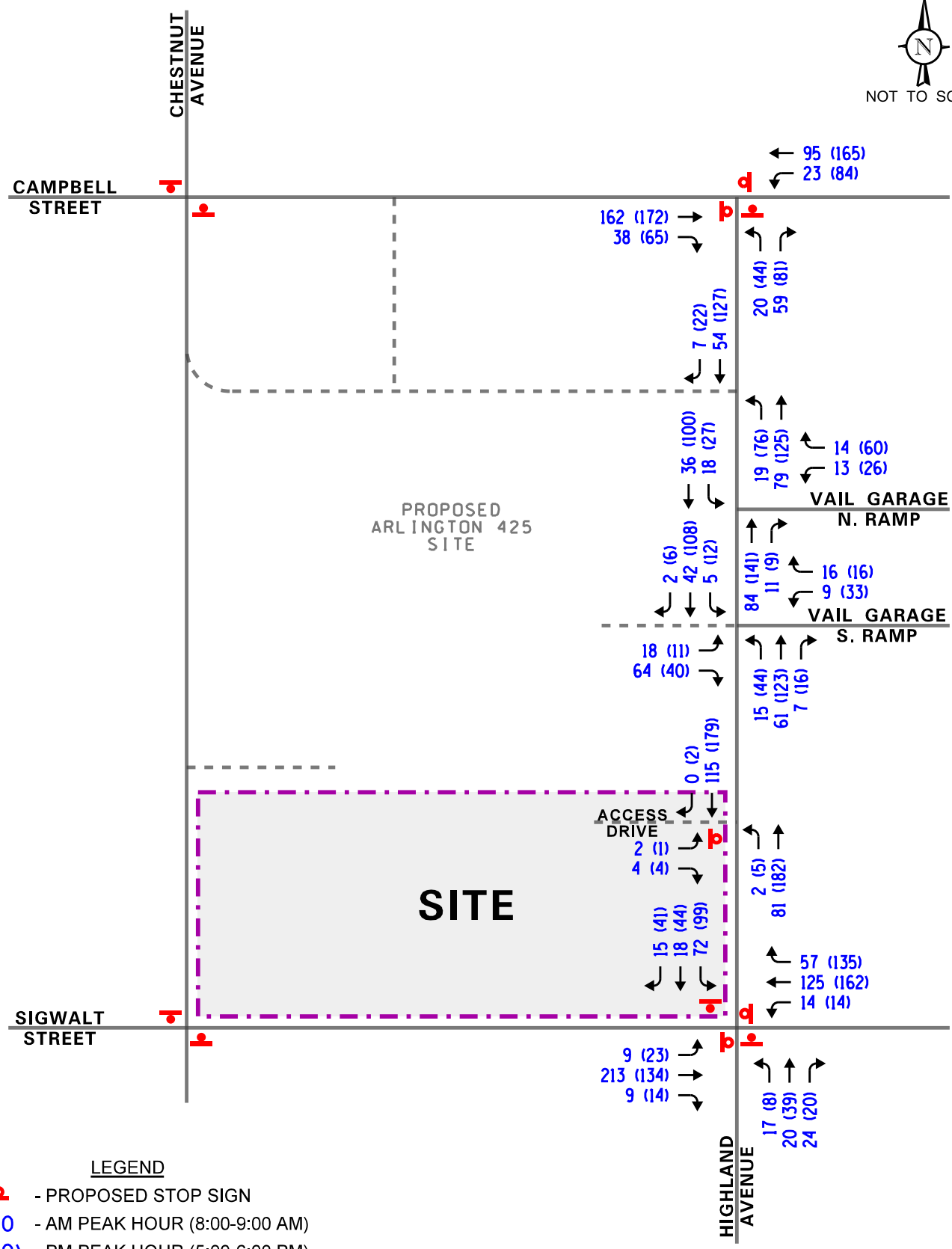
Proposed Row
Home Development
Arlington Heights, Illinois

Year 2024 Base (No Build)
Traffic Volumes

KLOA
Kenig, Lindgren, O'Hara, Aboona, Inc.
Job No: 19-063 Figure: 8



NOT TO SCALE



Proposed Row
Home Development
Arlington Heights, Illinois

Total Projected Traffic Volumes

KLOA
Kenig, Lindgren, O'Hara, Aboona, Inc.
Job No: 19-063 Figure: 9

5. Traffic Analysis and Recommendations

The following provides an evaluation conducted for the weekday morning and weekday evening peak hours. The analysis includes conducting capacity analyses to determine how well the roadway system and access drives are projected to operate and whether any roadway improvements or modifications are required.

Traffic Analyses

Roadway and adjacent or nearby intersection analyses were performed for the weekday morning and weekday evening peak hour periods for the existing (Year 2018/2019) and future projected (Year 2024) traffic volumes.

The traffic analyses were performed using the methodologies outlined in the Transportation Research Board's *Highway Capacity Manual (HCM)*, 2010 and analyzed using Synchro/SimTraffic computer software.

The analyses for the unsignalized intersections determine the average control delay to vehicles at an intersection. Control delay is the elapsed time from a vehicle joining the queue at a stop sign (includes the time required to decelerate to a stop) until its departure from the stop sign and resumption of free flow speed. The methodology analyzes each intersection approach controlled by a stop sign and considers traffic volumes on all approaches and lane characteristics.

The ability of an intersection to accommodate traffic flow is expressed in terms of level of service, which is assigned a letter from A to F based on the average control delay experienced by vehicles passing through the intersection. The *Highway Capacity Manual* definitions for levels of service and the corresponding control delay for signalized intersections and unsignalized intersections are included in the Appendix of this report.

Pedestrian and bicycle impacts are factored into the resulting levels of service and delay for each respective intersection. As noted, the existing pedestrian volumes were increased under projected traffic conditions to account for increased pedestrian activity in the area resulting from the proposed development. Further, the Village has plans to modify the traffic control at the intersections of Highland Avenue with Campbell Street and Sigwalt Street to be under all way stop sign control. As such, analyses for future conditions included these improvements.

Summaries of the traffic analysis results showing the level of service and overall intersection delay (measured in seconds) for the existing (Year 2018/2019) and Year 2024 total projected conditions are presented in **Tables 3 and 4**, respectively. A discussion of the intersections follows.

Table 3

CAPACITY ANALYSIS RESULTS – EXISTING TRAFFIC CONDITIONS

Intersection/Approach	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay
Highland Avenue and Campbell Street				
• Northbound Approach	B	10.1	B	12.3
Highland Avenue and Sigwalt Street				
• Northbound Approach	B	12.8	B	11.9
• Southbound Approach	B	14.3	B	14.1
Highland Avenue and North Garage Ramp				
• Westbound Approach	A	9.0	A	9.3
Highland Avenue and South Garage Ramp				
• Westbound Approach	A	8.8	A	9.5
LOS = Level of Service Delay is measured in seconds.				

Table 4

CAPACITY ANALYSIS RESULTS – FUTURE TRAFFIC CONDITIONS

Intersection/Approach	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay
Highland and Campbell (All-Way Stop)				
• Overall	A	8.4	A	9.6
• Eastbound Approach	A	8.6	A	9.5
• Westbound Approach	A	8.4	B	10.1
• Northbound Approach	A	7.8	A	8.9
Highland Ave and Sigwalt St (All-Way Stop)				
• Overall	B	11.1	B	10.9
• Eastbound Approach	B	12.1	B	10.2
• Westbound Approach	B	10.9	B	11.8
• Northbound Approach	A	9.4	A	9.2
• Southbound Approach	B	10.4	B	10.8
Highland Avenue and North Garage Ramp				
• Westbound Approach	B	10.4	B	12.0
Highland Avenue and South Garage Ramp/425 Access				
• Eastbound Approach	B	10.6	B	11.8
• Westbound Approach	B	10.9	C	15.5
Highland Avenue and Proposed Access				
• Eastbound Approach	A	9.2	A	9.6
LOS = Level of Service Delay is measured in seconds.				

Discussion and Recommendations

The following summarizes how the intersections are projected to operate and identify any roadway and traffic control improvements to accommodate the development traffic.

Highland Avenue and Campbell Street

The northbound approach currently operates at a LOS B or better during the peak hours. For future conditions, the intersection was analyzed as an all way stop sign-control. The analyses show that northbound approach will continue to operate at acceptable levels of service during the peak hours with minimal increases in overall delay. The queue analysis shows that the northbound queue on Highland Avenue will not exceed one to two vehicles during peak hours. Furthermore, westbound left-turn movements from Campbell Street onto Highland Avenue are projected to continue operating at LOS A during the peak hours with increases in delay of less than one second and 95th percentile queues of one to two vehicles. The proposed development traffic will have a limited impact on the operations of this intersection. High-visibility crosswalks should be provided on the east and south legs of the intersection.

Highland Avenue and Sigwalt Street

This intersection was analyzed as an all way stop sign control. The analyses show that the overall intersection, as well as the individual approaches, will operate at an LOS B or better for both peak hours under projected conditions. The queue analysis shows that the queues on all four approaches will not exceed one to two vehicles during peak hours. The existing high-visibility crosswalks on all four legs should be restriped due to weathering/fading.

Highland Avenue and Proposed Access Drive

All of the independent row home garages and the guest parking will be accessed from a single, full access drive off Highland Avenue. The access will provide one lane inbound and one lane outbound. The outbound lane should be under stop sign control. A minimum of two on-street parking spaces on the west side of Highland Avenue will need to be removed to accommodate the access intersection. The capacity analyses show that this access intersection will operate at acceptable levels of service with minimal queuing and delay. The access drive is located south of the existing one-way westbound (exit) alley to the north, and north of the two access drives on the east side of Highland Avenue serving the former AT&T development, and therefore will not have turning movement conflicts with these existing access drives. Further, the proposed development is estimated to generate a low volume of traffic during peak commuting hours. As such, the introduction of this access drive will have a minimal impact on the projected traffic operations along Highland Avenue. A high-visibility crosswalk is recommended across the driveway approach.

Pedestrian Mobility

The development proposes a pedestrian network system both within the development, as well as along the site frontage of the surrounding roadways (Sigwalt Street, Chestnut Avenue, and Highland Avenue). Further, high-visibility crosswalks should be provided on surrounding intersections, as identified earlier in this study.

6. Conclusion

The plan for a 16-row home residential development is proposed to be located north of Sigwalt Street between Chestnut Avenue and Highland Avenue. Access to the individual row home unit garages and guest parking will be from a single, full access drive off Highland Avenue. Based on the preceding analyses and recommendations, the following conclusions have been made:

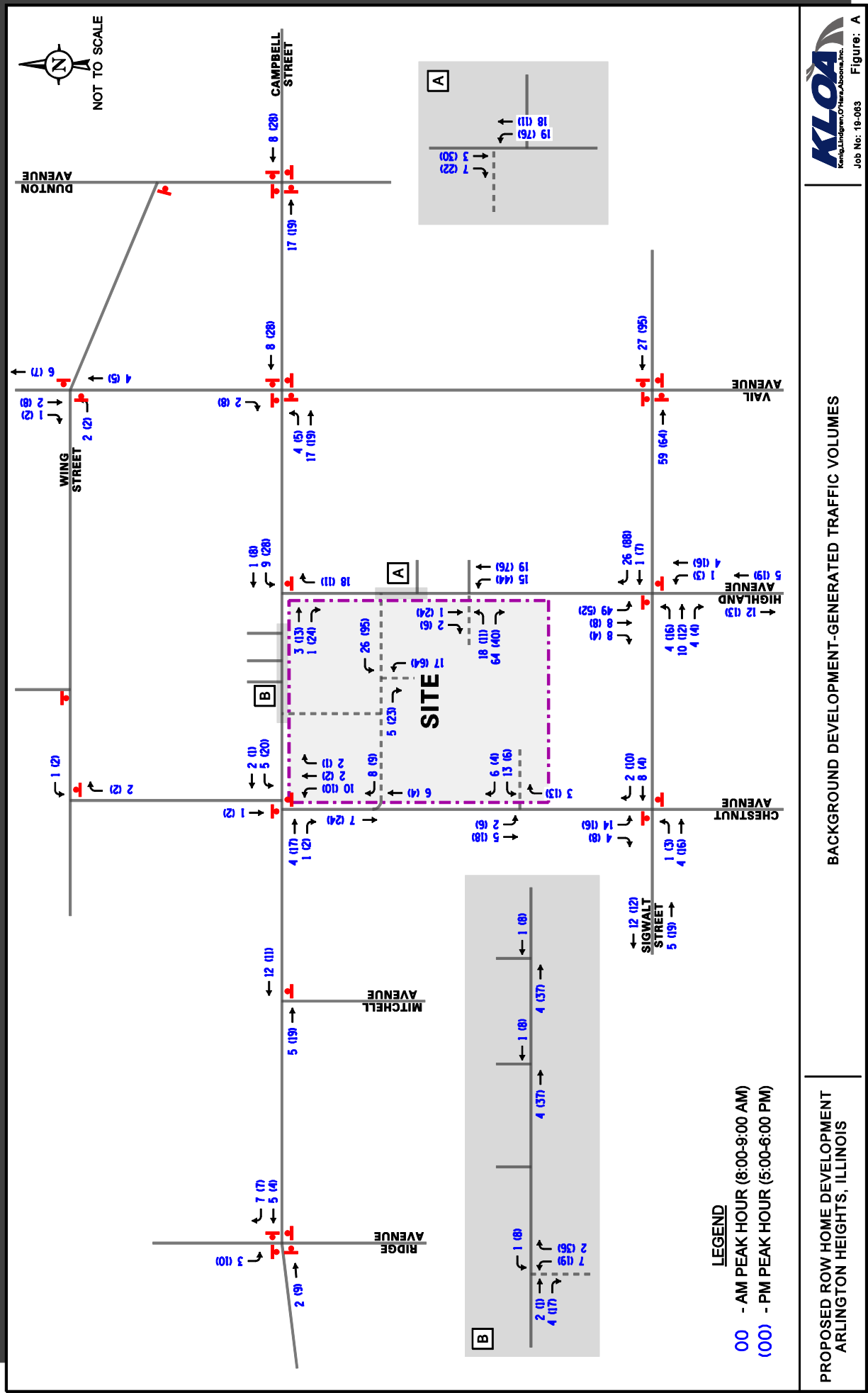
- The proposed overall development is located on the west portion of the Village of Arlington Heights's downtown district, which provides retail, entertainment, and commercial uses, and experiences high pedestrian mobility and interactivity. A residential development in this area is considered a complementary land use to further support these convenient and nearby goods and services without requiring the use of an automobile.
- Accessibility to and from the proposed development and surrounding area is enhanced by the various alternative modes of transportation serving the area, including bus transit and pedestrian and bicycle amenities.
- The low volume of traffic estimated to be generated by the proposed development will be further reduced due to the alternative modes of transportation serving the area and the convenience and accessibility of nearby goods and services.
- The development-generated traffic can be accommodated without significant impact to the external roadway system. All of the intersections within the study limits are projected to operate at acceptable levels of service with the addition of the proposed development-generated traffic, regional growth in existing traffic, and the traffic estimated to be generated by the proposed Arlington 425 development.
- The capacity analyses show that the intersections of Highland Avenue with Campbell Street and Sigwalt Street will operate at acceptable levels of service under all way stop sign control. Both Sigwalt Street traffic and Campbell Street traffic are currently under freeflow conditions.
- The proposed full access off Highland Avenue serving the proposed development will provide one lane inbound and one lane outbound under stop sign control. A high-visibility crosswalk is recommended across the driveway approach.
- The projected low vehicle turning movements at the proposed access drive will have a low impact on the projected traffic operations along Highland Avenue between Sigwalt Street and Campbell Street that include the Vail garage ramps and the one-way westbound (exit) alley to the north and the two access drives serving the former AT&T development to the south.
- A minimum of two on-street parking spaces on the west side of Highland Avenue will need to be removed to accommodate the access intersection.

Appendix

Site Plan
Background Traffic Assignment Figure
Traffic Counts
Capacity Analysis

Site Plan

Background Traffic Assignment Figure



BACKGROUND DEVELOPMENT-GENERATED TRAFFIC VOLUMES

PROPOSED ROW HOME DEVELOPMENT
 ARLINGTON HEIGHTS, ILLINOIS

Traffic Counts



Kenig, Lindgren, O'Hara, Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: Campbell Street and Highland Avenue
Site Code:
Start Date: 06/26/2018
Page No: 1

Turning Movement Data

Start Time	Campbell Street Eastbound					Campbell Street Westbound					Highland Avenue Northbound				
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	Int. Total
7:00 AM	0	9	11	0	20	0	0	15	1	15	0	8	5	4	48
7:15 AM	0	17	8	0	25	0	0	14	3	14	0	7	8	3	54
7:30 AM	0	20	13	0	33	0	2	16	5	18	0	7	4	1	62
7:45 AM	0	27	17	0	44	0	3	18	4	21	0	6	4	2	75
Hourly Total	0	73	49	0	122	0	5	63	13	68	0	28	21	10	239
8:00 AM	0	22	8	0	30	1	1	16	3	18	0	3	5	1	56
8:15 AM	0	39	13	0	52	0	4	18	1	22	0	8	8	0	90
8:30 AM	0	38	5	0	43	0	4	17	1	21	0	6	12	3	82
8:45 AM	0	41	10	0	51	0	3	16	2	19	0	1	14	5	85
Hourly Total	0	140	36	0	176	1	12	67	7	80	0	18	39	9	313
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	37	5	1	42	0	6	30	3	36	0	5	9	6	92
4:15 PM	0	40	5	2	45	4	1	22	2	27	0	2	5	5	79
4:30 PM	0	38	6	0	44	0	3	40	0	43	0	2	9	6	98
4:45 PM	0	36	12	3	48	3	3	24	0	30	0	2	7	3	87
Hourly Total	0	151	28	6	179	7	13	116	5	136	0	11	30	20	356
5:00 PM	0	36	7	0	43	0	10	38	3	48	0	8	17	5	116
5:15 PM	0	23	7	0	30	0	10	35	2	45	0	6	16	0	97
5:30 PM	0	36	6	0	42	0	9	31	1	40	0	10	18	1	110
5:45 PM	0	43	8	1	51	1	18	16	5	35	0	7	9	8	102
Hourly Total	0	138	28	1	166	1	47	120	11	168	0	31	60	14	425
Grand Total	0	502	141	7	643	9	77	366	36	452	0	88	150	53	1333
Approach %	0.0	78.1	21.9	-	-	2.0	17.0	81.0	-	-	0.0	37.0	63.0	-	-
Total %	0.0	37.7	10.6	-	48.2	0.7	5.8	27.5	-	33.9	0.0	6.6	11.3	-	17.9
Lights	0	500	140	-	640	9	75	356	-	440	0	87	147	-	234
% Lights	-	99.6	99.3	-	99.5	100.0	97.4	97.3	-	97.3	-	98.9	98.0	-	98.6
Buses	0	0	0	-	0	0	0	1	-	1	0	1	0	-	2
% Buses	-	0.0	0.0	-	0.0	0.0	0.0	0.3	-	0.2	-	1.1	0.0	-	0.4
Single-Unit Trucks	0	0	1	-	1	0	0	4	-	4	0	0	0	-	5
% Single-Unit Trucks	-	0.0	0.7	-	0.2	0.0	0.0	1.1	-	0.9	-	0.0	0.0	-	0.4
Articulated Trucks	0	0	0	-	0	0	0	1	-	1	0	0	0	-	1
% Articulated Trucks	-	0.0	0.0	-	0.0	0.0	0.0	0.3	-	0.2	-	0.0	0.0	-	0.1
Bicycles on Road	0	2	0	-	2	0	2	4	-	6	0	0	3	-	11
% Bicycles on Road	-	0.4	0.0	-	0.3	0.0	2.6	1.1	-	1.3	-	0.0	2.0	-	0.8
Pedestrians	-	-	-	7	-	-	-	-	36	-	-	-	-	53	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-



Kenig Lindgren O'Hara Aboona, Inc.
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(847)518-9990

Count Name: Campbell Street and Highland Avenue
Site Code:
Start Date: 06/26/2018
Page No.: 2

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Campbell Street Eastbound					Campbell Street Westbound					Highland Avenue Northbound				
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	Int. Total
8:00 AM	0	22	8	0	30	1	1	16	3	18	0	3	5	1	56
8:15 AM	0	39	13	0	52	0	4	18	1	22	0	8	8	0	16
8:30 AM	0	38	5	0	43	0	4	17	1	21	0	6	12	3	18
8:45 AM	0	41	10	0	51	0	3	16	2	19	0	1	14	5	15
Total	0	140	36	0	176	1	12	67	7	80	0	18	39	9	313
Approach %	0.0	79.5	20.5	-	-	1.3	15.0	83.8	-	-	0.0	31.6	68.4	-	-
Total %	0.0	44.7	11.5	-	56.2	0.3	3.8	21.4	-	25.6	0.0	5.8	12.5	-	18.2
PHF	0.000	0.854	0.682	-	0.846	0.250	0.750	0.931	-	0.909	0.000	0.563	0.696	-	0.792
Lights	0	140	35	-	175	1	12	63	-	76	0	18	39	-	57
% Lights	-	100.0	97.2	-	99.4	100.0	100.0	94.0	-	95.0	-	100.0	100.0	-	100.0
Buses	0	0	0	-	0	0	0	1	-	1	0	0	0	-	0
% Buses	-	0.0	0.0	-	0.0	0.0	0.0	1.5	-	1.3	-	0.0	0.0	-	0.0
Single-Unit Trucks	0	0	1	-	1	0	0	2	-	2	0	0	0	-	0
% Single-Unit Trucks	-	0.0	2.8	-	0.6	0.0	0.0	3.0	-	2.5	-	0.0	0.0	-	0.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Articulated Trucks	-	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0
Bicycles on Road	0	0	0	-	0	0	0	1	-	1	0	0	0	-	1
% Bicycles on Road	-	0.0	0.0	-	0.0	0.0	0.0	1.5	-	1.3	-	0.0	0.0	-	0.0
Pedestrians	-	-	-	0	-	-	-	-	7	-	-	-	-	9	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-



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Count Name: Campbell Street and Highland Avenue
Site Code:
Start Date: 06/26/2018
Page No.: 3

Turning Movement Peak Hour Data (5:00 PM)

Start Time	Campbell Street Eastbound					Campbell Street Westbound					Highland Avenue Northbound				
	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Left	Right	Peds	Int. Total
5:00 PM	0	36	7	0	43	0	10	38	3	48	0	8	17	5	116
5:15 PM	0	23	7	0	30	0	10	35	2	45	0	6	16	0	22
5:30 PM	0	36	6	0	42	0	9	31	1	40	0	10	18	1	110
5:45 PM	0	43	8	1	51	1	18	16	5	35	0	7	9	8	102
Total	0	138	28	1	166	1	47	120	11	168	0	31	60	14	425
Approach %	0.0	83.1	16.9	-	-	0.6	28.0	71.4	-	-	0.0	34.1	65.9	-	-
Total %	0.0	32.5	6.6	-	39.1	0.2	11.1	28.2	-	39.5	0.0	7.3	14.1	-	21.4
PHF	0.000	0.802	0.875	-	0.814	0.250	0.653	0.789	-	0.875	0.000	0.775	0.833	-	0.813
Lights	0	137	28	-	165	1	45	120	-	166	0	31	60	-	91
% Lights	-	99.3	100.0	-	99.4	100.0	95.7	100.0	-	98.8	-	100.0	100.0	-	100.0
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Buses	-	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Single-Unit Trucks	-	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0
% Articulated Trucks	-	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0
Bicycles on Road	0	1	0	-	1	0	2	0	-	2	0	0	0	-	3
% Bicycles on Road	-	0.7	0.0	-	0.6	0.0	4.3	0.0	-	1.2	-	0.0	0.0	-	0.7
Pedestrians	-	-	-	1	-	-	-	-	11	-	-	-	-	14	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-



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Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: Campbell St and Chestnut Ave
Site Code:
Start Date: 08/08/2017
Page No: 1

Turning Movement Data

Start Time	Campbell Ave Eastbound					Campbell St Westbound					Chestnut Ave Northbound					Chestnut Ave Southbound					Int. Total				
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left		Thru	Right	Peds	App. Total
7:00 AM	0	4	24	0	0	28	0	0	24	2	3	26	0	0	1	2	3	3	0	0	5	2	2	7	64
7:15 AM	0	2	24	1	0	27	0	0	18	3	2	21	0	0	2	0	3	2	0	2	4	1	3	7	57
7:30 AM	0	5	26	0	1	31	0	0	22	2	1	24	0	1	1	0	0	2	0	1	3	2	5	6	63
7:45 AM	0	0	43	5	3	48	0	1	25	2	4	28	0	2	4	0	2	6	0	0	4	1	5	5	87
Hourly Total	0	11	117	6	4	134	0	1	89	9	10	99	0	3	8	2	8	13	0	3	16	6	15	25	271
8:00 AM	0	2	34	1	1	37	0	1	25	1	1	27	0	0	1	0	2	1	0	2	1	2	1	5	70
8:15 AM	0	3	38	1	1	42	0	0	28	2	3	30	0	2	0	0	1	2	0	2	2	2	3	6	80
8:30 AM	0	6	38	1	1	45	0	1	28	1	0	30	0	1	1	0	2	2	0	1	2	2	1	5	82
8:45 AM	0	2	43	3	1	48	0	0	26	2	2	28	0	1	2	2	2	5	0	1	0	2	2	3	84
Hourly Total	0	13	153	6	4	172	0	2	107	6	6	115	0	4	4	2	7	10	0	6	5	8	7	19	316
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	7	53	0	2	60	0	0	29	1	1	30	0	3	0	0	5	3	0	1	2	6	0	9	102
4:15 PM	0	4	35	0	1	39	0	0	38	2	1	40	0	6	1	0	0	7	0	0	2	7	2	9	95
4:30 PM	0	6	24	0	1	30	1	2	30	5	0	38	0	2	2	0	2	4	0	3	1	6	0	10	82
4:45 PM	0	3	33	4	0	40	0	0	31	2	0	33	0	2	2	3	2	7	0	1	3	3	2	7	87
Hourly Total	0	20	145	4	4	169	1	2	128	10	2	141	0	13	5	3	9	21	0	5	8	22	4	35	366
5:00 PM	0	2	40	3	0	45	0	0	34	0	0	34	0	4	2	2	2	8	0	1	1	9	2	11	98
5:15 PM	0	7	41	2	0	50	2	2	26	3	0	33	0	4	2	0	0	6	0	1	1	5	0	7	96
5:30 PM	0	5	29	4	0	38	1	5	35	6	2	47	0	4	1	2	4	7	0	5	2	3	4	10	102
5:45 PM	0	6	50	3	1	59	2	1	31	3	4	37	0	2	8	3	6	13	0	3	4	2	10	9	118
Hourly Total	0	20	160	12	1	192	5	8	126	12	6	151	0	14	13	7	12	34	0	10	8	19	16	37	414
Grand Total	0	64	575	28	13	667	6	13	450	37	24	506	0	34	30	14	36	78	0	24	37	55	42	116	1367
Approach %	0.0	9.6	86.2	4.2	-	-	1.2	2.6	88.9	7.3	-	-	0.0	43.6	38.5	17.9	-	-	0.0	20.7	31.9	47.4	-	-	-
Total %	0.0	4.7	42.1	2.0	-	48.8	0.4	1.0	32.9	2.7	-	37.0	0.0	2.5	2.2	1.0	-	5.7	0.0	1.8	2.7	4.0	-	8.5	-
Lights	0	60	564	27	-	651	6	13	440	35	-	494	0	34	27	13	-	74	0	24	34	53	-	111	1330
% Lights	-	93.8	98.1	96.4	-	97.6	100.0	100.0	97.8	94.6	-	97.6	-	100.0	90.0	92.9	-	94.9	-	100.0	91.9	96.4	-	95.7	97.3
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	2	0	0	0	0	-	0	2
% Buses	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	6.7	0.0	-	2.6	-	0.0	0.0	0.0	-	0.0	0.1
Single-Unit Trucks	0	0	7	0	-	7	0	0	5	2	-	7	0	0	1	1	-	2	0	0	1	2	-	3	19
% Single-Unit Trucks	-	0.0	1.2	0.0	-	1.0	0.0	0.0	1.1	5.4	-	1.4	-	0.0	3.3	7.1	-	2.6	-	0.0	2.7	3.6	-	2.6	1.4
Articulated Trucks	0	1	1	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	2
% Articulated Trucks	-	1.6	0.2	0.0	-	0.3	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Road	0	3	3	1	-	7	0	0	5	0	-	5	0	0	0	0	-	0	0	0	2	0	-	2	14
% Bicycles on Road	-	4.7	0.5	3.6	-	1.0	0.0	0.0	1.1	0.0	-	1.0	-	0.0	0.0	0.0	-	0.0	-	0.0	5.4	0.0	-	1.7	1.0
Pedestrians	-	-	-	-	13	-	-	-	-	-	24	-	-	-	-	-	36	-	-	-	-	-	42	-	-



Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: Campbell St and Chestnut Ave
Site Code:
Start Date: 08/08/2017
Page No.: 3

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Campbell Ave Eastbound						Campbell St Westbound						Chestnut Ave Northbound						Chestnut Ave Southbound					
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total
8:00 AM	0	2	34	1	1	37	0	1	25	1	1	27	0	0	1	0	0	2	0	2	1	2	1	5
8:15 AM	0	3	38	1	1	42	0	0	28	2	3	30	0	2	0	0	0	1	2	2	2	3	6	80
8:30 AM	0	6	38	1	1	45	0	1	28	1	0	30	0	1	1	0	0	2	0	1	2	2	1	5
8:45 AM	0	2	43	3	1	48	0	0	26	2	2	28	0	1	2	2	2	5	0	1	0	2	2	3
Total	0	13	153	6	4	172	0	2	107	6	6	115	0	4	4	2	7	10	0	6	5	8	7	19
Approach %	0.0	7.6	89.0	3.5	-	-	0.0	1.7	93.0	5.2	-	-	0.0	40.0	40.0	20.0	-	-	0.0	31.6	26.3	42.1	-	-
Total %	0.0	4.1	48.4	1.9	-	54.4	0.0	0.6	33.9	1.9	-	36.4	0.0	1.3	1.3	0.6	-	3.2	0.0	1.9	1.6	2.5	-	6.0
PHF	0.000	0.542	0.890	0.500	-	0.896	0.000	0.500	0.955	0.750	-	0.958	0.000	0.500	0.500	0.250	-	0.500	0.000	0.750	0.625	1.000	-	0.792
Lights	0	13	151	6	-	170	0	2	104	5	-	111	0	4	4	2	-	10	0	6	5	7	-	18
% Lights	-	100.0	98.7	100.0	-	98.8	-	100.0	97.2	83.3	-	96.5	-	100.0	100.0	100.0	-	100.0	-	100.0	100.0	87.5	-	94.7
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Buses	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0
Single-Unit Trucks	0	0	2	0	-	2	0	0	3	1	-	4	0	0	0	0	-	0	0	0	0	1	-	1
% Single-Unit Trucks	-	0.0	1.3	0.0	-	1.2	-	0.0	2.8	16.7	-	3.5	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	12.5	-	5.3
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0
Pedestrians	-	-	-	-	4	-	-	-	-	-	6	-	-	-	-	-	7	-	-	-	-	-	7	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-



Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: Campbell St and Chestnut Ave
Site Code:
Start Date: 08/08/2017
Page No: 4

Turning Movement Peak Hour Data (5:00 PM)

Start Time	Campbell Ave Eastbound						Campbell St Westbound						Chestnut Ave Northbound						Chestnut Ave Southbound							
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total	
5:00 PM	0	2	40	3	0	45	0	0	34	0	0	34	0	4	2	2	2	2	8	0	1	1	9	2	11	98
5:15 PM	0	7	41	2	0	50	2	2	26	3	0	33	0	4	2	0	0	0	6	0	1	1	5	0	7	96
5:30 PM	0	5	29	4	0	38	1	5	35	6	2	47	0	4	1	2	4	7	0	5	2	3	4	10	102	
5:45 PM	0	6	50	3	1	59	2	1	31	3	4	37	0	2	8	3	6	13	0	3	4	2	10	9	118	
Total	0	20	160	12	1	192	5	8	126	12	6	151	0	14	13	7	12	34	34	0	10	8	19	16	37	414
Approach %	0.0	10.4	83.3	6.3	-	-	3.3	5.3	83.4	7.9	-	-	0.0	41.2	38.2	20.6	-	-	-	0.0	27.0	21.6	51.4	-	-	-
Total %	0.0	4.8	38.6	2.9	-	46.4	1.2	1.9	30.4	2.9	-	36.5	0.0	3.4	3.1	1.7	-	8.2	0.0	2.4	1.9	4.6	-	8.9	-	
PHF	0.000	0.714	0.800	0.750	-	0.814	0.625	0.400	0.900	0.500	-	0.803	0.000	0.875	0.406	0.583	-	0.654	0.000	0.500	0.500	0.528	-	0.841	0.877	
Lights	0	20	157	11	-	188	5	8	123	12	-	148	0	14	13	7	-	34	0	10	6	19	-	35	405	
% Lights	-	100.0	98.1	91.7	-	97.9	100.0	100.0	97.6	100.0	-	98.0	-	100.0	100.0	100.0	-	100.0	-	100.0	75.0	100.0	-	94.6	97.8	
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	
% Buses	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	
Single-Unit Trucks	0	0	2	0	-	2	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	3	
% Single-Unit Trucks	-	0.0	1.3	0.0	-	1.0	0.0	0.0	0.8	0.0	-	0.7	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.7	
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	
Bicycles on Road	0	0	1	1	-	2	0	0	2	0	-	2	0	0	0	0	-	0	0	0	2	0	-	2	6	
% Bicycles on Road	-	0.0	0.6	8.3	-	1.0	0.0	0.0	1.6	0.0	-	1.3	-	0.0	0.0	0.0	-	0.0	-	0.0	25.0	0.0	-	5.4	1.4	
Pedestrians	-	-	-	-	1	-	-	-	-	-	6	-	-	-	-	-	-	12	-	-	-	-	-	16	-	
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	



Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400
Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: Sigwalt Street and Highland Avenue
Site Code:
Start Date: 06/26/2018
Page No: 1

Turning Movement Data

Start Time	Sigwalt Street Eastbound					Sigwalt Street Westbound					Highland Avenue Northbound					Highland Avenue Southbound					Int. Total				
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total							
7:00 AM	0	9	30	1	4	40	0	4	35	5	1	44	0	0	6	3	0	9	0	3	1	2	4	6	99
7:15 AM	0	5	28	0	0	33	0	1	21	2	0	24	0	0	2	2	0	4	0	6	0	2	1	8	69
7:30 AM	0	7	31	0	1	38	0	2	20	7	0	29	0	1	2	2	0	5	0	7	2	3	0	12	84
7:45 AM	0	10	16	1	2	27	0	2	29	3	2	34	0	1	8	3	0	12	0	7	0	1	0	8	81
Hourly Total	0	31	105	2	7	138	0	9	105	17	3	131	0	2	18	10	0	30	0	23	3	8	5	34	333
8:00 AM	0	0	25	2	1	27	0	1	14	3	0	18	0	3	3	3	0	9	0	3	1	2	2	6	60
8:15 AM	0	2	23	0	0	25	0	3	28	7	0	38	0	2	5	1	0	8	0	4	2	1	0	7	78
8:30 AM	0	2	26	0	0	28	0	1	26	9	0	36	0	2	2	4	0	8	0	8	2	1	0	11	83
8:45 AM	0	0	32	2	1	34	0	8	36	9	0	53	0	8	5	15	0	28	0	5	3	1	0	9	124
Hourly Total	0	4	106	4	2	114	0	13	104	28	0	145	0	15	15	23	0	53	0	20	8	5	2	33	345
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	25	1	2	26	0	3	41	4	0	48	0	0	5	3	0	8	0	5	3	0	0	8	90
4:15 PM	0	1	25	1	3	27	0	2	30	3	0	35	0	0	1	2	0	3	0	2	2	0	2	4	69
4:30 PM	0	0	32	0	0	32	0	0	38	3	2	41	0	1	1	5	0	7	0	6	2	4	2	12	92
4:45 PM	0	2	29	1	2	32	0	0	42	6	0	48	0	0	5	7	0	12	0	2	0	2	0	4	96
Hourly Total	0	3	111	3	7	117	0	5	151	16	2	172	0	1	12	17	0	30	0	15	7	6	4	28	347
5:00 PM	0	0	28	2	2	30	0	2	48	4	0	54	0	1	3	1	0	5	0	6	6	5	2	17	106
5:15 PM	0	2	29	3	1	34	0	1	28	3	0	32	0	1	7	2	0	10	0	7	4	5	0	16	92
5:30 PM	0	3	25	0	2	28	0	2	48	4	0	54	0	0	4	1	0	5	0	13	8	13	1	34	121
5:45 PM	0	5	26	1	1	32	0	2	43	5	0	50	0	2	2	7	0	11	0	7	7	3	2	17	110
Hourly Total	0	10	108	6	6	124	0	7	167	16	0	190	0	4	16	11	0	31	0	33	25	26	5	84	429
Grand Total	0	48	430	15	22	493	0	34	527	77	5	638	0	22	61	61	0	144	0	91	43	45	16	179	1454
Approach %	0.0	9.7	87.2	3.0	-	-	0.0	5.3	82.6	12.1	-	-	0.0	15.3	42.4	42.4	-	-	0.0	50.8	24.0	25.1	-	-	-
Total %	0.0	3.3	29.6	1.0	-	33.9	0.0	2.3	36.2	5.3	-	43.9	0.0	1.5	4.2	4.2	-	9.9	0.0	6.3	3.0	3.1	-	12.3	-
Lights	0	48	421	14	-	483	0	31	516	77	-	624	0	22	57	60	-	139	0	90	40	45	-	175	1421
% Lights	-	100.0	97.9	93.3	-	98.0	-	91.2	97.9	100.0	-	97.8	-	100.0	93.4	98.4	-	96.5	-	98.9	93.0	100.0	-	97.8	97.7
Buses	0	0	1	0	-	1	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	2
% Buses	-	0.0	0.2	0.0	-	0.2	-	0.0	0.0	0.0	-	0.0	-	0.0	1.6	0.0	-	0.7	-	0.0	0.0	0.0	-	0.0	0.1
Single-Unit Trucks	0	0	6	0	-	6	0	0	7	0	-	7	0	0	0	1	-	1	0	1	0	0	-	1	15
% Single-Unit Trucks	-	0.0	1.4	0.0	-	1.2	-	0.0	1.3	0.0	-	1.1	-	0.0	0.0	1.6	-	0.7	-	1.1	0.0	0.0	-	0.6	1.0
Articulated Trucks	0	0	0	0	-	0	0	0	3	0	-	3	0	0	0	0	-	0	0	0	0	0	-	0	3
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	0.0	0.6	0.0	-	0.5	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.2
Bicycles on Road	0	0	2	1	-	3	0	3	1	0	-	4	0	0	3	0	-	3	0	0	3	0	-	3	13
% Bicycles on Road	-	0.0	0.5	6.7	-	0.6	-	8.8	0.2	0.0	-	0.6	-	0.0	4.9	0.0	-	2.1	-	0.0	7.0	0.0	-	1.7	0.9
Pedestrians	-	-	-	-	22	-	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	16	-	-



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Count Name: Sigwalt Street and Highland Avenue
Site Code:
Start Date: 06/26/2018
Page No.: 3

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Sigwalt Street Eastbound						Sigwalt Street Westbound						Highland Avenue Northbound						Highland Avenue Southbound						Int. Total	
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total		
8:00 AM	0	0	25	2	1	27	0	1	14	3	0	18	0	3	3	3	3	0	9	0	3	1	2	2	6	60
8:15 AM	0	2	23	0	0	25	0	3	28	7	0	38	0	2	5	1	0	8	8	0	4	2	1	0	7	78
8:30 AM	0	2	26	0	0	28	0	1	26	9	0	36	0	2	2	4	0	8	8	0	8	2	1	0	11	83
8:45 AM	0	0	32	2	1	34	0	8	36	9	0	53	0	8	5	15	0	28	0	5	3	1	0	9	124	
Total	0	4	106	4	2	114	0	13	104	28	0	145	0	15	15	23	0	53	0	20	8	5	2	33	345	
Approach %	0.0	3.5	93.0	3.5	-	-	0.0	9.0	71.7	19.3	-	-	0.0	28.3	28.3	43.4	-	-	0.0	60.6	24.2	15.2	-	-	-	-
Total %	0.0	1.2	30.7	1.2	-	33.0	0.0	3.8	30.1	8.1	-	42.0	0.0	4.3	4.3	6.7	-	15.4	0.0	5.8	2.3	1.4	-	-	9.6	-
PHF	0.000	0.500	0.828	0.500	-	0.838	0.000	0.406	0.722	0.778	-	0.684	0.000	0.469	0.750	0.383	-	0.473	0.000	0.625	0.667	0.625	-	-	0.750	0.696
Lights	0	4	104	4	-	112	0	13	103	28	-	144	0	15	15	22	-	52	0	19	8	5	-	-	32	340
% Lights	-	100.0	98.1	100.0	-	98.2	-	100.0	99.0	100.0	-	99.3	-	100.0	100.0	95.7	-	98.1	-	95.0	100.0	100.0	-	-	97.0	98.6
Buses	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1	1
% Buses	-	0.0	0.9	0.0	-	0.9	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	-	0.0	0.3
Single-Unit Trucks	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	1	-	1	0	1	0	0	-	-	1	3
% Single-Unit Trucks	-	0.0	0.9	0.0	-	0.9	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	4.3	-	1.9	-	5.0	0.0	0.0	-	-	3.0	0.9
Articulated Trucks	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1	1
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	0.0	1.0	0.0	-	0.7	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	-	0.0	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	0.0	0.0	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400
Rosemont, Illinois, United States 60018
(847)518-9990

Count Name: Sigwalt Street and Highland Avenue
Site Code:
Start Date: 06/26/2018
Page No: 4

Turning Movement Peak Hour Data (5:00 PM)

Start Time	Sigwalt Street Eastbound						Sigwalt Street Westbound						Highland Avenue Northbound						Highland Avenue Southbound					
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total
5:00 PM	0	0	28	2	2	30	0	2	48	4	0	54	0	1	3	1	0	5	0	6	6	5	2	17
5:15 PM	0	2	29	3	1	34	0	1	28	3	0	32	0	1	7	2	0	10	0	7	4	5	0	16
5:30 PM	0	3	25	0	2	28	0	2	48	4	0	54	0	0	4	1	0	5	0	13	8	13	1	34
5:45 PM	0	5	26	1	1	32	0	2	43	5	0	50	0	2	2	7	0	11	0	7	7	3	2	17
Total	0	10	108	6	6	124	0	7	167	16	0	190	0	4	16	11	0	31	0	33	25	26	5	84
Approach %	0.0	8.1	87.1	4.8	-	-	0.0	3.7	87.9	8.4	-	-	0.0	12.9	51.6	35.5	-	-	0.0	39.3	29.8	31.0	-	-
Total %	0.0	2.3	25.2	1.4	-	28.9	0.0	1.6	38.9	3.7	-	44.3	0.0	0.9	3.7	2.6	-	7.2	0.0	7.7	5.8	6.1	-	19.6
PHF	0.000	0.500	0.931	0.500	-	0.912	0.000	0.875	0.870	0.800	-	0.880	0.000	0.500	0.571	0.393	-	0.705	0.000	0.635	0.781	0.500	-	0.618
Lights	0	10	105	6	-	121	0	7	163	16	-	186	0	4	16	11	-	31	0	33	24	26	-	83
% Lights	-	100.0	97.2	100.0	-	97.6	-	100.0	97.6	100.0	-	97.9	-	100.0	100.0	100.0	-	100.0	-	100.0	96.0	100.0	-	98.8
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Buses	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0
Single-Unit Trucks	0	0	3	0	-	3	0	0	3	0	-	3	0	0	0	0	-	0	0	0	0	0	-	0
% Single-Unit Trucks	-	0.0	2.8	0.0	-	2.4	-	0.0	1.8	0.0	-	1.6	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	0	0	1	0	-	1
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.6	0.0	-	0.5	-	0.0	0.0	0.0	-	0.0	-	0.0	4.0	0.0	-	1.2
Pedestrians	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	5	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-

Arlington Heights, IL Weather: Warm and Dry
 Highland Ave and Lower Level Garage Access
 Wednesday June 27, 2018

07/02/18
 11:39:45

URNS/TEAPAC[Ver 3.61.12] - 60-Minute Volumes: by Movement

Intersection # 1 highland/lowerlevelgar													
Begin Time	N-Approach			E-Approach			S-Approach			W-Approach			Int Total
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	
700	0	59	38	25	0	5	25	52	0	0	0	0	204
715	0	56	38	20	0	7	20	45	0	0	0	0	186
730	0	53	37	13	0	8	21	35	0	0	0	0	167
745	0	52	32	14	0	11	12	42	0	0	0	0	163
800	0	35	17	13	0	12	10	52	0	0	0	0	139
815	0	25	9	12	0	8	7	46	0	0	0	0	107*
830	0	15	3	10	0	6	5	41	0	0	0	0	80*
845	0	9	2	4	0	3	3	22	0	0	0	0	43*

1600	0	45	18	18	0	17	2	53	0	0	0	0	153
1615	0	51	22	23	0	19	3	68	0	0	0	0	186
1630	0	54	23	19	0	20	7	67	0	0	0	0	190
1645	0	61	25	24	0	19	6	74	0	0	0	0	209
1700	0	65	26	39	0	25	8	97	0	0	0	0	260
1715	0	52	20	31	0	21	7	73	0	0	0	0	204*
1730	0	42	15	28	0	18	3	58	0	0	0	0	164*
1745	0	21	7	16	0	9	3	32	0	0	0	0	88*
=====													

URNS/TEAPAC[Ver 3.61.12] - 60-Minute Volumes: Appr/Exit Totals

Intersection # 1 highland/lowerlevelgar									
Begin Time	Approach Totals				Exit Totals				Int Total
	N	E	S	W	N	E	S	W	
700	97	30	77	0	77	63	64	0	204
715	94	27	65	0	65	58	63	0	186
730	90	21	56	0	48	58	61	0	167
745	84	25	54	0	56	44	63	0	163
800	52	25	62	0	65	27	47	0	139
815	34	20	53	0	58	16	33	0	107*
830	18	16	46	0	51	8	21	0	80*
845	11	7	25	0	26	5	12	0	43*

1600	63	35	55	0	71	20	62	0	153
1615	73	42	71	0	91	25	70	0	186
1630	77	39	74	0	86	30	74	0	190
1645	86	43	80	0	98	31	80	0	209
1700	91	64	105	0	136	34	90	0	260
1715	72	52	80	0	104	27	73	0	204*
1730	57	46	61	0	86	18	60	0	164*
1745	28	25	35	0	48	10	30	0	88*
=====									

Arlington Heights, IL Weather: Warm and Dry
 Highland Ave and Garage Ramp Access
 Wednesday June 27, 2018

07/02/18
 11:42:01

URNS/TEAPAC[Ver 3.61.12] - 60-Minute Volumes: by Movement

Intersection # 2 highland/garageramp													
Begin Time	N-Approach			E-Approach			S-Approach			W-Approach			Int Total
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	
700	0	0	9	19	0	22	25	0	0	0	0	0	75
715	0	0	7	17	0	18	20	0	0	0	0	0	62
730	0	0	7	12	0	14	22	0	0	0	0	0	55
745	0	0	8	13	0	10	17	0	0	0	0	0	48
800	0	0	4	15	0	8	6	0	0	0	0	0	33
815	0	0	3	12	0	5	6	0	0	0	0	0	26*
830	0	0	1	12	0	3	2	0	0	0	0	0	18*
845	0	0	0	6	0	1	2	0	0	0	0	0	9*

1600	0	0	9	7	0	13	8	0	0	0	0	0	37
1615	0	0	9	10	0	18	10	0	0	0	0	0	47
1630	0	0	10	9	0	18	14	0	0	0	0	0	51
1645	0	0	11	10	0	25	10	0	0	0	0	0	56
1700	0	0	11	15	0	32	15	0	0	0	0	0	73
1715	0	0	10	10	0	26	13	0	0	0	0	0	59*
1730	0	0	8	9	0	22	8	0	0	0	0	0	47*
1745	0	0	3	6	0	11	7	0	0	0	0	0	27*
=====													

URNS/TEAPAC[Ver 3.61.12] - 60-Minute Volumes: Appr/Exit Totals

Intersection # 2 highland/garageramp									
Begin Time	Approach Totals				Exit Totals				Int Total
	N	E	S	W	N	E	S	W	
700	9	41	25	0	19	34	22	0	75
715	7	35	20	0	17	27	18	0	62
730	7	26	22	0	12	29	14	0	55
745	8	23	17	0	13	25	10	0	48
800	4	23	6	0	15	10	8	0	33
815	3	17	6	0	12	9	5	0	26*
830	1	15	2	0	12	3	3	0	18*
845	0	7	2	0	6	2	1	0	9*

1600	9	20	8	0	7	17	13	0	37
1615	9	28	10	0	10	19	18	0	47
1630	10	27	14	0	9	24	18	0	51
1645	11	35	10	0	10	21	25	0	56
1700	11	47	15	0	15	26	32	0	73
1715	10	36	13	0	10	23	26	0	59*
1730	8	31	8	0	9	16	22	0	47*
1745	3	17	7	0	6	10	11	0	27*
=====									

Capacity Analysis – Existing Conditions

LEVEL OF SERVICE CRITERIA		
Unsignalized Intersections		
Level of Service		Average Control Delay (seconds per vehicle)
A		0 - 10
B		> 10 - 15
C		> 15 – 25
D		> 25 – 35
E		> 35 – 50
F		> 50
Signalized Intersections		
Level of Service	Interpretation	Average Control Delay (seconds per vehicle)
A	Favorable progression. Most vehicles arrive during the green indication and travel through the intersection without stopping.	≤ 10
B	Good progression, with more vehicles stopping than for Level of Service A.	> 10 - 20
C	Individual cycle failures (i.e. one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear. Number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	> 20 - 35
D	The volume-to-capacity ratio is high and either progression is ineffective or the cycle length is too long. Many vehicles stop and individual cycle failures are noticeable.	> 35 – 55
E	Progression is unfavorable. The volume-to-capacity ratio is high and the cycle length is long. Individual cycle failures are frequent.	> 55 – 80
F	The volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	> 80

Source: *Highway Capacity Manual, 2010.*

HCM Unsignalized Intersection Capacity Analysis

1: Highland Ave & Campbell St

04/09/2019

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	143	36	13	89	18	39
Future Volume (Veh/h)	143	36	13	89	18	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	164	41	15	102	21	45
Pedestrians				7	9	
Lane Width (ft)				12.0	12.0	
Walking Speed (ft/s)				3.5	3.5	
Percent Blockage				1	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			214		326	200
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			214		326	200
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	95
cM capacity (veh/h)			1356		660	833
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	205	117	66			
Volume Left	0	15	21			
Volume Right	41	0	45			
cSH	1700	1356	769			
Volume to Capacity	0.12	0.01	0.09			
Queue Length 95th (ft)	0	1	7			
Control Delay (s)	0.0	1.1	10.1			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.1	10.1			
Approach LOS			B			
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			28.2%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2: Highland Ave & Sigwalt St

04/09/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	197	4	13	120	28	15	15	23	20	8	5
Future Volume (Veh/h)	4	197	4	13	120	28	15	15	23	20	8	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	6	281	6	19	171	40	21	21	33	29	11	7
Pedestrians		2									2	
Lane Width (ft)		12.0									12.0	
Walking Speed (ft/s)		3.5									3.5	
Percent Blockage		0									0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	213			287			540	547	284	570	530	195
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	213			287			540	547	284	570	530	195
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			95	95	96	93	98	99
cM capacity (veh/h)	1367			1287			436	438	750	387	448	848
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	293	230	75	47								
Volume Left	6	19	21	29								
Volume Right	6	40	33	7								
cSH	1367	1287	535	436								
Volume to Capacity	0.00	0.01	0.14	0.11								
Queue Length 95th (ft)	0	1	12	9								
Control Delay (s)	0.2	0.8	12.8	14.3								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.2	0.8	12.8	14.3								
Approach LOS			B	B								
Intersection Summary												
Average Delay			2.9									
Intersection Capacity Utilization			26.1%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Highland Ave & North Garage Ramp

04/09/2019

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	13	44	10	17	32
Future Volume (Veh/h)	12	13	44	10	17	32
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	14	48	11	18	35
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	124	54			59	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	124	54			59	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	99			99	
cM capacity (veh/h)	860	1014			1545	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	27	59	53			
Volume Left	13	0	18			
Volume Right	14	11	0			
cSH	934	1700	1545			
Volume to Capacity	0.03	0.03	0.01			
Queue Length 95th (ft)	2	0	1			
Control Delay (s)	9.0	0.0	2.6			
Lane LOS	A		A			
Approach Delay (s)	9.0	0.0	2.6			
Approach LOS	A					
Intersection Summary						
Average Delay		2.7				
Intersection Capacity Utilization		19.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

4: Highland Ave & South Garage Ramp

04/09/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	8	0	15	0	39	6	4	40	0
Future Volume (Veh/h)	0	0	0	8	0	15	0	39	6	4	40	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	9	0	16	0	42	7	4	43	0
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	112	100	43	96	96	46	43				49	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	112	100	43	96	96	46	43				49	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	100	100	99	100	98	100				100	
cM capacity (veh/h)	850	788	1027	884	792	1024	1566				1558	
Direction, Lane #	WB 1	NB 1	SB 1									
Volume Total	25	49	47									
Volume Left	9	0	4									
Volume Right	16	7	0									
cSH	969	1700	1558									
Volume to Capacity	0.03	0.03	0.00									
Queue Length 95th (ft)	2	0	0									
Control Delay (s)	8.8	0.0	0.6									
Lane LOS	A		A									
Approach Delay (s)	8.8	0.0	0.6									
Approach LOS	A											
Intersection Summary												
Average Delay	2.1											
Intersection Capacity Utilization	15.4%			ICU Level of Service			A					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

1: Highland Ave & Campbell St

04/09/2019

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	153	39	53	150	43	67
Future Volume (Veh/h)	153	39	53	150	43	67
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	166	42	58	163	47	73
Pedestrians	25			25	25	
Lane Width (ft)	12.0			12.0	12.0	
Walking Speed (ft/s)	3.5			3.5	3.5	
Percent Blockage	2			2	2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			233		516	237
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			233		516	237
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		90	90
cM capacity (veh/h)			1303		473	764
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	208	221	120			
Volume Left	0	58	47			
Volume Right	42	0	73			
cSH	1700	1303	616			
Volume to Capacity	0.12	0.04	0.19			
Queue Length 95th (ft)	0	3	18			
Control Delay (s)	0.0	2.4	12.3			
Lane LOS		A	B			
Approach Delay (s)	0.0	2.4	12.3			
Approach LOS			B			
Intersection Summary						
Average Delay			3.6			
Intersection Capacity Utilization			44.1%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2: Highland Ave & Sigwalt St

04/09/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	118	9	13	150	43	4	21	19	44	34	35
Future Volume (Veh/h)	5	118	9	13	150	43	4	21	19	44	34	35
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	6	133	10	15	169	48	4	24	21	49	38	39
Pedestrians		25			25			25			25	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		2			2			2			2	
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	242			168			481	447	188	456	428	243
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	242			168			481	447	188	456	428	243
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	95	97	89	92	95
cM capacity (veh/h)	1293			1376			401	475	814	438	487	758
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	149	232	49	126								
Volume Left	6	15	4	49								
Volume Right	10	48	21	39								
cSH	1293	1376	568	522								
Volume to Capacity	0.00	0.01	0.09	0.24								
Queue Length 95th (ft)	0	1	7	23								
Control Delay (s)	0.4	0.6	11.9	14.1								
Lane LOS	A	A	B	B								
Approach Delay (s)	0.4	0.6	11.9	14.1								
Approach LOS				B	B							
Intersection Summary												
Average Delay				4.6								
Intersection Capacity Utilization				36.7%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

3: Highland Ave & North Garage Ramp

04/09/2019

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	25	58	52	8	26	66
Future Volume (Veh/h)	25	58	52	8	26	66
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	63	57	9	28	72
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	190	62			66	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	190	62			66	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	94			98	
cM capacity (veh/h)	785	1004			1536	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	90	66	100			
Volume Left	27	0	28			
Volume Right	63	9	0			
cSH	926	1700	1536			
Volume to Capacity	0.10	0.04	0.02			
Queue Length 95th (ft)	8	0	1			
Control Delay (s)	9.3	0.0	2.2			
Lane LOS	A		A			
Approach Delay (s)	9.3	0.0	2.2			
Approach LOS	A					
Intersection Summary						
Average Delay		4.1				
Intersection Capacity Utilization		23.2%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

4: Highland Ave & South Garage Ramp

04/09/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	32	0	15	0	45	15	11	80	0
Future Volume (Veh/h)	0	0	0	32	0	15	0	45	15	11	80	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	35	0	16	0	49	16	12	87	0
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	184	176	87	168	168	57	87	65				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	184	176	87	168	168	57	87	65				
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1	4.1				
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2	2.2				
p0 queue free %	100	100	100	96	100	98	100	99				
cM capacity (veh/h)	760	712	971	791	719	1009	1509	1537				
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	51	65	99								
Volume Left	0	35	0	12								
Volume Right	0	16	16	0								
cSH	1700	849	1509	1537								
Volume to Capacity	0.00	0.06	0.00	0.01								
Queue Length 95th (ft)	0	5	0	1								
Control Delay (s)	0.0	9.5	0.0	0.9								
Lane LOS	A	A		A								
Approach Delay (s)	0.0	9.5	0.0	0.9								
Approach LOS	A	A										
Intersection Summary												
Average Delay	2.7											
Intersection Capacity Utilization	21.5%			ICU Level of Service					A			
Analysis Period (min)	15											

Capacity Analysis – Future Conditions

HCM Unsignalized Intersection Capacity Analysis

1: Highland Ave & Campbell St

04/09/2019

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	162	38	23	95	20	59
Future Volume (vph)	162	38	23	95	20	59
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	186	44	26	109	23	68
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total (vph)	230	135	91			
Volume Left (vph)	0	26	23			
Volume Right (vph)	44	0	68			
Hadj (s)	-0.11	0.12	-0.40			
Departure Headway (s)	4.2	4.5	4.3			
Degree Utilization, x	0.27	0.17	0.11			
Capacity (veh/h)	845	774	772			
Control Delay (s)	8.6	8.4	7.8			
Approach Delay (s)	8.6	8.4	7.8			
Approach LOS	A	A	A			
Intersection Summary						
Delay			8.4			
Level of Service			A			
Intersection Capacity Utilization			41.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2: Highland Ave & Sigwalt St

04/09/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	9	213	9	14	125	57	17	20	24	70	18	15
Future Volume (vph)	9	213	9	14	125	57	17	20	24	70	18	15
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Hourly flow rate (vph)	13	304	13	20	179	81	24	29	34	100	26	21
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	330	280	87	147								
Volume Left (vph)	13	20	24	100								
Volume Right (vph)	13	81	34	21								
Hadj (s)	0.02	-0.15	-0.15	0.11								
Departure Headway (s)	5.0	4.9	5.6	5.7								
Degree Utilization, x	0.46	0.38	0.13	0.23								
Capacity (veh/h)	686	693	557	565								
Control Delay (s)	12.1	10.9	9.4	10.4								
Approach Delay (s)	12.1	10.9	9.4	10.4								
Approach LOS	B	B	A	B								
Intersection Summary												
Delay			11.1									
Level of Service			B									
Intersection Capacity Utilization			37.1%	ICU Level of Service				A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Highland Ave & North Garage Ramp

04/09/2019

									
Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations									
Traffic Volume (veh/h)	13	14	84	11	18	36			
Future Volume (Veh/h)	13	14	84	11	18	36			
Sign Control	Stop		Free			Free			
Grade	0%		0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	14	15	91	12	20	39			
Pedestrians	50		50			50			
Lane Width (ft)	12.0		12.0			12.0			
Walking Speed (ft/s)	3.5		3.5			3.5			
Percent Blockage	5		5			5			
Right turn flare (veh)									
Median type			None			None			
Median storage veh)									
Upstream signal (ft)									
pX, platoon unblocked									
vC, conflicting volume	276	197			153				
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	276	197			153				
tC, single (s)	6.4	6.2			4.1				
tC, 2 stage (s)									
tF (s)	3.5	3.3			2.2				
p0 queue free %	98	98			99				
cM capacity (veh/h)	638	766			1360				
Direction, Lane #	WB 1	NB 1	SB 1						
Volume Total	29	103	59						
Volume Left	14	0	20						
Volume Right	15	12	0						
cSH	698	1700	1360						
Volume to Capacity	0.04	0.06	0.01						
Queue Length 95th (ft)	3	0	1						
Control Delay (s)	10.4	0.0	2.7						
Lane LOS	B		A						
Approach Delay (s)	10.4	0.0	2.7						
Approach LOS	B								
Intersection Summary									
Average Delay		2.4							
Intersection Capacity Utilization		30.0%	ICU Level of Service	A					
Analysis Period (min)		15							

HCM Unsignalized Intersection Capacity Analysis

4: Highland Ave & South Garage Ramp

04/09/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	0	64	9	0	16	15	61	7	5	42	2
Future Volume (Veh/h)	18	0	64	9	0	16	15	61	7	5	42	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	0	70	10	0	17	16	66	8	5	46	2
Pedestrians		50			50			50			50	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		5			5			5			5	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	276	263	147	329	260	170	98			124		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	276	263	147	329	260	170	98			124		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	91	98	100	98	99			100		
cM capacity (veh/h)	551	574	816	475	576	793	1424			1393		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	90	27	90	53								
Volume Left	20	10	16	5								
Volume Right	70	17	8	2								
cSH	738	636	1424	1393								
Volume to Capacity	0.12	0.04	0.01	0.00								
Queue Length 95th (ft)	10	3	1	0								
Control Delay (s)	10.6	10.9	1.4	0.7								
Lane LOS	B	B	A	A								
Approach Delay (s)	10.6	10.9	1.4	0.7								
Approach LOS	B	B										
Intersection Summary												
Average Delay			5.4									
Intersection Capacity Utilization			31.4%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

5: Highland Ave & Access Drive

04/09/2019

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	4	2	81	115	0
Future Volume (Veh/h)	2	4	2	81	115	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	4	2	88	125	0
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	217	125	125			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	217	125	125			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	770	926	1462			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	6	90	125			
Volume Left	2	2	0			
Volume Right	4	0	0			
cSH	867	1462	1700			
Volume to Capacity	0.01	0.00	0.07			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	9.2	0.2	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.2	0.2	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		0.3				
Intersection Capacity Utilization		16.1%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

1: Highland Ave & Campbell St

04/09/2019

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	172	65	84	165	44	81
Future Volume (vph)	172	65	84	165	44	81
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	187	71	91	179	48	88
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total (vph)	258	270	136			
Volume Left (vph)	0	91	48			
Volume Right (vph)	71	0	88			
Hadj (s)	-0.13	0.10	-0.28			
Departure Headway (s)	4.4	4.6	4.8			
Degree Utilization, x	0.32	0.35	0.18			
Capacity (veh/h)	782	744	682			
Control Delay (s)	9.5	10.1	8.9			
Approach Delay (s)	9.5	10.1	8.9			
Approach LOS	A	B	A			
Intersection Summary						
Delay			9.6			
Level of Service			A			
Intersection Capacity Utilization			50.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2: Highland Ave & Sigwalt St

04/09/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	23	134	14	14	162	135	8	39	20	99	44	41
Future Volume (vph)	23	134	14	14	162	135	8	39	20	99	44	41
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	26	151	16	16	182	152	9	44	22	111	49	46
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	193	350	75	206								
Volume Left (vph)	26	16	9	111								
Volume Right (vph)	16	152	22	46								
Hadj (s)	0.01	-0.22	-0.12	0.01								
Departure Headway (s)	5.2	4.8	5.5	5.4								
Degree Utilization, x	0.28	0.46	0.12	0.31								
Capacity (veh/h)	643	719	562	609								
Control Delay (s)	10.2	11.8	9.2	10.8								
Approach Delay (s)	10.2	11.8	9.2	10.8								
Approach LOS	B	B	A	B								
Intersection Summary												
Delay			10.9									
Level of Service			B									
Intersection Capacity Utilization			45.8%	ICU Level of Service		A						
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Highland Ave & North Garage Ramp

04/09/2019

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	26	60	141	9	27	100
Future Volume (Veh/h)	26	60	141	9	27	100
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	28	65	153	10	29	109
Pedestrians	60		60			60
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	6		6			6
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	445	278			223	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	445	278			223	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	90			98	
cM capacity (veh/h)	496	676			1269	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	93	163	138			
Volume Left	28	0	29			
Volume Right	65	10	0			
cSH	609	1700	1269			
Volume to Capacity	0.15	0.10	0.02			
Queue Length 95th (ft)	13	0	2			
Control Delay (s)	12.0	0.0	1.8			
Lane LOS	B		A			
Approach Delay (s)	12.0	0.0	1.8			
Approach LOS	B					
Intersection Summary						
Average Delay			3.5			
Intersection Capacity Utilization			42.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis4: Highland Ave & South Garage Ramp

04/09/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	0	40	33	0	16	44	123	16	12	108	6
Future Volume (Veh/h)	11	0	40	33	0	16	44	123	16	12	108	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	0	43	36	0	17	48	134	17	13	117	7
Pedestrians		60			60			60			60	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		3.5			3.5			3.5			3.5	
Percent Blockage		6			6			6			6	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	522	514	240	548	508	262	184			211		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	522	514	240	548	508	262	184			211		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	94	89	100	98	96			99		
cM capacity (veh/h)	356	394	710	330	396	690	1311			1282		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	55	53	199	137								
Volume Left	12	36	48	13								
Volume Right	43	17	17	7								
cSH	583	396	1311	1282								
Volume to Capacity	0.09	0.13	0.04	0.01								
Queue Length 95th (ft)	8	11	3	1								
Control Delay (s)	11.8	15.5	2.1	0.8								
Lane LOS	B	C	A	A								
Approach Delay (s)	11.8	15.5	2.1	0.8								
Approach LOS	B	C										
Intersection Summary												
Average Delay			4.5									
Intersection Capacity Utilization			36.3%	ICU Level of Service						A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

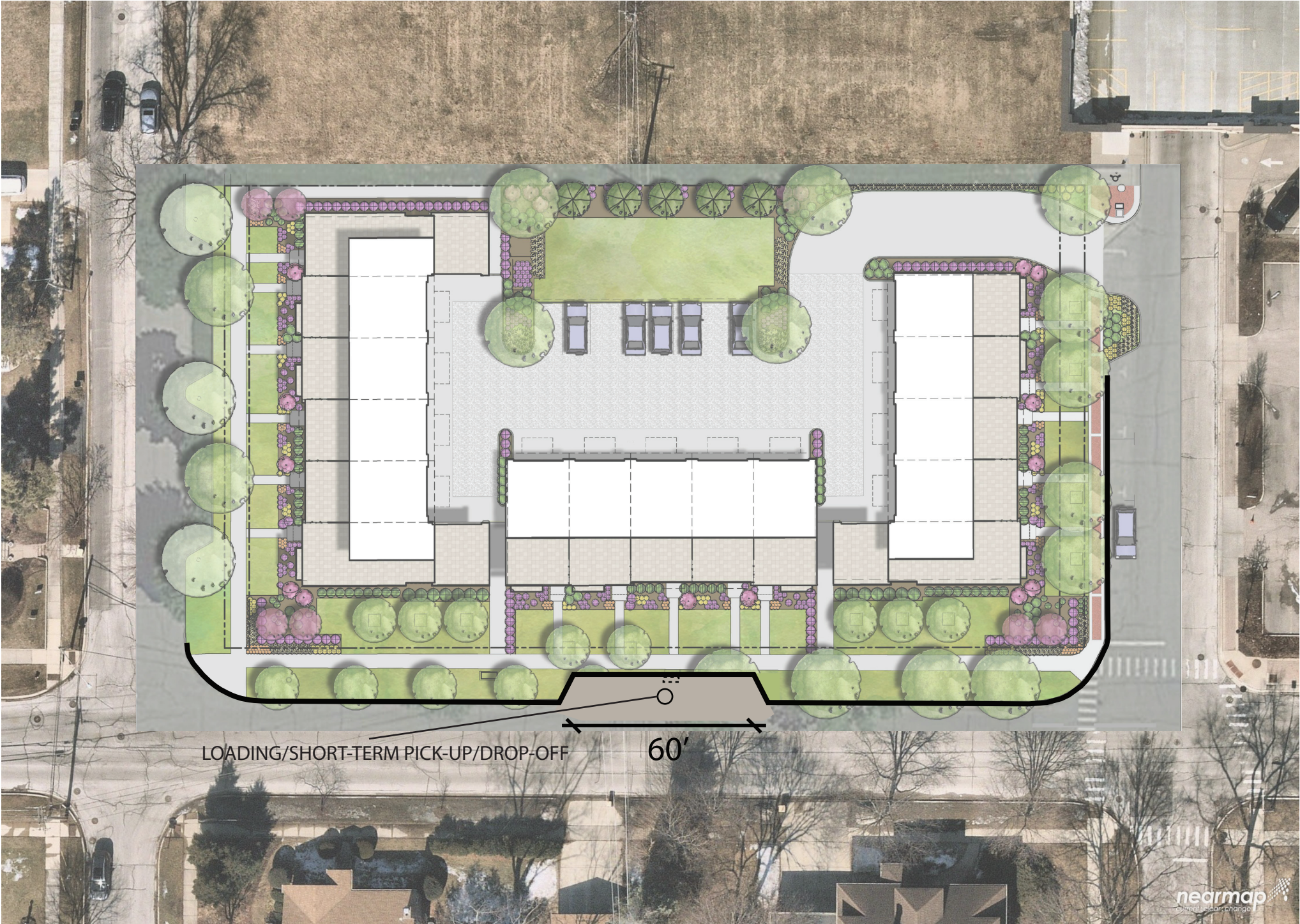
5: Highland Ave & Access

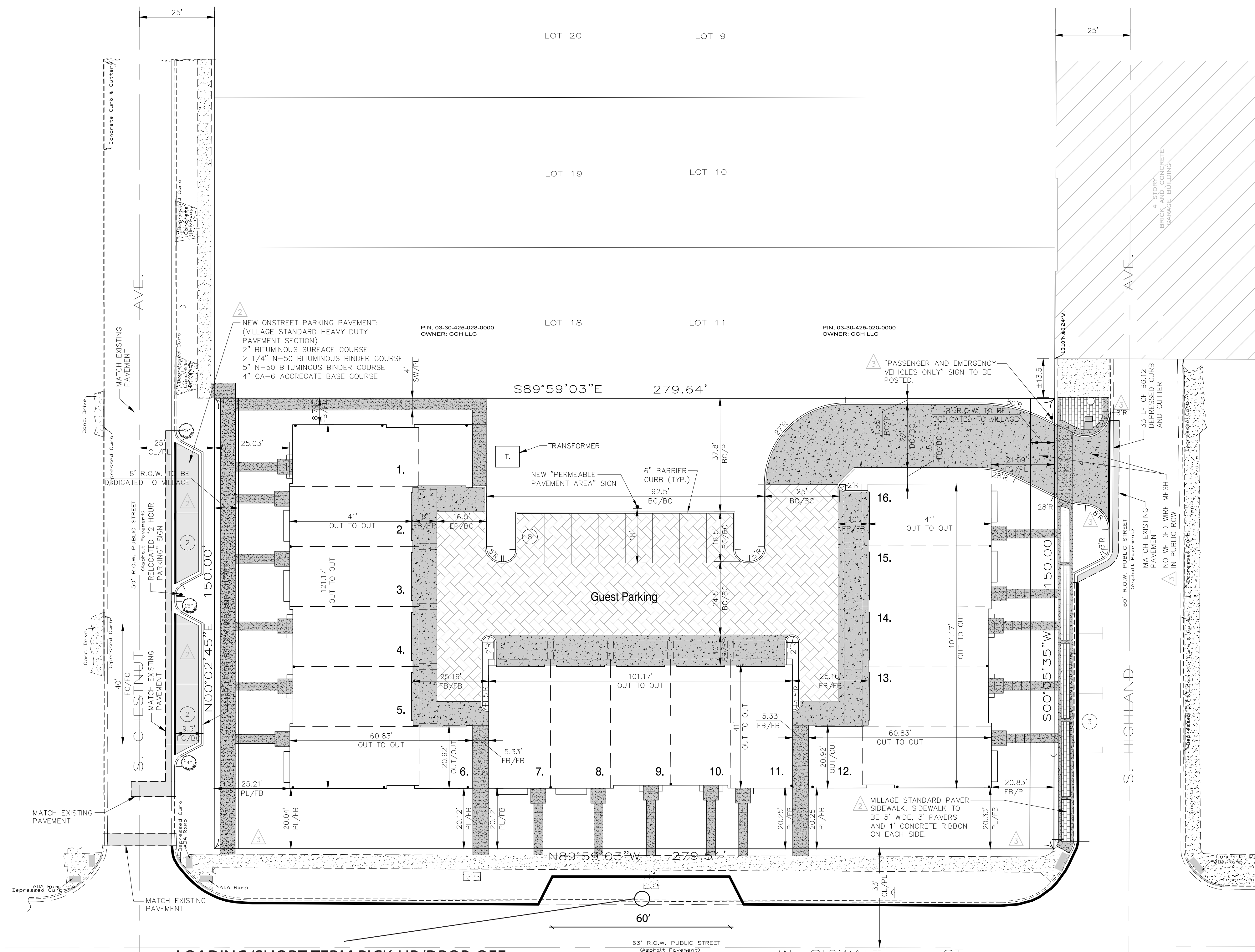
04/09/2019



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Volume (veh/h)	1	4	5	182	179	2
Future Volume (Veh/h)	1	4	5	182	179	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	4	5	198	195	2
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	404	196	197			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	404	196	197			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	600	845	1376			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	5	203	197			
Volume Left	1	5	0			
Volume Right	4	0	2			
cSH	782	1376	1700			
Volume to Capacity	0.01	0.00	0.12			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	9.6	0.2	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.6	0.2	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			23.6%	ICU Level of Service		A
Analysis Period (min)			15			

Sigwalt 16 Conceptual Drop-Off





SURFACE IMPROVEMENT LEGEND:

- PERMEABLE PAVERS (SEE DETAIL)
- VILLAGE STANDARD BRICK PAVEMENT (SEE DETAIL)
- CONCRETE DRIVEWAY ENTRANCE & APRONS (GARAGE ENTRY) 6" PCC PAVEMENT WITH 6"x6" No. 6 WELDED WIRE MESH (NO WELDED WIRE MESH IN PUBLIC RIGHT-OF-WAY) 4" AGGREGATE BASE COURSE CA-6, TYPE B
- CONCRETE SIDEWALKS (PUBLIC AND/OR PRIVATE) 4" PCC SIDEWALK 4" AGGREGATE BASE COURSE TYPE B, CA-6
- EX. CURB AND GUTTER
- CURB AND GUTTER (B6.12) SEE DETAIL SHEET
- REVERSED PITCH CURB AND GUTTER
- DEPRESSED CURB AND GUTTER
- ADA CURB RAMP WITH DETECTABLE WARNING

ABBREVIATIONS LEGEND (IN ADDITION TO TITLE SHEET LEGEND)

EX	EXISTING
PR	PROPOSED
BC	BACK OF CURB
FC	FACE OF CURB
EL	EDGE OF PAVEMENT
PL	PROPERTY LINE
FB	FACE OF BUILDING
FW	FACE OF WALK (SIDEWALK)
ROW	RIGHT OF WAY
BC/BC	BACK OF CURB TO BACK OF CURB
SW	SIDEWALK
RW	RADIUS
(TYP)	RETAINING WALL TYPICAL

SITE DATA:

EXISTING ZONING: VC-PD (VILLAGE CENTER - PLANNED DEVELOPMENT)
TOTAL PROPERTY SIZE BEFORE DEDICATED ROW= 41,939 S.F. (0.963 AC)
TOTAL PROPERTY SIZE AFTER DEDICATED ROW= 39,539 S.F. (0.908 AC)

PROPOSED SITE CONDITIONS:

IMPERVIOUS:	
PROPOSED BUILDING IMPERVIOUS FOOTPRINT	= 14,356 S.F.
SIDEWALK/CURB/PAVED AREAS	= 7,000 S.F.
TOTAL IMPERVIOUS AREA	= 21,356 S.F. (54%)
PERVIOUS:	
PERMEABLE PAVEMENT AREA	= 5,920 S.F.
PROPOSED GREENSPACE	= 12,263 S.F.
TOTAL PERVIOUS AREA	= 18,183 S.F. (46%)

PROPOSED PARKING SUMMARY: (ONSITE AND ADJACENT ROW)

REGULAR STALLS (ON-SITE)	= 8
REGULAR STALLS (ADJACENT ROW)	= 3
TOTAL STALLS PROVIDED	= 11

- SITE GEOMETRIC AND PAVING NOTES:**
- SIDEWALK RAMPS WITH DETECTABLE WARNINGS AND DEPRESSED CURBS SHALL BE INSTALLED AT ALL SIDEWALK CROSSINGS. SEE CONSTRUCTION STANDARDS FOR SPECIFIC DETAILS.
 - UNLESS OTHERWISE NOTED ON THE PLAN, ALL DIMENSIONS ARE TO THE BACK OF CURB, FACE OF CURB, FACE OF BUILDING, OR PROPERTY LINES.
 - UNLESS OTHERWISE NOTED, ALL CURB AND GUTTER SHALL BE B6.12 CONCRETE CURB AND GUTTER.
 - UNLESS OTHERWISE NOTED, ALL CURB RADI ARE 4' TO BACK OF CURB.
 - ALL BOUNDARY AND LOT DIMENSIONS ARE SHOWN PER THE SUBDIVISION (OR SITE) PLAT PREPARED BY THOMSON SURVEYING LTD. AND DATED 03/11/19.
 - BUILDING DIMENSIONS HAVE BEEN INDICATED HEREON BASED UPON ARCHITECTURAL INFORMATION CURRENT AS OF THE BASE DATE OF THIS PLAN PREPARATION. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR PRECISE BUILDING DIMENSIONS AND ADVISE THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
 - IMPROVEMENTS ADJACENT TO BUILDINGS, IF SHOWN (SUCH AS TRUCK DOCKS, RETAINING WALLS, SIDEWALKS, CURBING, FENCING, CANOPIES, RAMPS, HANDICAP ACCESS, PLANTERS, DUMPSTERS, TRANSFORMERS, BOLLARDS, ETC) HAVE BEEN SHOWN FOR APPROXIMATE LOCATION ONLY. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS, SPECIFICATIONS AND DETAILS.
 - THE LOCATION OF PRIVATE SIDEWALKS SHALL BE COORDINATED WITH PROPOSED DRIVEWAYS. CONTRACTOR TO VERIFY ACTUAL DRIVEWAY LOCATION WITH ARCHITECTURAL PLANS PRIOR TO CONSTRUCTING SIDEWALKS.
 - UPON COMPLETION OF PAVING OPERATIONS, THE CONTRACTOR SHALL INSTALL THE PAVEMENT MARKINGS AND STRIPES AND ALL DIRECTIONAL SIGNAGE, ETC AS SHOWN HEREON AND ON SIGNAGE AND STRIPING PLAN. PARKING STALL (EXCEPT FOR HC) MARKING COLOR IS WHITE. ALL ONSITE PAVEMENT MARKINGS AND STRIPES SHALL BE PAINTED WITH IDOT SPECIFICATION PAVEMENT PAINT. STRIPES SHALL BE 4" WIDE. HANDICAP STALLS SHALL BE PAINTED YELLOW AND SIGNED PER FEDERAL, STATE AND LOCAL REQUIREMENTS.
 - PRIOR TO OPENING TO THE PUBLIC, ALL TRAFFIC CONTROL SIGNAGE SHALL BE INSTALLED AS INDICATED. SIGNS SHALL BE INSTALL WITH 3" SQUARE ALUMINUM POSTS WITH A BAKED ON ENAMEL FINISH, SET 1" INTO CONCRETE PIER AND SHALL INCLUDE A POST CAP.
 - ALL ROADWAY PATCHES SHALL HAVE SURFACE ASPHALT LAYER EXTEND 2.0' BEYOND EDGE OF TRENCH.
 - ANY STAIRWAYS LEADING TO PUBLIC SIDEWALK SHALL NOT AFFECT THE ADA COMPLIANCE OF THE PUBLIC WALK.

PERMEABLE PAVEMENT AREA

ENVIRONMENTALLY FRIENDLY PARKING LOT

BENEFITS OF THIS TECHNOLOGY INCLUDE:

- REDUCES STORMWATER RUNOFF
- IMPROVES WATER QUALITY
- CLEANS AND FILTERS STORMWATER

MAINTAIN WITH CARE:

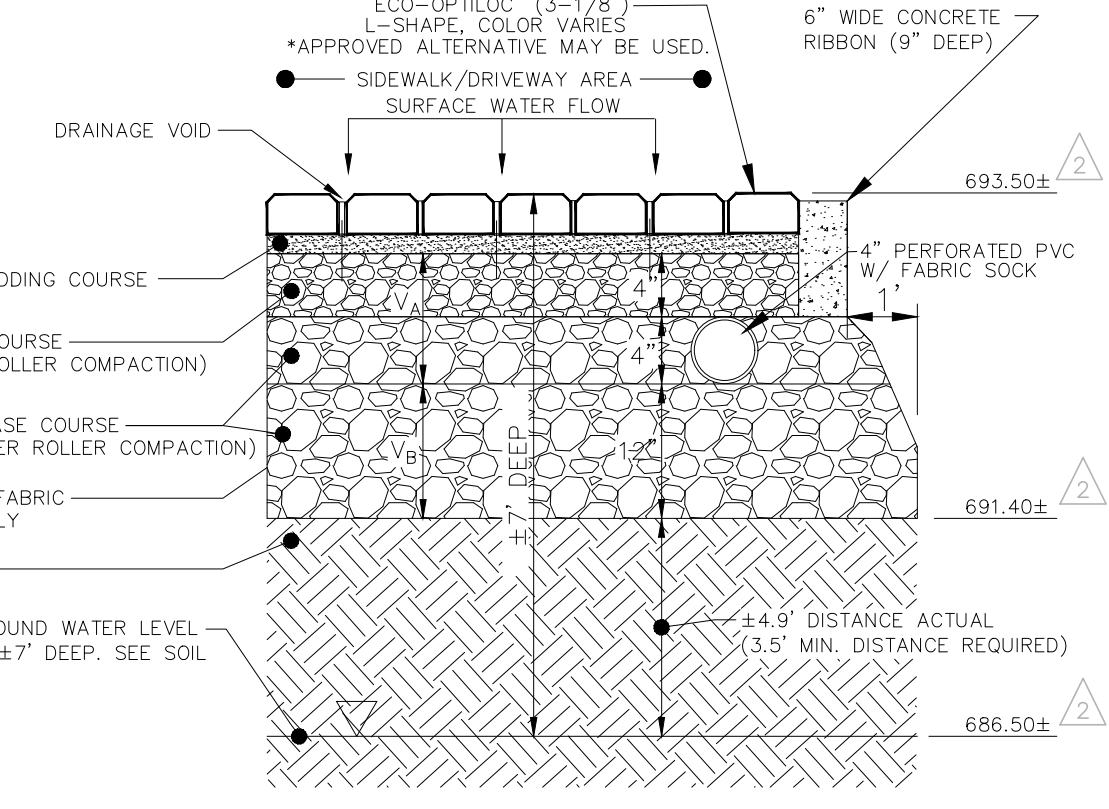
NO STORAGE OR DISPERSING OF GRANULAR MATERIALS

DO NOT SEAL COAT

NOTES: 1. ONE SIGN SHALL BE POSTED PER 40 PARKING SPACES.

TECHNICAL GUIDANCE MANUAL

TYPICAL SIGNAGE FOR PERMEABLE PAVEMENT AREA



- NOTES:**
- OFFSET A MINIMUM OF 10 FEET FROM FOUNDATIONS UNLESS WATERPROOFED, 20 FEET FROM SANITARY SEWERS, 20 FEET FROM ROADWAY SHOULDER AND 100 FEET FROM POTABLE WATER WELLS OR SEPTIC TANKS.
 - AVOID INSTALLATION ON SLOPES GREATER THAN 15 TO 1 AND ABOVE COMPACTED FILL.
 - WOVEN GEOTEXTILE FABRIC SHALL MEET REQUIREMENTS OF ILM MATERIAL SPECIFICATION 592 GEOTEXTILE, TABLE 1, CLASS 1, WITH AN APPARENT OPENING SIZE OF 0.50 MM.
 - STONE STORAGE OPTIONS ARE CA-7, DISTRICT VULCAN MIX, OR APPROVED ALTERNATE. NO RECYCLED MATERIALS.
 - MINIMUM DISTANCE OF 2 FEET (0.5 FEET IN COMBINED SEWER AREAS) BETWEEN BOTTOM OF BMP AND SEASONALLY HIGH GROUNDWATER LEVEL.
 - UNDERDRAINS ARE REQUIRED IN TYPICAL CLAYEY SOILS WHERE INFILTRATION RATES ARE LESS THAN 0.5 INCH/ HOUR. MAXIMUM OF 1 UNDERDRAIN PER 30 FEET. PROVIDE A SOIL REPORT DOCUMENTING NATIVE INFILTRATION RATE TO FOREGO UNDERDRAINS.
 - MINIMUM UNDERDRAIN BEDDING OF TWO INCHES, MAXIMUM OF 12 INCHES.
 - ONE OBSERVATION WELL REQUIRED PER 40,000 SQUARE FEET OF SURFACE AREA.
 - FOLLOW THE REQUIRED PRETREATMENT MEASURES LISTED ON THE VOLUME CONTROL PRETREATMENT MEASURES DETAIL.
 - MAINTENANCE REQUIREMENTS INCLUDE ANNUAL VACUUMING AND LOW-PRESSURE POWER WASHING OF PAVEMENT SURFACE. ADJACENT VEGETATED AREAS SHALL BE WELL MAINTAINED. BARE SPOTS AND ERODED AREAS SHALL BE REPLANTED AND STABILIZED IMMEDIATELY. DO NOT SEALCOAT.
 - APPROPRIATE SIGNAGE REQUIRED FOR FACILITY, REFER TO THE SIGNAGE FOR PERMEABLE PAVEMENT DETAIL.

VILLAGE OF ARLINGTON HEIGHTS SIDEWALK REQUIREMENTS

REINFORCEMENT:

No wetter wet fabric is allowed to be placed in any sidewalk in the Village right-of-way or any sidewalk to be maintained by the Village. Where sidewalks cross over a utility conduit, use an reinforcing bar that is placed mid-depth within sidewalk and extend to a minimum of 5 feet beyond either side of the utility crossing.

FORMS:

Side forms shall be lumber with a nominal thickness of 2 inches and a depth equal to the sidewalk thickness specified or of steel with equal rigidity. 2nd forms will not be allowed. Side forms shall be fast securely in place by stakes or bracing, within top edge of the forms face to grade. The forms shall be lightly coated with oil prior to placing concrete.

FORM REMOVAL AND BACKFILL:

Unless otherwise approved by the Director of Engineering, all forms shall remain undisturbed for a minimum of 24 hours after the concrete has been placed, and be removed within 48 hours. Upon the removal of the forms, the Contractor shall have seven calendar days to backfill. Between the side of the sidewalk and the ground using top soil. The Contractor is responsible for maintaining proper backfill until soil has been placed.

EXPANSION JOINTS:

Expansion joints shall consist of preformed joint filler, 1/2 inch thick. The top of the expansion joint shall be placed 1/4 inch below the surface of the sidewalk, and extend to the full depth of the walk. Expansion joints shall be spaced a minimum of 50 feet and shall also be placed between the sidewalk and all structures, such as light standards, manholes, etc., which extend through the sidewalk.

When the sidewalk is constructed adjacent to pavement or curb having expansion joints, the expansion joints in the sidewalk shall be placed opposite the existing expansion joints in nearby pavement.

Expansion joints shall also be placed where the sidewalk abuts existing sidewalks, between concrete driveway pavement and sidewalk, and between sidewalk and curbs where the sidewalk abuts a curb.

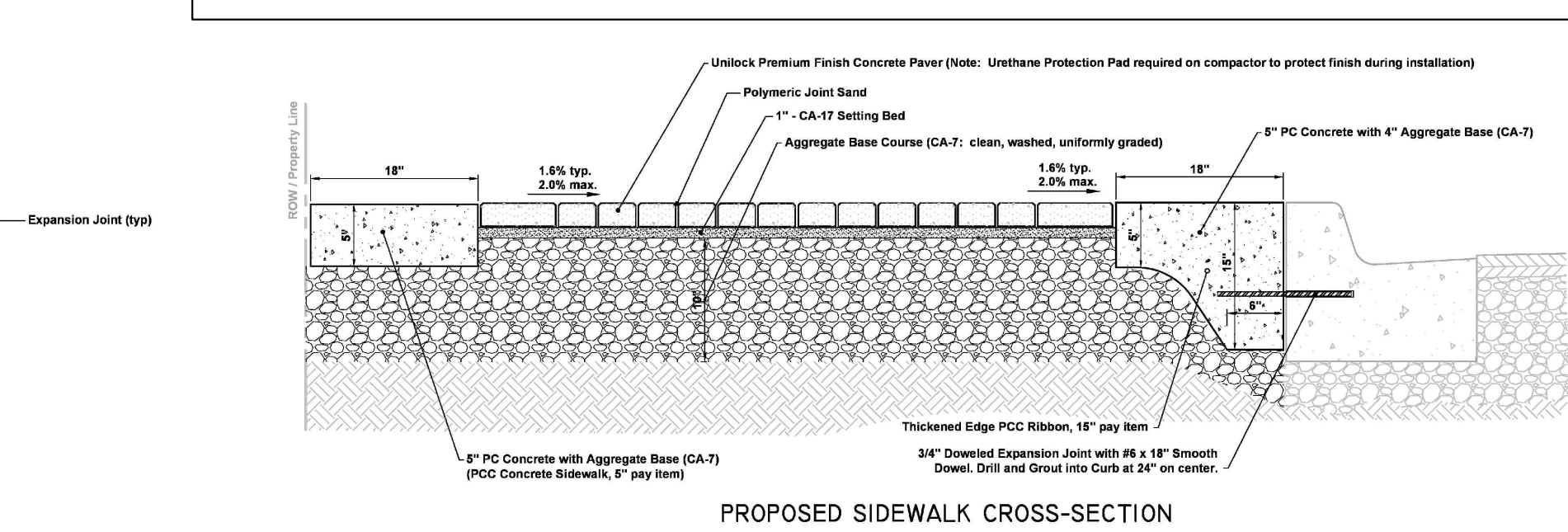
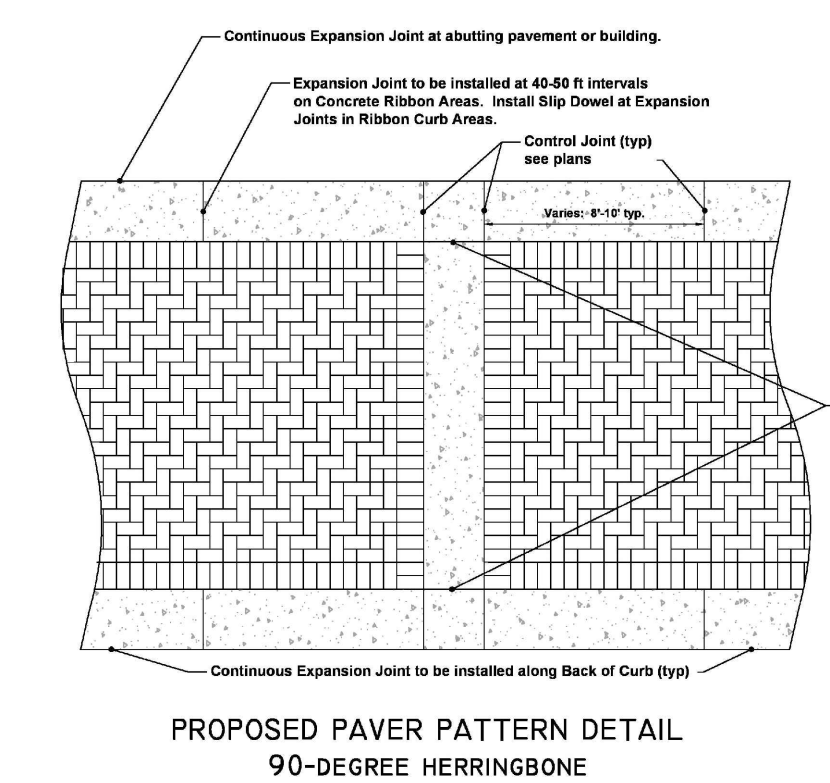
Slip Dowels are to be installed at all expansion joint locations within concrete ribbon areas.

PLACING, FINISHING, PROTECTION AND CURING

The concrete sidewalk shall be placed and finished in accordance with Article 424.08 of the Standard Specifications for Road and Bridge Construction.

All exposed concrete surfaces shall be protected against damage by rain or other natural causes. The Contractor shall be responsible for protecting the concrete against vandalism until the concrete is set and cured.

The sidewalks shall be cured for a minimum period of three days after placement as described in Article 720.13 of the Standard Specifications for Road and Bridge Construction.



SIGWALT 16

ARLINGTON HEIGHTS, ILLINOIS

SITE GEOMETRIC AND PAVING PLAN

PROJECT NO.: 42905219

DATE: 04/12/19

SCALE: 1"=20'

PROJ. MGR.: RWG

PROJ. ASSOC.: MRM

DRAWN BY: TLM

Engineering, LLC

975 E. 22nd St. Suite 400
Wheaton, IL 60189
630.480.7889
www.rwg-engineering.com

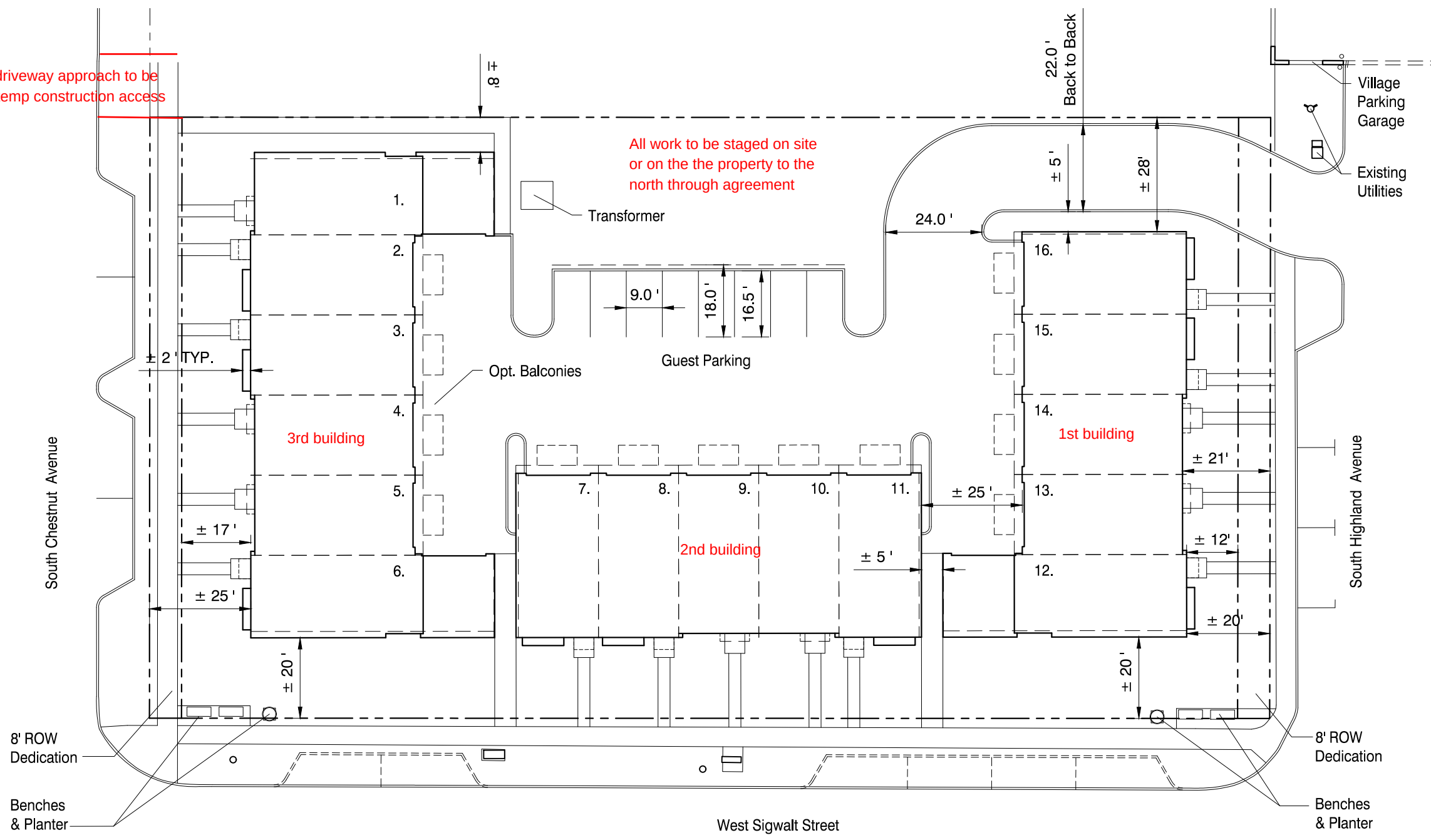
Civil Engineering • Real Estate Consulting • Project Management

RWG

SHEET 4 OF 10

June 05, 2019 1:06:23 p.m. AcadVer: 22.0s (LMS Tech)
Drawing: S:\42905219 - SIGWALT TOWNHOME\300_ENGINEERING\310_CADD\FINAL\429_BASE.DWG

existing driveway approach to be used as temp construction access



Project Data		R-7
	Provided	Required
Site		
Site Area (Gross, prior to Dedication)	± 41,939 sf	
Site Area (Net, after Dedication)	± 39,539 sf	14,400 sf (Per Unit Count)
Lot Size (Gross, prior to Dedication)	± 150' x ± 280'	
Lot Size (Net, after Dedication)	± 150' x ± 264'	
East (front) Setback (after 8' Ded.)	± 12'	25'
West (front) Setback (after 8' Ded.)	± 17'	25'
North (side) Setback	± 8'	15'
South (exterior side) Setback	± 20'	20'
Residential Site Data		
Dwelling Units	16	
Three Bedroom Min. sf	2400 sf	900 sf
Building Footprint	± 14,540 sf	
Gross Building Area	± 51,830 sf	
Building Area (Not Including Parking)	± 45,430 sf	
% Building Lot Coverage (Building Footprint / Net Site Area)	± 37%	55%
Floor Area Ratio (FAR) (Building Area / Net Site Area)	± 1.15	2.00
Parking	40	24
Stalls/Unit	2.5	1.5



[illegible]



MICHAEL D. FIRSEL
MICHAEL E. ROSS
CHRISTINE S. BOLGER
KAREN JERWOOD
STEPHEN E. ROSS

2801 LAKESIDE DRIVE, SUITE 207
BANNOCKBURN, IL 60015

O 847-582-9900
F 847-582-9933

www.firsellross.com

June 20, 2019

Mr. Terrence Ennes and Members of
the Plan Commission of the
Village of Arlington Heights
33 S. Arlington Heights Rd.
Arlington Heights, IL 60005-1403

**Re: Sigwalt 16 / Taylor Morrison of Illinois, LLC – Proposed Rowhome
Development in Downtown Arlington Heights**

ADDITIONAL VARIATION CRITERIA

Chairman Ennes and Commission Members,

This letter is written as an addition and supplement to our original Variation Criteria Justification letter of April 12, 2019. Village Staff has determined that additional variations for this project are required.

I. Variation to Chapter 28, Section 10.2-13, Maximum Number of Spaces, to allow a 40' accessory parking spaces where code limits the maximum number of accessory parking spaces to 36.

- 1. The proposed use will not alter the essential character of the locality and will be compatible with existing uses and zoning of nearby property.*

Of the 40 parking spaces provided, 32 of them will be in garages and 8 will be surface parking for guests. The number of parking spaces for this project is compatible for existing uses and zoning of nearby property

- 2. The plight of the owner is due to unique circumstances, which may include the length of time the subject property has been vacant as zoned.*

Mr. Terrence Ennes and Members of
the Plan Commission of the
Village of Arlington Heights
June 20, 2019
Page 2

The property has been vacant for a long time. To develop the property in the most beneficial fashion, consistent with its location on the edge of downtown. Due to the price point of the proposed rowhomes, owners will demand and expect at least 2 parking spaces each plus an area for guest parking

3. *The proposed variation is in harmony with the spirit and intent of this Chapter.*

It is the intention of the Village Zoning Code “[t]o protect the character and stability of the residential, business and manufacturing areas within the Village and to promote the orderly and beneficial development of such areas.” This project promotes the orderly and beneficial development consistent with the unique nature of this and the neighboring properties.

4. *The variance requested is the minimum variance necessary to allow reasonable use of the property.*

In order to accommodate the possibility of up to 8 guests at any one time, and to avoid the use of the adjoining Village garage and other surface parking spaces, the 8 additional parking spaces is the minimum needed.

J. Variation to Chapter 28, Section 10.2-8, Minimum Horizontal Width for Driving Aisle of 24 feet, to allow a minimum driving aisle width of 21’.

1. *The proposed use will not alter the essential character of the locality and will be compatible with existing uses and zoning of nearby property.*

The reduction of the drive aisle width reduction from 24’ to 21’ will have no bearing whatsoever on the essential character of the locality, and it will be compatible with existing uses and zoning of nearby property

2. *The plight of the owner is due to unique circumstances, which may include the length of time the subject property has been vacant as zoned.*

Due to the public utilities located north of the drive aisle which is also very close to the Vail Street Garage, there is no opportunity to widen the driving aisle to the north. To widen the driving aisle to the south would require the removal of a significant amount of the landscaped area adjoining lot 16 and well as minimize the fully landscaped entry feature to the project.

Mr. Terrence Ennes and Members of
the Plan Commission of the
Village of Arlington Heights
June 20, 2019
Page 3

3. The proposed variation is in harmony with the spirit and intent of this Chapter.

It is the intention of the Village Zoning Code “[t]o protect the character and stability of the residential, business and manufacturing areas within the Village and to promote the orderly and beneficial development of such areas.” This variation will have no impact on the harmony, spirit and intent of this Chapter.

4. The variance requested is the minimum variance necessary to allow reasonable use of the property.

The requested variation is the minimum necessary to maintain the residential nature and requires landscaping for the project.

The variances referenced below are necessary due to each dwelling unit being on a separate legally subdivided lot. In each of the three buildings there will be party walls separating the units, and due to site constraints, Village Code required rear, front, and side yards are not possible. Unfortunately, Village Code does not include separate zoning provisions for multi-family adjoining parcels when each unit is to be owned as a separate unit in fee simple. The collective justification for the above variances is provided after the list of requested variances.

K. Variation from Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback of 4.6 feet for lots 1 through 11 and 4.3 feet for lots 12 through 16 where code requires a 25-foot front yard setback for all lots.

L. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a side yard setback of 0 feet for interior walls on lots 1, 6, and 12 where code requires a 2.6 foot side yard setback, and 0 feet for interior walls on lots 2, 3, 4, 5, 8, 9, 10, 13, 14, and 15 where code requires a 2 foot side yard setback, and 0 feet for interior walls on lots 7, 11, and 16 where code requires a 2.1 foot side yard setback.

M. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a side yard setback of 0 feet for outer walls on lots 7, 11, and 15 where code requires a 2.1 foot side yard setback, and 4.3 feet for outer walls on lots 1 and 6 where code requires a 2.6 foot side yard setback, and 4.6 feet for outer walls on lot 12 where code requires a 2.6 foot side yard setback.

Mr. Terrence Ennes and Members of
the Plan Commission of the
Village of Arlington Heights
June 20, 2019
Page 4

- N. Variation from Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a rear yard setback of 0 feet for lots 1 through 16 where code requires a 30-foot rear yard setback.**
- O. Variation to Chapter 28, Section 5.1-7.7, Maximum Building Lot Coverage, to allow approximately 291% building lot coverage for lots 2 and 15, approximately 290% building coverage for lots 3 and 8, approximately 287% building lot coverage for lot 16, approximately 284% building lot coverage for lots 7, 11, 13, and 14, and approximately 283% building lot coverage for lots 4, 5, 9, and 10 where code allows a maximum building lot coverage of 200% on all lots.**
- P. Variation to Chapter 28, Section 5.1-7.11, Maximum Floor Area Ratio, to allow approximately 73% F.A.R. on lot 1, approximately 74% F.A.R. on lot 12, approximately 75% F.A.R. on lot 6, approximately 84% F.A.R. on lots 4, 5, 9, 10, and 14, approximately 85% F.A.R. on lot 13, approximately 87% F.A.R. on lots 7 and 11, approximately 88% F.A.R. on lots 2, 3, 8, and 16, and approximately 89% F.A.R. on lot 15 where code allows a maximum F.A.R. of 55% on all lots.**

- 1. The proposed use will not alter the essential character of the locality and will be compatible with existing uses and zoning of nearby property.*

The proposed use is completely in line with the Downtown Master Plan for attached dwelling units at this site. All surrounding uses and zoning of nearby are very compatible.

- 2. The plight of the owner is due to unique circumstances, which may include the length of time the subject property has been vacant as zoned.*

The property has been vacant for a long time. The subject property is in the transitional portion of the Downtown Business District to residential uses south and west. Previous higher density projects were not welcomed by the neighbors and the owner was able to find a nationally renowned developer to develop 16 rowhomes.

- 3. The proposed variation is in harmony with the spirit and intent of this Chapter.*

It is the intention of the Village Zoning Code "[t]o protect the character and stability of the residential, business and manufacturing areas within the Village and to promote the orderly



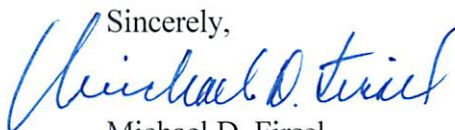
Mr. Terrence Ennes and Members of
the Plan Commission of the
Village of Arlington Heights
June 20, 2019
Page 5

and beneficial development of such areas.” This project promotes the orderly and beneficial development consistent with the unique nature of this and the neighboring properties.

4. *The variance requested is the minimum variance necessary to allow reasonable use of the property.*

In order to make the project financially feasible and viable, no less than 16 residential rowhome units will work. As a result the multi-family nature of the attached units and the location of the buildings on the small site is necessary.

Should you require and further information or clarification, please do not hesitate to contact the undersigned.

Sincerely,

Michael D. Firsell



Village of Arlington Heights Building & Life Safety Department

Interoffice Memorandum

To: Sam Hubbard, Development Planner, Planning and Community Development
From: Deb Pierce, Plan Reviewer, Building & Life Safety Department
Subject: Sigwalt 16 – PUD, Rezoning to R-7, Plat of Subdivision, Variations
PC#: 19-005 – Round 1
Date: April 25, 2019

General Comments:

The information provided is conceptual only and subject to a formal plan review.

Sam...

I do not have any comments.

RECEIVED
APR 25 2019
PLANNING AND COMMUNITY
DEVELOPMENT DEPARTMENT



**Village of Arlington Heights, IL
Department of Building & Life Safety**

Fire Safety Division

Date: 4/16/2018

P.C. Number: 19-005

Project Name: PUD, Rezoning to R-7, Plat of Subdivision, Variations

Project Location: Southern portion block 425

Planning Department Contact: Sam Hubbard, Planning and Community Development

General Comments:

The information provided is conceptual only and subject to a formal plan review.

1. All currently adopted codes shall apply.
2. A complete NFPA compliant fire suppression system is required.
3. An approved water supply capable of supplying the required fire flow for fire protection shall be provided.
4. A fire alarm may be required depending on the type of fire sprinkler provided.
5. Shop drawings for fire alarm systems shall be submitted for review and approval prior to system installation.
6. In buildings four or more stories above grade plane, one stairway shall extend to the roof surface, unless the roof has a slope steeper than four units vertical in 12 units horizontal.
7. Buildings or portions of buildings or facilities exceeding 30 feet in height above the lowest level of fire department vehicle access shall be provided with approved fire apparatus access roads capable of accommodating fire department aerial apparatus. Overhead utility and power lines shall not be located within the aerial fire apparatus access roadway.
8. Buildings shall have approved address numbers.

Date 04-16-18

Reviewed By:


Fire Safety Supervisor

RECEIVED
APR 23 2019
PLANNING & COMMUNITY
DEVELOPMENT DEPARTMENT

Memorandum

To: Sam Hubbard, Planning & Community Development
From: Cris Papierniak, Assistant Director of Public Works
Date: May 1, 2019
Subject: 45 S Chestnut Ave (16 Sigwalt) P.C. #19-005

With regard to the proposed PUD/Rezoning, I have the following comments:

- 1) The water line related comments will be reserved until plumbing submittals show what the intention is within each unit.
- 2) Provide elevations for every sanitary and storm crossing of water main.
- 3) The storm water connection to Sigwalt is mislabeled as sanitary connection.
- 4) The combined sewer line on Sigwalt will be a 30" RCP (the 18" combined sewer will be replaced with a 30")
- 5) The 4" water main on Sigwalt will be abandoned in summer of 2019.
- 6) Submit a maintenance plan for the underground detention basin.
- 7) The existing Village telemetry conduit (encased in concrete) will be impacted for storm MH #8.
- 8) The surface course of roadway shall be milled with a minimum of 2' beyond any roadway trench or cut to ensure smooth transition.
- 9) The project is located in Downtown Arlington Heights and will require brick paver sidewalks (new design with concrete bands), decorative lights and tree grates per Village standards.
- 10) Any work done on sidewalks will meet ADA compliance.
- 11) If approval is provided prior to Village's reconstruction of Sigwalt sewer, contact Mike Pagones, Village Engineer to coordinate storm sewer taps.

If you have any questions, please feel free to contact me.

PETITIONER'S APPLICATION - ARLINGTON HEIGHTS PLAN COMMISSION

Petition #: P.C. **19-005**
 Petitioner: Taylor Morrison of Illinois, Inc
 1384 Walden Office Square, Suite 300
 Schaumburg, IL 60173 - 847-232-8467
 Owner: SSO Arlington, LLC
 4205 W. Irving Park Road, 1st Floor
 Chicago, IL 60641
 Contact Person: Marc McLaughlin
 Address: 1834 Walden Office Square, Suite 300
 Schaumburg, IL 60173 - 847-232-8467
 Phone #: 224-223-3316
 Fax #:
 E-Mail: mmclaughlin@taylormorrison.com

P.I.N.# 03-30-425-012,013,014,03-30-425-021,022,023

Location: _____

Rezoning: ☒ Current: R3 Proposed: R7Subdivision: ☒

of Lots: 17 Current: 6 Proposed: 16

PUD: ☒ For: 16 row homes

Special Use: _____ For: _____

Land Use Variation: _____ For: _____

Land Use: _____ Current: vacant residential

Proposed: attached SFR

Site Gross Area: 41,939 sqft

of Units Total: 16

1BR: 2BR: 3BR: 4BR:

(Petitioner: Please do not write below this line.)

1. PUBLIC IMPROVEMENTS

REQUIRED: _____ YES NO COMMENTS

a. Underground Utilities

Water _____ NO

Sanitary Sewer _____ NO

Storm Sewer _____ NO

b. Surface Improvement

Pavement _____ YES

Curb & Gutter _____ YES

Sidewalks _____ YES

Street Lighting _____ YES

c. Easements

Utility & Drainage _____ NO

Access _____ ~~NO~~ POSSIBLE CROSS ACCESS W/425

2. PERMITS REQUIRED OTHER THAN VILLAGE:

a. MWRDGC ☒ b. IDOT _____

c. ARMY CORP _____ d. IEPA _____

e. CCHD _____

3. R.O.W. DEDICATIONS? _____

4. SITE PLAN ACCEPTABLE? _____

5. PRELIMINARY PLAT ACCEPTABLE? _____

6. TRAFFIC STUDY ACCEPTABLE? _____

7. STORM WATER DETENTION REQUIRED? _____

8. CONTRIBUTION ORDINANCE EXISTING? _____

9. FLOOD PLAIN OR FLOODWAY EXISTING? _____

10. WETLAND EXISTING? _____

YES

NO

COMMENTS

☒☐☐☒☐☒☐☒☒☐☐☒☒☒☐☒

GENERAL COMMENTS ATTACHED

PLANS PREPARED BY: RWG Eng., LLC

DATE OF PLANS: 4-12-19

Michael J. Pagan
 Director Village Engineer

4/30/19

Date

PLAN COMMISSION PC #19-005
Sigwalt 16
45 S Chestnut Ave
PUD, Rezoning to R-7, Plat of Subdivision, Variations
Round 1

RECEIVED
MAY 01 2019
PLANNING & COMMUNITY
DEVELOPMENT DEPARTMENT

- 1) The petitioner is notified that these comments are being provided to ensure that the project meets the requirements for submittal to the Plan Commission. Approval by the Plan Commission is not an endorsement or approval of these documents to obtain the required building permits, engineering approval, or permits required by other government or permitting agencies for construction. Detailed plan review with associated comments will be provided upon submittal of plans for a building permit. The petitioner shall acknowledge that they accept this understanding.
- 2) Since a subdivision is being proposed the plans must meet all subdivision requirements. Final engineering plans for all public improvements must be approved prior to the final plat of subdivision approval. An Engineers estimate of construction cost for full site improvements is required to complete the calculation for plan review, inspection, and other fees. An Engineers estimate of construction cost for public improvements is also required to complete the calculation for the required public improvement guarantee deposit. The public improvements for this development would include public sidewalk and all right-of-way improvements required by the Planning Department which may include but not limited to street lights and parking lanes. These estimates should be submitted at least three weeks prior to the final Plan Commission meeting to allow us time to generate the fee letter and for the petitioner to assemble the proper documents.
- 3) Final engineering plans shall be georeferenced by using State Plane Coordinate System – Illinois East. Below are details about projection:

Projected Coordinate System: NAD_1983_StatePlane_Illinois_East_FIPS_1201_Feet
Projection: Transverse_Mercator
False_Easting: 984250.00000000
False_Northing: 0.00000000
Central_Meridian: -88.33333333
Scale_Factor: 0.99997500
Latitude_Of_Origin: 36.66666667
Linear Unit: Foot_US
Geographic Coordinate System: GCS_North_American_1983
Datum: D_North_American_1983
Prime Meridian: Greenwich
Angular Unit: Degree

- 4) The Final Plat of Subdivision must be reviewed and approved by Engineering prior to final Plan Commission approval. The original signed mylar Final Plat of Subdivision, containing all non-Village signatures, shall be submitted one week before the scheduled date of the final Plan Commission meeting. Village Code Section 29-209 also requires a digital copy of the plat to be provided on disk to the Village. The petitioner shall acknowledge that they accept this understanding.

- 5) The proposed detention/retention facility will be a private system and as such will not be the Village's responsibility to maintain. If a basin is proposed, the basin requires a 1-foot freeboard with an overflow weir at the 6" line. The basin requires a 5' flat zone around the perimeter before the top of slope begins. Provide calculations for sizing the weir. An Onsite Utility Maintenance Agreement must be executed prior to final engineering approval. Please contact the Village Engineer for an editable version of the OUMA.
- 6) If a wet bottom basin is proposed, the basin shall be constructed with a minimum depth of no less than six feet (6'). A safety ledge, five feet (5') wide, back pitched towards the shore three inches (3"), at three feet (3') below normal water level (NWL) must be provided. The side slopes leading down to the basin's NWL must be 5:1 maximum. Provisions, such as a recirculation pump, must be made to keep the pond nuisance free.
- 7) The preliminary detention calculations are acceptable.
 - a) Final approval will require final engineering plans including calculations for storage provided and details of the detention system.
 - b) If the detention storage system will be located under pavement, it must be designed to AASHTO HS-25 loading standard.
 - c) The outlet pipe in the special restrictor structure must have a trap with a removable hood. For reference is a removal hood detail from the Metropolitan Water Reclamation District.
 - d) Since the restrictor required to meet the allowable release rate is less than 2", calculate the amount of detention storage provided with a 2" restrictor. Subtract this amount from the required storage based on the allowable release rate to show the storage deficiency. This deficiency can be paid as money in lieu of detention at the rate of \$1.00 per cubic foot.
- 8) Regarding the permeable pavers, the following items shall be addressed at final engineering:
 - a) The top of the CA-7 stone layer cannot be higher than the surrounding ground to avoid detained water from "bleeding" out of the side of the facility.
 - b) Provide existing and proposed elevations of the finished grade, and also provide the proposed elevations of the bottom of the CA07 stone layer.
 - c) At time of permit, provide a copy of the manufacturer's brochure showing specifications for their permeable paver system.
- 9) If on-site lighting is proposed, provide a site photometric lighting diagram indicating lighting intensities. Also provide the associated catalog cuts for all roadway, parking lot, and building mounted luminaires. All fixtures must be flat bottom, sharp cut-off, and no wall pack style fixtures will be permitted.

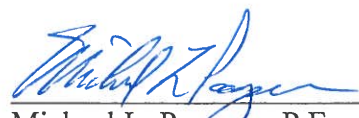
- 10) Provide an exhibit to engineering scale showing the turning path of the Fire Department's responding vehicle, in this case a Pierce Quantum. Exhibit must show front and rear wheel paths and the extent of the front and rear overhangs, as provided in an "Autoturn" exhibit. The vehicle shall be shown maneuvering through the site in all possible directions of travel. Attached are the specifications for the Pierce Quantum.
- 11) Per the Fire Department, fire lanes adjacent to buildings must be able to support the responding vehicle (Pierce Velocity or Pierce Quantum). A fully loaded engine is 49,800 lbs. Fire lanes require a heavy duty pavement section. Asphalt pavement section to consist of: 2" Surface, 2-1/4" N-50 Binder, 5" N-50 Binder, and 4" CA-6 Stone Subbase. For the proposed permeable pavers, provide additional information to show that the structural number of the proposed cross section is equivalent to the above referenced asphalt pavement section.
- 12) Coordinate possible fire lane cross access with the parcel located north of the proposed development.
- 13) The Professional Engineer stamp expiration date provided on the cover page of the engineering plans is not current. Provide current expiration date.
- 14) Regarding the Highland Ave driveway and pedestrian access route:
 - a) The proposed ADA ramps and pedestrian access route at the Highland Ave entrance are currently shown at an angle. The preferred alignment would have the north receiving ADA ramp in alignment with the public sidewalk south of the new driveway.
 - b) Sidewalk takes precedence through the driveway, with curb stopping on either side of the sidewalk.
 - c) All sidewalk and ADA ramps shall meet the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way dated July 26, 2011.
- 15) Verify the depth of the Village cable located in the parkway to confirm there are no conflicts with the proposed storm sewer and water main.
- 16) Provide additional information on the power lines to be relocated.
- 17) The proposed water main is not a public main and therefore must not be located in the right-of-way. Revise the plans accordingly.
- 18) Master meters shall be required at both connection points. In the event the petitioner chooses to install individual meters in the units, the units would not be supplied, maintained or read by the Village.
- 19) The proposed sanitary sewer on Highland Ave is located close to the property line. The line shall be relocated such that all structures are located on private property and not encroaching on the public right-of-way.

TRAFFIC:

- 20) The entrance/exit driveway width is required to be 24 ft. face to face of curb by Village Code. Curb return radii must be 20 ft. radii minimum.
- 21) The geometric alignment for the entrance/exit driveway into the internal parking lot needs to provide turning templates to verify if delivery, garbage, and fire emergency vehicles to get in and turn around to pull out forward, instead of having to back out. The internal 5 ft. radius of the right angle curve needs to be softened into a compound or tapered geometric transition to allow two vehicles to pass each other through this 90 degree turn.
- 22) The garage access for units 1; 5 & 6; 12 & 13; 16, does not accommodate vehicles to pull in to these garages, and back out in order to proceed forward back to the entrance/exit driveway. As such the 2-3 cars parked in these units can only pull into their garage, and must back out across 2-4 other unit's garage door openings, or have other access deficiencies. Pulling into or backing out of units 5 & 13 garages may not be possible if one car is already in the garage.
- 23) The sight distance for vehicles exiting the proposed driveway looking north must be evaluated to verify if oncoming traffic can be seen past the bay of cars parked under the parking garage.
- 24) Clarify if the proposed driveway to be bituminous or concrete.

PRELIMINARY PLAT OF SUBDIVISION:

- 25) The plat was reviewed against the attached Preliminary Plat of Subdivision Checklist. Use the checklist to complete items 12 & 13.
- 26) For the Final Plat of Subdivision, use the attached Final Plat of Subdivision Checklist.


Michael L. Pagones, P.E. 4/30/19
Village Engineer Date

Attachments:

Preliminary Plat of Subdivision Checklist (1 page)
Final Plat of Subdivision Checklist (3 pages)
Contacts for Plat Signatures (1 page)
Sample Utility Signature Blocks (1 page)
Pierce Quantum turning analysis (3 pages)
Removal Hood Detail from MWRD

Preliminary Plat of Subdivision Checklist

Municipal Code Section 29-201(b)(1 – 13)

- ☐ 1. The name of the proposed subdivision.
- ☐ 2. A north-point indication, scale, date of preparation of the Preliminary plat, and by whom prepared.
- ☐ 3. A legal description of land proposed to be subdivided, by section, township and range, and other terms as used in describing land on the records of the Recorder of Deeds or Registrar of Titles, Cook County, Illinois.
- ☐ 4. Sufficient information to locate accurately the proposed subdivision in relation to its general neighborhood, by means of references to streets, railroad lines, recorded plats, etc. If the foregoing references cannot be made, then a vicinity plat showing the location of the proposed subdivision, drawn to a smaller scale, shall accompany the Preliminary plat.
- ☐ 5. The description and location of all survey monuments, existing and to be erected, in the area of the proposed subdivision.
- ☐ 6. The boundary lines of the proposed subdivision, drawn to accurate scale and bearing, and a statement of the total area encompassed by the boundary lines.
- ☐ 7. The location and dimensions of streets, easements, improvements and utilities within and immediately contiguous to the proposed subdivision, as well as the location and dimensions of major features such as railroad lines, airports, water courses, lakes and exceptional topography.
- ☐ 8. The location, dimensions and layout of proposed streets, alleys, and sidewalks of the proposed subdivision.
- ☐ 9. The layout, number, dimensions and area of each lot of the proposed subdivision.
- ☐ 10. The location, dimensions and layout of all parcels of land intended to be dedicated for public use, such as parks and other open spaces, or reserved for the use of all subdivision property owners, together with an indication of the nature of each such use within the proposed subdivision.
- ☐ 11. The location, dimensions and layout of all public utility easements in the proposed subdivision.
- ☐ 12. The location and dimensions of all building setback lines in the proposed subdivision.
- ☐ 13. The names and last known addresses of the owners of the land proposed to be subdivided, the subdivider and all owners of land immediately adjoining the land proposed to be subdivided.

The Village of Arlington Heights Municipal Code can be accessed over the internet at www.vah.com .

Final Plat of Subdivision Checklist
Municipal Code Section 29-209(a – t)

- ☐ a. The date of preparation of the final plat and by whom prepared.
- ☐ b. The boundary of the plat, based on accurate traverse, with angles and lineal dimensions.
- ☐ c. All permanent survey monuments, markers and bench marks.
- ☐ d. Exact location, width and name of all streets within and adjoining the plat, and the exact location and widths of all cross walkways.
- ☐ e. True angles and distances to the nearest established street lines or official monuments, not less than three.
- ☐ f. Municipal, township, county and section lines accurately tied to the lines of the subdivision by distances and angles.
- ☐ g. Radii, internal angles, points and curvatures, tangent bearings and lengths of all arcs.
- ☐ h. All easements for rights of way established for public use and utilities.
- ☐ i. All lot numbers and lines, with accurate dimensions given in hundredths of feet.
- ☐ j. Accurate outlines and legal descriptions of all areas dedicated or reserved for public use, with the proposed uses indicated thereon; and all areas to be reserved by deed covenant for the common use of all property owners; together with the proposed uses indicated thereon.
- ☐ k. The text of protective covenants, approved by the Plan Commission, relating to the proposed subdivision.
- ☐ l. An endorsement by the County Clerk in the form acceptable to Cook County, that there are no delinquent, forfeited, foreclosed or purchased general taxes, or unpaid current general taxes, against the land proposed to be subdivided.
- ☐ m. A summary of all restrictions applicable to any part of such subdivision concerning building restrictions, use restrictions, building setback lines and similar matters.
- ☐ n. A deed of dedication in the form set forth in Section 29-217(a):
The Final plat shall contain a deed of dedication substantially as follows:

"We, the undersigned, (Names), owners of the real estate shown and described herein, do hereby lay off, plat and subdivide said real estate in accordance with the within plat. This subdivision shall be known and designated as (Name), an addition to the Village of Arlington Heights, Cook County. All streets and alleys and public open spaces shown and not heretofore dedicated are hereby dedicated to the public. Front and side yard building setback lines are established as shown on this plat, between which lines and the property lines of the streets, there shall be erected or maintained no building or structure. There are strips of ground, (Number) feet in width, as shown on this plat and marked 'Easement' reserved for the use of public utilities for the installation of water and sewer mains, poles, ducts, lines and wires, subject at all times to the proper authorities and to the easement herein reserved. No permanent or other structures are to be erected or maintained upon

these strips of land, but owners of lots in this subdivision shall take their titles subject to the rights of the public utilities, and to the rights of the owners of other lots in this subdivision.

(Additional dedications and protective covenants, or private restrictions, would be inserted here upon the subdivider's initiative or the recommendation of the Plan Commission or Village Board; important provisions are those specifying the use to be made of the property and, in the case of residential use, the minimum habitable floor area.)

The foregoing covenants (or restrictions), are to run with the land and shall be binding on all parties and all persons claiming under them until January 1, 20____ [25 year period is suggested], at which time said covenants (or restrictions) shall be automatically extended for successive periods of ten years unless indicated otherwise by negative vote of a majority of the then owners of the building sites covered by these covenants (or restrictions), in whole or in part, which said vote will be evidenced by a petition in writing signed by the owners and duly recorded. Invalidation of any one of the foregoing covenants (or restrictions) by judgment or court order shall in no way affect any of the other various covenants (or restrictions), which shall remain in full force and effect.

The right to enforce these provisions by injunction, together with the right to cause the removal, by due process of law, of any structure or part thereof erected or maintained in violation, is hereby dedicated to the public, and reserved to the several owners of the several lots in this subdivision and to their heirs and assigns.

WITNESS our hands and seals this ____ day of _____, 20____.

STATE OF ILLINOIS)
COUNTY OF COOK) SS.

Before me the undersigned Notary Public, in and for the County and State aforesaid, personally appeared (Names), and each separately and severally acknowledged the execution of the foregoing instrument as his or her voluntary act and deed, for the purposes therein expressed.

WITNESS my hand and notarial seal this ____ day of 20 ____.

Notary Public"

- ☐ o. A blank certificate of approval in the form set forth in Section 29-217(b).
The Final plat shall contain a certificate of approval as follows:

"Under the authority provided by 65 ILCS 5/11-12 as amended by the State Legislature of the State of Illinois and Ordinance adopted by the Village Board of the Village of Arlington Heights, Illinois, this plat was given approval by the Village of Arlington Heights AND MUST BE RECORDED WITHIN SIX MONTHS OF THE DATE OF APPROVAL BY THE VILLAGE BOARD, OTHERWISE IT IS NULL AND VOID.

APPROVED by the Plan Commission at a meeting held _____

Chairman

Secretary

APPROVED by the Village Board of Trustees at a meeting held _____

President

Village Clerk

APPROVED by the Village Collector

APPROVED by the Village Engineer

"

- ☐ p. A certification by a registered surveyor in the form set forth in Section 29-217(c). The Final plat shall contain a certificate signed by an Illinois Registered Land Surveyor in substantially the following form:

"I, (Name), hereby certify that I am an Illinois Registered Land Surveyor in compliance with the laws of the State of Illinois, and that this plat correctly represents a survey completed by me on (Date); that all monuments and markers shown thereon actually exist, and that I have accurately shown the materials that they are made of.

Signature

(SURVEYOR'S SEAL)

Illinois Land Surveyor
No. _____"

- ☐ q. A notarized statement from the owner indicating the school district in which each tract, parcel, lot or block lies.
- ☐ r. A certificate in the form as required by the Illinois Department of Transportation or Cook County Highway Department, respectively, when any new street or new driveway will access one of these Department's streets.
- ☐ s. The parcel index numbers of all lots contained within the plat shall be included on the plat of subdivision.
- ☐ t. A block stating "Send Tax Bill To: (Name/Address)." The actual name and address shall be provided by the developer.
- ☐ u. Provide a location to identify the address of each new lot.

The Village of Arlington Heights Municipal Code can be accessed over the internet at www.vah.com .

Contacts for Plat Signatures

Mr. Frank Gautier
Comcast Cable
688 Industrial Drive
Elmhurst, IL 60126

224-229-5853
Frank_Gautier2@comcast.com
Alternates:
Bob Schulter (Department Supervisor), Martha Agieras (Assistant)
Bob_Schulter@comcast.ncom
Martha_Gieras@comcast.com

Per Frank: Request that completed plat data be shared with Comcast in advance of signature, and that the plat be physically provided at their 688 Industrial Drive office at a mutually agreed date and time.

Mr. Mark Cozzi
ComEd
Three Lincoln Center, 4th Floor
Oakbrook Terrace, IL 60181

630-576-6530
Mark.Cozzi@ComEd.com

Ms. Kim Augustine
NICOR Gas
300 W Terra Cotta Ave
Crystal Lake, IL 60014

630-338-2976
kaugust@aglresources.com

Ms. Sue E. Manshum
ROW Engineer
Ameritech
1391 Abbot Ct
Buffalo Grove, IL 60089

847-465-6086
sm9231@att.com

Mr. Dominick Silvio
WOW Internet Cable
4350 Weaver Parkway
Warrenville, IL 60555

630-536-3121
dominick.silvio@wowinc.com

Ms. Abigail Robinson
IDOT Permits
201 W Center Court
Schaumburg, IL 60196

847-705-4541
Abigail.L.Robinson@illinois.gov

Mr. Michael Sterr, P.E.
Permit Division Head, Construction Bureau
Cook County Department of Transportation and Highways
69 W Washington St
24th Floor
Chicago, IL 60602

312-603-1670
michael.sterr@cookcountyil.gov
hwy.permits@cookcountyil.gov

Sample Signature Blocks

COMMONWEALTH EDISON COMPANY
EASEMENT APPROVED AND ACCEPTED

BY: _____ DATE: _____, 20__

TITLE: _____

AMERITECH/SBC
EASEMENT APPROVED AND ACCEPTED

BY: _____ DATE: _____, 20__

TITLE: _____

NICOR GAS
EASEMENT APPROVED AND ACCEPTED

BY: _____ DATE: _____, 20__

TITLE: _____

COMCAST CABLE
EASEMENT APPROVED AND ACCEPTED

BY: _____ DATE: _____, 20__

TITLE: _____

WIDE OPEN WEST, LLC
EASEMENT APPROVED AND ACCEPTED

BY: _____ DATE: _____, 20__

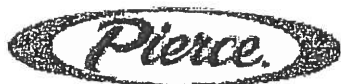
TITLE: _____

Received Fax: 06/03/05 10:45 FAX 820 832 3280 Fax Station: Norman J. Toberman Assoc

06/03/05 FRI 10:45 FAX 820 832 3280

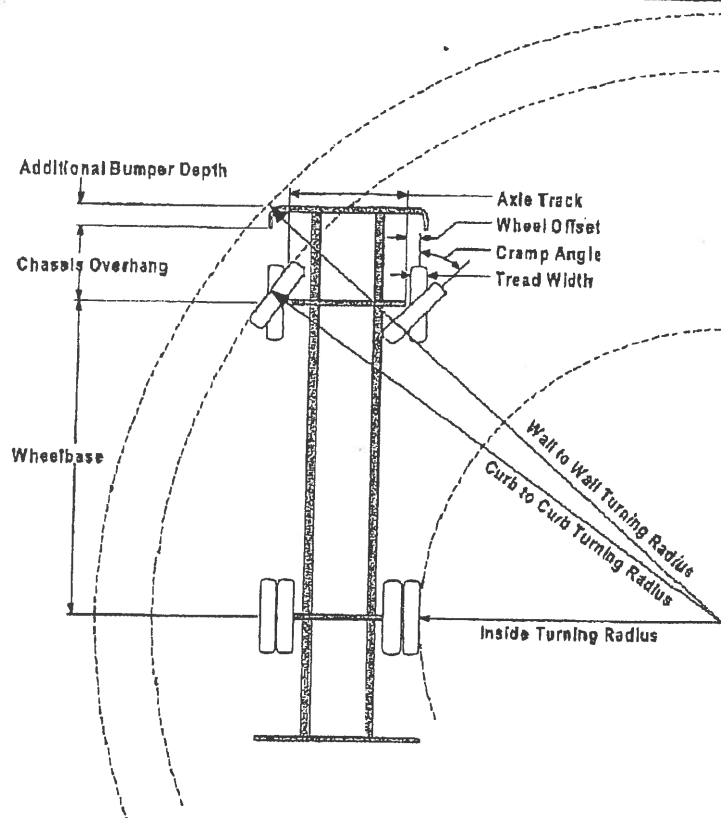
TECH SERVICE

004



Turning Performance Analysis

6/3/2005



Parameters:

Inside Cramp Angle:	40.00 °
Axle Track:	82.92 in.
Wheel Offset:	5.25 in.
Tread Width:	17.40 in.
Chassis Overhang:	65.99 in.
Additional Bumper Depth:	22.00 in.
Front Overhang:	146.60 in.
Wheelbase:	257.00 in.

Calculated Turning Radii:

Inside Turn:	24 ft. 4 in.
Curb to Curb:	40 ft. 0 in.
Wall to Wall:	47 ft. 6 in.

Comments:

Aerial Application

JOB# 13807 FOR REFERENCE ONLY

Components	PRIDE #	Description
Front Axle	0090913	Axle, Front, Oshkosh TAK-4, Non Drive, 24,000 lb, DLN/Qtm/AXT
Front Tires	0052978	Tires, Goodyear, 425/65R22.50 20 ply G286 tread
Chassis	0050220	Dash-2000 Chassis
Front Bumper	0012246	Bumper, 22" extended - all chassis'
Aerial Device	0022160	Aerial, 100' Pierce Platform

Notes:

Actual Inside Cramp Angle may be less due to highly specialized options.

Curb to Curb turning radius calculated for a 9.00 inch curb.

Reduce turning radius by 33% if vehicle is equipped with all-wheel steer.

Received/Fax: Jun 03 2005 9:40AM Fax Station: Norman J. Toberman Assoc

06/03/05 FRI 10:45 FAX 920 832 3260

TECH SERVICE

005



Turning Performance Analysis

6/3/2005

Definitions:

Inside Cramp Angle	Maximum turning angle of the front inside tire.
Axle Track	King-pin to king-pin distance of the front axle.
Wheel Offset	Offset from the center-line of the wheel to the king-pin.
Tread Width	Width of the tire tread.
Chassis Overhang	Distance from the center-line of the front axle to the front edge of the cab. This does not include the bumper depth.
Additional Bumper Depth	Depth that the bumper assembly adds to the front overhang.
Wheelbase	Distance between the center lines of the vehicle's front and rear axles.
Inside Turning Radius	Radius of the smallest circle around which the vehicle can turn.
Curb to Curb Turning Radius	Radius of the smallest circle inside of which the vehicle's tires can turn. This measurement assumes a curb height of 9 inches.
Wall to Wall Turning Radius	Radius of the smallest circle inside of which the entire vehicle can turn. This measurement takes into account any front overhang due to the chassis, bumper extensions and/or aerial devices.

TURNING PERFORMANCE ANALYSIS

OF

A PIERCE QUANTUM CHASSIS

FRONT AXLE	FRONT BRAKES	FRONT TIRES	CRAMP ANGLE	BUMPER TO AXLE DIM.
FL -943	DISC	385/65R22.5	45 DEG.	92.5 IN.
WHEELBASE	WHEEL OFFSET	FRONT AXLE TRACK		
184 INCHES	4.12	83.86 INCHES		

INSIDE TURNING RADIUS MEASURED TO THE CENTERLINE OF THE
INSIDE TIRE : 256.10 INCHES OR 21.34 FEET.

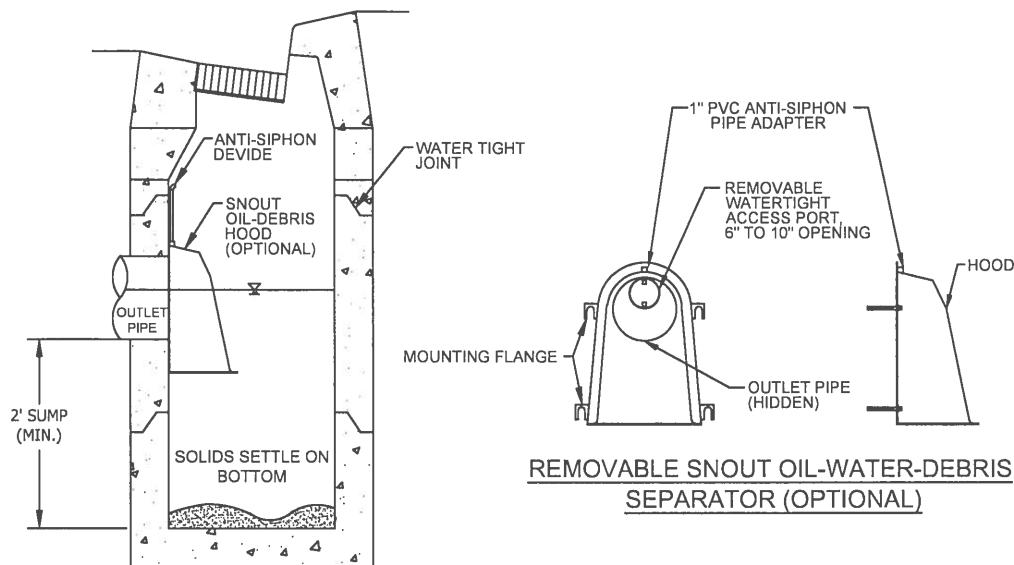
OUTSIDE TURNING RADIUS MEASURED TO THE CENTERLINE OF THE
OUTSIDE TIRE : 307.02 INCHES OR 25.59 FEET.

CURB TO CURB TURNING RADIUS CALCULATED FOR A 9.00 INCH CURB
HEIGHT : 316.55 INCHES OR 26.38 FEET.

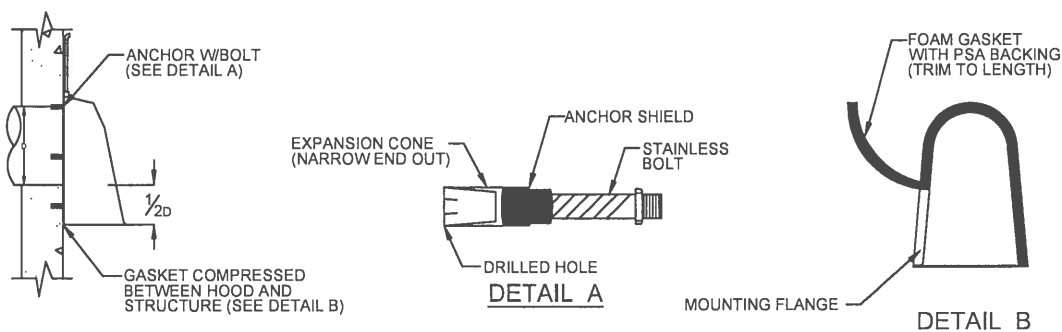
WALL TO WALL TURNING RADIUS MEASURED USING AN AXLE TO BUMPER
DIMENSION OF 92.50 INCHES : 375.18 INCHES OR 31.27 FEET.

ACTUAL WHEEL CRAMP ANGLE MAY BE LESS DUE TO OPTIONS
REDUCE TURNING RADIUS BY 33% IF VEHICLE IS EQUIPPED WITH ALL-WHEEL STEER

=====



CATCH BASIN WITH OPTIONAL HOOD



OUTLET PIPE

NOTES:

1. ALL HOODS SHALL BE CONSTRUCTED OF A FIBERGLASS REINFORCED RESIN COMPOSITE WITH ISO GEL COAT EXTERIOR FINISH WITH A MINIMUM 0.125" LAMINATE THICKNESS.
2. ALL HOODS SHALL BE EQUIPPED WITH A WATERTIGHT ACCESS PORT, A MOUNTING FLANGE, AND AN ANTI-SIPHON VENT PIPE AND ELBOW AS DRAWN. (SEE CONFIGURATION DETAIL).
3. THE SIZE AND POSITION OF THE HOOD SHALL BE DETERMINED BY OUTLET PIPE SIZE AS PER MANUFACTURER'S RECOMMENDATION (SNOUT SIZE ALWAYS LARGER THAN PIPE SIZE).
4. THE BOTTOM OF THE HOOD SHALL EXTEND DOWNWARD A MINIMUM DISTANCE EQUAL TO $\frac{1}{2}$ THE OUTLET PIPE DIAMETER WITH A MINIMUM DISTANCE OF 6" FOR PIPES < 12" I.D.
5. THE ANTI-SIPHON VENT SHALL EXTEND ABOVE HOOD BY MINIMUM OF 3" AND A MAXIMUM OF 12" ACCORDING TO STRUCTURE CONFIGURATION.
6. THE SURFACE OF THE STRUCTURE WHERE THE HOOD IS MOUNTED SHALL BE FINISHED SMOOTH AND FREE OF LOOSE MATERIAL AND PIPE SHALL BE FINISHED FLUSH TO WALL.
7. THE REMOVABLE HOOD SHALL BE ATTACHED TO THE STRUCTURE WITH THE SLOTTED TABS MOUNTED OVER $\frac{3}{8}$ " STAINLESS STEEL BOLTS AND OIL-RESISTANT GASKETS.
8. POSITION HOOD SUCH THAT BOTTOM FLANGE IS AT A DISTANCE OF $\frac{1}{2}$ " OUTLET PIPE DIAMETER (MIN.) BELOW THE PIPE INVERT. MINIMUM DISTANCE FOR PIPES < 12" I.D. IS 6".
9. RESTRICTOR AND SNOUT WHEN PAIRED SHOULD BE INSTALLED IN SUCH A WAY THAT RESTRICTOR AND SNOUT REMAIN INSPECTABLE.
10. RESTRICTOR AND SNOUT HOOD SHALL BE CURVED TO INSIDE RADIUS OF STRUCTURE AND WATERTIGHT.

NOT TO SCALE





Arlington Heights Fire Department Plan Review Sheet

P. C. Number 19-005

Project Name Sigwalt 16 PUD

Project Location 45 S Chestnut

Planning Department Contact Sam Hubbard

General Comments

Round 1

General Comments:

- 1) Sprinkler system installed per code.
- 2) Any Fire Department connections will be located at the front of the building. The Fire Connections will be fully visible and accessible and located within 100' of a accessible fire hydrant capable of providing the needed flow.
- 3) Install a fully operational annunciator panel or alarm panel at the main front entrance or to meet the Fire Departments needs.
- 4) Knox Box(s) shall be installed to meet the Fire Departments needs.

**NOTE: PLAN IS CONCEPTUAL ONLY
SUBJECT TO DETAILED PLAN REVIEW**

Date April 22, 2019

Reviewed By: LT. Mark Aleckson

Arlington Heights Fire Department

ARLINGTON HEIGHTS POLICE DEPARTMENT

Community Services Bureau

RECEIVED

APR 23 2019

PLANNING & COMMUNITY
DEVELOPMENT DEPARTMENT

DEPARTMENT PLAN REVIEW SUMMARY

Sigwalt 16 PDU
45 S. Chestnut Ave.

Round 1 Review Comments

04/23/2019

1. Character of use:

The character of use is consistent with the area. It will be necessary to limit access to the grounds, especially benches or pergola areas. This is recommended to limit access and loitering. The addition of Trespass signs is recommended.

2. Are lighting requirements adequate?

Lighting should be up to Village of Arlington Heights Code. Special attention should be given to those outside common areas- ie courtyard and parking lot. Landscaping must not create hiding locations and should provide for natural surveillance.

3. Present traffic problems?

With the construction of Arlington 425 imminent, there will be increased traffic flow to an already congested downtown area. The Police Department has concerns about the traffic flow at Highland/Sigwalt and Highland/Campbell and again recommend a four way stop sign at those intersections.

4. Traffic accidents at particular location?

This is not a problem area in relation to traffic accidents.

5. Traffic problems that may be created by the development.

-The area around the parking lot entrance/exit should be clear of obstructions. Vehicle traffic entering and exiting the parking lot must be able to view other vehicles and pedestrians. Street parking adjacent to the entrances/exits should be prohibited. Warning lights/audible signals could be used to signal that vehicles are exiting.

6. General comments:

-Please ensure that there is an emergency information/contact card on file with the Arlington Heights Police Department and that it is up-to-date. Agent contact information must be provided to the Arlington Heights Police Department during all construction phases. The form is attached. Please complete and return. This allows police department personnel to contact an agent during emergency situations or for suspicious/criminal activity on the property during all hours.

A-121 #330
Alexandra Ovington, Crime Prevention Officer
Community Services Bureau

D. Hajek #557
Doug Hajek, Sergeant
Community Services Bureau

PETITIONER'S APPLICATION - ARLINGTON HEIGHTS PLAN COMMISSION

Petition #: P.C. **19-005**
 Petitioner: Taylor Morrison of Illinois, Inc
1384 Walden Office Square, Suite 300
Schaumburg, IL 60173 - 847-232-8467
 Owner: SSO Arlington, LLC
4205 W. Irving Park Road, 1st Floor
Chicago, IL 60641
 Contact Person: Marc McLaughlin
 Address: 1834 Walden Office Square, Suite 300
Schaumburg, IL 60173 - 847-232-8467
 Phone #: 224-223-3316
 Fax #: _____
 E-Mail: mmclaughlin@taylormorrison.com

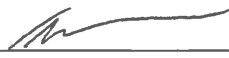
P.I.N.# 03-30-425-012,013,014,03-30-425-021,022,023
 Location: _____
 Rezoning: ☒ Current: R3 Proposed: R7
 Subdivision: ☒
 # of Lots: 17 Current: 6 Proposed: 16
 PUD: ☒ For: 16 row homes
 Special Use: _____ For: _____
 Land Use Variation: _____ For: _____
 Land Use: _____ Current: vacant residential
 Proposed: attached SFR
 Site Gross Area: 41,939 sqft
 # of Units Total: 16
 1BR: _____ 2BR: _____ 3BR: _____ 4BR: _____

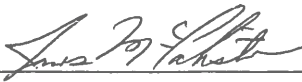
(Petitioner: Please do not write below this line.)

1. GENERAL COMMENTS:

No Comments.

RECEIVED
 APR 24 2019
 PLANNING & COMMUNITY
 DEVELOPMENT DEPARTMENT


 Environmental Health Officer 4-22-19
 Date


 Director 4/23/19
 Date

PETITIONER'S APPLICATION - ARLINGTON HEIGHTS PLAN COMMISSION

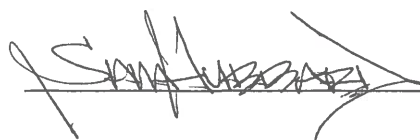
Petition #: P.C. <u>19-005</u>	P.I.N.# <u>03-30-425-012,013,014,03-30-425-021,022,023</u>
Petitioner: <u>Taylor Morrison of Illinois, Inc</u>	Location: _____
<u>1384 Walden Office Square, Suite 300</u>	Rezoning: ☒ Current: <u>R3</u> Proposed: <u>R7</u>
<u>Schaumburg, IL 60173 - 847-232-8467</u>	Subdivision: ☒
Owner: <u>SSO Arlington, LLC</u>	# of Lots: <u>17</u> Current: <u>6</u> Proposed: <u>16</u>
<u>4205 W. Irving Park Road, 1st Floor</u>	PUD: ☒ For: <u>16 row homes</u>
<u>Chicago, IL 60641</u>	Special Use: _____ For: _____
Contact Person: <u>Marc McLaughlin</u>	Land Use Variation: _____ For: _____
Address: <u>1834 Walden Office Square, Suite 300</u>	Land Use: _____ Current: <u>vacant residential</u>
<u>Schaumburg, IL 60173 - 847-232-8467</u>	Proposed: <u>attached SFR</u>
Phone #: <u>224-223-3316</u>	Site Gross Area: <u>41,939 sqft</u>
Fax #: _____	# of Units Total: <u>16</u>
E-Mail: <u>mmclaughlin@taylormorrison.com</u>	1BR: _____ 2BR: _____ 3BR: _____ 4BR: _____

(Petitioner: Please do not write below this line.)

- | | <u>YES</u> | <u>NO</u> | |
|----|-------------------------------------|--------------------------|---|
| 1. | ☒ | ☐ | COMPLIES WITH COMPREHENSIVE PLAN? |
| 2. | ☒ | ☐ | COMPLIES WITH THOROUGHFARE PLAN? |
| 3. | ☒ | ☐ | VARIATIONS NEEDED FROM ZONING REGULATIONS?
(See below.) |
| 4. | ☒ | ☐ | VARIATIONS NEEDED FROM SUBDIVISION REGULATIONS?
(See below.) |
| 5. | ☒ | ☐ | SUBDIVISION REQUIRED? |
| 6. | ☒ | ☐ | SCHOOL/PARK DISTRICT CONTRIBUTIONS REQUIRED?
(See below.) |

Comments:

PLEASE SEE ATTACHED COMMENTS.

 5/1/19
Date

Planning & Community Development Dept. Review

May 1, 2019



REVIEW ROUND 1

Project: Southern 1/3 of Block 425 – Taylor Morrison Townhomes
Sigwalt 16

Case Number: PC 19-005

General:

7. The Plan Commission must review and approve the following actions:
 - a. A rezoning from R-3, One-Family Dwelling District into the R-7, Multiple-Family Dwelling District.
 - b. A Planned Unit Development (PUD) to allow the construction of a 16-unit single-family attached rowhome development.
 - c. Preliminary and Final Plat of Resubdivision to subdivide the subject property into individual lots for each townhome unit.
 - d. Variation to Chapter 28, Section 5.1-7.2, Minimum Area for Zoning District, to allow the R-7 District to be approx. 1.39 acres where code requires a minimum of 2 acres for the R-7 District.
 - e. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback along Highland Avenue to be 12' where code requires a 25' setback.
 - f. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback along Chestnut Avenue to be 17' where code requires a 25' setback.
 - g. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a side yard setback (north) to be 8' where code requires a 15' setback.
 - h. Variation to Chapter 28, Section 5.1-7.10, Spacing Between Multi-Family Buildings, to allow 5' spacing between principal buildings where code requires 25' spacing.
 - i. Variation to Chapter 28, Section 10.2-8, to allow a two-way driveway width of 22' where code requires a minimum of 24' for a two-way drive aisle.
 - j. Variation to Chapter 28, Section 10.2-9, to allow tandem parking spaces.
 - k. It should be noted that the property is proposed to be subdivided into individual units for each townhome, which will require variations for each lot based on the R-7 setback and bulk standards, although the overall development will comply with bulk standards and with most setback standards.
8. Section 9.8(i) of the Zoning Code requires that all PUD's include a preliminary construction schedule and phasing plan. Please provide the required preliminary construction schedule, which includes information on the approximate date of construction start, the number of construction phases and the starting and completion date for each phase, and details on what will be constructed in each phase, as well as a construction staging plan. The construction phasing plan shall include the anticipated number of construction workers and where they will park during each phase of construction, the type and amount of construction vehicles per phase and where they will be staged, the location of material storage, and information on anticipated lane closures, including info on where the closures will take place and the general timeframe for each closure.
9. School, Park, and Library contributions will be required prior to the issuance of a building permit. Your response to the affordable housing policy has been received and will be evaluated by the Housing Commission as part of the zoning entitlement process.
10. Please ensure that all plans and/or studies to be resubmitted as a result of the Round 1 Department review comments include a revision date.

Site Plan:

11. Streetscape along Chestnut should be modified to be consistent the proposed streetscape to the north (widening of Chestnut to include parking along the east side of the street). Please revise the plans to show this improvement.
12. The plans appear to show that the existing overhead lines on the north side of Sigwalt that traverse directly south across Sigwalt, along the north side of Sigwalt, and diagonally across Sigwalt to the southwest corner of Sigwalt and Chestnut will all remain. These overhead lines should be buried or relocated as part of this development proposal. Can the existing telephone and electric utility boxes located along Sigwalt Street be relocated to the rear of the site or put underground?
13. Staff would like to discuss the potential merits of parking bump-outs at Sigwalt/Highland and Sigwalt/Chestnut and installation of these improvements may be required.
14. Previous iterations of the plans showed fencing in the front yard areas. Is fencing still proposed?
15. Other than the proposed transformer at the rear of the property, will there be any other ground mounted utility or mechanical equipment (switch gear, generators, meters, utility pedestals, AC units, etc.). Any/all proposed ground mounted utility/mechanical equipment must be appropriately located and screened.
16. The KLOA study recommended the provision of high-visibility crosswalks across the driveway entrance to the subject property. Please show these on the plans.
17. Given the 8' of ROW dedication along Highland Avenue, the proposed servicewalks for each unit extend well into the ROW. Maintenance of these servicewalks will be the responsibility of the homeowners and the Village will not maintain said service walks to each unit.

Building:

18. Please provide the projection distance of the proposed bay windows. Bay windows may not project more than 3' into a required front, rear, or exterior side yard.

Plat of Subdivision:

19. Please clarify if you are proceeding with Preliminary and Final Plat of Subdivision concurrently or separately. The submitted plat of subdivision was reviewed under the assumption that you are proceeding with Preliminary approval first, then returning for Final Plat approval at a future date.
20. Please revise the title of the plat to clarify whether it is preliminary or final. If you are proceeding with Final Plat approval, please note that the Final Plat, as approved by the Engineering Dept., must be printed on mylar and submitted to the Village, with signatures obtained from all parties except those to be coordinated by the Village, no less than one week prior to the Plan Commission hearing date. If this requirement cannot be met, you can proceed with Preliminary Plat approval with Final Plat approval obtained at a future date (i.e. a separate Plan Commission meeting would be needed). No public notice is required for Final Plat of Subdivision approval.
21. Please note that final engineering must be approved by the Engineering Dept. no less than one week prior to appearance before the Village Board for Final Plat of Subdivision approval. Additionally, please note that all applicable engineering fees and surety bonds, public improvement deposits, and recording fee's must be provided one week prior to appearing before the Village Board for Final Plat approval. If this requirement cannot be met, you can proceed with Preliminary Plat approval with Final Plat approval obtained at a future date (i.e. a separate Plan Commission meeting would be needed). No public notice is required for Final Plat of Subdivision approval.
22. Please clarify if each townhome unit will be placed on a separate subdivided lot. Currently, the Plat of Subdivision only places each building on separate platted lots. Since variations will be required for each townhome lot, please revise the plat to show the individual lots and the necessary variations can be incorporated into the Plat approval process. Otherwise, when a final plat of Subdivision is prepared that shows individual lots for each unit, another public notice and Plan Commission hearing would be required for the needed variations.

Prepared by: SANJEEV K

Sigwalt 16
45 S. Chestnut
PC 19-005
4/29/19

- 1) Provide additional landscaping on the south end adjacent to unit #6 and #12. Overall, the landscaping is minimal and it is recommended that additional landscaping be provided. Along Sigwalt, Chestnut and Highland provide additional understory trees. On the north elevation adjacent to unit #1 and #16, vary the landscaping and increase the height to soften the elevation.
- 2) Along Highland Avenue, the streetscape shall match the Downtown. Incorporate the brick pavers and the site furnishings that are consistent with the Downtown streetscape.
- 3) Increase the size of the shade trees in the courtyard at the ends of the parking row so that they are a minimum of 4" caliper (Chapter 28. Section 6.15).
- 4) Incorporate permeable pavers within the drive aisle. The crosswalk near Highland shall be striped.
- 5) It is recommended that specialty pavement such as brick pavers be provided for the private walkways.
- 6) Will the three buildings be constructed at once? If not please provide an interim landscape plan.
- 7) The proposed Linden trees along Sigwalt may potentially conflict with the existing overhead utility lines. Please evaluate the placement and species of the proposed trees.
- 8) Landscape screening must be provided for any utility/mechanical areas located at grade so that they are fully screened.
- 9) A landscape compliance bond in the amount of 30% of the landscaping costs will be required. In addition, a \$4 tree fee is required for each lineal foot of frontage.

SIGWALT 16 – PC#: 19-005
PETITIONER RESPONSES TO ROUND 1 COMMENTS
MAY 21, 2019

RESPONSES TO BUILDING AND LIFE SAFETY DEPARTMENT COMMENTS

- A. The information provided is conceptual only and subject to formal plan review.

[Response:](#) No Comments.

SIGWALT 16 – PC#: 19-005
PETITIONER RESPONSES TO ROUND 1 COMMENTS
MAY 21, 2019

RESPONSES TO FIRE SAFETY DIVISION COMMENTS

1. All currently adopted codes shall apply.

Response: Understood

2. A complete NFPA compliant fire suppression system is required.

Response: Understood and will comply with requirements of currently adopted codes to provide the appropriate NFPA system.

3. An approved water supply capable of supplying the required fire flow for fire protection shall be provided.

Response: Understood and will comply.

4. A fire alarm may be required depending on the type of fire sprinkler provided.

Response: Understood and agree.

5. Shop drawings for fire alarm systems shall be submitted for review and approval prior to system installation.

Response: Understood. Will be in final plans.

6. In buildings four or more stories above grade plane, one stairway shall extend to the roof surface, unless the roof has a slope steeper than four units vertical in 12 units horizontal.

Response: With the upper roof not occupied, IBC 1009.13 allows access to be by an alternating tread device. Given the individual townhouse construction with no shared interior exit stair, no mechanical equipment on the upper roof, and full access being provided to the 3rd floor roof decks, we would like to work with the Fire and Building Departments during building permit review to request relief from this code requirement. If relief is not granted, we will comply with the code requirements to provide an alternating tread device.

7. Buildings or portions of buildings or facilities exceeding 30 feet in height above the lowest level of fire department vehicles access shall be provided with approved fire apparatus access roads capable of accommodating fire department aerial apparatus. Overhead utility

and power lines shall not be located within the aerial fire apparatus access roadway.

[Response:](#) Understood and agree. See accompanying exhibit.

8. Buildings shall have approved address numbers.

[Response:](#) Understood and agree. Will be assigned by USPS.

SIGWALT 16 – PC#: 19-005
PETITIONER RESPONSES TO ROUND 1 COMMENTS
MAY 21, 2019

RESPONSE TO PUBLIC WORKS DEPARTMENT COMMENTS

1. The water line related comments will be reserved until plumbing submittals show what the intention is within each unit.

Response: The watermain was redesigned in coordination with Engineering Department. All units have individual services.

2. Provide elevations for every sanitary and storm crossing of water main.

Response: A crossings schedule is now provided.

3. The storm water connection to Sigwalt is mislabeled as sanitary connection.

Response: The storm sewer connection is now provided by the Village's contractor at owner's expense. Coordinated with Engineering Department.

4. The combined sewer line on Sigwalt will be a 30" RCP (the 18" combined sewer will be replaced with a 30").

Response: Change is noted.

5. The 4" water main on Sigwalt will be abandoned in summer of 2019.

Response: Change is noted.

6. Submit a maintenance plan for the underground detention basin.

Response: The maintenance plan is submitted as the required Exhibit R for MWRD. See maintenance notes on the Final Engineering Plan.

7. The existing Village telemetry conduit (encased in concrete) will be impacted for storm MH #8.

Response: Sanitary manhole #8 has now been redesigned to connect in a different location. Coordinated with the Engineering Department.

8. The surface course of roadway shall be milled with a minimum of 2' beyond any roadway trench or cut to ensure smooth transition.

Response: Comment is noted and addressed in note #11 on page 4.

9. The project is located in Downtown Arlington Heights and will require brick paver sidewalks (new design with concrete bands), decorative lights and tree grates per Village standards.

Response: Brick Pavers have been incorporated on Highland; however, Petitioner feels that site furnishings in front of these individually owned townhomes is not appropriate.

10. Any work done on sidewalks will meet ADA compliance.

Response: Public sidewalks. Understood and agree.

11. If approval is provided prior to Village's reconstruction of Sigwalt sewer, contact Mike Pagones, Village Engineer to coordinate storm sewer taps.

Response: Coordination with the Engineering Department for all utility stubs/taps has been done.

SIGWALT 16 – PC#: 19-005
PETITIONER RESPONSES TO ROUND 1 COMMENTS
MAY 21, 2019

RESPONSE TO ENGINEERING DEPARTMENT COMMENTS

1-10. Printed comments – all agreed.

ADDITIONAL COMMENTS:

1. The petitioner is notified that these comments are being provided to ensure that the project meets the requirements for submittal to the Plan Commission. Approval by the Plan Commission is not an endorsement or approval of these documents to obtain the required building permits, engineering approval, or permits required by other government or permitting agencies for construction. Detailed plan review with associated comments will be provided upon submittal of plans for a building permit. The petitioner shall acknowledge that they accept this understanding.

[Response: Understood and agree.](#)

2. Since a subdivision is being proposed the plans must meet all subdivision requirements. Final engineering plans for all public improvements must be approved prior to the final plat of subdivision approval. An Engineers estimate of construction cost for full site improvements is required to complete the calculation for plan review, inspection, and other fees. An Engineers estimate of construction cost for public improvements is also required to complete the calculation for the required public improvements guarantee deposit. The public improvements for this development would include public sidewalk and all right-of-way improvements required by the Planning Department which may include but not limited to streetlights and parking lanes. These estimates should be submitted at least three weeks prior to the final Plan Commission meeting to allow us time to generate the fee letter and for the petitioner to assemble the proper documents.

[Response: Understood. See attached EEOPC.](#)

3. Final engineering plans shall be georeferenced by using State Plane Coordinate System – Illinois East. Below are details about projection:

Projected Coordinate System:	NAD_1983_StatePlane_Illinois_East_FIPS_1201_Feet
Projection:	Transverse_Mercator
False_Easting:	984250.00000000
False_Northing:	0.00000000
Central_Meridian:	-88.33333333

Scale_Factor: 0.99997500
Latitude_Of_Origin: 36.66666667
Linear Unit: Foot_US
Geographic Coordinate System: GCS_North_American_1983
Datum: D_North_American_1983
Prime Meridian: Greenwich
Angular Unit: Degree

[Response:](#) The georeference of the engineering plans using the State Plane Coordinate System – Illinois East was previously done. Please see front page of engineering plans.

4. The Final Plat of Subdivision must be reviewed and approved by Engineering prior to final Plan Commission approval. The original signed mylar Final Plat of Subdivision, containing all non-Village signatures, shall be submitted one week before the scheduled date of the final Plan Commission meeting. Village Code Section 29-209 also requires a digital copy of the plat to be provided on disk to the Village. The petitioner shall acknowledge that they accept this understanding.

[Response:](#) Understood and agree.

5. The proposed detention/retention facility will be a private system and as such will not be the Village's responsibility to maintain. If a basin is proposed, the basin requires a 1-foot freeboard with an overflow weir at the 6" line. The basin requires a 5' flat zone around the perimeter before the top of slope begins. Provide calculations for sizing the weir. An Onsite Utility Maintenance Agreement must be executed prior to final engineering approval. Please contact the Village Engineer for an editable version of the OUMA.

[Response:](#) The detention design is an underground StormTech system already preapproved by MWRD. Weir calculations are included in the Storm Drainage Analysis. The OUMA will be submitted for your approval.

6. If a wet bottom basin is proposed, the basin shall be constructed with a minimum depth of no less than six feet (6'). A safety ledge, five feet (5') wide, back pitched towards the shore three inches (3"), at three feet (3') below normal water level (NWL) must be provided. The side slopes leading down to the basin's NWL must be 5:1 maximum. Provisions, such as a recirculation pump, must be made to keep the pond nuisance free.

[Response:](#) A wet bottom basin is not proposed.

7. The preliminary detention calculations are acceptable.
 - a. Final approval will require final engineering plans including calculations for storage provided and details of the detention system.

- b. If the detention storage system will be located under pavement, it must be designed to AASHTO HS-25 loading standard.
- c. The outlet pipe in the special restrictor structure must have a trap with a removable hood. For reference is a removal hood detail from the Metropolitan Water Reclamation District.
- d. Since the restrictor required to meet the allowable release rate is less than 2", calculate the amount of detention storage provided with a 2" restrictor. Subtract this amount from the required storage based on the allowable release rate to show the storage deficiency. The deficiency can be paid as money in lieu of detention at the rate of \$1.00 per cubic foot.

Response: We meet storage. Calculations for storage and details of the StormTech system are provided. The detention system is almost all in the grass area north of the parking lot. However, a portion does stretch out into the pavement. The StormTech system meets the AASHTO HS-25 loading standard. The restrictor does have the trash grate and a check valve is on the downstream pipe. As discussed, a removable hood is not needed. The detention volume was calculated using the required village release rate, not that of the 2" restrictor. Therefore, the required detention volume has been met. No money in lieu of is required.

- 8. Regarding the permeable pavers, the following items shall be addresses at final engineering:

- a. The top of the CA-7 stone layer cannot be higher than the surrounding ground to avoid detained water from "bleeding" out of the side of the facility.

Response: The permeable pavers are in the lowest area around the back of the townhome units. All drainage flows to them, permeates through them, then uses the underdrain to flow any remaining stormwater to the detention system.

- b. Provide existing and proposed elevations of the finished grade, and also provide the proposed elevations of the bottom of the CA-7 stone layer.

Response: Elevations were added to the permeable paver cross section on Sheet 4.

- c. At time of permit, provide a copy of the manufacturer's brochure showing specifications for their permeable paver system.

Response: Manufacturer's information has been included with this submittal.

9. If on-site lighting is proposed, provide a site photometric lighting diagram indicating lighting intensities. Also provide the associated catalog cuts for all roadway, parking lot, and building mounted luminaires. All fixtures must be flat bottom, sharp- cut-off, and no wall pack style fixtures will be permitted.

Response: There is no roadway or parking lot lighting proposed.

10. Provide an exhibit to engineering scale showing the turning path of the Fire Department's responding vehicle, in this case a Pierce Quantum. Exhibit must show front and rear wheel paths and the extent of the front and rear overhangs, as provided in an "Autoturn" exhibit. The vehicle shall be shown maneuvering through the site in all possible directions of travel. Attached are the specifications for the Pierce Quantum.

Response: See accompanying exhibit.

11. Per the Fire Department, fire lanes adjacent to buildings must be able to support the responding vehicle (Pierce Velocity or Pierce Quantum). A fully loaded engine is 49,800 lbs. Fire lanes require a heavy duty pavement section. Asphalt pavement section to consist of: 2" Surface, 2 1/4" N-50 Binder, 5" N-50 Binder, and 4" CA-6 Stone Subbase. For the proposed permeable pavers provide additional information to show that the structural number of the proposed cross section is equivalent to the above referenced asphalt pavement section.

Response: Calculations were submitted showing that the permeable pavers stone base can support the 49,800 lb. fire truck. Another calculations sheet was added showing the SN for the permeable pavers exceeds that of the heavy-duty cross section.

12. Coordinate possible fire lane cross access with the parcel located north of the proposed development.

Response: We are unable to provide fire lane cross access and meet the requirements of the stormwater ordinance.

13. The Professional Engineer stamp expiration date provided on the cover page of the engineering plans is not current. Provide current expiration date.

Response: Stamp was updated.

14. Regarding the Highland Ave driveway and pedestrian access route:

- a. The proposed ADA ramps and pedestrian access route at the Highland Ave entrance are currently shown at an angle. The preferred alignment would have the north receiving ADA ramp in alignment with the public sidewalk south of the new driveway.

Response: The angle was taken out of the crossing. It is now shown as straight.

- b. Sidewalk takes precedence through the driveway, with curb stopping on either side of the sidewalk.

Response: The sidewalk is now shown as continuous.

- c. All sidewalk and ADA ramps shall meet the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way dated July 26, 2011.

Response: All sidewalks and ADA ramps in the public right-of-way will meet required guidelines.

- 15. Verify the depth of the Village cable located in the parkway to confirm there are no conflicts with the proposed storm sewer and water main.

Response: The depth of the Village cable encased in concrete was confirmed with public works. It was noted as being +/- 2' deep.

- 16. Provide additional information on the power lines to be relocated.

Response: The power lines are not proposed to be relocated. Power lines on site are being removed and abandoned.

- 17. The proposed water main is not a public main and therefore must not be located in the right-of-way. Revise the plans accordingly.

Response: The plans were revised per our meeting dated 5/16/19.

- 18. Master meters shall be required at both connection points. In the event the petitioner chooses to install individual meters in the units, the units would not be supplied, maintained or read by the Village.

Response: The petitioner has chosen to install individual meters.

- 19. The proposed sanitary sewer on Highland Ave is located close to the property line. The line shall be relocated such that all structures are located on private property and not encroaching on the public right-of-way.

Response: The sanitary sewer was moved west to be out of the ROW

TRAFFIC:

- 20. The entrance/exit driveway width is required to be 24 ft. face to face of curb by Village Code. Curb return radii must be 20 ft. radii minimum.

Response: It appears that the 20 ft. radii turn is used for standard perpendicular access. The entrance to the property is not simple. It comes in at an angle and has a compound curb return necessitated by the site characteristics and configuration, as well as the existing above ground utilities. A large fire truck can make all necessary turns so Petitioner does not believe that the proposed entrance/exit driveway is an issue.

21. The geometric alignment for the entrance/exit driveway into the internal parking lot needs to provide turning templates to verify if delivery, garbage, and fire emergency vehicles to get in and turn around to pull out forward, instead of having to back out. The internal 5 ft. radius of the right angle curve needs to be softened into a compound or tapered geometric transition to allow two vehicles to pass each other through this 90 degree turn.

Response: The largest vehicle (the fire truck) has an Autoturn exhibit provided as required by the fire department. Other smaller vehicles will back out as well if they choose to pull all the way into the parking lot. A tapered transition was added to the corner radius.

22. The garage access for units 1; 5 & 6; 12 & 13; 16, does not accommodate vehicles to pull into these garages, and back out in order to proceed forward back to the entrance/exit driveway. As such the 2-3 cars parked in these units can only pull into their garage, and must back out across 2-4 other unit's garage dooring openings, or have other access deficiencies. Pulling into or backing out of units 5 & 13 garages may not be possible if one car is already in the garage.

Response: Petitioner is well aware of this situation and will advise each Purchaser of such. Developer also believes that the smaller of these units will have 1-car owners and will not pose an issue.

23. The sight distance for vehicles exiting the proposed driveway looking north must be evaluated to verify if oncoming traffic can be seen past the bay of cars parked under the parking garage.

Response: Included with this submittal, please find the prepared sight distance figure which shows the available sight distance for vehicles exiting the proposed access drive serving the development. It is important to note that this access drive is located in an urban downtown setting and, as such, other access drive/intersections in the vicinity also do not meet the 150 feet sight distance. For example, the one-way exiting access drive located offset to the north of the proposed access drive on the east side of Highland Avenue is immediately adjacent to the parking garage wall and has limited sight distance.

24. Clarify if the proposed driveway to be bituminous or concrete.

Response: Concrete.

PRELIMINARY PLAT OF SUBDIVISION:

25. The plat was reviewed against the attached Preliminary Plat of Subdivision Checklist. Use the checklist to complete items 12 & 13.

Response: The submitted plat of subdivision is a final plat of subdivision.

26. For the Final Plat of Subdivision, use the attached Final Plat of Subdivision Checklist.

Response: The submitted plat of subdivision is a final plat of subdivision.

SIGWALT 16 – PC#: 19-005
PETITIONER RESPONSES TO ROUND 1 COMMENTS
MAY __, 2019

RESPONSE TO FIRE DEPARTMENT COMMENTS

1. Sprinkler system installed per code.

Response: Understand and agree.

2. Any Fire Department connections will be located at the front of the building. The Fire Connections will be fully visible and accessible and located within 100' of an accessible fire hydrant capable of providing the needed flow.

Response: We do not believe any fire department connections will be required for the applicable fire suppression system; however, final details of the system design will be in final plans and will comply with applicable code requirements.

3. Install a fully operational annunciator panel or alarm panel at the main front entrance or to meet the Fire Department's needs.

Response: We do not believe any annunciator panels will be required for the applicable fire suppression system; however, final details of the system design will be in final plans and will comply with applicable code requirements.

4. Knox Box(s) shall be installed to meet the Fire Department's needs.

Response: It is not anticipated that Knox Box(s) will be required for these individual townhomes, but if required, they will be provided.

SIGWALT 16 – PC#: 19-005
PETITIONER RESPONSES TO ROUND 1 COMMENTS
MAY __, 2019

RESPONSE TO POLICE DEPARTMENT COMMENTS

1. Character of use:

The character of use is consistent with the area. It will be necessary to limit access to the grounds, especially benches or pergola areas. This is recommended to limit access and loitering. The addition of Trespass signs is recommended.

[Response:](#) Understood and agree.

2. Are lighting requirements adequate?

Lighting should be up to Village of Arlington Heights Code. Special attention should be given to those outside common areas- ie courtyard and parking lot. Landscaping must not create hiding locations and should provide for natural surveillance.

[Response:](#) There is no roadway or parking lot lighting proposed, and landscaping has been designed to avoid creating hiding locations.

3. Present traffic problems?

With the construction of Arlington 425 imminent, there will be increased traffic flow to an already congested downtown area. The Police Department has concerns about the traffic flow at Highland/Sigwalt and Highland/Campbell and again recommend a four way stop sign at those intersections.

[Response:](#) We concur regarding a four-way stop at Sigwalt and Highland.

4. Traffic accidents at particular location?

This is not a problem area in relation to traffic accidents.

[Response:](#) Agreed.

5. Traffic problems that may be created by the development.

The area around the parking lot entrance/exit should be clear of obstructions. Vehicles traffic entering and existing the parking lot must be able to view other vehicles and pedestrians. Street parking adjacent to the entrances/exits should be prohibited. Warning lights/audible signals could be used to signal that vehicles are exiting.

[Response:](#) The access drive off Highland Avenue has been located and designed to optimize sightlines for both approaching traffic on Highland Avenue as well as exiting traffic on the access drive. A high-visibility crosswalk will be provided across the access drive. Warning lights/audible signals

are not needed for this access drive since traffic exiting the development will be visible to the pedestrians on the adjacent sidewalk.

6. **General comments:**

Please ensure that there is an emergency information/contact card on file with the Arlington Heights Police Department and that it is up-to-date. Agent contact information must be provided to the Arlington Heights Police Department during all construction phases. The form is attached. Please complete and return. This allows police department personnel to contact an agent during emergency situations or for suspicious/criminal activity on the property during all hours.

Response: Duly noted.

SIGWALT 16 – PC#: 19-005
PETITIONER RESPONSES TO ROUND 1 COMMENTS
MAY __, 2019

RESPONSE TO PLANNING & COMMUNITY DEVELOPMENT COMMENTS

1-6. [Printed Comments – all agreed.](#)

ADDITIONAL COMMENTS:

General:

7. The Plan Commission must review and approve the following actions:
 - a. A rezoning from R-3, One-Family Dwelling District into the R-7, Multiple-Family Dwelling District.
 - b. A Planned Unit Development (PUD) to allow the construction of a 16-unit single-family attached rowhome development.
 - c. Preliminary and Final Plat of Resubdivision to subdivide the subject property into individual lots for each townhome unit.
 - d. Variation to Chapter 28, Section 5.1-7.2, Minimum Area for Zoning District, to allow the R-7 District to be approx. 1.39 acres where code requires a minimum of 2 acres for the R-7 District.
 - e. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback along Highland Avenue to be 12' where code requires a 25' setback.
 - f. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback along Chestnut Avenue to be 17' where code requires a 25' setback.
 - g. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a side yard setback (north) to be 8' where code requires a 15' setback.
 - h. Variation to Chapter 28, Section 5.1-7.10, Spacing Between Multi-Family Buildings, to allow 5' spacing between principal buildings where code requires 25' spacing.
 - i. Variation to Chapter 28, Section 10.2-8, to allow a two-way driveway width of 22' where code requires a minimum of 25' for a two-way drive aisle.
 - j. Variation to Chapter 28, Section 10.2-9, to allow tandem parking spaces.
 - k. It should be noted that the property is proposed to be subdivided into individual units for each townhome, which will require variations for each lot based on the R-7 setback and bulk standards, although the overall development will comply with bulk standards and with most setback standards.

[Response:](#) Understood and agree.

8. Section 9.8(i) of the zoning Code requires that all PUD's include a preliminary construction schedule and phasing plan. Please provide the required preliminary construction schedule, which includes information on the approximate date of construction start, the number of construction phases and the starting and completion date for each phase, and details on what will be constructed in each phase, as well as a construction staging plan. The construction phase plan shall include the anticipated number of construction workers and where they will park during each phase of construction, the type and amount of construction vehicles per phase and where they will be staged, the location of material storage, and information on anticipated lane closures, including info on where the closures will take place and the general timeframe for each closure.

[Response:](#) See attached construction schedule.

9. School, Park, and Library contributions will be required prior to the issuance of a building permit. Your response to the affordable housing policy has been received and will be evaluated by the Housing Commission as part of the zoning entitlement process.

[Response:](#) Understood.

10. Please ensure that all plans and/or studies to be resubmitted as a result of the Round 1 Department review comments include a revision date.

[Response:](#) All plans and/or studies to be resubmitted as a result of the Round 1 Department review comments will include a revision date.

Site Plan:

11. Streetscape along Chestnut should be modified to be consistent with the proposed streetscape to the north (widening of Chestnut to include parking along the east side of the street). Please revise the plans to show this improvement.

[Response:](#) Plans have been revised

12. The plans appear to show that the existing overhead lines on the north side of Sigwalt that traverse directly south across Sigwalt, along the north side of Sigwalt, and diagonally across Sigwalt to the southwest corner of Sigwalt and Chestnut will all remain. These overhead lines should be buried or relocated as part of this development proposal. Can the existing telephone and electric utility boxes located along Sigwalt Street be relocated to the rear of the site or put underground?

Response: The existing powerlines are not proposed to be relocated or buried. See the attached fire access diagram showing unobstructed access with the existing power lines, which the Fire Chief and Fire Marshal have reviewed and accepted.

13. Staff would like to discuss the potential merits of parking bump-outs at Sigwalt/Highland and Sigwalt/Chestnut and installation of these Improvements may be required.

Response: Due to the existing utilities on Sigwalt, which break up and limit where street parking could be accommodated, the Petitioner feels that the green space and parkway trees would provide a better transition from the CBD to the residential neighborhood.

14. Previous iterations of the plans showed fencing in the front yard areas. Is fencing still proposed?

Response: Per recommendation by the Design Commission and agreed by our architect, the proposed fencing in the front yard area has been removed.

15. Other than the proposed transformer at the rear of the property, will there be any other ground mounted utility or mechanical equipment (switch gear, generators, meters, utility pedestals, AC units, etc.). Any/all proposed ground mounted utility/mechanical equipment must be appropriately located and screened.

Response: The AC units will be located on the 3rd floor roof decks with appropriate screening. The Petitioner will work with the utility companies to locate all meters (gas and electric) on the rear or sides of the buildings, and will comply with Village requirements to provide landscape screening as needed.

16. The KLOA study recommended the provision of high-visibility crosswalks across the driveway entrance to the subject property. Please show these on the plans.

Response: Petitioner's engineer met with the Village Engineering Department who instructed Petitioner to pour the sidewalk straight through to match sidewalk grades, with no depressed curb, striping or ADA domes.

17. Given the 8' of ROW dedication along Highland Avenue, the proposed servicewalks for each unit extend well into the ROW. Maintenance of these servicewalks will be the responsibility of the homeowners and the Village will not maintain said service walks to each unit.

Response: Understood and agree.

Building:

18. Please provide the projection distance of the proposed bay windows. Bay windows may not project more than 3' into a required front, rear, or exterior side yard.

Response: The bay windows are currently planned to project 2', and will not exceed the 3' maximum allowed projection into the front, rear, or exterior side yards.

Plat of Subdivision:

19. Please clarify if you are proceeding with Preliminary and Final Plat of Subdivision concurrently or separately. The submitted plat of subdivision was reviewed under the assumption that you are proceeding with Preliminary approval first, then returning for Final Plat approval at a future date.

Response: We submitted a proposed Final Plat of Subdivision.

20. Please revise the title of the plat to clarify whether it is preliminary or final. If you are proceeding with Final Plat approval, please note that the Final Plat, as approved by the Engineering Dept., must be printed on mylar and submitted to the Village, with signature obtained from all parties except those to be coordinated by the Village, no less than one week prior to the Plan Commission hearing date. If this requirement cannot be met, you can proceed with Preliminary Plat approval with Final Plat approval obtained at a future date (i.e. a separate Plan Commission meeting would be needed). No public notice is required for Final Plat of Subdivision approval.

Response: Understood. We are proceeding with Final Plat approval.

21. Please note that final engineering must be approved by the Engineering Dept. no less than one week prior to appearance before the Village Board for Final Plat of Subdivision approval. Additionally, please note that all applicable engineering fees and surety bonds, public improvement deposits, and recording fees must be provided one week prior to appearing before the Village Board for Final Plat approval. If this requirement cannot be met, you can proceed with Preliminary Plat approval with Final Plat approval obtained at a future date (i.e. a separate Plan Commission meeting would be needed). No public notice is required for Final Plat of Subdivision approval.

Response: We are proceeding with Final Plat approval.

22. Please clarify if each townhome unit will be placed on a separate subdivided lot. Currently, the Plat of Subdivision only places each building on separate platted lots. Since variations will be required for each townhome lot, please revise the plat to show the individual lots and the necessary variations can be incorporated into the Plat approval process. Otherwise, when a final plat of Subdivision is prepared that shows individual lots for each unit, another public notice and Plan Commission hearing would be required for the needed variations.

Response: Each townhome will be on a separately divided lot. The attached revised Plat of Subdivision depicts each subdivided lot.

23. A draft of the proposed Declaration of Conditions, Covenants, and Restrictions (if any are proposed) is required for Final Plat of Subdivision approval, per Section 29-209(k) of Chapter 29 of the Municipal Code.

Response: The proposed Declaration for Sigwalt 16 Townhomes is being submitted herewith.

24. Please revise the Plat to show the required setbacks (20' to south, 25' to east, 25' to west, 15' to north).

Response: The required setbacks are now shown on the revised Plat

25. Please cross-hatch area of ROW dedication.

Response: The ROW is crosshatched on the revised Plat.

26. The corresponding lot number in parenthesis next to the PINs at the top left-hand corner of the plat do not match the existing lots as shown on the plat.

Response: The Amended Plat has been revised so that PIN 03-30-425-023 now references Lot 14

ADDITIONAL COMMENTS – Landscaping

1. Provide additional landscaping on the south end adjacent to unit #6 and #12. Overall, the landscaping is minimal, and it is recommended that additional landscaping be provided. Along Sigwalt, Chestnut and Highland Provide additional understory trees. On the north elevation adjacent to unit #1 and #16, vary the landscaping and increase the height to soften the elevation.

Response: Landscaping along Sigwalt and Chestnut has been modified to provide additional trees as well as the street parking on Chestnut as requested by the Planning and Community Development Department. On Highland, given the shallower front yards, we feel the initially proposed trees are appropriate, and on the north elevation of units #1 and #16, we have limited space due to the entry drive and sidewalk. We do not believe that the proposed overall landscaping is minimal. A substantial variety of planting sizes and types has been provided at the front entries and site corners to draw focus and attract people's attention to those feature areas.

2. Along Highland Avenue, the streetscape shall match the Downtown. Incorporate the brick pavers and the site furnishings that are consistent with the Downtown streetscape.

Response: Brick pavers have been incorporated; however, we feel site furnishings in front of these individually owned townhomes is not appropriate and has not been included.

3. Increase the size of the shade trees in the courtyard at the ends of the parking row so that they are a minimum of 4" caliper (Chapter 28. Section 6.15).

Response: The size of the shade trees in the courtyard at the ends of the parking row have been increased to a minimum of 4' caliper. See revised plan.

4. Incorporate permeable pavers within the drive aisle. The crosswalk near Highland shall be striped.

Response: The detention structure required to meet stormwater control requirements extends under the drive aisle and permeable pavers are not allowed to be installed over it. The crosswalk near Highland will be treated like a standard residential driveway crossing per direction from Engineering Department.

5. It is recommended that specialty pavement such as brick pavers be provided for the private walkways.

Response: Many of the private walkways have steps due to grading, and concrete will perform better than brick pavers in this condition long-term.

6. Will the three buildings be constructed at once? If not, please provide an interim landscape plan.

Response: All three building foundations will be constructed at once. An interim landscape plan isn't warranted under the construction schedule.

7. The proposed Linden trees along Sigwalt may potentially conflict with the existing overhead utility lines. Please evaluate the placement and species of the proposed trees.]

Response: Two trees on the initially submitted plan were mis-tagged and the landscaping along Sigwalt has been modified.

8. Landscape screening must be provided for any utility/mechanical areas located at grade so that they are fully screened.

Response: Landscape screening will be provided for any utility/mechanical areas located at grade to comply with Village requirements.

9. A landscape compliance bond in the amount of 30% of the landscaping costs will be required. In addition, a \$4 tree fee is required for each lineal foot of frontage.

Response: Understood.



Village of Arlington Heights, IL
Department of Building & Life Safety

Fire Safety Division

Date: 5/22/2019

P.C. Number: 19-005 Round 2

Project Name: PUD, Rezoning to R-7, Plat of Subdivision, Variations

Project Location: Southern portion block 425

Planning Department Contact: Sam Hubbard, Planning and Community Development

1. Addresses will be assigned by the Building and Life Safety Department.

No further comments.

RECEIVED

MAY 22 2019

PLANNING & COMMUNITY
DEVELOPMENT DEPARTMENT

05-22-19

Reviewed By: _____


Fire Safety Supervisor

Memorandum

To: Sam Hubbard, Planning & Community Development
From: Cris Papierniak, Assistant Director of Public Works
Date: May 31, 2019
Subject: 45 S Chestnut Ave (16 Sigwalt) P.C. #19-005 Round 2

With regard to the proposed PUD/Rezoning, I have the following comments:

- 1) Water meters and backflow devices will be sized once plumbing plans have been submitted.
- 2) Strike Traverse City reference on hydrant detail.
- 3) PW is still evaluating the proposed concrete sidewalk on Sigwalt and whether that sidewalk should follow the downtown streetscape.
- 4) PW is still evaluating the proposed walk on Highland to determine the appropriate width.
- 5) Further comments will be submitted once the construction plans have been submitted for review.

If you have any questions, please feel free to contact me.

C. file

PLAN COMMISSION PC #19-005
Sigwalt 16
45 S Chestnut Ave
PUD, Rezoning to R-7, Plat of Subdivision, Variations
Round 1

RECEIVED
MAY 31 2019
PLANNING & COMMUNITY
DEVELOPMENT DEPARTMENT

- 27) The petitioner's response to Comment No. 1 is acceptable.
- 28) The petitioner's response to Comment No. 2 is noted. The Engineering Division is in receipt of the Engineer's Estimate of Probable Cost. The Estimate will be reviewed and the fee letter prepared.
- 29) The petitioner's response to Comment Nos. 3 and 4 are acceptable.
- 30) The petitioner's response to Comment No. 5 is noted. The Onsite Utility Maintenance Agreement (OUMA) shall be submitted for approval, and shall be executed prior to final engineering approval.
- 31) The petitioner's response to Comment No. 6 is acceptable.
- 32) The petitioner's response to Comment Nos. 7 a, c and d are acceptable.
- 33) The petitioner's response to Comment No. 7 b is noted. The Engineering Division is in receipt of the information provided from the manufacturer regarding the AASHTO HS-25 loading. This information shall be shown on the plans. This can be addressed at permit.
- 34) The petitioner's response to Comment Nos. 8 a, b and c are acceptable.
- 35) The petitioner's response to Comment No. 9 is noted. If lights are proposed on the buildings, provide a photometric lighting diagram and associated catalog cut sheets. This can be addressed at permit. Please refer to the Traffic Comments No. 44 pertaining to roadway lighting.
- 36) The petitioner's response to Comment Nos. 10 thru 15 are acceptable.
- 37) The petitioner's response to Comment No. 16 is noted. The Engineering Division will defer to the Fire Department regarding the fire access diagram for buildings 7 thru 11.
- 38) The petitioner's response to Comment No. 17 is not acceptable. Please refer to Final Plat Comments pertaining to the Blanket Public Utility Easement shown for Lot 18.
- 39) The petitioner's response to Comment No. 18 is noted. The water services on Chestnut Ave shall be augered under the pavement and not open cut. This can be addressed at permit.
- 40) The petitioner's response to Comment No. 19 is acceptable.

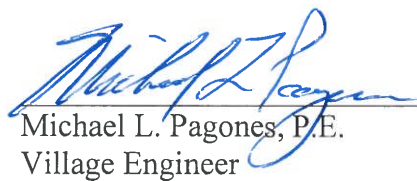
- 41) Regarding the proposed concrete apron off of Highland Ave, wire mesh is not allowed in the public right-of-way. Revise the plans accordingly. This can be addressed at permit.
- 42) The temporary construction access off of Chestnut Ave is on the adjacent property to the north. Approval must be obtained from the adjacent property, and use of this entrance shall be coordinated with the pending future improvements proposed on this property. The Soil and Erosion Control Plan also shows the construction entrance being located off of Highland Ave. Clarify the construction plan. This can be addressed at permit.

TRAFFIC:

- 43) The petitioner's response to Comment No. 9 is noted. If street lighting or ornamental lighting will be required on Chestnut Ave, Highland Ave, and/or Sigwalt St, this can be addressed at permit.
- 44) The petitioner's response to Comment No. 20 is noted.
 - b) Provide a turning template for a westbound vehicle turning right exiting the site. The template shall allow the rear wheel path to clear the 6 ft radius on the south curb return and to complete the turn without vehicles traveling over the centerline of Highland Ave into oncoming northbound traffic.
 - c) It is recommended that the 6 ft radius on the north and south side of the Highland Ave entrance/exit be widened to improve turning vehicles into and out of the site.
- 45) The petitioner's response to Comment No. 21 is not acceptable. The proposal to have all vehicles SU-30 and larger backing out of the site is unreasonable. This design conflicts with Sections 2.05 & 8.06 of the Condominium Declaration. Is there going to be an onsite garbage corral or is each property owner placing their garbage out at the curb, via garbage and recycling bins? All deliveries, Large Panel, Moving, and Service vehicles, etc. should be made from the street. The entrance to the parking lot should be posted with signage stating, "Passenger and Emergency Vehicles Only".
- 46) The petitioner's response to Comment No. 22 is noted. The Engineering Division reiterates for the Plan Commission their position that the garage access for units 1; 5 & 6; 12 & 13; and 16 are problematic regardless of the number of vehicles owned by the future purchasers.
- 47) The petitioner's response to Comment No. 23 is not acceptable. Please relate what segment of Village Ordinance 88-095 the Traffic Consultant is referring to for the 150 ft. sight distance, and how the sight triangle to the north is only 70 ft. Also an explanation for the position of the motorist vehicle projecting over the curb and across the public sidewalk must be provided.
- 48) A maintenance and traffic staging plan shall be provided. This can be addressed at permit.

FINAL PLAT OF SUBDIVISION:

- 49) The plat was reviewed against the Final Plat of Subdivision Checklist provided in Round 1 comments. The following items must be addressed:
- a) The water main proposed to be installed along the north side of Sigwalt St shall be in a dedicated public easement separate from the blanket easement proposed for the private sanitary sewer and the storm sewer. The water main easement description on page 2 shall be titled PUBLIC WATER MAIN EASEMENT PROVISIONS. The blanket easements for the private sanitary sewer, storm sewer and other utilities may overlap the public water main easement.
 - b) Per item m., provide a summary of all restrictions applicable to any part of such subdivision concerning building restrictions, use restrictions, building setback lines and similar matters.
 - c) Revise the Owner's Certificate with all applicable language provided in item n., deed of dedication.
 - d) On the Village Certificate on page 2, revise "DIRECTOR OF ENGINEERING" to "VILLAGE ENGINEER".
 - e) Provide all utility signature blocks.
 - f) Provide Nicor Gas Company plat stamp.
 - g) Provide ComEd Easment Provisions.

 5/31/19
Michael L. Pagones, P.E. Date
Village Engineer

Attachments:

Nicor Gas Company Plat Stamp
ComEd Easement Provisions

NICOR GAS COMPANY PLAT STAMP

An easement is hereby reserved for and granted to NORTHERN ILLINOIS GAS COMPANY, an Illinois Corporation, doing business as NICOR GAS COMPANY, its successors and assigns ("Nicor") to install, operate, maintain, repair, replace and remove, facilities used in connection with the transmission and distribution of natural gas in, over, under, across, along and upon the surface of the property shown on this plat marked "Nicor Easement", together with reasonable right of access thereto and the right to install required service connections to serve improvements thereon, or on adjacent lots and to serve other property, adjacent or otherwise, and the right to remove obstructions, including but not limited to, trees, bushes, roots and fences, as may be reasonably required incident to the rights herein given, and the right to enter upon the property for all such purposes. Obstructions shall not be placed over Nicor facilities or in, upon or over the property identified on this plat for utility purposes without the prior written consent of Nicor. After installation of any such facilities, the grade of the property shall not be altered in a manner so as to interfere with the proper operation and maintenance thereof.

INFORMATION PROVIDED BY:

Erin K. Andersen
Land Management Agent
Land Services Department
630-388-2094

X2ekande@southernco.com

EASEMENT PROVISIONS

An easement for serving the subdivision and other property with electric and communication service is hereby reserved for and granted to

Commonwealth Edison Company
and
SBC Telephone Company, Grantees,

their respective licensees, successors and assigns jointly and severally, to construct, operate, repair, maintain, modify, reconstruct, replace, supplement, relocate and remove, from time to time, poles, guys, anchors, wires, cables, conduits, manholes, transformers, pedestals, equipment cabinets or other facilities used in connection with overhead and underground transmission and distribution of electricity, communications, sounds and signals in, over, under, across, along and upon the surface of the property shown within the dashed or dotted lines (or similar designation) on the plat and marked "Easement", "Utility Easement", "Public Utility Easement", "P.U.E" (or similar designation), the property designated in the Declaration of Condominium and/or on this plat as "Common Elements", and the property designated on the plat as "common area or areas", and the property designated on the plat for streets and alleys, whether public or private, together with the rights to install required service connections over or under the surface of each lot and common area or areas to serve improvements thereon, or on adjacent lots, and common area or areas, the right to cut, trim or remove trees, bushes, roots and saplings and to clear obstructions from the surface and subsurface as may be reasonably required incident to the rights herein given, and the right to enter upon the subdivided property for all such purposes. Obstructions shall not be placed over Grantees' facilities or in, upon or over the property within the dashed or dotted lines (or similar designation) marked "Easement", "Utility Easement", "Public Utility Easement", "P.U.E" (or similar designation) without the prior written consent of Grantees. After installation of any such facilities, the grade of the subdivided property shall not be altered in a manner so as to interfere with the proper operation and maintenance thereof.

The term "Common Elements" shall have the meaning set forth for such term in the "*Condominium Property Act*", Chapter 765 ILCS 605/2(c), as amended from time to time.

The term "common area or areas" is defined as a lot, parcel or area of real property, the beneficial use and enjoyment of which is reserved in whole or as an apportionment to the separately owned lots, parcels or areas within the planned development, even though such be otherwise designated on the plat by terms such as "outlots", "common elements", "open space", "open area", "common ground", "parking" and "common area". The term "common area or areas", and "Common Elements" include real property surfaced with interior driveways and walkways, but excludes real property physically occupied by a building, Service Business District or structures such as a pool, retention pond or mechanical equipment.

Relocation of facilities will be done by Grantees at cost of the Grantor/Lot Owner, upon written request.



Arlington Heights Fire Department Plan Review Sheet

P. C. Number 19-005

Project Name

Sigwalt 16 PUD

Project Location

45 S Chestnut

Planning Department Contact Sam Hubbard

General Comments

Round 2

General Comments:

1) The Fire Department has no additional comments at this time. Please be advised as more detailed plans are provided we may have additional comments at that time.

**NOTE: PLAN IS CONCEPTUAL ONLY
SUBJECT TO DETAILED PLAN REVIEW**

Date May 29, 2019

Reviewed By: LT. Mark Aleckson

Arlington Heights Fire Department

ARLINGTON HEIGHTS POLICE DEPARTMENT

Community Services Bureau

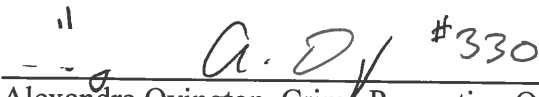
DEPARTMENT PLAN REVIEW SUMMARY

Sigwalt 16 PDU
45 S. Chestnut Ave.

Round 2 Review Comments

04/23/2019

1. **Character of use:**
Nothing further.
2. **Are lighting requirements adequate?**
Nothing further.
3. **Present traffic problems?**
Nothing further.
4. **Traffic accidents at particular location?**
Nothing further.
5. **Traffic problems that may be created by the development.**
Nothing further.
6. **General comments:**
Nothing further.



Alexandra Ovington, Crime Prevention Officer
Community Services Bureau



Doug Hajek, Sergeant
Community Services Bureau

RECEIVED

MAY 23 2019

**PLANNING & COMMUNITY
DEVELOPMENT DEPARTMENT**

Planning & Community Development Dept. Review

May 29, 2019



REVIEW ROUND 2

Project: Southern 1/3 of Block 425 – Taylor Morrison Townhomes
Sigwalt 16

Case Number: PC 19-005

27. The response to comments #8, #9, #10, #14, #16, #18, #19, #21, #23, and #25 are acceptable.
28. The response to comment #7 is noted. Based on the Final Plat submitted as part of Round 2, additional variations will be required for each individual townhome lot. The final list of these variations will be provided once a response to my 5/28/19 email to Marc McLaughlin is received.
29. The response to comment #11 is noted. If streetlights are required along Chestnut Avenue, they shall be the decorative style of streetlights as will be provided along the norther ¾'s of the block.
30. The response to comment #12 is noted. Staff will recommend a condition of approval that the overhead utilities along Sigwalt Street west of Highland Avenue and east of Chestnut Avenue be buried unless Commonwealth Edison and the Village deems that it is not feasible, in which case the overhead utilities will need to be relocated to the south side of Sigwalt Street.
31. The response to comment #13 is noted. Staff is still evaluating whether parking along Sigwalt shall be required.
32. The response to comment #15 is noted, however, no mention was made to above ground cable and telephone equipment/pedestals. Please note that any above ground utility equipment, including cable and telephone equipment, shall be located at the rear of the site and screened with landscaping to the satisfaction of the Village.
33. The response to comment #20 is noted. The final plat as printed on mylar, with all non-Village signatures, must be provided no later than June 19th to proceed at the June 26th Plan Commission hearing.
34. The response to comment #22 is noted. Please complete the attached table, as was emailed to Marc McLaughlin on 5/28/19, to allow a full analysis of the necessary variations for each individual townhome lot.
35. The response to comment #24 is unacceptable. No building setbacks are shown on the Final Plat.
36. The landscape plan show grass in the northeast corner curb bump-out, however, the engineering plan calls for this area to be concrete. Please revise the landscape plan to be consistent with the engineering plans. The concrete in this area should be replaced with brick pavers with the concrete ribbon, similar to what is required of the development to the north.
37. The architectural plans show dashed lines indicating parking spaces within the ROW along Sigwalt. Please clarify if these parking spaces are being proposed (see comment #31).
38. Page 34 of the CCR's reference "Colfax Crossing". Please make sure all reference to Colfax Crossing are revised to read "Sigwalt 16 Townhomes".

Final Plat of Subdivision:

39. Signature blocks for Ameritech/SBC and ComEd are missing from the Final Plat.
40. Iron pipes should be set in the 4 new corners of the subject property as based on the new property boundaries due to the ROW dedication. Please show this on the plat.
41. The Owners Certificate must be revised to remove reference to the dedication of ROW, which will be contained in a newly added Deed of Dedication certificate (see comment #42). Please follow the example below relative to the language on the Owners Certificate:

OWNER'S CERTIFICATE

STATE OF ILLINOIS)
COUNTY OF _____) S.S.

I _____, DO HEREBY
CERTIFY THAT I AM THE LEGAL OWNER OF THE PROPERTY DESCRIBED HEREON
AND THAT I HAVE CAUSED THE SAID PROPERTY TO BE SURVEYED AND SUBDIVIDED
AS SHOWN HEREON. ADDITIONALLY, I HEREBY CERTIFY THAT THE PROPERTY HEREO
DESCRIBED IS LOCATED WITHIN THE BOUNDARIES OF:

ELEMENTARY SCHOOL DISTRICT: CONSOLIDATED COMMUNITY SCHOOL DISTRICT #25

TOWNSHIP HIGH SCHOOL DISTRICT #214
HIGH SCHOOL DISTRICT: HARPER COMMUNITY COLLEGE DISTRICT #512

DATED THIS _____ DAY OF _____, A.D. 20_____.

OWNER SIGNATURE

42. A Deed of Dedication certificate must be added to the Plat, as per Section 29-217(a) of the Subdivision Control Regulations. The 2nd and 3rd paragraphs as shown in Section 29-217(a) can be omitted, and the language from the "Declaration of Covenants, Conditions, Restrictions and Easements" as shown on the plat, can be substituted in their place.
43. In the "Certificated As To Special Assessments", please remove the line referencing the statutory fee's regarding the annexed plat. The submitted document is a Plat of Subdivision and not a Plat of Annexation.

Prepared by:

Sam J. [Signature]

Sigwalt 16
45 S. Chestnut
PC 19-005
5/30/19

- 1) Provide additional landscaping on the south end adjacent to unit #6 and #12 in order to soften the elevation. Provide foundation plantings adjacent to the building where there is no landscaping.
- 2) Please remove the benches and concrete near each corner along Sigwalt to allow for additional green space.
- 3) Along Highland, incorporate pavers in the northeast corner where there is currently concrete.
- 4) The width of the sidewalk along Highland Avenue will need to be increased and we are still evaluating how wide the sidewalk will need to be.
- 5) We are still evaluating the proposed concrete sidewalk on Sigwalt and whether that sidewalk should be more of the downtown style with pavers and a concrete ribbon.
- 6) It is recommended that additional understory trees be provided along Sigwalt, Chestnut and Highland in order to soften the mass of the proposed building.
- 7) It is recommended that tinted concrete that is patterned be included for the front walkways.

SIGWALT 16 – PC#: 19-005

PETITIONER RESPONSES TO ROUND 2 COMMENTS

JUNE 6, 2019

RESPONSE TO PUBLIC WORKS DEPARTMENT COMMENTS

1. Water meters and backflow devices will be sized once plumbing plans have been submitted.

[Response:](#) Agreed.

2. Strike Traverse City reference on hydrant detail.

[Response:](#) Done.

3. PW is still evaluating the proposed concrete sidewalk on Sigwalt and whether that sidewalk should follow the downtown streetscape.

[Response:](#) See response in “Roadway Clarifications” below

4. PW is still evaluating the proposed walk on Highland to determine the appropriate width.

[Response:](#) See response in “Roadway Clarifications” below

5. Further comments will be submitted once the construction plans have been submitted for review.

[Response:](#) Understood.

SIGWALT 16 – PC#: 19-005

PETITIONER RESPONSES TO ROUND 2 COMMENTS

JUNE 6, 2019

RESPONSE TO ENGINEERING DEPARTMENT COMMENTS

30. The petitioner's response to Comment No. 5 is noted. The Onsite Utility Maintenance Agreement (OUMA) shall be submitted for approval, and shall be executed prior to final engineering approval.

[Response:](#) Submitted herewith.

35. The petitioner's response to Comment No. 9 is noted. If lights are proposed on the buildings, provide a photometric lighting diagram and associated catalog cut sheets. This can be addressed at permit. Please refer to the Traffic Comments No. 44 pertaining to roadway lighting.

[Response:](#) Photometrics and cut sheets of lights that are proposed on the buildings will be provided at permit.

38. The petitioner's response to Comment No. 17 is not acceptable. Please refer to Final Plat Comments pertaining to the Blanket Public Utility Easement shown for Lot 18.

[Response:](#) Blanket Public Utility Easement has been revised.

41. Regarding the proposed concrete apron off of Highland Ave, wire mesh is not allowed in the public right-of-way. Revise the plans accordingly. This can be addressed at permit.

[Response:](#) A note was added to the Final Engineering Plans to not allow welded wire mesh in the proposed concrete apron in the public right-of-way.

42. The temporary construction access off of Chestnut Ave is on the adjacent property to the north. Approval must be obtained from the adjacent property, and use of this entrance shall be coordinated with the pending future improvements proposed on this property. The Soil and Erosion Control Plan also shows the construction entrance being located off of Highland Ave. Clarify the construction plan. This can be addressed at permit.

[Response:](#) Understood and agreed.

TRAFFIC:

44. The petitioner's response to Comment No. 20 is noted.

- b) Provide a turning template for a westbound vehicle turning right exiting the site. The template shall allow the rear wheel path to clear the 6 ft radius on the south curb return and to complete the turn without vehicles traveling over the centerline of Highland Ave into oncoming northbound traffic.

Response: An auto-turn exhibit was created and included in this resubmittal package showing a passenger vehicle turning right, exiting the site from an eastbound position. It utilizes the new 8' radius and completes the turn without traveling over the centerline of Highland Ave.

- c) It is recommended that the 6 ft radius on the north and south side of the Highland Ave entrance/exit be widened to improve turning vehicles into and out of the site.

Response: The 6' radii on the north and south side were both widened to 8'. This is the maximum radius allowed on the north side to not conflict with the existing utility box locations.

- 45. The petitioner's response to Comment No. 21 is not acceptable. The proposal to have all vehicles SU-30 and larger backing out of the site is unreasonable. This design conflicts with Sections 2.05 & 8.06 of the Condominium Declaration. Is there going to be an onsite garbage corral or is each property owner placing their garbage out at the curb, via garbage and recycling bins? All deliveries, Large Panel, Moving, and Service vehicles, etc. should be made from the street. The entrance to the parking lot should be posted with signage stating, "Passenger and Emergency Vehicles Only".

Response: Petitioner agrees that vehicles SU-30 and larger should not be backing in or out of the site. Each townhome will have its own garbage receptacles that will be put out in the common area on trash pickup day(s). An auto-turn exhibit was created and included in this resubmittal package showing the largest Mack Garbage Truck (28.7' in length) being able to turn around in the back parking area without having to use any proposed parking stalls. SU-30 trucks or larger should be required to make deliveries or provide move-in move-out services from the street. A sign was added to the plans at the entrance to the parking lot stating "Passenger and Emergency Vehicles Only"

- 46. The petitioner's response to Comment No. 22 is noted. The Engineering Division reiterates for the Plan Commission their position that the garage access for units 1; 5 & 6; 12 & 13; and 16 are problematic regardless of the number of vehicles owned by the future purchasers.

Response: Petitioner believes that this is an internal developer issue to deal with potential purchasers.

- 47. The petitioner's response to Comment No. 23 is not acceptable. Please relate what segment of Village Ordinance 88-095 the Traffic Consultant is referring to for the 150 ft. sight distance, and how the sight triangle to the north is only 70 ft. Also an explanation for the position of the motorist vehicle projecting over the curb and across the public sidewalk must be provided.

Response: The 150-foot sight distance requirement was based on Chapter 29 Subdivision Control Regulations, Section 29-304 Street Layout and Design. The attached exhibit shows the vehicle position being at the edge of pavement. This

requires the motorist to stop before the sidewalk at the stop bar prior to proceeding. At this position the available sight line to the north is 70 feet. In order to alleviate any concerns about the available sight distance, consideration should be given to the placement of a sign facing north warning drivers on Highland Avenue of exiting traffic from the driveway.

FINAL PLAT OF SUBDIVISION:

49. The plat was reviewed against the Final Plat of Subdivision Checklist provided in Round 1 comments. The following items must be addressed:

- a) The water main proposed to be installed along the north side of Sigwalt St shall be in a dedicated public easement separate from the blanket easement proposed for the private sanitary sewer and the storm sewer. The water main easement description on page 2 shall be titled PUBLIC WATER MAIN EASEMENT PROVISIONS. The blanket easements for the private sanitary sewer, storm sewer and other utilities may overlap the public water main easement.

Response: A 10' Public Watermain Easement has been added along the south line of the subdivision.

- b) Per item m., provide a summary of all restrictions applicable to any part of such subdivision concerning building restrictions, use restrictions, building setback lines and similar matters.

Response: Any such restrictions are contained in the Declaration

- c) Revise the Owner's Certificate with all applicable language provided in item n., deed of dedication.

Response: Owner's Certification has been revised

- d) On the Village Certificate on page 2, revise "DIRECTOR OF ENGINEERING" to "VILLAGE ENGINEER".

Response: "Director of Engineering" has been change to "Village Engineer".

- e) Provide all utility signature blocks.

Response: Signature blocks have been added.

- f) Provide Nicor Gas Company plat stamp.

Response: Nicor plat stamp has been added.

- g) Provide ComEd Easement Provisions.

Response: ComEd Easement Provisions have been added.

SIGWALT 16 – PC#: 19-005

PETITIONER RESPONSES TO ROUND 2 COMMENTS

JUNE 6, 2019

RESPONSE TO PLANNING & COMMUNITY DEVELOPMENT COMMENTS

General:

ADDITIONAL COMMENTS:

7. The Plan Commission must review and approve the following actions:
 - a. A rezoning from R-3, One-Family Dwelling District into the R-7, Multiple-Family Dwelling District.
 - b. A Planned Unit Development (PUD) to allow the construction of a 16-unit single-family attached rowhome development.
 - c. Preliminary and Final Plat of Resubdivision to subdivide the subject property into individual lots for each townhome unit.
 - d. Variation to Chapter 28, Section 5.1-7.2, Minimum Area for Zoning District, to allow the R-7 District to be approx. 1.39 acres where code requires a minimum of 2 acres for the R-7 District.
 - e. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback along Highland Avenue to be 12' where code requires a 25' setback.
 - f. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback along Chestnut Avenue to be 17' where code requires a 25' setback.
 - g. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a side yard setback (north) to be 8' where code requires a 15' setback.
 - h. Variation to Chapter 28, Section 5.1-7.10, Spacing Between Multi-Family Buildings, to allow 5' spacing between principal buildings where code requires 25' spacing.
 - i. Variation to Chapter 28, Section 10.2-8, to allow a two-way driveway width of 22' where code requires a minimum of 25' for a two-way drive aisle.
 - j. Variation to Chapter 28, Section 10.2-9, to allow tandem parking spaces.
 - k. It should be noted that the property is proposed to be subdivided into individual units for each townhome, which will require variations for each lot based on the R-7 setback and bulk standards, although the overall development will comply with bulk standards and with most setback standards.

[Response:](#) Based on minor wording changes to some of the above referenced Variances as well as the additional Variances required as a result of platting each of the individual rowhome Lots, the Petitioner requests that the Plan Commission review and approve the following Variances:

- d. Variation to Chapter 28, Section 5.1-7.2, Minimum Area for Zoning District, to allow the R-7 District to be approximately 1.39 acres where code requires a minimum of 2 acres for the R-7 District.
- e. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback for the rowhome building along Highland Avenue to be 12' where code requires a 25' setback.
- f. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback for the rowhome building along Chestnut Avenue to be 17' where code requires a 25' setback.
- g. Variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a side yard setback (north) to be 8' for the rowhome building along Chestnut Avenue where code requires a 15' setback.
- h. Variation to Chapter 28, Section 5.1-7.10, Spacing Between Multi-Family Buildings, to allow 5' spacing between principal buildings where code requires 25' spacing.
- i. Variation to Chapter 28, Section 10.2-8, to allow a two-way driveway width of 21' where code requires a minimum of 24' for a two-way drive aisle.
- j. Variation to Chapter 28, Section 10.2-9, to allow tandem parking spaces.
- k. A variation from Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a front yard setback of 4.6 feet for lots 1 through 11 and 4.3 feet for lots 12 through 16 where code requires a 25-foot front yard setback for all lots.
- l. A variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a side yard setback of 0 feet for interior walls on lots 1, 6, and 12 where code requires a 2.6 foot side yard setback, and 0 feet for interior walls on lots 2, 3, 4, 5, 8, 9, 10, 13, 14, and 15 where code requires a 2 foot side yard setback, and 0 feet for interior walls on lots 7, 11, and 16 where code requires a 2.1 foot side yard setback.
- m. A variation to Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a side yard setback of 0 feet for outer walls on lots 7, 11, and 15 where code requires a 2.1 foot side yard setback, and 4.3 feet for outer walls on lots 1 and 6 where code requires a 2.6 foot side yard setback, and 4.6 feet for outer walls on lot 12 where code requires a 2.6 foot side yard setback.
- n. A variation from Chapter 28, Section 5.1-7.6, Required Minimum Yards, to allow a rear yard setback of 0 feet for lots 1 through 16 where code requires a 30-foot rear yard setback.
- o. A variation to Chapter 28, Section 5.1-7.7, Maximum Building Lot Coverage, to allow approximately 291% building lot coverage for lots 2 and 15, approximately 290% building coverage for lots 3 and 8, approximately 287% building lot coverage for lot 16, approximately 284% building lot coverage for lots 7, 11, 13, and 14, and approximately 283% building lot coverage for lots 4, 5, 9, and 10 where code allows a maximum building lot coverage of 200% on all lots.
- p. A variation to Chapter 28, Section 5.1-7.11, Maximum Floor Area Ratio, to allow approximately 73% F.A.R. on lot 1, approximately 74% F.A.R. on lot 12, approximately 75% F.A.R. on lot 6, approximately 84% F.A.R. on lots 4, 5, 9, 10, and 14, approximately 85% F.A.R. on lot 13, approximately 87%

F.A.R. on lots 7 and 11, approximately 88% F.A.R. on lots 2, 3, 8, and 16, and approximately 89% F.A.R. on lot 15 where code allows a maximum F.A.R. of 55% on all lots.

28. The response to comment #7 is noted. Based on the Final Plat submitted as part of Round 2, additional variations will be required for each individual townhome lot. The final list of these variations will be provided once a response to my 5/28/19 email to Marc McLaughlin is received.

Response: The requested Zoning Analysis Table related to the Individual Lots has been completed and is being simultaneously submitted to staff.

29. The response to comment #11 is noted. If streetlights are required along Chestnut Avenue, they shall be the decorative style of streetlights as will be provided along the norther ¾'s of the block.

Response: Agreed. Location of decorative streetlights will be provided on all streets at locations to be worked out with Village staff during permitting process.

30. The response to comment #12 is noted. Staff will recommend a condition of approval that the overhead utilities along Sigwalt Street west of Highland Avenue and east of Chestnut Avenue be buried unless Commonwealth Edison and the Village deems that it is not feasible, in which case the overhead utilities will need to be relocated to the south side of Sigwalt Street.

Response: Petitioner does not agree with this recommendation. The overhead utilities serve many more properties than just this one. Petitioner does not believe that it should bear the responsibility or cost of burying or relocating public utility poles that serve many other properties. The cost of such endeavor will be prohibitive and cannot fall on the shoulders of a 16 unit rowhome development simply because the utility lines border the subject property.

31. The response to comment #13 is noted. Staff is still evaluating whether parking along Sigwalt shall be required.

Response: See response in "Roadway Clarifications" below.

32. The response to comment #15 is noted, however, no mention was made to above ground cable and telephone equipment/pedestals. Please note that any above ground utility equipment, including cable and telephone equipment, shall be located at the rear of the site and screened with landscaping to the satisfaction of the Village.

Response: Understood and agreed

33. The response to comment #20 is noted. The final plat as printed on mylar, with all non-Village signatures, must be provided no later than June 19th to proceed at the June 26th Plan Commission hearing.

[Response:](#) Understood.

34. The response to comment #22 is noted. Please complete the attached table, as was emailed to Marc McLaughlin on 5/28/19, to allow a full analysis of the necessary variations for each individual townhome lot.

[Response:](#) The requested Zoning Analysis Table related to the Individual Lots has been completed and has been previously submitted to staff.

35. The response to comment #24 is unacceptable. No building setbacks are shown on the Final Plat.

[Response:](#) The building setbacks are now shown.

36. The landscape plan show grass in the northeast corner curb bump-out, however, the engineering plan calls for this area to be concrete. Please revise the landscape plan to be consistent with the engineering plans. The concrete in this area should be replaced with brick pavers with the concrete ribbon, similar to what is required of the development to the north.

[Response:](#) The northeast corner of the Landscape Plan has been revised to show pavers in that area.

37. The architectural plans show dashed lines indicating parking spaces within the ROW along Sigwalt. Please clarify if these parking spaces are being proposed (see comment #31).

[Response:](#) The dashed lines for parking spaces on Sigwalt should not have been included and have been removed in the revised plan. The neighbors have indicated they do not want parking added there and we feel having a parkway with greenspace is more appropriate for the townhomes as well.

38. Page 34 of the CCR's reference "Colfax Crossing". Please make sure all reference to Colfax Crossing are revised to read "Sigwalt 16 Townhomes".

[Response:](#) Done.

Final Plat of Subdivision:

39. Signature blocks for Ameritech/SBC and ComEd are missing from the Final Plat.

[Response:](#) Added.

40. Iron pipes should be set in the 4 new corners of the subject property as based on the new property boundaries due to the ROW dedication. Please show this on the plat.

[Response:](#) Corners to be set are shown on the plat

41. The Owners Certificate must be revised to remove reference to the dedication of ROW, which will be contained in a newly added Deed of Dedication certificate (see comment #42). Please follow the example below relative to the language on the Owners Certificate:

OWNER'S CERTIFICATE

STATE OF ILLINOIS)
COUNTY OF _____) S.S.

I _____, DO HEREBY

CERTIFY THAT I AM THE LEGAL OWNER OF THE PROPERTY DESCRIBED HEREON AND THAT I HAVE CAUSED THE SAID PROPERTY TO BE SURVEYED AND SUBDIVIDED AS SHOWN HEREON. ADDITIONALLY, I HEREBY CERTIFY THAT THE PROPERTY HEREO DESCRIBED IS LOCATED WITHIN THE BOUNDARIES OF:

ELEMENTARY SCHOOL DISTRICT: CONSOLIDATED COMMUNITY SCHOOL DISTRICT #25

TOWNSHIP HIGH SCHOOL DISTRICT #214

HIGH SCHOOL DISTRICT: HARPER COMMUNITY COLLEGE DISTRICT #512

DATED THIS _____ DAY OF _____, A.D. 20_____.

OWNER SIGNATURE

[Response:](#) Owner's Certificate has been revised

42. A Deed of Dedication certificate must be added to the Plat, as per Section 29-217(a) of the Subdivision Control Regulations. The 2nd and 3rd paragraphs as shown in Section 29-217(a) can be omitted, and the language from the "Declaration of Covenants, Conditions, Restrictions and Easements" as shown on the plat, can be substituted in their place.

[Response:](#) A Deed of Dedication certificate has been added to the plat.

43. In the "Certificated As To Special Assessments", please remove the line referencing the statutory fee's regarding the annexed plat. The submitted document is a Plat of Subdivision and not a Plat of Annexation.

[Response:](#) The "Certification As To Special Assessment" has been revised

ADDITIONAL COMMENTS – Landscaping

1. Provide additional landscaping on the south end adjacent to unit #6 and #12 in order to soften the elevation. Provide foundation plantings adjacent to the building where there is no landscaping.

Response: Additional landscaping south of units #6 and 12 has been provided in the revised plan.

2. Please remove the benches and concrete near each corner along Sigwalt to allow for additional green space.

Response: The benches and concrete near the corners has been removed in the revised plan.

3. Along Highland, incorporate pavers in the northeast corner where there is currently concrete.

Response: The northeast corner of the Landscape Plan has been revised to show pavers in that area.

4. The width of the sidewalk along Highland Avenue will need to be increased and we are still evaluating how wide the sidewalk will need to be.

Response: See response in “Roadway Clarifications” below.

5. We are still evaluating the proposed concrete sidewalk on Sigwalt and whether that sidewalk should be more of the downtown style with pavers and a concrete ribbon.

Response: See response in “Roadway Clarifications” below

6. It is recommended that additional understory trees be provided along Sigwalt, Chestnut and Highland in order to soften the mass of the proposed building.

Response: We feel the front yards on Chestnut and Highland are not large enough to warrant additional understory trees. An additional tree has been provided on Sigwalt.

7. It is recommended that tinted concrete that is patterned be included for the front walkways.

Response: Petitioner does not agree with this recommendation. This is matter of taste and perceived aesthetics that has not been required of similar projects within the Village and not required by any portion of the Village Code.

SIGWALT 16 – PC#: 19-005

PETITIONER RESPONSES TO ROUND 2 COMMENTS

JUNE 6, 2019

ROADWAY CLARIFICATIONS

RESPONSE TO EMAIL FROM SAM HUBBARD OF JUNE 5, 2019

- Chestnut: Standard 5' wide concrete sidewalk, decorative streetlights (where required – to be consistent with what Arlington 425 will be constructing along Chestnut to the north), expanded pavement with parking bump-outs on east side of street (also consistent with what Arlington 425 will be providing to the north). All of these improvements appear to be shown on your Round 2 plans and no changes are needed (except no streetlights are shown – this can be addressed at permit).

[Response:](#) Understood. No response required

- Sigwalt: The existing 5' wide concrete sidewalk should be replaced with the downtown style pavers/brick ribbon sidewalk at 7' in width. Upon scaling the plans, it appears that there is 7' between the property line and the closest existing utility box, which should provide just enough space to accommodate the 7' wide downtown style sidewalk (1.5' concrete ribbons on each side, 4' of pavers) within the ROW. Please revise all plans to reflect this improvement. The Planning Dept. will not recommend the expansion of Sigwalt to include street parking/bump-outs on the northern side of the street given the low number of proposed units along this street. However, please be aware that the Plan Commission and/or Village Board may opt to require them as part of zoning approval. Where streetlights are required, they must be the decorative downtown style fixtures.

[Response:](#) Petitioner does not agree with this recommendation. This property has residential on the south side of Sigwalt and west side of Chestnut. This property will be zoned as an R-7 *residential* district, and not a part of the downtown business district. This is supposed to be a transitional block and should look and feel residential, not commercial. Widening the sidewalk to by 2' to the north as recommended by staff will take away green space that serves as a part of the front yard of the residential units facing Sigwalt. This will detract from the residential look and feel Petitioner is attempting to create for these units. Location of decorative streetlights will be provided on all streets at locations to be worked out with Village staff during permitting process.

- Highland: The proposed 5' wide “downtown” style sidewalk should be increased to 7' in width. Where streetlights are required, they should be the decorative downtown style. No other typical downtown street furnishings should be included. As previously indicated, the existing concrete area to the north of the drive aisle (where abutting the subject property) should be revised to be the downtown style streetscape for the full width from the curb to approx. 1' from the property line. Please ensure that your next submittal includes revised plans that reflect these changes. The bump-out on the southern side of the entry drive, currently shown as landscaping

within the Round 2 plans, will be the maintenance responsibility of the HOA. Please clarify this within the CCR's.

Response: Agreed. Location of decorative streetlights will be provided on all streets at locations to be worked out with Village staff during permitting process.



**Plan Commission
6/26/2019**

Item: Raising Canes - 225 E. Palatine Rd. - PC#19-006

Department: Planning & Community Development

Requested Action

1. Amendment to Planned Unit Development Ordinances #74-49 and #01-026.
2. Special Use Permit for a restaurant with a drive-through.

Variations Required

1. None

Recommendation

—
The Staff Development Committee reviewed the proposed amendment to Ordinances #74-49 and #01-026 to allow for development of an outlot within the Town & Country shopping center, as well as the request for a Special Use Permit, and recommends approval of the application subject to the following conditions:

1. The petitioner shall comply with all Design Commission recommendations from June 25th, 2019.
2. The applicant shall comply with all applicable Federal, State, and Village Codes, Regulations, and Policies.

ATTACHMENTS:

Description

Staff Report
Legal Notice
DC Staff Report
Business Description
Written response to Special Use
Justification Criteria
Plat of Survey
Construction Plans: Site Plan, Floor
Plans, Elevations, Civil Engineering

Type

Board or Commission Report
Exhibits
Board or Commission Report
Correspondence
Correspondence
Exhibits
Exhibits

Parking Summary	Exhibits
Traffic Study	Exhibits
Market Study	Exhibits
Department Comments - Round 1	Exhibits
Department Comments - Round 1 -	Exhibits
Petitioner Response	



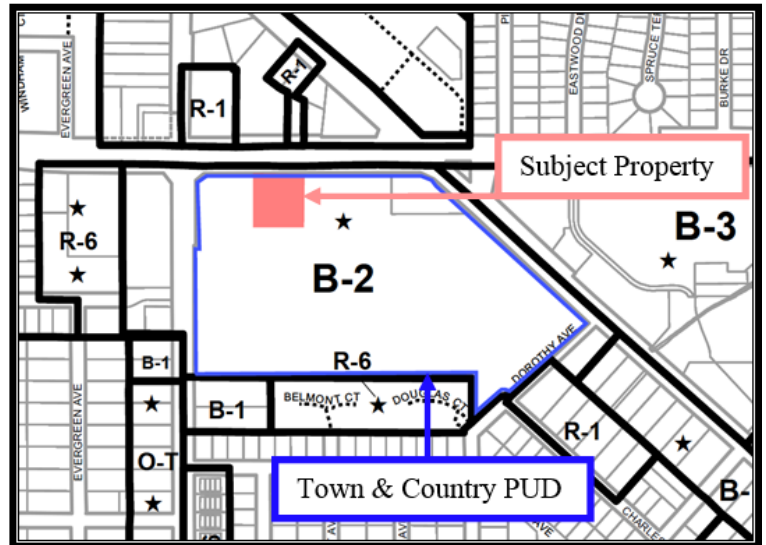
VILLAGE OF ARLINGTON HEIGHTS **STAFF DEVELOPMENT** **COMMITTEE REPORT**

PC File Number: 19-006
Project Title: Raising Cane's
Address: Town & Country Shopping Center
PIN: 03-20-101-016

To: Plan Commission
Prepared By: Jake Schmidt, Assistant Planner
Meeting Date: June 26, 2019
Date Prepared: June 19, 2019

Petitioner: Greg Barrow
 Visconsi Companies, Ltd.
Address: 30050 Chagrin Blvd. Ste. 360
 Pepper Pike, OH 44124

Existing Zoning: B-2: General Business District
Comprehensive Plan: Commercial



SURROUNDING LAND USES

Direction	Existing Zoning	Existing Use	Comprehensive Plan
North	R-1, One-Family Dwelling District, and B-2, General Business District	Bank, Auto Repair Facility, Multi-tenant commercial building	Commercial
South	B-1, Business District Limited Retail, and R-6, Multiple-Family Dwelling District	Office Building, Multi-family residential homes	Offices Only, Moderate Density Multi-family
East	B-3, General Service, Wholesale and Motor Vehicle District, and R-1, One-Family Dwelling District	Southpoint Shopping Center, Single-family residential homes	Commercial, Single-Family Detached
West	B-1, Business District Limited Retail, and B-2, General Business District	Multi-tenant shopping center, Bank	Commercial

Requested Action:

1. Amendment to Planned Unit Development Ordinances #74-49 and #01-026.
2. Special Use Permit for a restaurant with a drive-through.

Variations Required:

1. None

Project Background:

Town and Country Shopping center is situated on 31.51 acres of land, bounded by Arlington Heights Road, Palatine Road, and Rand Road. The petitioner is proposing construction of a 3,736 square foot outlot building on the northern side of the shopping center abutting Palatine Road. The building would house Raising Cane's, a fast casual fried chicken restaurant that is based out of Louisiana. The restaurant would offer a drive-through as well as outdoor seating. Hours of operation are 10:00am-midnight on Sunday through Thursday, and 10:00am-2:00am on Friday and Saturday. Management anticipates a total of 12 employees onsite during peak shift.

Zoning and Comprehensive Plan

The subject property is within the B-2, General Business District, which permits restaurants with a drive-through as a Special Use. Although restaurants that are less than 4,000 square feet can qualify for a waiver from the Special Use Permit review process, since the proposal includes a drive-through lane and requires a PUD amendment, the restaurant is not eligible for a Special Use Permit waiver. As previously mentioned, the PUD must also be amended to allow for construction of the proposed outlot building. As part of the Special Use Permit review process, the petitioner has provided acceptable written justification demonstrating compliance with the three standards for Special Use Permit approval.

The site is designated as "Commercial" on the Comprehensive Plan and the proposed use is compatible with this designation. In order to demonstrate that the proposed restaurant is necessary for the public convenience, the petitioner has provided a market analysis establishing that there is sufficient market demand for the proposed restaurant at the proposed location. Staff is supportive of a restaurant use in this location and notes that the proposed building would be located near the center of the shopping center and would not be located in close proximity to any residential homes.

Site Plan, Building and Landscaping

Site circulation to the shopping center would not be altered with the current proposal; patrons of the proposed restaurant would utilize the current drive aisles into the shopping center for access to the outlot. Currently, access to the Town & Country shopping center comes from a full access signalized intersection with Rand Road, a right-in/right-out non-signalized intersection with Rand Road, a non-signalized right-in/right-out intersection with Palatine Road, and a full access signalized intersection with Arlington Heights Road. To improve site access to the outlot, the proposed drive aisle leading from the outlot to the main circulation drive within the shopping center aligns with the existing drive-aisles in the parking lot.

The building architecture requires Design Review, and will be appearing before the Design Commission on June 25th. Recommended changes to the design are minimal, with concerns limited to signage and rooftop screening rather than the layout or siting of the structure. A three-foot tall landscape screen is proposed adjacent to parking areas, and shade trees shall be provided within all parking lot landscape islands at the end of all rows of parking. Staff will provide a verbal update of the results of the Design Commission meeting at Plan Commission hearing. Overall, Staff approves of the building design and proposed site landscaping.

The proposed restaurant will move forward as a new building within the shopping center, and no new subdivision or separate lot is proposed.

Traffic

Pursuant to Chapter 28, Section 6.12, the petitioner has provided a traffic and parking study from Kimley-Horn, a certified traffic engineer, that assessed access (location, design, and Level of Service) at relevant intersections, on-site circulation through the shopping center and outlot, trip generation and distribution, parking, and drive-through stacking.

The study has found that drive-through operations would not impact on-site circulation within the Town and Country circulation network, or negatively impact circulation within the proposed Raising Cane's parking lot. Two drive-through lanes are proposed for the restaurant, with a total stacking capacity of 18 vehicles. Peak weekday and weekend drive-through stacking observed at an existing Raising Cane's location in Oak Lawn was found to be 9 total vehicles, which the proposed Arlington Heights location would be able to accommodate.

With respect to traffic conditions, the study assessed a scenario wherein Town and Country was fully occupied and the proposed Raising Cane's was in operation. The study found that under this scenario, the existing access intersections to Town and Country Shopping Center are expected to adequately accommodate projected traffic volumes.

The petitioner has also proposed a pedestrian connection to the sidewalk along Palatine Road, which is located in IDOT right-of-way. Review and approval by IDOT within any portion of their right-of-way shall be required.

Parking

The subject area in which Raising Cane's is proposed currently provides 115 parking spaces. The proposed development would reduce the number of spaces in this area to 46 spaces (loss of 69 parking stalls), however, the overall shopping center would still conform to code requirements (see **Table 1** at the end of this report). This area of the parking lot is not regularly used. The closest tenant space to the proposed Raising Cane's development is the BMO Bank outlot, which has adequate parking per code for its customers. The BMO Bank parking lot will not be altered as part of this petition. Therefore, Staff does not have concerns related to the proposed reduction of parking in this area.

Staff has analyzed the proposed Raising Cane's outlot to determine if it can stand alone relative to parking requirements, and found that the site provides the necessary number of parking stall to conform to code requirements. Specifically, the zoning code requires 39 parking spaces for Raising Cane's, and the outlot would contain 46 parking spaces (surplus of 7 spaces on the outlot site) upon completion of the development. The provided parking study surveyed existing parking lot usage to determine if adequate parking is provided at the site. The survey includes hourly counts between 11:00am and 8:00pm on Thursday, January 10th, 2019, Saturday, January 12th, 2019, and on Tuesday, January 15th, 2019. Peak parking lot occupancy was observed at 11:00am on Saturday, January 12th, when 515 vehicles were observed accessing the site, resulting in a surplus of 1,098 parking spaces.

With respect to bicycle parking, Raising Cane's requires 2 bicycle parking spaces per code, and a 2-space bicycle rack is proposed outside the western entrance to the building.

RECOMMENDATION

The Staff Development Committee reviewed the proposed amendment to Ordinances #74-49 and #01-026 to allow for development of an outlot within the Town & Country shopping center, as well as the request for a Special Use Permit, and recommends approval of the application subject to the following conditions:

1. The petitioner shall comply with all Design Commission recommendations from June 25th, 2019.
2. The applicant shall comply with all applicable Federal, State, and Village Codes, Regulations, and Policies.

June 19, 2019

Bill Enright, Deputy Director of Planning and Community Development

Cc: Randy Recklaus, Village Manager
All Department Heads
PC File 19-006

Table 1: Vehicle Parking Calculations

SPACE	SPACE SF	CODE USE	PARKING CALC SF	PARKING RATIO (1:X)	PARKING REQUIRED
Vacancy	1,294	VACANT	1,294	300	4
Walgreen's	17,498	Retail	17,498	300	58
Vacancy	50,041	VACANT	50,041	300	167
LA Fitness	50,003	Health Club	50,003	250	200
Great Clips	1,056	Beauty Shop	1,056	250	4
Sally Beauty Supply	1,965	Retail	1,965	300	7
Jo-Ann Fabrics	29,887	Retail	36,796	300	123
Palm Beach Tan	2,602	Beauty Shop	2,602	250	10
Dick's Sporting Goods	51,330	Retail	51,330	300	171
Catherine's	6,073	Retail	6,073	300	20
Golden Corral	10,618	Restaurant	4,080	45	91
Vision Works	3,528	Retail	3,528	300	12
Vacancy	41,722	VACANT	41,722	300	139
Best Buy*	44,365	Retail	44,365	300	148
Burger King	2,995	Restaurant	1,260	45	28
BMO Harris Bank	4,146	Retail	4,146	300	14
Verizon	4,220	Retail	4,220	300	14
PROPOSED - Raising Cane's	3,736	Restaurant	1,754	45	39

Town & Country Shopping Center
6/19/2019

TOTAL PARKING REQUIRED	1,249
TOTAL PARKING PROVIDED	1,544
SURPLUS	
(DEFICIT)	295

NOTICE OF PUBLIC HEARING
NOTICE IS HEREBY GIVEN THAT THE PLAN COMMISSION OF THE VILLAGE OF ARLINGTON HEIGHTS WILL CONDUCT A PUBLIC HEARING ON JUNE 26, 2019, AT 7:30 P.M. In the Municipal Building, 33 South Arlington Heights Road, Arlington Heights, Illinois to consider Petition No. 19-006, an amendment to Planned Unit Development Ordinance #74-49 and #01-026 to allow modifications to the approved development plans for construction of a new outlot building within the PUD, and a Special Use Permit to allow a restaurant with a drive through, on property located at 225 East Palatine Road in Arlington Heights, IL, and legally described as follows: THAT PART OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 OF SECTION 20, AND THAT PART OF THE NORTHWEST 1/4 OF THE NORTHEAST 1/4 OF SAID SECTION 20, ALL IN TOWNSHIP 42 NORTH, RANGE 11 EAST OF THE THIRD PRINCIPAL MERIDIAN, DESCRIBED AS FOLLOWS: BEGINNING AT A POINT ON THE NORTH LINE OF THE SOUTH 250 FEET OF SAID NORTHEAST 1/4 OF THE NORTHWEST 1/4, 50 FEET EAST OF THE WEST LINE OF SAID NORTHEAST 1/4 OF THE NORTHWEST 1/4 OF SECTION 20; THENCE SOUTH 89 DEGREES, 54 MINUTES, 12 SECONDS EAST, ALONG THE NORTH LINE OF SAID 250 FEET, 1,268.62 FEET TO A POINT ON THE EAST LINE OF SAID NORTHEAST 1/4 OF THE NORTHWEST 1/4, ALSO BEING THE WEST LINE OF SAID NORTHEAST 1/4 OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 OF SECTION 20; THENCE SOUTH 00 DEGREES, 16 MINUTES, 27 SECONDS EAST, ALONG SAID QUARTER SECTION LINE, A DISTANCE OF 205.04 FEET TO A POINT, SAID POINT BEING 44.96 FEET NORTHERLY OF THE SOUTHWEST CORNER OF SAID NORTHEAST 1/4 OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 OF SECTION 20; THENCE NORTH 44 DEGREES, 54 MINUTES, 25 SECONDS EAST, A DISTANCE OF 165.25 FEET TO A POINT OF CURVATURE; THENCE EASTERLY ALONG A CURVED LINE, CONVEX NORTHERLY, HAVING A RADIUS OF 60 FEET, A DISTANCE OF 66.74 FEET TO A POINT ON THE NORTHWESTERLY RIGHT-OF-WAY LINE OF DOROTHY AVENUE, 249.37 FEET NORTH-EASTERLY OF THE SOUTHWEST CORNER OF SAID NORTHEAST 1/4 OF THE NORTHWEST 1/4 OF SECTION 20; THENCE NORTH 44 DEGREES, 54 MINUTES, 25 SECONDS EAST, ALONG THE NORTHWESTERLY RIGHT-OF-WAY LINE OF DOROTHY AVENUE, A DISTANCE OF 492.87 FEET TO A POINT ON A LINE 59 FEET SOUTHWESTERLY OF AND PARALLEL WITH THE CENTER LINE OF RAND ROAD; THENCE NORTH 48 DEGREES, 02 MINUTES, 35 SECONDS WEST, ALONG SAID PARALLEL LINE, A DISTANCE OF 735.95 FEET TO THE EAST LINE OF SAID NORTHEAST 1/4 OF THE NORTHWEST 1/4; THENCE SOUTH 00 DEGREES, 16 MINUTES, 27 SECONDS EAST, ALONG SAID EAST LINE OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4, 7.33 FEET TO THE SOUTH LINE OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 OF SAID SECTION 20; THENCE NORTH 89 DEGREES, 57 MINUTES, 27 SECONDS WEST, ALONG SAID SOUTH LINE OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 OF SECTION 20, A DISTANCE OF 10 FEET TO A POINT ON A LINE 50 FEET EAST OF AND PARALLEL WITH THE WEST LINE OF SAID NORTHEAST 1/4 OF THE NORTHWEST 1/4; THENCE SOUTH 00 DEGREES, 14 MINUTES, 48 SECONDS EAST, ALONG SAID PARALLEL LINE, A DISTANCE OF 600.23 FEET TO THE POINT OF BEGINNING, IN COOK COUNTY, ILLINOIS, CONTAINING AN AREA OF 1,370,000 SQUARE FEET OR 31.451 ACRES (MORE OR LESS).
And any variations as determined necessary by the Plan Commission.
All persons desiring to be heard shall be given the opportunity to be heard. Should any individual need auxiliary aid or service, such as a sign language interpreter or materials in alternative formats, please contact the Health Department at 33 South Arlington Heights Road, Arlington Heights, Illinois 60005, (847) 368-5760, TDD# (847) 368-5794.
Terry Ennes, Chairman
ARLINGTON HEIGHTS PLAN COMMISSION
Published in Daily Herald on June 11, 2019 (4526568)

CERTIFICATE OF PUBLICATION

Paddock Publications, Inc.

Daily Herald

Corporation organized and existing under and by virtue of the laws of the State of Illinois, DOES HEREBY CERTIFY that it is the publisher of the **DAILY HERALD**. That said **DAILY HERALD** is a secular newspaper and has been circulated daily in the Village(s) of Algonquin, Antioch, Arlington Heights, Aurora, North Aurora, Bannockburn, Barrington, Barrington Hills, Lake Barrington, North Barrington, South Barrington, Bartlett, Batavia, Buffalo Grove, Burlington, Campton Hills, Carpentersville, Cary, Crystal Lake, Deerfield, Deer Park, Des Plaines, Elburn, East Dundee, Elgin, South Elgin, Elk Grove Village, Fox Lake, Fox River Grove, Franklin Park, Geneva, Gilberts, Glenview, Grayslake, Green Oaks, Gurnee, Hainesville, Hampshire, Hanover Park, Hawthorn Woods, Highland Park, Highwood, Hoffman Estates, Huntley, Inverness, Island Lake, Kildeer, Lake Bluff, Lake Forest, Lake in the Hills, Lake Villa, Lake Zurich, Libertyville, Lincolnshire, Lindenhurst, Long Grove, Melrose Park, Montgomery, Morton Grove, Mt. Prospect, Mundelein, Niles, Northbrook, Northfield, Northlake, Palatine, Park Ridge, Prospect Heights, River Grove, Riverwoods, Rolling Meadows, Rosemont, Round Lake, Round Lake Beach, Round Lake Heights, Round Lake Park, Schaumburg, Schiller Park, Sleepy Hollow, St. Charles, Streamwood, Sugar Grove, Third Lake, Tower Lakes, Vernon Hills, Volo, Wadsworth, Wauconda, Waukegan, West Dundee, Wheeling, Wildwood, Wilmette

County(ies) of Cook, Kane, Lake, McHenry

and State of Illinois, continuously for more than one year prior to the date of the first publication of the notice hereinafter referred to and is of general circulation throughout said Village(s), County(ies) and State.

I further certify that the **DAILY HERALD** is a newspaper as defined in "an Act to revise the law in relation to notices" as amended in 1992 Illinois Compiled Statutes, Chapter 715, Act 5, Section 1 and 5. That a notice of which the annexed printed slip is a true copy, was published 6/11/19 in said **DAILY HERALD**.

IN WITNESS WHEREOF, the undersigned, the said **PADDOCK PUBLICATIONS, Inc.**, has caused this certificate to be signed by, this authorized agent, at Arlington Heights, Illinois.

PADDOCK PUBLICATIONS, INC.
DAILY HERALD NEWSPAPERS

BY

Laurel Baitz
Authorized Agent

Control # 4526568

RECEIVED

JUN 18 2019

**PLANNING & COMMUNITY
DEVELOPMENT DEPARTMENT**

STAFF DESIGN COMMISSION REPORT

PROJECT INFORMATION:

Project Name: Raising Cane's
Project Address: 225 E. Palatine Road
Prepared By: Steve Hautzinger

Date Prepared: June 18, 2019

PETITION INFORMATION:

DC Number: 19-047
Petitioner Name: Gregory Barrow
Petitioner Address: Town & Country Chicago Associates
30050 Chagrin Blvd, Suite 360
Pepper Pike, OH 44124
Meeting Date: June 25, 2019

Requested Action(s):

Approval of the proposed architectural design for a new restaurant building.

Design Commission Responsibility for Projects Being Reviewed by Plan Commission:

The subject design is being forwarded to the Design Commission for review pursuant to Chapter 6 of the Municipal Code.

This project requires Plan Commission review and Village Board approval to amend the existing Planned Unit Development for Town and Country shopping center, as well as Special Use approval for a restaurant with a drive-through. Because this project is going to the Plan Commission, the role of the Design Commission is limited. The Design Commission's responsibility is as outlined in Chapter 28 of the Municipal Code, Section 14.2-1, which states:

*"For developments where a public hearing is necessary before the Plan Commission or Zoning Board of Appeals, the design review process should, if feasible, be completed by the time of the public hearing. Development proposals requiring rezoning, PUD or other Plan Commission approvals, shall be reviewed by the Design Commission **for building and signage only.**"*

Summary:

The petitioner is proposing to build a new free standing Raising Cane's fast casual restaurant at the Town & Country shopping center. The proposed restaurant will be located in an existing parking area facing Palatine Road between BMO Harris Bank and the Verizon store. The restaurant will have indoor dining, outdoor dining, and a drive through. The scope of the project includes redevelopment of the site with new parking and landscaping.

Architectural Design:

The proposed design is based on prototype branding for Raising Cane's. The design has a fresh modern appearance that is generally consistent with other fast casual restaurants in this area. The exterior materials and colors are nicely coordinated, and the black outdoor dining canopy has an inviting appeal. The red number "1" on the face of the entry tower is considered a large wall sign, so it is not allowed by code, and will either need to be omitted or a hardship demonstrated to justify a sign variation.

Overall, the architectural design is nicely done, and will fit in well in this location

Signage:

In addition to the large number "1" wall sign, the proposed design includes three more wall signs and one ground that do not comply with Chapter 30 sign code. This building has one street frontage, so only one wall sign is allowed, with a maximum size of 25% of the wall that it is mounted on. The proposed wall mural is not allowed to be painted directly on the building wall.

One 6-foot tall ground sign is proposed, however the location of the sign is not shown on the site plan. Raising Cane's will be part of the Town & Country shopping center, and Town & Country already has three code-compliant multi-tenant ground signs. Additional ground signs are not allowed. The adjacent Verizon store has a small ground that was approved by variation in 1981.

The signage will either need to be revised, or sign variations requested as a separate application to be reviewed based on hardship.

Rooftop Mechanical Unit Screening:

The proposed building has multiple rooftop mechanical units, which are required to be fully screened from public view. The building design includes a continuous equipment screen which is nicely coordinated with the building design.

One minor concern is the rooftop guard rail on the back of the building that sticks up above the wall. Since the back of the building will be highly visible from the Town & Country parking lot, it is recommended that an alternative solution be studied to better fit with the building design.

Trash Dumpster Screening:

A trash dumpster enclosure is proposed at the southwest corner of the site. The enclosure is proposed to be built with split-face CMU in a "Texas Buff" color to complement the colors of the building, with a black standing seam flat roof.

RECOMMENDATION:

It is recommended that the Design Commission **approve** the proposed architectural design for Raising Cane's located at 225 E. Palatine Road. This recommendation is subject to compliance with the plans received 5/22/19, exterior elevations and roof plan received 6/14/19, Design Commission recommendations, compliance with all applicable Federal, State, and Village codes regulations and policies, the issuance of all required permits, and the following:

1. Explore alternative solutions to eliminate the rooftop guard rail.
2. Either revise the proposed signage package to comply with Chapter 30 sign code, or request sign variations.
3. This review deals with architectural design only and should not be construed to be an approval of, or to have any other impact on, any other zoning and/or land use issues or decisions that stem from zoning, sign code or building or any other reviews. In addition to the normal technical review, permit drawings will be reviewed for consistency with the Design Commission and any other Commission or Board approval conditions. It is the architect/owner/builder's responsibility to comply with the Design Commission approval and ensure that building permit plans and sign permit plans comply with all zoning code, building code and sign code requirements.

_____, June 18, 2019

Steve Hautzinger AIA, Design Planner
Department of Planning & Community Development

Cc: Charles Witherington Perkins, Director of Planning and Community Development, Bill Enright, Deputy Director of Planning and Community Development, Jake Schmidt, Assistant Planner, Petitioner, DC File 19-047



Raising Cane's Project description N. Arlington Heights Road & E. Palatine Road

Raising Cane's is a quick serve restaurant that was founded in 1996 in Baton Rouge, LA by its founder, Todd Graves. The restaurant has ONE LOVE, which is chicken, as evident by the minimal menu that includes: chicken fingers, fries, cole slaw and Texas toast. The food is always cooked to order to ensure the best quality and flavor possible.

Raising Cane's is not a chain restaurant, but is part of the community, starting with the name of the city being part of the painted mural on the side of the building. The restaurant not only employs people from the area, but gives back to the community in several ways. By promoting education, feeding the hungry, pet welfare, local community involvement and more.

The building itself promotes visual esthetics with the variations not only in the architecture, but the building materials themselves. The use of a brick wainscot with EIFS above is accented by the use of full brick facades and limestone (hydraulic limestone) at the main entrances and drive thru areas to provide a seamless look to the 'towers'. All of this with the variations in the heights of the building, along with the ample landscaping around the building provides an esthetically pleasing structure that accents the development unlike the fast food 'box style' of many businesses. Though there are no 'green' features to the landscaping, Raising Cane's designs with native plants to ensure they are best suited for the local climate and conditions.

The structure is approximately 3,800 square feet, including a masonry corral at the rear of the building for operations. The roof line around the exterior varies from the main façade at 16'-7", to the towers for the entrances and drive thru pick-up at 19'-10", the lower drive thru tower at 17'-3" and finally the ONE (for the one love) at the main entrance topping out at 23'-4".

Raising Cane's will have approximately 55 employees at this location, with an average of 8 employees per shift. The restaurant will be open Sun - Thu: 10:00am - 12:00am; Fri - Sat: 10:00am - 2:00am. The drive Thru will have the hours of operation.

The project is being submitted to the Planning Commission for review 4/12/19 with a tentative date of a Plan Commission Meeting of 7/10/19. The building plans will be submitted for permitting after Planning and Design Commission approval with a construction start date of mid-October. The project will have a 175 day construction schedule with an anticipated opening date of 3/20/2020.



April 11, 2019

**Sam Hubbard
Village of Arlington Heights
Planning & Zoning Commission
33 South Arlington Heights Road
Arlington Heights, IL 60005**

***Regarding:*
Raising Cane's Chicken Fingers
N. Arlington Heights Road &
East Palatine Road
Arlington, IL 60004
Our Project No. 19064**

**RE: Proposed Drive-Through
Restaurant**

Mr. Hubbard:

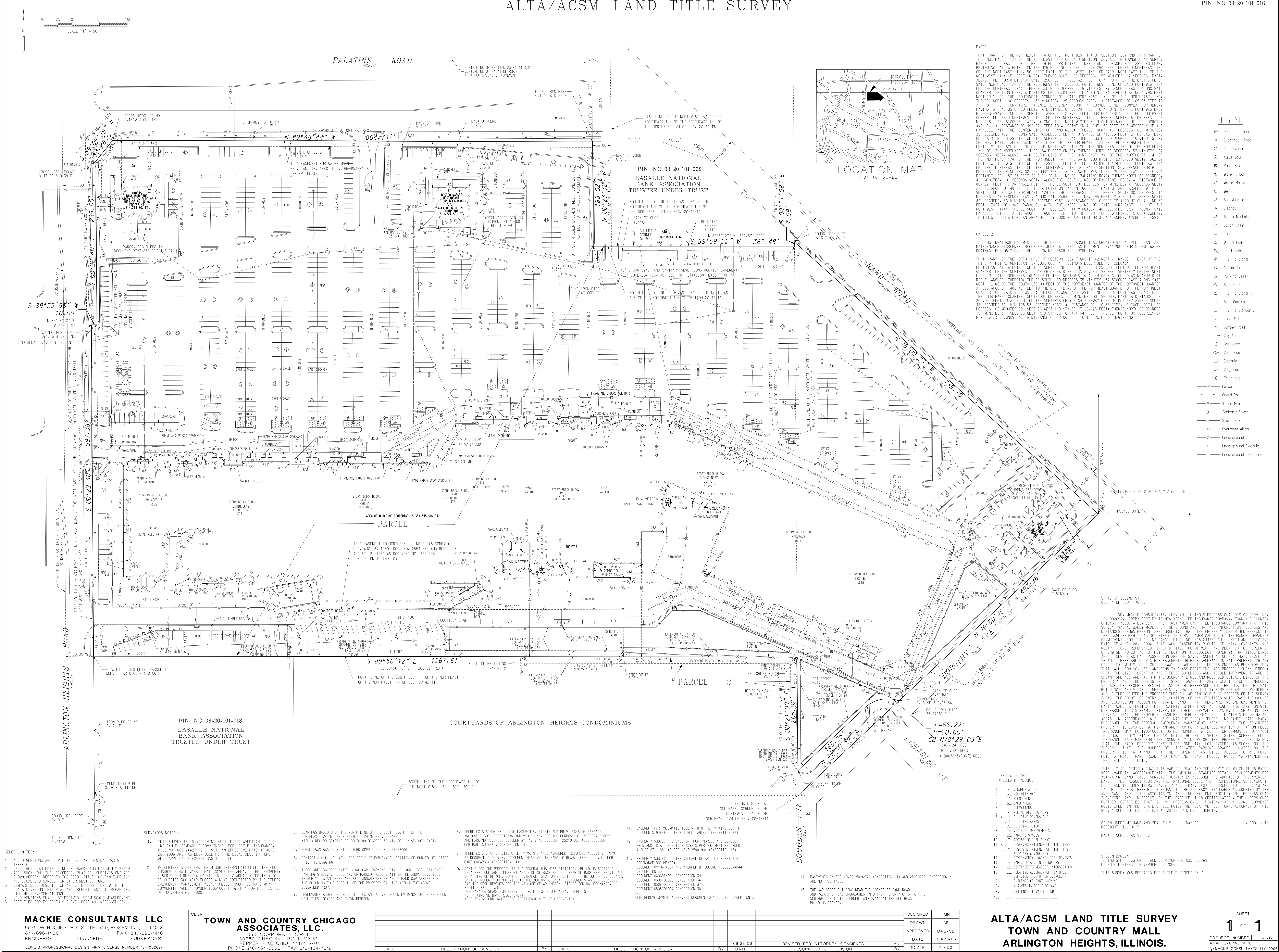
The location of the proposed drive-through restaurant is currently occupied by under-utilized mall parking spaces.

The project is deemed necessary and suitable for the location based on the similar uses of the surrounding commercial center, which includes a variety of retail and restaurant establishments. As a result, the proposed project is not anticipated to cause any detriment, above and beyond what is generated by the surrounding uses to the health, safety, or general welfare of those living and working in the overall vicinity.

It is the intent of the client to comply with all applicable codes and regulations, and to incorporate any conditions granted by the Village Board of Trustees, including conditions related to signage, materials, noise mitigation or traffic control measures, to the design of the structure and site.

ALTA/ACSM LAND TITLE SURVEY

PIN NO. 03-20-101-016



PARCEL 1

THAT PART OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 OF SECTION 20, AND THAT PART OF THE NORTHWEST 1/4 OF THE NORTHWEST 1/4 OF SAID SECTION 20, ALL IN TOWNSHIP 42 NORTH, RANGE 11 EAST, OF THE THIRD PRINCIPAL MERIDIAN, DESCRIBED AS FOLLOWS: BEGINNING AT A POINT ON THE NORTH LINE OF THE SOUTH 250 FEET OF SAID NORTHEAST 1/4 OF THE NORTHEAST 1/4, 50 FEET EAST OF THE WEST LINE OF SAID NORTHEAST 1/4 OF THE NORTHWEST 1/4 OF SECTION 20; THENCE NORTH 89 DEGREES, 56 MINUTES, 12 SECONDS EAST, ALONG THE NORTH LINE OF SAID 250 FEET, 1+588.62 FEET TO A POINT ON THE EAST LINE OF SAID NORTHEAST 1/4 OF THE NORTHWEST 1/4, ALSO BEING THE WEST LINE OF SAID NORTHEAST 1/4 OF THE NORTHWEST 1/4, 16 MINUTES, 25 SECONDS EAST, ALONG SAID QUARTER SECTION LINE, A DISTANCE OF 205.04 FEET TO A POINT, SAID POINT BEING 44.96 FEET NORTHERLY OF THE SOUTHWEST CORNER OF SAID NORTHEAST 1/4 OF THE NORTHWEST 1/4; THENCE NORTH 46 DEGREES, 56 MINUTES, 25 SECONDS EAST, A DISTANCE OF 165.25 FEET TO A POINT OF CURVATURE; THENCE EASTERLY ALONG A CURVED LINE, CONVEY NORTHERLY, HAVING A RADIUS OF 60 FEET, A DISTANCE OF 68.24 FEET TO A POINT ON THE NORTHEASTLY RIGHT-OF-WAY LINE OF DOROTHY AVENUE, 245.37 FEET NORTHEAST OF THE SOUTHWEST CORNER OF SAID NORTHEAST 1/4 OF THE NORTHWEST 1/4; THENCE NORTH 46 DEGREES, 36 MINUTES, 25 SECONDS EAST, ALONG THE NORTHEASTLY RIGHT-OF-WAY LINE OF DOROTHY AVENUE, A DISTANCE OF 490.87 FEET TO A POINT ON A LINE 55 FEET SOUTHWESTERLY OF AND PARALLEL WITH THE CENTER LINE OF RAND ROAD; THENCE NORTH 48 DEGREES, 02 MINUTES, 39 SECONDS WEST, ALONG SAID PARALLEL LINE, A DISTANCE OF 735.89 FEET TO THE EAST LINE OF SAID NORTHEAST 1/4 OF THE NORTHWEST 1/4; THENCE SOUTH 00 DEGREES, 16 MINUTES, 27 SECONDS EAST, ALONG SAID EAST LINE OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4, 1.33 FEET TO THE SOUTH LINE OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 OF THE NORTHWEST 1/4 OF SAID SECTION 20; THENCE NORTH 89 DEGREES, 57 MINUTES, 27 SECONDS WEST, ALONG SAID SOUTH LINE OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 OF THE NORTHWEST 1/4 OF SAID SECTION 20, 205 FEET TO A POINT, THENCE NORTH 00 DEGREES, 14 MINUTES, 48 SECONDS EAST, ALONG SAID PARALLEL LINE, 295 FEET TO A POINT, THENCE NORTH 89 DEGREES, 56 MINUTES, 12 SECONDS WEST, A DISTANCE OF 10 FEET TO A POINT ON A LINE 50 FEET EAST OF AND PARALLEL WITH THE WEST LINE OF SAID NORTHEAST 1/4 OF THE NORTHWEST 1/4; THENCE SOUTH 00 DEGREES, 14 MINUTES, 48 SECONDS EAST, ALONG SAID PARALLEL LINE, A DISTANCE OF 600.23 FEET TO THE POINT OF BEGINNING, IN COOK COUNTY, ILLINOIS, CONTAINING AN AREA OF 1,370.000 SQUARE FEET OR 31.451 ACRES, 1 MORE OR LESS.

PARCEL 2

12 FOOT DRAINAGE EASEMENT FOR THE BENEFIT OF PARCEL 1 AS CREATED BY EASEMENT GRANT AND MAINTENANCE AGREEMENT RECORDED IN COOK COUNTY, ILLINOIS, DOCUMENT 21117983 FOR STORM WATER DRAINAGE PURPOSES OVER THE FOLLOWING DESCRIBED PROPERTY:

THAT PART OF THE NORTH HALF OF SECTION 20, TOWNSHIP 42 NORTH, RANGE 11 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN COOK COUNTY, ILLINOIS DESCRIBED AS FOLLOWS: BEGINNING AT A POINT ON THE NORTH LINE OF THE SOUTH 250.00 FEET OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 20, 831.98 FEET WESTERLY OF THE WEST LINE OF SAID NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 20 AS MEASURED AT RIGHT ANGLES THERE TO; THENCE SOUTH 89 DEGREES 35 MINUTES 37 SECONDS EAST ALONG SAID NORTH LINE OF SAID NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 20, A DISTANCE OF 188.45 FEET TO THE EAST LINE OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 20; THENCE ALONG SAID EAST LINE OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 20, 89 DEGREES 35 MINUTES 37 SECONDS EAST, A DISTANCE OF 205.04 FEET TO A POINT ON THE NORTHEASTLY RIGHT-OF-WAY LINE OF DOROTHY AVENUE SOUTH 47 DEGREES 12 MINUTES 52 SECONDS WEST, A DISTANCE OF 10 FEET TO A POINT ON A LINE 50 FEET EAST OF AND PARALLEL WITH THE WEST LINE OF SAID NORTHEAST 1/4 OF THE NORTHWEST 1/4; THENCE SOUTH 00 DEGREES, 14 MINUTES, 48 SECONDS EAST, ALONG SAID PARALLEL LINE, A DISTANCE OF 600.23 FEET TO THE POINT OF BEGINNING, IN COOK COUNTY, ILLINOIS, CONTAINING AN AREA OF 1,370.000 SQUARE FEET OR 31.451 ACRES, 1 MORE OR LESS.

WE, MACKIE CONSULTANTS, LLC, AN ILLINOIS PROFESSIONAL DESIGN FIRM NO. 184-000994, HEREBY CERTIFY TO NEW YORK LIFE INSURANCE COMPANY, TOWN AND COUNTRY CHICAGO ASSOCIATES, LLC, AND FIRST AMERICAN TITLE INSURANCE COMPANY THAT THIS SURVEY WAS ACTUALLY MADE UPON THE GROUND AND THAT ALL INFORMATION, COURSES AND DISTANCES SHOWN HEREON ARE CORRECT, THAT THE PROPERTY DESCRIBED HEREON IS THE SAME PROPERTY AS DESCRIBED IN FIRST AMERICAN TITLE INSURANCE COMPANY'S POLICY NO. 144239-0111 WITH AN EFFECTIVE DATE OF JUNE 28, 2006; THAT ALL EASEMENTS, RIGHTS OF WAY, COVENANTS AND RESTRICTIONS ARE SHOWN HEREON IN SAID TITLE COMMITMENT HAVE BEEN PLOTTED HEREON OTHERWISE NOTED AS TO THEIR EFFECT ON THE SUBJECT PROPERTY; THAT TITLE LINES AND LINES OF ACTUAL POSSESSION ARE THE SAME, EXCEPT AS NOTED; THAT, EXCEPT AS SHOWN, THERE ARE NO VISIBLE EASEMENTS OR RIGHTS OF WAY ON SAID PROPERTY OR ANY OTHER EASEMENTS OR RIGHTS OF WAY OF WHICH THE UNDERSIGNED HAS BEEN ADVISED THAT ALL ZONING, USE AND DENSITY CLASSIFICATIONS ARE PROPERLY SHOWN HEREON; THAT THE SIZE, LOCATION AND TYPE OF BUILDINGS AND VISIBLE IMPROVEMENTS ARE AS SHOWN HEREON; THAT THE PROPERTY DESCRIBED HEREON DOES NOT LIE WITHIN FLOOD HAZARD AREAS IN ACCORDANCE WITH THE MAP ENTITLED "FLOOD INSURANCE RATE MAP" PUBLISHED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY THAT THE DESCRIBED PROPERTY IS LOCATED WITHIN AN AREA HAVING A ZONE DESIGNATION OF "X" ON FLOOD INSURANCE RATE MAP NO. 17031C0201F DATED NOVEMBER 6, 2000; FOR COMMUNITY NO. 17031 IN COOK COUNTY, STATE OF ARKANSAS, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR THE COMMUNITY IN WHICH THE PROPERTY IS SITUATED; THAT THE SAID PROPERTY CONSTITUTES ONE TAX LOT EXCEPT AS SHOWN ON THE SURVEY; THAT THE NUMBER OF INDICATED PARKING SPACES LOCATED ON THE PROPERTY IS 1611; AND THAT THE PROPERTY HAS DIRECT ACCESS TO ARLINGTON HEIGHTS ROAD, RAND ROAD AND PALATINE ROAD, PUBLIC ROADS MAINTAINED BY THE STATE OF ILLINOIS.

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS" JOINTLY ESTABLISHED AND ADOPTED BY THE AMERICAN LAND TITLE ASSOCIATION AND THE NATIONAL SOCIETY OF PROFESSIONAL SURVEYORS IN 2006 AND INCLUDES ITEMS 1-4, 6, 7(A), 7(B)(1), 7(B)(2), 8 THROUGH 10, 11(B), 13 AND 14, AND IS IN FULL COMPLIANCE WITH THE "STANDARD DETAIL REQUIREMENTS" ADOPTED BY THE AMERICAN LAND TITLE ASSOCIATION AND THE NATIONAL SOCIETY OF PROFESSIONAL SURVEYORS AND IN EFFECT ON THE DATE OF THIS CERTIFICATION; THE UNDERSIGNED FURTHER CERTIFIES THAT IN MY PROFESSIONAL OPINION, AS A LAND SURVEYOR REGISTERED IN THE STATE OF ILLINOIS, THE RELATIVE POSITIONAL ACCURACY OF THIS SURVEY DOES NOT EXCEED THAT WHICH IS SPECIFIED THEREIN.

TABLE A OPTIONS CHECKED IF INCLUDED

1. MONUMENTATION	☒
2. VICINITY MAP	☒
3. FLOOD ZONE	☒
4. LAND AREAS	☒
5. ELEVATIONS	☒
6. ZONING RESTRICTIONS	☒
7(A). BUILDING DIMENSIONS	☒
7(B). BUILDING AREAS	☒
8. VISIBLE IMPROVEMENTS	☒
9. PARKING SPACES	☒
10. ACCESS TO PUBLIC WAY	☒
11(A). OBSERVED EVIDENCE OF UTILITIES	☒
11(B). CONVEYANCE AGENCY REQUIREMENTS	☒
12. NAMES OF ADJOINING OWNERS	☒
13. DISTANCE TO NEAREST INTERSECTION	☒
14. RELATIVE ACCURACY OF FEATURES	☒
15. DELETED FROM OTHER SOURCES	☒
16. EVIDENCE OF EARTH MOVING	☒
17. CHANGES IN RIGHT-OF-WAY	☒
18. EVIDENCE OF WASTE DUMP	☒
19. EVIDENCE OF WASTE DUMP	☒

SURVEYORS NOTES:

- THIS SURVEY IS IN AGREEMENT WITH FIRST AMERICAN TITLE INSURANCE COMPANY'S COMMITMENT FOR TITLE INSURANCE. FILE NO. MCS-244239-0111 WITH AN EFFECTIVE DATE OF JUNE 28, 2006 AND HAS BEEN USED FOR THE LEGAL DESCRIPTIONS AND APPLICABLE EXCEPTIONS TO TITLE.
- WE FURTHER STATE THAT FROM OUR INTERPOLATION OF THE FLOOD INSURANCE RATE MAPS THAT COVER THE AREA, THE PROPERTY DESCRIBED HEREIN FALLS WITHIN ZONE X AREAS DETERMINED TO BE INSURABLE. ALSO THERE ARE 28 STANDARD SPACES AND 3 HANDICAP SPACES FOR THE BUILDING TO THE SOUTH OF THE PROPERTY FALLING WITHIN THE ABOVE DESCRIBED PROPERTY.
- PROPERTY HAS DIRECT ACCESS TO ARLINGTON HEIGHTS ROAD, RAND ROAD AND PALATINE ROAD, PUBLIC ROADS MAINTAINED BY THE STATE OF ILLINOIS.
- NO DIMENSIONS SHALL BE DERIVED FROM SCALE MEASUREMENT. CERTIFIED COPIES OF THIS SURVEY BEAR AN IMPRESSED SEAL.

GENERAL NOTES:

- ALL DIMENSIONS ARE GIVEN IN FEET AND DECIMAL PARTS.
- ONLY THOSE BUILDING LINE SETBACKS AND EASEMENTS WHICH ARE SHOWN ON THE RECORDED PLAT OR SUBDIVISIONS ARE SHOWN HEREON. REFER TO THE DEED, TITLE INSURANCE POLICY AND LOCAL ORDINANCES FOR OTHER RESTRICTIONS.
- COMPARE DEED DESCRIPTION AND SITE CONDITIONS WITH THE DATA GIVEN ON THIS PLAT AND REPORT ANY DISCREPANCIES TO THE SURVEYOR AT ONCE.
- NO DIMENSIONS SHALL BE DERIVED FROM SCALE MEASUREMENT. CERTIFIED COPIES OF THIS SURVEY BEAR AN IMPRESSED SEAL.

BEARINGS BASED UPON THE NORTH LINE OF THE SOUTH 250 FT. OF THE NORTHEAST 1/4 OF THE NORTHWEST 1/4 OF SEC. 20-42-11 WITH A RECORD BEARING OF SOUTH 89 DEGREES 56 MINUTES 12 SECONDS EAST.

SURVEY WAS BASED ON FIELD WORK COMPLETED ON 09-13-2006.

CONTACT JULL, I.E. AT 1-800-892-0123 FOR EXACT LOCATION OF BURIED UTILITIES PRIOR TO DIGGING.

THERE ARE 36 DESIGNATED HANDICAP PARKING SPACES AND 1577 STANDARD PARKING SPACES STRIPED AND OR MARKED FALLING WITHIN THE ABOVE DESCRIBED PROPERTY. ALSO THERE ARE 28 STANDARD SPACES AND 3 HANDICAP SPACES FOR THE BUILDING TO THE SOUTH OF THE PROPERTY FALLING WITHIN THE ABOVE DESCRIBED PROPERTY.

OBSERVABLE ABOVE GROUND UTILITIES AND ABOVE GROUND EVIDENCE OF UNDERGROUND UTILITIES LOCATED AND SHOWN HEREON.

THERE EXISTS NON EXCLUSIVE EASEMENTS, RIGHTS AND PRIVILEGES OR PASSAGE AND USE - BOTH PEDESTRIAN AND VEHICULAR, FOR THE PURPOSE OF INGRESS, EGRESS FROM AND TO ALL PUBLIC ROADWAYS PER DOCUMENT RECORDED AUGUST 27, 1981 AS DOCUMENT 2591904 (EXCEPTION 17).

THERE EXISTS AN ON SITE UTILITY MAINTENANCE AGREEMENT RECORDED AUGUST 9, 1979 PER DOCUMENT 2591904 (EXCEPTION 14).

ZONING FOR THE PROPERTY IS B-2 GENERAL BUSINESS DISTRICT, BUILDING SETBACKS ARE 10 FEET FROM THE FRONT AND 5 FEET FROM THE REAR SETBACKS FOR THE VILLAGE OF ARLINGTON HEIGHTS ZONING ORDINANCE, SECTION 28-5-1.11. THE BUILDINGS LOCATED ON THE PROPERTY DO NOT VIOLATE THE ZONING SETBACK REQUIREMENTS AS LISTED ABOVE. PARKING REQUIREMENTS FOR THE VILLAGE OF ARLINGTON HEIGHTS ZONING ORDINANCE, SECTION 28-5-1.11 ARE:

ONE PARKING SPACE FOR EVERY 300 SO. FT. OF FLOOR AREA, THERE IS (SEE ZONING ORDINANCE FOR ADDITIONAL SITE REQUIREMENTS).

EASEMENT FOR PNEUMATIC TUBE WITHIN THE PARKING LOT IN DOCUMENTS 9384624 IS NOT PLOTTABLE. (EXCEPTION 22)

PROPERTY SUBJECT TO EASEMENT FOR INGRESS AND EGRESS FROM AND TO ALL PUBLIC ROADWAYS PER DOCUMENT RECORDED AUGUST 27, 1981 AS DOCUMENT 2591904 (EXCEPTION 17)

PROPERTY SUBJECT TO THE VILLAGE OF ARLINGTON HEIGHTS ORDINANCE DOCUMENTS:

DOCUMENT 001674931 AND AMENDED BY DOCUMENT 002064844 (EXCEPTION 33)

DOCUMENT 006934064 (EXCEPTION 34)

DOCUMENT 006930030 (EXCEPTION 36)

DOCUMENT 008103008 (EXCEPTION 37)

DOCUMENT 008103007 (EXCEPTION 38)

AND

TIF REDEVELOPMENT AGREEMENT DOCUMENT 051803028 (EXCEPTION 35)

DATE 09-28-06

REVISED PER ATTORNEY COMMENTS

DATE 09-20-08

SCALE 1" = 50'

MACKIE CONSULTANTS LLC
9575 W. HIGGINS RD., SUITE 500, ROSEMONT, IL 60018
847-696-1400
ENGINEERS PLANNERS
ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NUMBER 184-002694

TOWN AND COUNTRY CHICAGO ASSOCIATES, LLC.
160 CORPORATE CIRCLE
30050 CHAGRIN BOULEVARD
PEPPER PIKE, OHIO 44224-5704
PHONE 216-464-5550 FAX 216-464-7219

DESIGNED MN
DRAWN MN
APPROVED DAG/SB
DATE 09-20-08
BY SCALE 1" = 50'

ALTA/ACSM LAND TITLE SURVEY
TOWN AND COUNTRY MALL
ARLINGTON HEIGHTS, ILLINOIS.

SHEET 1 OF 1

PROJECT NUMBER 427G
FILE S/E/ALTA/PLT
© MACKIE CONSULTANTS LLC, 2006

Printed By: Cooper, Jason Sheet: Set-Raising Cones - Shumbaung Layout: C1.0 Date: 05/05/2019 01:46:11pm
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 This document, together with the concepts and designs presented herein, as an instrument of service, shall be without liability to Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



PUBLIC WORKS & ENGINEERING DEPARTMENT CONTACTS: SCOTT SHIRLEY (DIRECTOR OF PUBLIC WORKS) GLENN ADAMS (STREET FOREMAN) SCOTT BELLANGER (TRAFFIC FOREMAN) DAVE NORDIN (WATER DIST. FOREMAN) JEFF MUSINSKI (SUPT. OF UTILITIES) MIKE NOLAN (SEWER FOREMAN) MIKE PAGONES (VILLAGE ENGINEER)	33 S. ARLINGTON HEIGHTS ROAD ARLINGTON HEIGHTS, IL 60005 (847) 368-5808 (847) 368-5837 (847) 368-5845 (847) 368-5830 (847) 368-5806 (847) 368-5832 (847) 368-5250
PLANNING & COMMUNITY DEVELOPMENT CONTACT: CHARLES PERKINS	33 S. ARLINGTON HEIGHTS RD. ARLINGTON HEIGHTS, IL 60005 (847) 368-5200
SANITARY SEWER CONTACT: TBD	METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO 100 E. ERIE ST. CHICAGO, IL 60611 (312) 751-4449
POWER COMPANY CONTACT: TBD	COMMONWEALTH EDISON MAYWOOD OFFICE (630) 890-0883
NATURAL GAS COMPANY CONTACT: TBD	NICOR GAS COMPANY (630) 878-0768
TELEPHONE COMPANY CONTACT: TBD	AT&T CHICAGO NORTH OFFICE (630) 779-5160



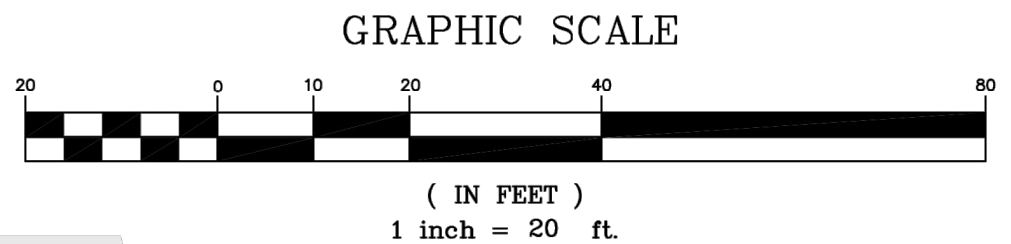
1. IF REPRODUCED, THE SCALES SHOWN ON THESE PLANS ARE BASED ON A 24" X 36" SHEET.
2. ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO CONTRACT COMPLETION AND THE FINAL CONNECTION OF SERVICES.

Date of Expiration: 11-30-19

**Call
Before
You Dig**
JULIE
1-800-892-0123

MAY 2019

ALTA/NSPS LAND TITLE AND TOPOGRAPHIC SURVEY



PALATINE ROAD

46

GRID NORTH

UTILITY STATEMENT

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM VISIBLE FIELD EVIDENCE AND EXISTING DRAWINGS, MAPS AND RECORDS SUPPLIED TO SURVEYOR. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED, ALTHOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM AVAILABLE INFORMATION. THE SURVEYOR HAS PHYSICALLY LOCATED VISIBLE STRUCTURES, HOWEVER, HE HAS NOT PHYSICALLY LOCATED THE UNDERGROUND LINES.

ABBREVIATIONS

O.D.I.P. = OUTSIDE DIAMETER IRON PIPE
TF = TOP OF FOUNDATION
FF = FINISHED FLOOR
FES = FLARED END SECTION
VCP = VITRIFIED CLAY PIPE
DIP = DUCTILE IRON PIPE
PVC = POLYVINYL CHLORIDE
RCP = REINFORCED CONCRETE PIPE
CMP = CORRUGATED METAL PIPE
(R) = RECORD BEARING OR DISTANCE
(M) = MEASURED BEARING OR DISTANCE
(C) = CALCULATED BEARING OR DISTANCE
(D) = DEED BEARING OR DISTANCE
A = ARC LENGTH
R = RADIUS
CH = CHORD
CB = CHORD BEARING
B.S.L. = BUILDING SETBACK LINE
U.E. = UTILITY EASEMENT
D.E. = DRAINAGE EASEMENT
P.U.E. = PUBLIC UTILITY EASEMENT
P.O.C. = POINT OF COMMENCEMENT
P.O.B. = POINT OF BEGINNING
P.U. & D.E. = PUBLIC UTILITY AND DRAINAGE EASEMENT
BC = BACK OF CURB
BDC = BACK OF DEPRESSION
FL = FLOW LINE
C = CONCRETE
P = PAVEMENT
G = GRAVEL
EW = EDGE OF WALK
TW = TOP OF WALL
TP = TOP OF PIPE
IE = INVERT ELEVATION
PL = PROPERTY LINE
DS = DOWN SPOUT
S.F. = SQUARE FEET
SL = SHORE LINE
TSF = TRANSFORMER
B = PAVERS

LINE LEGEND

— LIMITS OF LAND PER
— LEGAL DESCRIPTION
— ADJACENT LAND
— PARCEL LINE
— EASEMENT LINE
— CENTERLINE
— BUILDING SETBACK LINE
— SECTION LINE
— EXISTING CONTOUR

LEGEND

● FOUND 7/8" O.D.I.P. UNLESS OTHERWISE NOTED (FIELD LOCATION)
■ CONCRETE MONUMENT
+ CROSS IN CONCRETE
⊙ MANHOLE
⊙ STORM STRUCTURE
⊙ SANITARY MANHOLE
⊙ CLEANOUT
⊙ FLARED END SECTION
⊙ TRANSFORMER PAD
⊙ ELECTRIC MANHOLE
⊙ ELECTRIC BOX
⊙ ELECTRIC PEDESTAL
⊙ ELECTRIC MARKER
⊙ ELECTRIC METER
⊙ UTILITY POLE
⊙ UTILITY POLE W/LIGHT
⊙ UTILITY POLE W/TSP
⊙ GUY POLE
⊙ OVERHEAD TRAFFIC SIGNAL
⊙ TRAFFIC SIGNAL MANHOLE
⊙ LIGHT
⊙ LIGHT POLE
⊙ HAND HOLE
⊙ VALVE VAULT
⊙ FIRE HYDRANT
⊙ IRRIGATION CONTROL VALVE
⊙ POST INDICATOR VALVE
⊙ SIAMANESE WATER CONNECTION
⊙ WATER MARKER
⊙ WATER METER
⊙ VALVE BOX
⊙ B/BOX
⊙ TELEPHONE MANHOLE
⊙ TELEPHONE NETWORK INTERFACE
⊙ TELEPHONE MARKER
⊙ TELEPHONE PEDESTAL
⊙ CABLE TELEVISION PEDESTAL

⊙ GAS METER
⊙ GAS VALVE
⊙ GAS MARKER
⊙ DOWN SPOUT
⊙ BORING HOLE
⊙ MONITORING WELL
⊙ GATE POST
⊙ BOLLARD POLE
⊙ SIGN
⊙ FLAG POLE
⊙ MAILBOX
⊙ SANITARY SEWER
⊙ STORM SEWER
⊙ WATER MAIN
⊙ GAS MAIN
⊙ ELECTRIC LINE
⊙ OVERHEAD WIRES
⊙ TELEPHONE LINE
⊙ CONIFEROUS TREE
⊙ W/APPROX. DIAMETER
⊙ DECIDUOUS TREE
⊙ W/APPROX. DIAMETER
⊙ MULTI-STEM
(DRIP LINE SHOWN IS APPROXIMATE)
+ ELEVATION

— BITUMINOUS PAVEMENT
— CONCRETE SURFACE
— DEPRESSED CURB
— GRAVEL SURFACE
— LANDSCAPE AREA
— STONE SURFACE
— DETECTABLE TACTILE WARNING SURFACE
— WOOD FENCE
— CHAIN LINK FENCE
— METAL FENCE
— METAL GUARDRAIL
— OVERHEAD TRAFFIC ARM

BENCHMARKS

REFERENCE BENCHMARK:
COOK COUNTY BENCHMARK DM3905, LOCATED IN PALATINE, 38 FEET NORTH OF THE CENTERLINE OF ANDERSON DRIVE, 17 FEET EAST OF THE CENTERLINE OF REYNOLDS DRIVE, 2.0 FEET WEST OF BACK OF SIDEWALK
ELEVATION = 719.509

SITE BENCHMARKS

SITE BENCHMARK #1
SOUTHEAST BOLT ON FIRE HYDRANT AT THE NORTHWEST CORNER OF SITE
ELEVATION = 696.74

SITE BENCHMARK #2
SOUTHWEST BOLT ON FIRE HYDRANT AT THE ENTRANCE TO WALL NEAR THE NORTHEAST CORNER OF SITE
ELEVATION = 691.09

OWNER: TOWN & COUNTRY CHICAGO ASSOCIATES, LLC

GENERAL NOTES

1. SURVEY ABOVE IS FOR REFERENCE ONLY AND IS NOT TO SCALE.

Kimley»Horn
© 2017 KIMLEY-HORN AND ASSOCIATES, INC.
1001 WARRENVILLE ROAD, SUITE 350,
LISLE, IL 60532
TEL: 630-585-6550
WWW.KIMLEY-HORN.COM

PROJECT
RAISING CANE
ARLINGTON HEIGHTS ROAD
& E. PALATINE ROAD
ARLINGTON HEIGHTS, IL

**COMPASS
SURVEYING LTD**
ALTA SURVEYS • TOPOGRAPHY • CONSTRUCTION STAKING
2631 GINGER WOODS PARKWAY, STE. 100
AURORA, IL 60502
PHONE: (630) 830-9100 FAX: (630) 830-0001 EMAIL: ADMIN@COMPASSSURVEYING.COM

SCALE: 1" = 20'

V0.1

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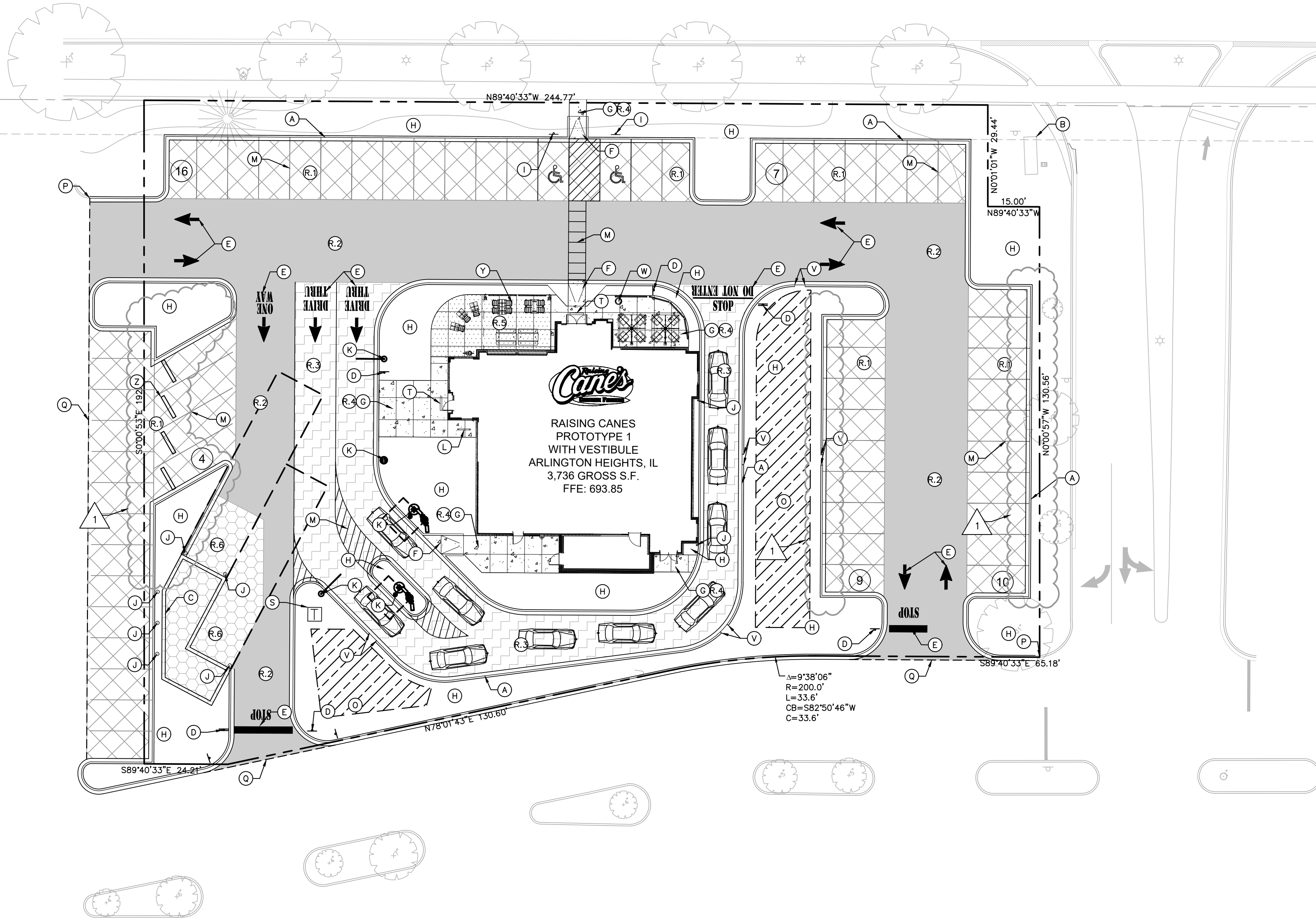
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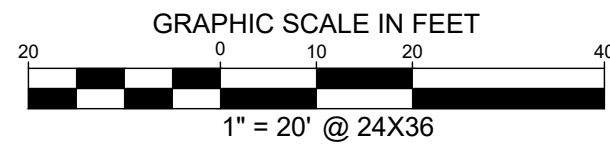
NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 20-42-11

PALATINE ROAD



SITE LEGEND

(A)	B&I2 BARRIER CURB AND GUTTER. SEE CONSTRUCTION DETAILS.
(B)	EXISTING MULTI-TENANT MONUMENT SIGN.
(C)	RECYCLING/TRASH DUMPSTER LOCATION. SEE ARCHITECTURAL PLANS FOR DETAILS OF SCREENING, GATES, BOLLARDS AND MASONRY.
(D)	SITE DIRECTIONAL SIGN. SEE SHEET C5.2 - STRIPING AND SIGNAGE PLAN.
(E)	DIRECTIONAL PAVEMENT MARKING. SEE SHEET C5.2 - STRIPING AND SIGNAGE PLAN.
(F)	BARRIER FREE RAMP. SEE CONSTRUCTION DETAILS.
(G)	CONCRETE SIDEWALK. SEE CONSTRUCTION DETAILS.
(H)	LANDSCAPE AREA. SEE LANDSCAPE PLANS FOR DETAILS.
(I)	ACCESSIBLE PARKING SIGN.
(J)	6\" PIPE BOLLARD. SEE CONSTRUCTION DETAILS.
(K)	DRIVE THRU ORDER BOARD, PRE-ORDER BOARD OR HEIGHT DETECTOR. SEE ARCHITECTURAL PLANS FOR DETAILS.
(L)	BIKE RACK. SEE ARCHITECTURAL PLANS FOR DETAILS.
(M)	PAVEMENT STRIPING. SEE SHEET C5.2 - STRIPING AND SIGNAGE PLAN.
(N)	PROPOSED FIRE HYDRANT. SEE SHEET C7.0 - UTILITY PLAN FOR DETAILS. (NOT USED)
(O)	BIORETENTION FACILITY. SEE CONSTRUCTION DETAILS
(P)	TIE PROPOSED CURB AND GUTTER TO EXISTING CURB & GUTTER WITH SMOOTH, CONTINUOUS TRANSITIONS.
(Q)	SAWCUT LINE.
(R-1)	STANDARD DUTY ASPHALT PAVEMENT. SEE CONSTRUCTION DETAILS.
(R-2)	HEAVY DUTY ASPHALT PAVEMENT. SEE CONSTRUCTION DETAILS .
(R-3)	HEAVY DUTY INTEGRAL COLORED CONCRETE PAVEMENT. SEE CONSTRUCTION DETAILS AND GENERAL NOTES.
(R-4)	STANDARD DUTY CONCRETE PAVEMENT. FOR SIDEWALK. SEE CONSTRUCTION DETAILS.
(R-5)	PATIO AREA PAVING. SEE ARCHITECTURAL PLANS FOR DETAILS.
(R-6)	HEAVY DUTY INTEGRAL COLORED CONCRETE PAVEMENT AT TRASH ENCLOSURE. SEE CONSTRUCTION DETAILS.
(S)	TRANSFORMER PAD LOCATION. SEE ELECTRICAL PLANS FOR DETAILS.
(T)	NoLA TILES. SEE ARCHITECTURAL PLANS FOR DETAILS.
(U)	LIGHT POLE. SEE LIGHTING PLANS FOR DETAILS.
(V)	CURB CUT. SEE SHEET C6.0 - GRADING PLAN FOR DETAILS
(W)	TRASH PAD. SEE ARCHITECTURAL PLANS FOR DETAILS
(X)	GUIDE RAIL IN CURB. SEE ARCHITECTURAL PLANS FOR DETAILS. (NOT USED)
(Y)	COVERED PATIO. SEE ARCHITECTURAL PLANS FOR DETAILS.
(Z)	CONCRETE WHEEL STOPS. SEE CONSTRUCTION DETAILS.



LEGEND

---	LEASE LINE
---	ADJACENT PROPERTY LINE
[Symbol]	PROPOSED CONCRETE CURB & GUTTER
[Symbol]	EXISTING CURB & GUTTER
[Symbol]	PROPOSED PARKING COUNT
[Symbol]	(R-1) STANDARD DUTY ASPHALT PAVEMENT. SEE CONSTRUCTION DETAILS.
[Symbol]	(R-2) HEAVY DUTY ASPHALT PAVEMENT. SEE CONSTRUCTION DETAILS.
[Symbol]	(R-3) HEAVY DUTY CONCRETE PAVEMENT. INTEGRAL COLOR 880 GRAPHITE (IRON OXIDE) SEE GENERAL NOTES - PAVING NOTES.
[Symbol]	(R-4) STANDARD DUTY CONCRETE FOR SIDEWALKS. SEE CONSTRUCTION DETAILS.
[Symbol]	(R-5) PATIO PAVEMENT. SEE ARCHITECTURAL PLANS.
[Symbol]	(R-6) HEAVY DUTY CONCRETE PAVEMENT AT TRASH ENCLOSURE. INTEGRAL COLOR 880 GRAPHITE (IRON OXIDE) SEE CONSTRUCTION DETAILS
[Symbol]	(O) BIORETENTION FACILITY. SEE CONSTRUCTION DETAILS

SITE NOTES

- ALL WORK AND MATERIALS SHALL COMPLY WITH ALL VILLAGE/COUNTY REGULATIONS AND CODES AND O.S.H.A. STANDARDS
- CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR SITE LIGHTING & ELECTRICAL PLAN.
- REFERENCE ARCHITECTURAL PLANS FOR DUMPSTER ENCLOSURE DETAILS.
- EXISTING STRUCTURES WITHIN CONSTRUCTION LIMITS ARE TO BE ABANDONED, REMOVED OR RELOCATED AS NECESSARY. ALL COSTS SHALL BE INCLUDED IN BASE BID.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELOCATIONS, (UNLESS OTHERWISE NOTED ON PLANS) INCLUDING BUT NOT LIMITED TO, ALL UTILITIES, STORM DRAINAGE, SIGNS, TRAFFIC SIGNALS & POLES, ETC. AS REQUIRED. ALL WORK SHALL BE IN ACCORDANCE WITH GOVERNING AUTHORITIES REQUIREMENTS AND PROJECT SITE WORK SPECIFICATIONS AND SHALL BE APPROVED BY SUCH. ALL COSTS SHALL BE INCLUDED IN BASE BID.
- EXISTING SITE BOUNDARY, TOPOGRAPHY, UTILITY AND ROAD INFORMATION TAKEN FROM A SURVEY BY COMPASS SURVEYING, LTD. DATED DECEMBER 17TH 2018, AND REVISED MARCH 14, 2019.
- TOTAL LAND AREA IS 1.02 ACRES.
- ALL PROPOSED PAVING IN VILLAGE R.O.W. AND EASEMENTS TO CONFORM TO VILLAGE OF ARLINGTON HEIGHTS STANDARDS.
- CONTRACTOR SHALL ADJUST EXISTING VALVES, MANHOLE RIMS, ETC. AS NECESSARY TO MATCH FINISHED GRADE.
- REFERENCE LANDSCAPE PLANS FOR PROPOSED BUFFERS, SCREENING, AND PLANTING.
- THERE ARE EXISTING TREES ONSITE, REFER TO LANDSCAPE PLAN AND TREE PRESERVATION PLAN FOR TREES TO REMAIN.
- CONTRACTOR SHALL SAWCUT ALONG ALL EXISTING PAVEMENT TO PROVIDE CLEAN UNIFORM SURFACE TO TIE INTO PROPOSED PAVEMENT.

SITE ANALYSIS TABLE

TOWN AND COUNTRY CENTER		
EXISTING ZONING	B-2 GENERAL BUSINESS/PUD	
PROPOSED USE	RESTAURANT W/ DRIVE THRU	
LOT AREA	44,334 SF / 1.02 AC	
GROSS BUILDING AREA	3,736 SF	
NET SEATING AREA	1,754 SF	
TOTAL PARKING	REQUIRED	PROVIDED
	39 SPACES	46 SPACES
ACCESSIBLE	2 SPACES	2 SPACES

BENCHMARKS

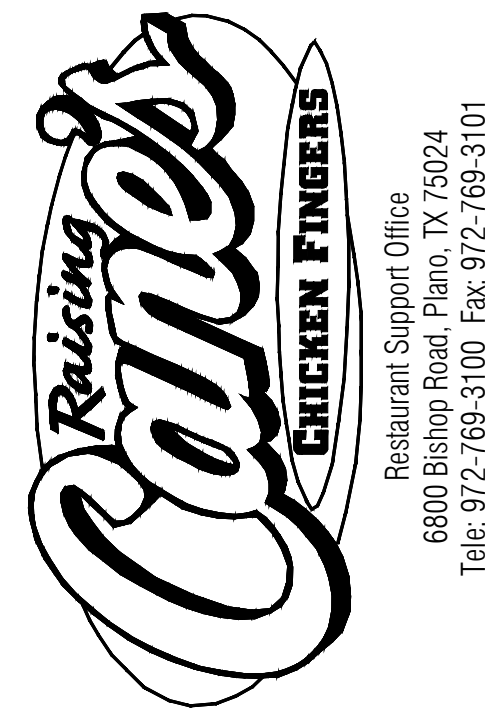
LOCATIONS SHOWN ON SURVEY

REFERENCE BENCHMARK:
COOK COUNTY BENCHMARK DM3905, LOCATED IN PALATINE, 36 FEET NORTH OF THE CENTERLINE OF ANDERSON DRIVE, 17 FEET EAST OF THE CENTERLINE OF REYNOLDS DRIVE, 2.5 FEET WEST OF BACK OF SIDEWALK
DATUM: NAVD83 ELEVATION = 719.509

SITE BENCHMARKS:

SITE BENCHMARK #1
SOUTHEAST BOLT ON FIRE HYDRANT AT THE NORTHWEST CORNER OF SITE
ELEVATION = 696.74

SITE BENCHMARK #2
SOUTHWEST BOLT ON FIRE HYDRANT AT THE ENTRANCE TO MALL, NEAR THE NORTHEAST CORNER OF SITE.
ELEVATION = 691.09



Store:

RAISING CANE'S #484
225 E. PALETINE ROAD
ARLINGTON HEIGHTS, IL

Architect & Project Manager:



Set Control Information:

Setup / Update Date:

ADA Project Manager: JEFF POUNTNEY

Engineer's Information:



PRELIMINARY
ENGINEERING

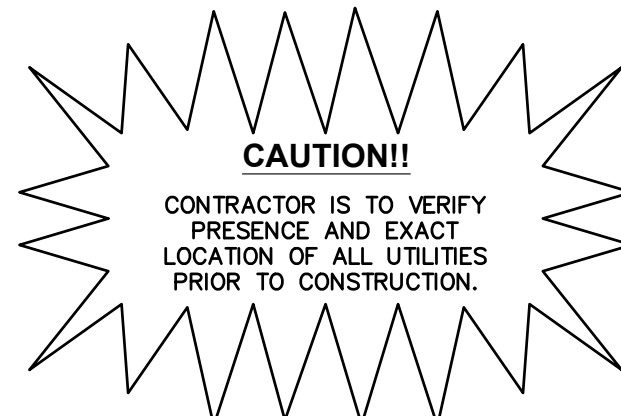
Sheet Revisions: (sheet specific per Designer)

#	Date:	Description:
1	5/24/2019	DEVELOPMENT REVIEW #2

Sheet Title:

SITE KEYNOTE
PLAN

Date:	04/12/2019
Project Number:	168418012
Drawn By:	AEK
Checked By:	JCC
Sheet Number:	C5.0



REVIEW SET - NOT FOR CONSTRUCTION



Store:

RAISING CANE'S #484
225 E. PALATINE ROAD
ARLINGTON HEIGHTS, IL

Architect & Project Manager:

ADA ARCHITECTS, INC.
17710 Detroit Avenue, Lakewood, Ohio 44107
Phone (216) 521-5134 Fax (216) 521-4824
www.adaarchitects.cc

Set Control Information:

Setup / Update Date:

ADA Project Manager: JEFF POUNTNEY

Engineer's Information:

Kimley»Horn
2019 KIMLEY-HORN AND ASSOCIATES, INC.
1001 WARRENVILLE ROAD, SUITE 350, IL 60532
PHONE: 630-487-5550
WWW.KIMLEY-HORN.COM

**PRELIMINARY
ENGINEERING**

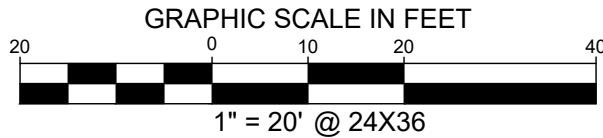
Sheet Revisions: (sheet specific per Designer)

#	Date:	Description:
1	5/24/2019	DEVELOPMENT REVIEW #2

Sheet Title:

**DIMENSION
CONTROL PLAN**

Date:	04/12/2019
Project Number:	168418012
Drawn By:	AEK
Checked By:	JCC
Sheet Number:	C5.1

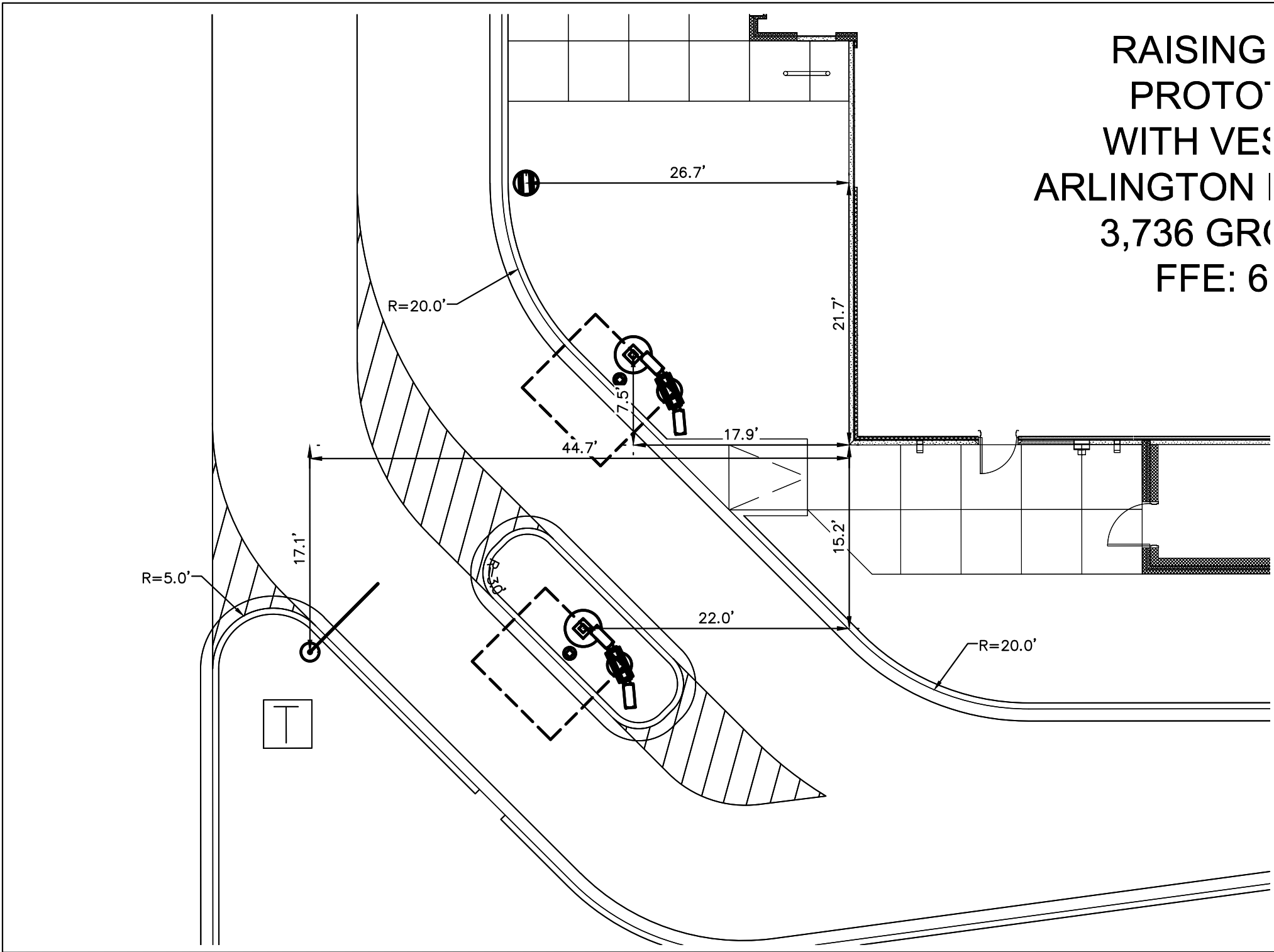


DIMENSION NOTES

1. ALL CURB RADII ARE TO BE 3' UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
3. ALL CURBS SHALL BE 6" STANDARD EXCEPT WHERE OTHERWISE NOTED ON PLANS.
4. REFERENCE LANDSCAPE PLANS FOR PROPOSED BUFFERS, SCREENING, AND PLANTING.

LEGEND

- LEASE LINE
- - - ADJACENT PROPERTY LINE
- PROPOSED CONCRETE CURB
- EXISTING CURB



INSET 1

SCALE: 1"=10'

REFERENCE ARCHITECTURAL PLANS FOR DETAILS AND EXACT LOCATION OF MENU BOARD,
HEIGHT DETECTOR AND PRE-ORDER BOARD.

BENCHMARKS

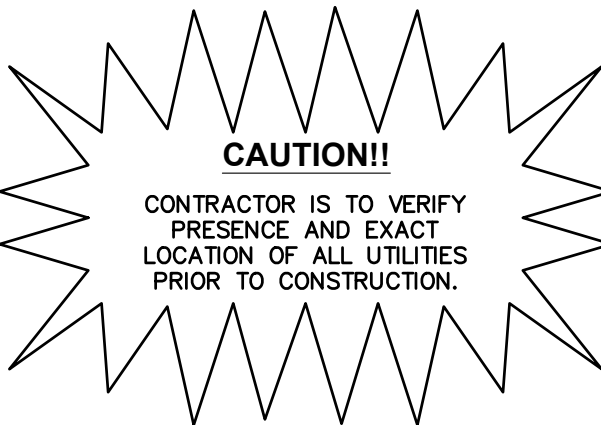
LOCATIONS SHOWN ON SURVEY

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COOK COUNTY BENCHMARK DM3905, LOCATED IN PALATINE, 36 FEET NORTH OF THE
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DRIVE, 2.5 FEET WEST OF BACK OF SIDEWALK.
DATUM: NAVD88 ELEVATION = 719.509

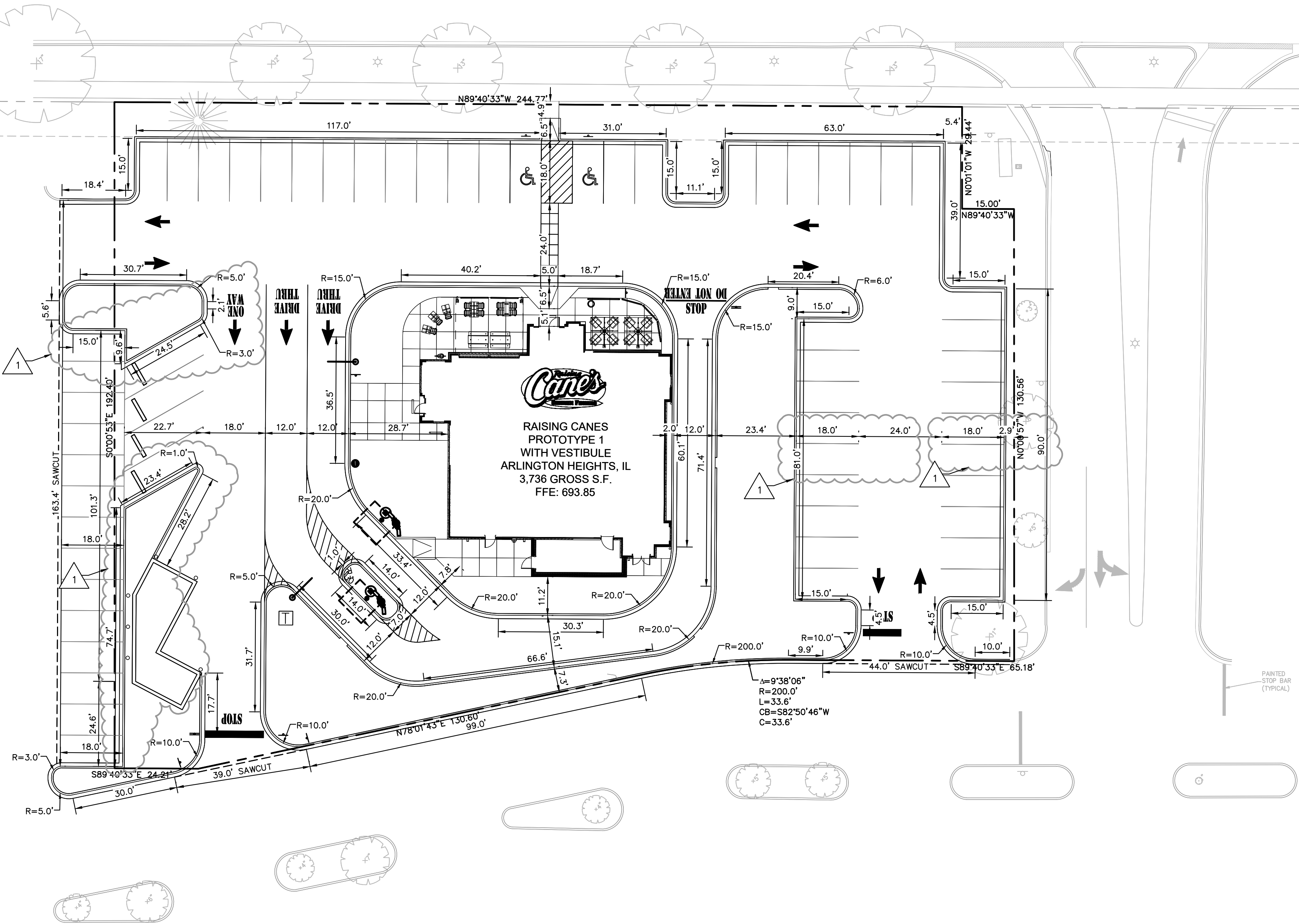
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SOUTHWEST BOLT ON FIRE HYDRANT AT THE ENTRANCE TO MALL, NEAR THE
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ELEVATION = 691.09



PALATINE ROAD



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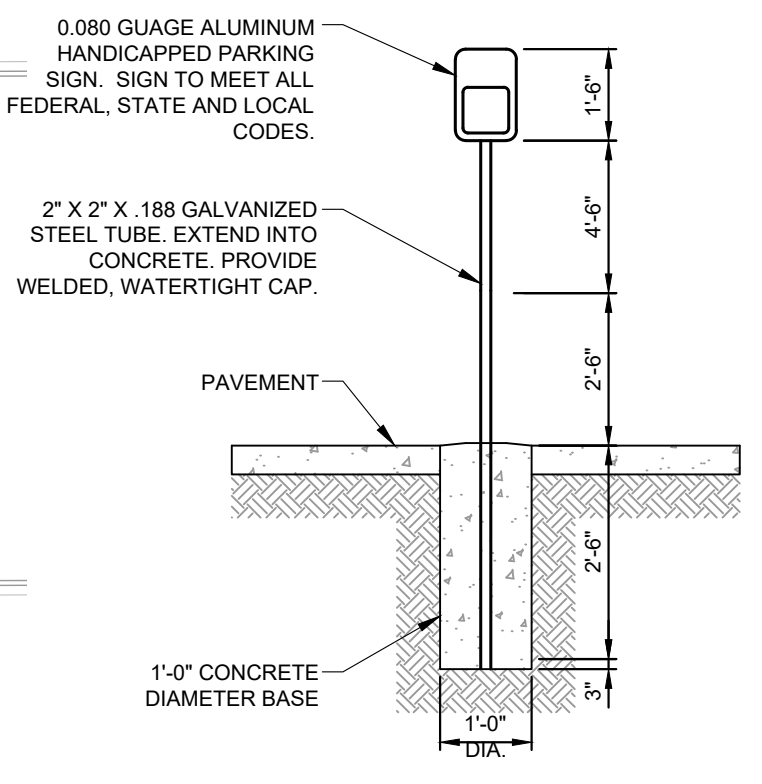
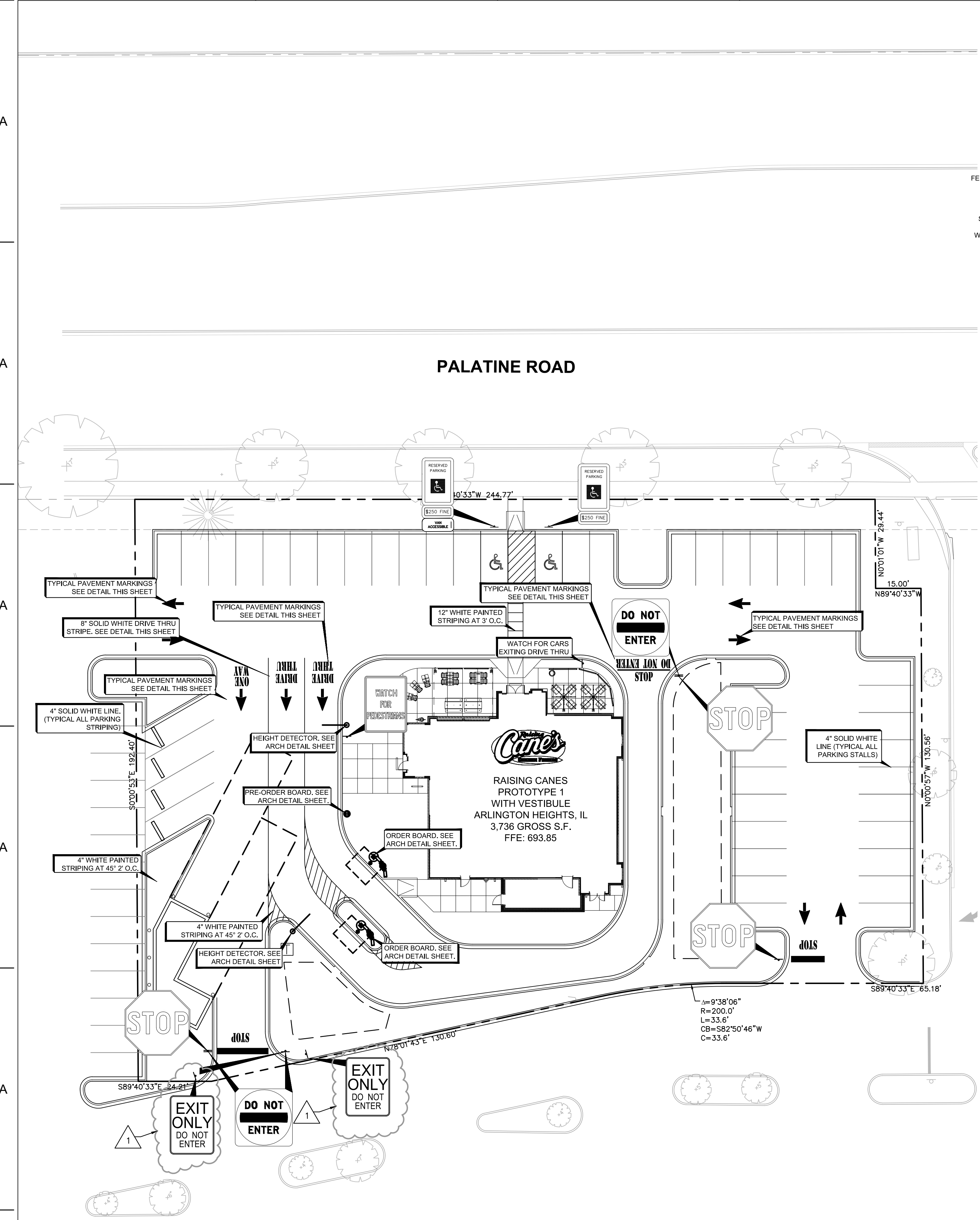
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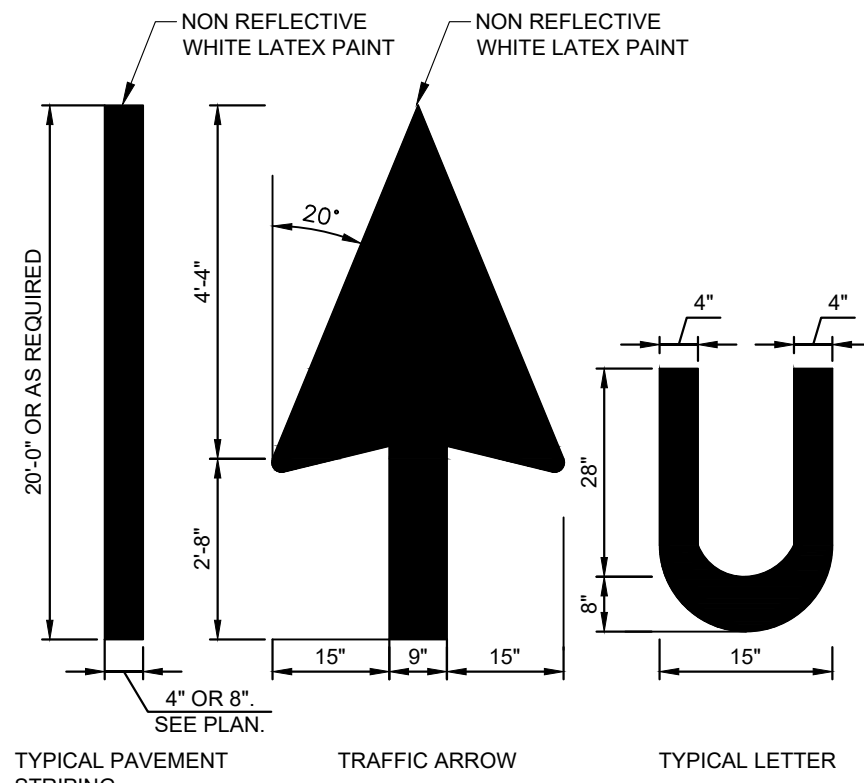
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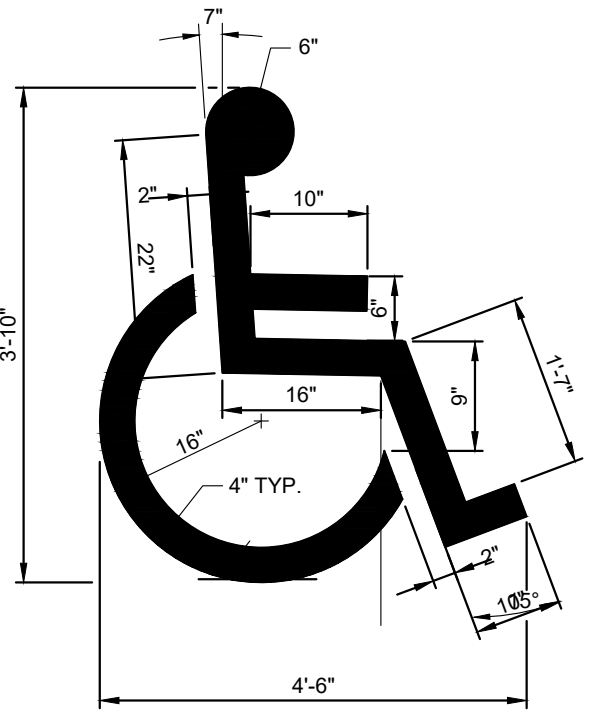
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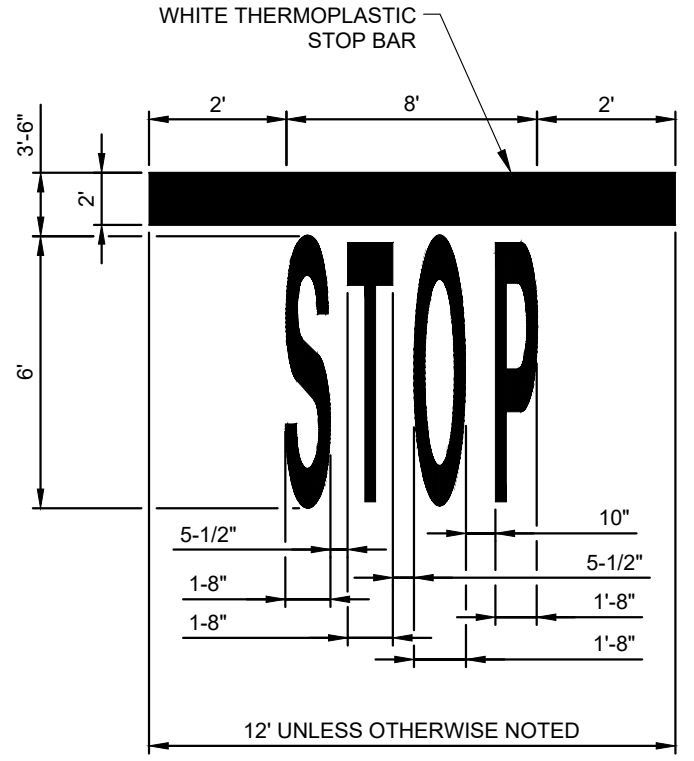
"HANDICAPPED PARKING" SIGN POST DETAIL
N.T.S.



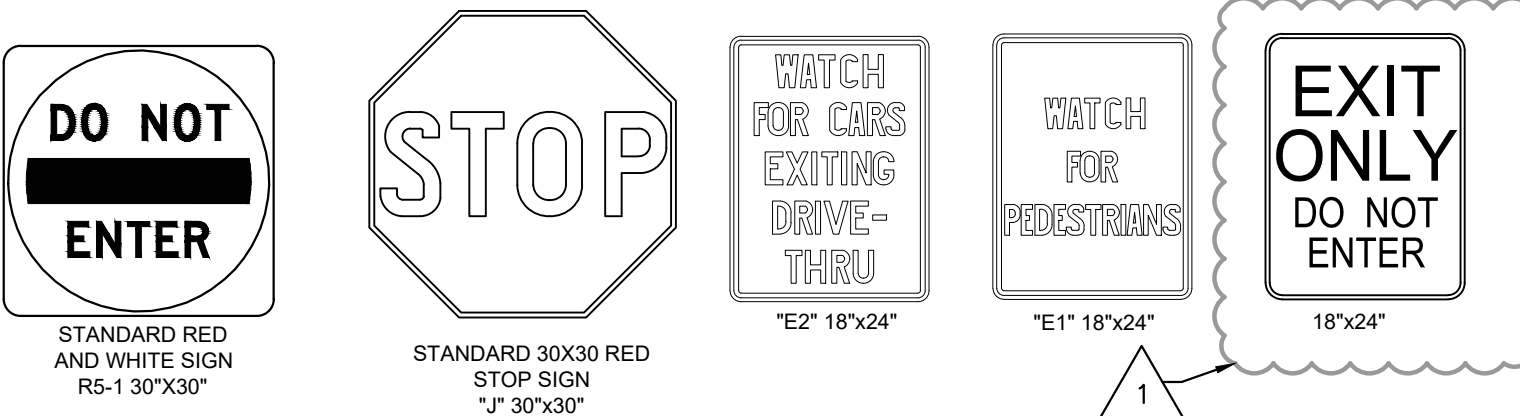
TYPICAL PAVEMENT MARKINGS
N.T.S.



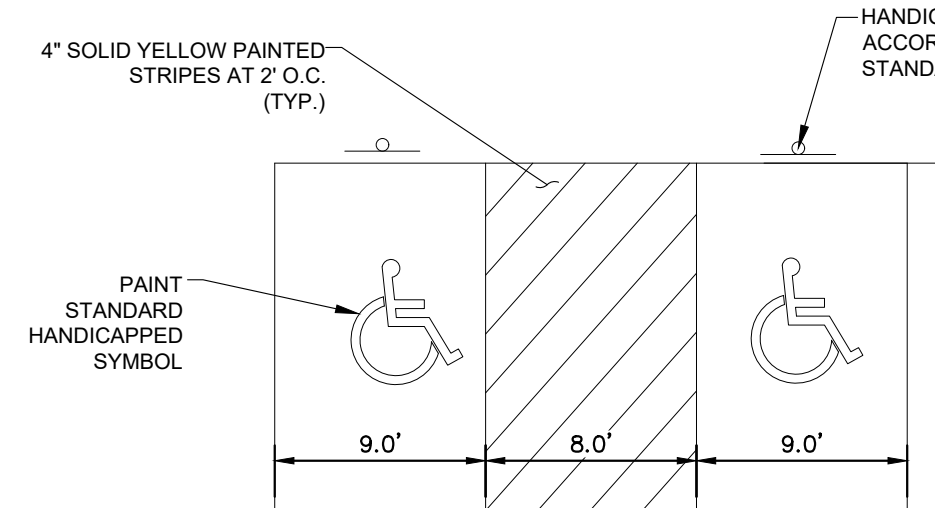
NOTE:
1. ALL TRAFFIC MARKINGS TO BE THERMOPLASTIC AS PER DIMENSIONS SHOWN.
2. HANDICAPPED PARKING SYMBOLS SHALL BE PAINTED YELLOW.
HANDICAPPED PARKING SYMBOL DETAIL
N.T.S.



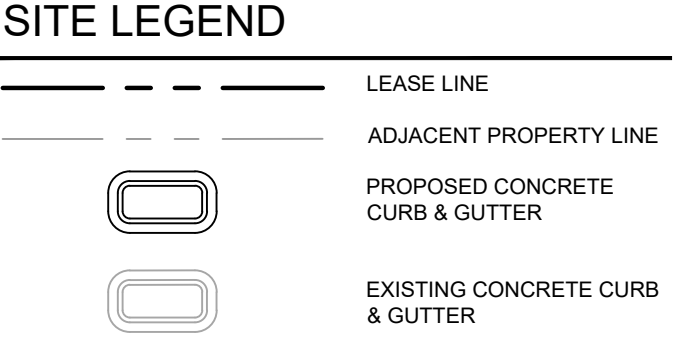
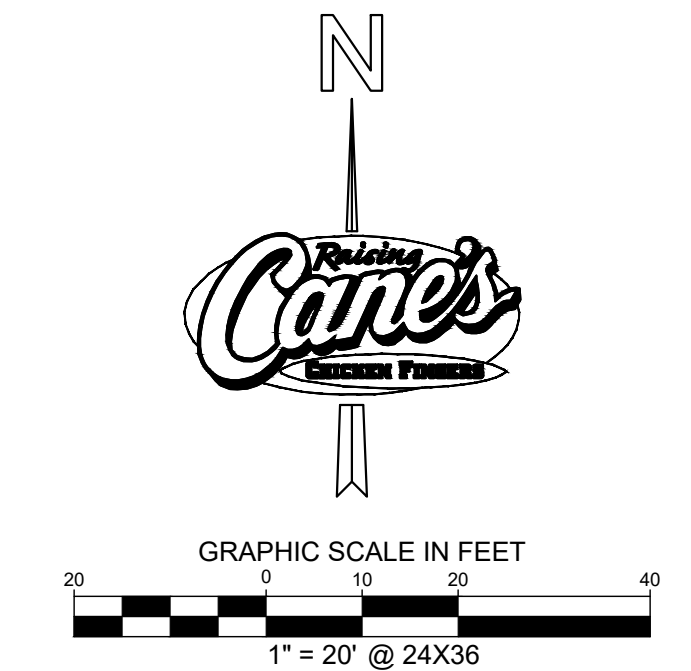
STOP BAR DETAIL
N.T.S.



STANDARD PARKING LOT SIGNS
N.T.S.



NOTES:
1. DIMENSIONS MAY VARY REFER TO SITE GEOMETRICS PLAN.
2. SIGNAGE AND MARKINGS TO BE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.
ACCESSIBLE PARKING DETAIL
N.T.S.

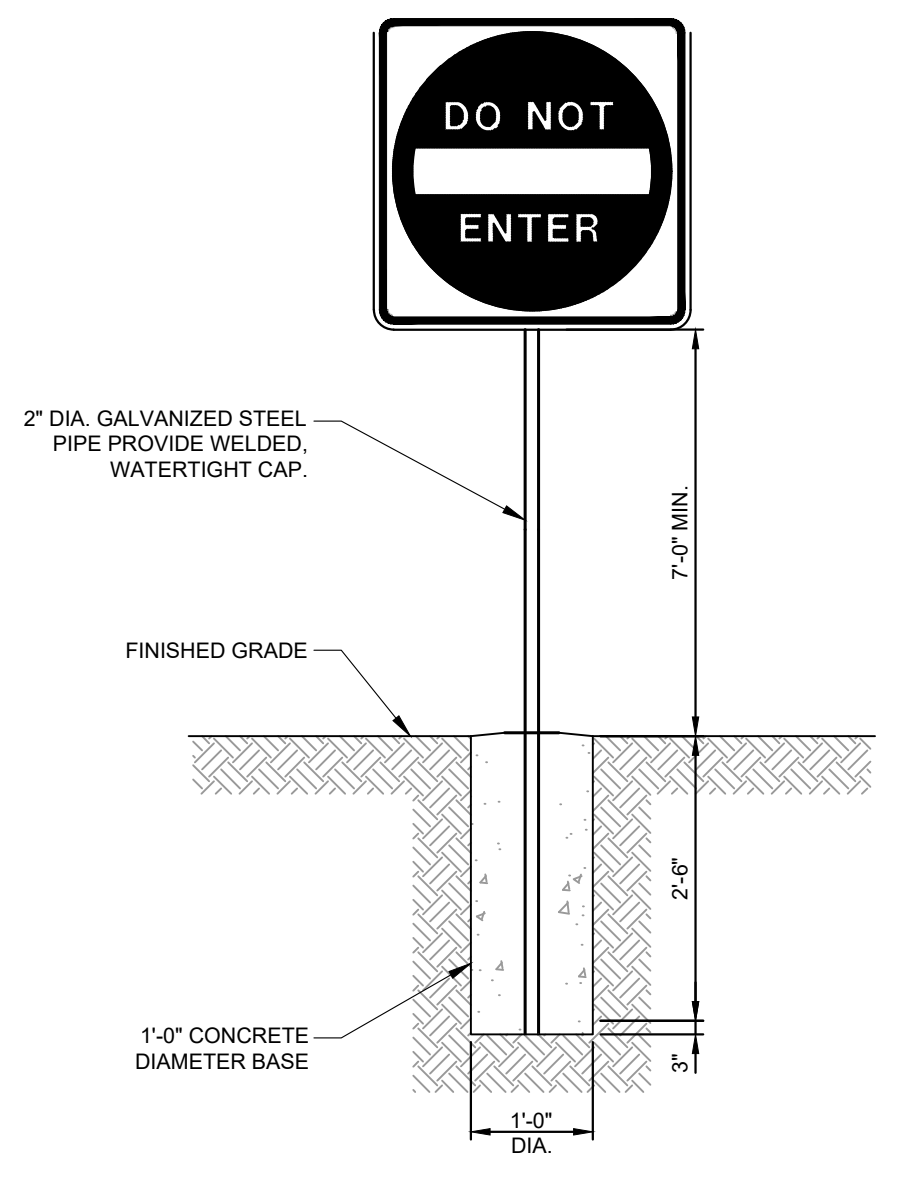


BENCHMARKS
LOCATIONS SHOWN ON SURVEY

REFERENCE BENCHMARK:
COOK COUNTY BENCHMARK DM3905, LOCATED IN PALATINE, 36 FEET NORTH OF THE CENTERLINE OF ANDERSON DRIVE, 17 FEET EAST OF THE CENTERLINE OF REYNOLDS DRIVE, 2.5 FEET WEST OF BACK OF SIDEWALK.
DATUM: NAVD88 ELEVATION = 719.509

SITE BENCHMARKS:
SITE BENCHMARK #1
SOUTHEAST BOLT ON FIRE HYDRANT AT THE NORTHWEST CORNER OF SITE ELEVATION = 696.74

SITE BENCHMARK #2
SOUTHWEST BOLT ON FIRE HYDRANT AT THE ENTRANCE TO MALL, NEAR THE NORTHEAST CORNER OF SITE. ELEVATION = 691.09



SIGN POST DETAIL
N.T.S.



Store:
RAISING CANE'S #484
225 E. PALETINE ROAD
ARLINGTON HEIGHTS, IL

Architect & Project Manager:
ARCHITECTS, INC.
17710 Detroit Avenue Lakewood, Ohio 44107
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Set Control Information:
Setup / Update Date:
ADA Project Manager: JEFF POUNTNEY

Engineer's Information:
Kimley»Horn
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1001 WARRENVILLE ROAD, SUITE 350, IL 60532
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PRELIMINARY ENGINEERING

Sheet Revisions: (sheet specific per Designer)

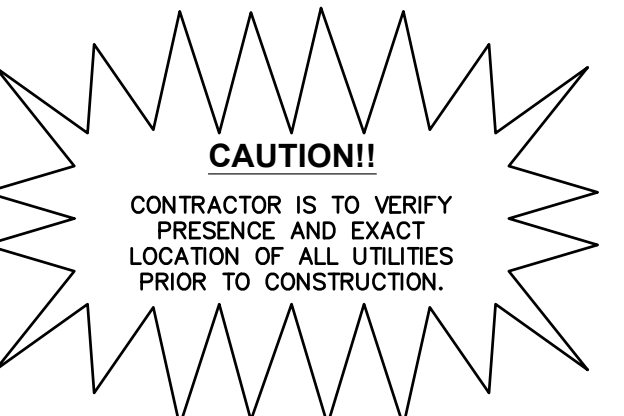
#	Date:	Description:
1	5/24/2019	DEVELOPMENT REVIEW #2

Sheet Title:

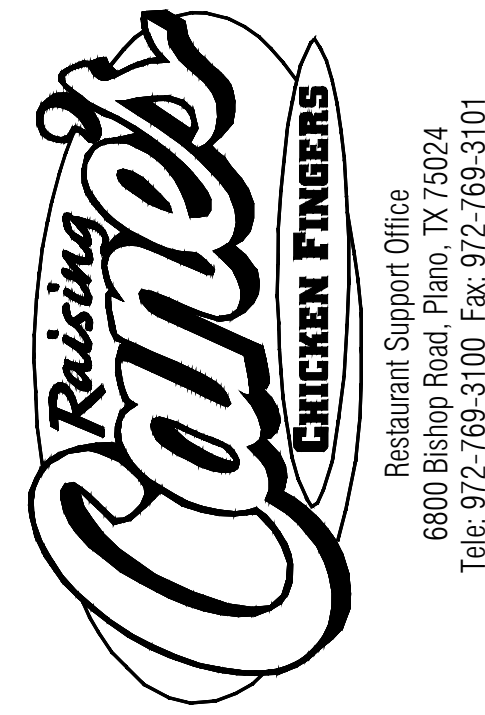
STRIPING AND SIGNAGE PLAN

Date: 04/12/2019
Project Number: 168418012
Drawn By: AEK
Checked By: JCC
Sheet Number:

C5.2



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PRELIMINARY ENGINEERING

Sheet Revisions: (sheet specific per Designer)

#	Date:	Description:
1	5/24/2019	DEVELOPMENT REVIEW #2

Sheet Title:

AUTOTURN PLAN

Date: 04/12/2019
Project Number: 168418012
Drawn By: AEK
Checked By: JCC

Sheet Number:

C5.3

Jun 03 2005 10:37AM Norman J. Toberman Assoc 8474398221 p. 4

08/03/06 PRI 10:45 PAX 920 832 3280 TECH SERVICE Q 004

Pierce Turning Performance Analysis 6/3/2005

Parameters:

Inside Cramp Angle:	40.00 °
Axle Track:	82.92 in.
Wheel Offset:	5.25 in.
Tread Width:	17.40 in.
Chassis Overhang:	65.99 in.
Additional Bumper Depth:	22.00 in.
Front Overhang:	146.60 in.
Wheelbase:	257.00 in.

Calculated Turning Radii:

Inside Turn:	24 ft. 4 in.
Curb to Curb:	40 ft. 0 in.
Wall to Wall:	47 ft. 6 in.

Comments:

Aerial Application
JOB# 13807 FOR REFERENCE ONLY

Components

PRIDE #	Description
0090913	Axle, Front, Oshkosh TAK-4, Non Drive, 24,000 lb, D3X/Qm/AXT
0052978	Tires, Goodyear, 425/65R22.50 20 ply G286 tread
0050220	Drive-2000 Chassis
0012246	Bumper, 22" extended - all chassis
0022160	Aerial, 100' Pierce Platform

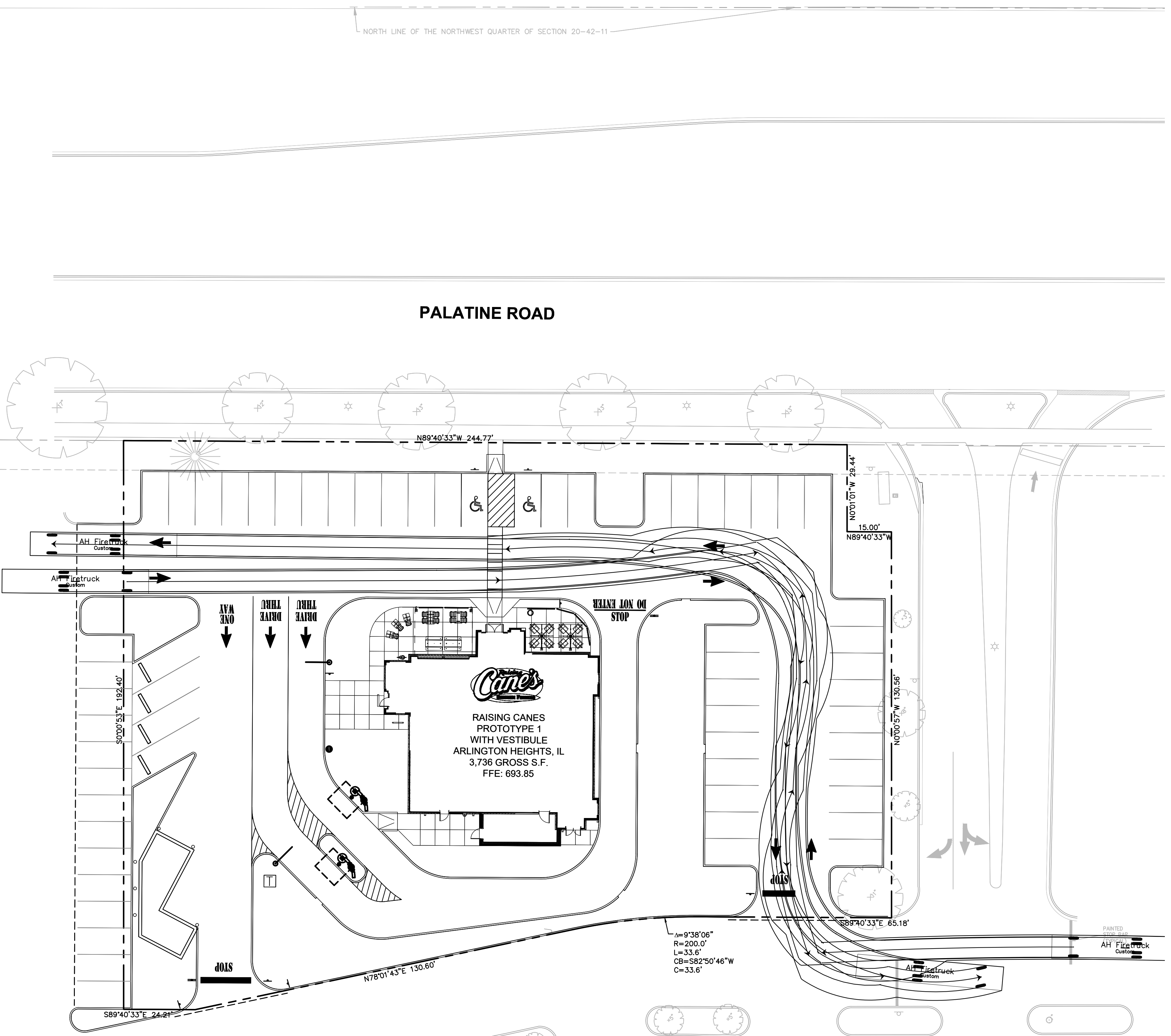
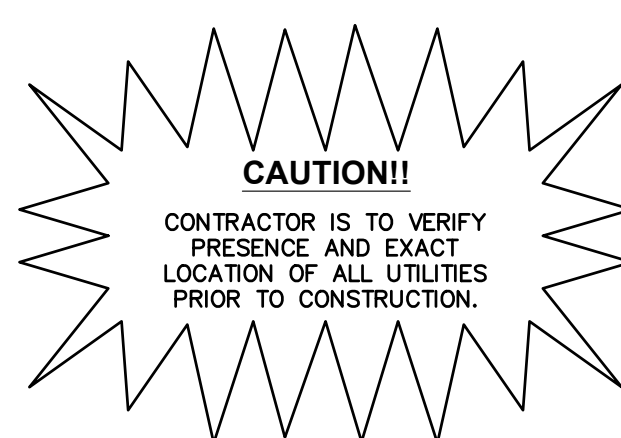
Notes:

Actual Inside Cramp Angle may be less due to highly specialized options.

Curb to Curb turning radius calculated for a 9.00 inch curb.

Reduce turning radius by 33% if vehicle is equipped with all-wheel steer.

Page 1 of 2



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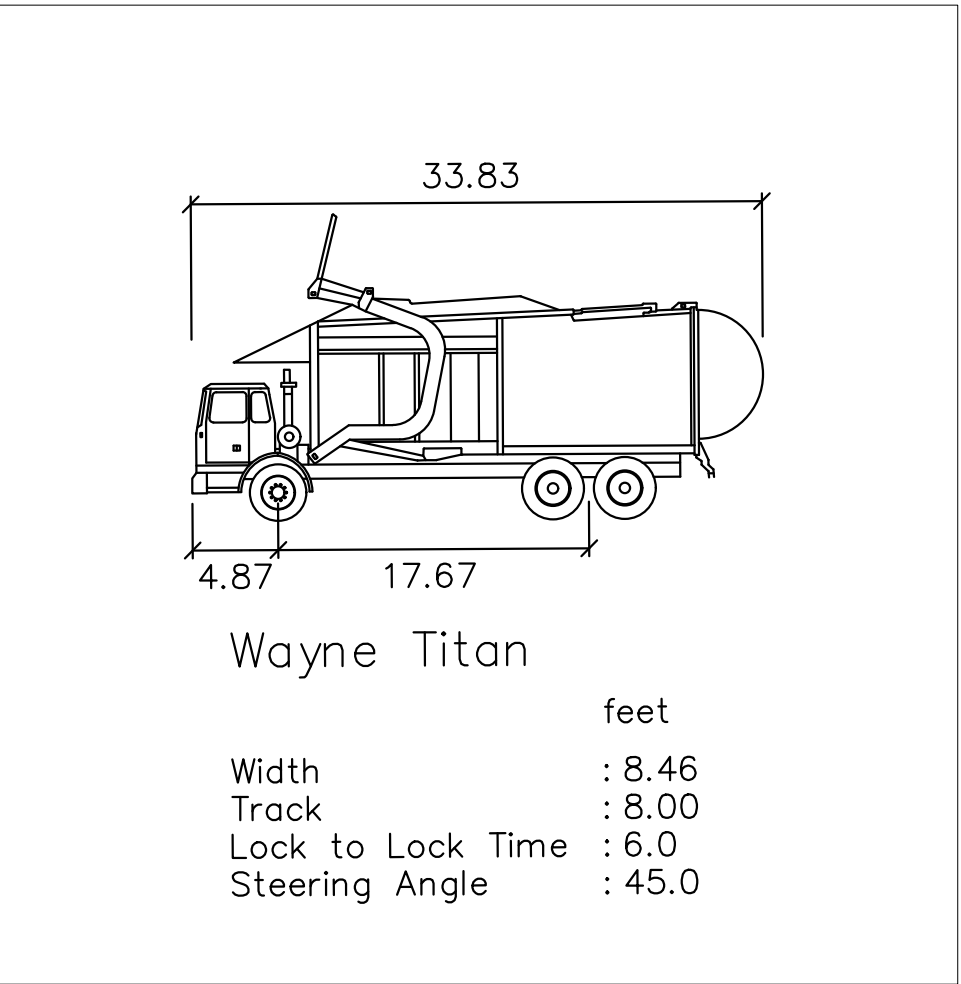
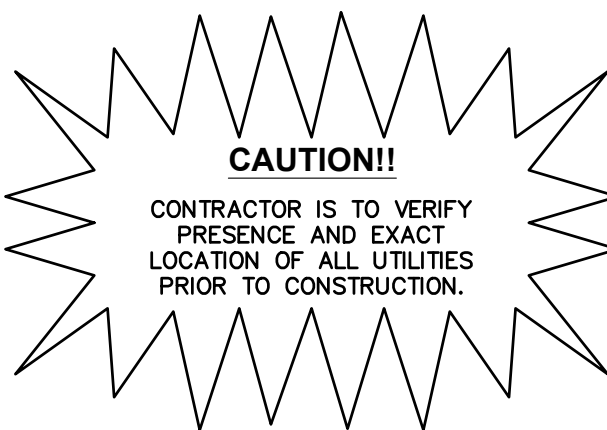
Sheet Title:

AUTOTURN PLAN

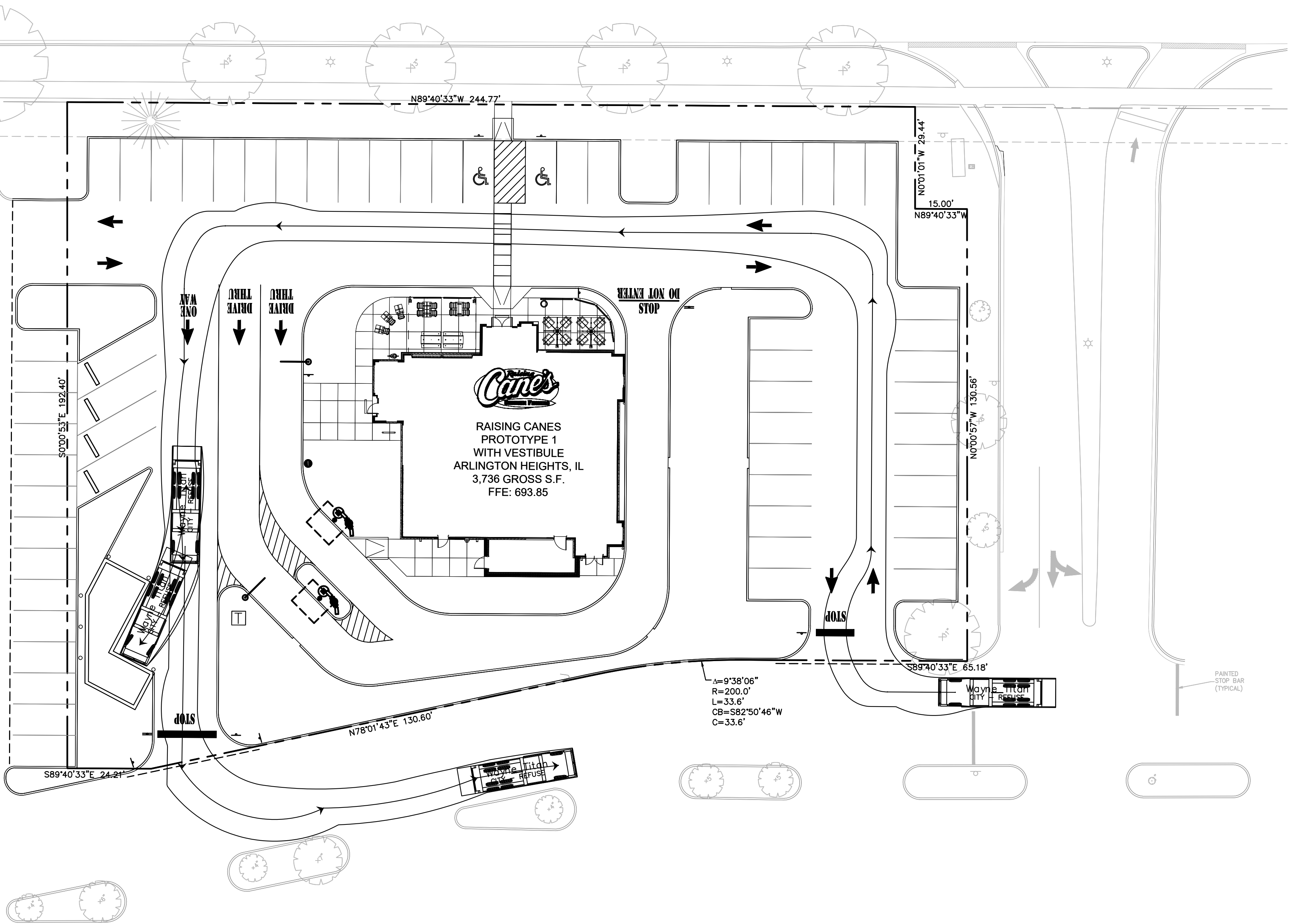
Date:	04/12/2019
Project Number:	168418012
Drawn By:	AEK
Checked By:	JCC

Sheet Number:

C5.4



PALATINE ROAD



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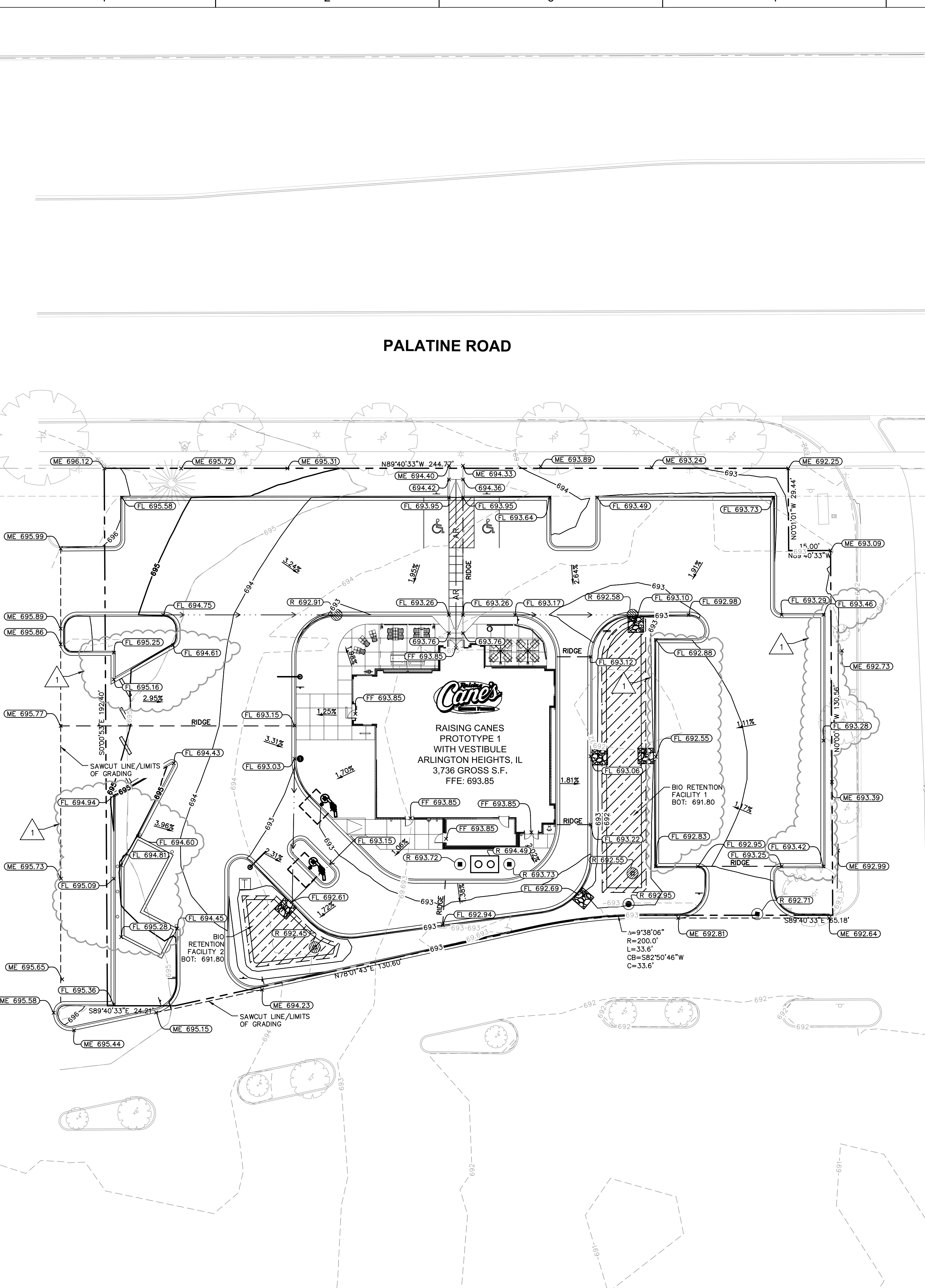
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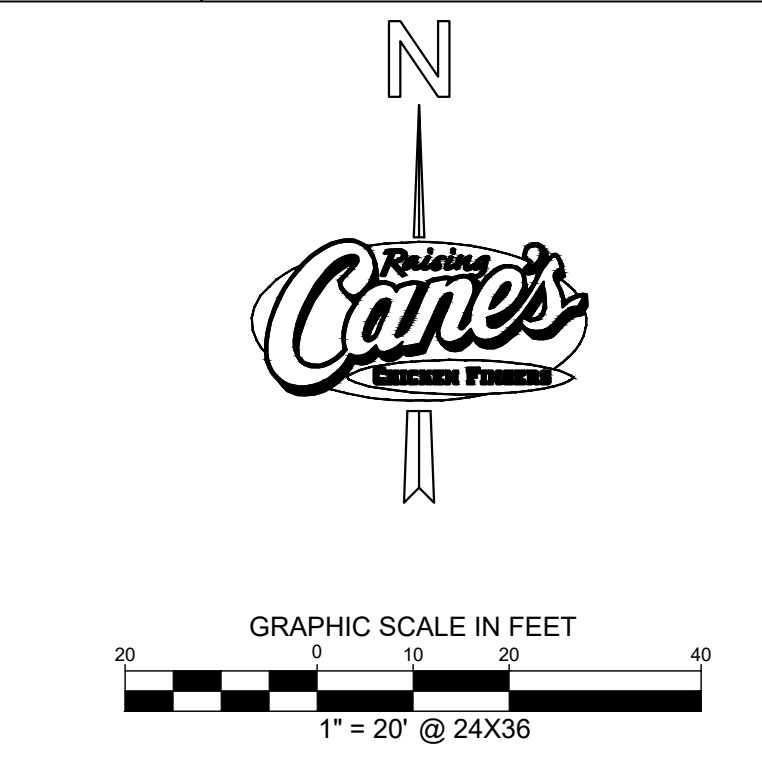
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GRADING NOTES

- 1. ALL CONSTRUCTION TO BE IN ACCORDANCE WITH THESE PLANS AND THE VILLAGE OF ARLINGTON HEIGHTS STANDARDS AND SPECIFICATIONS.
- 2. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL MAKE CERTAIN THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS APPROVED BY ALL OF THE PERMITTING AUTHORITIES.
- 3. THE GENERAL CONTRACTOR AND ALL SUB-CONTRACTORS SHALL VERIFY THE SUITABILITY OF ALL EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE COMMENCEMENT OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES. MINOR ADJUSTMENTS TO FINISH GRADE TO ACCOMPLISH SPOT DRAINAGE ARE ACCEPTABLE. IF NECESSARY, UPON PRIOR APPROVAL OF ENGINEER, PAVING INSTALLED SHALL "FLUSH OUT" AT ANY JUNCTURE WITH EXISTING PAVING.
- 4. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
- 5. ALL CUT OR FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.
- 6. EXISTING AND PROPOSED GRADE CONTOUR INTERVALS SHOWN AT 1 FOOT.
- 7. THE CONTRACTOR SHALL ADHERE TO ALL TERMS & CONDITIONS AS OUTLINED IN THE EPA OR APPLICABLE STATE GENERAL N.P.D.E.S. PERMIT FOR STORM WATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES.
- 8. CONTRACTOR SHALL ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH FIT AND CONTINUOUS GRADE.
- 9. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS.
- 10. FOR CURRENT TOPOGRAPHIC INFORMATION REFER TO SHEETS V0.0 AND V0.1 ALTA SURVEY. IF THE CONTRACTOR DOES NOT ACCEPT EXISTING TOPOGRAPHY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, THEN THE CONTRACTOR SHALL SUPPLY, AT THEIR EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED LAND SURVEYOR TO THE OWNER FOR REVIEW.
- 11. ALL UNSURFACED AREAS DISTURBED BY GRADING OPERATION SHALL RECEIVE 4 INCHES OF TOPSOIL. CONTRACTOR SHALL APPLY STABILIZATION FABRIC TO ALL SLOPES 4H:1V OR STEEPER. CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH GOVERNING SPECIFICATIONS UNTIL A HEALTHY STAND OF VEGETATION IS OBTAINED.
- 12. CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO SAME.
- 13. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT BUILDING FOOTPRINT DIMENSIONS.
- 14. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS AND FINAL GEOTECH REPORT FOR BUILDING SUBGRADE PREPARATION REQUIREMENTS.
- 15. CONTRACTOR SHALL ADJUST EXISTING VALVES, MANHOLE RIMS, ETC. AS NECESSARY TO MATCH FINISHED GRADE. CONTRACTOR SHALL CONFIRM ALL EXISTING MANHOLES WITHIN PROJECT AREA ARE IN COMPLIANCE WITH CURRENT VILLAGE OF ARLINGTON HEIGHTS AND COOK COUNTY REQUIREMENTS. CONTRACTOR SHALL IMPROVE STRUCTURES AS NECESSARY TO MEET CURRENT REQUIREMENTS.
- 16. ALL ELEVATIONS ARE TOP OF PAVEMENT UNLESS NOTED OTHERWISE, TO GET TOP OF CURB ELEVATIONS ADD 6" TO THE ELEVATION SHOWN.
- 17. GRADING FOR ALL SIDEWALKS AND ACCESSIBLE ROUTES INCLUDING CROSSING DRIVEWAYS SHALL CONFORM TO ADA STANDARDS. SLOPES SHALL NOT EXCEED 5% LONGITUDINAL SLOPE OR 2% CROSS SLOPE. SIDEWALK ACCESS TO EXTERNAL BUILDING DOORS SHALL BE ADA COMPLIANT. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF ADA CRITERIA CANNOT BE MET AT ANY LOCATION.
- 18. ANY PROPOSED CONTOURS SHOWN ARE APPROXIMATE. PROPOSED SPOT ELEVATIONS AND DESIGNATED GRADIENT ARE TO BE USED IN THE EVENT OF ANY DISCREPANCIES.
- 19. REFER TO EROSION CONTROL PLAN FOR EROSION CONTROL DEVICES TO BE INSTALLED PRIOR TO COMMENCING GRADING OPERATIONS.
- 20. ALL VEGETATION SHALL BE CLEARED AND GRUBBED FOR ALL AREAS TO BE DISTURBED.
- 21. ALL FILL TO BE PLACED SHALL BE IN ACCORDANCE WITH THE CURRENT APPLICABLE GEOTECHNICAL REPORT RECOMMENDATIONS.



GRADING LEGEND

- PROPOSED LEASE LINE
- ADJACENT PROPERTY LINE
- EXISTING EASEMENT
- 700 EXISTING CONTOUR
- 700 PROPOSED CONTOUR
- AR ACCESSIBLE ROUTE
- 1.00% PROPOSED FLOW ARROW WITH SLOPE
- FL FLOW LINE
- TS TOP OF SLAB (DUMPSTER PAD)
- ME MATCH EXISTING ELEVATION
- FG FINISHED GRADE
- EG EXISTING GRADE
- R RIM ELEVATION
- PROPOSED RIDGE
- SAWCUT LINE
- PROPOSED SWALE
- 100 YEAR OVERLAND FLOW ROUTE

UTILITY LEGEND

- EX. HYDRANT
- EX. SANITARY SEWER MANHOLE
- EX. STORM MANHOLE
- EX. STORM STRUCTURE
- PROPOSED STORM STRUCTURE
- PROPOSED SANITARY MANHOLE
- PROPOSED STORM/SANITARY CLEANOUT
- PROPOSED WATER STRUCTURE
- PROPOSED TRANSFORMER
- LIGHT POLE



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PRELIMINARY ENGINEERING

Sheet Revisions: (sheet specific per Designer)

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1	5/24/2019	DEVELOPMENT REVIEW #2

Sheet Title:

GRADING PLAN

Date: 04/12/2019

Project Number: 168418012

Drawn By: AEK

Checked By: JCC

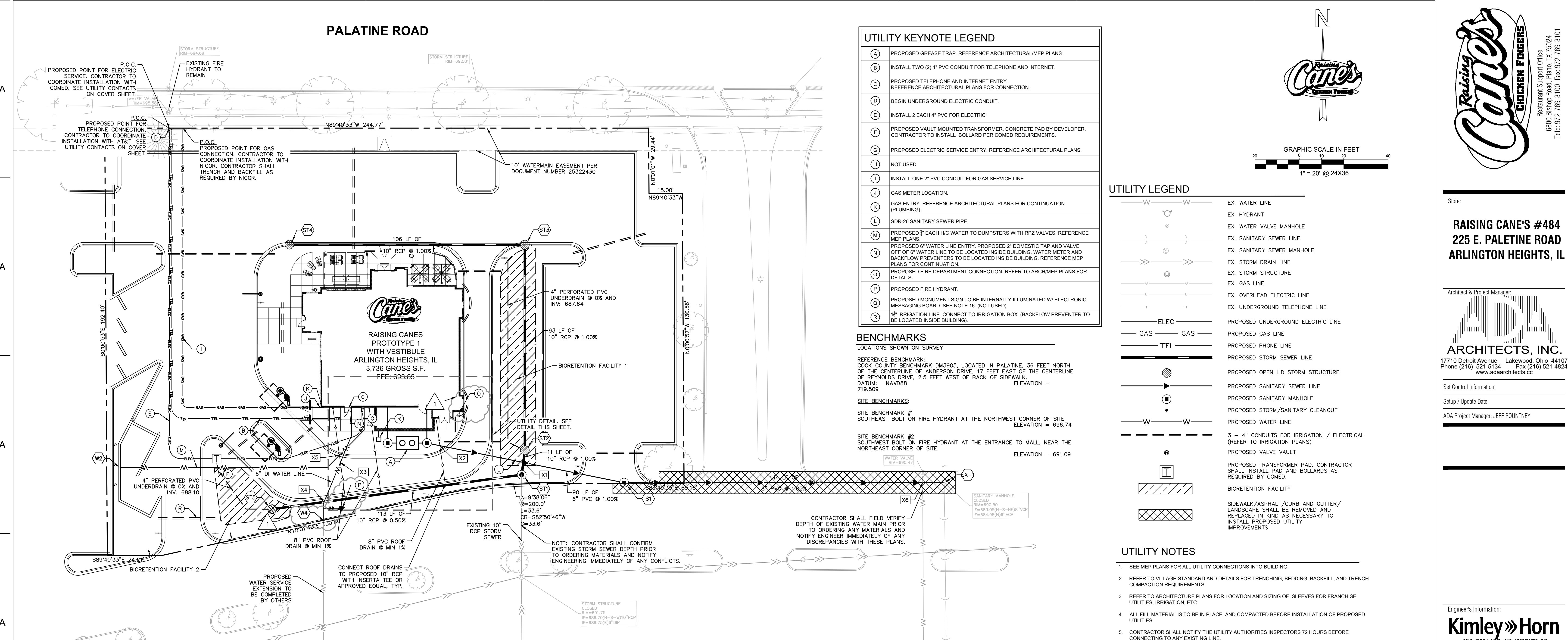
Sheet Number:

CAUTION!!

CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

C6.0

REVIEW SET - NOT FOR CONSTRUCTION



STORM STRUCTURE TABLE		STORM STRUCTURE TABLE	
STRUCTURE NAME:	DETAILS:	STRUCTURE NAME:	DETAILS:
ST1	4' DIA STORM MH (TYPE A) WITH NEENAH R-1772 FRAME/LID TO BE CONSTRUCTED ON TOP OF EXISTING 10" STORM SEWER RIM: 692.95 INV IN: 687.53 (N) INV IN: 687.53 (W) INV OUT: 687.43 (S)	ST4	2' DIA STORM INLET WITH NEENAH R-2540 FRAME/GRATE RIM: 692.61 INV OUT: 689.63 (E)
ST2	4' DIA (TYPE A) CATCH BASIN WITH NEENAH R-4340-B GRATE. CONNECT UNDERDRAIN FOR BIORETENTION FACILITY 1 RIM: 692.55 INV IN: 687.64 (N) INV OUT: 687.64 (S)	ST5	2' DIA STORM INLET WITH NEENAH R-4340-B GRATE. CONNECT UNDERDRAIN FOR BIORETENTION FACILITY 2 RIM: 692.45 INV OUT: 688.10 (E)
ST3	4' DIA (TYPE A) CATCHBASIN WITH NEENAH R-2540 FRAME/GRATE RIM: 692.58 INV IN: 688.57 (W) INV OUT: 688.57 (S)		

ROOF DRAIN STRUCTURE TABLE	
STRUCTURE NAME:	DETAILS:
RD1	ROOF DRAIN INV OUT: 688.00 (S)
RD2	ROOF DRAIN INV OUT: 688.24 (S)
RD3	ROOF DRAIN INV OUT: 688.34 (S)

WATER STRUCTURE TABLE	
STRUCTURE NAME:	DETAILS:
W1	3/4" WATER BUILDING CONNECTION
W2	3/4" WATER CONNECTION TO TRASH ENCLOSURE
W3	6" FIRE WATER BUILDING CONNECTION
W4	CONNECT TO 6" STUB LEFT BY OTHERS

SANITARY STRUCTURE TABLE		SANITARY STRUCTURE TABLE	
STRUCTURE NAME:	DETAILS:	STRUCTURE NAME:	DETAILS:
EX-1	CONNECT TO EXISTING SANITARY MH RIM: 692.61 INV IN: 683.15 (W) INV IN: 684.98 (N) INV OUT: 683.05 (S) INV OUT: 683.05 (NE)	S4	4' DIA SANITARY MH RIM: 693.72 INV IN: 688.64 (N) INV OUT: 688.54 (E)
S1	4' DIA SANITARY MH RIM: 692.71 INV IN: 684.69 (W) INV OUT: 684.59 (E)	S5	SANITARY BUILDING CONNECTION FOR GREASE TRAP RIM: 693.85 INV OUT: 688.80 (S)
S2	4' DIA SANITARY DROP MH RIM: 693.73 INV IN: 688.26 (W) INV IN: 688.64 (N) INV OUT: 685.60 (E)	S6	SANITARY BUILDING CONNECTION FOR WASTE RIM: 693.85 INV OUT: 688.80 (S)
S3	GREASE TRAP RIM: 694.49 INV IN: 688.50 (W) INV OUT: 688.30 (E)		

UTILITY CROSSING LEGEND

X1 10" STORM 6" SAN. B/P = 688.54 T/P = 685.67

X2 6" STORM 6" SAN. B/P = 690.28 T/P = 688.54

X3 6" STORM 6" WATER B/P = 690.28 T/P = 688.78

X4 10" STORM 6" WATER B/P = 690.38 T/P = 688.88

X5 6" STORM 6" WATER B/P = 690.55 T/P = 689.05

X6 6" WATER 6" SSWR B/P = 684.47 T/P = 683.75

NOTE: WHERE THERE IS LESS THAN 10 FT HORIZONTAL OR 18-IN VERTICAL SEPARATION BETWEEN A SEWER AND WATER MAIN, OR IF WATER MAIN CROSSES UNDER A SEWER, WATER MAIN QUALITY PIPE IS TO BE USED TO CONSTRUCT THE SEWER OR EITHER PIPE IS TO BE ENCASED. THE PROTECTION MUST EXTEND ON EACH SIDE OF THE CROSSING UNTIL THE DISTANCE BETWEEN THE WATER MAIN AND SEWER IS AT LEAST 10 FT. ACCEPTABLE WATER MAIN QUALITY PIPE INCLUDES PVC SDR/VMO MEETING ASTM D2241 WITH JOINTS MEETING ASTM D3133 OR DUCTILE IRON PIPE. RCP STORM SEWER WITH FLEXIBLE GASKET JOINTS MEETING ASTM C361 OR ASTM C443 IS ALSO ACCEPTABLE AT CROSSINGS.

UTILITY KEYNOTE LEGEND

(A) PROPOSED GREASE TRAP. REFERENCE ARCHITECTURAL/MEP PLANS.

(B) INSTALL TWO (2) 4" PVC CONDUIT FOR TELEPHONE AND INTERNET.

(C) PROPOSED TELEPHONE AND INTERNET ENTRY. REFERENCE ARCHITECTURAL PLANS FOR CONNECTION.

(D) BEGIN UNDERGROUND ELECTRIC CONDUIT.

(E) INSTALL 2 EACH 4" PVC FOR ELECTRIC

(F) PROPOSED VAULT MOUNTED TRANSFORMER. CONCRETE PAD BY DEVELOPER. CONTRACTOR TO INSTALL BOLLARD PER COMED REQUIREMENTS.

(G) PROPOSED ELECTRIC SERVICE ENTRY. REFERENCE ARCHITECTURAL PLANS.

(H) NOT USED

(I) INSTALL ONE 2" PVC CONDUIT FOR GAS SERVICE LINE

(J) GAS METER LOCATION.

(K) GAS ENTRY. REFERENCE ARCHITECTURAL PLANS FOR CONTINUATION (PLUMBING).

(L) SDR-26 SANITARY SEWER PIPE.

(M) PROPOSED 3/4" EACH H/C WATER TO DUMPSTERS WITH RPZ VALVES. REFERENCE MEP PLANS.

(N) PROPOSED 6" WATER LINE ENTRY. PROPOSED 2" DOMESTIC TAP AND VALVE OFF OF 6" WATER LINE TO BE LOCATED INSIDE BUILDING. WATER METER AND BACKFLOW PREVENTERS TO BE LOCATED INSIDE BUILDING. REFERENCE MEP PLANS FOR CONTINUATION.

(O) PROPOSED FIRE DEPARTMENT CONNECTION. REFER TO ARCH/MEP PLANS FOR DETAILS.

(P) PROPOSED FIRE HYDRANT.

(Q) PROPOSED MONUMENT SIGN TO BE INTERNALLY ILLUMINATED W/ ELECTRONIC MESSAGING BOARD. SEE NOTE 16. (NOT USED)

(R) 12" IRRIGATION LINE. CONNECT TO IRRIGATION BOX. (BACKFLOW PREVENTER TO BE LOCATED INSIDE BUILDING).

BENCHMARKS

LOCATIONS SHOWN ON SURVEY

REFERENCE BENCHMARK:
COOK COUNTY BENCHMARK DM3905, LOCATED IN PALATINE, 36 FEET NORTH OF THE CENTERLINE OF ANDERSON DRIVE, 17 FEET EAST OF THE CENTERLINE OF REYNOLDS DRIVE, 2.5 FEET WEST OF BACK OF SIDEWALK.
DATUM: NAVD88 ELEVATION = 719.509

SITE BENCHMARKS:

SITE BENCHMARK #1
SOUTHEAST BOLT ON FIRE HYDRANT AT THE NORTHWEST CORNER OF SITE. ELEVATION = 696.74

SITE BENCHMARK #2
SOUTHWEST BOLT ON FIRE HYDRANT AT THE ENTRANCE TO MALL, NEAR THE NORTHEAST CORNER OF SITE. ELEVATION = 691.09

UTILITY LEGEND

W W EX. WATER LINE

EX. HYDRANT

EX. WATER VALVE MANHOLE

EX. SANITARY SEWER LINE

EX. SANITARY SEWER MANHOLE

EX. STORM DRAIN LINE

EX. STORM STRUCTURE

EX. GAS LINE

EX. OVERHEAD ELECTRIC LINE

EX. UNDERGROUND TELEPHONE LINE

ELEC PROPOSED UNDERGROUND ELECTRIC LINE

GAS PROPOSED GAS LINE

TEL PROPOSED PHONE LINE

PROPOSED STORM SEWER LINE

PROPOSED OPEN LID STORM STRUCTURE

PROPOSED SANITARY SEWER LINE

PROPOSED SANITARY MANHOLE

PROPOSED STORM/SANITARY CLEANOUT

PROPOSED WATER LINE

3 - 4" CONDUITS FOR IRRIGATION / ELECTRICAL (REFER TO IRRIGATION PLANS)

PROPOSED VALVE VAULT

PROPOSED TRANSFORMER PAD. CONTRACTOR SHALL INSTALL PAD AND BOLLARDS AS REQUIRED BY COMED.

BIORETENTION FACILITY

SIDEWALK/ASPHALT/CURB AND GUTTER/ LANDSCAPE SHALL BE REMOVED AND REPLACED IN KIND AS NECESSARY TO INSTALL PROPOSED UTILITY IMPROVEMENTS

UTILITY NOTES

1. SEE MEP PLANS FOR ALL UTILITY CONNECTIONS INTO BUILDING.

2. REFER TO VILLAGE STANDARD AND DETAILS FOR TRENCHING, BEDDING, BACKFILL, AND TRENCH COMPACTION REQUIREMENTS.

3. REFER TO ARCHITECTURE PLANS FOR LOCATION AND SIZING OF SLEEVES FOR FRANCHISE UTILITIES, IRRIGATION, ETC.

4. ALL FILL MATERIAL IS TO BE IN PLACE, AND COMPACTED BEFORE INSTALLATION OF PROPOSED UTILITIES.

5. CONTRACTOR SHALL NOTIFY THE UTILITY AUTHORITIES INSPECTORS 72 HOURS BEFORE CONNECTING TO ANY EXISTING LINE.

6. ALL SANITARY SEWER LINES SHALL BE PVC MEETING, ASTM D-3034 SDR 26 EXCEPT FOR SANITARY SEWER THAT CROSSES ABOVE WATER MAIN. THIS PIPE SHALL BE AWWA C900 (UNLESS WATER MAIN CASING IS UTILIZED). PROVIDE 42" MINIMUM COVER.

7. WATER LINES SHALL BE AS FOLLOWS:
PRIVATE (LARGER THAN 3 INCHES): DUCTILE IRON PIPE, CLASS 52 OR POLYVINYL CHLORIDE PLASTIC PIPE (ASTM D-312 AND AWWA C900)
PRIVATE (3 INCHES OR SMALLER): TYPE "K" SOFT COPPER, ASTM B88

8. CONTRACTOR IS RESPONSIBLE FOR COMPLYING TO THE SPECIFICATIONS OF THE VILLAGE OF ARLINGTON HEIGHTS WITH REGARDS TO MATERIALS AND INSTALLATION OF THE WATER LINE.

9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DEFLECT ELECTRIC, GAS, CABLE, AND TELEPHONE CONDUIT AND PIPING AS REQUIRED TO AVOID UTILITY CONFLICTS.

10. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

11. CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY PERMITS, INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY VILLAGE CODES AND/OR UTILITY SERVICE COMPANIES.

12. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES FOR INSTALLATION REQUIREMENTS AND SPECIFICATIONS IN REGARDS TO TAPS, HYDRANTS, VALVES, ETC.

13. CONTRACTOR IS RESPONSIBLE FOR PAVEMENT REPLACEMENT REQUIRED FOR ALL UTILITY INSTALLATIONS PER VILLAGE OF ARLINGTON HEIGHTS STANDARDS.

14. WATER TIGHT CONNECTION SHALL BE MADE USING A RESILIENT CONNECTOR "SEAL BOOT" PER ASTM C-923.

15. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 5.5 FEET COVER ON ALL WATER LINES.

UTILITY DETAIL

SCALE: 1" = 10'

NOTE: REFERENCE MEP PLANS FOR EXACT LOCATION OF ALL UTILITY BUILDING ENTRIES.

UTILITY PLAN

Date: 04/12/2019

Project Number: 168418012

Drawn By: AEK

Checked By: JCC

Sheet Number: C7.0

RAISING CANES #484

225 E. PALETINE ROAD

ARLINGTON HEIGHTS, IL

ARCHITECTS, INC.

17710 Detroit Avenue Lakewood, Ohio 44107

Phone (216) 521-5134 Fax (216) 521-4824

www.adaarchitects.cc

Set Control Information:

Setup / Update Date:

ADA Project Manager: JEFF POUNTNEY

Engineer's Information:

Kimley»Horn

2019 KIMLEY-HORN AND ASSOCIATES, INC.

1001 WARRENVILLE ROAD, SUITE 350, IL 60532

PHONE: 630-487-5550

WWW.KIMLEY-HORN.COM

PRELIMINARY ENGINEERING

Sheet Revisions: (sheet specific per Designer)

#	Date:	Description:
1	5/24/2019	DEVELOPMENT REVIEW #2

Sheet Title:

CAUTION!!

CONTRACTOR IS TO VERIFY PRESENCE AND EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

Call Before You Dig

1-800-892-0123

A

A

A

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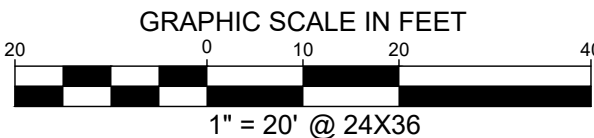
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TREE INVENTORY

Tree #	Botanical Name	Common Name	Size (Cal.)	Condition	Action	Replacement
1	Gleditsia triacanthos	Honey Locust	17"	Good	Preserve	
2	Pinus Nigra	Austrian Pine	17"	Fair	Preserve	
3	Gleditsia triacanthos	Honey Locust	12"	Good	Preserve	
4	Gleditsia triacanthos	Honey Locust	13"	Good	Preserve	
5	Gleditsia triacanthos	Honey Locust	13"	Good	Preserve	
6	Gleditsia triacanthos	Honey Locust	13"	Good	Preserve	
7	Gleditsia triacanthos	Honey Locust	3"	Good	Remove	2
8	Gleditsia triacanthos	Honey Locust	3"	Good	Remove	2
9	Gleditsia triacanthos	Honey Locust	4"	Good	Remove	2
10	Gleditsia triacanthos	Honey Locust	3"	Good	Preserve	
11	Gleditsia triacanthos	Honey Locust	8"	Fair	Preserve	
12	Gleditsia triacanthos	Honey Locust	5"	Good	Preserve	
13	Gleditsia triacanthos	Honey Locust	11"	Fair	Preserve	
14	Ulmus	Elm	4"	Fair	Remove	2
15	Ulmus	Elm	2"	Fair	Remove	0
16	Ulmus	Elm	4"	Good	Remove	2
17	Acer	Maple	7"	Fair	Remove	2
18	Gleditsia triacanthos	Honey Locust	5"	Good	Remove	2
						14 Total Replacement Trees

*Tree inventory w as performed during dormant season, species and condition may be different than identified.



Store:

RAISING CANE'S #484
225 E. PALETINE ROAD
ARLINGTON HEIGHTS, IL

Architect & Project Manager:

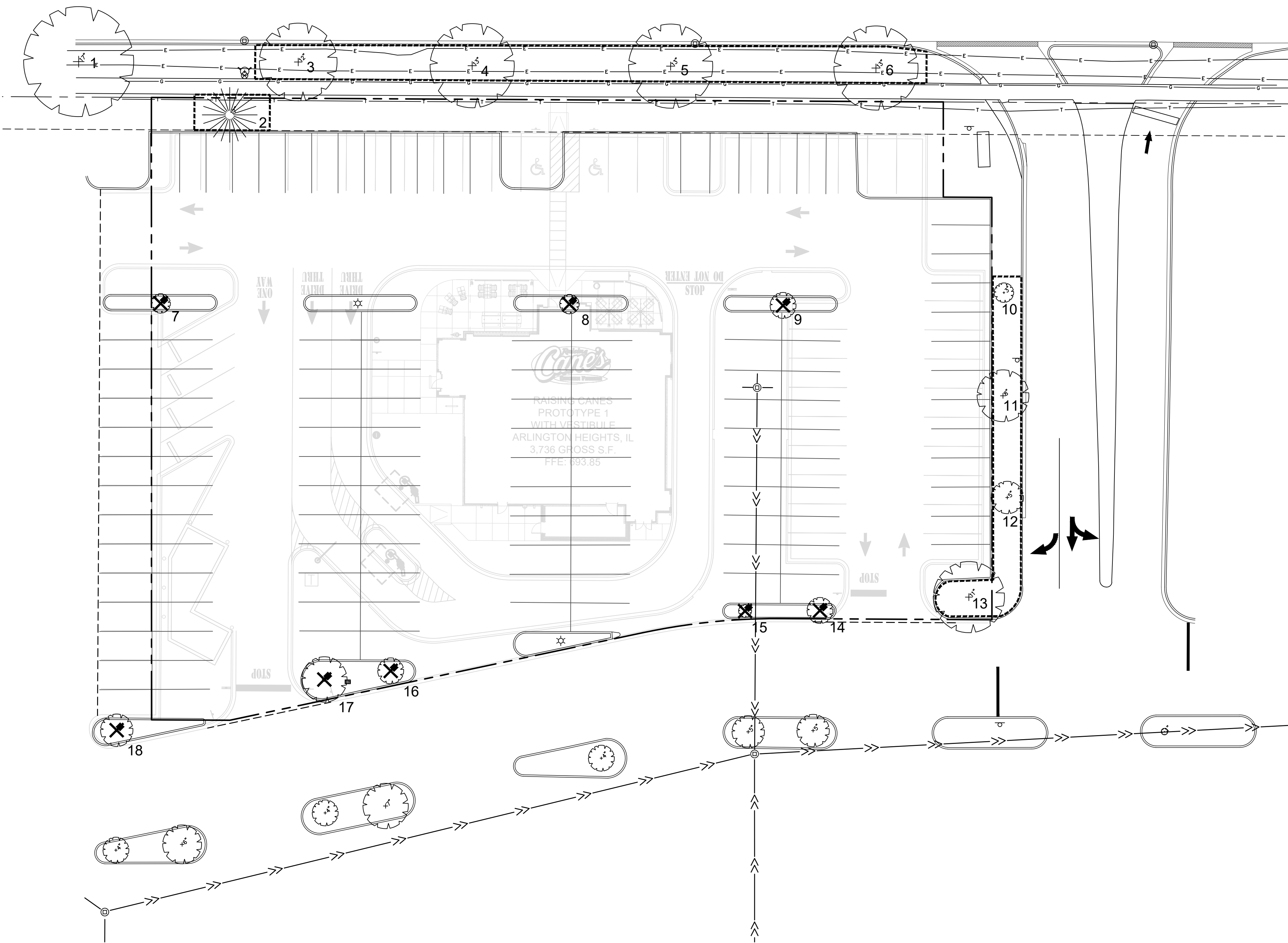


Set Control Information:

Setup / Update Date:

ADA Project Manager: JEFF POUNTNEY

PALATINE ROAD

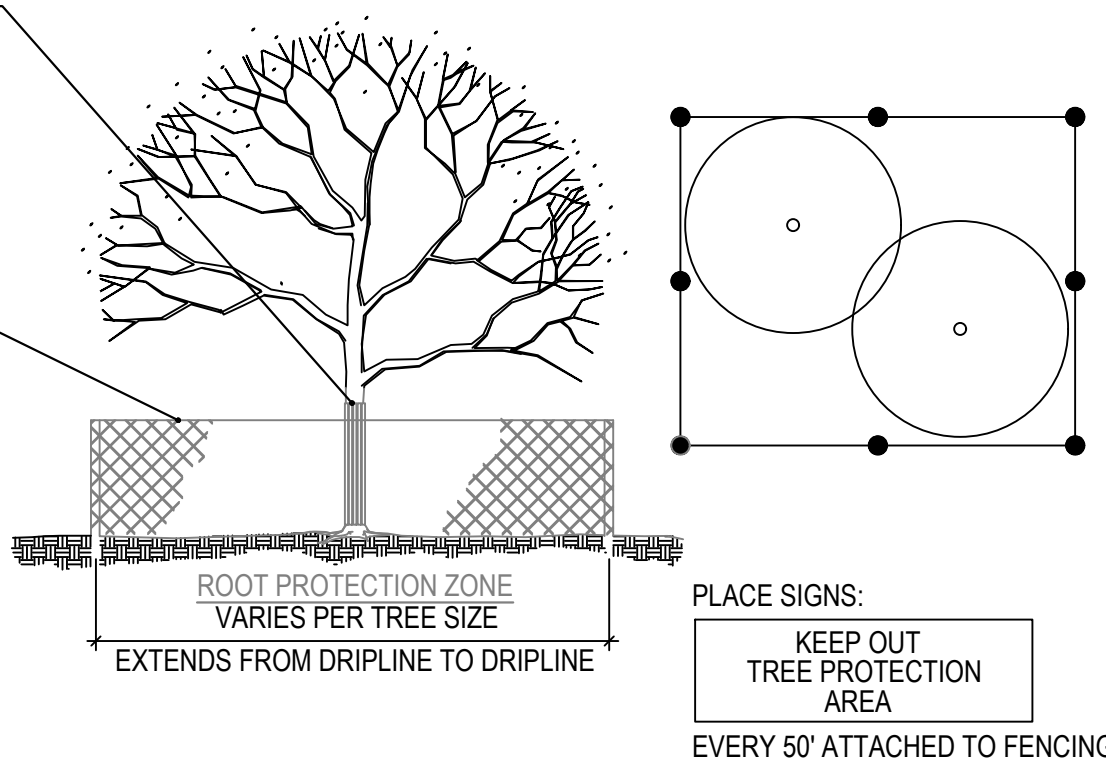


TRUNK PROTECTION

Required if wheeled construction equipment involved within 20' or less, 1" boards not less than 5' long or to reach first scaffold branch. Wire to hold boards in place, no nails permitted. include wrapping of burlap under boards.

BRANCH PROTECTION

Protect lower branches of tree canopy. provide construction fencing or equal at dripline (min.)



TREE PROTECTION NOTES

- ALL TREES TO BE PROTECTED AND PRESERVED SHALL BE PER DETAIL. GROUPING OF MORE THAN ONE TREE MAY OCCUR.
- TREES TO BE PROTECTED AND PRESERVED SHALL BE IDENTIFIED ON THE TRUNK WITH WHITE SURVEY TAPE.
- TO PREVENT ROOT SMOTHERING, SOIL STOCKPILES, SUPPLIES, EQUIPMENT OR ANY OTHER MATERIAL SHALL NOT BE PLACED OR STORED WITHIN THE DRIP LINE OR WITHIN 15 FEET OF A TREE TRUNK, WHICHEVER IS GREATER.
- TREE ROOTS SHALL NOT BE CUT UNLESS CUTTING IS UNAVOIDABLE.
- WHEN ROOT CUTTING IS UNAVOIDABLE, A CLEAN SHARP CUT SHALL BE MADE TO AVOID SHREDDING OR SMASHING. ROOT CUTS SHOULD BE MADE BACK TO A LATERAL ROOT. WHENEVER POSSIBLE, ROOTS SHOULD BE CUT BETWEEN LATE FALL AND BUD OPENING, WHEN ROOT ENERGY SUPPLIES ARE HIGH AND CONDITIONS ARE LEAST FAVORABLE FOR DISEASE CAUSING AGENTS. EXPOSED ROOTS SHALL BE COVERED IMMEDIATELY TO PREVENT DEHYDRATION. ROOTS SHALL BE COVERED WITH SOIL OR BURLAP AND KEPT MOIST.
- WATERING OF PROTECTED TREES IN WHICH ROOTS WERE CUT SHALL BE PROVIDED BY THE CONTRACTOR.
- AUGER TUNNELING RATHER THAN TRENCHING SHOULD BE USED FOR UTILITY PLACEMENT WITHIN DRIP LINE.
- FENCING MATERIAL SHALL ENCIRCLE ANY TREE OR SHRUB WHOSE OUTER DRIP LINE EDGE IS WITHIN 20 FEET OF ANY CONSTRUCTION ACTIVITIES.
- FENCING MATERIAL SHALL BE BRIGHT, CONTRASTING COLOR, DURABLE, AND A MINIMUM OF FOUR FEET IN HEIGHT.
- FENCING MATERIAL SHALL BE SET AT THE DRIP LINE OR 15 FEET FROM TREE TRUNK, WHICHEVER IS GREATER, AND MAINTAINED IN AN UPRIGHT POSITION THROUGHOUT THE DURATION OF CONSTRUCTION ACTIVITIES.
- ANY GRADE CHANGES (SUCH AS THE REMOVAL OF TOPSOIL OR ADDITION OF FILL MATERIAL) WITHIN THE DRIP LINE SHOULD BE AVOIDED FOR EXISTING TREES TO REMAIN. RETAINING WALLS AND TREE WELLS ARE ACCEPTABLE ONLY WHEN CONSTRUCTED PRIOR TO GRADE CHANGE.
- REFER TO PLANS FOR FENCE STAKING LOCATIONS.

1 TREE PROTECTION

NTS



PRELIMINARY ENGINEERING

Sheet Revisions: (sheet specific per Designer)

#	Date:	Description:
1	5/24/2019	DEVELOPMENT REVIEW #2

Sheet Title:

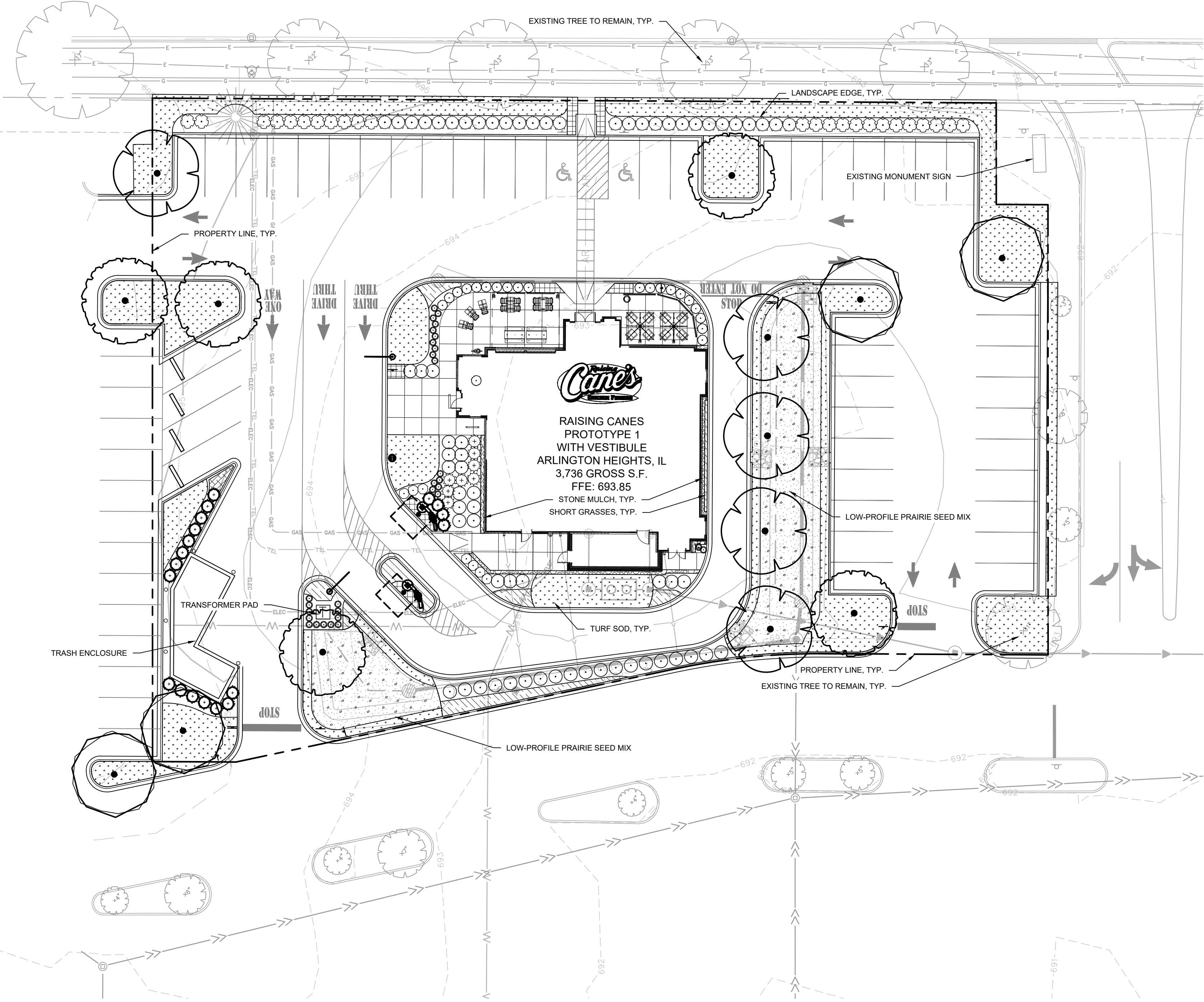
TREE PRESERVATION PLAN

Date:	04/12/2019
Project Number:	168418012
Drawn By:	CALW
Checked By:	KED

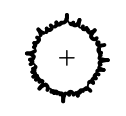
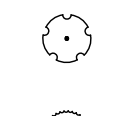
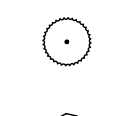
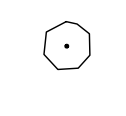
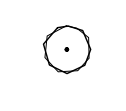
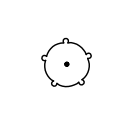
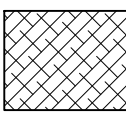
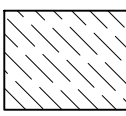
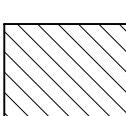
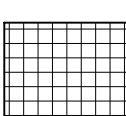
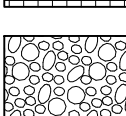
Sheet Number:

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PALATINE ROAD



PLANT SCHEDULE

TREES	CODE	QTY	BOTANICAL NAME / COMMON NAME	CONT	CAL	SIZE
	AA	4	ACER FREEMANII 'ARMSTRONG' / FREEMAN MAPLE	B & B	4"	CAL MIN
	LT	5	LIRIODENDRON TULIPIFERA / TULIP TREE	B & B	4"	CAL MIN
	QB	5	QUERCUS BICOLOR / SWAMP WHITE OAK	B & B	4"	CAL MIN
EVERGREEN TREES	CODE	QTY	BOTANICAL NAME / COMMON NAME	CONT	CAL	SIZE
	JS	19	JUNIPERUS CHINENSIS 'SPARTAN' / SPARTAN JUNIPER	B & B		4' HT MIN
SHRUBS	CODE	QTY	BOTANICAL NAME / COMMON NAME	CONT	SPACING	SIZE
	AM2	24	ARONIA MELANOCARPA ELATA / GLOSSY BLACK CHOKEBERRY	5 GAL		36" FULL
	CH	40	CORNUS ALBA 'BAILHALO' TM / IVORY HALO DOGWOOD	3 GAL		24" HT MIN
	RR	7	ROSA X 'KNOCKOUT' TM / ROSE	3 GAL		18" HT MIN
	ST2	21	SPIRAEA BETULIFOLIA 'TOR' / BIRCHLEAF SPIREA	3 GAL		18" HT MIN
	TT	8	TAXUS X MEDIA 'TAUNTONII' / TAUTON YEW	3 GAL		36" HT MIN
	VR	28	VIBURNUM DENTATUM 'RASTZAM' / RASPBERRY TART VIBURNUM	5 GAL		36" HT MIN
GRASSES	CODE	QTY	BOTANICAL NAME / COMMON NAME	CONT	SPACING	SIZE
	CK	30	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER' / FEATHER REED GRASS	1 GAL		12" HT MIN
SHRUB AREAS	CODE	QTY	BOTANICAL NAME / COMMON NAME	CONT	SPACING	
	SH	11	SPOROBOLUS HETEROLEPIS / PRAIRIE DROPSEED	1 GAL	18" o.c.	
PERENNIALS AND GRASSES	CODE	QTY	BOTANICAL NAME / COMMON NAME	CONT	SPACING	
	EK	137	ECHINACEA PURPUREA 'KIM'S KNEE HIGH' TM / PURPLE CONEFLOWER	1 GAL	18" o.c.	
	LB	33	LIRIOPE MUSCARI 'BIG BLUE' / BIG BLUE LILYTURF	1 GAL	24" o.c.	
GROUND COVERS	CODE	QTY	BOTANICAL NAME / COMMON NAME			
	A	185	/ ANNUALS			
	R	135 SF	/ 2"-3" RIVER ROCK MULCH			

LOW-PROFILE PRAIRIE SEED MIX

BOTANICAL NAME	COMMON NAME	LBS / ACRE	% OF TOTAL
GRASSES, SEDGES, & RUSHES			
Agrostis alba palustris	Bent grass	2.0	6.7%
Bouteloua curtipendula	Side-Oats Grama	6.0	20.0%
Calamagrostis canadensis	Bluejoint	2.0	6.7%
Carex vulpinoidia	Prairie Sedge	2.0	6.7%
Elymus canadensis	Canada Wild Rye	3.0	10.0%
Panicum virgatum	Switch Grass	4.0	13.3%
Schizachyrium scoparium	Little Bluestem	4.0	13.3%
Sporobolus heterolepis	Prairie Dropseed	3.0	10.0%
TOTAL LBS PER ACRE:		26	86.7%

FORBS & BROADLEAVES

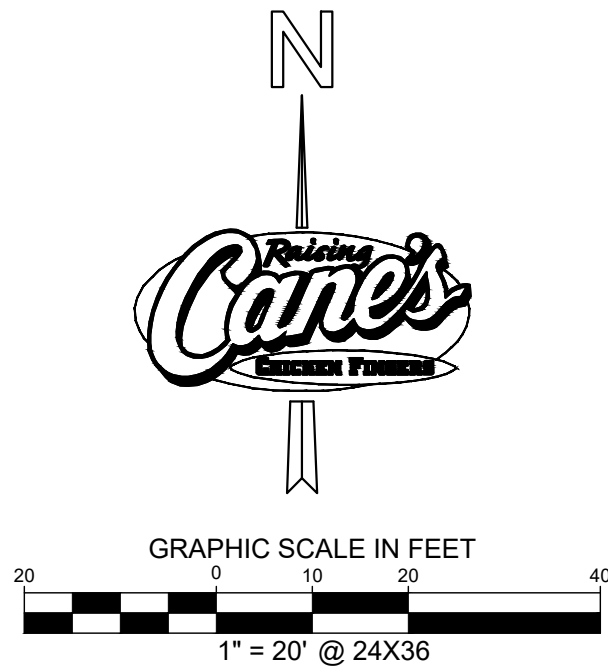
Asclepias tuberosa	Butterfly Weed	0.25	0.8%
Cassia fasciculata	Partridge Pea	0.50	1.7%
Coreopsis palmata	Prairie Coreopsis	0.25	0.8%
Echinacea purpurea	Purple Coneflower	0.75	2.5%
Liatris aspera	Rough Blazing Star	0.25	0.8%
Monarda fistulosa	Wild Bergamot	0.50	1.7%
Potentilla arguta	Prairie Cinquefoil	0.25	0.8%
Pycnanthemum virginianum	Virginia Mountain Mint	0.25	0.8%
Rudbeckia hirta	Black-Eyed Susan	0.75	2.5%
Solidago juncea	Early Goldenrod	0.25	0.8%
FORBS & BROADLEAVES LBS PER ACRE:		4	13.3%

SEED MIX TOTAL LBS PER ACRE:

30

TEMPORARY COVER

Avena sativa	Common Oat	150	60%
Lolium multiflorum	Annual Rye	100	40%
TEMPORARY COVER LBS PER ACRE:		250	



Store:

RAISING CANE'S #484
225 E. PALETINE ROAD
ARLINGTON HEIGHTS, IL

Architect & Project Manager:



Set Control Information:

Setup / Update Date:

ADA Project Manager: JEFF POUNTNEY

Engineers Information:



PRELIMINARY
ENGINEERING

Sheet Revisions: (sheet specific per Designer)

#	Date:	Description:
1	5/24/2019	DEVELOPMENT REVIEW #2

Sheet Title:

LANDSCAPE
PLAN

Date:	04/12/2019
Project Number:	168418012
Drawn By:	CALW
Checked By:	KED
Sheet Number:	L2.0



MEMORANDUM

To: LuAron McCormack – Raising Cane’s Restaurants, LLC

From: Rory Fancier, AICP, PTP – Kimley-Horn
Tim Sjogren, P.E., PTOE – Kimley-Horn

Date: May 31, 2019

RE: Parking Summary for Raising Cane’s Outlot Redevelopment
Arlington Heights, Illinois

Kimley-Horn and Associates, Inc. (Kimley-Horn) was retained by Raising Cane’s Restaurants, LLC to perform a parking analysis for the restaurant outlot proposed for the Town & Country Center, located on the southeast quadrant of Arlington Heights Road/Palatine Road in Arlington Heights, Illinois. The parking analysis was completed in order to evaluate existing parking occupancy and assess future parking conditions with the addition of the proposed outlot redevelopment.

Executive Summary

The Town & Country Center currently provides a total of 1,619 parking spaces. With the proposed outlot redevelopment, an overall total of 1,550 spaces would be provided. The proposed parking supply exceeds Village of Arlington Heights Municipal Code requirements. Furthermore, the proposed parking supply is expected to accommodate peak demand for the existing shopping center, future occupancy of currently vacant tenant spaces, and the proposed outlot redevelopment. The conservative analysis that follows suggests that the Town & Country Center would have approximately 667 spaces (44 percent) available during the weekday peak period, and 543 spaces (36 percent) available during the Saturday peak period. Similarly, the Raising Cane’s outlot would have approximately 24 spaces (52 percent) available during the weekday peak period, and 22 spaces (48 percent) available during the Saturday peak period. Establishment of cross-access and shared parking between the Town & Country Center and the proposed outlot redevelopment is recommended in order to facilitate access and circulation, as well as to provide for efficient use of the proposed parking supply.

Existing and Proposed Site Development

The Town & Country Center is a multi-tenant shopping center with both inline and outlot uses. A total of 1,619 parking spaces are currently provided for the Town & Country Center, including 44 ADA spaces. Cross-access and shared parking is provided across the Town & Country Center. An aerial of the existing shopping center, including the proposed outlot redevelopment site is shown in **Exhibit 1**.

Raising Cane’s Restaurants, LLC proposes to redevelop an outlot parcel located along the Palatine Road frontage. The redevelopment would include removal of 115 existing parking spaces to accommodate an approximately 3,700 square-foot restaurant with drive-through window. A total of 46 spaces would be provided for the proposed restaurant, including 2 ADA spaces. The proposed site plan is provided as **Attachment 1**.



EXHIBIT 1
SITE LOCATION MAP

Table 1 summarizes the parking required for the existing Town & Country Center and proposed outlot redevelopment per Section 28.10.4-2 (Off Street Parking and Loading) of the Village of Arlington Heights Municipal Code. As shown in the table, the Town & Country Center is required to provide a total of 1,210 parking spaces, which includes parking required for the currently vacant tenant spaces. The vacant tenant spaces were assumed to be future retail tenants which require 1 space per 300 square feet. Based on the existing supply (1,619 spaces), a parking surplus of 409 spaces is currently provided.

With the proposed outlot redevelopment a total of 115 spaces would be removed and the proposed restaurant would provide a total of 46 spaces. The proposed parking supply exceeds the parking required for the outlot redevelopment. Furthermore, with the proposed modifications, an overall total parking supply of 1,550 spaces would be provided for the Town & Country Center. Per the Code a total of 1,249 spaces is required; therefore, a parking surplus of 301 spaces would be provided.

Table 1. Village of Arlington Heights Required Parking

Land Use	Floor Area (sq. ft.)		Land Use	Parking Ratio	Required Spaces
	Total	Parking Calculation ¹			
Existing					
Walgreen's	17,498	17,498	Retail	1 / 300 sq. ft.	58
LA Fitness	50,003	50,003	Health Club	1 / 250 sq. ft.	200
Great Clips	1,056	1,056	Beauty Shop	1 / 250 sq. ft.	4
Sally Beauty Supply	1,965	1,965	Retail	1 / 300 sq. ft.	7
Jo-Ann Fabrics	29,887	36,796	Retail	1 / 300 sq. ft.	123
Palm Beach Tan	2,602	2,602	Beauty Shop	1 / 250 sq. ft.	10
Dick's Sporting Goods	51,330	51,330	Retail	1 / 300 sq. ft.	171
Catherine's	6,073	6,073	Retail	1 / 300 sq. ft.	20
Golden Corral	10,618	4,080	Restaurant	1 / 45 sq. ft.	91
Vision Works	3,528	3,528	Retail	1 / 300 sq. ft.	12
Best Buy	44,365	44,365	Retail	1 / 300 sq. ft.	148
Burger King	2,995	1,260	Restaurant	1 / 45 sq. ft.	28
BMO Harris	4,146	4,146	Retail	1 / 300 sq. ft.	14
Verizon	4,220	4,220	Retail	1 / 300 sq. ft.	14
Existing Required Parking					900
Existing Parking Supply					1,619
Parking Surplus (+) / Deficit (-)					+719
Vacant (Future Occupancy)					
Vacant	1,294	1,294	Vacant ²	1 / 300 sq. ft.	4
Vacant	15,041	15,041	Vacant ²	1 / 300 sq. ft.	50
	35,000	35,000	Vacant (Grocery Store) ³	1 / 300 sq. ft.	117
Vacant	41,722	41,722	Vacant ²	1 / 300 sq. ft.	139
Total Town & Country Center Required Parking (with Future Occupancy)					1,210
Existing Parking Supply					1,619
Parking Surplus (+) / Deficit (-)					+409
Proposed					
Raising Cane's	3,736	1,754	Restaurant	1 / 45 sq. ft.	39
Future Required Parking					1,249
Future Parking Supply					1,550
Parking Surplus (+) / Deficit (-)					+301

¹ Per Section 28-3(47) (Definitions) of the Village of Arlington Heights Municipal Code, for determining off-street parking requirements, floor area is calculated as the "sum of the gross horizontal areas of several floors of the building, or portion thereof, devoted to such use, measured from the exterior faces of the exterior walls or from the center line of walls separating two buildings."

² For purposes of this analysis, vacant tenant spaces were assumed to be occupied by future retail uses with a required parking ratio of 1 / 300 sq. ft.

³ Based on input from the Village of Arlington Heights, approximately 35,000 square feet is assumed to be a future grocery store.

Existing Parking Demand

To determine actual parking demand for the existing Town & Country Center, Kimley-Horn conducted hourly parking occupancy counts during two typical weekdays and one Saturday as follows. The count dates were selected in coordination with Village of Arlington Heights staff.

- Thursday, January 10, 2019, from 11:00AM to 8:00PM
- Saturday, January 12, 2019, from 11:00AM to 7:00PM
- Tuesday, January 15, 2019, from 11:00AM to 8:00PM

The count periods captured the peak periods of parking demand for the existing shopping center and were identified based on data provided by the Urban Land Institute (ULI) Shared Parking, Second Edition. During the study periods, the existing parking supply was verified, and the number of parked vehicles were documented. Other observations regarding curbside and delivery truck loading activity were noted.

The Town & Country Center currently provides a total of 1,619 spaces, including 44 ADA spaces and 115 standard spaces on the subject outlot. **Table 3** summarizes the observed parking occupancy for the Town & Country Center. During the weekday, the peak occurred at 6:00PM with approximately 444 occupied spaces (27 percent) on Thursday and 446 occupied spaces (28 percent) on Tuesday. On Saturday, the peak occurred at 11:00AM with approximately 515 occupied spaces (32 percent).

During the observation periods, the outlot was generally not used for employee or customer parking. On Thursday and Saturday, a maximum of two (2) vehicles were observed parked in the outlot. During the Tuesday observation period, a total of four (4) vehicles were parked in the outlot. These vehicles were parked continuously from 11:00AM to 8:00PM indicating use for long-term storage rather than active employee or customer parking. Parking occupancy for the outlot is included in the data presented in Table 3.

Table 3. Observed Parking Occupancy – Town & Country Center

Time of Day	Thursday, January 10, 2019		Saturday, January 12, 2019		Tuesday, January 15, 2019	
	Occupied Spaces	Percent Occupied	Occupied Spaces	Percent Occupied	Occupied Spaces	Percent Occupied
11:00AM	320	20%	515	32%	312	19%
12:00PM	327	20%	501	31%	337	21%
1:00PM	312	19%	470	29%	341	21%
2:00PM	338	21%	449	28%	315	20%
3:00PM	349	22%	411	25%	309	19%
4:00PM	375	23%	371	23%	379	23%
5:00PM	443	27%	347	21%	425	26%
6:00PM	444	27%	316	20%	446	28%
7:00PM	408	25%	302	19%	444	27%
8:00PM	325	20%	--	--	352	22%
Average	364	22%	409	25%	366	23%

As shown in Table 3, during the weekday peak hour (6:00PM), the overall Town & Country Center is approximately 27 to 28 percent occupied. During this period, approximately 1,175 spaces are available for employees and customers. During the Saturday peak hour (11:00AM), a total of 1,104 spaces remain available for employees and customers. Spillover parking to adjacent residential neighborhoods or commercial centers was not observed during the count periods.

Future Parking Demand

In order to evaluate future parking conditions with occupancy of existing vacant tenant spaces and redevelopment of the proposed Raising Cane's outlot, a future parking analysis was performed for Town & Country Center.

Vacant Retail Uses

As shown in Table 1, a total of 93,057 square feet of retail use is currently vacant. Per direction from Village of Arlington Heights staff, of the total vacant retail square footage approximately 35,000 square feet was assumed to be a future grocery store and the remaining square footage was assumed to be other retail uses. In order to project future parking demand for the vacant tenant spaces, the Urban Land Institute (ULI) Shared Parking, 2nd Edition and Institute of Engineers (ITE) Parking Generation Manual, 5th Edition were referenced. These manuals provide base parking ratios reflecting 85th percentile conditions. A summary of the parking demand ratios for retail and grocery store uses is outlined in **Table 4**.

Table 4. Peak Parking Demand Ratios

Land Use	Parking Demand Ratio (per 1,000 square feet)					
	Weekday			Saturday		
	Visitor	Employee	Total	Visitor	Employee	Total
Retail ¹	2.9	0.7	3.6	3.2	0.8	4.0
Grocery Store ²	3.28	0.79	4.07	3.86	0.96	4.82

¹Based on ULI data for Community Shopping Center (<400,000 square feet).

²ULI data not provided specific to grocery store; therefore, 85th percentile parking demand rates from the ITE Parking Generation Manual, 5th Edition manual was assumed. ITE provides a total parking demand rate. The customer and employee rates were estimated based on the ratio of ULI parking demand rates provided for customers and employees for the general retail use.

Next, hourly parking demand was calculated using the time-of-day factors provided in the ULI manual as summarized in **Table 5**. Based on available data, the time-of-day factors for a shopping center were assumed for the retail and grocery store uses.

Table 5. Time-of-Day Factors for Parking Demand¹

Time of Day	Weekday		Saturday	
	Visitor	Employee	Visitor	Employee
11:00AM	85%	95%	65%	95%
12:00PM	95%	100%	80%	100%
1:00PM	100%	100%	90%	100%
2:00PM	95%	100%	100%	100%
3:00PM	90%	100%	100%	100%
4:00PM	90%	100%	95%	100%
5:00PM	95%	95%	90%	95%
6:00PM	95%	95%	80%	85%
7:00PM	95%	95%	75%	80%
8:00PM	80%	90%	65%	75%

¹Referenced from ULI's Shared Parking as a percentage of peak parking demand.

The peak parking demand ratios (Table 4) and time-of-day factors (Table 5) were used to calculate new parking demand projections for the currently vacant tenant spaces at the Town & Country Center. The peak parking demand ratios were adjusted to reflect a 90 percent effective capacity ratio which accounts for vehicle circulation convenience and operational fluctuations, including snow cover, vehicles encroaching into adjacent spaces, maintenance, and vacant spaces designated for specific user groups such as accessible parking or valet parking. Based on these assumptions, the projected future parking demand is presented in **Table 6**.

Table 6. Projected Parking Occupancy – Vacant Tenant Spaces

Time of Day	Projected Future Demand					
	Weekday			Saturday		
	Visitor	Employee	Total	Visitor	Employee	Total
11:00AM	268	72	340	232	85	316
12:00PM	299	76	375	285	89	374
1:00PM	315	76	391	321	89	410
2:00PM	299	76	375	357	89	446
3:00PM	283	76	359	357	89	446
4:00PM	283	76	359	339	89	428
5:00PM	299	72	371	321	85	406
6:00PM	299	72	371	285	76	361
7:00PM	299	72	371	267	71	339
8:00PM	252	68	320	232	67	299

As shown above, the currently vacant tenant spaces are projected to generate demand for approximately 391 spaces under peak weekday conditions (1:00PM). Under Saturday conditions, the peak is expected to occur from 2:00PM to 4:00PM with approximately 446 spaces occupied.

Proposed Raising Cane's Restaurant

Based on input from the Village of Arlington Heights, supplemental parking counts were conducted at the existing Raising Cane's in Oak Lawn, Illinois in order to address potential concerns that the proposed Raising Cane's outlot redevelopment may generate parking demand at different rates than a typical restaurant. This supplemental count was conducted to estimate parking demand generated by the proposed outlot redevelopment. The existing Raising Cane's in Oak Lawn was selected based on the following considerations:

- Suburban setting
- Frontage along major arterial roadway with similar average daily traffic volumes (39,000 average daily vehicles along Palatine Road in Arlington Heights; 45,800 average daily vehicles on Cicero Avenue in Oak Lawn)
- Outlot in an existing commercial shopping center
- Similar building size (3,736 square feet is proposed in Arlington Heights; 3,575 square feet is developed in Oak Lawn)

Kimley-Horn conducted hourly parking occupancy counts at the Oak Lawn site during a typical weekday and weekend as follows:

- Thursday, January 10, 2019, from 11:00AM to 8:00PM
- Saturday, January 12, 2019, from 11:00AM to 7:00PM

The Raising Cane's Oak Lawn development provides a total parking supply of 41 spaces. A summary of the observed parking occupancy is provided in **Table 7**. During the weekday, the peak occurred at 4:00PM with approximately 24 occupied spaces (59 percent). On Saturday, the peak occurred at 4:00PM with approximately 26 occupied spaces (63 percent).

Table 7. Observed Parking Occupancy – Raising Cane’s Oak Lawn

Time of Day	Thursday, January 10, 2019		Saturday, January 12, 2019	
	Occupied Spaces	Percent Occupied	Occupied Spaces	Percent Occupied
11:00AM	7	17%	10	24%
12:00PM	26	63%	14	34%
1:00PM	18	44%	17	42%
2:00PM	20	49%	18	44%
3:00PM	17	42%	18	44%
4:00PM	24	59%	26	63%
5:00PM	18	44%	20	49%
6:00PM	14	34%	18	44%
7:00PM	19	46%	11	27%
8:00PM	18	44%	--	--
Average	18	44%	17	41%

The Raising Cane’s in Oak Lawn includes approximately 3,575 square feet of gross floor area. The proposed Raising Cane’s outlot redevelopment would be similar, with a total of 3,736 square feet of gross floor area (1,754 square feet net seating area); and therefore, the peak demand observed at the Oak Lawn Raising Cane’s development was assumed for the proposed Arlington Heights outlot redevelopment.

The proposed redevelopment would provide 46 parking spaces for restaurant employees and customers; therefore, peak parking demand (26 spaces) would be accommodated onsite without spillover to the Town & Country Center. Although parking demand is expected to be accommodated onsite, cross-access and shared parking would be provided between the proposed Raising Cane’s restaurant and the overall Town & Country Center.

Overall Town & Country Center

In order to evaluate peak parking conditions for the overall Town & Country Center, parking demand for existing tenants (Table 3), currently vacant tenant spaces (Table 6), and the proposed restaurant outlot (Table 7) were considered. A summary of projected weekday parking conditions is presented in **Table 8**; Saturday conditions are presented in **Table 9**.

Table 8. Projected Parking Occupancy – Overall Town & Country Center (Weekday)

Time of Day	Weekday				
	Existing Demand ¹	Projected Future Demand			Percent Occupied
	Occupied Spaces	Vacant Tenants	Raising Cane's	Total	
11:00AM	312	340	7	659	43%
12:00PM	337	375	26	738	48%
1:00PM	341	391	18	750	48%
2:00PM	315	375	20	710	46%
3:00PM	309	359	17	685	44%
4:00PM	379	359	24	762	49%
5:00PM	425	371	18	814	53%
6:00PM	446	371	14	831	54%
7:00PM	444	371	19	834	54%
8:00PM	352	320	18	690	45%

¹ Assumed data from Tuesday, January 15, 2019 for purposes of a conservative analysis.

As shown above, peak weekday conditions are projected to occur at 7:00PM with 834 spaces occupied, which reflects an approximately 54 percent occupancy rate. Under peak conditions, approximately 716 spaces would be available.

Table 9. Projected Parking Occupancy – Overall Town & Country Center (Saturday)

Time of Day	Saturday				
	Existing Demand	Projected Future Demand			Percent Occupied
		Occupied Spaces	Vacant Tenants	Raising Cane's	
11:00AM	515	316	10	841	54%
12:00PM	501	374	14	889	57%
1:00PM	470	410	17	897	58%
2:00PM	449	446	18	913	59%
3:00PM	411	446	18	875	56%
4:00PM	371	428	26	825	53%
5:00PM	347	406	20	773	50%
6:00PM	316	361	18	695	45%
7:00PM	302	339	11	652	42%

As shown above, peak Saturday conditions are projected to occur at 2:00PM with 913 spaces occupied, which reflects an approximately 59 percent occupancy rate. Under peak conditions, approximately 637 spaces would be available.

Proposed Parking Supply Evaluation

Based on existing parking occupancy and future parking projections, the individual peak demand for the Town & Country Center, currently vacant tenant spaces, and the proposed outlet redevelopment occur at different times which provides an opportunity for shared parking between uses. During the weekday, peak parking demand for the Town & Country Center occurs at 6:00PM (446 spaces), whereas the weekday peak for the currently vacant tenant spaces is projected to occur at 1:00PM (391 spaces) and peak demand for Raising Cane's occurs at 4:00PM (24

spaces). On Saturday, peak parking demand for the Town & Country Center occurs at 11:00AM (515 spaces), whereas the peak for the currently vacant tenant spaces is projected to occur from 2:00PM to 4:00PM (446 spaces) and peak demand for Raising Cane's occurs at 4:00PM (26 spaces).

A summary of the overall peak parking conditions (highlighted in Table 8 and Table 9) for the Town & Country Center is provided in **Table 10**.

Table 10. Summary of Overall Town & Country Parking Conditions

Land Use	Future Parking Supply	Village Code Requirements		Overall Peak Demand Scenario (based on empirical data)			
				Weekday		Saturday	
		Required Spaces	Δ	Peak Demand	Δ	Peak Demand	Δ
Existing	1,504	900	+294	444	+689	449	+609
Future Retail Tenants		310		371		446	
Raising Cane's Outlot	46	39	+7	19	+27	18	+28
Total	1,550	1,249	+301	834	+716	913	+637

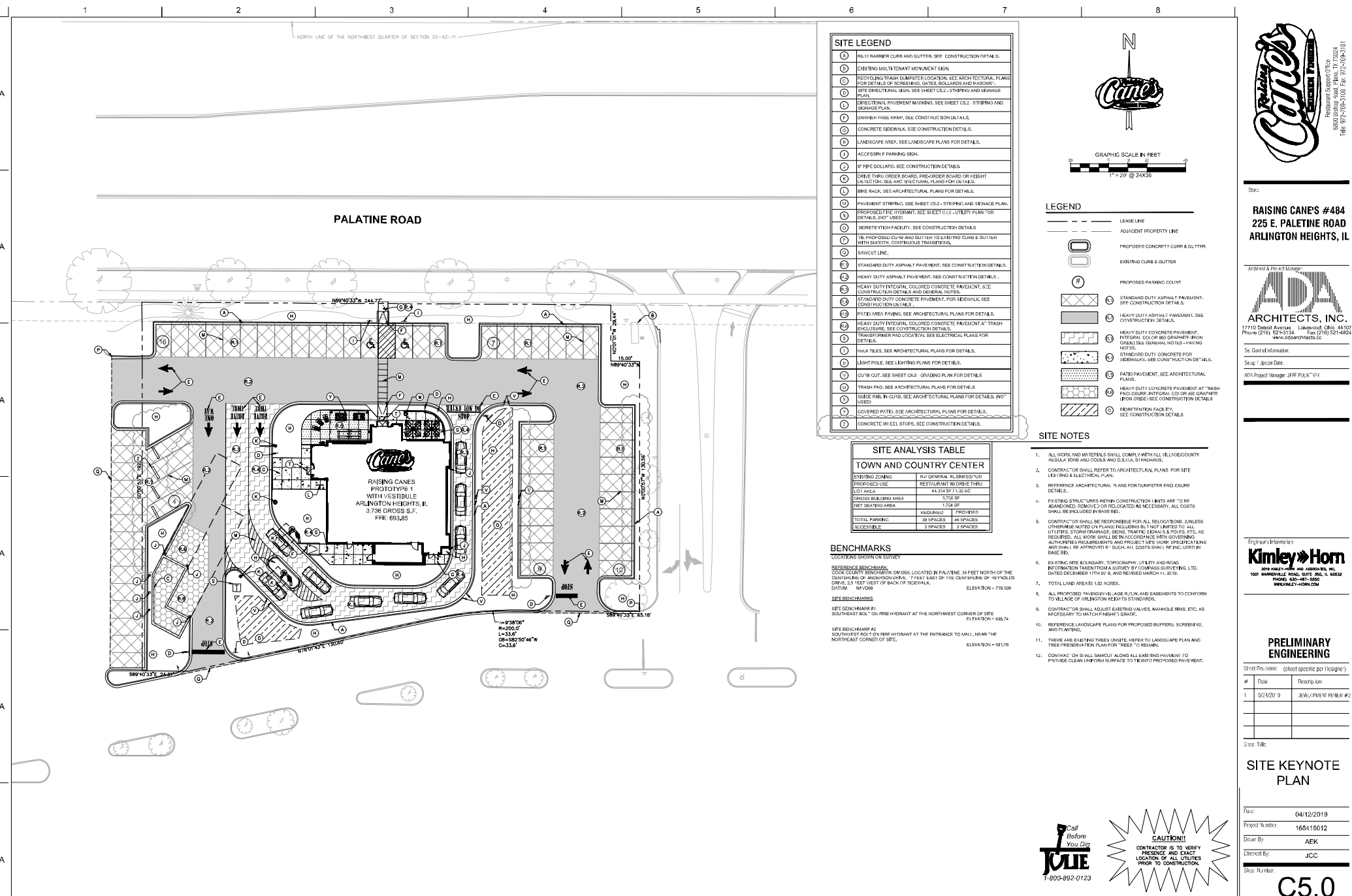
As shown above, peak demand for the overall Town & Country Center is approximately 834 spaces during a typical weekday. Based on the future parking supply of 1,550 spaces, a surplus of 716 spaces is anticipated during peak weekday conditions. On Saturday, peak demand is projected to be approximately 913 spaces. Under peak Saturday conditions, approximately 637 spaces would be available. Therefore, the proposed parking supply is expected to accommodate peak parking demand for the Town & Country Center.

Conclusion

The Town & Country Center currently provides a total of 1,619 spaces. With the proposed outlot redevelopment, 115 spaces would be removed, and 46 spaces would be provided for the Raising Cane's restaurant. The parking supply proposed for the Raising Cane's restaurant (46 spaces) exceeds the Village of Arlington Heights parking requirements. Furthermore, the overall parking supply of 1,550 spaces planned for the Town & Country Center exceeds the Village parking requirements.

Based on the observed peak parking demand for the existing Town & Country Center, observed peak parking demand for a comparable Raising Cane's location, and projected parking demand for currently vacant tenant spaces, the proposed parking supply is expected to be more than sufficient. Based on this analysis, the Town & Country Center is expected to continue to operate with surplus parking, and spillover parking to adjacent residential neighborhoods or commercial centers is not anticipated. Establishment of cross-access and shared parking between the Town & Country Center and the proposed outlot redevelopment is recommended in order to facilitate access and circulation, as well as to provide for efficient use of the proposed parking supply.

Please do not hesitate to contact us with any questions related to the information in this memorandum.



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PRELIMINARY ENGINEERING

#	Date	Description
1	5/2/2019	JCC/JP/REV#1 PER#1

Site Title: **SITE KEYNOTE PLAN**

Drawn: 04/12/2019
Project Number: 168415012
Drawn By: AEK
Checked By: JCC
Site Number: **C5.0**



RAISING CANE'S RESTAURANT

Traffic Impact Study

Arlington Heights, Illinois

May 2019

Prepared for:

Raising Cane's Restaurants, LLC

Kimley»Horn

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EXECUTIVE SUMMARY

Kimley-Horn and Associates, Inc., (Kimley-Horn) was retained by Raising Cane's Restaurants, LLC to perform a traffic impact study for a proposed restaurant on the southeast quadrant of Arlington Heights Road/Palatine Road in Arlington Heights, Illinois. The proposed restaurant would occupy an outlot within the existing shopping center known as Town & Country Center. Access to the restaurant would be provided via the existing Town & Country Center driveways along Arlington Heights Road, Palatine Road, and Rand Road. Internal to the shopping center, two-full access driveways would be provided for the proposed Raising Cane's restaurant.

As part of this traffic impact study, existing and future traffic conditions were evaluated for the signalized intersections of Arlington Heights Road/Palatine Road, Arlington Heights Road/Lillian Avenue/Access B, and Rand Road/Access E. In addition, the unsignalized intersections of Arlington Heights Road/Access A, Palatine Road/Access C and Rand Road/Access D were evaluated. Traffic conditions were also evaluated from the proposed site access driveways on the southern boundary of the subject site.

Based on a review of future traffic conditions, it is anticipated that future background traffic growth and site-generated trips would be accommodated at the study intersections. The existing Town & Country Center access driveways are projected to operate with acceptable delay and limited queues. At the internal site access driveways proposed for the Raising Cane's restaurant, a single inbound lane and single outbound lane is recommended. Stop control should be posted for outbound traffic at each Raising Cane's restaurant driveway. In addition, onsite wayfinding should be provided to direct motorists to the dedicated drive-through window lanes. Additional details related to the improvements identified above are provided in the *Recommendations & Conclusions* section of this report.

1. INTRODUCTION

Kimley-Horn and Associates, Inc., (Kimley-Horn) was retained by Raising Cane's Restaurants, LLC to perform a traffic impact study for a proposed outlot redevelopment at the Town & Country Center, located on the southeast quadrant of the intersection of Arlington Heights Road/Palatine Road in Arlington Heights, Illinois. The proposed outlot redevelopment would provide an approximately 3,735 square-foot restaurant with a drive-through window.

Existing site access for the Town & Country Center would be maintained with the outlot redevelopment; internal cross-access would be provided in order to facilitate access to the proposed restaurant. The proposed outlot redevelopment would provide two full-access driveways to the internal Town & Country Center access drive, and cross-access with the bank to the west would be maintained. With the outlot redevelopment, two internal full-access driveways would be removed. An aerial view of the study location and surrounding roadway network is presented in **Exhibit 1**.

As a part of this study, the existing network was analyzed to determine the current operations at the study intersections. In order to assess the site's impact on the area roadway network, site-generated trips were established and added to background traffic volumes. This report presents and documents Kimley-Horn's data collection, summarizes the evaluation of existing and projected future traffic conditions on the surrounding roadways, and identifies recommendations to address the potential impact of site-generated traffic on the adjacent roadway network.

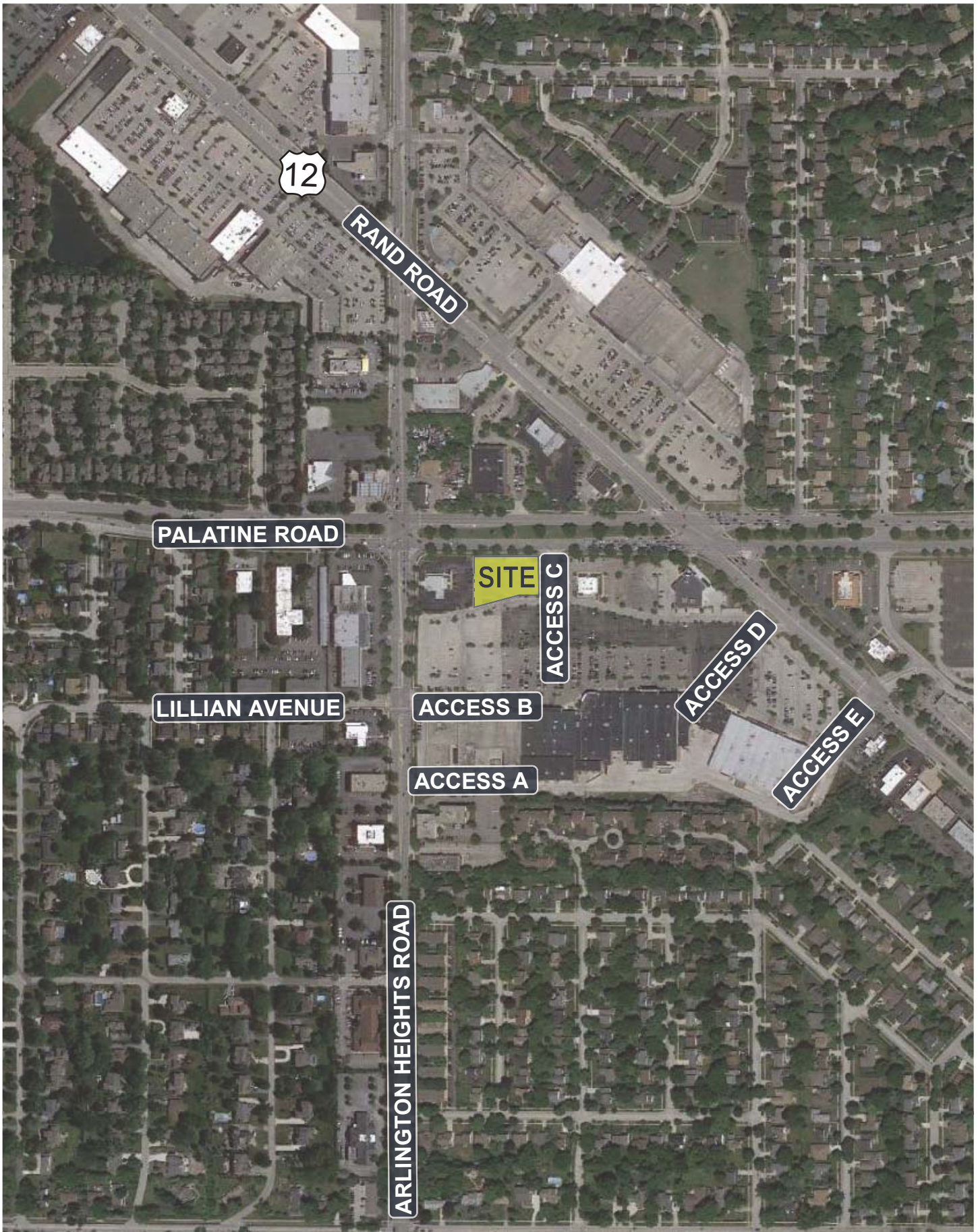


EXHIBIT 1
SITE LOCATION MAP

2. EXISTING CONDITIONS

Kimley-Horn conducted a field visit to collect relevant information pertaining to existing land uses in the surrounding area, the adjacent street system, current traffic volumes and operating conditions, lane configurations and traffic controls at nearby intersections, and other key roadway characteristics. This section of the report details information on these existing conditions.

2.1. Area Land Uses & Connectivity

Located on the southeast quadrant of the intersection of Arlington Heights Road/Palatine Road, Town & Country Center is an existing commercial shopping center. The shopping center provides both inline commercial tenants and outlots fronting Palatine Road. The restaurant redevelopment is proposed for an outlot currently occupied by a surface parking lot.

Near Town & Country Center, commercial uses front Palatine Road and Rand Road. East of Rand Road, the north side of Palatine Road is developed with single-family residences. Single-family residences are also located on the north and south sides of Palatine Road west of Arlington Heights Road. South of Palatine Road, Arlington Heights Road provides access to single- and multi-family residences with limited commercial uses on the west side of the street.

Located along the northern boundary of the Town & Country Center, Palatine Road provides east-west access from South Barrington on the west to Northbrook on the east. Approximately one mile west of the subject site, Palatine Road provides a full interchange with IL Route 53. IL 53 provides access to Interstate 90 (I-90) and Interstate 290 (I-290) less than five miles south of the Palatine Road interchange. Nearly six miles east of the subject site, Palatine Road provides a full interchange with Interstate 294 (I-294). Regional connectivity is also provided by Arlington Heights Road and Rand Road (US Route 12), located on the eastern and western boundaries of the Town & Country Center, respectively.

2.2. Existing Roadway Characteristics

A field investigation was conducted within the study area. As a result of this visit, the following information was obtained about the existing roadway network.

Arlington Heights Road travels in a north-south direction along the west boundary of the Town & Country Center. The Illinois Department of Transportation (IDOT) classifies Arlington Heights Road as a minor arterial roadway. Through the study area, Arlington Heights Road provides two travel lanes in each direction with channelized turn lanes provided at key intersections. At its signalized intersection with Palatine Road, Arlington Heights Road provides a dedicated left-turn lane, two through lanes, and a dedicated right-turn lane on both the north and south legs. At its signalized intersection with Lillian Avenue, Arlington Heights Road provides a dedicated left-turn lane, a single through lane, and a shared through/right-turn lane on both legs. The posted speed limit is 35 miles per hour (MPH) through the study area. Arlington Heights Road is under IDOT jurisdiction.

Rand Road (US 12) travels in a northwesterly-southeasterly direction along the eastern boundary of the Town & Country Center. IDOT classifies Rand Road as a Strategic Regional Arterial (SRA) roadway. The SRA system was established by IDOT to promote mobility on key routes throughout the Chicago area by applying various strategies, such as access control and limited signalization. Through the study area, Rand Road generally provides two travel lanes in each direction; however, along the property frontage three travel lanes are provided. A signalized access to the Town & Country Center is provided on Rand Road; the signalized intersection also provides access to the Southpoint shopping center located on the east side of the street. At this intersection, Rand Road provides a dedicated left-turn lane, two through lanes, and a shared through/right-turn lane on the north leg; the south leg provides a dedicated left-turn lane, one through lane, and one shared through/right-turn lane. A 35 MPH speed limit is posted on Rand Road through the study area. Rand Road is under IDOT jurisdiction.

Palatine Road travels in an east-west direction along the northern boundary of the subject site. IDOT classifies Palatine Road as an SRA roadway. Palatine Road generally provides three travel lanes in each direction with left-turn channelization. A landscape center median is provided through the study area. At its signalized intersection with Arlington Heights Road, Palatine Road provides a dedicated left-turn lane, three through lanes, and a dedicated right-turn lane on the west leg. On the east leg, Palatine Road provides a dedicated left-turn lane, two through lanes, and a shared through/right-turn lane. A 35 MPH speed limit is posted on Palatine Road through the study area. Palatine Road is under IDOT jurisdiction.

Lillian Avenue is an east-west roadway which extends west of Arlington Heights Road. Classified as a local roadway, Lillian Avenue generally provides a single travel lane in each direction. At its signalized intersection with Arlington Heights Road, Lillian Avenue provides a dedicated left-turn lane and a shared through/right-turn lane. A speed limit is not posted on Lillian Avenue; therefore, a 25 MPH speed limit was assumed for the purposes of this analysis. Lillian Avenue is under the jurisdiction of the Village of Arlington Heights.

Site Access Driveways for the Town & Country Center are currently provided along Arlington Heights Road, Palatine Road, and Rand Road. For purposes of this analysis, the driveways are labeled Access A through Access E in a clockwise orientation. Two full-access driveways are provided on Arlington Heights Road; the south access driveway (Access A) facilitates loading activity in the rear of the inline commercial buildings, and the north access driveway (Access B) provides customer and employee access to the shopping center. A right-in/right-out (RIRO) access driveway (Access C) is provided on Palatine Road. Two site access driveways are provided on Rand Road, including a RIRO access driveway (Access D) and a full-access driveway (Access E) located opposite the Southpoint shopping center. Each site access driveway provides a single inbound lane and a single outbound lane, with the exception of Access B and Access E. Access B provides a dedicated left-turn lane, a single through lane, and a dedicated right-turn lane in the outbound direction; a single lane is provided in the inbound direction. Access E provides a dedicated left-turn lane and a shared through/right-turn lane in the outbound direction, and two lanes for inbound traffic. For purposes of this analysis, a 25 MPH speed limit was assumed for each site access driveway.

Private Access Driveway, providing access to the Southpoint shopping center, is located on the east side of Rand Road opposite Access E. This driveway provides a dedicated left-turn lane and shared through/right-turn lane in the outbound direction, and a single lane for inbound traffic. For purposes of this analysis, a 25 MPH speed limit was assumed.

2.3. Data Collection

Based on discussions with Village of Arlington Heights, data collection efforts for this study included traffic counts at study area intersections, as well as trip generation counts and drive-through queue observations at an existing Raising Cane's restaurant. A summary of the data collection performed for this study is provided in the following sections.

Study Area Traffic Counts

Turning movement count data was collected in January 2019 at the intersections listed below. Counts were conducted on a typical weekday from 7:00 to 9:00AM and 4:00 to 6:00PM in order to capture peak traffic conditions. In addition, counts were conducted from 11:00AM to 1:00PM on a typical Saturday.

- Arlington Heights Road / Access A
- Arlington Heights Road / Lillian Avenue / Access B
- Arlington Heights Road / Palatine Road
- Palatine Road / Access C
- Rand Road / Access D
- Rand Road / Access E

The traffic count data indicates that peak traffic volumes occur within the study area on weekdays from 7:15 to 8:15AM and 4:15 to 5:15PM. During the Saturday midday period, the peak hour occurs from 11:45AM to 12:45PM. Existing peak hour vehicle traffic volumes are presented in **Exhibit 2**. A summary of the traffic count data is provided in the appendix.

Weekday count data reveals traffic volumes on Palatine Road at Arlington Heights Road are higher in the eastbound direction during the morning peak hour. During the evening and Saturday midday peak hours, traffic volumes on Palatine Road are generally evenly distributed. During the evening peak hour, traffic volumes in the westbound direction are slightly higher as compared to the eastbound direction. During the Saturday midday peak hour, traffic volumes in the eastbound direction are slightly higher as compared to the westbound direction. Traffic volumes on Arlington Heights Road are generally evenly distributed during each peak hour. South of Palatine Road, traffic volumes on Rand Road are higher in the southbound direction during the morning peak hour and higher in the northbound direction during the evening peak hour. Traffic volumes on Rand Road during the Saturday midday peak hour are generally evenly distributed.

Existing Raising Cane's Restaurant

Kimley-Horn conducted traffic counts at an existing Raising Cane's restaurant in Oak Lawn, Illinois. The Oak Lawn restaurant was selected as comparable to the proposed Arlington Heights location based



on its size and location. The existing 3,575 square-foot restaurant occupies an outlot on the northwest quadrant of Cicero Avenue/111th Street. According to IDOT, the average daily traffic volume along the segment of Cicero Avenue fronting the restaurant is 45,800 vehicles, which is generally comparable to the estimated 39,000 average daily vehicles on Palatine Road.

Traffic counts were conducted at the existing Raising Cane's access driveways in January 2019 in order to evaluate empirical trip generation characteristics (*Section 3.3. Trip Generation*). The counts were conducted on a typical weekday from 7:00 to 9:00AM and 4:00 to 6:00PM. In addition, counts were conducted from 11:00AM to 1:00PM on a typical Saturday. A summary of the traffic counts conducted at the existing Raising Cane's restaurant is provided in the appendix.

Observations of drive-through operations were also performed at the existing Raising Cane's restaurant in Oak Lawn, Illinois. The drive-through observations were conducted from 11:00AM to 8:00PM on a typical weekday, and from 11:00AM to 7:00PM on a typical Saturday. A summary of the drive-through observations is presented in *Section 3.2. Site Plan Evaluation*; detailed counts are provided in the appendix.

2.4. Existing Capacity Analyses

Per IDOT standards, Synchro capacity software was used to evaluate existing operational conditions at the study intersections during the weekday and Saturday peak hours. The capacity of an intersection quantifies its ability to accommodate traffic volumes and is expressed in terms of level of service (LOS), measured in average delay per vehicle. LOS grades range from A to F, with LOS A as the highest (best traffic flow and least delay), LOS E as saturated or at-capacity conditions, and LOS F as the lowest (oversaturated conditions). The lowest LOS grade typically accepted by jurisdictional transportation agencies in Northeastern Illinois is LOS D.

The LOS grades shown below, which are provided in the Transportation Research Board's Highway Capacity Manual (HCM), quantify and categorize the driver's discomfort, frustration, fuel consumption, and travel times experienced as a result of intersection control and the resulting traffic queuing. A detailed description of each LOS rating can be found in **Table 2.2**.

Table 2.1. Level of Service Grading Descriptions¹

Level of Service	Description
A	Minimal control delay; traffic operates at primarily free-flow conditions; unimpeded movement within traffic stream.
B	Minor control delay at signalized intersections; traffic operates at a fairly unimpeded level with slightly restricted movement within traffic stream.
C	Moderate control delay; movement within traffic stream more restricted than at LOS B; formation of queues contributes to lower average travel speeds.
D	Considerable control delay that may be substantially increased by small increases in flow; average travel speeds continue to decrease.
E	High control delay; average travel speed no more than 33 percent of free flow speed.
F	Extremely high control delay; extensive queuing and high volumes create exceedingly restricted traffic flow.

¹ Highway Capacity Manual 2010

The range of control delay for each rating (as detailed in the HCM) is shown in **Table 2.3**. Because signalized intersections are expected to carry a higher volume of vehicles and stopping is required during red time, note that higher delays are tolerated for the corresponding LOS ratings.

Table 2.2. Level of Service Grading Criteria¹

Level of Service	Average Control Delay (s/veh) at:	
	Unsignalized Intersections	Signalized Intersections
A	0 – 10	0 – 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F ²	> 50	> 80

¹ Highway Capacity Manual 2010

² All movements with a Volume to Capacity (v/C) ratio greater than 1 receive a rating of LOS F.

Based on these standards, capacity results were identified for the study intersections under existing conditions. In order to evaluate existing traffic operation, signal timings for the Arlington Heights Road/Palatine Road intersection were obtained from IDOT. The intersection of Arlington Heights Road/Lilliane Avenue/Access B and Rand Road/Access E were assumed to be “free” running stand-alone traffic signals and do not currently operate on a coordinated signal system. In order to evaluate traffic conditions and reflect the responsive nature of the signal cycles, the signal was optimized with an assumed minimum cycle length of 90 seconds. Per IDOT requirements, right-turn-on-red (RTOR) movements were not included in the capacity analysis.

The results of capacity analysis for existing conditions are summarized in **Table 2.4**. In this table, operation on each approach is quantified according to the average delay per vehicle and the corresponding level of service. Overall intersection operations are reported for the signalized intersections of Arlington Heights Road/Palatine Road, Arlington Heights Road/Lilliane Avenue/Access B, and Rand Road/Access E. Overall intersection level of service is not reported for

minor-leg stop-controlled intersections, since the majority of vehicles are able to move through the intersection with little to no delay. The results presented in Table 2.4 are based on Synchro's HCM 2010 reports with the exception of Arlington Heights Road/Palatine Road, which is reported using Synchro's Lanes, Volumes, Timings Report. Due to the presence of U-turn movements on the east and west legs, the Synchro HCM 2010 report is not available for this intersection.

Table 2.3. Existing (Year 2018) Levels of Service

Intersection		Weekday				Saturday	
		AM Peak Hour		PM Peak Hour		Midday Peak Hour	
		Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Arlington Heights Road / Access A (Loading Dock)	△						
Westbound		26	D	34	D	19	C
Southbound (Left)		12	B	11	B	11	B
Arlington Heights Road / Lillian Avenue / Access B	★						
Eastbound		28	C	29	C	25	C
Westbound		30	C	33	C	31	C
Northbound		11	B	14	B	15	B
Southbound		13	B	11	B	13	B
Intersection		14	B	15	B	17	B
Arlington Heights Road / Palatine Road	★						
Eastbound		98	F	65	E ¹	43	D ²
Westbound		42	D ¹	79	E ¹	51	D ²
Northbound		61	E ¹	60	E ¹	49	D ¹
Southbound		64	E	55+	E ¹	44	D ²
Intersection		74	E	66	E	47	D
Palatine Road / Access C (RIRO)	△						
Northbound (Right)		28	D	20	C	16	C
Rand Road / Access D (RIRO)	△						
Eastbound (Right)		19	C	16	C	16	C
Rand Road / Access E	★						
Eastbound		32	C	38	D	29	C
Westbound		32	C	36	D	27	C
Northbound		5	A	9	A	8	A
Southbound		6	A	7	A	8	A
Intersection		6	A	11	B	10-	A

★ – Signalized Intersection

△ – Minor-Leg Stop-Controlled Intersection

¹Left-turn operates at LOS F.

²Left-turn operates at LOS E.

The intersection of Arlington Heights Road/Palatine Road operates at LOS E during the weekday peak hours, and LOS D during the Saturday midday peak hours. During the morning peak hour, the northbound and southbound approaches operate at LOS E, and the eastbound approach operates at LOS F. During the evening peak hour, each approach operates at LOS E. The delay estimated for the weekday peak hours is likely a function of a relatively long cycle length (140 seconds during the morning peak hour and 150 seconds during the evening peak hour) and priority given to east-west

traffic on Palatine Road. As a result, long periods of green time are allocated to the east-west through movements and the minor street (Arlington Heights Road) approach receives shorter green times.

According to the capacity analysis completed for the intersection of Arlington Heights Road/Palatine Road, the 95th percentile queue estimated for the eastbound left-turn movement exceeds the existing storage lane by approximately 145 feet (6 vehicles) during the morning peak hour. Similarly, the queue estimated for the northbound left-turn movement exceeds the existing storage lane by approximately 210 feet (8 vehicles), and the southbound right-turn movement exceeds the storage lane by approximately 120 feet (5 vehicles). During the evening peak hour, 95th percentile queues exceed the storage lanes for the eastbound and westbound left-turn movements by approximately 130 feet (5 vehicles) and 60 feet (2 vehicles), respectively. The queues estimated for the northbound left-turn movement exceeds the storage lane by 185 feet (7 vehicles), and the southbound right-turn movement exceeds the storage lane by roughly 110 feet (4 vehicles). During the Saturday midday peak hour, the 95th percentile queues are generally accommodated within the storage lanes with the exception of the northbound left-turn movement which exceeds the turn lane by approximately 160 feet (6 vehicles). The estimated queues are generally higher than the maximum queues observed in the field. The maximum queues observed in the field were accommodated within the storage lanes provided with the exception of the northbound left-turn movement which exceeded the existing storage by approximately 50 feet (2 vehicles) in the morning peak hour and 100 feet (4 vehicles) in the evening peak hour. The results of the capacity analysis are considered conservative as they do not reflect RTOR movements, which were observed in the field.

The signalized intersections of Arlington Heights Road/Lillian Avenue/Access B and Rand Road/Access E operate at LOS B or better during each peak hour, with each approach operating at LOS D or better. During each peak hour, the 95th percentile queues are accommodated within the existing storage lanes.

The approaches and turn movements at the unsignalized intersections operate at LOS D or better. The 95th percentile queues estimated for the Town & Country Center access driveways are approximately 75 feet (3 vehicles) or less during each peak hour with two exceptions. At Access B, the estimated 95th percentile queue for the westbound (outbound) right-turn movement is approximately 125 feet (5 vehicles) during the evening peak hour and 175 feet (7 vehicles) during the Saturday midday peak hour.

3. FUTURE CONDITIONS

This section of the report outlines the proposed site plan, summarizes site-specific traffic characteristics, and develops future traffic projections for analysis.

3.1. Development Characteristics & Site Access

The proposed redevelopment would include an approximately 3,735 square-foot restaurant with a drive-through window. Existing site access for the Town & Country Center would be maintained with the outlot redevelopment; internal cross-access would be provided in order to facilitate access to the proposed restaurant.

The proposed outlot redevelopment would provide two full-access driveways to the internal Town & Country Center access drive, and cross-access with the bank to the west would be maintained. With the outlot redevelopment, two internal full-access driveways would be removed. A copy of the site plan is provided in the appendix.

3.2. Site Plan Evaluation

For purposes of this analysis, the proposed site plan was evaluated based on several characteristics including onsite circulation, drive-through window access and vehicle stacking, and pedestrian access. A summary of the key benefits of the proposed site plan are summarized below.

- Utilizes existing Town & Country Center site access driveways; new access to the public roadway network is not proposed.
- Eliminates two full-access driveways to the internal Town & Country Center access drive, thereby reducing turning movement conflicts at the shopping center.
- Maintains cross-access with the existing bank to the west of the site.
- Includes a designated onsite crosswalk to provide an accessible route between the ADA parking spaces and the proposed Raising Cane's entryway.
- Maintains sidewalk along the Palatine Road frontage.
- Dedicates drive-through lanes separate from the parking lot drive aisle in order to optimize drive-through operations and minimize impacts to the parking lot.
- Provides queue storage for approximately 18 vehicles (12 inside lane, 6 outside lane) in the dedicated drive-through lanes. Between the menu order board and pick-up window, queue storage for approximately 10 vehicles (8 inside lane, 2 outside lane) is provided. As noted in *Section 3.5. Drive-Through Operations*, the maximum observed queue at the existing Raising Cane's restaurant in Oak Lawn was 9 vehicles; therefore, the proposed queue storage is expected to accommodate demand without spillback to the parking lot.
- Provides a total of 46 parking spaces, which exceeds the Village of Arlington Heights requirement of 39 spaces for the proposed restaurant.

3.3. Trip Generation

In order to calculate trips generated by the proposed restaurant, data was referenced from the Institute of Transportation Engineers (ITE) manual titled Trip Generation, Tenth Edition. Trip generation rates for the ITE Land Use Code (LUC) corresponding to the proposed use are shown in **Table 3.1**. Copies of the ITE data are provided in the appendix.

Table 3.1. ITE Trip Generation Data by Land Use

ITE Land Use	Unit	Weekday			Saturday
		Daily	AM Peak Hour	PM Peak Hour	Midday Peak Hour
Fast-Food Restaurant with Drive-Through Window (LUC 934)	Per 1,000 sq. ft.	470.95 50% in / 50% out	40.19 51% in / 49% out	32.67 52% in / 48% out	54.86 51% in / 49% out

For the purpose of this study, site generated trips are expected to exhibit multiple routing patterns when traveling to and from the subject site, as described below:

- **Pass-by** – Pass-by traffic reflects the travel patterns of motorists who are already traveling on the adjacent study roadways and stop at the site en-route to another destination. Data in the ITE Trip Generation Handbook, Third Edition, reveals that 49 percent of vehicles at a Fast-Food Restaurant with Drive-Through Window (LUC 934) during the morning peak hour and 50 percent of trips during the evening peak hour are pass-by trips. ITE data is not provided for Daily trips and Saturday peak hour trips; therefore, an average of the morning and evening peak hour data (50 percent) was used to estimate pass-by trips during these periods.
- **Primary Trips** – Vehicles that travel to the subject redevelopment and then return directly to their place of origin are called “primary trips.” Primary trips reflect new traffic volumes generated by the proposed redevelopment that would approach and depart on the same route. Trips to/from the site that are not pass-by trips are expected to be primary trips.

Per these assumptions, site-generated traffic projections are presented in **Table 3.2**.

Table 3.2. Site-Generated Traffic Projections

Land Use	Size	Weekday							Saturday		
		Daily	AM Peak			PM Peak			Midday Peak Hour		
			In	Out	Total	In	Out	Total	In	Out	Total
Fast-Food Restaurant with Drive-Through Window	3,736 sq. ft.	1,760	75	75	150	65	60	125	105	100	205
<i>Less Pass-by Trips¹</i>		-880	-35	-35	-70	-30	-30	-60	-50	-50	-100
<i>Total New Trips to the Study Area</i>		880	40	40	80	35	30	65	55	50	105

¹ Pass-by trips were applied at a rate of 49 percent during the morning peak hour and 50 percent during the evening peak hour, based on data provided in ITE's Trip Generation Handbook, Third Edition. ITE data is not provided for Daily and Saturday midday peak hour; therefore, an average of 50 percent was assumed to estimate pass-by trips during these periods.

For purposes of this analysis, the ITE trip generation was compared to empirical data collected at the existing Raising Cane's restaurant in Oak Lawn. A comparison of the trip generation is presented in **Table 3.3** below. The empirical trip generation reflects the peak hour of generator (i.e., highest volume of site-generated traffic during a one-hour period); and therefore, ITE data for peak hour of generator was reviewed for comparison.

Table 3.3. Trip Generation Comparison (Driveway Trips)

Land Use	Size	Weekday						Saturday		
		AM Peak			PM Peak			Midday Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
ITE Peak Hour of Generator ¹	3,575 sq. ft.	95	85	180	95	90	185	100	95	195
Empirical Peak Hour of Generator ²	3,575 sq. ft.	5	5	10	65	70	135	60	55	115

¹ Reflects trip generation based on ITE peak hour of generator provided for Fast-Food Restaurant with Drive-Through Window (LUC 934) as presented in Trip Generation, Tenth Edition.

² Reflects empirical peak hour of generator per observations conducted at an existing Raising Cane's restaurant in Oak Lawn, Illinois.

As shown, the ITE data provides a higher estimate of site-generated traffic during each peak hour. Therefore, use of the ITE data for the proposed Raising Cane's restaurant is assumed to provide a conservative estimate of site-generated traffic during the peak hour of adjacent street traffic (Table 3.2). As such, the empirical data was set aside and the standard ITE trip generation was used for the capacity analysis.

3.4. Directional Distribution

The estimated distribution of site-generated traffic on the surrounding roadway network as it approaches and departs the site is a function of several variables, such as the nature of surrounding land uses, prevailing traffic volumes/patterns, characteristics of the street system, and the ease with which motorists can travel over various sections of that system. The anticipated directional distributions estimated for primary trips are outlined in **Table 3.4**.

Table 3.4. Estimated Trip Distribution

Traveling to/from:	Portion of Primary Trips
North on Arlington Heights Road	15%
South on Arlington Heights Road	15%
North on Rand Road	15%
South on Rand Road	15%
East on Palatine Road	20%
West on Palatine Road	20%
Total	100%

Pass-by trips are expected to travel to and from the site in a manner that is proportional to existing travel patterns. Pass-by trip distribution estimates account for the expectation that site trips are likely to travel along Palatine Road and Arlington Heights Road. Based on the preceding trip distribution

assumptions, the site trip assignments for primary trips and pass-by trips are illustrated on **Exhibits 3 and 4**, respectively. Total site trip assignment is depicted in **Exhibit 5**.

3.5. Drive-Through Operations

The proposed restaurant redevelopment would provide a drive-through window on the east side of the building. Two drive-through lanes would be provided with stacking for a total of 18 vehicles (12 inside lane, 6 outside lane). In order to evaluate the proposed drive-through lane stacking, observations were conducted at the Raising Cane's restaurant in Oak Lawn. A summary of the drive-through observations is presented in **Table 3.5** below.

Table 3.5 Drive-Through Observations – Raising Cane's Restaurant Oak Lawn, IL

Drive-Through Lane Queue	Weekday	Saturday
Maximum	9 vehicles (4:00PM)	9 vehicles (1:30PM)

As shown above, a maximum queue of nine (9) vehicles occurred during both the weekday and Saturday observations. During the weekday, the maximum queue was observed at 4:00PM. On Saturday, the maximum queue occurred at 1:30PM. During the weekday and Saturday observation periods when vehicles were present in the drive-through lanes, an average of three (3) vehicles or less was observed. The maximum queue conditions represent periods when vehicles arrived in groups or platoons; throughout most of the observation periods, drive-through vehicle arrivals were staggered. Based on observations conducted at the existing Raising Cane's restaurant in Oak Lawn, the proposed drive-through window stacking is expected to accommodate demand without impacting site access, internal circulation, or parking maneuvers. Queue spillback to the Raising Cane's parking lot or Town & Country Center circulation network is not anticipated.







3.6. Future Capacity Analysis

The proposed redevelopment is expected to be constructed by Year 2020; Kimley-Horn therefore evaluated future traffic conditions for a Year 2025 design horizon (build-plus-five conditions, per typical IDOT requirements).

Future No-Build Traffic Projections

Based on information received from the Chicago Metropolitan Agency for Planning (CMAP), traffic growth on Arlington Heights Road north of Palatine Road is projected at a compounded rate of roughly 0.38 percent annually through Year 2050; south of Palatine Road, growth on Arlington Heights Road is projected at a rate of 0.35 percent. Palatine Road has a projected growth rate of 0.15 percent, and Rand Road south of Palatine Road has a projected growth rate of 0.18 percent. An official letter from CMAP documenting the projected Year 2050 traffic volumes on the study roadways is included in the appendix. Background traffic volumes are depicted in **Exhibit 6**.

In addition to the background traffic growth, trips estimated for future occupancy of currently vacant tenant spaces was added to the roadway network. A total of 93,057 square feet of retail use is currently vacant. Per direction from Village of Arlington Heights staff, approximately 35,000 square feet of the vacant space is assumed to be a future grocery store and the remaining square footage is assumed to be retail use. In order to calculate trips generated by the vacant tenant spaces, data was referenced from the ITE Trip Generation, Tenth Edition manual. Trip generation rates for the ITE Land Use Code (LUC) corresponding to the vacant tenant spaces are shown in **Table 3.6**. Copies of the ITE data are provided in the appendix.

Table 3.6. ITE Trip Generation Data by Land Use – Vacant Tenant Spaces

ITE Land Use	Unit	Weekday			Saturday
		Daily	AM Peak Hour	PM Peak Hour	Midday Peak Hour
Shopping Center (LUC 820)	Per 1,000 sq. ft.	$\ln(T) = 0.68 \ln(X) + 5.57$ 50% in/50% out	$T = 0.50(X) + 151.78$ 62% in/38% out	$\ln(T) = 0.74 \ln(X) + 2.89$ 48% in/52% out	$\ln(T) = 0.79 \ln(X) + 2.79$ 52% in/48% out
Supermarket (LUC 850)	Per 1,000 sq. ft.	$T = 70.89(X) + 1212.64$ 50% in/50% out	3.82 60% in/40% out	$\ln(T) = 0.75 \ln(X) + 3.21$ 51% in / 49% out	$\ln(T) = 0.69 \ln(X) + 3.61$ 51% in/49% out

T – Site-generated trips

X – 1,000 square feet gross floor area

Based on this data, the trip generation estimated for the vacant tenant spaces is presented in **Table 3.7**. Similar to trips estimated for the proposed restaurant, the traffic estimated for the vacant tenant spaces is also expected to exhibit a diverse range of travel patterns when traveling to and from Town & Country Center. Pass-by trips and primary trips are anticipated. In addition, the future retail and grocery store tenants are expected to complement other uses in the Town & Country Center; thus, it is likely that some patrons that visit the retail and grocery store uses will also visit other tenants. To reflect these “internally captured” trips, a 10 percent reduction was assumed for the future retail and grocery store uses.



Table 3.7. Site-Generated Traffic Projections – Vacant Tenant Spaces

Land Use	Size	Weekday							Saturday		
		Daily	AM Peak			PM Peak			Midday Peak Hour		
			In	Out	Total	In	Out	Total	In	Out	Total
Shopping Center (LUC 820)	58,057 sq. ft.	4,150	110	70	180	175	190	365	210	195	405
Supermarket (LUC 850)	35,000 sq. ft.	3,690	80	55	135	180	175	355	220	210	430
Total Trips		7,840	190	125	315	355	365	720	430	405	835
<i>Less 10% Internal Capture</i>		<i>-840</i>	<i>-20</i>	<i>-10</i>	<i>-30</i>	<i>-40</i>	<i>-40</i>	<i>-80</i>	<i>-40</i>	<i>-40</i>	<i>-80</i>
Total Driveway Trips		7,000	170	115	285	315	325	640	390	365	755
<i>Less Pass-by Trips¹</i>		<i>-2,470</i>	<i>-30</i>	<i>-30</i>	<i>-60</i>	<i>-115</i>	<i>-115</i>	<i>-230</i>	<i>-115</i>	<i>-115</i>	<i>-230</i>
Total New Trips to the Study Area		4,530	140	85	225	200	210	410	275	250	525

¹Pass-by trips were applied at a rate of 34 percent during the evening peak hour and 26 percent during the Saturday midday peak hour for the Shopping Center (LUC 820). ITE data is not provided for Daily and morning peak hour; therefore, 34 percent was applied to estimate pass-by trips during these periods. For the Supermarket (LUC 850), pass-by trips were applied at a rate of 36 percent during the evening peak hour. ITE data is not provided for Daily and Saturday midday peak hour; therefore, 36 percent was assumed. For purposes of the analysis, pass-by trips were not assumed during the morning peak hour.

For purposes of the analysis, the directional distributions summarized in Table 3.4 were assumed for the site-generated trips outlined above. Pass-by trips are expected to travel to and from the site in a manner that is proportional to existing travel patterns. Based on the preceding trip distribution assumptions, the total site trip assignments for primary trips and pass-by trips are illustrated on **Exhibit 7**. Detailed trip assignments for primary trips and pass-by trips are provided in the appendix.

The site-generated trips were added to the background traffic volumes depicted in Exhibit 6 to estimate the Future (2025) No-Build traffic volumes, which are depicted in **Exhibit 8**. Based on these assumptions, future capacity results for the no-build condition are provided in **Table 3.8**. Consistent with existing conditions, the results are based on Synchro's HCM 2010 reports with the exception of Arlington Heights Road/Palatine Road, which is reported using Synchro's Lanes, Volumes, Timings Report. Due to the presence of U-turn movements on the east and west legs, the Synchro HCM 2010 report is not available for this intersection. Additional capacity analysis details are included in the appendix.





Table 3.8. Future (Year 2025) No-Build Levels of Service

Intersection		Weekday				Saturday	
		AM Peak Hour		PM Peak Hour		Midday Peak Hour	
		Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Arlington Heights Road / Access A (Loading Dock)	△						
Westbound		28	D	38	E	20	C
Southbound (Left)		12	B	12	B	12	B
Arlington Heights Road / Lillian Avenue / Access B	★						
Eastbound		29	C	32	C	28	C
Westbound		32	C	46	D ⁵	50	D ⁵
Northbound		11	B	17	B	17	B
Southbound		13	B	12	B	14	B
Intersection		15	B	20-	B	22	C
Arlington Heights Road / Palatine Road	★						
Eastbound		109	F	67	E ¹	44	D ³
Westbound		42	D ¹	81	F	52	D ³
Northbound		70	E ¹	81	F	68	E ¹
Southbound		71	E ²	58	E ¹	49	D ⁴
Intersection		82	F	73	E	53	D
Palatine Road / Access C (RIRO)	△						
Northbound (Right)		39	E	33	D	26	D
Rand Road / Access D (RIRO)	△						
Eastbound (Right)		21	C	18	C	19	C
Rand Road / Access E	★						
Eastbound		33	C	39	D	29	C
Westbound		33	C	34	C	26	C
Northbound		5	A	11	B	10-	A
Southbound		6	A	9	A	10-	A
Intersection		7	A	13	B	12	B

★ – Signalized Intersection

△ – Minor-Leg Stop-Controlled Intersection

¹ Left-turn operates at LOS F.

² Thru movement operates at LOS F.

³ Left-turn operates at LOS E.

⁴ Left-turn and thru movements operate at LOS E.

⁵ Right-turn movement operates at LOS E.

With the addition of background traffic growth and trips estimated for the currently vacant tenant spaces, the study intersections are expected to operate similar to existing conditions. The level of service for each approach and movement is consistent with existing conditions with some exceptions. The westbound approach at Arlington Heights/Access A is projected to operate at LOS E (compared to LOS D under existing conditions) during the evening peak hour. The 95th percentile queues projected for Arlington Heights/Access A are expected to be similar to existing conditions.

At Arlington Heights/Palatine Road, the overall intersection is projected to operate at LOS F (compared to LOS E under existing conditions) during the morning peak hour. During this same peak hour, the southbound through movement is projected to operate at LOS F (compared to LOS E under

existing conditions). During the evening peak hour, the westbound and northbound approaches are projected to operate at LOS F (compared to LOS E under existing conditions). During the Saturday midday peak hour, the northbound approach is projected to operate at LOS E (compared to LOS D under existing conditions). The 95th percentile queues projected for Arlington Heights/Palatine Road are projected to be generally consistent with existing conditions with some exceptions. During each peak hour, the 95th percentile queues projected for the northbound and southbound left-turn lanes are projected to increase as compared to existing conditions. The queues estimated for the northbound left-turn lane would continue to exceed the available storage, consistent with existing conditions.

At the intersection of Arlington Heights Road/Lillian Avenue/Access B, the projected level of service is consistent with existing conditions. The 95th percentile queues for the westbound right-turn movement are expected to exceed the available storage length during the weekday evening and Saturday midday peak hours. The results of the capacity analysis are considered conservative as they do not reflect RTOR movements, which were observed in the field. Furthermore, the current site access and onsite circulation configuration provides flexibility for motorists to select an alternate outbound access driveway if long delays or queues are observed at Access B.

At the intersection of Palatine Road/Access C, the northbound right-turn movement is projected to operate at LOS E (compared to LOS D under existing conditions) during the morning peak hour, and LOS D (compared to LOS C under existing conditions) during the evening and Saturday midday peak hours. During each peak hour, the 95th percentile queues are approximately 75 feet (3 vehicles) or less.

For the intersection of Rand Road/Access E, delay is shown to decrease for the westbound approach in the evening peak hour. This is attributable to the future traffic volumes and green time allocated to this movement. During the evening peak hour, the northbound approach is projected to operate at LOS B (compared to LOS A under existing conditions). During the Saturday midday peak hour, the overall intersection is projected to operate at LOS B (compared to LOS A under existing conditions). The projected 95th percentile queues are expected to be similar to existing conditions.

Future Build Traffic Projections

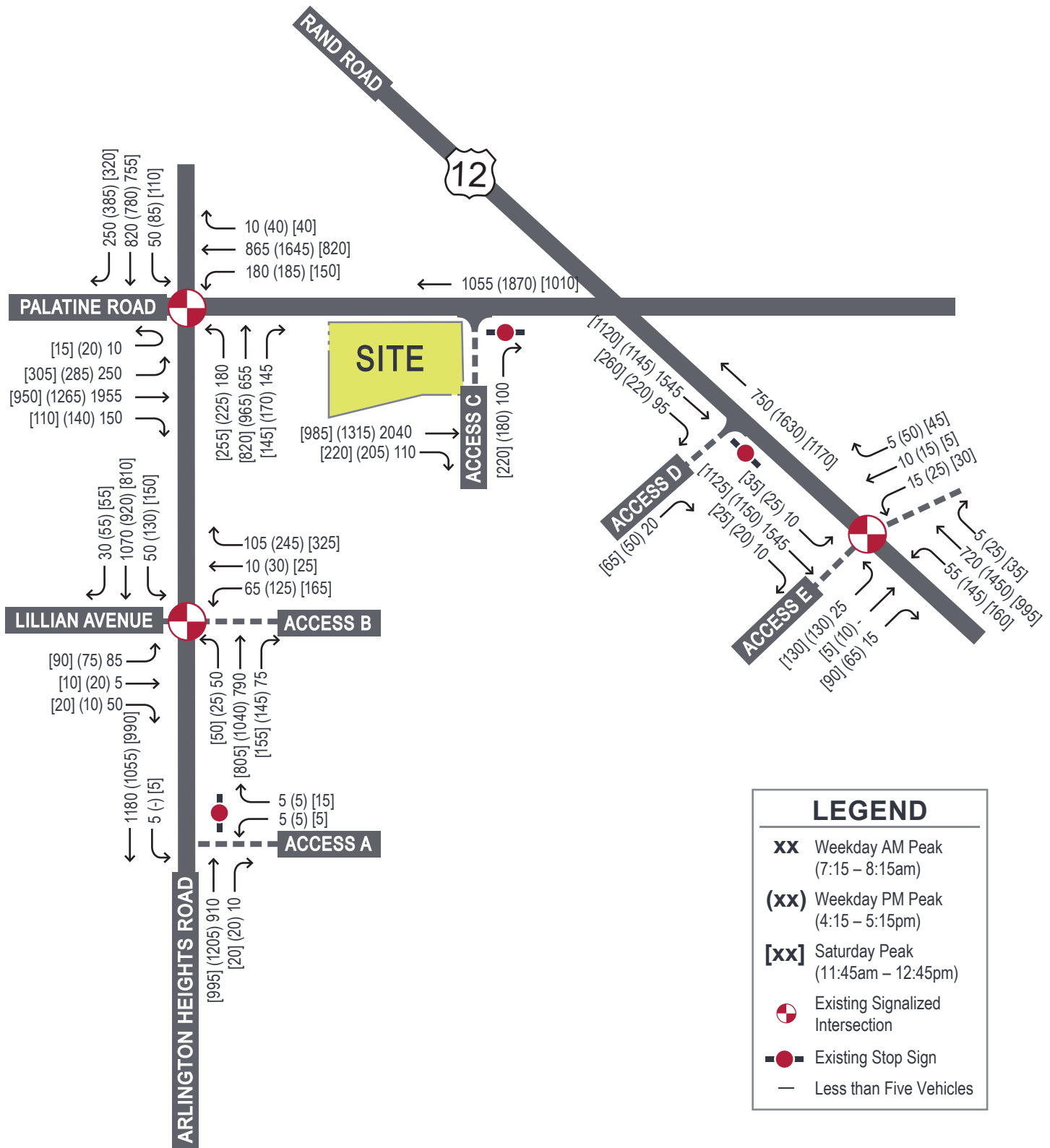
Total traffic projections for Year 2025 were calculated by adding site trips (Exhibit 5) to Future (2025) No-Build traffic volumes (Exhibit 8). Traffic projections for the Year 2025 future build scenario are illustrated in **Exhibit 9**.

For the analysis of future traffic conditions, turn lane warrants were evaluated for the study intersections and the proposed site access driveways using guidelines in the IDOT *Bureau of Design and Environment (BDE) Manual*. At the intersection of Arlington Heights Road/Palatine Road, dedicated left- and right-turn lanes are provided on each leg, with the exception of the east leg which provides a left-turn lane only. Based on the IDOT *BDE Manual* volume guidance provided for signalized intersections, projected future traffic volumes (Exhibit 9) do not meet warrant criteria for a right-turn lane on Palatine Road at Arlington Heights Road.

At the site access driveways, dedicated right-turn lanes are not currently provided. Based on the IDOT *BDE Manual* volume guidance for signalized intersections, projected future traffic volumes (Exhibit 9) meet the minimum warrant criteria for a northbound right-turn lane on Arlington Heights Road at Access B during Saturday midday peak hour conditions; however, based on a review of the corridor, exclusive right-turn lanes are generally not provided along the Arlington Heights Road corridor. Furthermore, the capacity analysis results indicate the northbound approach and northbound right-turn movement are projected to operate at LOS B during each peak hour. Therefore, a northbound right-turn lane was not included in the analysis of Arlington Heights/Lillian Avenue/Access B. At the intersection of Rand Road/Access E, the projected future traffic volumes (Exhibit 9) do not meet warrant criteria for a southbound right-turn lane on Rand Road. Therefore, a right-turn lane was not included in the analysis of future conditions at Rand Road/Access E.

Right-turn lanes were also evaluated for the unsignalized Town & Country Center access driveways. The IDOT *BDE Manual* does not provide specific volume guidance for four-lane roadways with a design speed less than 50 MPH (design speed on Arlington Heights Road is 40 MPH, posted speed limit is 35 MPH). Per IDOT guidance, a right-turn lane may also be considered to meet the level of service criteria or to provide uniform intersection design along a corridor. At Arlington Heights Road/Access A, the northbound right-turn is projected to operate under “free-flow” conditions and right-turn lanes are generally not provided along the corridor; therefore, a dedicated northbound right-turn lane was not included in the analysis of future conditions. The IDOT *BDE Manual* does not provide specific volume guidance for unsignalized intersections on a six-lane roadway with a design speed of 40 MPH (posted speed limit on Palatine Road and Rand Road is 35 MPH). Per guidance in the IDOT *BDE Manual*, a right-turn lane may also be considered where right-turn lanes are consistently provided along the corridor. Based on a review of the study area, right-turn lanes are generally not provided on Palatine Road or Rand Road at site access driveways. Therefore, an eastbound right-turn lane on Palatine Road at Access C was not included in the analysis of future conditions. Similarly, a southbound right-turn lane on Rand Road at Access D was not included in the analysis of future conditions.

At the internal site access driveways proposed for the Raising Cane’s restaurant, a single inbound lane and single outbound lane is recommended. Stop control should be posted for outbound traffic at each Raising Cane’s restaurant driveway. In addition, onsite wayfinding should be provided to direct motorists to the dedicated drive-through window lanes.



Based on the assumptions applied to the traffic projections for the future build scenario, future capacity results are provided in **Table 3.9**. The results are based on Synchro's HCM 2010 reports with the exception of Arlington Heights Road/Palatine Road, which is reported using Synchro's Lanes, Volumes, Timings Report. Due to the presence of U-turn movements on the east and west legs, the Synchro HCM 2010 report is not available for this intersection. Additional capacity analysis details are included in the appendix.

Table 3.9. Future (Year 2025) Build Levels of Service

Intersection		Weekday				Saturday	
		AM Peak Hour		PM Peak Hour		Midday Peak Hour	
		Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Arlington Heights Road / Access A (Loading Dock)	△						
Westbound		29	D	39	E	21	C
Southbound (Left)		12	B	12	B	12	B
Arlington Heights Road / Lillian Avenue / Access B	★						
Eastbound		29	C	32	C	28	C
Westbound		32	C	51	D ⁵	59	E
Northbound		12	B	17	B	18	B
Southbound		13	B	12	B	14	B
Intersection		15	B	21	C	25	C
Arlington Heights Road / Palatine Road	★						
Eastbound		107	F	67	E ¹	44	D ³
Westbound		42	D ¹	81	F	52	D ³
Northbound		75	E ¹	83	F	72	E ¹
Southbound		71	E ²	59	E ¹	50	D ⁴
Intersection		82	F	73	E	54	D
Palatine Road / Access C (RIRO)	△						
Northbound (Right)		56	F	41	E	31	D
Rand Road / Access D (RIRO)	△						
Eastbound (Right)		21	C	19	C	20	C
Rand Road / Access E	★						
Eastbound		33	C	41	D	29	C
Westbound		33	C	34	C	26	C
Northbound		5	A	11	B	10-	A
Southbound		6	A	9	A	11	B
Intersection		7	A	13	B	12	B

★ – Signalized Intersection

△ – Minor-Leg Stop-Controlled Intersection

¹ Left-turn operates at LOS F.

² Thru movement operates at LOS F.

³ Left-turn operates at LOS E.

⁴ Left-turn and thru movement operate at LOS E.

⁵ Right-turn movement operates at LOS E.

With the addition of site-generated traffic, the study intersections are expected to operate similar to future-no build conditions. The level of service for each approach and movement is consistent with some exceptions. At the intersection of Arlington Heights Road/Lillian Avenue/Access B, the overall intersection is projected to operate at LOS C (compared to LOS B under future no-build conditions) during the evening peak hour. During the Saturday midday peak hour, the westbound approach is projected to operate at LOS E (compared to LOS D under future no-build conditions).

At the intersection of Palatine Road/Access C, the northbound right-turn movement is projected to operate at LOS F (compared to LOS E under future no-build conditions) during the morning peak hour. During the evening peak hour, the northbound right-turn movement is projected to operate at LOS E (compared to LOS D under future no-build conditions). The projected delay is not unusual for a minor-street stop-controlled intersection with a heavily traveled arterial such as Palatine Road. The projected 95th percentile queues are approximately 125 feet (5 vehicles) or less during each peak hour. The queue is expected to be accommodated within the existing throat length provided for Access C; therefore, impacts to onsite circulation are not anticipated. Furthermore, the current site access and onsite circulation configuration provides flexibility for motorists to select an alternate outbound access driveway if long delays or queues are observed at Access C.

At the intersection of Rand Road/Access E, the southbound approach is projected to operate at LOS B (compared to LOS A under future no-build conditions) during the Saturday midday peak hour.

For each study intersection, the projected 95th percentile queues are expected to be similar to existing conditions. The 95th percentile queues projected for the existing Town & Country Center access driveways are approximately 125 feet (5 vehicles) or less during each peak hour with some exceptions. Consistent with future no-build conditions, the 95th percentile queue for the westbound (outbound) right-turn movement at Access B is projected to exceed the storage length during the weekday evening and Saturday midday peak hours. The results of the capacity analysis are considered conservative as they do not reflect RTOR movements, which were observed in the field.

4. RECOMMENDATIONS & CONCLUSIONS

Based on Kimley-Horn's review of the proposed site plan and evaluation of existing and future traffic conditions, the study intersections are expected to adequately accommodate the proposed redevelopment with the following recommendations:

- Provide a single inbound lane and a single outbound lane at the internal site access driveways proposed for the Raising Cane's restaurant.
- Install minor-leg stop control for outbound traffic at the internal site access driveways.
- Consider onsite wayfinding to direct motorists to the dedicated drive-through window lanes.

Regardless of the final configuration of the intersection geometrics, several additional items should be taken into consideration when preparing site and roadway improvement plans for the subject redevelopment. As the site design progresses, care should be taken with landscaping, signage, and monumentation at the site access locations to ensure that adequate horizontal sight distance is provided from the new stop bars. If alterations to the site plan or land use should occur, changes to the analysis provided within this traffic impact study may be needed.

APPENDIX

Conceptual Site Plan

CMAP Year 2050 Projections

Existing Capacity Reports

Future No-Build Capacity Reports

Future Build Capacity Reports

Data from the ITE Manual Trip Generation, Tenth Edition

Data from the ITE Trip Generation Handbook, Third Edition

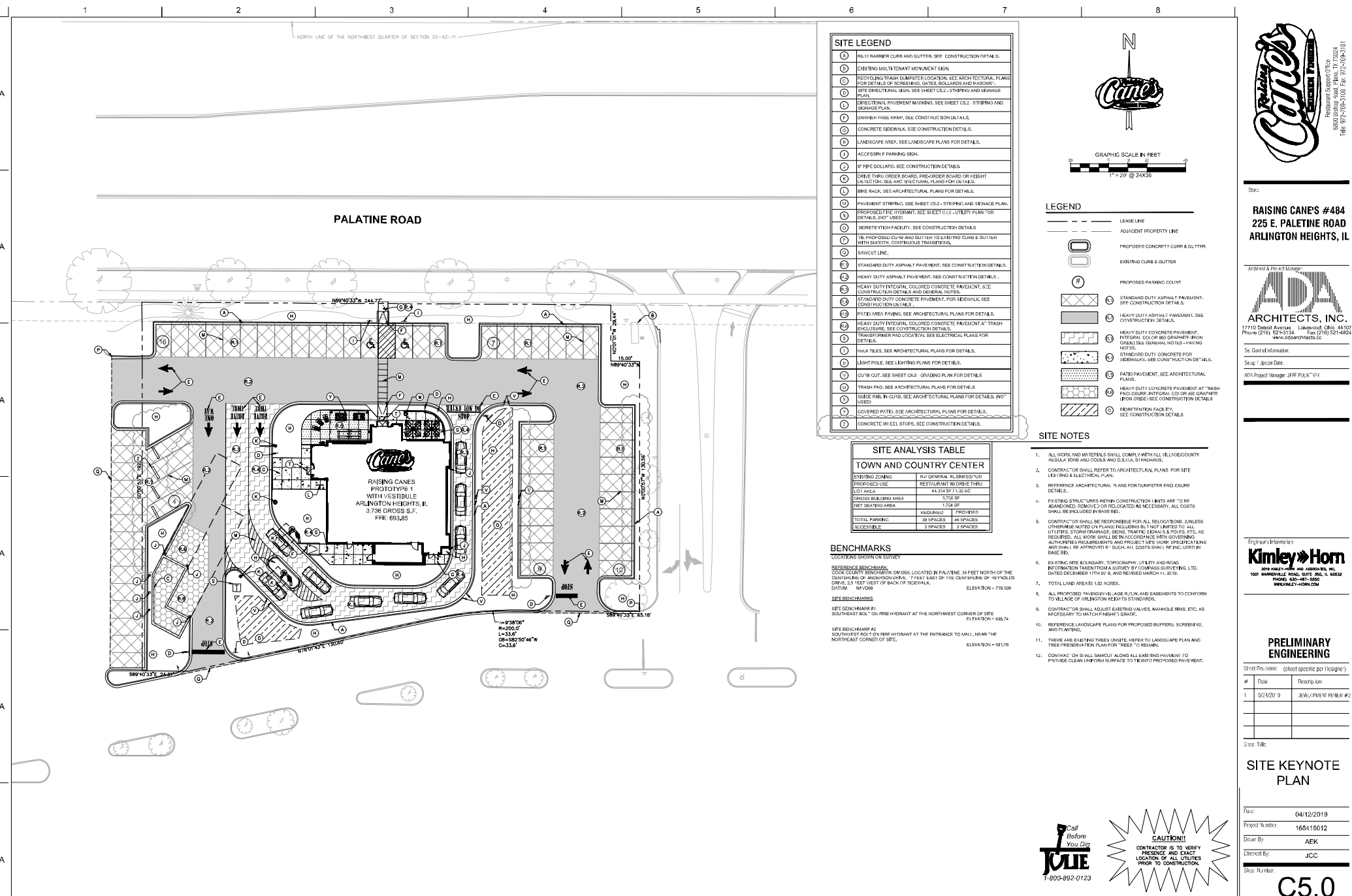
Vacant Tenant Spaces Trip Assignment – Primary Trips

Vacant Tenant Spaces Trip Assignment – Pass-By Trips

Traffic Counts – Study Intersections

Traffic Counts – Existing Raising Cane's Restaurant

CONCEPTUAL SITE PLAN



Architect & Principal
ADA ARCHITECTS, INC.
17710 Daniel Avenue, Lombard, Illinois 60148
Phone (216) 525-5154 Fax (216) 521-4824
www.adaarchitects.com
Site / Issue Date:
ADA Project Manager: JEFF POLAK, EIT

Engineers Information:
Kimley-Horn
1001 WARDVILLE ROAD, SUITE 201, G0632
PHOTO 100-401-880
WWW.KIMLEY-HORN.COM

PRELIMINARY ENGINEERING		
Sheet No. (Rev.) (sheet specific per Designer)		
#	Date	Description
1	5/2/2019	JEREMY REYNOLDS #2

Site Title:
SITE KEYNOTE PLAN
Rev: 04/12/2019
Project Number: 168415012
Drawn By: AEK
Checked By: JCC
Site Number: **C5.0**



CMAP YEAR 2050 PROJECTIONS



Chicago Metropolitan Agency for Planning

233 South Wacker Drive
Suite 800
Chicago, Illinois 60606

312 454 0400
www.cmap.illinois.gov

January 23, 2019

Rory S. Fancier-Splitt
Transportation Planner
1001 Warrenville Road
Suite 350
Lisle, IL 60532

Subject: Palatine Road @ Arlington Heights Road
IDOT

Dear Ms. Fancier-Splitt:

In response to a request made on your behalf and dated January 22, 2019, we have developed year 2050 average daily traffic (ADT) projections for the subject location.

ROAD SEGMENT	Current ADT	Year 2050 ADT
Arlington Hts Rd N of Palatine Rd	28,800	33,000
Arlington Hts Rd S of Palatine Rd	28,300	32,100
Palatine Rd E of Arlington Hts Rd	39,000	41,100
Palatine Rd W of Arlington Hts Rd	45,000	47,500
Rand Rd S of Palatine Rd	28,700	30,500

Traffic projections are developed using existing ADT data provided in the request letter and the results from the October 2018 CMAP Travel Demand Analysis. The regional travel model uses CMAP 2050 socioeconomic projections and assumes the implementation of the ON TO 2050 Comprehensive Regional Plan for the Northeastern Illinois area. The provision of this data in support of your request does not constitute a CMAP endorsement of the proposed development or any subsequent developments.

If you have any questions, please call me at (312) 386-8806.

Sincerely,

Jose Rodriguez, PTP, AICP
Senior Planner, Research & Analysis

cc: Quigley (IDOT)
Letters1



January 22, 2019

Mr. Jose Rodriguez
Chicago Metropolitan Agency for Planning
233 S. Wacker Drive, Suite 800
Chicago, IL 60606

RE: Request for 2050 Traffic Projections
Arlington Heights, Illinois

Dear Mr. Rodriguez:

Kimley-Horn is formally requesting Year 2050 traffic projections for roadway segments near the intersection of Palatine Road/Arlington Heights Road in Arlington Heights, Illinois. This information is requested for use in developing an annual growth rate for area traffic volumes. The existing Average Daily Traffic volumes on the requested roadway segments are identified by IDOT as follows:

Arlington Heights Road north of Palatine Road (Year 2014)	28,800
Arlington Heights Road south of Palatine Road (Year 2014)	28,300
Palatine Road east of Arlington Heights Road (Year 2014)	39,000
Palatine Road west of Arlington Heights Road (Year 2014)	45,000
Rand Road south of Palatine Road (Year 2017)	28,700

Please do not hesitate to contact me at (630) 487-3395 or via email at rory.fancler@kimley-horn.com should you have any questions on this matter.

Sincerely,

A handwritten signature in blue ink that reads "Rory Fancler-Splitt".

Rory Fancler-Splitt, AICP, PTP
Transportation Planner

EXISTING CAPACITY REPORTS

Weekday Morning Peak Hour

Weekday Evening Peak Hour

Saturday Midday Peak Hour

HCM 2010 TWSC
100: Arlington Heights Road & Access A (Loading Dock)

02/14/2019

Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	860	10	5	1135
Future Vol, veh/h	5	5	860	10	5	1135
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	40	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	25	4	10	40	3
Mvmt Flow	5	5	905	11	5	1195

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1519	458	0
Stage 1	911	-	-
Stage 2	608	-	-
Critical Hdwy	6.84	7.4	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.55	-
Pot Cap-1 Maneuver	110	492	-
Stage 1	352	-	-
Stage 2	506	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	109	492	-
Mov Cap-2 Maneuver	109	-	-
Stage 1	349	-	-
Stage 2	506	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.1	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	- 109 492	544	-
HCM Lane V/C Ratio	-	- 0.048 0.011	0.01	-
HCM Control Delay (s)	-	- 39.7 12.4	11.7	-
HCM Lane LOS	-	- E B	B	-
HCM 95th %tile Q(veh)	-	- 0.1 0	0	-

HCM 2010 Signalized Intersection Capacity Analysis

200: Arlington Heights Road & Lillian Avenue/Access B

02/14/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	5	50	30	10	50	50	775	40	25	1060	30
Future Volume (veh/h)	85	5	50	30	10	50	50	775	40	25	1060	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1849	1900	1863	1961	1827	1863	1818	1900	1863	1862	1900
Adj Flow Rate, veh/h	89	5	53	32	11	53	53	816	42	26	1116	32
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	11	11	2	2	4	2	4	4	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	331	20	208	274	204	187	313	1877	97	397	1937	56
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.06	0.14	0.14	0.02	0.10	0.10	0.03	0.56	0.56	0.02	0.55	0.55
Ln Grp Delay, s/veh	26.4	0.0	29.3	29.0	30.0	31.3	8.8	10.8	10.7	7.7	13.3	13.2
Ln Grp LOS	C		C	C	C	C	A	B	B	A	B	B
Approach Vol, veh/h		147			96			911			1174	
Approach Delay, s/veh		27.6			30.4			10.7			13.2	
Approach LOS		C			C			B			B	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Case No	1.1	4.0	1.1	4.0	1.1	4.0	1.1	3.0				
Phs Duration (G+Y+Rc), s	4.7	47.4	5.0	16.6	5.5	46.7	7.9	13.7				
Change Period (Y+Rc), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0				
Max Green (Gmax), s	4.5	51.0	3.5	12.0	6.5	49.0	7.5	8.0				
Max Allow Headway (MAH), s	3.8	9.1	3.9	7.7	3.8	9.1	3.9	6.3				
Max Q Clear (g_c+I1), s	2.5	12.4	3.2	4.4	3.0	17.4	5.2	4.3				
Green Ext Time (g_e), s	0.0	19.8	0.0	0.2	0.0	23.3	0.0	0.1				
Prob of Phs Call (p_c)	0.41	1.00	0.48	0.99	0.66	1.00	0.84	0.96				
Prob of Max Out (p_x)	1.00	0.38	1.00	1.00	1.00	0.71	1.00	1.00				
Left-Turn Movement Data												
Assigned Mvmt	1		3		5		7					
Mvmt Sat Flow, veh/h	1774		1774		1774		1740					
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		3342		137		3512		1961				
Right-Turn Movement Data												
Assigned Mvmt		12		14		16		18				
Mvmt Sat Flow, veh/h		172		1455		101		1553				
Left Lane Group Data												
Assigned Mvmt	1	0	3	0	5	0	7	0				
Lane Assignment	(Pr/Pm)		(Pr/Pm)		(Pr/Pm)		(Pr/Pm)					

Existing (2019) Traffic Volumes 7:15 am 02/04/2019 AM Peak Hour

Synchro 10 Report
Page 2

HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

02/14/2019

Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	26	0	32	0	53	0	89	0
Grp Sat Flow (s), veh/h/ln	1774	0	1774	0	1774	0	1740	0
Q Serve Time (g_s), s	0.5	0.0	1.2	0.0	1.0	0.0	3.2	0.0
Cycle Q Clear Time (g_c), s	0.5	0.0	1.2	0.0	1.0	0.0	3.2	0.0
Perm LT Sat Flow (s_l), veh/h/ln	641	0	1340	0	488	0	1307	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	40.7	0.0	7.7	0.0	40.7	0.0	9.1	0.0
Perm LT Serve Time (g_u), s	31.0	0.0	7.7	0.0	25.3	0.0	7.3	0.0
Perm LT Q Serve Time (g_ps), s	0.4	0.0	0.0	0.0	1.9	0.0	0.1	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	397	0	274	0	313	0	331	0
V/C Ratio (X)	0.07	0.00	0.12	0.00	0.17	0.00	0.27	0.00
Avail Cap (c_a), veh/h	475	0	321	0	421	0	404	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	7.6	0.0	28.8	0.0	8.6	0.0	26.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.2	0.0	0.3	0.0	0.4	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	7.7	0.0	29.0	0.0	8.8	0.0	26.4	0.0
1st-Term Q (Q1), veh/ln	0.2	0.0	0.6	0.0	0.5	0.0	1.5	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	1.80	0.00	1.80	0.00	1.80	0.00
%ile Back of Q (95%), veh/ln	0.4	0.0	1.0	0.0	0.9	0.0	2.8	0.0
%ile Storage Ratio (RQ%)	0.06	0.00	0.17	0.00	0.44	0.00	0.61	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T		T	
Lanes in Grp	0	1	0	0	0	1	0	1
Grp Vol (v), veh/h	0	422	0	0	0	562	0	11
Grp Sat Flow (s), veh/h/ln	0	1727	0	0	0	1769	0	1961
Q Serve Time (g_s), s	0.0	10.4	0.0	0.0	0.0	15.4	0.0	0.4
Cycle Q Clear Time (g_c), s	0.0	10.4	0.0	0.0	0.0	15.4	0.0	0.4
Lane Grp Cap (c), veh/h	0	970	0	0	0	975	0	204
V/C Ratio (X)	0.00	0.43	0.00	0.00	0.00	0.58	0.00	0.05
Avail Cap (c_a), veh/h	0	1194	0	0	0	1175	0	213
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	9.4	0.0	0.0	0.0	10.9	0.0	29.8
Incr Delay (d2), s/veh	0.0	1.4	0.0	0.0	0.0	2.5	0.0	0.2
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	10.8	0.0	0.0	0.0	13.3	0.0	30.0
1st-Term Q (Q1), veh/ln	0.0	4.9	0.0	0.0	0.0	7.5	0.0	0.2

Existing (2019) Traffic Volumes 7:15 am 02/04/2019 AM Peak Hour

Synchro 10 Report
Page 3

HCM 2010 Signalized Intersection Capacity Analysis

200: Arlington Heights Road & Lillian Avenue/Access B

02/14/2019

2nd-Term Q (Q2), veh/ln	0.0	0.4	0.0	0.0	0.0	0.7	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.71	0.00	1.00	0.00	1.57	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	9.1	0.0	0.0	0.0	12.8	0.0	0.4
%ile Storage Ratio (RQ%)	0.00	1.04	0.00	0.00	0.00	0.64	0.00	0.03
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	436	0	58	0	586	0	53
Grp Sat Flow (s), veh/h/ln	0	1787	0	1592	0	1844	0	1553
Q Serve Time (g_s), s	0.0	10.4	0.0	2.4	0.0	15.4	0.0	2.3
Cycle Q Clear Time (g_c), s	0.0	10.4	0.0	2.4	0.0	15.4	0.0	2.3
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1552.9
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
Prop RT Outside Lane (P_R)	0.00	0.10	0.00	0.91	0.00	0.05	0.00	1.00
Lane Grp Cap (c), veh/h	0	1004	0	228	0	1017	0	187
V/C Ratio (X)	0.00	0.43	0.00	0.25	0.00	0.58	0.00	0.28
Avail Cap (c_a), veh/h	0	1236	0	259	0	1225	0	195
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	9.4	0.0	28.1	0.0	10.9	0.0	29.5
Incr Delay (d2), s/veh	0.0	1.4	0.0	1.2	0.0	2.4	0.0	1.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	10.7	0.0	29.3	0.0	13.2	0.0	31.3
1st-Term Q (Q1), veh/ln	0.0	5.1	0.0	1.0	0.0	7.8	0.0	1.0
2nd-Term Q (Q2), veh/ln	0.0	0.4	0.0	0.1	0.0	0.7	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.70	0.00	1.80	0.00	1.56	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	9.3	0.0	2.0	0.0	13.3	0.0	1.9
%ile Storage Ratio (RQ%)	0.00	1.07	0.00	0.21	0.00	0.66	0.00	0.32
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Ctrl Delay	13.8
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary
200: Arlington Heights Road & Lillian Avenue/Access B

02/14/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	5	50	30	10	50	50	775	40	25	1060	30
Future Volume (veh/h)	85	5	50	30	10	50	50	775	40	25	1060	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1849	1900	1863	1961	1827	1863	1818	1900	1863	1862	1900
Adj Flow Rate, veh/h	89	5	53	32	11	53	53	816	42	26	1116	32
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	11	11	2	2	4	2	4	4	2	2	2
Cap, veh/h	331	20	208	274	204	187	313	1877	97	397	1937	56
Arrive On Green	0.06	0.14	0.14	0.02	0.10	0.10	0.03	0.56	0.56	0.02	0.55	0.55
Sat Flow, veh/h	1740	137	1455	1774	1961	1553	1774	3342	172	1774	3512	101
Grp Volume(v), veh/h	89	0	58	32	11	53	53	422	436	26	562	586
Grp Sat Flow(s),veh/h/ln	1740	0	1592	1774	1961	1553	1774	1727	1787	1774	1769	1844
Q Serve(g_s), s	3.2	0.0	2.4	1.2	0.4	2.3	1.0	10.4	10.4	0.5	15.4	15.4
Cycle Q Clear(g_c), s	3.2	0.0	2.4	1.2	0.4	2.3	1.0	10.4	10.4	0.5	15.4	15.4
Prop In Lane	1.00		0.91	1.00		1.00	1.00		0.10	1.00		0.05
Lane Grp Cap(c), veh/h	331	0	228	274	204	187	313	970	1004	397	975	1017
V/C Ratio(X)	0.27	0.00	0.25	0.12	0.05	0.28	0.17	0.43	0.43	0.07	0.58	0.58
Avail Cap(c_a), veh/h	404	0	259	321	213	195	421	1194	1236	475	1175	1225
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.0	0.0	28.1	28.8	29.8	29.5	8.6	9.4	9.4	7.6	10.9	10.9
Incr Delay (d2), s/veh	0.4	0.0	1.2	0.2	0.2	1.7	0.3	1.4	1.4	0.1	2.5	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.8	0.0	2.0	1.0	0.4	1.9	0.9	9.1	9.3	0.4	12.8	13.3
LnGrp Delay(d),s/veh	26.4	0.0	29.3	29.0	30.0	31.3	8.8	10.8	10.7	7.7	13.3	13.2
LnGrp LOS	C		C	C	C	C	A	B	B	A	B	B
Approach Vol, veh/h		147			96			911			1174	
Approach Delay, s/veh		27.6			30.4			10.7			13.2	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.7	47.4	5.0	16.6	5.5	46.7	7.9	13.7				
Change Period (Y+Rc), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0				
Max Green Setting (Gmax), s	4.5	51.0	3.5	12.0	6.5	49.0	7.5	8.0				
Max Q Clear Time (g_c+I1), s	2.5	12.4	3.2	4.4	3.0	17.4	5.2	4.3				
Green Ext Time (p_c), s	0.0	19.8	0.0	0.2	0.0	23.3	0.0	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			13.8									
HCM 2010 LOS			B									
Notes												

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

02/14/2019

												
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	10	250	1900	150	180	855	10	150	620	140	35	785
Future Volume (vph)	10	250	1900	150	180	855	10	150	620	140	35	785
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	12	13	12	12	12	12	12	12	12
Storage Length (ft)		415		0	215		0	140		175	150	
Storage Lanes		1		0	1		0	1		1	1	
Taper Length (ft)		120			180			170			250	
Lane Util. Factor	0.91	1.00	0.91	0.91	1.00	0.91	0.91	1.00	0.95	1.00	1.00	0.95
Frt			0.989			0.998				0.850		
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	1829	5029	0	1811	4932	0	1752	3654	1583	1752	3725
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	1829	5029	0	1811	4932	0	1752	3654	1583	1752	3725
Right Turn on Red				No			No			No		
Satd. Flow (RTOR)												
Link Speed (mph)			35			35			35			35
Link Distance (ft)			601			560			640			500
Travel Time (s)			11.7			10.9			12.5			9.7
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	2%	3%	4%	2%	3%	2%
Adj. Flow (vph)	11	263	2000	158	189	900	11	158	653	147	37	826
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	274	2158	0	189	911	0	158	653	147	37	826
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			52			52			17			17
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane												
Headway Factor	1.00	0.96	1.00	1.00	0.96	1.00	1.00	1.00	0.94	1.00	1.00	0.94
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors	1	1	2		1	2		1	2	1	1	2
Detector Template	Left	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	20	100		20	100		20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Size(ft)	20	20	6		20	6		20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA

Existing (2019) Traffic Volumes 7:15 am 02/04/2019 AM Peak Hour

Synchro 10 Report
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Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

02/14/2019

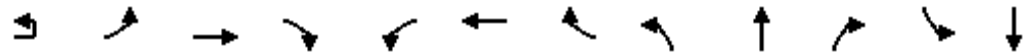
Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	245
Future Volume (vph)	245
Ideal Flow (vphpl)	1900
Lane Width (ft)	12
Storage Length (ft)	280
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1568
Flt Permitted	
Satd. Flow (perm)	1568
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.95
Heavy Vehicles (%)	3%
Adj. Flow (vph)	258
Shared Lane Traffic (%)	
Lane Group Flow (vph)	258
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	pm+ov

Existing (2019) Traffic Volumes 7:15 am 02/04/2019 AM Peak Hour

Synchro 10 Report
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Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

02/14/2019



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Protected Phases	7!	7	4		3	8		5	2	3	1	6
Permitted Phases										2		
Detector Phase	7	7	4		3	8		5	2	3	1	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		3.0	15.0		3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	7.5	7.5	21.5		7.5	21.5		7.5	21.5	7.5	7.5	21.5
Total Split (s)	24.0	24.0	60.0		24.0	60.0		17.0	39.0	24.0	17.0	39.0
Total Split (%)	17.1%	17.1%	42.9%		17.1%	42.9%		12.1%	27.9%	17.1%	12.1%	27.9%
Maximum Green (s)	19.5	19.5	53.5		19.5	53.5		12.5	32.5	19.5	12.5	32.5
Yellow Time (s)	3.5	3.5	4.5		3.5	4.5		3.5	4.5	3.5	3.5	4.5
All-Red Time (s)	1.0	1.0	2.0		1.0	2.0		1.0	2.0	1.0	1.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	6.5		4.5	6.5		4.5	6.5	4.5	4.5	6.5
Lead/Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	7.0		4.0	7.0		4.0	7.0	4.0	4.0	7.0
Recall Mode	None	None	None		None	None		None	C-Min	None	None	C-Min
Walk Time (s)									7.0			7.0
Flash Dont Walk (s)									11.0			11.0
Pedestrian Calls (#/hr)									0			0
Act Effect Green (s)		19.5	54.7		18.3	53.5		12.5	37.8	62.6	9.4	32.5
Actuated g/C Ratio		0.14	0.39		0.13	0.38		0.09	0.27	0.45	0.07	0.23
v/c Ratio		1.08	1.10		0.80	0.48		1.01	0.66	0.21	0.32	0.96
Control Delay		134.3	92.9		83.1	33.8		137.3	50.3	25.5	68.5	74.5
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		134.3	92.9		83.1	33.8		137.3	50.3	25.5	68.5	74.5
LOS		F	F		F	C		F	D	C	E	E
Approach Delay			97.5			42.3			60.9			64.2
Approach LOS			F			D			E			E
90th %ile Green (s)	19.5	19.5	53.5		19.5	53.5		12.5	32.6	19.5	12.4	32.5
90th %ile Term Code	Max	Max	Max		Max	Max		Max	Coord	Max	Gap	Coord
70th %ile Green (s)	19.5	19.5	53.5		19.5	53.5		12.5	34.4	19.5	10.6	32.5
70th %ile Term Code	Max	Max	Max		Max	Hold		Max	Coord	Max	Gap	Coord
50th %ile Green (s)	19.5	19.5	53.5		19.5	53.5		12.5	35.7	19.5	9.3	32.5
50th %ile Term Code	Max	Max	Max		Max	Hold		Max	Coord	Max	Gap	Coord
30th %ile Green (s)	19.5	19.5	54.6		18.4	53.5		12.5	36.9	18.4	8.1	32.5
30th %ile Term Code	Max	Max	Max		Gap	Hold		Max	Coord	Gap	Gap	Coord
10th %ile Green (s)	19.5	19.5	58.5		14.5	53.5		12.5	49.5	14.5	0.0	32.5
10th %ile Term Code	Max	Max	Max		Gap	Hold		Max	Coord	Gap	Skip	Coord
Queue Length 50th (ft)		~277	~828		168	228		~148	285	81	33	393
Queue Length 95th (ft)		#460	#920		#279	272		#300	367	136	70	#523
Internal Link Dist (ft)			521			480			560			420
Turn Bay Length (ft)		415			215			140		175	150	
Base Capacity (vph)		254	1965		252	1884		156	986	721	156	864
Starvation Cap Reductn		0	0		0	0		0	0	0	0	0
Spillback Cap Reductn		0	0		0	0		0	0	0	0	0
Storage Cap Reductn		0	0		0	0		0	0	0	0	0
Reduced v/c Ratio		1.08	1.10		0.75	0.48		1.01	0.66	0.20	0.24	0.96

Existing (2019) Traffic Volumes 7:15 am 02/04/2019 AM Peak Hour

Synchro 10 Report
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Lanes, Volumes, Timings

300: Arlington Heights Road & Palatine Road

02/14/2019

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 57.4 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 73.8

Intersection LOS: E

Intersection Capacity Utilization 97.3%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

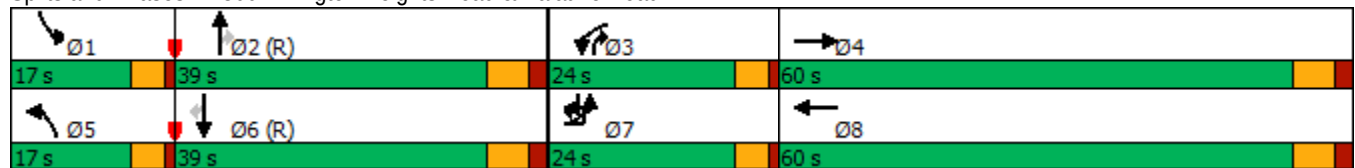
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

! Phase conflict between lane groups.

Splits and Phases: 300: Arlington Heights Road & Palatine Road



Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

02/14/2019

Lane Group	SBR
Protected Phases	7!
Permitted Phases	6
Detector Phase	7
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	7.5
Total Split (s)	24.0
Total Split (%)	17.1%
Maximum Green (s)	19.5
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	4.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	58.5
Actuated g/C Ratio	0.42
v/c Ratio	0.39
Control Delay	30.7
Queue Delay	0.0
Total Delay	30.7
LOS	C
Approach Delay	
Approach LOS	
90th %ile Green (s)	19.5
90th %ile Term Code	Max
70th %ile Green (s)	19.5
70th %ile Term Code	Max
50th %ile Green (s)	19.5
50th %ile Term Code	Max
30th %ile Green (s)	19.5
30th %ile Term Code	Max
10th %ile Green (s)	19.5
10th %ile Term Code	Max
Queue Length 50th (ft)	162
Queue Length 95th (ft)	239
Internal Link Dist (ft)	
Turn Bay Length (ft)	280
Base Capacity (vph)	655
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.39

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑		↑
Traffic Vol, veh/h	2050	25	0	1045	0	20
Future Vol, veh/h	2050	25	0	1045	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	4	2	4	2	2
Mvmt Flow	2158	26	0	1100	0	21

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- - - 1092
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - - 7.14
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - - 3.92
Pot Cap-1 Maneuver	-	-	0 - 0 180
Stage 1	-	-	0 - 0 -
Stage 2	-	-	0 - 0 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - - 180
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	27.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	180	-	-	-
HCM Lane V/C Ratio	0.117	-	-	-
HCM Control Delay (s)	27.6	-	-	-
HCM Lane LOS	D	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	15	0	725	1515	20
Future Vol, veh/h	0	15	0	725	1515	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	6	2	3	2	2
Mvmt Flow	0	16	0	763	1595	21

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 808	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 7.22	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.96	- -	- -
Pot Cap-1 Maneuver	0 271	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 271	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	19.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 271	- -	- -
HCM Lane V/C Ratio	- 0.058	- -	- -
HCM Control Delay (s)	- 19.1	- -	- -
HCM Lane LOS	- C	- -	- -
HCM 95th %tile Q(veh)	- 0.2	- -	- -

HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

02/14/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	2	15	15	10	5	30	710	5	10	1510	10
Future Volume (veh/h)	10	2	15	15	10	5	30	710	5	10	1510	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1759	1863	1900	1863	1842	1900	1759	1862	1900
Adj Flow Rate, veh/h	11	2	16	16	11	5	32	747	5	11	1589	11
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	8	2	2	2	3	3	8	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	195	14	111	187	94	43	309	2500	17	529	3594	25
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.02	0.70	0.70	0.01	0.69	0.69
Ln Grp Delay, s/veh	32.1	0.0	32.5	32.5	0.0	32.1	4.0	4.7	4.7	3.5	5.6	6.2
Ln Grp LOS	C		C	C		C	A	A	A	A	A	A
Approach Vol, veh/h		29			32			784			1611	
Approach Delay, s/veh		32.3			32.3			4.7			5.8	
Approach LOS		C			C			A			A	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs		1	2		4	5	6		8			
Case No		1.1	4.0		6.0	1.1	4.0		6.0			
Phs Duration (G+Y+Rc), s		4.1	57.2		11.7	4.9	56.3		11.7			
Change Period (Y+Rc), s		3.5	6.0		6.0	3.5	6.0		6.0			
Max Green (Gmax), s		5.5	58.0		11.0	6.5	57.0		11.0			
Max Allow Headway (MAH), s		3.8	9.1		7.0	3.8	9.1		6.8			
Max Q Clear (g_c+I1), s		2.1	7.8		3.2	2.4	11.9		3.6			
Green Ext Time (g_e), s		0.0	19.0		0.1	0.0	38.4		0.1			
Prob of Phs Call (p_c)		0.20	1.00		0.71	0.48	1.00		0.71			
Prob of Max Out (p_x)		1.00	0.17		0.51	0.59	0.81		0.60			
Left-Turn Movement Data												
Assigned Mvmt		1			7	5			3			
Mvmt Sat Flow, veh/h		1675			1392	1774			1312			
Through Movement Data												
Assigned Mvmt			2		4		6		8			
Mvmt Sat Flow, veh/h			3564		179		5208		1214			
Right-Turn Movement Data												
Assigned Mvmt			12		14		16		18			
Mvmt Sat Flow, veh/h			24		1431		36		552			
Left Lane Group Data												
Assigned Mvmt		1	0	0	7	5	0	0	3			
Lane Assignment		(Pr/Pm)			(Pr/Pm)							

Existing (2019) Traffic Volumes 7:15 am 02/04/2019 AM Peak Hour

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HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

02/14/2019

Lanes in Grp	1	0	0	1	1	0	0	1
Grp Vol (v), veh/h	11	0	0	11	32	0	0	16
Grp Sat Flow (s), veh/h/ln	1675	0	0	1392	1774	0	0	1312
Q Serve Time (g_s), s	0.1	0.0	0.0	0.5	0.4	0.0	0.0	0.8
Cycle Q Clear Time (g_c), s	0.1	0.0	0.0	1.2	0.4	0.0	0.0	1.6
Perm LT Sat Flow (s_l), veh/h/ln	669	0	0	1392	316	0	0	1312
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	50.3	0.0	0.0	5.7	50.3	0.0	0.0	5.7
Perm LT Serve Time (g_u), s	45.4	0.0	0.0	5.1	40.4	0.0	0.0	4.9
Perm LT Q Serve Time (g_ps), s	0.1	0.0	0.0	0.5	1.1	0.0	0.0	0.8
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Lane Grp Cap (c), veh/h	529	0	0	195	309	0	0	187
V/C Ratio (X)	0.02	0.00	0.00	0.06	0.10	0.00	0.00	0.09
Avail Cap (c_a), veh/h	641	0	0	297	432	0	0	283
Upstream Filter (I)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	3.5	0.0	0.0	31.8	3.9	0.0	0.0	32.1
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.4
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	3.5	0.0	0.0	32.1	4.0	0.0	0.0	32.5
1st-Term Q (Q1), veh/ln	0.1	0.0	0.0	0.2	0.2	0.0	0.0	0.3
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	0.00	1.80	1.80	0.00	0.00	1.80
%ile Back of Q (95%), veh/ln	0.1	0.0	0.0	0.4	0.3	0.0	0.0	0.6
%ile Storage Ratio (RQ%)	0.02	0.00	0.00	0.07	0.04	0.00	0.00	0.13
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T			T				
Lanes in Grp	0	1	0	0	0	2	0	0
Grp Vol (v), veh/h	0	367	0	0	0	1034	0	0
Grp Sat Flow (s), veh/h/ln	0	1750	0	0	0	1694	0	0
Q Serve Time (g_s), s	0.0	5.8	0.0	0.0	0.0	9.9	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	5.8	0.0	0.0	0.0	9.9	0.0	0.0
Lane Grp Cap (c), veh/h	0	1228	0	0	0	2338	0	0
V/C Ratio (X)	0.00	0.30	0.00	0.00	0.00	0.44	0.00	0.00
Avail Cap (c_a), veh/h	0	1391	0	0	0	2648	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	4.1	0.0	0.0	0.0	5.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.0	0.6	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	4.7	0.0	0.0	0.0	5.6	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	2.8	0.0	0.0	0.0	4.6	0.0	0.0

Existing (2019) Traffic Volumes 7:15 am 02/04/2019 AM Peak Hour

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HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

02/14/2019

2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.80	0.00	1.00	0.00	1.75	0.00	1.00
%ile Back of Q (95%), veh/ln	0.0	5.3	0.0	0.0	0.0	8.4	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.22	0.00	0.00	0.00	0.58	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	385	0	18	0	566	0	16
Grp Sat Flow (s), veh/h/ln	0	1838	0	1610	0	1856	0	1765
Q Serve Time (g_s), s	0.0	5.8	0.0	0.8	0.0	9.9	0.0	0.6
Cycle Q Clear Time (g_c), s	0.0	5.8	0.0	0.8	0.0	9.9	0.0	0.6
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.01	0.00	0.89	0.00	0.02	0.00	0.31
Lane Grp Cap (c), veh/h	0	1289	0	125	0	1280	0	137
V/C Ratio (X)	0.00	0.30	0.00	0.14	0.00	0.44	0.00	0.12
Avail Cap (c_a), veh/h	0	1461	0	243	0	1450	0	266
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	4.1	0.0	31.4	0.0	5.0	0.0	31.3
Incr Delay (d2), s/veh	0.0	0.6	0.0	1.1	0.0	1.1	0.0	0.8
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	4.7	0.0	32.5	0.0	6.2	0.0	32.1
1st-Term Q (Q1), veh/ln	0.0	2.9	0.0	0.3	0.0	5.0	0.0	0.3
2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.4	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.80	0.00	1.80	0.00	1.70	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	5.6	0.0	0.7	0.0	9.2	0.0	0.6
%ile Storage Ratio (RQ%)	0.00	0.23	0.00	0.09	0.00	0.64	0.00	0.14
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Ctrl Delay	6.1
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary

600: Rand Road & Access E/Private Driveway

02/14/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	2	15	15	10	5	30	710	5	10	1510	10
Future Volume (veh/h)	10	2	15	15	10	5	30	710	5	10	1510	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1759	1863	1900	1863	1842	1900	1759	1862	1900
Adj Flow Rate, veh/h	11	2	16	16	11	5	32	747	5	11	1589	11
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	8	2	2	2	3	3	8	2	2
Cap, veh/h	195	14	111	187	94	43	309	2500	17	529	3594	25
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.02	0.70	0.70	0.01	0.69	0.69
Sat Flow, veh/h	1392	179	1431	1312	1214	552	1774	3564	24	1675	5208	36
Grp Volume(v), veh/h	11	0	18	16	0	16	32	367	385	11	1034	566
Grp Sat Flow(s),veh/h/ln	1392	0	1610	1312	0	1765	1774	1750	1838	1675	1694	1856
Q Serve(g_s), s	0.5	0.0	0.8	0.8	0.0	0.6	0.4	5.8	5.8	0.1	9.9	9.9
Cycle Q Clear(g_c), s	1.2	0.0	0.8	1.6	0.0	0.6	0.4	5.8	5.8	0.1	9.9	9.9
Prop In Lane	1.00		0.89	1.00		0.31	1.00		0.01	1.00		0.02
Lane Grp Cap(c), veh/h	195	0	125	187	0	137	309	1228	1289	529	2338	1280
V/C Ratio(X)	0.06	0.00	0.14	0.09	0.00	0.12	0.10	0.30	0.30	0.02	0.44	0.44
Avail Cap(c_a), veh/h	297	0	243	283	0	266	432	1391	1461	641	2648	1450
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.8	0.0	31.4	32.1	0.0	31.3	3.9	4.1	4.1	3.5	5.0	5.0
Incr Delay (d2), s/veh	0.3	0.0	1.1	0.4	0.0	0.8	0.1	0.6	0.6	0.0	0.6	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	0.0	0.7	0.6	0.0	0.6	0.3	5.3	5.6	0.1	8.4	9.2
LnGrp Delay(d),s/veh	32.1	0.0	32.5	32.5	0.0	32.1	4.0	4.7	4.7	3.5	5.6	6.2
LnGrp LOS	C		C	C		C	A	A	A	A	A	A
Approach Vol, veh/h	29					32		784		1611		
Approach Delay, s/veh	32.3					32.3		4.7		5.8		
Approach LOS	C					C		A		A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	4.1	57.2	11.7		4.9	56.3	11.7					
Change Period (Y+Rc), s	3.5	6.0	6.0		3.5	6.0	6.0					
Max Green Setting (Gmax), s	5.5	58.0	11.0		6.5	57.0	11.0					
Max Q Clear Time (g_c+I1), s	2.1	7.8	3.2		2.4	11.9	3.6					
Green Ext Time (p_c), s	0.0	19.0	0.1		0.0	38.4	0.1					
Intersection Summary												
HCM 2010 Ctrl Delay			6.1									
HCM 2010 LOS			A									

HCM 2010 TWSC
100: Arlington Heights Road & Access A (Loading Dock)

02/14/2019

Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	1140	20	2	995
Future Vol, veh/h	5	5	1140	20	2	995
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	40	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	6	2	2
Mvmt Flow	5	5	1200	21	2	1047

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1739	611	0
Stage 1	1211	-	-
Stage 2	528	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	78	437	-
Stage 1	245	-	-
Stage 2	556	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	78	437	-
Mov Cap-2 Maneuver	78	-	-
Stage 1	244	-	-
Stage 2	556	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33.9	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	- 78 437	567	-
HCM Lane V/C Ratio	-	- 0.067 0.012	0.004	-
HCM Control Delay (s)	-	- 54.5 13.3	11.4	-
HCM Lane LOS	-	- F B	B	-
HCM 95th %tile Q(veh)	-	- 0.2 0	0	-

HCM 2010 Signalized Intersection Capacity Analysis

200: Arlington Heights Road & Lillian Avenue/Access B

02/14/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	20	10	65	30	130	25	1040	80	90	920	55
Future Volume (veh/h)	75	20	10	65	30	130	25	1040	80	90	920	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1961	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	79	21	11	68	32	137	26	1095	84	95	968	58
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	300	131	68	310	208	237	345	1818	139	325	1942	116
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.05	0.11	0.11	0.05	0.11	0.11	0.02	0.55	0.55	0.04	0.57	0.57
Ln Grp Delay, s/veh	28.4	0.0	31.0	28.6	31.4	35.5	8.3	14.4	14.3	9.5	11.4	11.4
Ln Grp LOS	C		C	C	C	D	A	B	B	A	B	B
Approach Vol, veh/h		111			237			1205			1121	
Approach Delay, s/veh		29.1			32.9			14.2			11.2	
Approach LOS		C			C			B			B	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Case No	1.1	4.0	1.1	4.0	1.1	4.0	1.1	3.0				
Phs Duration (G+Y+Rc), s	6.8	47.2	7.0	14.6	4.8	49.2	7.5	14.0				
Change Period (Y+Rc), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0				
Max Green (Gmax), s	8.5	48.0	6.5	8.0	3.5	53.0	6.5	8.0				
Max Allow Headway (MAH), s	3.8	9.1	3.9	7.5	3.8	9.1	3.9	6.3				
Max Q Clear (g_c+I1), s	3.7	18.8	4.6	3.2	2.5	14.9	5.0	8.1				
Green Ext Time (g_e), s	0.1	22.4	0.0	0.0	0.0	24.0	0.0	0.0				
Prob of Phs Call (p_c)	0.86	1.00	0.76	1.00	0.42	1.00	0.81	1.00				
Prob of Max Out (p_x)	0.33	0.76	1.00	1.00	1.00	0.54	1.00	1.00				
Left-Turn Movement Data												
Assigned Mvmt	1		3		5		7					
Mvmt Sat Flow, veh/h	1774		1774		1774		1774					
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		3332		1153		3393		1961				
Right-Turn Movement Data												
Assigned Mvmt		12		14		16		18				
Mvmt Sat Flow, veh/h		255		604		203		1583				
Left Lane Group Data												
Assigned Mvmt	1	0	3	0	5	0	7	0				
Lane Assignment	(Pr/Pm)		(Pr/Pm)		(Pr/Pm)		(Pr/Pm)					

Existing (2019) Traffic Volumes 4:15 pm 02/04/2019 PM Peak Hour

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HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

02/14/2019

Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	95	0	68	0	26	0	79	0
Grp Sat Flow (s), veh/h/ln	1774	0	1774	0	1774	0	1774	0
Q Serve Time (g_s), s	1.7	0.0	2.6	0.0	0.5	0.0	3.0	0.0
Cycle Q Clear Time (g_c), s	1.7	0.0	2.6	0.0	0.5	0.0	3.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	474	0	1372	0	547	0	1211	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	41.7	0.0	8.0	0.0	41.2	0.0	8.0	0.0
Perm LT Serve Time (g_u), s	24.4	0.0	7.3	0.0	30.3	0.0	6.9	0.0
Perm LT Q Serve Time (g_ps), s	4.3	0.0	0.0	0.0	0.5	0.0	0.1	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	325	0	310	0	345	0	300	0
V/C Ratio (X)	0.29	0.00	0.22	0.00	0.08	0.00	0.26	0.00
Avail Cap (c_a), veh/h	448	0	381	0	397	0	359	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	9.0	0.0	28.2	0.0	8.2	0.0	27.9	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.4	0.0	0.1	0.0	0.5	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	9.5	0.0	28.6	0.0	8.3	0.0	28.4	0.0
1st-Term Q (Q1), veh/ln	0.8	0.0	1.2	0.0	0.2	0.0	1.4	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	1.80	0.00	1.80	0.00	1.80	0.00
%ile Back of Q (95%), veh/ln	1.6	0.0	2.3	0.0	0.4	0.0	2.6	0.0
%ile Storage Ratio (RQ%)	0.21	0.00	0.37	0.00	0.22	0.00	0.56	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T		T	
Lanes in Grp	0	1	0	0	0	1	0	1
Grp Vol (v), veh/h	0	581	0	0	0	505	0	32
Grp Sat Flow (s), veh/h/ln	0	1770	0	0	0	1770	0	1961
Q Serve Time (g_s), s	0.0	16.8	0.0	0.0	0.0	12.9	0.0	1.1
Cycle Q Clear Time (g_c), s	0.0	16.8	0.0	0.0	0.0	12.9	0.0	1.1
Lane Grp Cap (c), veh/h	0	965	0	0	0	1013	0	208
V/C Ratio (X)	0.00	0.60	0.00	0.00	0.00	0.50	0.00	0.15
Avail Cap (c_a), veh/h	0	1125	0	0	0	1242	0	208
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	11.6	0.0	0.0	0.0	9.7	0.0	30.7
Incr Delay (d2), s/veh	0.0	2.8	0.0	0.0	0.0	1.8	0.0	0.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	14.4	0.0	0.0	0.0	11.4	0.0	31.4
1st-Term Q (Q1), veh/ln	0.0	8.1	0.0	0.0	0.0	6.2	0.0	0.6

Existing (2019) Traffic Volumes 4:15 pm 02/04/2019 PM Peak Hour

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HCM 2010 Signalized Intersection Capacity Analysis
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2nd-Term Q (Q2), veh/ln	0.0	0.7	0.0	0.0	0.0	0.5	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.55	0.00	1.00	0.00	1.64	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	13.7	0.0	0.0	0.0	10.9	0.0	1.2
%ile Storage Ratio (RQ%)	0.00	1.55	0.00	0.00	0.00	0.54	0.00	0.08
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	598	0	32	0	521	0	137
Grp Sat Flow (s), veh/h/ln	0	1818	0	1756	0	1827	0	1583
Q Serve Time (g_s), s	0.0	16.8	0.0	1.2	0.0	12.9	0.0	6.1
Cycle Q Clear Time (g_c), s	0.0	16.8	0.0	1.2	0.0	12.9	0.0	6.1
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1583.3
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3
Prop RT Outside Lane (P_R)	0.00	0.14	0.00	0.34	0.00	0.11	0.00	1.00
Lane Grp Cap (c), veh/h	0	992	0	199	0	1045	0	237
V/C Ratio (X)	0.00	0.60	0.00	0.16	0.00	0.50	0.00	0.58
Avail Cap (c_a), veh/h	0	1156	0	199	0	1283	0	237
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	11.6	0.0	30.2	0.0	9.7	0.0	29.9
Incr Delay (d2), s/veh	0.0	2.7	0.0	0.8	0.0	1.7	0.0	5.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	14.3	0.0	31.0	0.0	11.4	0.0	35.5
1st-Term Q (Q1), veh/ln	0.0	8.3	0.0	0.6	0.0	6.4	0.0	2.6
2nd-Term Q (Q2), veh/ln	0.0	0.7	0.0	0.0	0.0	0.5	0.0	0.4
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.55	0.00	1.80	0.00	1.63	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	14.0	0.0	1.2	0.0	11.2	0.0	5.4
%ile Storage Ratio (RQ%)	0.00	1.58	0.00	0.11	0.00	0.55	0.00	0.88
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary
200: Arlington Heights Road & Lillian Avenue/Access B

02/14/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	20	10	65	30	130	25	1040	80	90	920	55
Future Volume (veh/h)	75	20	10	65	30	130	25	1040	80	90	920	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1961	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	79	21	11	68	32	137	26	1095	84	95	968	58
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	300	131	68	310	208	237	345	1818	139	325	1942	116
Arrive On Green	0.05	0.11	0.11	0.05	0.11	0.11	0.02	0.55	0.55	0.04	0.57	0.57
Sat Flow, veh/h	1774	1153	604	1774	1961	1583	1774	3332	255	1774	3393	203
Grp Volume(v), veh/h	79	0	32	68	32	137	26	581	598	95	505	521
Grp Sat Flow(s),veh/h/ln	1774	0	1756	1774	1961	1583	1774	1770	1818	1774	1770	1827
Q Serve(g_s), s	3.0	0.0	1.2	2.6	1.1	6.1	0.5	16.8	16.8	1.7	12.9	12.9
Cycle Q Clear(g_c), s	3.0	0.0	1.2	2.6	1.1	6.1	0.5	16.8	16.8	1.7	12.9	12.9
Prop In Lane	1.00		0.34	1.00		1.00	1.00		0.14	1.00		0.11
Lane Grp Cap(c), veh/h	300	0	199	310	208	237	345	965	992	325	1013	1045
V/C Ratio(X)	0.26	0.00	0.16	0.22	0.15	0.58	0.08	0.60	0.60	0.29	0.50	0.50
Avail Cap(c_a), veh/h	359	0	199	381	208	237	397	1125	1156	448	1242	1283
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.9	0.0	30.2	28.2	30.7	29.9	8.2	11.6	11.6	9.0	9.7	9.7
Incr Delay (d2), s/veh	0.5	0.0	0.8	0.4	0.7	5.6	0.1	2.8	2.7	0.5	1.8	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.6	0.0	1.2	2.3	1.2	5.4	0.4	13.7	14.0	1.6	10.9	11.2
LnGrp Delay(d),s/veh	28.4	0.0	31.0	28.6	31.4	35.5	8.3	14.4	14.3	9.5	11.4	11.4
LnGrp LOS	C		C	C	C	D	A	B	B	A	B	B
Approach Vol, veh/h		111			237			1205			1121	
Approach Delay, s/veh		29.1			32.9			14.2			11.2	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	47.2	7.0	14.6	4.8	49.2	7.5	14.0				
Change Period (Y+Rc), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0				
Max Green Setting (Gmax), s	8.5	48.0	6.5	8.0	3.5	53.0	6.5	8.0				
Max Q Clear Time (g_c+I1), s	3.7	18.8	4.6	3.2	2.5	14.9	5.0	8.1				
Green Ext Time (p_c), s	0.1	22.4	0.0	0.0	0.0	24.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			15.2									
HCM 2010 LOS			B									
Notes												

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

02/14/2019

												
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	20	280	1205	140	185	1630	40	170	910	165	65	740
Future Volume (vph)	20	280	1205	140	185	1630	40	170	910	165	65	740
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	12	13	12	12	12	12	12	12	12
Storage Length (ft)		415		0	215		0	140		175	150	
Storage Lanes		1		0	1		0	1		1	1	
Taper Length (ft)		120			180			170			250	
Lane Util. Factor	0.91	1.00	0.91	0.91	1.00	0.91	0.91	1.00	0.95	1.00	1.00	0.95
Frt			0.984			0.996				0.850		
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	1829	4960	0	1829	5064	0	1770	3725	1583	1770	3725
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	1829	4960	0	1829	5064	0	1770	3725	1583	1770	3725
Right Turn on Red				No			No			No		
Satd. Flow (RTOR)												
Link Speed (mph)			35			35			35			35
Link Distance (ft)			601			560			640			500
Travel Time (s)			11.7			10.9			12.5			9.7
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	3%	2%	2%	2%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	21	295	1268	147	195	1716	42	179	958	174	68	779
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	316	1415	0	195	1758	0	179	958	174	68	779
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			52			52			17			17
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane												
Headway Factor	1.00	0.96	1.00	1.00	0.96	1.00	1.00	1.00	0.94	1.00	1.00	0.94
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors	1	1	2		1	2		1	2	1	1	2
Detector Template	Left	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	20	100		20	100		20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Size(ft)	20	20	6		20	6		20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA

Existing (2019) Traffic Volumes 4:15 pm 02/04/2019 PM Peak Hour

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Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

02/14/2019

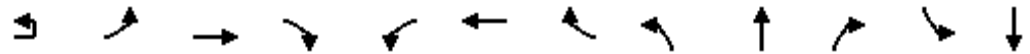
Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	375
Future Volume (vph)	375
Ideal Flow (vphpl)	1900
Lane Width (ft)	12
Storage Length (ft)	280
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1583
Flt Permitted	
Satd. Flow (perm)	1583
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.95
Heavy Vehicles (%)	2%
Adj. Flow (vph)	395
Shared Lane Traffic (%)	
Lane Group Flow (vph)	395
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	pm+ov

Existing (2019) Traffic Volumes 4:15 pm 02/04/2019 PM Peak Hour

Synchro 10 Report
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Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

02/14/2019



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Protected Phases	7!	7	4		3	8		5	2	3	1	6
Permitted Phases										2		
Detector Phase	7	7	4		3	8		5	2	3	1	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		3.0	15.0		3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	7.5	7.5	21.5		7.5	21.5		7.5	21.5	7.5	7.5	21.5
Total Split (s)	28.0	28.0	57.0		28.0	57.0		21.0	50.0	28.0	15.0	44.0
Total Split (%)	18.7%	18.7%	38.0%		18.7%	38.0%		14.0%	33.3%	18.7%	10.0%	29.3%
Maximum Green (s)	23.5	23.5	50.5		23.5	50.5		16.5	43.5	23.5	10.5	37.5
Yellow Time (s)	3.5	3.5	4.5		3.5	4.5		3.5	4.5	3.5	3.5	4.5
All-Red Time (s)	1.0	1.0	2.0		1.0	2.0		1.0	2.0	1.0	1.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	6.5		4.5	6.5		4.5	6.5	4.5	4.5	6.5
Lead/Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	7.0		4.0	7.0		4.0	7.0	4.0	4.0	7.0
Recall Mode	None	None	None		None	None		None	C-Min	None	None	C-Min
Walk Time (s)									7.0			7.0
Flash Dont Walk (s)									11.0			11.0
Pedestrian Calls (#/hr)									0			0
Act Effect Green (s)		23.5	53.4		20.6	50.5		16.5	46.5	73.7	9.9	37.5
Actuated g/C Ratio		0.16	0.36		0.14	0.34		0.11	0.31	0.49	0.07	0.25
v/c Ratio		1.10	0.80		0.78	1.03		0.92	0.83	0.22	0.59	0.84
Control Delay		140.6	48.3		82.9	78.6		112.2	56.0	23.1	88.0	62.5
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.2	0.0	0.0	0.0
Total Delay		140.6	48.3		82.9	78.6		112.2	56.2	23.1	88.0	62.5
LOS		F	D		F	E		F	E	C	F	E
Approach Delay			65.1			79.0			59.5			54.8
Approach LOS			E			E			E			D
90th %ile Green (s)	23.5	23.5	50.5		23.5	50.5		16.5	43.5	23.5	10.5	37.5
90th %ile Term Code	Max	Max	Max		Max	Max		Max	Coord	Max	Max	Coord
70th %ile Green (s)	23.5	23.5	50.5		23.5	50.5		16.5	43.5	23.5	10.5	37.5
70th %ile Term Code	Max	Max	Max		Max	Max		Max	Coord	Max	Max	Coord
50th %ile Green (s)	23.5	23.5	52.0		22.0	50.5		16.5	43.5	22.0	10.5	37.5
50th %ile Term Code	Max	Max	Max		Gap	Max		Max	Coord	Gap	Max	Coord
30th %ile Green (s)	23.5	23.5	54.8		19.2	50.5		16.5	43.7	19.2	10.3	37.5
30th %ile Term Code	Max	Max	Max		Gap	Max		Max	Coord	Gap	Gap	Coord
10th %ile Green (s)	23.5	23.5	59.0		15.0	50.5		16.5	58.5	15.0	0.0	37.5
10th %ile Term Code	Max	Max	Max		Gap	Max		Max	Coord	Gap	Skip	Coord
Queue Length 50th (ft)		~350	463		185	~672		176	473	98	66	383
Queue Length 95th (ft)		#547	534		273	#768		#326	#567	147	121	464
Internal Link Dist (ft)			521			480			560			420
Turn Bay Length (ft)		415			215			140		175	150	
Base Capacity (vph)		286	1764		286	1704		194	1155	807	123	931
Starvation Cap Reductn		0	0		0	0		0	17	0	0	0
Spillback Cap Reductn		0	0		0	0		0	0	0	0	0
Storage Cap Reductn		0	0		0	0		0	0	0	0	0
Reduced v/c Ratio		1.10	0.80		0.68	1.03		0.92	0.84	0.22	0.55	0.84

Existing (2019) Traffic Volumes 4:15 pm 02/04/2019 PM Peak Hour

Synchro 10 Report
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Lanes, Volumes, Timings

300: Arlington Heights Road & Palatine Road

02/14/2019

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 61.5 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 66.2

Intersection LOS: E

Intersection Capacity Utilization 98.3%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

! Phase conflict between lane groups.

Splits and Phases: 300: Arlington Heights Road & Palatine Road

 Ø1	 Ø2 (R)	 Ø3	 Ø4
15 s	50 s	28 s	57 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
21 s	44 s	28 s	57 s

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

02/14/2019

Lane Group	SBR
Protected Phases	7!
Permitted Phases	6
Detector Phase	7
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	7.5
Total Split (s)	28.0
Total Split (%)	18.7%
Maximum Green (s)	23.5
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	4.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	67.5
Actuated g/C Ratio	0.45
v/c Ratio	0.55
Control Delay	34.0
Queue Delay	0.0
Total Delay	34.0
LOS	C
Approach Delay	
Approach LOS	
90th %ile Green (s)	23.5
90th %ile Term Code	Max
70th %ile Green (s)	23.5
70th %ile Term Code	Max
50th %ile Green (s)	23.5
50th %ile Term Code	Max
30th %ile Green (s)	23.5
30th %ile Term Code	Max
10th %ile Green (s)	23.5
10th %ile Term Code	Max
Queue Length 50th (ft)	280
Queue Length 95th (ft)	388
Internal Link Dist (ft)	
Turn Bay Length (ft)	280
Base Capacity (vph)	712
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.55

Intersection

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑		↑
Traffic Vol, veh/h	1340	95	0	1855	0	55
Future Vol, veh/h	1340	95	0	1855	0	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1411	100	0	1953	0	58

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- - - 756
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - - 7.14
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - - 3.92
Pot Cap-1 Maneuver	-	-	0 - 0 301
Stage 1	-	-	0 - 0 -
Stage 2	-	-	0 - 0 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - - 301
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	301	-	-	-
HCM Lane V/C Ratio	0.192	-	-	-
HCM Control Delay (s)	19.8	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.7	-	-	-

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	35	0	1545	1115	90
Future Vol, veh/h	0	35	0	1545	1115	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	37	0	1626	1174	95

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 635	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 7.14	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.92	- -	- -
Pot Cap-1 Maneuver	0 361	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 361	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	16.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 361	- -	- -
HCM Lane V/C Ratio	- 0.102	- -	- -
HCM Control Delay (s)	- 16.1	- -	- -
HCM Lane LOS	- C	- -	- -
HCM 95th %tile Q(veh)	- 0.3	- -	- -

HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

02/14/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	10	65	25	15	50	110	1435	25	25	1105	20
Future Volume (veh/h)	60	10	65	25	15	50	110	1435	25	25	1105	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	63	11	68	26	16	53	116	1511	26	26	1163	21
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	187	25	157	178	43	142	425	2414	42	267	3350	60
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.04	0.68	0.68	0.02	0.65	0.65
Ln Grp Delay, s/veh	38.5	0.0	36.7	36.5	0.0	35.7	4.8	9.7	9.6	6.6	6.8	7.1
Ln Grp LOS	D		D	D		D	A	A	A	A	A	A
Approach Vol, veh/h		142			95			1653			1210	
Approach Delay, s/veh		37.5			35.9			9.3			6.9	
Approach LOS		D			D			A			A	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Case No	1.1	4.0		6.0	1.1	4.0		6.0				
Phs Duration (G+Y+Rc), s	4.8	60.6		15.1	7.0	58.4		15.1				
Change Period (Y+Rc), s	3.5	6.0		6.0	3.5	6.0		6.0				
Max Green (Gmax), s	3.5	59.0		12.0	7.5	55.0		12.0				
Max Allow Headway (MAH), s	3.8	9.1		6.9	3.8	9.1		7.2				
Max Q Clear (g_c+I1), s	2.4	21.1		8.9	3.7	10.2		7.2				
Green Ext Time (g_e), s	0.0	33.4		0.3	0.1	30.0		0.2				
Prob of Phs Call (p_c)	0.44	1.00		0.99	0.93	1.00		0.99				
Prob of Max Out (p_x)	1.00	0.87		1.00	0.94	0.55		1.00				
Left-Turn Movement Data												
Assigned Mvmt	1			7	5			3				
Mvmt Sat Flow, veh/h	1774			1326	1774			1314				
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		3560		225		5144		380				
Right-Turn Movement Data												
Assigned Mvmt		12		14		16		18				
Mvmt Sat Flow, veh/h		61		1392		93		1260				
Left Lane Group Data												
Assigned Mvmt	1	0	0	7	5	0	0	3				
Lane Assignment	(Pr/Pm)			(Pr/Pm)								

Existing (2019) Traffic Volumes 4:15 pm 02/04/2019 PM Peak Hour

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HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

02/14/2019

Lanes in Grp	1	0	0	1	1	0	0	1
Grp Vol (v), veh/h	26	0	0	63	116	0	0	26
Grp Sat Flow (s), veh/h/ln	1774	0	0	1326	1774	0	0	1314
Q Serve Time (g_s), s	0.4	0.0	0.0	3.7	1.7	0.0	0.0	1.5
Cycle Q Clear Time (g_c), s	0.4	0.0	0.0	6.9	1.7	0.0	0.0	5.2
Perm LT Sat Flow (s_l), veh/h/ln	336	0	0	1326	471	0	0	1314
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	52.4	0.0	0.0	9.1	53.1	0.0	0.0	9.1
Perm LT Serve Time (g_u), s	35.4	0.0	0.0	5.9	44.2	0.0	0.0	5.4
Perm LT Q Serve Time (g_ps), s	1.4	0.0	0.0	3.7	2.9	0.0	0.0	1.5
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Lane Grp Cap (c), veh/h	267	0	0	187	425	0	0	178
V/C Ratio (X)	0.10	0.00	0.00	0.34	0.27	0.00	0.00	0.15
Avail Cap (c_a), veh/h	315	0	0	236	514	0	0	226
Upstream Filter (I)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	6.4	0.0	0.0	36.2	4.5	0.0	0.0	35.7
Incr Delay (d2), s/veh	0.2	0.0	0.0	2.2	0.3	0.0	0.0	0.8
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	6.6	0.0	0.0	38.5	4.8	0.0	0.0	36.5
1st-Term Q (Q1), veh/ln	0.2	0.0	0.0	1.4	0.8	0.0	0.0	0.5
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	0.00	1.80	1.80	0.00	0.00	1.80
%ile Back of Q (95%), veh/ln	0.4	0.0	0.0	2.7	1.5	0.0	0.0	1.1
%ile Storage Ratio (RQ%)	0.06	0.00	0.00	0.45	0.16	0.00	0.00	0.23
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T			T				
Lanes in Grp	0	1	0	0	0	2	0	0
Grp Vol (v), veh/h	0	750	0	0	0	766	0	0
Grp Sat Flow (s), veh/h/ln	0	1770	0	0	0	1695	0	0
Q Serve Time (g_s), s	0.0	19.1	0.0	0.0	0.0	8.2	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	19.1	0.0	0.0	0.0	8.2	0.0	0.0
Lane Grp Cap (c), veh/h	0	1200	0	0	0	2208	0	0
V/C Ratio (X)	0.00	0.63	0.00	0.00	0.00	0.35	0.00	0.00
Avail Cap (c_a), veh/h	0	1297	0	0	0	2317	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	7.2	0.0	0.0	0.0	6.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	2.5	0.0	0.0	0.0	0.4	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	9.7	0.0	0.0	0.0	6.8	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	9.2	0.0	0.0	0.0	3.8	0.0	0.0

Existing (2019) Traffic Volumes 4:15 pm 02/04/2019 PM Peak Hour

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600: Rand Road & Access E/Private Driveway

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2nd-Term Q (Q2), veh/ln	0.0	0.8	0.0	0.0	0.0	0.1	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.52	0.00	1.00	0.00	1.80	0.00	1.00
%ile Back of Q (95%), veh/ln	0.0	15.2	0.0	0.0	0.0	7.1	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.62	0.00	0.00	0.00	0.50	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	787	0	79	0	418	0	69
Grp Sat Flow (s), veh/h/ln	0	1852	0	1617	0	1846	0	1640
Q Serve Time (g_s), s	0.0	19.1	0.0	3.7	0.0	8.2	0.0	3.1
Cycle Q Clear Time (g_c), s	0.0	19.1	0.0	3.7	0.0	8.2	0.0	3.1
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.03	0.00	0.86	0.00	0.05	0.00	0.77
Lane Grp Cap (c), veh/h	0	1256	0	182	0	1203	0	185
V/C Ratio (X)	0.00	0.63	0.00	0.43	0.00	0.35	0.00	0.37
Avail Cap (c_a), veh/h	0	1358	0	241	0	1262	0	245
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	7.2	0.0	33.3	0.0	6.3	0.0	33.1
Incr Delay (d2), s/veh	0.0	2.4	0.0	3.4	0.0	0.8	0.0	2.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	9.6	0.0	36.7	0.0	7.1	0.0	35.7
1st-Term Q (Q1), veh/ln	0.0	9.6	0.0	1.6	0.0	4.2	0.0	1.4
2nd-Term Q (Q2), veh/ln	0.0	0.8	0.0	0.2	0.0	0.3	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.51	0.00	1.80	0.00	1.78	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	15.7	0.0	3.3	0.0	7.9	0.0	2.8
%ile Storage Ratio (RQ%)	0.00	0.65	0.00	0.43	0.00	0.55	0.00	0.66
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	10.5							
HCM 2010 LOS	B							

HCM 2010 Signalized Intersection Summary

600: Rand Road & Access E/Private Driveway

02/14/2019

																				
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR								
Lane Configurations																				
Traffic Volume (veh/h)	60	10	65	25	15	50	110	1435	25	25	1105	20								
Future Volume (veh/h)	60	10	65	25	15	50	110	1435	25	25	1105	20								
Number	7	4	14	3	8	18	5	2	12	1	6	16								
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0								
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00								
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900								
Adj Flow Rate, veh/h	63	11	68	26	16	53	116	1511	26	26	1163	21								
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0								
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95								
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2								
Cap, veh/h	187	25	157	178	43	142	425	2414	42	267	3350	60								
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.04	0.68	0.68	0.02	0.65	0.65								
Sat Flow, veh/h	1326	225	1392	1314	380	1260	1774	3560	61	1774	5144	93								
Grp Volume(v), veh/h	63	0	79	26	0	69	116	750	787	26	766	418								
Grp Sat Flow(s),veh/h/ln	1326	0	1617	1314	0	1640	1774	1770	1852	1774	1695	1846								
Q Serve(g_s), s	3.7	0.0	3.7	1.5	0.0	3.1	1.7	19.1	19.1	0.4	8.2	8.2								
Cycle Q Clear(g_c), s	6.9	0.0	3.7	5.2	0.0	3.1	1.7	19.1	19.1	0.4	8.2	8.2								
Prop In Lane	1.00		0.86	1.00		0.77	1.00		0.03	1.00		0.05								
Lane Grp Cap(c), veh/h	187	0	182	178	0	185	425	1200	1256	267	2208	1203								
V/C Ratio(X)	0.34	0.00	0.43	0.15	0.00	0.37	0.27	0.63	0.63	0.10	0.35	0.35								
Avail Cap(c_a), veh/h	236	0	241	226	0	245	514	1297	1358	315	2317	1262								
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00								
Uniform Delay (d), s/veh	36.2	0.0	33.3	35.7	0.0	33.1	4.5	7.2	7.2	6.4	6.3	6.3								
Incr Delay (d2), s/veh	2.2	0.0	3.4	0.8	0.0	2.6	0.3	2.5	2.4	0.2	0.4	0.8								
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0								
%ile BackOfQ(95%),veh/ln	2.7	0.0	3.3	1.1	0.0	2.8	1.5	15.2	15.7	0.4	7.1	7.9								
LnGrp Delay(d),s/veh	38.5	0.0	36.7	36.5	0.0	35.7	4.8	9.7	9.6	6.6	6.8	7.1								
LnGrp LOS	D		D	D		D	A	A	A	A	A	A								
Approach Vol, veh/h	142					95		1653			1210									
Approach Delay, s/veh	37.5					35.9		9.3			6.9									
Approach LOS	D					D		A			A									
Timer	1	2	3	4	5	6	7	8												
Assigned Phs	1	2	4		5	6	8													
Phs Duration (G+Y+Rc), s	4.8	60.6	15.1		7.0	58.4	15.1													
Change Period (Y+Rc), s	3.5	6.0	6.0		3.5	6.0	6.0													
Max Green Setting (Gmax), s	3.5	59.0	12.0		7.5	55.0	12.0													
Max Q Clear Time (g_c+I1), s	2.4	21.1	8.9		3.7	10.2	7.2													
Green Ext Time (p_c), s	0.0	33.4	0.3		0.1	30.0	0.2													
Intersection Summary																				
HCM 2010 Ctrl Delay																				
HCM 2010 LOS																				

HCM 2010 TWSC
100: Arlington Heights Road & Access A (Loading Dock)

02/14/2019

Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	15	920	20	5	920
Future Vol, veh/h	5	15	920	20	5	920
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	40	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	7	2	2	25	2
Mvmt Flow	5	16	968	21	5	968

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1473	495	0
Stage 1	979	-	-
Stage 2	494	-	-
Critical Hdwy	6.84	7.04	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.37	-
Pot Cap-1 Maneuver	118	507	-
Stage 1	325	-	-
Stage 2	579	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	117	507	-
Mov Cap-2 Maneuver	117	-	-
Stage 1	322	-	-
Stage 2	579	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.5	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	- 117 507	571	-
HCM Lane V/C Ratio	-	- 0.045 0.031	0.009	-
HCM Control Delay (s)	-	- 37.2 12.3	11.4	-
HCM Lane LOS	-	- E B	B	-
HCM 95th %tile Q(veh)	-	- 0.1 0.1	0	-

HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

02/14/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	10	20	80	25	180	50	815	70	90	825	55
Future Volume (veh/h)	90	10	20	80	25	180	50	815	70	90	825	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1961	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	95	11	21	84	26	189	53	858	74	95	868	58
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	354	79	151	369	256	283	353	1592	137	370	1693	113
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.06	0.14	0.14	0.06	0.13	0.13	0.03	0.48	0.48	0.05	0.50	0.50
Ln Grp Delay, s/veh	24.1	0.0	26.7	24.3	26.8	34.3	9.6	14.9	14.8	9.7	13.6	13.5
Ln Grp LOS	C		C	C	C	C	A	B	B	A	B	B
Approach Vol, veh/h		127			299			985			1021	
Approach Delay, s/veh		24.8			30.8			14.6			13.2	
Approach LOS		C			C			B			B	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Case No	1.1	4.0	1.1	4.0	1.1	4.0	1.1	3.0				
Phs Duration (G+Y+Rc), s	6.8	39.3	7.4	15.5	5.4	40.7	7.8	15.0				
Change Period (Y+Rc), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0				
Max Green (Gmax), s	13.5	41.0	7.5	9.0	4.5	50.0	7.5	9.0				
Max Allow Headway (MAH), s	3.8	9.1	3.9	7.6	3.8	9.1	3.9	6.2				
Max Q Clear (g_c+I1), s	3.8	14.5	4.8	3.2	3.0	13.9	5.1	9.7				
Green Ext Time (g_e), s	0.1	17.0	0.0	0.1	0.0	20.8	0.0	0.0				
Prob of Phs Call (p_c)	0.84	1.00	0.80	1.00	0.64	1.00	0.84	1.00				
Prob of Max Out (p_x)	0.00	0.63	1.00	1.00	1.00	0.48	1.00	1.00				
Left-Turn Movement Data												
Assigned Mvmt	1		3		5		7					
Mvmt Sat Flow, veh/h	1774		1774		1774		1774					
Through Movement Data												
Assigned Mvmt		2			4		6		8			
Mvmt Sat Flow, veh/h		3298			574		3368		1961			
Right-Turn Movement Data												
Assigned Mvmt		12			14		16		18			
Mvmt Sat Flow, veh/h		284			1096		225		1583			
Left Lane Group Data												
Assigned Mvmt	1	0	3	0	5	0	7	0				
Lane Assignment	(Pr/Pm)		(Pr/Pm)		(Pr/Pm)		(Pr/Pm)					

Existing (2019) Traffic Volumes 11:45 am 02/04/2019 Saturday Midday Peak Hour

Synchro 10 Report
Page 2

HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

02/14/2019

Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	95	0	84	0	53	0	95	0
Grp Sat Flow (s), veh/h/ln	1774	0	1774	0	1774	0	1774	0
Q Serve Time (g_s), s	1.8	0.0	2.8	0.0	1.0	0.0	3.1	0.0
Cycle Q Clear Time (g_c), s	1.8	0.0	2.8	0.0	1.0	0.0	3.1	0.0
Perm LT Sat Flow (s_l), veh/h/ln	598	0	1372	0	602	0	1162	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	33.3	0.0	9.0	0.0	33.3	0.0	9.0	0.0
Perm LT Serve Time (g_u), s	20.8	0.0	8.3	0.0	22.8	0.0	8.2	0.0
Perm LT Q Serve Time (g_ps), s	2.4	0.0	0.0	0.0	1.0	0.0	0.1	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	370	0	369	0	353	0	354	0
V/C Ratio (X)	0.26	0.00	0.23	0.00	0.15	0.00	0.27	0.00
Avail Cap (c_a), veh/h	632	0	463	0	419	0	435	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	9.4	0.0	24.0	0.0	9.4	0.0	23.7	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.3	0.0	0.2	0.0	0.4	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	9.7	0.0	24.3	0.0	9.6	0.0	24.1	0.0
1st-Term Q (Q1), veh/ln	0.9	0.0	1.3	0.0	0.5	0.0	1.5	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	1.80	0.00	1.80	0.00	1.80	0.00
%ile Back of Q (95%), veh/ln	1.6	0.0	2.5	0.0	0.9	0.0	2.8	0.0
%ile Storage Ratio (RQ%)	0.22	0.00	0.40	0.00	0.48	0.00	0.59	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T		T	
Lanes in Grp	0	1	0	0	0	1	0	1
Grp Vol (v), veh/h	0	460	0	0	0	456	0	26
Grp Sat Flow (s), veh/h/ln	0	1770	0	0	0	1770	0	1961
Q Serve Time (g_s), s	0.0	12.5	0.0	0.0	0.0	11.9	0.0	0.8
Cycle Q Clear Time (g_c), s	0.0	12.5	0.0	0.0	0.0	11.9	0.0	0.8
Lane Grp Cap (c), veh/h	0	855	0	0	0	890	0	256
V/C Ratio (X)	0.00	0.54	0.00	0.00	0.00	0.51	0.00	0.10
Avail Cap (c_a), veh/h	0	1052	0	0	0	1283	0	256
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	12.5	0.0	0.0	0.0	11.5	0.0	26.4
Incr Delay (d2), s/veh	0.0	2.4	0.0	0.0	0.0	2.1	0.0	0.4
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	14.9	0.0	0.0	0.0	13.6	0.0	26.8
1st-Term Q (Q1), veh/ln	0.0	6.0	0.0	0.0	0.0	5.7	0.0	0.4

HCM 2010 Signalized Intersection Capacity Analysis

200: Arlington Heights Road & Lillian Avenue/Access B

02/14/2019

2nd-Term Q (Q2), veh/ln	0.0	0.6	0.0	0.0	0.0	0.5	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.64	0.00	1.00	0.00	1.66	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	10.8	0.0	0.0	0.0	10.3	0.0	0.8
%ile Storage Ratio (RQ%)	0.00	1.22	0.00	0.00	0.00	0.51	0.00	0.06
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	472	0	32	0	470	0	189
Grp Sat Flow (s), veh/h/ln	0	1813	0	1669	0	1823	0	1583
Q Serve Time (g_s), s	0.0	12.5	0.0	1.2	0.0	11.9	0.0	7.7
Cycle Q Clear Time (g_c), s	0.0	12.5	0.0	1.2	0.0	11.9	0.0	7.7
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1583.3
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3
Prop RT Outside Lane (P_R)	0.00	0.16	0.00	0.66	0.00	0.12	0.00	1.00
Lane Grp Cap (c), veh/h	0	875	0	230	0	917	0	283
V/C Ratio (X)	0.00	0.54	0.00	0.14	0.00	0.51	0.00	0.67
Avail Cap (c_a), veh/h	0	1078	0	230	0	1322	0	283
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	12.5	0.0	26.2	0.0	11.5	0.0	26.4
Incr Delay (d2), s/veh	0.0	2.4	0.0	0.6	0.0	2.0	0.0	7.8
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	14.8	0.0	26.7	0.0	13.5	0.0	34.3
1st-Term Q (Q1), veh/ln	0.0	6.2	0.0	0.5	0.0	5.9	0.0	3.3
2nd-Term Q (Q2), veh/ln	0.0	0.6	0.0	0.0	0.0	0.5	0.0	0.6
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.63	0.00	1.80	0.00	1.65	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	11.0	0.0	1.0	0.0	10.5	0.0	7.1
%ile Storage Ratio (RQ%)	0.00	1.24	0.00	0.10	0.00	0.52	0.00	1.17
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Ctrl Delay	16.5
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary

200: Arlington Heights Road & Lillian Avenue/Access B

02/14/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	10	20	80	25	180	50	815	70	90	825	55
Future Volume (veh/h)	90	10	20	80	25	180	50	815	70	90	825	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1961	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	95	11	21	84	26	189	53	858	74	95	868	58
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	354	79	151	369	256	283	353	1592	137	370	1693	113
Arrive On Green	0.06	0.14	0.14	0.06	0.13	0.13	0.03	0.48	0.48	0.05	0.50	0.50
Sat Flow, veh/h	1774	574	1096	1774	1961	1583	1774	3298	284	1774	3368	225
Grp Volume(v), veh/h	95	0	32	84	26	189	53	460	472	95	456	470
Grp Sat Flow(s),veh/h/ln	1774	0	1669	1774	1961	1583	1774	1770	1813	1774	1770	1823
Q Serve(g_s), s	3.1	0.0	1.2	2.8	0.8	7.7	1.0	12.5	12.5	1.8	11.9	11.9
Cycle Q Clear(g_c), s	3.1	0.0	1.2	2.8	0.8	7.7	1.0	12.5	12.5	1.8	11.9	11.9
Prop In Lane	1.00		0.66	1.00		1.00	1.00		0.16	1.00		0.12
Lane Grp Cap(c), veh/h	354	0	230	369	256	283	353	855	875	370	890	917
V/C Ratio(X)	0.27	0.00	0.14	0.23	0.10	0.67	0.15	0.54	0.54	0.26	0.51	0.51
Avail Cap(c_a), veh/h	435	0	230	463	256	283	419	1052	1078	632	1283	1322
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.7	0.0	26.2	24.0	26.4	26.4	9.4	12.5	12.5	9.4	11.5	11.5
Incr Delay (d2), s/veh	0.4	0.0	0.6	0.3	0.4	7.8	0.2	2.4	2.4	0.4	2.1	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.8	0.0	1.0	2.5	0.8	7.1	0.9	10.8	11.0	1.6	10.3	10.5
LnGrp Delay(d),s/veh	24.1	0.0	26.7	24.3	26.8	34.3	9.6	14.9	14.8	9.7	13.6	13.5
LnGrp LOS	C		C	C	C	C	A	B	B	A	B	B
Approach Vol, veh/h		127			299			985			1021	
Approach Delay, s/veh		24.8			30.8			14.6			13.2	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	39.3	7.4	15.5	5.4	40.7	7.8	15.0				
Change Period (Y+Rc), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0				
Max Green Setting (Gmax), s	13.5	41.0	7.5	9.0	4.5	50.0	7.5	9.0				
Max Q Clear Time (g_c+I1), s	3.8	14.5	4.8	3.2	3.0	13.9	5.1	9.7				
Green Ext Time (p_c), s	0.1	17.0	0.0	0.1	0.0	20.8	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			16.5									
HCM 2010 LOS			B									
Notes												

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

02/14/2019

												
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	15	300	875	110	150	810	40	190	755	140	80	710
Future Volume (vph)	15	300	875	110	150	810	40	190	755	140	80	710
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	12	13	12	12	12	12	12	12	12
Storage Length (ft)		415		0	215		0	140		175	150	
Storage Lanes		1		0	1		0	1		1	1	
Taper Length (ft)		120			180			170			250	
Lane Util. Factor	0.91	1.00	0.91	0.91	1.00	0.91	0.91	1.00	0.95	1.00	1.00	0.95
Frt			0.983			0.993				0.850		
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	1829	4999	0	1829	5050	0	1770	3725	1583	1770	3725
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	1829	4999	0	1829	5050	0	1770	3725	1583	1770	3725
Right Turn on Red				No			No			No		
Satd. Flow (RTOR)												
Link Speed (mph)			35			35			35			35
Link Distance (ft)			601			560			640			500
Travel Time (s)			11.7			10.9			12.5			9.7
Peak Hour Factor	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)	16	316	921	116	158	853	42	200	795	147	84	747
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	332	1037	0	158	895	0	200	795	147	84	747
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			52			52			17			17
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane												
Headway Factor	1.00	0.96	1.00	1.00	0.96	1.00	1.00	1.00	0.94	1.00	1.00	0.94
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors	1	1	2		1	2		1	2	1	1	2
Detector Template	Left	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	20	100		20	100		20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Size(ft)	20	20	6		20	6		20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA
Protected Phases	7!	7	4		3	8		5	2	3	1	6

Existing (2019) Traffic Volumes 11:45 am 02/04/2019 Saturday Midday Peak Hour

Synchro 10 Report
Page 1

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

02/14/2019

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	315
Future Volume (vph)	315
Ideal Flow (vphpl)	1900
Lane Width (ft)	12
Storage Length (ft)	280
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1583
Flt Permitted	
Satd. Flow (perm)	1583
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.95
Adj. Flow (vph)	332
Shared Lane Traffic (%)	
Lane Group Flow (vph)	332
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	pm+ov
Protected Phases	7!

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

02/14/2019

												
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Permitted Phases											2	
Detector Phase	7	7	4		3	8		5	2	3	1	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		3.0	15.0		3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	7.5	7.5	21.5		7.5	21.5		7.5	21.5	7.5	7.5	21.5
Total Split (s)	34.0	34.0	44.0		22.0	32.0		19.0	38.0	22.0	16.0	35.0
Total Split (%)	28.3%	28.3%	36.7%		18.3%	26.7%		15.8%	31.7%	18.3%	13.3%	29.2%
Maximum Green (s)	29.5	29.5	37.5		17.5	25.5		14.5	31.5	17.5	11.5	28.5
Yellow Time (s)	3.5	3.5	4.5		3.5	4.5		3.5	4.5	3.5	3.5	4.5
All-Red Time (s)	1.0	1.0	2.0		1.0	2.0		1.0	2.0	1.0	1.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	6.5		4.5	6.5		4.5	6.5	4.5	4.5	6.5
Lead/Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	7.0		4.0	7.0		4.0	7.0	4.0	4.0	7.0
Recall Mode	None	None	None		None	None		None	C-Min	None	None	C-Min
Walk Time (s)									7.0			7.0
Flash Dont Walk (s)									11.0			11.0
Pedestrian Calls (#/hr)									0			0
Act Effect Green (s)		26.4	38.8		15.3	27.7		14.9	35.8	57.6	10.5	29.0
Actuated g/C Ratio		0.22	0.32		0.13	0.23		0.12	0.30	0.48	0.09	0.24
v/c Ratio		0.83	0.64		0.68	0.77		0.91	0.72	0.19	0.54	0.83
Control Delay		62.0	37.0		64.6	48.6		94.4	43.3	19.7	65.5	52.5
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		62.0	37.0		64.6	48.6		94.4	43.3	19.7	65.5	52.5
LOS		E	D		E	D		F	D	B	E	D
Approach Delay			43.1			51.0			49.2			44.0
Approach LOS			D			D			D			D
90th %ile Green (s)	29.5	29.5	37.5		17.5	25.5		14.5	31.5	17.5	11.5	28.5
90th %ile Term Code	Max	Max	Max		Max	Max		Max	Coord	Max	Max	Coord
70th %ile Green (s)	29.5	29.5	37.5		17.5	25.5		14.5	31.5	17.5	11.5	28.5
70th %ile Term Code	Max	Max	Max		Max	Max		Max	Coord	Max	Max	Coord
50th %ile Green (s)	28.6	28.6	38.5		16.5	26.4		14.5	31.5	16.5	11.5	28.5
50th %ile Term Code	Gap	Gap	Max		Gap	Max		Max	Coord	Gap	Max	Coord
30th %ile Green (s)	24.6	24.6	40.8		14.2	30.4		14.5	32.7	14.2	10.3	28.5
30th %ile Term Code	Gap	Gap	Max		Gap	Max		Max	Coord	Gap	Gap	Coord
10th %ile Green (s)	19.7	19.7	39.7		10.9	30.9		16.5	51.9	10.9	0.0	30.9
10th %ile Term Code	Gap	Gap	Hold		Gap	Gap		Gap	Coord	Gap	Skip	Coord
Queue Length 50th (ft)		241	251		117	242		156	304	67	63	292
Queue Length 95th (ft)		346	305		189	297		#302	381	109	117	#373
Internal Link Dist (ft)			521			480			560			420
Turn Bay Length (ft)		415			215			140		175	150	
Base Capacity (vph)		449	1616		266	1167		219	1111	789	169	899
Starvation Cap Reductn		0	0		0	0		0	0	0	0	0
Spillback Cap Reductn		0	0		0	0		0	0	0	0	0
Storage Cap Reductn		0	0		0	0		0	0	0	0	0
Reduced v/c Ratio		0.74	0.64		0.59	0.77		0.91	0.72	0.19	0.50	0.83
Intersection Summary												

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

02/14/2019

Lane Group	SBR
Permitted Phases	6
Detector Phase	7
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	7.5
Total Split (s)	34.0
Total Split (%)	28.3%
Maximum Green (s)	29.5
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	4.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	61.9
Actuated g/C Ratio	0.52
v/c Ratio	0.41
Control Delay	19.2
Queue Delay	0.0
Total Delay	19.2
LOS	B
Approach Delay	
Approach LOS	
90th %ile Green (s)	29.5
90th %ile Term Code	Max
70th %ile Green (s)	29.5
70th %ile Term Code	Max
50th %ile Green (s)	28.6
50th %ile Term Code	Gap
30th %ile Green (s)	24.6
30th %ile Term Code	Gap
10th %ile Green (s)	19.7
10th %ile Term Code	Gap
Queue Length 50th (ft)	147
Queue Length 95th (ft)	214
Internal Link Dist (ft)	
Turn Bay Length (ft)	280
Base Capacity (vph)	856
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.39
Intersection Summary	

Lanes, Volumes, Timings

300: Arlington Heights Road & Palatine Road

02/14/2019

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 21.6 (18%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 46.5

Intersection LOS: D

Intersection Capacity Utilization 81.5%

ICU Level of Service D

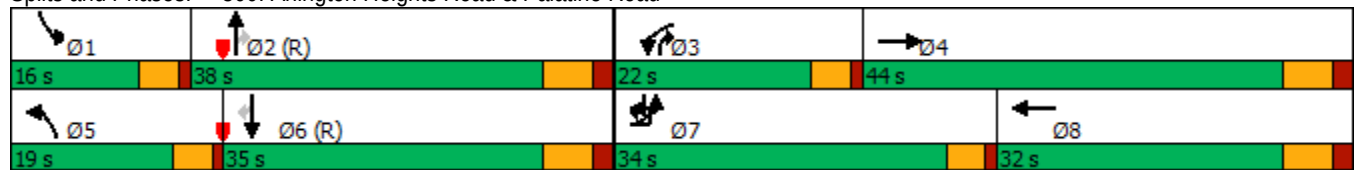
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

! Phase conflict between lane groups.

Splits and Phases: 300: Arlington Heights Road & Palatine Road



Intersection

Int Delay, s/veh 0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑		↑
Traffic Vol, veh/h	1015	80	0	1000	0	75
Future Vol, veh/h	1015	80	0	1000	0	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1068	84	0	1053	0	79

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- - - 576
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - - 7.14
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - - 3.92
Pot Cap-1 Maneuver	-	-	0 - 0 394
Stage 1	-	-	0 - 0
Stage 2	-	-	0 - 0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - - 394
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	394	-	-	-
HCM Lane V/C Ratio	0.2	-	-	-
HCM Control Delay (s)	16.4	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.7	-	-	-

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	50	0	1085	1085	100
Future Vol, veh/h	0	50	0	1085	1085	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	53	0	1142	1142	105

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 624	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 7.14	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.92	- -	- -
Pot Cap-1 Maneuver	0 367	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 367	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	16.4	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 367	- -	- -
HCM Lane V/C Ratio	- 0.143	- -	- -
HCM Control Delay (s)	- 16.4	- -	- -
HCM Lane LOS	- C	- -	- -
HCM 95th %tile Q(veh)	- 0.5	- -	- -

HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

02/14/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	5	90	30	5	45	110	985	35	35	1075	25
Future Volume (veh/h)	55	5	90	30	5	45	110	985	35	35	1075	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	58	5	95	32	5	47	116	1037	37	37	1132	26
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	243	10	189	200	19	182	427	2114	75	385	2954	68
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.05	0.61	0.61	0.02	0.58	0.58
Ln Grp Delay, s/veh	28.0	0.0	29.9	29.0	0.0	26.4	5.5	8.6	8.5	5.9	7.8	8.3
Ln Grp LOS	C		C	C		C	A	A	A	A	A	A
Approach Vol, veh/h		158			84			1190			1195	
Approach Delay, s/veh		29.2			27.4			8.2			7.9	
Approach LOS		C			C			A			A	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs		1	2		4	5	6		8			
Case No		1.1	4.0		6.0	1.1	4.0		6.0			
Phs Duration (G+Y+Rc), s		4.9	44.3		13.9	6.8	42.4		13.9			
Change Period (Y+Rc), s		3.5	6.0		6.0	3.5	6.0		6.0			
Max Green (Gmax), s		4.5	52.0		18.0	10.5	46.0		18.0			
Max Allow Headway (MAH), s		3.8	9.1		7.1	3.8	9.1		7.1			
Max Q Clear (g_c+I1), s		2.5	12.5		6.4	3.6	9.6		7.2			
Green Ext Time (g_e), s		0.0	25.7		1.0	0.1	25.4		0.4			
Prob of Phs Call (p_c)		0.48	1.00		0.99	0.87	1.00		0.99			
Prob of Max Out (p_x)		1.00	0.57		0.19	0.04	0.62		0.15			
Left-Turn Movement Data												
Assigned Mvmt		1			7	5			3			
Mvmt Sat Flow, veh/h		1774			1347	1774			1290			
Through Movement Data												
Assigned Mvmt			2		4		6		8			
Mvmt Sat Flow, veh/h			3486		80		5115		154			
Right-Turn Movement Data												
Assigned Mvmt			12		14		16		18			
Mvmt Sat Flow, veh/h			124		1516		117		1452			
Left Lane Group Data												
Assigned Mvmt		1	0	0	7	5	0	0	3			
Lane Assignment		(Pr/Pm)			(Pr/Pm)							

Existing (2019) Traffic Volumes 11:45 am 02/04/2019 Saturday Midday Peak Hour

Synchro 10 Report
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HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

02/14/2019

Lanes in Grp	1	0	0	1	1	0	0	1
Grp Vol (v), veh/h	37	0	0	58	116	0	0	32
Grp Sat Flow (s), veh/h/ln	1774	0	0	1347	1774	0	0	1290
Q Serve Time (g_s), s	0.5	0.0	0.0	2.6	1.6	0.0	0.0	1.5
Cycle Q Clear Time (g_c), s	0.5	0.0	0.0	4.4	1.6	0.0	0.0	5.2
Perm LT Sat Flow (s_l), veh/h/ln	523	0	0	1347	483	0	0	1290
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	36.4	0.0	0.0	7.9	36.8	0.0	0.0	7.9
Perm LT Serve Time (g_u), s	27.7	0.0	0.0	6.0	28.9	0.0	0.0	4.2
Perm LT Q Serve Time (g_ps), s	0.7	0.0	0.0	2.6	2.5	0.0	0.0	1.5
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Lane Grp Cap (c), veh/h	385	0	0	243	427	0	0	200
V/C Ratio (X)	0.10	0.00	0.00	0.24	0.27	0.00	0.00	0.16
Avail Cap (c_a), veh/h	471	0	0	459	631	0	0	407
Upstream Filter (I)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	5.8	0.0	0.0	26.9	5.2	0.0	0.0	28.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	1.1	0.3	0.0	0.0	0.8
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	5.9	0.0	0.0	28.0	5.5	0.0	0.0	29.0
1st-Term Q (Q1), veh/ln	0.3	0.0	0.0	1.0	0.8	0.0	0.0	0.5
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	0.00	1.80	1.80	0.00	0.00	1.80
%ile Back of Q (95%), veh/ln	0.5	0.0	0.0	1.8	1.5	0.0	0.0	1.0
%ile Storage Ratio (RQ%)	0.08	0.00	0.00	0.31	0.16	0.00	0.00	0.23
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T			T				
Lanes in Grp	0	1	0	0	0	2	0	0
Grp Vol (v), veh/h	0	526	0	0	0	750	0	0
Grp Sat Flow (s), veh/h/ln	0	1770	0	0	0	1695	0	0
Q Serve Time (g_s), s	0.0	10.5	0.0	0.0	0.0	7.6	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	10.5	0.0	0.0	0.0	7.6	0.0	0.0
Lane Grp Cap (c), veh/h	0	1073	0	0	0	1958	0	0
V/C Ratio (X)	0.00	0.49	0.00	0.00	0.00	0.38	0.00	0.00
Avail Cap (c_a), veh/h	0	1459	0	0	0	2473	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	6.9	0.0	0.0	0.0	7.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.6	0.0	0.0	0.0	0.6	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	8.6	0.0	0.0	0.0	7.8	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	5.1	0.0	0.0	0.0	3.5	0.0	0.0

Existing (2019) Traffic Volumes 11:45 am 02/04/2019 Saturday Midday Peak Hour

Synchro 10 Report
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HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

02/14/2019

2nd-Term Q (Q2), veh/ln	0.0	0.5	0.0	0.0	0.0	0.2	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.69	0.00	1.00	0.00	1.80	0.00	1.00
%ile Back of Q (95%), veh/ln	0.0	9.5	0.0	0.0	0.0	6.7	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.39	0.00	0.00	0.00	0.46	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	548	0	100	0	408	0	52
Grp Sat Flow (s), veh/h/ln	0	1841	0	1595	0	1842	0	1607
Q Serve Time (g_s), s	0.0	10.5	0.0	3.7	0.0	7.6	0.0	1.8
Cycle Q Clear Time (g_c), s	0.0	10.5	0.0	3.7	0.0	7.6	0.0	1.8
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.07	0.00	0.95	0.00	0.06	0.00	0.90
Lane Grp Cap (c), veh/h	0	1117	0	199	0	1064	0	201
V/C Ratio (X)	0.00	0.49	0.00	0.50	0.00	0.38	0.00	0.26
Avail Cap (c_a), veh/h	0	1518	0	455	0	1343	0	458
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	6.9	0.0	25.8	0.0	7.2	0.0	25.0
Incr Delay (d2), s/veh	0.0	1.5	0.0	4.1	0.0	1.0	0.0	1.4
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	8.5	0.0	29.9	0.0	8.3	0.0	26.4
1st-Term Q (Q1), veh/ln	0.0	5.3	0.0	1.6	0.0	3.9	0.0	0.8
2nd-Term Q (Q2), veh/ln	0.0	0.5	0.0	0.2	0.0	0.3	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.68	0.00	1.80	0.00	1.80	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	9.8	0.0	3.3	0.0	7.5	0.0	1.6
%ile Storage Ratio (RQ%)	0.00	0.40	0.00	0.43	0.00	0.52	0.00	0.38
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Ctrl Delay	10.0
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary

600: Rand Road & Access E/Private Driveway

02/14/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	5	90	30	5	45	110	985	35	35	1075	25
Future Volume (veh/h)	55	5	90	30	5	45	110	985	35	35	1075	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	58	5	95	32	5	47	116	1037	37	37	1132	26
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	243	10	189	200	19	182	427	2114	75	385	2954	68
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.05	0.61	0.61	0.02	0.58	0.58
Sat Flow, veh/h	1347	80	1516	1290	154	1452	1774	3486	124	1774	5115	117
Grp Volume(v), veh/h	58	0	100	32	0	52	116	526	548	37	750	408
Grp Sat Flow(s),veh/h/ln	1347	0	1595	1290	0	1607	1774	1770	1841	1774	1695	1842
Q Serve(g_s), s	2.6	0.0	3.7	1.5	0.0	1.8	1.6	10.5	10.5	0.5	7.6	7.6
Cycle Q Clear(g_c), s	4.4	0.0	3.7	5.2	0.0	1.8	1.6	10.5	10.5	0.5	7.6	7.6
Prop In Lane	1.00		0.95	1.00		0.90	1.00		0.07	1.00		0.06
Lane Grp Cap(c), veh/h	243	0	199	200	0	201	427	1073	1117	385	1958	1064
V/C Ratio(X)	0.24	0.00	0.50	0.16	0.00	0.26	0.27	0.49	0.49	0.10	0.38	0.38
Avail Cap(c_a), veh/h	459	0	455	407	0	458	631	1459	1518	471	2473	1343
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	0.0	25.8	28.2	0.0	25.0	5.2	6.9	6.9	5.8	7.2	7.2
Incr Delay (d2), s/veh	1.1	0.0	4.1	0.8	0.0	1.4	0.3	1.6	1.5	0.1	0.6	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.8	0.0	3.3	1.0	0.0	1.6	1.5	9.5	9.8	0.5	6.7	7.5
LnGrp Delay(d),s/veh	28.0	0.0	29.9	29.0	0.0	26.4	5.5	8.6	8.5	5.9	7.8	8.3
LnGrp LOS	C		C	C		C	A	A	A	A	A	A
Approach Vol, veh/h	158					84		1190		1195		
Approach Delay, s/veh	29.2					27.4		8.2		7.9		
Approach LOS	C					C		A		A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	4.9	44.3	13.9		6.8	42.4	13.9					
Change Period (Y+Rc), s	3.5	6.0	6.0		3.5	6.0	6.0					
Max Green Setting (Gmax), s	4.5	52.0	18.0		10.5	46.0	18.0					
Max Q Clear Time (g_c+I1), s	2.5	12.5	6.4		3.6	9.6	7.2					
Green Ext Time (p_c), s	0.0	25.7	1.0		0.1	25.4	0.4					
Intersection Summary												
HCM 2010 Ctrl Delay	10.0											
HCM 2010 LOS	A											

FUTURE NO-BUILD CAPACITY REPORTS

Weekday Morning Peak Hour

Weekday Evening Peak Hour

Saturday Midday Peak Hour

HCM 2010 TWSC
100: Arlington Heights Road & Access A (Loading Dock)

05/24/2019

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	905	10	5	1175
Future Vol, veh/h	5	5	905	10	5	1175
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	40	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	25	4	10	40	3
Mvmt Flow	5	5	953	11	5	1237
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1588	482	0	0	964	0
Stage 1	959	-	-	-	-	-
Stage 2	629	-	-	-	-	-
Critical Hdwy	6.84	7.4	-	-	4.9	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.55	-	-	2.6	-
Pot Cap-1 Maneuver	99	473	-	-	518	-
Stage 1	333	-	-	-	-	-
Stage 2	494	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	98	473	-	-	518	-
Mov Cap-2 Maneuver	98	-	-	-	-	-
Stage 1	330	-	-	-	-	-
Stage 2	494	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	28.2	0	0.1			
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 98 473	518	-		
HCM Lane V/C Ratio	-	- 0.054 0.011	0.01	-		
HCM Control Delay (s)	-	- 43.8 12.7	12	-		
HCM Lane LOS	-	- E B	B	-		
HCM 95th %tile Q(veh)	-	- 0.2 0	0	-		

HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	5	50	50	10	85	50	795	65	40	1080	30
Future Volume (veh/h)	85	5	50	50	10	85	50	795	65	40	1080	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1849	1900	1863	1961	1827	1863	1813	1900	1863	1862	1900
Adj Flow Rate, veh/h	89	5	53	53	11	89	53	837	68	42	1137	32
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	11	11	2	2	4	2	4	4	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	329	18	190	291	207	200	306	1794	146	383	1942	55
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.06	0.13	0.13	0.04	0.11	0.11	0.03	0.56	0.56	0.02	0.55	0.55
Ln Grp Delay, s/veh	27.5	0.0	30.8	28.7	30.3	33.3	9.0	11.6	11.5	7.9	13.6	13.5
Ln Grp LOS	C		C	C	C	C	A	B	B	A	B	B
Approach Vol, veh/h		147			153			958			1211	
Approach Delay, s/veh		28.8			31.5			11.4			13.4	
Approach LOS		C			C			B			B	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs		1	2	3	4	5	6	7	8			
Case No		1.1	4.0	1.1	4.0	1.1	4.0	1.1	3.0			
Phs Duration (G+Y+Rc), s		5.2	47.5	6.2	15.8	5.5	47.3	8.0	13.9			
Change Period (Y+Rc), s		3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0			
Max Green (Gmax), s		4.5	51.0	3.5	12.0	6.5	49.0	7.5	8.0			
Max Allow Headway (MAH), s		3.8	9.1	3.9	7.7	3.8	9.1	3.9	6.2			
Max Q Clear (g_c+I1), s		2.8	13.6	4.0	4.5	3.0	18.0	5.3	6.0			
Green Ext Time (g_e), s		0.0	20.7	0.0	0.2	0.0	23.3	0.0	0.1			
Prob of Phs Call (p_c)		0.58	1.00	0.67	0.99	0.67	1.00	0.84	0.99			
Prob of Max Out (p_x)		1.00	0.44	1.00	1.00	1.00	0.73	1.00	1.00			
Left-Turn Movement Data												
Assigned Mvmt		1		3		5		7				
Mvmt Sat Flow, veh/h		1774		1774		1774		1740				
Through Movement Data												
Assigned Mvmt			2		4		6		8			
Mvmt Sat Flow, veh/h			3226		137		3514		1961			
Right-Turn Movement Data												
Assigned Mvmt			12		14		16		18			
Mvmt Sat Flow, veh/h			262		1455		99		1553			
Left Lane Group Data												
Assigned Mvmt		1	0	3	0	5	0	7	0			
Lane Assignment		(Pr/Pm)		(Pr/Pm)		(Pr/Pm)		(Pr/Pm)				

HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	42	0	53	0	53	0	89	0
Grp Sat Flow (s), veh/h/ln	1774	0	1774	0	1774	0	1740	0
Q Serve Time (g_s), s	0.8	0.0	2.0	0.0	1.0	0.0	3.3	0.0
Cycle Q Clear Time (g_c), s	0.8	0.0	2.0	0.0	1.0	0.0	3.3	0.0
Perm LT Sat Flow (s_l), veh/h/ln	613	0	1340	0	478	0	1265	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	41.3	0.0	7.9	0.0	41.3	0.0	8.3	0.0
Perm LT Serve Time (g_u), s	29.9	0.0	7.3	0.0	25.3	0.0	7.5	0.0
Perm LT Q Serve Time (g_ps), s	0.8	0.0	0.0	0.0	2.0	0.0	0.1	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	383	0	291	0	306	0	329	0
V/C Ratio (X)	0.11	0.00	0.18	0.00	0.17	0.00	0.27	0.00
Avail Cap (c_a), veh/h	449	0	311	0	413	0	398	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	7.8	0.0	28.4	0.0	8.7	0.0	27.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.3	0.0	0.3	0.0	0.4	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	7.9	0.0	28.7	0.0	9.0	0.0	27.5	0.0
1st-Term Q (Q1), veh/ln	0.4	0.0	1.0	0.0	0.5	0.0	1.6	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	1.80	0.00	1.80	0.00	1.80	0.00
%ile Back of Q (95%), veh/ln	0.7	0.0	1.8	0.0	0.9	0.0	2.9	0.0
%ile Storage Ratio (RQ%)	0.09	0.00	0.29	0.00	0.44	0.00	0.63	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T		T	
Lanes in Grp	0	1	0	0	0	1	0	1
Grp Vol (v), veh/h	0	447	0	0	0	572	0	11
Grp Sat Flow (s), veh/h/ln	0	1722	0	0	0	1769	0	1961
Q Serve Time (g_s), s	0.0	11.6	0.0	0.0	0.0	16.0	0.0	0.4
Cycle Q Clear Time (g_c), s	0.0	11.6	0.0	0.0	0.0	16.0	0.0	0.4
Lane Grp Cap (c), veh/h	0	957	0	0	0	977	0	207
V/C Ratio (X)	0.00	0.47	0.00	0.00	0.00	0.59	0.00	0.05
Avail Cap (c_a), veh/h	0	1176	0	0	0	1160	0	210
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	9.9	0.0	0.0	0.0	11.1	0.0	30.0
Incr Delay (d2), s/veh	0.0	1.6	0.0	0.0	0.0	2.6	0.0	0.2
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	11.6	0.0	0.0	0.0	13.6	0.0	30.3
1st-Term Q (Q1), veh/ln	0.0	5.5	0.0	0.0	0.0	7.8	0.0	0.2

HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

2nd-Term Q (Q2), veh/ln	0.0	0.4	0.0	0.0	0.0	0.7	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.68	0.00	1.00	0.00	1.56	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	9.9	0.0	0.0	0.0	13.3	0.0	0.4
%ile Storage Ratio (RQ%)	0.00	1.13	0.00	0.00	0.00	0.66	0.00	0.03
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	458	0	58	0	597	0	89
Grp Sat Flow (s), veh/h/ln	0	1766	0	1592	0	1844	0	1553
Q Serve Time (g_s), s	0.0	11.6	0.0	2.5	0.0	16.0	0.0	4.0
Cycle Q Clear Time (g_c), s	0.0	11.6	0.0	2.5	0.0	16.0	0.0	4.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1552.9
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7
Prop RT Outside Lane (P_R)	0.00	0.15	0.00	0.91	0.00	0.05	0.00	1.00
Lane Grp Cap (c), veh/h	0	982	0	208	0	1019	0	200
V/C Ratio (X)	0.00	0.47	0.00	0.28	0.00	0.59	0.00	0.44
Avail Cap (c_a), veh/h	0	1206	0	256	0	1210	0	203
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	9.9	0.0	29.3	0.0	11.1	0.0	30.1
Incr Delay (d2), s/veh	0.0	1.6	0.0	1.5	0.0	2.5	0.0	3.3
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	11.5	0.0	30.8	0.0	13.5	0.0	33.3
1st-Term Q (Q1), veh/ln	0.0	5.6	0.0	1.1	0.0	8.1	0.0	1.7
2nd-Term Q (Q2), veh/ln	0.0	0.4	0.0	0.1	0.0	0.7	0.0	0.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.67	0.00	1.80	0.00	1.55	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	10.1	0.0	2.1	0.0	13.7	0.0	3.4
%ile Storage Ratio (RQ%)	0.00	1.15	0.00	0.21	0.00	0.68	0.00	0.56
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Ctrl Delay	14.7
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary
200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	5	50	50	10	85	50	795	65	40	1080	30
Future Volume (veh/h)	85	5	50	50	10	85	50	795	65	40	1080	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1849	1900	1863	1961	1827	1863	1813	1900	1863	1862	1900
Adj Flow Rate, veh/h	89	5	53	53	11	89	53	837	68	42	1137	32
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	11	11	2	2	4	2	4	4	2	2	2
Cap, veh/h	329	18	190	291	207	200	306	1794	146	383	1942	55
Arrive On Green	0.06	0.13	0.13	0.04	0.11	0.11	0.03	0.56	0.56	0.02	0.55	0.55
Sat Flow, veh/h	1740	137	1455	1774	1961	1553	1774	3226	262	1774	3514	99
Grp Volume(v), veh/h	89	0	58	53	11	89	53	447	458	42	572	597
Grp Sat Flow(s),veh/h/ln	1740	0	1592	1774	1961	1553	1774	1722	1766	1774	1769	1844
Q Serve(g_s), s	3.3	0.0	2.5	2.0	0.4	4.0	1.0	11.6	11.6	0.8	16.0	16.0
Cycle Q Clear(g_c), s	3.3	0.0	2.5	2.0	0.4	4.0	1.0	11.6	11.6	0.8	16.0	16.0
Prop In Lane	1.00		0.91	1.00		1.00	1.00		0.15	1.00		0.05
Lane Grp Cap(c), veh/h	329	0	208	291	207	200	306	957	982	383	977	1019
V/C Ratio(X)	0.27	0.00	0.28	0.18	0.05	0.44	0.17	0.47	0.47	0.11	0.59	0.59
Avail Cap(c_a), veh/h	398	0	256	311	210	203	413	1176	1206	449	1160	1210
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.0	0.0	29.3	28.4	30.0	30.1	8.7	9.9	9.9	7.8	11.1	11.1
Incr Delay (d2), s/veh	0.4	0.0	1.5	0.3	0.2	3.3	0.3	1.6	1.6	0.1	2.6	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.9	0.0	2.1	1.8	0.4	3.4	0.9	9.9	10.1	0.7	13.3	13.7
LnGrp Delay(d),s/veh	27.5	0.0	30.8	28.7	30.3	33.3	9.0	11.6	11.5	7.9	13.6	13.5
LnGrp LOS	C		C	C	C	C	A	B	B	A	B	B
Approach Vol, veh/h		147			153			958			1211	
Approach Delay, s/veh		28.8			31.5			11.4			13.4	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.2	47.5	6.2	15.8	5.5	47.3	8.0	13.9				
Change Period (Y+Rc), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0				
Max Green Setting (Gmax), s	4.5	51.0	3.5	12.0	6.5	49.0	7.5	8.0				
Max Q Clear Time (g_c+I1), s	2.8	13.6	4.0	4.5	3.0	18.0	5.3	6.0				
Green Ext Time (p_c), s	0.0	20.7	0.0	0.2	0.0	23.3	0.0	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			14.7									
HCM 2010 LOS			B									
Notes												

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

												
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	10	250	1945	150	180	865	10	170	650	145	45	820
Future Volume (vph)	10	250	1945	150	180	865	10	170	650	145	45	820
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	12	13	12	12	12	12	12	12	12
Storage Length (ft)		415		0	215		0	140		175	150	
Storage Lanes		1		0	1		0	1		1	1	
Taper Length (ft)		120			180			170			250	
Lane Util. Factor	0.91	1.00	0.91	0.91	1.00	0.91	0.91	1.00	0.95	1.00	1.00	0.95
Fr't			0.989			0.998				0.850		
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	1829	4984	0	1811	4932	0	1752	3585	1583	1752	3725
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	1829	4984	0	1811	4932	0	1752	3585	1583	1752	3725
Right Turn on Red				No			No			No		
Satd. Flow (RTOR)												
Link Speed (mph)			35			35			35			35
Link Distance (ft)			601			560			640			500
Travel Time (s)			11.7			10.9			12.5			9.7
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	3%	2%	3%	5%	2%	3%	6%	2%	3%	2%
Adj. Flow (vph)	11	263	2047	158	189	911	11	179	684	153	47	863
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	274	2205	0	189	922	0	179	684	153	47	863
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			52			52			17			17
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane												
Headway Factor	1.00	0.96	1.00	1.00	0.96	1.00	1.00	1.00	0.94	1.00	1.00	0.94
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors	1	1	2		1	2		1	2	1	1	2
Detector Template	Left	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	20	100		20	100		20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Size(ft)	20	20	6		20	6		20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA

Future (2025) No-Build Traffic Projections 7:15 am 02/04/2019 AM Peak Hour

Synchro 10 Report
Page 1

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	250
Future Volume (vph)	250
Ideal Flow (vphpl)	1900
Lane Width (ft)	12
Storage Length (ft)	280
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1568
Flt Permitted	
Satd. Flow (perm)	1568
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.95
Heavy Vehicles (%)	3%
Adj. Flow (vph)	263
Shared Lane Traffic (%)	
Lane Group Flow (vph)	263
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	pm+ov

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

												
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Protected Phases	7!	7	4		3	8		5	2	3	1	6
Permitted Phases										2		
Detector Phase	7	7	4		3	8		5	2	3	1	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		3.0	15.0		3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	7.5	7.5	21.5		7.5	21.5		7.5	21.5	7.5	7.5	21.5
Total Split (s)	24.0	24.0	60.0		24.0	60.0		17.0	39.0	24.0	17.0	39.0
Total Split (%)	17.1%	17.1%	42.9%		17.1%	42.9%		12.1%	27.9%	17.1%	12.1%	27.9%
Maximum Green (s)	19.5	19.5	53.5		19.5	53.5		12.5	32.5	19.5	12.5	32.5
Yellow Time (s)	3.5	3.5	4.5		3.5	4.5		3.5	4.5	3.5	3.5	4.5
All-Red Time (s)	1.0	1.0	2.0		1.0	2.0		1.0	2.0	1.0	1.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	6.5		4.5	6.5		4.5	6.5	4.5	4.5	6.5
Lead/Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	7.0		4.0	7.0		4.0	7.0	4.0	4.0	7.0
Recall Mode	None	None	None		None	None		None	C-Min	None	None	C-Min
Walk Time (s)									7.0			7.0
Flash Dont Walk (s)									11.0			11.0
Pedestrian Calls (#/hr)									0			0
Act Effct Green (s)		19.5	54.7		18.3	53.5		12.5	37.3	62.1	9.9	32.5
Actuated g/C Ratio		0.14	0.39		0.13	0.38		0.09	0.27	0.44	0.07	0.23
v/c Ratio		1.08	1.13		0.80	0.49		1.15	0.72	0.22	0.38	1.00
Control Delay		134.3	105.9		83.1	34.0		171.7	52.5	26.0	70.3	83.7
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		134.3	105.9		83.1	34.0		171.7	52.5	26.0	70.3	83.7
LOS		F	F		F	C		F	D	C	E	F
Approach Delay			109.0			42.3			69.5			71.3
Approach LOS			F			D			E			E
90th %ile Green (s)	19.5	19.5	53.5		19.5	53.5		12.5	32.5	19.5	12.5	32.5
90th %ile Term Code	Max	Max	Max		Max	Max		Max	Coord	Max	Max	Coord
70th %ile Green (s)	19.5	19.5	53.5		19.5	53.5		12.5	33.5	19.5	11.5	32.5
70th %ile Term Code	Max	Max	Max		Max	Hold		Max	Coord	Max	Gap	Coord
50th %ile Green (s)	19.5	19.5	53.5		19.5	53.5		12.5	34.9	19.5	10.1	32.5
50th %ile Term Code	Max	Max	Max		Max	Hold		Max	Coord	Max	Gap	Coord
30th %ile Green (s)	19.5	19.5	54.6		18.4	53.5		12.5	36.3	18.4	8.7	32.5
30th %ile Term Code	Max	Max	Max		Gap	Hold		Max	Coord	Gap	Gap	Coord
10th %ile Green (s)	19.5	19.5	58.5		14.5	53.5		12.5	49.5	14.5	0.0	32.5
10th %ile Term Code	Max	Max	Max		Gap	Hold		Max	Coord	Gap	Skip	Coord
Queue Length 50th (ft)		~277	~867		168	232		~190	306	86	42	416
Queue Length 95th (ft)		#460	#958		#279	276		#347	389	141	84	#561
Internal Link Dist (ft)			521			480			560			420
Turn Bay Length (ft)		415			215			140		175	150	
Base Capacity (vph)		254	1947		252	1884		156	956	716	156	864
Starvation Cap Reductn		0	0		0	0		0	0	0	0	0
Spillback Cap Reductn		0	0		0	0		0	0	0	0	0
Storage Cap Reductn		0	0		0	0		0	0	0	0	0
Reduced v/c Ratio		1.08	1.13		0.75	0.49		1.15	0.72	0.21	0.30	1.00

Lanes, Volumes, Timings

300: Arlington Heights Road & Palatine Road

05/24/2019

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 57.4 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.15

Intersection Signal Delay: 81.6

Intersection LOS: F

Intersection Capacity Utilization 100.2%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

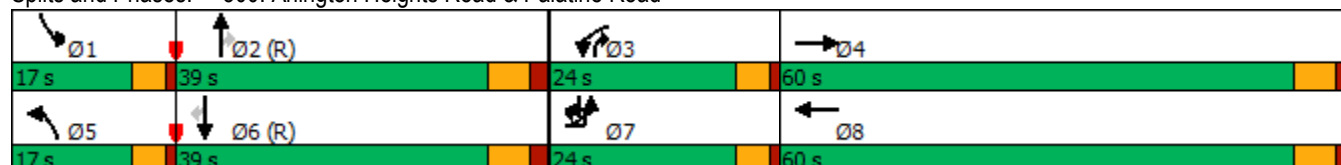
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

! Phase conflict between lane groups.

Splits and Phases: 300: Arlington Heights Road & Palatine Road



Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

Lane Group	SBR
Protected Phases	7!
Permitted Phases	6
Detector Phase	7
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	7.5
Total Split (s)	24.0
Total Split (%)	17.1%
Maximum Green (s)	19.5
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	4.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	58.5
Actuated g/C Ratio	0.42
v/c Ratio	0.40
Control Delay	30.8
Queue Delay	0.0
Total Delay	30.8
LOS	C
Approach Delay	
Approach LOS	
90th %ile Green (s)	19.5
90th %ile Term Code	Max
70th %ile Green (s)	19.5
70th %ile Term Code	Max
50th %ile Green (s)	19.5
50th %ile Term Code	Max
30th %ile Green (s)	19.5
30th %ile Term Code	Max
10th %ile Green (s)	19.5
10th %ile Term Code	Max
Queue Length 50th (ft)	166
Queue Length 95th (ft)	243
Internal Link Dist (ft)	
Turn Bay Length (ft)	280
Base Capacity (vph)	655
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.40

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑		↗
Traffic Vol, veh/h	2055	80	0	1055	0	65
Future Vol, veh/h	2055	80	0	1055	0	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	4	2	4	2	2
Mvmt Flow	2163	84	0	1111	0	68
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	1124
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.92
Pot Cap-1 Maneuver	-	-	0	-	0	171
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	171
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0		39.4	
HCM LOS					E	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT		
Capacity (veh/h)	171	-	-	-		
HCM Lane V/C Ratio	0.4	-	-	-		
HCM Control Delay (s)	39.4	-	-	-		
HCM Lane LOS	E	-	-	-		
HCM 95th %tile Q(veh)	1.8	-	-	-		

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	20	0	745	1540	75
Future Vol, veh/h	0	20	0	745	1540	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	6	2	3	2	2
Mvmt Flow	0	21	0	784	1621	79
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	850	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.96	-	-	-	-
Pot Cap-1 Maneuver	0	254	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	254	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	20.5	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 254		-	-		
HCM Lane V/C Ratio	- 0.083		-	-		
HCM Control Delay (s)	- 20.5		-	-		
HCM Lane LOS	- C		-	-		
HCM 95th %tile Q(veh)	- 0.3		-	-		

HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

05/24/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	1	15	15	10	5	50	720	5	10	1540	10
Future Volume (veh/h)	20	1	15	15	10	5	50	720	5	10	1540	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1759	1863	1900	1863	1842	1900	1759	1862	1900
Adj Flow Rate, veh/h	21	1	16	16	11	5	53	758	5	11	1621	11
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	8	2	2	2	3	3	8	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	199	8	123	191	100	45	310	2502	17	522	3560	24
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.03	0.70	0.70	0.01	0.68	0.68
Ln Grp Delay, s/veh	33.0	0.0	32.7	32.9	0.0	32.4	4.4	4.8	4.8	3.7	6.1	6.6
Ln Grp LOS	C		C	C		C	A	A	A	A	A	A
Approach Vol, veh/h		38			32			816			1643	
Approach Delay, s/veh		32.9			32.7			4.8			6.3	
Approach LOS		C			C			A			A	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Case No	1.1	4.0		6.0	1.1	4.0		6.0				
Phs Duration (G+Y+Rc), s	4.1	58.4		12.1	5.5	57.0		12.1				
Change Period (Y+Rc), s	3.5	6.0		6.0	3.5	6.0		6.0				
Max Green (Gmax), s	5.5	58.0		11.0	6.5	57.0		11.0				
Max Allow Headway (MAH), s	3.8	9.1		6.7	3.8	9.1		6.8				
Max Q Clear (g_c+I1), s	2.2	8.0		3.7	2.7	12.7		3.6				
Green Ext Time (g_e), s	0.0	19.4		0.1	0.0	38.3		0.1				
Prob of Phs Call (p_c)	0.20	1.00		0.77	0.67	1.00		0.77				
Prob of Max Out (p_x)	1.00	0.18		0.62	0.92	0.82		0.60				
Left-Turn Movement Data												
Assigned Mvmt	1			7	5			3				
Mvmt Sat Flow, veh/h	1675			1392	1774			1313				
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		3564		94		5209		1214				
Right-Turn Movement Data												
Assigned Mvmt		12		14		16		18				
Mvmt Sat Flow, veh/h		24		1503		35		552				
Left Lane Group Data												
Assigned Mvmt	1	0	0	7	5	0	0	3				
Lane Assignment	(Pr/Pm)			(Pr/Pm)								

HCM 2010 Signalized Intersection Capacity Analysis
600: Rand Road & Access E/Private Driveway

05/24/2019

Lanes in Grp	1	0	0	1	1	0	0	1
Grp Vol (v), veh/h	11	0	0	21	53	0	0	16
Grp Sat Flow (s), veh/h/ln	1675	0	0	1392	1774	0	0	1313
Q Serve Time (g_s), s	0.2	0.0	0.0	1.1	0.7	0.0	0.0	0.9
Cycle Q Clear Time (g_c), s	0.2	0.0	0.0	1.7	0.7	0.0	0.0	1.6
Perm LT Sat Flow (s_l), veh/h/ln	662	0	0	1392	307	0	0	1313
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	51.0	0.0	0.0	6.1	51.0	0.0	0.0	6.1
Perm LT Serve Time (g_u), s	46.4	0.0	0.0	5.5	40.3	0.0	0.0	5.4
Perm LT Q Serve Time (g_ps), s	0.1	0.0	0.0	1.1	2.2	0.0	0.0	0.9
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Lane Grp Cap (c), veh/h	522	0	0	199	310	0	0	191
V/C Ratio (X)	0.02	0.00	0.00	0.11	0.17	0.00	0.00	0.08
Avail Cap (c_a), veh/h	631	0	0	290	417	0	0	277
Upstream Filter (I)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	3.7	0.0	0.0	32.5	4.2	0.0	0.0	32.5
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.5	0.3	0.0	0.0	0.4
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	3.7	0.0	0.0	33.0	4.4	0.0	0.0	32.9
1st-Term Q (Q1), veh/ln	0.1	0.0	0.0	0.4	0.3	0.0	0.0	0.3
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	0.00	1.80	1.80	0.00	0.00	1.80
%ile Back of Q (95%), veh/ln	0.1	0.0	0.0	0.8	0.6	0.0	0.0	0.6
%ile Storage Ratio (RQ%)	0.02	0.00	0.00	0.13	0.07	0.00	0.00	0.14
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T			T				
Lanes in Grp	0	1	0	0	0	2	0	0
Grp Vol (v), veh/h	0	372	0	0	0	1055	0	0
Grp Sat Flow (s), veh/h/ln	0	1750	0	0	0	1694	0	0
Q Serve Time (g_s), s	0.0	6.0	0.0	0.0	0.0	10.7	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	6.0	0.0	0.0	0.0	10.7	0.0	0.0
Lane Grp Cap (c), veh/h	0	1228	0	0	0	2316	0	0
V/C Ratio (X)	0.00	0.30	0.00	0.00	0.00	0.46	0.00	0.00
Avail Cap (c_a), veh/h	0	1360	0	0	0	2589	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	4.2	0.0	0.0	0.0	5.4	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.0	0.6	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	4.8	0.0	0.0	0.0	6.1	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	2.9	0.0	0.0	0.0	4.8	0.0	0.0

HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

05/24/2019

2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.80	0.00	1.00	0.00	1.73	0.00	1.00
%ile Back of Q (95%), veh/ln	0.0	5.6	0.0	0.0	0.0	8.7	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.23	0.00	0.00	0.00	0.61	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	391	0	17	0	577	0	16
Grp Sat Flow (s), veh/h/ln	0	1838	0	1597	0	1856	0	1765
Q Serve Time (g_s), s	0.0	6.0	0.0	0.7	0.0	10.7	0.0	0.6
Cycle Q Clear Time (g_c), s	0.0	6.0	0.0	0.7	0.0	10.7	0.0	0.6
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.01	0.00	0.94	0.00	0.02	0.00	0.31
Lane Grp Cap (c), veh/h	0	1290	0	131	0	1268	0	145
V/C Ratio (X)	0.00	0.30	0.00	0.13	0.00	0.46	0.00	0.11
Avail Cap (c_a), veh/h	0	1429	0	236	0	1418	0	260
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	4.2	0.0	31.8	0.0	5.4	0.0	31.7
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.9	0.0	1.2	0.0	0.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	4.8	0.0	32.7	0.0	6.6	0.0	32.4
1st-Term Q (Q1), veh/ln	0.0	3.0	0.0	0.3	0.0	5.3	0.0	0.3
2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.4	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.80	0.00	1.80	0.00	1.69	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	5.9	0.0	0.6	0.0	9.6	0.0	0.6
%ile Storage Ratio (RQ%)	0.00	0.24	0.00	0.08	0.00	0.67	0.00	0.14
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Ctrl Delay	6.5
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary

600: Rand Road & Access E/Private Driveway

05/24/2019

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Traffic Volume (veh/h)	20	1	15	15	10	5	50	720	5	10	1540	10						
Future Volume (veh/h)	20	1	15	15	10	5	50	720	5	10	1540	10						
Number	7	4	14	3	8	18	5	2	12	1	6	16						
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0						
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00						
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Adj Sat Flow, veh/h/ln	1863	1863	1900	1759	1863	1900	1863	1842	1900	1759	1862	1900						
Adj Flow Rate, veh/h	21	1	16	16	11	5	53	758	5	11	1621	11						
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95						
Percent Heavy Veh, %	2	2	2	8	2	2	2	3	3	8	2	2						
Cap, veh/h	199	8	123	191	100	45	310	2502	17	522	3560	24						
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.03	0.70	0.70	0.01	0.68	0.68						
Sat Flow, veh/h	1392	94	1503	1313	1214	552	1774	3564	24	1675	5209	35						
Grp Volume(v), veh/h	21	0	17	16	0	16	53	372	391	11	1055	577						
Grp Sat Flow(s),veh/h/ln	1392	0	1597	1313	0	1765	1774	1750	1838	1675	1694	1856						
Q Serve(g_s), s	1.1	0.0	0.7	0.9	0.0	0.6	0.7	6.0	6.0	0.2	10.7	10.7						
Cycle Q Clear(g_c), s	1.7	0.0	0.7	1.6	0.0	0.6	0.7	6.0	6.0	0.2	10.7	10.7						
Prop In Lane	1.00		0.94	1.00		0.31	1.00		0.01	1.00		0.02						
Lane Grp Cap(c), veh/h	199	0	131	191	0	145	310	1228	1290	522	2316	1268						
V/C Ratio(X)	0.11	0.00	0.13	0.08	0.00	0.11	0.17	0.30	0.30	0.02	0.46	0.46						
Avail Cap(c_a), veh/h	290	0	236	277	0	260	417	1360	1429	631	2589	1418						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Uniform Delay (d), s/veh	32.5	0.0	31.8	32.5	0.0	31.7	4.2	4.2	4.2	3.7	5.4	5.4						
Incr Delay (d2), s/veh	0.5	0.0	0.9	0.4	0.0	0.7	0.3	0.6	0.6	0.0	0.6	1.2						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(95%),veh/ln	0.8	0.0	0.6	0.6	0.0	0.6	0.6	5.6	5.9	0.1	8.7	9.6						
LnGrp Delay(d),s/veh	33.0	0.0	32.7	32.9	0.0	32.4	4.4	4.8	4.8	3.7	6.1	6.6						
LnGrp LOS	C		C	C		C	A	A	A	A	A	A						
Approach Vol, veh/h	38					32		816			1643							
Approach Delay, s/veh	32.9					32.7		4.8			6.3							
Approach LOS	C					C		A			A							
Timer	1	2	3	4	5	6	7	8										
Assigned Phs	1	2			4	5	6	8										
Phs Duration (G+Y+Rc), s	4.1	58.4			12.1	5.5	57.0	12.1										
Change Period (Y+Rc), s	3.5	6.0			6.0	3.5	6.0	6.0										
Max Green Setting (Gmax), s	5.5	58.0			11.0	6.5	57.0	11.0										
Max Q Clear Time (g_c+I1), s	2.2	8.0			3.7	2.7	12.7	3.6										
Green Ext Time (p_c), s	0.0	19.4			0.1	0.0	38.3	0.1										
Intersection Summary																		
HCM 2010 Ctrl Delay	6.5																	
HCM 2010 LOS	A																	

HCM 2010 TWSC
100: Arlington Heights Road & Access A (Loading Dock)

05/24/2019

Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	1200	20	2	1050
Future Vol, veh/h	5	5	1200	20	2	1050
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	40	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	6	2	2
Mvmt Flow	5	5	1263	21	2	1105

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1831	642	0
Stage 1	1274	-	-
Stage 2	557	-	-
Critical Hdwy	6.84	6.94	4.14
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	2.22
Pot Cap-1 Maneuver	68	417	536
Stage 1	226	-	-
Stage 2	537	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	68	417	536
Mov Cap-2 Maneuver	68	-	-
Stage 1	225	-	-
Stage 2	537	-	-

Approach	WB	NB	SB
HCM Control Delay, s	38	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	68 417	536	-
HCM Lane V/C Ratio	-	0.077 0.013	0.004	-
HCM Control Delay (s)	-	62.3 13.7	11.7	-
HCM Lane LOS	-	F B	B	-
HCM 95th %tile Q(veh)	-	0.2 0	0	-

HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	20	10	115	30	230	25	1045	135	125	925	55
Future Volume (veh/h)	75	20	10	115	30	230	25	1045	135	125	925	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1961	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	79	21	11	121	32	242	26	1100	142	132	974	58
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	292	114	60	341	243	283	335	1682	217	312	1940	116
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.05	0.10	0.10	0.08	0.12	0.12	0.02	0.53	0.53	0.05	0.57	0.57
Ln Grp Delay, s/veh	31.0	0.0	34.6	29.6	32.1	55.7	9.2	17.0	17.1	11.9	12.2	12.2
Ln Grp LOS	C		C	C	C	E	A	B	B	B	B	B
Approach Vol, veh/h		111			395			1268			1164	
Approach Delay, s/veh		32.0			45.8			16.9			12.1	
Approach LOS		C			D			B			B	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Case No	1.1	4.0	1.1	4.0	1.1	4.0	1.1	3.0				
Phs Duration (G+Y+Rc), s	7.9	49.2	9.9	14.0	4.8	52.3	7.8	16.1				
Change Period (Y+Rc), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0				
Max Green (Gmax), s	8.5	48.0	6.5	8.0	3.5	53.0	6.5	8.0				
Max Allow Headway (MAH), s	3.8	9.2	3.9	7.5	3.8	9.1	3.9	6.2				
Max Q Clear (g_c+I1), s	4.6	22.3	6.8	3.4	2.5	16.0	5.2	12.1				
Green Ext Time (g_e), s	0.1	20.9	0.0	0.0	0.0	23.7	0.0	0.0				
Prob of Phs Call (p_c)	0.95	1.00	0.93	1.00	0.44	1.00	0.83	1.00				
Prob of Max Out (p_x)	0.85	0.83	1.00	1.00	1.00	0.56	1.00	1.00				
Left-Turn Movement Data												
Assigned Mvmt	1		3		5		7					
Mvmt Sat Flow, veh/h	1774		1774		1774		1774					
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		3154		1153		3395		1961				
Right-Turn Movement Data												
Assigned Mvmt		12		14		16		18				
Mvmt Sat Flow, veh/h		406		604		202		1583				
Left Lane Group Data												
Assigned Mvmt	1	0	3	0	5	0	7	0				
Lane Assignment	(Pr/Pm)		(Pr/Pm)		(Pr/Pm)		(Pr/Pm)					

HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	132	0	121	0	26	0	79	0
Grp Sat Flow (s), veh/h/ln	1774	0	1774	0	1774	0	1774	0
Q Serve Time (g_s), s	2.6	0.0	4.8	0.0	0.5	0.0	3.2	0.0
Cycle Q Clear Time (g_c), s	2.6	0.0	4.8	0.0	0.5	0.0	3.2	0.0
Perm LT Sat Flow (s_l), veh/h/ln	446	0	1372	0	544	0	1101	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	44.8	0.0	8.6	0.0	43.2	0.0	8.0	0.0
Perm LT Serve Time (g_u), s	22.9	0.0	6.6	0.0	32.3	0.0	8.0	0.0
Perm LT Q Serve Time (g_ps), s	9.2	0.0	0.2	0.0	0.5	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	312	0	341	0	335	0	292	0
V/C Ratio (X)	0.42	0.00	0.35	0.00	0.08	0.00	0.27	0.00
Avail Cap (c_a), veh/h	401	0	344	0	383	0	340	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	10.9	0.0	29.0	0.0	9.1	0.0	30.5	0.0
Incr Delay (d2), s/veh	0.9	0.0	0.6	0.0	0.1	0.0	0.5	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	11.9	0.0	29.6	0.0	9.2	0.0	31.0	0.0
1st-Term Q (Q1), veh/ln	1.2	0.0	2.4	0.0	0.3	0.0	1.5	0.0
2nd-Term Q (Q2), veh/ln	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	1.80	0.00	1.80	0.00	1.80	0.00
%ile Back of Q (95%), veh/ln	2.4	0.0	4.3	0.0	0.5	0.0	2.8	0.0
%ile Storage Ratio (RQ%)	0.33	0.00	0.71	0.00	0.25	0.00	0.60	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T		T	
Lanes in Grp	0	1	0	0	0	1	0	1
Grp Vol (v), veh/h	0	616	0	0	0	508	0	32
Grp Sat Flow (s), veh/h/ln	0	1770	0	0	0	1770	0	1961
Q Serve Time (g_s), s	0.0	20.2	0.0	0.0	0.0	14.0	0.0	1.2
Cycle Q Clear Time (g_c), s	0.0	20.2	0.0	0.0	0.0	14.0	0.0	1.2
Lane Grp Cap (c), veh/h	0	944	0	0	0	1011	0	243
V/C Ratio (X)	0.00	0.65	0.00	0.00	0.00	0.50	0.00	0.13
Avail Cap (c_a), veh/h	0	1048	0	0	0	1157	0	243
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	13.5	0.0	0.0	0.0	10.4	0.0	31.6
Incr Delay (d2), s/veh	0.0	3.5	0.0	0.0	0.0	1.8	0.0	0.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	17.0	0.0	0.0	0.0	12.2	0.0	32.1
1st-Term Q (Q1), veh/ln	0.0	9.8	0.0	0.0	0.0	6.8	0.0	0.6

HCM 2010 Signalized Intersection Capacity Analysis

200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

2nd-Term Q (Q2), veh/ln	0.0	0.9	0.0	0.0	0.0	0.5	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.50	0.00	1.00	0.00	1.61	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	16.0	0.0	0.0	0.0	11.7	0.0	1.2
%ile Storage Ratio (RQ%)	0.00	1.81	0.00	0.00	0.00	0.58	0.00	0.09
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	626	0	32	0	524	0	242
Grp Sat Flow (s), veh/h/ln	0	1791	0	1756	0	1827	0	1583
Q Serve Time (g_s), s	0.0	20.3	0.0	1.4	0.0	14.0	0.0	10.1
Cycle Q Clear Time (g_c), s	0.0	20.3	0.0	1.4	0.0	14.0	0.0	10.1
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1583.3
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4
Prop RT Outside Lane (P_R)	0.00	0.23	0.00	0.34	0.00	0.11	0.00	1.00
Lane Grp Cap (c), veh/h	0	955	0	173	0	1044	0	283
V/C Ratio (X)	0.00	0.65	0.00	0.18	0.00	0.50	0.00	0.86
Avail Cap (c_a), veh/h	0	1061	0	173	0	1195	0	283
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	13.6	0.0	33.5	0.0	10.4	0.0	32.3
Incr Delay (d2), s/veh	0.0	3.5	0.0	1.1	0.0	1.7	0.0	23.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	17.1	0.0	34.6	0.0	12.2	0.0	55.7
1st-Term Q (Q1), veh/ln	0.0	9.9	0.0	0.7	0.0	7.0	0.0	5.2
2nd-Term Q (Q2), veh/ln	0.0	0.9	0.0	0.1	0.0	0.5	0.0	1.8
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.50	0.00	1.80	0.00	1.60	0.00	1.62
%ile Back of Q (95%), veh/ln	0.0	16.2	0.0	1.3	0.0	12.0	0.0	11.4
%ile Storage Ratio (RQ%)	0.00	1.83	0.00	0.12	0.00	0.59	0.00	1.87
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Ctrl Delay	19.5
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary
200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

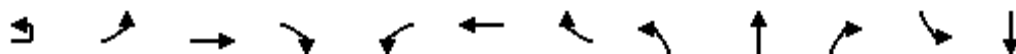
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	20	10	115	30	230	25	1045	135	125	925	55
Future Volume (veh/h)	75	20	10	115	30	230	25	1045	135	125	925	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1961	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	79	21	11	121	32	242	26	1100	142	132	974	58
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	292	114	60	341	243	283	335	1682	217	312	1940	116
Arrive On Green	0.05	0.10	0.10	0.08	0.12	0.12	0.02	0.53	0.53	0.05	0.57	0.57
Sat Flow, veh/h	1774	1153	604	1774	1961	1583	1774	3154	406	1774	3395	202
Grp Volume(v), veh/h	79	0	32	121	32	242	26	616	626	132	508	524
Grp Sat Flow(s),veh/h/ln	1774	0	1756	1774	1961	1583	1774	1770	1791	1774	1770	1827
Q Serve(g_s), s	3.2	0.0	1.4	4.8	1.2	10.1	0.5	20.2	20.3	2.6	14.0	14.0
Cycle Q Clear(g_c), s	3.2	0.0	1.4	4.8	1.2	10.1	0.5	20.2	20.3	2.6	14.0	14.0
Prop In Lane	1.00		0.34	1.00		1.00	1.00		0.23	1.00		0.11
Lane Grp Cap(c), veh/h	292	0	173	341	243	283	335	944	955	312	1011	1044
V/C Ratio(X)	0.27	0.00	0.18	0.35	0.13	0.86	0.08	0.65	0.65	0.42	0.50	0.50
Avail Cap(c_a), veh/h	340	0	173	344	243	283	383	1048	1061	401	1157	1195
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.5	0.0	33.5	29.0	31.6	32.3	9.1	13.5	13.6	10.9	10.4	10.4
Incr Delay (d2), s/veh	0.5	0.0	1.1	0.6	0.5	23.5	0.1	3.5	3.5	0.9	1.8	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.8	0.0	1.3	4.3	1.2	11.4	0.5	16.0	16.2	2.4	11.7	12.0
LnGrp Delay(d),s/veh	31.0	0.0	34.6	29.6	32.1	55.7	9.2	17.0	17.1	11.9	12.2	12.2
LnGrp LOS	C		C	C	C	E	A	B	B	B	B	B
Approach Vol, veh/h		111			395			1268			1164	
Approach Delay, s/veh		32.0			45.8			16.9			12.1	
Approach LOS		C			D			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.9	49.2	9.9	14.0	4.8	52.3	7.8	16.1				
Change Period (Y+Rc), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0				
Max Green Setting (Gmax), s	8.5	48.0	6.5	8.0	3.5	53.0	6.5	8.0				
Max Q Clear Time (g_c+I1), s	4.6	22.3	6.8	3.4	2.5	16.0	5.2	12.1				
Green Ext Time (p_c), s	0.1	20.9	0.0	0.0	0.0	23.7	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			19.5									
HCM 2010 LOS			B									
Notes												

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings

300: Arlington Heights Road & Palatine Road

05/24/2019



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗↗		↖	↖↖↖		↖	↖↖	↖	↖	↖↖
Traffic Volume (vph)	20	285	1255	140	185	1645	40	220	960	170	80	780
Future Volume (vph)	20	285	1255	140	185	1645	40	220	960	170	80	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	12	13	12	12	12	12	12	12	12
Storage Length (ft)		415		0	215		0	140		175	150	
Storage Lanes		1		0	1		0	1		1	1	
Taper Length (ft)		120			180			170			250	
Lane Util. Factor	0.91	1.00	0.91	0.91	1.00	0.91	0.91	1.00	0.95	1.00	1.00	0.95
Fr't			0.985			0.996				0.850		
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	1829	4965	0	1829	5064	0	1770	3725	1583	1770	3725
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	1829	4965	0	1829	5064	0	1770	3725	1583	1770	3725
Right Turn on Red				No			No			No		
Satd. Flow (RTOR)												
Link Speed (mph)			35			35			35			35
Link Distance (ft)			601			560			640			500
Travel Time (s)			11.7			10.9			12.5			9.7
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	3%	2%	2%	2%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	21	300	1321	147	195	1732	42	232	1011	179	84	821
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	321	1468	0	195	1774	0	232	1011	179	84	821
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			52			52			17			17
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane												
Headway Factor	1.00	0.96	1.00	1.00	0.96	1.00	1.00	1.00	0.94	1.00	1.00	0.94
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors	1	1	2		1	2		1	2	1	1	2
Detector Template	Left	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	20	100		20	100		20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Size(ft)	20	20	6		20	6		20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA

Future (2025) No-Build Traffic Projections 4:15 pm 02/04/2019 PM Peak Hour

Synchro 10 Report
Page 1

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	385
Future Volume (vph)	385
Ideal Flow (vphpl)	1900
Lane Width (ft)	12
Storage Length (ft)	280
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1583
Flt Permitted	
Satd. Flow (perm)	1583
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.95
Heavy Vehicles (%)	2%
Adj. Flow (vph)	405
Shared Lane Traffic (%)	
Lane Group Flow (vph)	405
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	pm+ov

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

												
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Protected Phases	7!	7	4		3	8		5	2	3	1	6
Permitted Phases										2		
Detector Phase	7	7	4		3	8		5	2	3	1	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		3.0	15.0		3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	7.5	7.5	21.5		7.5	21.5		7.5	21.5	7.5	7.5	21.5
Total Split (s)	28.0	28.0	57.0		28.0	57.0		21.0	50.0	28.0	15.0	44.0
Total Split (%)	18.7%	18.7%	38.0%		18.7%	38.0%		14.0%	33.3%	18.7%	10.0%	29.3%
Maximum Green (s)	23.5	23.5	50.5		23.5	50.5		16.5	43.5	23.5	10.5	37.5
Yellow Time (s)	3.5	3.5	4.5		3.5	4.5		3.5	4.5	3.5	3.5	4.5
All-Red Time (s)	1.0	1.0	2.0		1.0	2.0		1.0	2.0	1.0	1.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	6.5		4.5	6.5		4.5	6.5	4.5	4.5	6.5
Lead/Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	7.0		4.0	7.0		4.0	7.0	4.0	4.0	7.0
Recall Mode	None	None	None		None	None		None	C-Min	None	None	C-Min
Walk Time (s)									7.0			7.0
Flash Dont Walk (s)									11.0			11.0
Pedestrian Calls (#/hr)									0			0
Act Effct Green (s)		23.5	53.4		20.6	50.5		16.5	43.8	70.9	10.2	37.5
Actuated g/C Ratio		0.16	0.36		0.14	0.34		0.11	0.29	0.47	0.07	0.25
v/c Ratio		1.12	0.83		0.78	1.04		1.20	0.93	0.24	0.70	0.88
Control Delay		145.7	49.6		82.9	81.2		181.7	66.5	24.1	97.4	66.1
Queue Delay		0.0	0.0		0.0	0.0		0.0	1.2	0.0	0.0	0.0
Total Delay		145.7	49.6		82.9	81.2		181.7	67.7	24.1	97.4	66.1
LOS		F	D		F	F		F	E	C	F	E
Approach Delay			66.9			81.4			80.8			58.3
Approach LOS			E			F			F			E
90th %ile Green (s)	23.5	23.5	50.5		23.5	50.5		16.5	43.5	23.5	10.5	37.5
90th %ile Term Code	Max	Max	Max		Max	Max		Max	Coord	Max	Max	Coord
70th %ile Green (s)	23.5	23.5	50.5		23.5	50.5		16.5	43.5	23.5	10.5	37.5
70th %ile Term Code	Max	Max	Max		Max	Max		Max	Coord	Max	Max	Coord
50th %ile Green (s)	23.5	23.5	52.0		22.0	50.5		16.5	43.5	22.0	10.5	37.5
50th %ile Term Code	Max	Max	Max		Gap	Max		Max	Coord	Gap	Max	Coord
30th %ile Green (s)	23.5	23.5	54.8		19.2	50.5		16.5	43.5	19.2	10.5	37.5
30th %ile Term Code	Max	Max	Max		Gap	Max		Max	Coord	Gap	Max	Coord
10th %ile Green (s)	23.5	23.5	59.0		15.0	50.5		16.5	45.0	15.0	9.0	37.5
10th %ile Term Code	Max	Max	Max		Gap	Max		Max	Coord	Gap	Gap	Coord
Queue Length 50th (ft)		~361	487		185	~684		~273	510	101	82	410
Queue Length 95th (ft)		#559	561		273	#779		#452	#640	151	#162	#513
Internal Link Dist (ft)			521			480			560			420
Turn Bay Length (ft)		415			215			140		175	150	
Base Capacity (vph)		286	1766		286	1704		194	1087	778	123	931
Starvation Cap Reductn		0	0		0	0		0	17	0	0	0
Spillback Cap Reductn		0	0		0	0		0	0	0	0	0
Storage Cap Reductn		0	0		0	0		0	0	0	0	0
Reduced v/c Ratio		1.12	0.83		0.68	1.04		1.20	0.94	0.23	0.68	0.88

Lanes, Volumes, Timings

300: Arlington Heights Road & Palatine Road

05/24/2019

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 61.5 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.20

Intersection Signal Delay: 72.6

Intersection LOS: E

Intersection Capacity Utilization 102.3%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

! Phase conflict between lane groups.

Splits and Phases: 300: Arlington Heights Road & Palatine Road

 Ø1	 Ø2 (R)	 Ø3	 Ø4
15 s	50 s	28 s	57 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
21 s	44 s	28 s	57 s

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

Lane Group	SBR
Protected Phases	7!
Permitted Phases	6
Detector Phase	7
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	7.5
Total Split (s)	28.0
Total Split (%)	18.7%
Maximum Green (s)	23.5
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	4.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	67.5
Actuated g/C Ratio	0.45
v/c Ratio	0.57
Control Delay	34.4
Queue Delay	0.0
Total Delay	34.4
LOS	C
Approach Delay	
Approach LOS	
90th %ile Green (s)	23.5
90th %ile Term Code	Max
70th %ile Green (s)	23.5
70th %ile Term Code	Max
50th %ile Green (s)	23.5
50th %ile Term Code	Max
30th %ile Green (s)	23.5
30th %ile Term Code	Max
10th %ile Green (s)	23.5
10th %ile Term Code	Max
Queue Length 50th (ft)	289
Queue Length 95th (ft)	400
Internal Link Dist (ft)	
Turn Bay Length (ft)	280
Base Capacity (vph)	712
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.57

Intersection

Int Delay, s/veh 1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑↓			↑↑↑		↑
Traffic Vol, veh/h	1325	180	0	1870	0	155
Future Vol, veh/h	1325	180	0	1870	0	155
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1395	189	0	1968	0	163

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- - - 792
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - - 7.14
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - - 3.92
Pot Cap-1 Maneuver	-	-	0 - 0 285
Stage 1	-	-	0 - 0
Stage 2	-	-	0 - 0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - - 285
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	33.3
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	285	-	-	-
HCM Lane V/C Ratio	0.572	-	-	-
HCM Control Delay (s)	33.3	-	-	-
HCM Lane LOS	D	-	-	-
HCM 95th %tile Q(veh)	3.3	-	-	-

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	50	0	1620	1140	200
Future Vol, veh/h	0	50	0	1620	1140	200
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	53	0	1705	1200	211

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 706	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 7.14	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.92	- -	- -
Pot Cap-1 Maneuver	0 324	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 324	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	18.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 324	- -	- -
HCM Lane V/C Ratio	- 0.162	- -	- -
HCM Control Delay (s)	- 18.3	- -	- -
HCM Lane LOS	- C	- -	- -
HCM 95th %tile Q(veh)	- 0.6	- -	- -

HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	10	65	25	15	50	140	1450	25	25	1145	20
Future Volume (veh/h)	120	10	65	25	15	50	140	1450	25	25	1145	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	126	11	68	26	16	53	147	1526	26	26	1205	21
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	225	32	199	215	54	180	406	2339	40	247	3201	56
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.05	0.66	0.66	0.02	0.62	0.62
Ln Grp Delay, s/veh	42.5	0.0	34.4	35.4	0.0	33.7	6.0	11.5	11.4	8.0	8.4	8.8
Ln Grp LOS	D		C	D		C	A	B	B	A	A	A
Approach Vol, veh/h		205			95			1699			1252	
Approach Delay, s/veh		39.3			34.2			11.0			8.5	
Approach LOS		D			C			B			A	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs		1	2		4	5	6		8			
Case No		1.1	4.0		6.0	1.1	4.0		6.0			
Phs Duration (G+Y+Rc), s		4.9	61.2		18.0	7.8	58.3		18.0			
Change Period (Y+Rc), s		3.5	6.0		6.0	3.5	6.0		6.0			
Max Green (Gmax), s		3.5	59.0		12.0	7.5	55.0		12.0			
Max Allow Headway (MAH), s		3.8	9.1		6.6	3.8	9.1		7.2			
Max Q Clear (g_c+I1), s		2.5	23.7		13.1	4.4	11.7		7.2			
Green Ext Time (g_e), s		0.0	31.6		0.0	0.1	30.2		0.2			
Prob of Phs Call (p_c)		0.46	1.00		1.00	0.97	1.00		1.00			
Prob of Max Out (p_x)		1.00	0.89		1.00	1.00	0.60		1.00			
Left-Turn Movement Data												
Assigned Mvmt		1			7	5			3			
Mvmt Sat Flow, veh/h		1774			1326	1774			1314			
Through Movement Data												
Assigned Mvmt			2		4		6		8			
Mvmt Sat Flow, veh/h			3561		225		5147		380			
Right-Turn Movement Data												
Assigned Mvmt			12		14		16		18			
Mvmt Sat Flow, veh/h			61		1392		90		1260			
Left Lane Group Data												
Assigned Mvmt		1	0	0	7	5	0	0	3			
Lane Assignment		(Pr/Pm)			(Pr/Pm)							

HCM 2010 Signalized Intersection Capacity Analysis

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Lanes in Grp	1	0	0	1	1	0	0	1
Grp Vol (v), veh/h	26	0	0	126	147	0	0	26
Grp Sat Flow (s), veh/h/ln	1774	0	0	1326	1774	0	0	1314
Q Serve Time (g_s), s	0.5	0.0	0.0	7.9	2.4	0.0	0.0	1.5
Cycle Q Clear Time (g_c), s	0.5	0.0	0.0	11.1	2.4	0.0	0.0	5.2
Perm LT Sat Flow (s_l), veh/h/ln	331	0	0	1326	453	0	0	1314
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	52.3	0.0	0.0	12.0	53.7	0.0	0.0	12.0
Perm LT Serve Time (g_u), s	33.6	0.0	0.0	8.8	42.6	0.0	0.0	8.3
Perm LT Q Serve Time (g_ps), s	1.6	0.0	0.0	7.9	5.4	0.0	0.0	1.5
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Lane Grp Cap (c), veh/h	247	0	0	225	406	0	0	215
V/C Ratio (X)	0.11	0.00	0.00	0.56	0.36	0.00	0.00	0.12
Avail Cap (c_a), veh/h	292	0	0	225	473	0	0	215
Upstream Filter (I)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	7.9	0.0	0.0	37.2	5.5	0.0	0.0	34.9
Incr Delay (d2), s/veh	0.2	0.0	0.0	5.2	0.5	0.0	0.0	0.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	8.0	0.0	0.0	42.5	6.0	0.0	0.0	35.4
1st-Term Q (Q1), veh/ln	0.2	0.0	0.0	2.9	1.1	0.0	0.0	0.6
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	0.00	1.80	1.80	0.00	0.00	1.80
%ile Back of Q (95%), veh/ln	0.4	0.0	0.0	5.8	2.2	0.0	0.0	1.1
%ile Storage Ratio (RQ%)	0.07	0.00	0.00	0.99	0.24	0.00	0.00	0.23
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T			T				
Lanes in Grp	0	1	0	0	0	2	0	0
Grp Vol (v), veh/h	0	758	0	0	0	794	0	0
Grp Sat Flow (s), veh/h/ln	0	1770	0	0	0	1695	0	0
Q Serve Time (g_s), s	0.0	21.6	0.0	0.0	0.0	9.7	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	21.6	0.0	0.0	0.0	9.7	0.0	0.0
Lane Grp Cap (c), veh/h	0	1162	0	0	0	2108	0	0
V/C Ratio (X)	0.00	0.65	0.00	0.00	0.00	0.38	0.00	0.00
Avail Cap (c_a), veh/h	0	1241	0	0	0	2217	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	8.7	0.0	0.0	0.0	7.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	2.8	0.0	0.0	0.0	0.5	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	11.5	0.0	0.0	0.0	8.4	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	10.3	0.0	0.0	0.0	4.5	0.0	0.0

Future (2025) No-Build Traffic Projections 4:15 pm 02/04/2019 PM Peak Hour

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HCM 2010 Signalized Intersection Capacity Analysis

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2nd-Term Q (Q2), veh/ln	0.0	0.9	0.0	0.0	0.0	0.2	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.49	0.00	1.00	0.00	1.76	0.00	1.00
%ile Back of Q (95%), veh/ln	0.0	16.7	0.0	0.0	0.0	8.2	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.69	0.00	0.00	0.00	0.57	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	794	0	79	0	432	0	69
Grp Sat Flow (s), veh/h/ln	0	1852	0	1617	0	1847	0	1640
Q Serve Time (g_s), s	0.0	21.7	0.0	3.7	0.0	9.7	0.0	3.2
Cycle Q Clear Time (g_c), s	0.0	21.7	0.0	3.7	0.0	9.7	0.0	3.2
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.03	0.00	0.86	0.00	0.05	0.00	0.77
Lane Grp Cap (c), veh/h	0	1216	0	231	0	1148	0	234
V/C Ratio (X)	0.00	0.65	0.00	0.34	0.00	0.38	0.00	0.29
Avail Cap (c_a), veh/h	0	1299	0	231	0	1208	0	234
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	8.7	0.0	32.5	0.0	7.9	0.0	32.3
Incr Delay (d2), s/veh	0.0	2.7	0.0	1.9	0.0	0.9	0.0	1.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	11.4	0.0	34.4	0.0	8.8	0.0	33.7
1st-Term Q (Q1), veh/ln	0.0	10.8	0.0	1.6	0.0	4.9	0.0	1.4
2nd-Term Q (Q2), veh/ln	0.0	0.9	0.0	0.1	0.0	0.3	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.48	0.00	1.80	0.00	1.72	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	17.4	0.0	3.2	0.0	9.0	0.0	2.8
%ile Storage Ratio (RQ%)	0.00	0.71	0.00	0.41	0.00	0.62	0.00	0.65
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	12.5							
HCM 2010 LOS	B							

HCM 2010 Signalized Intersection Summary
600: Rand Road & Access E/Private Driveway

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Traffic Volume (veh/h)	120	10	65	25	15	50	140	1450	25	25	1145	20						
Future Volume (veh/h)	120	10	65	25	15	50	140	1450	25	25	1145	20						
Number	7	4	14	3	8	18	5	2	12	1	6	16						
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0						
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00						
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900						
Adj Flow Rate, veh/h	126	11	68	26	16	53	147	1526	26	26	1205	21						
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95						
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2						
Cap, veh/h	225	32	199	215	54	180	406	2339	40	247	3201	56						
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.05	0.66	0.66	0.02	0.62	0.62						
Sat Flow, veh/h	1326	225	1392	1314	380	1260	1774	3561	61	1774	5147	90						
Grp Volume(v), veh/h	126	0	79	26	0	69	147	758	794	26	794	432						
Grp Sat Flow(s),veh/h/ln	1326	0	1617	1314	0	1640	1774	1770	1852	1774	1695	1847						
Q Serve(g_s), s	7.9	0.0	3.7	1.5	0.0	3.2	2.4	21.6	21.7	0.5	9.7	9.7						
Cycle Q Clear(g_c), s	11.1	0.0	3.7	5.2	0.0	3.2	2.4	21.6	21.7	0.5	9.7	9.7						
Prop In Lane	1.00		0.86	1.00		0.77	1.00		0.03	1.00		0.05						
Lane Grp Cap(c), veh/h	225	0	231	215	0	234	406	1162	1216	247	2108	1148						
V/C Ratio(X)	0.56	0.00	0.34	0.12	0.00	0.29	0.36	0.65	0.65	0.11	0.38	0.38						
Avail Cap(c_a), veh/h	225	0	231	215	0	234	473	1241	1299	292	2217	1208						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Uniform Delay (d), s/veh	37.2	0.0	32.5	34.9	0.0	32.3	5.5	8.7	8.7	7.9	7.9	7.9						
Incr Delay (d2), s/veh	5.2	0.0	1.9	0.5	0.0	1.5	0.5	2.8	2.7	0.2	0.5	0.9						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(95%),veh/ln	5.8	0.0	3.2	1.1	0.0	2.8	2.2	16.7	17.4	0.4	8.2	9.0						
LnGrp Delay(d),s/veh	42.5	0.0	34.4	35.4	0.0	33.7	6.0	11.5	11.4	8.0	8.4	8.8						
LnGrp LOS	D		C	D		C	A	B	B	A	A	A						
Approach Vol, veh/h	205					95		1699		1252								
Approach Delay, s/veh	39.3					34.2		11.0		8.5								
Approach LOS	D					C		B		A								
Timer	1	2	3	4	5	6	7	8										
Assigned Phs	1	2			4	5	6	8										
Phs Duration (G+Y+Rc), s	4.9	61.2			18.0	7.8	58.3	18.0										
Change Period (Y+Rc), s	3.5	6.0			6.0	3.5	6.0	6.0										
Max Green Setting (Gmax), s	3.5	59.0			12.0	7.5	55.0	12.0										
Max Q Clear Time (g_c+I1), s	2.5	23.7			13.1	4.4	11.7	7.2										
Green Ext Time (p_c), s	0.0	31.6			0.0	0.1	30.2	0.2										
Intersection Summary																		
HCM 2010 Ctrl Delay		12.5																
HCM 2010 LOS		B																

HCM 2010 TWSC
100: Arlington Heights Road & Access A (Loading Dock)

05/24/2019

Intersection

Int Delay, s/veh 0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	15	985	20	5	980
Future Vol, veh/h	5	15	985	20	5	980
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	40	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	7	2	2	25	2
Mvmt Flow	5	16	1037	21	5	1032

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1574	529	0
Stage 1	1048	-	-
Stage 2	526	-	-
Critical Hdwy	6.84	7.04	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.37	-
Pot Cap-1 Maneuver	101	481	-
Stage 1	299	-	-
Stage 2	557	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	100	481	-
Mov Cap-2 Maneuver	100	-	-
Stage 1	296	-	-
Stage 2	557	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.3	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	- 100 481	533	-
HCM Lane V/C Ratio	-	- 0.053 0.033	0.01	-
HCM Control Delay (s)	-	- 43 12.7	11.8	-
HCM Lane LOS	-	- E B	B	-
HCM 95th %tile Q(veh)	-	- 0.2 0.1	0	-

HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	10	20	145	25	295	50	815	135	135	820	55
Future Volume (veh/h)	90	10	20	145	25	295	50	815	135	135	820	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1961	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	95	11	21	153	26	311	53	858	142	142	863	58
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	326	63	120	397	280	330	350	1419	235	360	1696	114
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.06	0.11	0.11	0.10	0.14	0.14	0.03	0.47	0.47	0.07	0.50	0.50
Ln Grp Delay, s/veh	26.7	0.0	30.3	24.9	27.4	63.7	10.5	17.7	17.7	11.2	14.1	14.1
Ln Grp LOS	C		C	C	C	E	B	B	B	B	B	B
Approach Vol, veh/h		127			490			1053			1063	
Approach Delay, s/veh		27.7			49.7			17.3			13.7	
Approach LOS		C			D			B			B	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Case No	1.1	4.0	1.1	4.0	1.1	4.0	1.1	3.0				
Phs Duration (G+Y+Rc), s	8.3	40.0	10.5	14.0	5.6	42.7	8.1	16.4				
Change Period (Y+Rc), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0				
Max Green (Gmax), s	13.5	41.0	7.5	9.0	4.5	50.0	7.5	9.0				
Max Allow Headway (MAH), s	3.8	9.2	3.9	7.6	3.8	9.1	3.9	6.2				
Max Q Clear (g_c+I1), s	4.9	17.3	7.4	3.3	3.1	14.4	5.4	12.4				
Green Ext Time (g_e), s	0.2	16.7	0.0	0.1	0.0	20.5	0.0	0.0				
Prob of Phs Call (p_c)	0.94	1.00	0.95	1.00	0.66	1.00	0.85	1.00				
Prob of Max Out (p_x)	0.01	0.72	1.00	1.00	1.00	0.48	1.00	1.00				
Left-Turn Movement Data												
Assigned Mvmt	1		3		5		7					
Mvmt Sat Flow, veh/h	1774		1774		1774		1774					
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		3040		574		3366		1961				
Right-Turn Movement Data												
Assigned Mvmt		12		14		16		18				
Mvmt Sat Flow, veh/h		503		1096		226		1583				
Left Lane Group Data												
Assigned Mvmt	1	0	3	0	5	0	7	0				
Lane Assignment	(Pr/Pm)		(Pr/Pm)		(Pr/Pm)		(Pr/Pm)					

HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	142	0	153	0	53	0	95	0
Grp Sat Flow (s), veh/h/ln	1774	0	1774	0	1774	0	1774	0
Q Serve Time (g_s), s	2.9	0.0	5.4	0.0	1.1	0.0	3.4	0.0
Cycle Q Clear Time (g_c), s	2.9	0.0	5.4	0.0	1.1	0.0	3.4	0.0
Perm LT Sat Flow (s_l), veh/h/ln	561	0	1372	0	604	0	1039	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	35.2	0.0	8.9	0.0	34.0	0.0	8.0	0.0
Perm LT Serve Time (g_u), s	18.7	0.0	6.7	0.0	24.2	0.0	8.0	0.0
Perm LT Q Serve Time (g_ps), s	5.6	0.0	0.3	0.0	0.9	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	360	0	397	0	350	0	326	0
V/C Ratio (X)	0.39	0.00	0.39	0.00	0.15	0.00	0.29	0.00
Avail Cap (c_a), veh/h	572	0	409	0	410	0	396	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	10.5	0.0	24.3	0.0	10.3	0.0	26.3	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.6	0.0	0.2	0.0	0.5	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	11.2	0.0	24.9	0.0	10.5	0.0	26.7	0.0
1st-Term Q (Q1), veh/ln	1.3	0.0	2.6	0.0	0.5	0.0	1.6	0.0
2nd-Term Q (Q2), veh/ln	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	1.80	0.00	1.80	0.00	1.80	0.00
%ile Back of Q (95%), veh/ln	2.5	0.0	4.9	0.0	1.0	0.0	3.0	0.0
%ile Storage Ratio (RQ%)	0.35	0.00	0.80	0.00	0.50	0.00	0.64	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T		T	
Lanes in Grp	0	1	0	0	0	1	0	1
Grp Vol (v), veh/h	0	499	0	0	0	454	0	26
Grp Sat Flow (s), veh/h/ln	0	1770	0	0	0	1770	0	1961
Q Serve Time (g_s), s	0.0	15.3	0.0	0.0	0.0	12.4	0.0	0.8
Cycle Q Clear Time (g_c), s	0.0	15.3	0.0	0.0	0.0	12.4	0.0	0.8
Lane Grp Cap (c), veh/h	0	826	0	0	0	892	0	280
V/C Ratio (X)	0.00	0.60	0.00	0.00	0.00	0.51	0.00	0.09
Avail Cap (c_a), veh/h	0	997	0	0	0	1216	0	280
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	14.4	0.0	0.0	0.0	12.0	0.0	27.1
Incr Delay (d2), s/veh	0.0	3.3	0.0	0.0	0.0	2.1	0.0	0.3
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	17.7	0.0	0.0	0.0	14.1	0.0	27.4
1st-Term Q (Q1), veh/ln	0.0	7.4	0.0	0.0	0.0	6.0	0.0	0.5

HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

2nd-Term Q (Q2), veh/ln	0.0	0.8	0.0	0.0	0.0	0.5	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.58	0.00	1.00	0.00	1.64	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	12.8	0.0	0.0	0.0	10.8	0.0	0.9
%ile Storage Ratio (RQ%)	0.00	1.44	0.00	0.00	0.00	0.53	0.00	0.06
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	501	0	32	0	467	0	311
Grp Sat Flow (s), veh/h/ln	0	1774	0	1669	0	1823	0	1583
Q Serve Time (g_s), s	0.0	15.3	0.0	1.3	0.0	12.4	0.0	10.4
Cycle Q Clear Time (g_c), s	0.0	15.3	0.0	1.3	0.0	12.4	0.0	10.4
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1583.3
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8
Prop RT Outside Lane (P_R)	0.00	0.28	0.00	0.66	0.00	0.12	0.00	1.00
Lane Grp Cap (c), veh/h	0	828	0	183	0	919	0	330
V/C Ratio (X)	0.00	0.60	0.00	0.17	0.00	0.51	0.00	0.94
Avail Cap (c_a), veh/h	0	999	0	206	0	1252	0	330
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	14.4	0.0	29.4	0.0	12.0	0.0	28.4
Incr Delay (d2), s/veh	0.0	3.3	0.0	1.0	0.0	2.0	0.0	35.3
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	17.7	0.0	30.3	0.0	14.1	0.0	63.7
1st-Term Q (Q1), veh/ln	0.0	7.4	0.0	0.6	0.0	6.2	0.0	6.1
2nd-Term Q (Q2), veh/ln	0.0	0.8	0.0	0.0	0.0	0.5	0.0	3.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.58	0.00	1.80	0.00	1.63	0.00	1.54
%ile Back of Q (95%), veh/ln	0.0	12.8	0.0	1.1	0.0	11.0	0.0	14.3
%ile Storage Ratio (RQ%)	0.00	1.44	0.00	0.11	0.00	0.54	0.00	2.35
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Ctrl Delay	22.2
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary

200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

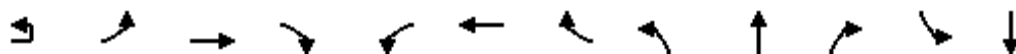
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	10	20	145	25	295	50	815	135	135	820	55
Future Volume (veh/h)	90	10	20	145	25	295	50	815	135	135	820	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1961	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	95	11	21	153	26	311	53	858	142	142	863	58
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	326	63	120	397	280	330	350	1419	235	360	1696	114
Arrive On Green	0.06	0.11	0.11	0.10	0.14	0.14	0.03	0.47	0.47	0.07	0.50	0.50
Sat Flow, veh/h	1774	574	1096	1774	1961	1583	1774	3040	503	1774	3366	226
Grp Volume(v), veh/h	95	0	32	153	26	311	53	499	501	142	454	467
Grp Sat Flow(s),veh/h/ln	1774	0	1669	1774	1961	1583	1774	1770	1774	1774	1770	1823
Q Serve(g_s), s	3.4	0.0	1.3	5.4	0.8	10.4	1.1	15.3	15.3	2.9	12.4	12.4
Cycle Q Clear(g_c), s	3.4	0.0	1.3	5.4	0.8	10.4	1.1	15.3	15.3	2.9	12.4	12.4
Prop In Lane	1.00		0.66	1.00		1.00	1.00		0.28	1.00		0.12
Lane Grp Cap(c), veh/h	326	0	183	397	280	330	350	826	828	360	892	919
V/C Ratio(X)	0.29	0.00	0.17	0.39	0.09	0.94	0.15	0.60	0.60	0.39	0.51	0.51
Avail Cap(c_a), veh/h	396	0	206	409	280	330	410	997	999	572	1216	1252
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.3	0.0	29.4	24.3	27.1	28.4	10.3	14.4	14.4	10.5	12.0	12.0
Incr Delay (d2), s/veh	0.5	0.0	1.0	0.6	0.3	35.3	0.2	3.3	3.3	0.7	2.1	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.0	0.0	1.1	4.9	0.9	14.3	1.0	12.8	12.8	2.5	10.8	11.0
LnGrp Delay(d),s/veh	26.7	0.0	30.3	24.9	27.4	63.7	10.5	17.7	17.7	11.2	14.1	14.1
LnGrp LOS	C		C	C	C	E	B	B	B	B	B	B
Approach Vol, veh/h		127			490			1053			1063	
Approach Delay, s/veh		27.7			49.7			17.3			13.7	
Approach LOS		C			D			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	40.0	10.5	14.0	5.6	42.7	8.1	16.4				
Change Period (Y+Rc), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0				
Max Green Setting (Gmax), s	13.5	41.0	7.5	9.0	4.5	50.0	7.5	9.0				
Max Q Clear Time (g_c+I1), s	4.9	17.3	7.4	3.3	3.1	14.4	5.4	12.4				
Green Ext Time (p_c), s	0.2	16.7	0.0	0.1	0.0	20.5	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				22.2								
HCM 2010 LOS				C								
Notes												

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings

300: Arlington Heights Road & Palatine Road

05/24/2019



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗↗		↖	↖↖↖		↖	↖↖	↖	↖	↖↖
Traffic Volume (vph)	15	305	940	110	150	820	40	245	810	145	105	750
Future Volume (vph)	15	305	940	110	150	820	40	245	810	145	105	750
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	12	13	12	12	12	12	12	12	12
Storage Length (ft)		415		0	215		0	140		175	150	
Storage Lanes		1		0	1		0	1		1	1	
Taper Length (ft)		120			180			170			250	
Lane Util. Factor	0.91	1.00	0.91	0.91	1.00	0.91	0.91	1.00	0.95	1.00	1.00	0.95
Frt			0.984			0.993				0.850		
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	1829	5004	0	1829	5050	0	1770	3725	1583	1770	3725
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	1829	5004	0	1829	5050	0	1770	3725	1583	1770	3725
Right Turn on Red				No			No			No		
Satd. Flow (RTOR)												
Link Speed (mph)			35			35			35			35
Link Distance (ft)			601			560			640			500
Travel Time (s)			11.7			10.9			12.5			9.7
Peak Hour Factor	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)	16	321	989	116	158	863	42	258	853	153	111	789
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	337	1105	0	158	905	0	258	853	153	111	789
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			52			52			17			17
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane												
Headway Factor	1.00	0.96	1.00	1.00	0.96	1.00	1.00	1.00	0.94	1.00	1.00	0.94
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors	1	1	2		1	2		1	2	1	1	2
Detector Template	Left	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	20	100		20	100		20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Size(ft)	20	20	6		20	6		20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA
Protected Phases	7!	7	4		3	8		5	2	3	1	6

Future (2025) No-Build Traffic Projections 11:45 am 02/04/2019 Saturday Midday Peak Hour

Synchro 10 Report
Page 1

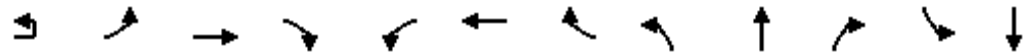
Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	320
Future Volume (vph)	320
Ideal Flow (vphpl)	1900
Lane Width (ft)	12
Storage Length (ft)	280
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1583
Flt Permitted	
Satd. Flow (perm)	1583
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.95
Adj. Flow (vph)	337
Shared Lane Traffic (%)	
Lane Group Flow (vph)	337
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	pm+ov
Protected Phases	7!

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Permitted Phases										2		
Detector Phase	7	7	4		3	8		5	2	3	1	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		3.0	15.0		3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	7.5	7.5	21.5		7.5	21.5		7.5	21.5	7.5	7.5	21.5
Total Split (s)	34.0	34.0	44.0		22.0	32.0		19.0	38.0	22.0	16.0	35.0
Total Split (%)	28.3%	28.3%	36.7%		18.3%	26.7%		15.8%	31.7%	18.3%	13.3%	29.2%
Maximum Green (s)	29.5	29.5	37.5		17.5	25.5		14.5	31.5	17.5	11.5	28.5
Yellow Time (s)	3.5	3.5	4.5		3.5	4.5		3.5	4.5	3.5	3.5	4.5
All-Red Time (s)	1.0	1.0	2.0		1.0	2.0		1.0	2.0	1.0	1.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	6.5		4.5	6.5		4.5	6.5	4.5	4.5	6.5
Lead/Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	7.0		4.0	7.0		4.0	7.0	4.0	4.0	7.0
Recall Mode	None	None	None		None	None		None	C-Min	None	None	C-Min
Walk Time (s)									7.0			7.0
Flash Dont Walk (s)									11.0			11.0
Pedestrian Calls (#/hr)									0			0
Act Effect Green (s)		26.8	38.9		15.3	27.5		15.3	32.7	54.6	11.0	28.5
Actuated g/C Ratio		0.22	0.32		0.13	0.23		0.13	0.27	0.46	0.09	0.24
v/c Ratio		0.83	0.68		0.68	0.78		1.15	0.84	0.21	0.69	0.89
Control Delay		61.6	37.9		64.6	49.4		153.4	50.2	20.6	74.3	57.9
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		61.6	37.9		64.6	49.4		153.4	50.2	20.6	74.3	57.9
LOS		E	D		E	D		F	D	C	E	E
Approach Delay			43.5			51.7			67.7			48.9
Approach LOS			D			D			E			D
90th %ile Green (s)	29.5	29.5	37.5		17.5	25.5		14.5	31.5	17.5	11.5	28.5
90th %ile Term Code	Max	Max	Max		Max	Max		Max	Coord	Max	Max	Coord
70th %ile Green (s)	29.5	29.5	37.5		17.5	25.5		14.5	31.5	17.5	11.5	28.5
70th %ile Term Code	Max	Max	Max		Max	Max		Max	Coord	Max	Max	Coord
50th %ile Green (s)	29.0	29.0	38.5		16.5	26.0		14.5	31.5	16.5	11.5	28.5
50th %ile Term Code	Gap	Gap	Max		Gap	Max		Max	Coord	Gap	Max	Coord
30th %ile Green (s)	25.7	25.7	40.8		14.2	29.3		14.5	31.5	14.2	11.5	28.5
30th %ile Term Code	Gap	Gap	Max		Gap	Max		Max	Coord	Gap	Max	Coord
10th %ile Green (s)	20.1	20.1	40.3		10.9	31.1		18.3	37.7	10.9	9.1	28.5
10th %ile Term Code	Gap	Gap	Hold		Gap	Gap		Max	Coord	Gap	Gap	Coord
Queue Length 50th (ft)		244	272		117	246		~244	333	70	84	312
Queue Length 95th (ft)		#355	329		189	301		#413	#436	114	#161	#420
Internal Link Dist (ft)			521			480			560			420
Turn Bay Length (ft)		415			215			140		175	150	
Base Capacity (vph)		449	1622		266	1156		224	1016	748	169	884
Starvation Cap Reductn		0	0		0	0		0	0	0	0	0
Spillback Cap Reductn		0	0		0	0		0	0	0	0	0
Storage Cap Reductn		0	0		0	0		0	0	0	0	0
Reduced v/c Ratio		0.75	0.68		0.59	0.78		1.15	0.84	0.20	0.66	0.89

Intersection Summary

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

Lane Group	SBR
Permitted Phases	6
Detector Phase	7
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	7.5
Total Split (s)	34.0
Total Split (%)	28.3%
Maximum Green (s)	29.5
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	4.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	61.8
Actuated g/C Ratio	0.52
v/c Ratio	0.41
Control Delay	19.3
Queue Delay	0.0
Total Delay	19.3
LOS	B
Approach Delay	
Approach LOS	
90th %ile Green (s)	29.5
90th %ile Term Code	Max
70th %ile Green (s)	29.5
70th %ile Term Code	Max
50th %ile Green (s)	29.0
50th %ile Term Code	Gap
30th %ile Green (s)	25.7
30th %ile Term Code	Gap
10th %ile Green (s)	20.1
10th %ile Term Code	Gap
Queue Length 50th (ft)	149
Queue Length 95th (ft)	217
Internal Link Dist (ft)	
Turn Bay Length (ft)	280
Base Capacity (vph)	850
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.40
Intersection Summary	

Lanes, Volumes, Timings

300: Arlington Heights Road & Palatine Road

05/24/2019

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 21.6 (18%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.15

Intersection Signal Delay: 52.7

Intersection LOS: D

Intersection Capacity Utilization 86.1%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

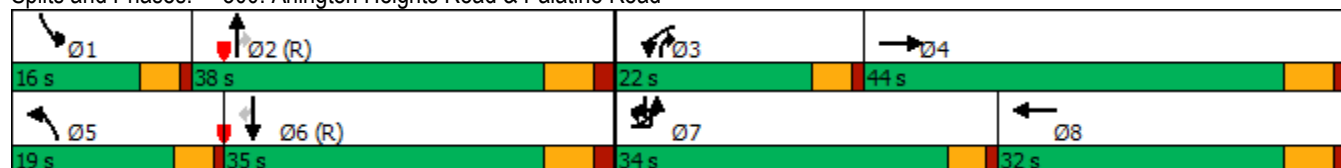
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

! Phase conflict between lane groups.

Splits and Phases: 300: Arlington Heights Road & Palatine Road



Intersection

Int Delay, s/veh 2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑		↑
Traffic Vol, veh/h	1000	190	0	1010	0	185
Future Vol, veh/h	1000	190	0	1010	0	185
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1053	200	0	1063	0	195

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- - - 627
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - - 7.14
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - - 3.92
Pot Cap-1 Maneuver	-	-	0 - 0 365
Stage 1	-	-	0 - 0
Stage 2	-	-	0 - 0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - - 365
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	25.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	365	-	-	-
HCM Lane V/C Ratio	0.534	-	-	-
HCM Control Delay (s)	25.6	-	-	-
HCM Lane LOS	D	-	-	-
HCM 95th %tile Q(veh)	3	-	-	-

Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	65	0	1155	1115	230
Future Vol, veh/h	0	65	0	1155	1115	230
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	68	0	1216	1174	242

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 708	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 7.14	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.92	- -	- -
Pot Cap-1 Maneuver	0 324	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 324	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Control Delay, s	19.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 324	- -	- -
HCM Lane V/C Ratio	- 0.211	- -	- -
HCM Control Delay (s)	- 19.1	- -	- -
HCM Lane LOS	- C	- -	- -
HCM 95th %tile Q(veh)	- 0.8	- -	- -

HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

05/24/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	5	90	30	5	45	150	995	35	35	1120	25
Future Volume (veh/h)	115	5	90	30	5	45	150	995	35	35	1120	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	121	5	95	32	5	47	158	1047	37	37	1179	26
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	284	13	241	240	25	231	412	2049	72	360	2788	61
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.07	0.59	0.59	0.02	0.54	0.54
Ln Grp Delay, s/veh	30.0	0.0	27.4	28.2	0.0	25.3	6.9	10.0	9.9	7.2	9.7	10.3
Ln Grp LOS	C		C	C		C	A	A	A	A	A	B
Approach Vol, veh/h	221			84			1242			1242		
Approach Delay, s/veh	28.8			26.4			9.5			9.9		
Approach LOS	C			C			A			A		
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Case No	1.1	4.0		6.0	1.1	4.0		6.0				
Phs Duration (G+Y+Rc), s	5.0	45.4		16.7	7.9	42.5		16.7				
Change Period (Y+Rc), s	3.5	6.0		6.0	3.5	6.0		6.0				
Max Green (Gmax), s	4.5	52.0		18.0	10.5	46.0		18.0				
Max Allow Headway (MAH), s	3.8	9.1		6.7	3.8	9.1		7.1				
Max Q Clear (g_c+I1), s	2.6	13.9		9.6	4.4	11.1		7.3				
Green Ext Time (g_e), s	0.0	25.4		1.1	0.2	25.4		0.4				
Prob of Phs Call (p_c)	0.50	1.00		1.00	0.95	1.00		1.00				
Prob of Max Out (p_x)	1.00	0.59		0.59	0.13	0.67		0.15				
Left-Turn Movement Data												
Assigned Mvmt	1			7	5			3				
Mvmt Sat Flow, veh/h	1774			1347	1774			1290				
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		3487		80		5120		154				
Right-Turn Movement Data												
Assigned Mvmt		12		14		16		18				
Mvmt Sat Flow, veh/h		123		1516		113		1452				
Left Lane Group Data												
Assigned Mvmt	1	0	0	7	5	0	0	3				
Lane Assignment	(Pr/Pm)			(Pr/Pm)			(Pr/Pm)			(Pr/Pm)		

HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

05/24/2019

Lanes in Grp	1	0	0	1	1	0	0	1
Grp Vol (v), veh/h	37	0	0	121	158	0	0	32
Grp Sat Flow (s), veh/h/ln	1774	0	0	1347	1774	0	0	1290
Q Serve Time (g_s), s	0.6	0.0	0.0	5.8	2.4	0.0	0.0	1.5
Cycle Q Clear Time (g_c), s	0.6	0.0	0.0	7.6	2.4	0.0	0.0	5.3
Perm LT Sat Flow (s_l), veh/h/ln	518	0	0	1347	462	0	0	1290
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	36.5	0.0	0.0	10.7	37.9	0.0	0.0	10.7
Perm LT Serve Time (g_u), s	27.5	0.0	0.0	8.8	27.4	0.0	0.0	6.9
Perm LT Q Serve Time (g_ps), s	0.7	0.0	0.0	5.8	5.5	0.0	0.0	1.5
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Lane Grp Cap (c), veh/h	360	0	0	284	412	0	0	240
V/C Ratio (X)	0.10	0.00	0.00	0.43	0.38	0.00	0.00	0.13
Avail Cap (c_a), veh/h	439	0	0	431	574	0	0	381
Upstream Filter (I)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	7.1	0.0	0.0	27.8	6.3	0.0	0.0	27.7
Incr Delay (d2), s/veh	0.1	0.0	0.0	2.2	0.6	0.0	0.0	0.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	7.2	0.0	0.0	30.0	6.9	0.0	0.0	28.2
1st-Term Q (Q1), veh/ln	0.3	0.0	0.0	2.1	1.1	0.0	0.0	0.5
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	0.00	1.80	1.80	0.00	0.00	1.80
%ile Back of Q (95%), veh/ln	0.6	0.0	0.0	4.1	2.2	0.0	0.0	1.0
%ile Storage Ratio (RQ%)	0.09	0.00	0.00	0.70	0.24	0.00	0.00	0.23
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T			T				
Lanes in Grp	0	1	0	0	0	2	0	0
Grp Vol (v), veh/h	0	531	0	0	0	781	0	0
Grp Sat Flow (s), veh/h/ln	0	1770	0	0	0	1695	0	0
Q Serve Time (g_s), s	0.0	11.9	0.0	0.0	0.0	9.1	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	11.9	0.0	0.0	0.0	9.1	0.0	0.0
Lane Grp Cap (c), veh/h	0	1040	0	0	0	1846	0	0
V/C Ratio (X)	0.00	0.51	0.00	0.00	0.00	0.42	0.00	0.00
Avail Cap (c_a), veh/h	0	1372	0	0	0	2325	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	8.2	0.0	0.0	0.0	9.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.8	0.0	0.0	0.0	0.7	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	10.0	0.0	0.0	0.0	9.7	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	5.8	0.0	0.0	0.0	4.2	0.0	0.0

HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

05/24/2019

2nd-Term Q (Q2), veh/ln	0.0	0.5	0.0	0.0	0.0	0.2	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.65	0.00	1.00	0.00	1.78	0.00	1.00
%ile Back of Q (95%), veh/ln	0.0	10.4	0.0	0.0	0.0	7.9	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.43	0.00	0.00	0.00	0.55	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	553	0	100	0	424	0	52
Grp Sat Flow (s), veh/h/ln	0	1841	0	1595	0	1843	0	1607
Q Serve Time (g_s), s	0.0	11.9	0.0	3.8	0.0	9.1	0.0	1.9
Cycle Q Clear Time (g_c), s	0.0	11.9	0.0	3.8	0.0	9.1	0.0	1.9
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.07	0.00	0.95	0.00	0.06	0.00	0.90
Lane Grp Cap (c), veh/h	0	1082	0	254	0	1004	0	256
V/C Ratio (X)	0.00	0.51	0.00	0.39	0.00	0.42	0.00	0.20
Avail Cap (c_a), veh/h	0	1427	0	428	0	1264	0	431
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	8.2	0.0	25.3	0.0	9.0	0.0	24.5
Incr Delay (d2), s/veh	0.0	1.7	0.0	2.1	0.0	1.3	0.0	0.8
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	9.9	0.0	27.4	0.0	10.3	0.0	25.3
1st-Term Q (Q1), veh/ln	0.0	6.0	0.0	1.7	0.0	4.6	0.0	0.8
2nd-Term Q (Q2), veh/ln	0.0	0.5	0.0	0.1	0.0	0.4	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.64	0.00	1.80	0.00	1.74	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	10.7	0.0	3.3	0.0	8.6	0.0	1.6
%ile Storage Ratio (RQ%)	0.00	0.44	0.00	0.43	0.00	0.60	0.00	0.38
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Ctrl Delay	11.7
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
600: Rand Road & Access E/Private Driveway

05/24/2019

																
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Volume (veh/h)	115	5	90	30	5	45	150	995	35	35	1120	25				
Future Volume (veh/h)	115	5	90	30	5	45	150	995	35	35	1120	25				
Number	7	4	14	3	8	18	5	2	12	1	6	16				
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0				
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00				
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900				
Adj Flow Rate, veh/h	121	5	95	32	5	47	158	1047	37	37	1179	26				
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0				
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95				
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2				
Cap, veh/h	284	13	241	240	25	231	412	2049	72	360	2788	61				
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.07	0.59	0.59	0.02	0.54	0.54				
Sat Flow, veh/h	1347	80	1516	1290	154	1452	1774	3487	123	1774	5120	113				
Grp Volume(v), veh/h	121	0	100	32	0	52	158	531	553	37	781	424				
Grp Sat Flow(s),veh/h/ln	1347	0	1595	1290	0	1607	1774	1770	1841	1774	1695	1843				
Q Serve(g_s), s	5.8	0.0	3.8	1.5	0.0	1.9	2.4	11.9	11.9	0.6	9.1	9.1				
Cycle Q Clear(g_c), s	7.6	0.0	3.8	5.3	0.0	1.9	2.4	11.9	11.9	0.6	9.1	9.1				
Prop In Lane	1.00		0.95	1.00		0.90	1.00		0.07	1.00		0.06				
Lane Grp Cap(c), veh/h	284	0	254	240	0	256	412	1040	1082	360	1846	1004				
V/C Ratio(X)	0.43	0.00	0.39	0.13	0.00	0.20	0.38	0.51	0.51	0.10	0.42	0.42				
Avail Cap(c_a), veh/h	431	0	428	381	0	431	574	1372	1427	439	2325	1264				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Uniform Delay (d), s/veh	27.8	0.0	25.3	27.7	0.0	24.5	6.3	8.2	8.2	7.1	9.0	9.0				
Incr Delay (d2), s/veh	2.2	0.0	2.1	0.5	0.0	0.8	0.6	1.8	1.7	0.1	0.7	1.3				
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
%ile BackOfQ(95%),veh/ln	4.1	0.0	3.3	1.0	0.0	1.6	2.2	10.4	10.7	0.6	7.9	8.6				
LnGrp Delay(d),s/veh	30.0	0.0	27.4	28.2	0.0	25.3	6.9	10.0	9.9	7.2	9.7	10.3				
LnGrp LOS	C		C	C		C	A	A	A	A	A	B				
Approach Vol, veh/h	221					84		1242		1242						
Approach Delay, s/veh	28.8					26.4		9.5		9.9						
Approach LOS	C					C		A		A						
Timer	1	2	3	4	5	6	7	8								
Assigned Phs	1	2			4	5	6	8								
Phs Duration (G+Y+Rc), s	5.0	45.4			16.7	7.9	42.5	16.7								
Change Period (Y+Rc), s	3.5	6.0			6.0	3.5	6.0	6.0								
Max Green Setting (Gmax), s	4.5	52.0			18.0	10.5	46.0	18.0								
Max Q Clear Time (g_c+I1), s	2.6	13.9			9.6	4.4	11.1	7.3								
Green Ext Time (p_c), s	0.0	25.4			1.1	0.2	25.4	0.4								
Intersection Summary																
HCM 2010 Ctrl Delay				11.7												
HCM 2010 LOS				B												

FUTURE BUILD CAPACITY REPORTS

Weekday Morning Peak Hour

Weekday Evening Peak Hour

Saturday Midday Peak Hour

HCM 2010 TWSC
100: Arlington Heights Road & Access A (Loading Dock)

05/24/2019

Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	910	10	5	1180
Future Vol, veh/h	5	5	910	10	5	1180
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	40	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	25	4	10	40	3
Mvmt Flow	5	5	958	11	5	1242

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1595	485	0
Stage 1	964	-	-
Stage 2	631	-	-
Critical Hdwy	6.84	7.4	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.55	-
Pot Cap-1 Maneuver	98	471	-
Stage 1	331	-	-
Stage 2	492	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	97	471	-
Mov Cap-2 Maneuver	97	-	-
Stage 1	328	-	-
Stage 2	492	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.5	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	- 97 471	515	-
HCM Lane V/C Ratio	-	- 0.054 0.011	0.01	-
HCM Control Delay (s)	-	- 44.2 12.7	12.1	-
HCM Lane LOS	-	- E B	B	-
HCM 95th %tile Q(veh)	-	- 0.2 0	0	-

HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	5	50	65	10	105	50	790	75	50	1070	30
Future Volume (veh/h)	85	5	50	65	10	105	50	790	75	50	1070	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1849	1900	1863	1961	1827	1863	1810	1900	1863	1862	1900
Adj Flow Rate, veh/h	89	5	53	68	11	111	53	832	79	53	1126	32
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	11	11	2	2	4	2	4	4	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	328	17	177	296	209	207	308	1748	166	383	1934	55
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.06	0.12	0.12	0.05	0.11	0.11	0.03	0.55	0.55	0.03	0.55	0.55
Ln Grp Delay, s/veh	27.6	0.0	31.6	28.2	30.1	35.0	9.0	11.9	11.9	8.1	13.6	13.5
Ln Grp LOS	C		C	C	C	C	A	B	B	A	B	B
Approach Vol, veh/h		147			190			964			1211	
Approach Delay, s/veh		29.2			32.3			11.7			13.3	
Approach LOS		C			C			B			B	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Case No	1.1	4.0	1.1	4.0	1.1	4.0	1.1	3.0				
Phs Duration (G+Y+Rc), s	5.5	47.0	6.9	15.1	5.5	47.0	8.0	14.0				
Change Period (Y+Rc), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0				
Max Green (Gmax), s	4.5	51.0	3.5	12.0	6.5	49.0	7.5	8.0				
Max Allow Headway (MAH), s	3.8	9.2	3.9	7.7	3.8	9.1	3.9	6.2				
Max Q Clear (g_c+I1), s	3.0	13.9	4.5	4.5	3.0	17.8	5.3	7.0				
Green Ext Time (g_e), s	0.0	20.8	0.0	0.2	0.0	23.2	0.0	0.1				
Prob of Phs Call (p_c)	0.67	1.00	0.76	1.00	0.67	1.00	0.84	0.99				
Prob of Max Out (p_x)	1.00	0.45	1.00	1.00	1.00	0.72	1.00	1.00				
Left-Turn Movement Data												
Assigned Mvmt	1		3		5		7					
Mvmt Sat Flow, veh/h	1774		1774		1774		1740					
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		3175		137		3513		1961				
Right-Turn Movement Data												
Assigned Mvmt		12		14		16		18				
Mvmt Sat Flow, veh/h		301		1455		100		1553				
Left Lane Group Data												
Assigned Mvmt	1	0	3	0	5	0	7	0				
Lane Assignment	(Pr/Pm)		(Pr/Pm)		(Pr/Pm)		(Pr/Pm)					

HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	53	0	68	0	53	0	89	0
Grp Sat Flow (s), veh/h/ln	1774	0	1774	0	1774	0	1740	0
Q Serve Time (g_s), s	1.0	0.0	2.5	0.0	1.0	0.0	3.3	0.0
Cycle Q Clear Time (g_c), s	1.0	0.0	2.5	0.0	1.0	0.0	3.3	0.0
Perm LT Sat Flow (s_l), veh/h/ln	610	0	1340	0	483	0	1240	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	41.0	0.0	8.0	0.0	41.0	0.0	8.0	0.0
Perm LT Serve Time (g_u), s	29.1	0.0	6.6	0.0	25.2	0.0	7.6	0.0
Perm LT Q Serve Time (g_ps), s	1.1	0.0	0.1	0.0	1.9	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	383	0	296	0	308	0	328	0
V/C Ratio (X)	0.14	0.00	0.23	0.00	0.17	0.00	0.27	0.00
Avail Cap (c_a), veh/h	442	0	299	0	415	0	398	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	7.9	0.0	27.8	0.0	8.7	0.0	27.2	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.4	0.0	0.3	0.0	0.4	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	8.1	0.0	28.2	0.0	9.0	0.0	27.6	0.0
1st-Term Q (Q1), veh/ln	0.5	0.0	1.2	0.0	0.5	0.0	1.6	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	1.80	0.00	1.80	0.00	1.80	0.00
%ile Back of Q (95%), veh/ln	0.9	0.0	2.2	0.0	0.9	0.0	2.9	0.0
%ile Storage Ratio (RQ%)	0.12	0.00	0.37	0.00	0.44	0.00	0.63	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T		T	
Lanes in Grp	0	1	0	0	0	1	0	1
Grp Vol (v), veh/h	0	451	0	0	0	567	0	11
Grp Sat Flow (s), veh/h/ln	0	1720	0	0	0	1769	0	1961
Q Serve Time (g_s), s	0.0	11.9	0.0	0.0	0.0	15.8	0.0	0.4
Cycle Q Clear Time (g_c), s	0.0	11.9	0.0	0.0	0.0	15.8	0.0	0.4
Lane Grp Cap (c), veh/h	0	947	0	0	0	974	0	209
V/C Ratio (X)	0.00	0.48	0.00	0.00	0.00	0.58	0.00	0.05
Avail Cap (c_a), veh/h	0	1177	0	0	0	1163	0	211
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	10.2	0.0	0.0	0.0	11.1	0.0	29.9
Incr Delay (d2), s/veh	0.0	1.7	0.0	0.0	0.0	2.5	0.0	0.2
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	11.9	0.0	0.0	0.0	13.6	0.0	30.1
1st-Term Q (Q1), veh/ln	0.0	5.6	0.0	0.0	0.0	7.6	0.0	0.2

HCM 2010 Signalized Intersection Capacity Analysis

200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

2nd-Term Q (Q2), veh/ln	0.0	0.5	0.0	0.0	0.0	0.7	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.66	0.00	1.00	0.00	1.57	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	10.1	0.0	0.0	0.0	13.0	0.0	0.4
%ile Storage Ratio (RQ%)	0.00	1.16	0.00	0.00	0.00	0.64	0.00	0.03
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	460	0	58	0	591	0	111
Grp Sat Flow (s), veh/h/ln	0	1757	0	1592	0	1844	0	1553
Q Serve Time (g_s), s	0.0	11.9	0.0	2.5	0.0	15.8	0.0	5.0
Cycle Q Clear Time (g_c), s	0.0	11.9	0.0	2.5	0.0	15.8	0.0	5.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1552.9
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
Prop RT Outside Lane (P_R)	0.00	0.17	0.00	0.91	0.00	0.05	0.00	1.00
Lane Grp Cap (c), veh/h	0	967	0	194	0	1015	0	207
V/C Ratio (X)	0.00	0.48	0.00	0.30	0.00	0.58	0.00	0.54
Avail Cap (c_a), veh/h	0	1203	0	256	0	1213	0	208
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	10.2	0.0	29.8	0.0	11.1	0.0	30.1
Incr Delay (d2), s/veh	0.0	1.7	0.0	1.8	0.0	2.4	0.0	4.9
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	11.9	0.0	31.6	0.0	13.5	0.0	35.0
1st-Term Q (Q1), veh/ln	0.0	5.8	0.0	1.1	0.0	7.9	0.0	2.1
2nd-Term Q (Q2), veh/ln	0.0	0.5	0.0	0.1	0.0	0.7	0.0	0.3
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.66	0.00	1.80	0.00	1.56	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	10.3	0.0	2.1	0.0	13.4	0.0	4.3
%ile Storage Ratio (RQ%)	0.00	1.18	0.00	0.22	0.00	0.66	0.00	0.72
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Ctrl Delay	15.1
HCM 2010 LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary

200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

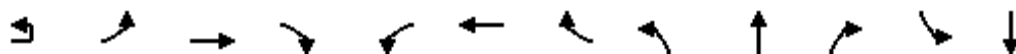
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	5	50	65	10	105	50	790	75	50	1070	30
Future Volume (veh/h)	85	5	50	65	10	105	50	790	75	50	1070	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1849	1900	1863	1961	1827	1863	1810	1900	1863	1862	1900
Adj Flow Rate, veh/h	89	5	53	68	11	111	53	832	79	53	1126	32
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	4	11	11	2	2	4	2	4	4	2	2	2
Cap, veh/h	328	17	177	296	209	207	308	1748	166	383	1934	55
Arrive On Green	0.06	0.12	0.12	0.05	0.11	0.11	0.03	0.55	0.55	0.03	0.55	0.55
Sat Flow, veh/h	1740	137	1455	1774	1961	1553	1774	3175	301	1774	3513	100
Grp Volume(v), veh/h	89	0	58	68	11	111	53	451	460	53	567	591
Grp Sat Flow(s),veh/h/ln	1740	0	1592	1774	1961	1553	1774	1720	1757	1774	1769	1844
Q Serve(g_s), s	3.3	0.0	2.5	2.5	0.4	5.0	1.0	11.9	11.9	1.0	15.8	15.8
Cycle Q Clear(g_c), s	3.3	0.0	2.5	2.5	0.4	5.0	1.0	11.9	11.9	1.0	15.8	15.8
Prop In Lane	1.00		0.91	1.00		1.00	1.00		0.17	1.00		0.05
Lane Grp Cap(c), veh/h	328	0	194	296	209	207	308	947	967	383	974	1015
V/C Ratio(X)	0.27	0.00	0.30	0.23	0.05	0.54	0.17	0.48	0.48	0.14	0.58	0.58
Avail Cap(c_a), veh/h	398	0	256	299	211	208	415	1177	1203	442	1163	1213
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.2	0.0	29.8	27.8	29.9	30.1	8.7	10.2	10.2	7.9	11.1	11.1
Incr Delay (d2), s/veh	0.4	0.0	1.8	0.4	0.2	4.9	0.3	1.7	1.7	0.2	2.5	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.9	0.0	2.1	2.2	0.4	4.3	0.9	10.1	10.3	0.9	13.0	13.4
LnGrp Delay(d),s/veh	27.6	0.0	31.6	28.2	30.1	35.0	9.0	11.9	11.9	8.1	13.6	13.5
LnGrp LOS	C		C	C	C	C	A	B	B	A	B	B
Approach Vol, veh/h		147			190			964			1211	
Approach Delay, s/veh		29.2			32.3			11.7			13.3	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.5	47.0	6.9	15.1	5.5	47.0	8.0	14.0				
Change Period (Y+Rc), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0				
Max Green Setting (Gmax), s	4.5	51.0	3.5	12.0	6.5	49.0	7.5	8.0				
Max Q Clear Time (g_c+I1), s	3.0	13.9	4.5	4.5	3.0	17.8	5.3	7.0				
Green Ext Time (p_c), s	0.0	20.8	0.0	0.2	0.0	23.2	0.0	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			15.1									
HCM 2010 LOS			B									
Notes												

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings

300: Arlington Heights Road & Palatine Road

05/24/2019



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↰	↰↰↰		↰	↰↰↰		↰	↰↰	↰	↰	↰↰
Traffic Volume (vph)	10	250	1955	150	180	865	10	180	655	145	50	820
Future Volume (vph)	10	250	1955	150	180	865	10	180	655	145	50	820
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	12	13	12	12	12	12	12	12	12
Storage Length (ft)		415		0	215		0	140		175	150	
Storage Lanes		1		0	1		0	1		1	1	
Taper Length (ft)		120			180			170			250	
Lane Util. Factor	0.91	1.00	0.91	0.91	1.00	0.91	0.91	1.00	0.95	1.00	1.00	0.95
Frt			0.989			0.998				0.850		
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	1829	5029	0	1811	4932	0	1752	3585	1583	1752	3725
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	1829	5029	0	1811	4932	0	1752	3585	1583	1752	3725
Right Turn on Red				No			No			No		
Satd. Flow (RTOR)												
Link Speed (mph)			35			35			35			35
Link Distance (ft)			601			560			640			500
Travel Time (s)			11.7			10.9			12.5			9.7
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	2%	2%	3%	5%	2%	3%	6%	2%	3%	2%
Adj. Flow (vph)	11	263	2058	158	189	911	11	189	689	153	53	863
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	274	2216	0	189	922	0	189	689	153	53	863
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			52			52			17			17
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane												
Headway Factor	1.00	0.96	1.00	1.00	0.96	1.00	1.00	1.00	0.94	1.00	1.00	0.94
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors	1	1	2		1	2		1	2	1	1	2
Detector Template	Left	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	20	100		20	100		20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Size(ft)	20	20	6		20	6		20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA

Future (2025) Build Traffic Projections 7:15 am 02/04/2019 AM Peak Hour

Synchro 10 Report
Page 1

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	250
Future Volume (vph)	250
Ideal Flow (vphpl)	1900
Lane Width (ft)	12
Storage Length (ft)	280
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1568
Flt Permitted	
Satd. Flow (perm)	1568
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.95
Heavy Vehicles (%)	3%
Adj. Flow (vph)	263
Shared Lane Traffic (%)	
Lane Group Flow (vph)	263
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	pm+ov

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

												
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Protected Phases	7!	7	4		3	8		5	2	3	1	6
Permitted Phases										2		
Detector Phase	7	7	4		3	8		5	2	3	1	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		3.0	15.0		3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	7.5	7.5	21.5		7.5	21.5		7.5	21.5	7.5	7.5	21.5
Total Split (s)	24.0	24.0	60.0		24.0	60.0		17.0	39.0	24.0	17.0	39.0
Total Split (%)	17.1%	17.1%	42.9%		17.1%	42.9%		12.1%	27.9%	17.1%	12.1%	27.9%
Maximum Green (s)	19.5	19.5	53.5		19.5	53.5		12.5	32.5	19.5	12.5	32.5
Yellow Time (s)	3.5	3.5	4.5		3.5	4.5		3.5	4.5	3.5	3.5	4.5
All-Red Time (s)	1.0	1.0	2.0		1.0	2.0		1.0	2.0	1.0	1.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	6.5		4.5	6.5		4.5	6.5	4.5	4.5	6.5
Lead/Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	7.0		4.0	7.0		4.0	7.0	4.0	4.0	7.0
Recall Mode	None	None	None		None	None		None	C-Min	None	None	C-Min
Walk Time (s)									7.0			7.0
Flash Dont Walk (s)									11.0			11.0
Pedestrian Calls (#/hr)									0			0
Act Effct Green (s)		19.5	54.7		18.3	53.5		12.5	37.1	61.8	10.2	32.5
Actuated g/C Ratio		0.14	0.39		0.13	0.38		0.09	0.26	0.44	0.07	0.23
v/c Ratio		1.08	1.13		0.80	0.49		1.21	0.73	0.22	0.42	1.00
Control Delay		134.3	104.1		83.1	34.0		191.7	53.1	26.2	71.3	83.7
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		134.3	104.1		83.1	34.0		191.7	53.1	26.2	71.3	83.7
LOS		F	F		F	C		F	D	C	E	F
Approach Delay			107.4			42.3			74.5			71.3
Approach LOS			F			D			E			E
90th %ile Green (s)	19.5	19.5	53.5		19.5	53.5		12.5	32.5	19.5	12.5	32.5
90th %ile Term Code	Max	Max	Max		Max	Max		Max	Coord	Max	Max	Coord
70th %ile Green (s)	19.5	19.5	53.5		19.5	53.5		12.5	33.0	19.5	12.0	32.5
70th %ile Term Code	Max	Max	Max		Max	Hold		Max	Coord	Max	Gap	Coord
50th %ile Green (s)	19.5	19.5	53.5		19.5	53.5		12.5	34.4	19.5	10.6	32.5
50th %ile Term Code	Max	Max	Max		Max	Hold		Max	Coord	Max	Gap	Coord
30th %ile Green (s)	19.5	19.5	54.6		18.4	53.5		12.5	35.9	18.4	9.1	32.5
30th %ile Term Code	Max	Max	Max		Gap	Hold		Max	Coord	Gap	Gap	Coord
10th %ile Green (s)	19.5	19.5	58.5		14.5	53.5		12.5	49.5	14.5	0.0	32.5
10th %ile Term Code	Max	Max	Max		Gap	Hold		Max	Coord	Gap	Skip	Coord
Queue Length 50th (ft)		~277	~868		168	232		~209	310	87	47	416
Queue Length 95th (ft)		#460	#960		#279	276		#370	392	141	92	#561
Internal Link Dist (ft)			521			480			560			420
Turn Bay Length (ft)		415			215			140		175	150	
Base Capacity (vph)		254	1965		252	1884		156	949	712	156	864
Starvation Cap Reductn		0	0		0	0		0	0	0	0	0
Spillback Cap Reductn		0	0		0	0		0	0	0	0	0
Storage Cap Reductn		0	0		0	0		0	0	0	0	0
Reduced v/c Ratio		1.08	1.13		0.75	0.49		1.21	0.73	0.21	0.34	1.00

Lanes, Volumes, Timings

300: Arlington Heights Road & Palatine Road

05/24/2019

Intersection Summary

Area Type: Other

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 57.4 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.21

Intersection Signal Delay: 81.8

Intersection LOS: F

Intersection Capacity Utilization 100.9%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

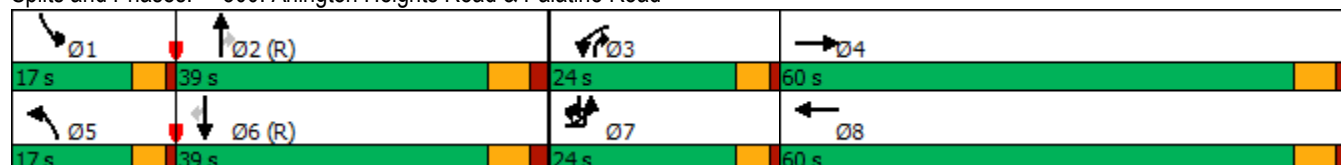
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

! Phase conflict between lane groups.

Splits and Phases: 300: Arlington Heights Road & Palatine Road



Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

Lane Group	SBR
Protected Phases	7!
Permitted Phases	6
Detector Phase	7
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	7.5
Total Split (s)	24.0
Total Split (%)	17.1%
Maximum Green (s)	19.5
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	4.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	58.5
Actuated g/C Ratio	0.42
v/c Ratio	0.40
Control Delay	30.8
Queue Delay	0.0
Total Delay	30.8
LOS	C
Approach Delay	
Approach LOS	
90th %ile Green (s)	19.5
90th %ile Term Code	Max
70th %ile Green (s)	19.5
70th %ile Term Code	Max
50th %ile Green (s)	19.5
50th %ile Term Code	Max
30th %ile Green (s)	19.5
30th %ile Term Code	Max
10th %ile Green (s)	19.5
10th %ile Term Code	Max
Queue Length 50th (ft)	166
Queue Length 95th (ft)	243
Internal Link Dist (ft)	
Turn Bay Length (ft)	280
Base Capacity (vph)	655
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.40

Intersection

Int Delay, s/veh 1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑		↑
Traffic Vol, veh/h	2040	110	0	1055	0	100
Future Vol, veh/h	2040	110	0	1055	0	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	4	2	4	2	2
Mvmt Flow	2147	116	0	1111	0	105

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- - - 1132
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - - 7.14
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - - 3.92
Pot Cap-1 Maneuver	-	-	0 - 0 169
Stage 1	-	-	0 - 0
Stage 2	-	-	0 - 0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - - 169
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	56.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	169	-	-	-
HCM Lane V/C Ratio	0.623	-	-	-
HCM Control Delay (s)	56.2	-	-	-
HCM Lane LOS	F	-	-	-
HCM 95th %tile Q(veh)	3.5	-	-	-

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	20	0	750	1545	95
Future Vol, veh/h	0	20	0	750	1545	95
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	6	2	3	2	2
Mvmt Flow	0	21	0	789	1626	100
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	863	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.96	-	-	-	-
Pot Cap-1 Maneuver	0	249	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	249	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	20.8	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 249		-	-		
HCM Lane V/C Ratio	- 0.085		-	-		
HCM Control Delay (s)	- 20.8		-	-		
HCM Lane LOS	- C		-	-		
HCM 95th %tile Q(veh)	- 0.3		-	-		

HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

05/24/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	1	15	15	10	5	55	720	5	10	1545	10
Future Volume (veh/h)	25	1	15	15	10	5	55	720	5	10	1545	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1759	1863	1900	1863	1842	1900	1759	1862	1900
Adj Flow Rate, veh/h	26	1	16	16	11	5	58	758	5	11	1626	11
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	8	2	2	2	3	3	8	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	202	8	127	194	102	47	309	2498	16	520	3548	24
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.03	0.70	0.70	0.01	0.68	0.68
Ln Grp Delay, s/veh	33.3	0.0	32.7	32.9	0.0	32.4	4.5	4.9	4.9	3.8	6.2	6.7
Ln Grp LOS	C		C	C		C	A	A	A	A	A	A
Approach Vol, veh/h		43			32			821			1648	
Approach Delay, s/veh		33.0			32.7			4.9			6.4	
Approach LOS		C			C			A			A	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs		1	2		4	5	6		8			
Case No		1.1	4.0		6.0	1.1	4.0		6.0			
Phs Duration (G+Y+Rc), s		4.1	58.6		12.3	5.6	57.1		12.3			
Change Period (Y+Rc), s		3.5	6.0		6.0	3.5	6.0		6.0			
Max Green (Gmax), s		5.5	58.0		11.0	6.5	57.0		11.0			
Max Allow Headway (MAH), s		3.8	9.1		6.6	3.8	9.1		6.8			
Max Q Clear (g_c+I1), s		2.2	8.1		3.9	2.7	12.9		3.6			
Green Ext Time (g_e), s		0.0	19.4		0.1	0.0	38.2		0.1			
Prob of Phs Call (p_c)		0.20	1.00		0.79	0.70	1.00		0.79			
Prob of Max Out (p_x)		1.00	0.18		0.70	1.00	0.83		0.60			
Left-Turn Movement Data												
Assigned Mvmt		1			7	5			3			
Mvmt Sat Flow, veh/h		1675			1392	1774			1313			
Through Movement Data												
Assigned Mvmt			2		4		6		8			
Mvmt Sat Flow, veh/h			3564		94		5209		1214			
Right-Turn Movement Data												
Assigned Mvmt			12		14		16		18			
Mvmt Sat Flow, veh/h			24		1503		35		552			
Left Lane Group Data												
Assigned Mvmt		1	0	0	7	5	0	0	3			
Lane Assignment		(Pr/Pm)			(Pr/Pm)							

HCM 2010 Signalized Intersection Capacity Analysis
600: Rand Road & Access E/Private Driveway

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Lanes in Grp	1	0	0	1	1	0	0	1
Grp Vol (v), veh/h	11	0	0	26	58	0	0	16
Grp Sat Flow (s), veh/h/ln	1675	0	0	1392	1774	0	0	1313
Q Serve Time (g_s), s	0.2	0.0	0.0	1.3	0.7	0.0	0.0	0.9
Cycle Q Clear Time (g_c), s	0.2	0.0	0.0	1.9	0.7	0.0	0.0	1.6
Perm LT Sat Flow (s_l), veh/h/ln	662	0	0	1392	305	0	0	1313
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	51.1	0.0	0.0	6.3	51.1	0.0	0.0	6.3
Perm LT Serve Time (g_u), s	46.5	0.0	0.0	5.7	40.2	0.0	0.0	5.6
Perm LT Q Serve Time (g_ps), s	0.1	0.0	0.0	1.3	2.5	0.0	0.0	0.9
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Lane Grp Cap (c), veh/h	520	0	0	202	309	0	0	194
V/C Ratio (X)	0.02	0.00	0.00	0.13	0.19	0.00	0.00	0.08
Avail Cap (c_a), veh/h	629	0	0	288	413	0	0	276
Upstream Filter (I)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	3.8	0.0	0.0	32.6	4.3	0.0	0.0	32.5
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	0.3	0.0	0.0	0.4
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	3.8	0.0	0.0	33.3	4.5	0.0	0.0	32.9
1st-Term Q (Q1), veh/ln	0.1	0.0	0.0	0.5	0.3	0.0	0.0	0.3
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	0.00	1.80	1.80	0.00	0.00	1.80
%ile Back of Q (95%), veh/ln	0.1	0.0	0.0	1.0	0.7	0.0	0.0	0.6
%ile Storage Ratio (RQ%)	0.02	0.00	0.00	0.16	0.07	0.00	0.00	0.14
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T			T				
Lanes in Grp	0	1	0	0	0	2	0	0
Grp Vol (v), veh/h	0	372	0	0	0	1058	0	0
Grp Sat Flow (s), veh/h/ln	0	1750	0	0	0	1694	0	0
Q Serve Time (g_s), s	0.0	6.1	0.0	0.0	0.0	10.9	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	6.1	0.0	0.0	0.0	10.9	0.0	0.0
Lane Grp Cap (c), veh/h	0	1227	0	0	0	2308	0	0
V/C Ratio (X)	0.00	0.30	0.00	0.00	0.00	0.46	0.00	0.00
Avail Cap (c_a), veh/h	0	1353	0	0	0	2575	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	4.3	0.0	0.0	0.0	5.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.0	0.7	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	4.9	0.0	0.0	0.0	6.2	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	2.9	0.0	0.0	0.0	5.0	0.0	0.0

HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

05/24/2019

2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.80	0.00	1.00	0.00	1.72	0.00	1.00
%ile Back of Q (95%), veh/ln	0.0	5.6	0.0	0.0	0.0	8.9	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.23	0.00	0.00	0.00	0.62	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	391	0	17	0	579	0	16
Grp Sat Flow (s), veh/h/ln	0	1838	0	1597	0	1856	0	1765
Q Serve Time (g_s), s	0.0	6.1	0.0	0.7	0.0	10.9	0.0	0.6
Cycle Q Clear Time (g_c), s	0.0	6.1	0.0	0.7	0.0	10.9	0.0	0.6
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.01	0.00	0.94	0.00	0.02	0.00	0.31
Lane Grp Cap (c), veh/h	0	1288	0	135	0	1264	0	149
V/C Ratio (X)	0.00	0.30	0.00	0.13	0.00	0.46	0.00	0.11
Avail Cap (c_a), veh/h	0	1421	0	234	0	1410	0	259
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	4.3	0.0	31.8	0.0	5.5	0.0	31.7
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.9	0.0	1.2	0.0	0.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	4.9	0.0	32.7	0.0	6.7	0.0	32.4
1st-Term Q (Q1), veh/ln	0.0	3.0	0.0	0.3	0.0	5.5	0.0	0.3
2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.4	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.80	0.00	1.80	0.00	1.68	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	5.9	0.0	0.6	0.0	9.9	0.0	0.6
%ile Storage Ratio (RQ%)	0.00	0.24	0.00	0.08	0.00	0.69	0.00	0.14
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Ctrl Delay	6.7
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary

600: Rand Road & Access E/Private Driveway

05/24/2019

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Traffic Volume (veh/h)	25	1	15	15	10	5	55	720	5	10	1545	10						
Future Volume (veh/h)	25	1	15	15	10	5	55	720	5	10	1545	10						
Number	7	4	14	3	8	18	5	2	12	1	6	16						
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0						
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00						
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Adj Sat Flow, veh/h/ln	1863	1863	1900	1759	1863	1900	1863	1842	1900	1759	1862	1900						
Adj Flow Rate, veh/h	26	1	16	16	11	5	58	758	5	11	1626	11						
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95						
Percent Heavy Veh, %	2	2	2	8	2	2	2	3	3	8	2	2						
Cap, veh/h	202	8	127	194	102	47	309	2498	16	520	3548	24						
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	0.03	0.70	0.70	0.01	0.68	0.68						
Sat Flow, veh/h	1392	94	1503	1313	1214	552	1774	3564	24	1675	5209	35						
Grp Volume(v), veh/h	26	0	17	16	0	16	58	372	391	11	1058	579						
Grp Sat Flow(s),veh/h/ln	1392	0	1597	1313	0	1765	1774	1750	1838	1675	1694	1856						
Q Serve(g_s), s	1.3	0.0	0.7	0.9	0.0	0.6	0.7	6.1	6.1	0.2	10.9	10.9						
Cycle Q Clear(g_c), s	1.9	0.0	0.7	1.6	0.0	0.6	0.7	6.1	6.1	0.2	10.9	10.9						
Prop In Lane	1.00		0.94	1.00		0.31	1.00		0.01	1.00		0.02						
Lane Grp Cap(c), veh/h	202	0	135	194	0	149	309	1227	1288	520	2308	1264						
V/C Ratio(X)	0.13	0.00	0.13	0.08	0.00	0.11	0.19	0.30	0.30	0.02	0.46	0.46						
Avail Cap(c_a), veh/h	288	0	234	276	0	259	413	1353	1421	629	2575	1410						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Uniform Delay (d), s/veh	32.6	0.0	31.8	32.5	0.0	31.7	4.3	4.3	4.3	3.8	5.5	5.5						
Incr Delay (d2), s/veh	0.6	0.0	0.9	0.4	0.0	0.7	0.3	0.6	0.6	0.0	0.7	1.2						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(95%),veh/ln	1.0	0.0	0.6	0.6	0.0	0.6	0.7	5.6	5.9	0.1	8.9	9.9						
LnGrp Delay(d),s/veh	33.3	0.0	32.7	32.9	0.0	32.4	4.5	4.9	4.9	3.8	6.2	6.7						
LnGrp LOS	C		C	C		C	A	A	A	A	A	A						
Approach Vol, veh/h	43					32		821		1648								
Approach Delay, s/veh	33.0					32.7		4.9		6.4								
Approach LOS	C					C		A		A								
Timer	1	2	3	4	5	6	7	8										
Assigned Phs	1	2			4	5	6	8										
Phs Duration (G+Y+Rc), s	4.1	58.6			12.3	5.6	57.1	12.3										
Change Period (Y+Rc), s	3.5	6.0			6.0	3.5	6.0	6.0										
Max Green Setting (Gmax), s	5.5	58.0			11.0	6.5	57.0	11.0										
Max Q Clear Time (g_c+I1), s	2.2	8.1			3.9	2.7	12.9	3.6										
Green Ext Time (p_c), s	0.0	19.4			0.1	0.0	38.2	0.1										
Intersection Summary																		
HCM 2010 Ctrl Delay																		
HCM 2010 LOS																		

HCM 2010 TWSC
100: Arlington Heights Road & Access A (Loading Dock)

05/24/2019

Intersection

Int Delay, s/veh 0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	1205	20	2	1055
Future Vol, veh/h	5	5	1205	20	2	1055
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	40	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	6	2	2
Mvmt Flow	5	5	1268	21	2	1111

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1839	645	0
Stage 1	1279	-	-
Stage 2	560	-	-
Critical Hdwy	6.84	6.94	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.32	-
Pot Cap-1 Maneuver	67	415	-
Stage 1	225	-	-
Stage 2	535	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	67	415	-
Mov Cap-2 Maneuver	67	-	-
Stage 1	224	-	-
Stage 2	535	-	-

Approach	WB	NB	SB
HCM Control Delay, s	38.6	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	-	67	415
HCM Lane V/C Ratio	-	-	0.079	0.013
HCM Control Delay (s)	-	-	63.3	13.8
HCM Lane LOS	-	-	F	B
HCM 95th %tile Q(veh)	-	-	0.2	0

HCM 2010 Signalized Intersection Capacity Analysis

200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	20	10	125	30	245	25	1040	145	130	920	55
Future Volume (veh/h)	75	20	10	125	30	245	25	1040	145	130	920	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1961	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	79	21	11	132	32	258	26	1095	153	137	968	58
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	290	113	59	342	244	286	337	1663	232	312	1942	116
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.05	0.10	0.10	0.08	0.12	0.12	0.02	0.53	0.53	0.06	0.57	0.57
Ln Grp Delay, s/veh	31.2	0.0	34.8	29.9	32.2	63.6	9.2	17.3	17.3	12.1	12.2	12.1
Ln Grp LOS	C		C	C	C	E	A	B	B	B	B	B
Approach Vol, veh/h		111			422			1274			1163	
Approach Delay, s/veh		32.2			50.7			17.1			12.1	
Approach LOS		C			D			B			B	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Case No	1.1	4.0	1.1	4.0	1.1	4.0	1.1	3.0				
Phs Duration (G+Y+Rc), s	8.1	49.4	10.0	14.0	4.8	52.6	7.9	16.1				
Change Period (Y+Rc), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0				
Max Green (Gmax), s	8.5	48.0	6.5	8.0	3.5	53.0	6.5	8.0				
Max Allow Headway (MAH), s	3.8	9.2	3.9	7.5	3.8	9.1	3.9	6.2				
Max Q Clear (g_c+I1), s	4.7	22.6	7.3	3.4	2.5	15.9	5.2	12.1				
Green Ext Time (g_e), s	0.1	20.8	0.0	0.0	0.0	23.6	0.0	0.0				
Prob of Phs Call (p_c)	0.95	1.00	0.95	1.00	0.44	1.00	0.83	1.00				
Prob of Max Out (p_x)	0.93	0.83	1.00	1.00	1.00	0.55	1.00	1.00				
Left-Turn Movement Data												
Assigned Mvmt	1		3		5		7					
Mvmt Sat Flow, veh/h	1774		1774		1774		1774					
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		3120		1153		3393		1961				
Right-Turn Movement Data												
Assigned Mvmt		12		14		16		18				
Mvmt Sat Flow, veh/h		435		604		203		1583				
Left Lane Group Data												
Assigned Mvmt	1	0	3	0	5	0	7	0				
Lane Assignment	(Pr/Pm)		(Pr/Pm)		(Pr/Pm)		(Pr/Pm)					

HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	137	0	132	0	26	0	79	0
Grp Sat Flow (s), veh/h/ln	1774	0	1774	0	1774	0	1774	0
Q Serve Time (g_s), s	2.7	0.0	5.3	0.0	0.5	0.0	3.2	0.0
Cycle Q Clear Time (g_c), s	2.7	0.0	5.3	0.0	0.5	0.0	3.2	0.0
Perm LT Sat Flow (s_l), veh/h/ln	444	0	1372	0	547	0	1085	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	45.1	0.0	8.6	0.0	43.4	0.0	8.0	0.0
Perm LT Serve Time (g_u), s	22.8	0.0	6.6	0.0	32.7	0.0	8.0	0.0
Perm LT Q Serve Time (g_ps), s	10.0	0.0	0.2	0.0	0.5	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	312	0	342	0	337	0	290	0
V/C Ratio (X)	0.44	0.00	0.39	0.00	0.08	0.00	0.27	0.00
Avail Cap (c_a), veh/h	398	0	342	0	384	0	337	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	11.2	0.0	29.2	0.0	9.1	0.0	30.7	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.7	0.0	0.1	0.0	0.5	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	12.1	0.0	29.9	0.0	9.2	0.0	31.2	0.0
1st-Term Q (Q1), veh/ln	1.3	0.0	2.6	0.0	0.3	0.0	1.6	0.0
2nd-Term Q (Q2), veh/ln	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	1.80	0.00	1.80	0.00	1.80	0.00
%ile Back of Q (95%), veh/ln	2.4	0.0	4.8	0.0	0.5	0.0	2.9	0.0
%ile Storage Ratio (RQ%)	0.33	0.00	0.79	0.00	0.25	0.00	0.61	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T		T	
Lanes in Grp	0	1	0	0	0	1	0	1
Grp Vol (v), veh/h	0	620	0	0	0	505	0	32
Grp Sat Flow (s), veh/h/ln	0	1770	0	0	0	1770	0	1961
Q Serve Time (g_s), s	0.0	20.5	0.0	0.0	0.0	13.9	0.0	1.2
Cycle Q Clear Time (g_c), s	0.0	20.5	0.0	0.0	0.0	13.9	0.0	1.2
Lane Grp Cap (c), veh/h	0	943	0	0	0	1013	0	244
V/C Ratio (X)	0.00	0.66	0.00	0.00	0.00	0.50	0.00	0.13
Avail Cap (c_a), veh/h	0	1043	0	0	0	1152	0	244
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	13.7	0.0	0.0	0.0	10.4	0.0	31.7
Incr Delay (d2), s/veh	0.0	3.6	0.0	0.0	0.0	1.8	0.0	0.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	17.3	0.0	0.0	0.0	12.2	0.0	32.2
1st-Term Q (Q1), veh/ln	0.0	10.0	0.0	0.0	0.0	6.7	0.0	0.6

HCM 2010 Signalized Intersection Capacity Analysis

200: Arlington Heights Road & Lillian Avenue/Access B

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2nd-Term Q (Q2), veh/ln	0.0	0.9	0.0	0.0	0.0	0.5	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.50	0.00	1.00	0.00	1.61	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	16.4	0.0	0.0	0.0	11.6	0.0	1.2
%ile Storage Ratio (RQ%)	0.00	1.85	0.00	0.00	0.00	0.58	0.00	0.09
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	628	0	32	0	521	0	258
Grp Sat Flow (s), veh/h/ln	0	1786	0	1756	0	1827	0	1583
Q Serve Time (g_s), s	0.0	20.6	0.0	1.4	0.0	13.9	0.0	10.1
Cycle Q Clear Time (g_c), s	0.0	20.6	0.0	1.4	0.0	13.9	0.0	10.1
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1583.3
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6
Prop RT Outside Lane (P_R)	0.00	0.24	0.00	0.34	0.00	0.11	0.00	1.00
Lane Grp Cap (c), veh/h	0	952	0	172	0	1046	0	286
V/C Ratio (X)	0.00	0.66	0.00	0.19	0.00	0.50	0.00	0.90
Avail Cap (c_a), veh/h	0	1053	0	173	0	1189	0	286
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	13.7	0.0	33.7	0.0	10.4	0.0	32.7
Incr Delay (d2), s/veh	0.0	3.6	0.0	1.1	0.0	1.7	0.0	30.9
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	17.3	0.0	34.8	0.0	12.1	0.0	63.6
1st-Term Q (Q1), veh/ln	0.0	10.1	0.0	0.7	0.0	6.9	0.0	5.6
2nd-Term Q (Q2), veh/ln	0.0	0.9	0.0	0.1	0.0	0.5	0.0	2.4
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.49	0.00	1.80	0.00	1.60	0.00	1.58
%ile Back of Q (95%), veh/ln	0.0	16.5	0.0	1.3	0.0	11.9	0.0	12.8
%ile Storage Ratio (RQ%)	0.00	1.86	0.00	0.12	0.00	0.59	0.00	2.09
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Ctrl Delay	20.5
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary
200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	20	10	125	30	245	25	1040	145	130	920	55
Future Volume (veh/h)	75	20	10	125	30	245	25	1040	145	130	920	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1961	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	79	21	11	132	32	258	26	1095	153	137	968	58
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	290	113	59	342	244	286	337	1663	232	312	1942	116
Arrive On Green	0.05	0.10	0.10	0.08	0.12	0.12	0.02	0.53	0.53	0.06	0.57	0.57
Sat Flow, veh/h	1774	1153	604	1774	1961	1583	1774	3120	435	1774	3393	203
Grp Volume(v), veh/h	79	0	32	132	32	258	26	620	628	137	505	521
Grp Sat Flow(s),veh/h/ln	1774	0	1756	1774	1961	1583	1774	1770	1786	1774	1770	1827
Q Serve(g_s), s	3.2	0.0	1.4	5.3	1.2	10.1	0.5	20.5	20.6	2.7	13.9	13.9
Cycle Q Clear(g_c), s	3.2	0.0	1.4	5.3	1.2	10.1	0.5	20.5	20.6	2.7	13.9	13.9
Prop In Lane	1.00		0.34	1.00		1.00	1.00		0.24	1.00		0.11
Lane Grp Cap(c), veh/h	290	0	172	342	244	286	337	943	952	312	1013	1046
V/C Ratio(X)	0.27	0.00	0.19	0.39	0.13	0.90	0.08	0.66	0.66	0.44	0.50	0.50
Avail Cap(c_a), veh/h	337	0	173	342	244	286	384	1043	1053	398	1152	1189
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.7	0.0	33.7	29.2	31.7	32.7	9.1	13.7	13.7	11.2	10.4	10.4
Incr Delay (d2), s/veh	0.5	0.0	1.1	0.7	0.5	30.9	0.1	3.6	3.6	1.0	1.8	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.9	0.0	1.3	4.8	1.2	12.8	0.5	16.4	16.5	2.4	11.6	11.9
LnGrp Delay(d),s/veh	31.2	0.0	34.8	29.9	32.2	63.6	9.2	17.3	17.3	12.1	12.2	12.1
LnGrp LOS	C		C	C	C	E	A	B	B	B	B	B
Approach Vol, veh/h		111			422			1274			1163	
Approach Delay, s/veh		32.2			50.7			17.1			12.1	
Approach LOS		C			D			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	49.4	10.0	14.0	4.8	52.6	7.9	16.1				
Change Period (Y+Rc), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0				
Max Green Setting (Gmax), s	8.5	48.0	6.5	8.0	3.5	53.0	6.5	8.0				
Max Q Clear Time (g_c+I1), s	4.7	22.6	7.3	3.4	2.5	15.9	5.2	12.1				
Green Ext Time (p_c), s	0.1	20.8	0.0	0.0	0.0	23.6	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			20.5									
HCM 2010 LOS			C									
Notes												

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

												
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	20	285	1265	140	185	1645	40	225	965	170	85	780
Future Volume (vph)	20	285	1265	140	185	1645	40	225	965	170	85	780
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	12	13	12	12	12	12	12	12	12
Storage Length (ft)		415		0	215		0	140		175	150	
Storage Lanes		1		0	1		0	1		1	1	
Taper Length (ft)		120			180			170			250	
Lane Util. Factor	0.91	1.00	0.91	0.91	1.00	0.91	0.91	1.00	0.95	1.00	1.00	0.95
Frt			0.985			0.996				0.850		
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	1829	4965	0	1829	5064	0	1770	3725	1583	1770	3725
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	1829	4965	0	1829	5064	0	1770	3725	1583	1770	3725
Right Turn on Red				No			No			No		
Satd. Flow (RTOR)												
Link Speed (mph)			35			35			35			35
Link Distance (ft)			601			560			640			500
Travel Time (s)			11.7			10.9			12.5			9.7
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	2%	3%	2%	2%	2%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	21	300	1332	147	195	1732	42	237	1016	179	89	821
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	321	1479	0	195	1774	0	237	1016	179	89	821
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			52			52			17			17
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane												
Headway Factor	1.00	0.96	1.00	1.00	0.96	1.00	1.00	1.00	0.94	1.00	1.00	0.94
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors	1	1	2		1	2		1	2	1	1	2
Detector Template	Left	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	20	100		20	100		20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Size(ft)	20	20	6		20	6		20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	385
Future Volume (vph)	385
Ideal Flow (vphpl)	1900
Lane Width (ft)	12
Storage Length (ft)	280
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1583
Flt Permitted	
Satd. Flow (perm)	1583
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.95
Heavy Vehicles (%)	2%
Adj. Flow (vph)	405
Shared Lane Traffic (%)	
Lane Group Flow (vph)	405
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	pm+ov

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

												
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Protected Phases	7!	7	4		3	8		5	2	3	1	6
Permitted Phases										2		
Detector Phase	7	7	4		3	8		5	2	3	1	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		3.0	15.0		3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	7.5	7.5	21.5		7.5	21.5		7.5	21.5	7.5	7.5	21.5
Total Split (s)	28.0	28.0	57.0		28.0	57.0		21.0	50.0	28.0	15.0	44.0
Total Split (%)	18.7%	18.7%	38.0%		18.7%	38.0%		14.0%	33.3%	18.7%	10.0%	29.3%
Maximum Green (s)	23.5	23.5	50.5		23.5	50.5		16.5	43.5	23.5	10.5	37.5
Yellow Time (s)	3.5	3.5	4.5		3.5	4.5		3.5	4.5	3.5	3.5	4.5
All-Red Time (s)	1.0	1.0	2.0		1.0	2.0		1.0	2.0	1.0	1.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	6.5		4.5	6.5		4.5	6.5	4.5	4.5	6.5
Lead/Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	7.0		4.0	7.0		4.0	7.0	4.0	4.0	7.0
Recall Mode	None	None	None		None	None		None	C-Min	None	None	C-Min
Walk Time (s)									7.0			7.0
Flash Dont Walk (s)									11.0			11.0
Pedestrian Calls (#/hr)									0			0
Act Effct Green (s)		23.5	53.4		20.6	50.5		16.5	43.7	70.8	10.3	37.5
Actuated g/C Ratio		0.16	0.36		0.14	0.34		0.11	0.29	0.47	0.07	0.25
v/c Ratio		1.12	0.84		0.78	1.04		1.22	0.94	0.24	0.74	0.88
Control Delay		145.7	50.0		82.9	81.2		190.1	67.5	24.1	100.9	66.1
Queue Delay		0.0	0.0		0.0	0.0		0.0	1.3	0.0	0.0	0.0
Total Delay		145.7	50.0		82.9	81.2		190.1	68.8	24.1	100.9	66.1
LOS		F	D		F	F		F	E	C	F	E
Approach Delay			67.0			81.4			83.3			58.7
Approach LOS			E			F			F			E
90th %ile Green (s)	23.5	23.5	50.5		23.5	50.5		16.5	43.5	23.5	10.5	37.5
90th %ile Term Code	Max	Max	Max		Max	Max		Max	Coord	Max	Max	Coord
70th %ile Green (s)	23.5	23.5	50.5		23.5	50.5		16.5	43.5	23.5	10.5	37.5
70th %ile Term Code	Max	Max	Max		Max	Max		Max	Coord	Max	Max	Coord
50th %ile Green (s)	23.5	23.5	52.0		22.0	50.5		16.5	43.5	22.0	10.5	37.5
50th %ile Term Code	Max	Max	Max		Gap	Max		Max	Coord	Gap	Max	Coord
30th %ile Green (s)	23.5	23.5	54.8		19.2	50.5		16.5	43.5	19.2	10.5	37.5
30th %ile Term Code	Max	Max	Max		Gap	Max		Max	Coord	Gap	Max	Coord
10th %ile Green (s)	23.5	23.5	59.0		15.0	50.5		16.5	44.5	15.0	9.5	37.5
10th %ile Term Code	Max	Max	Max		Gap	Max		Max	Coord	Gap	Gap	Coord
Queue Length 50th (ft)		~361	493		185	~684		~283	513	101	87	410
Queue Length 95th (ft)		#559	566		273	#779		#462	#646	151	#177	#513
Internal Link Dist (ft)			521			480			560			420
Turn Bay Length (ft)		415			215			140		175	150	
Base Capacity (vph)		286	1766		286	1704		194	1085	777	123	931
Starvation Cap Reductn		0	0		0	0		0	17	0	0	0
Spillback Cap Reductn		0	0		0	0		0	0	0	0	0
Storage Cap Reductn		0	0		0	0		0	0	0	0	0
Reduced v/c Ratio		1.12	0.84		0.68	1.04		1.22	0.95	0.23	0.72	0.88

Lanes, Volumes, Timings

300: Arlington Heights Road & Palatine Road

05/24/2019

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 61.5 (41%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.22

Intersection Signal Delay: 73.2

Intersection LOS: E

Intersection Capacity Utilization 102.5%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

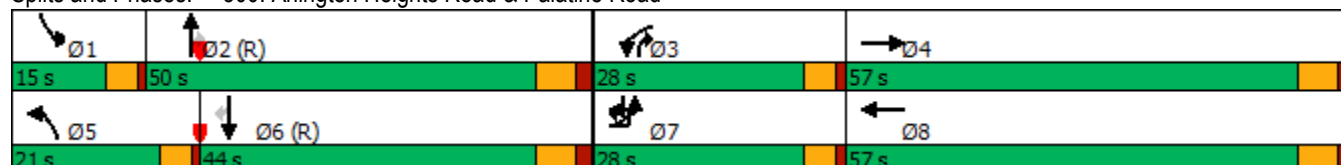
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

! Phase conflict between lane groups.

Splits and Phases: 300: Arlington Heights Road & Palatine Road



Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

Lane Group	SBR
Protected Phases	7!
Permitted Phases	6
Detector Phase	7
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	7.5
Total Split (s)	28.0
Total Split (%)	18.7%
Maximum Green (s)	23.5
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	4.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	67.5
Actuated g/C Ratio	0.45
v/c Ratio	0.57
Control Delay	34.4
Queue Delay	0.0
Total Delay	34.4
LOS	C
Approach Delay	
Approach LOS	
90th %ile Green (s)	23.5
90th %ile Term Code	Max
70th %ile Green (s)	23.5
70th %ile Term Code	Max
50th %ile Green (s)	23.5
50th %ile Term Code	Max
30th %ile Green (s)	23.5
30th %ile Term Code	Max
10th %ile Green (s)	23.5
10th %ile Term Code	Max
Queue Length 50th (ft)	289
Queue Length 95th (ft)	400
Internal Link Dist (ft)	
Turn Bay Length (ft)	280
Base Capacity (vph)	712
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.57

Intersection

Int Delay, s/veh 2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑		↑
Traffic Vol, veh/h	1315	205	0	1870	0	180
Future Vol, veh/h	1315	205	0	1870	0	180
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1384	216	0	1968	0	189

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- - - 800
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - - 7.14
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - - 3.92
Pot Cap-1 Maneuver	-	-	0 - 0 281
Stage 1	-	-	0 - 0
Stage 2	-	-	0 - 0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - - 281
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	40.7
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	281	-	-	-
HCM Lane V/C Ratio	0.674	-	-	-
HCM Control Delay (s)	40.7	-	-	-
HCM Lane LOS	E	-	-	-
HCM 95th %tile Q(veh)	4.5	-	-	-

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	50	0	1630	1145	220
Future Vol, veh/h	0	50	0	1630	1145	220
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	53	0	1716	1205	232
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	719	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	318	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	318	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	18.6	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	318	-	-		
HCM Lane V/C Ratio	-	0.166	-	-		
HCM Control Delay (s)	-	18.6	-	-		
HCM Lane LOS	-	C	-	-		
HCM 95th %tile Q(veh)	-	0.6	-	-		

HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

05/24/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	10	65	25	15	50	145	1450	25	25	1150	20
Future Volume (veh/h)	130	10	65	25	15	50	145	1450	25	25	1150	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	137	11	68	26	16	53	153	1526	26	26	1211	21
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	225	32	199	215	54	180	406	2339	40	247	3194	55
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.05	0.66	0.66	0.02	0.62	0.62
Ln Grp Delay, s/veh	44.5	0.0	34.4	35.4	0.0	33.7	6.1	11.5	11.4	8.1	8.4	8.9
Ln Grp LOS	D		C	D		C	A	B	B	A	A	A
Approach Vol, veh/h		216			95			1705			1258	
Approach Delay, s/veh		40.8			34.2			11.0			8.6	
Approach LOS		D			C			B			A	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs		1	2		4	5	6		8			
Case No		1.1	4.0		6.0	1.1	4.0		6.0			
Phs Duration (G+Y+Rc), s		4.9	61.2		18.0	7.9	58.2		18.0			
Change Period (Y+Rc), s		3.5	6.0		6.0	3.5	6.0		6.0			
Max Green (Gmax), s		3.5	59.0		12.0	7.5	55.0		12.0			
Max Allow Headway (MAH), s		3.8	9.1		6.6	3.8	9.1		7.2			
Max Q Clear (g_c+I1), s		2.5	23.7		13.8	4.4	11.8		7.2			
Green Ext Time (g_e), s		0.0	31.6		0.0	0.1	30.3		0.2			
Prob of Phs Call (p_c)		0.46	1.00		1.00	0.97	1.00		1.00			
Prob of Max Out (p_x)		1.00	0.89		1.00	1.00	0.60		1.00			
Left-Turn Movement Data												
Assigned Mvmt		1			7	5			3			
Mvmt Sat Flow, veh/h		1774			1326	1774			1314			
Through Movement Data												
Assigned Mvmt			2		4		6		8			
Mvmt Sat Flow, veh/h			3561		225		5148		380			
Right-Turn Movement Data												
Assigned Mvmt			12		14		16		18			
Mvmt Sat Flow, veh/h			61		1392		89		1260			
Left Lane Group Data												
Assigned Mvmt		1	0	0	7	5	0	0	3			
Lane Assignment		(Pr/Pm)			(Pr/Pm)							

HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

05/24/2019

Lanes in Grp	1	0	0	1	1	0	0	1
Grp Vol (v), veh/h	26	0	0	137	153	0	0	26
Grp Sat Flow (s), veh/h/ln	1774	0	0	1326	1774	0	0	1314
Q Serve Time (g_s), s	0.5	0.0	0.0	8.7	2.4	0.0	0.0	1.5
Cycle Q Clear Time (g_c), s	0.5	0.0	0.0	11.8	2.4	0.0	0.0	5.2
Perm LT Sat Flow (s_l), veh/h/ln	331	0	0	1326	450	0	0	1314
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	52.2	0.0	0.0	12.0	53.7	0.0	0.0	12.0
Perm LT Serve Time (g_u), s	33.6	0.0	0.0	8.8	42.4	0.0	0.0	8.3
Perm LT Q Serve Time (g_ps), s	1.6	0.0	0.0	8.7	5.9	0.0	0.0	1.5
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Lane Grp Cap (c), veh/h	247	0	0	225	406	0	0	215
V/C Ratio (X)	0.11	0.00	0.00	0.61	0.38	0.00	0.00	0.12
Avail Cap (c_a), veh/h	292	0	0	225	471	0	0	215
Upstream Filter (I)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	7.9	0.0	0.0	37.6	5.5	0.0	0.0	34.9
Incr Delay (d2), s/veh	0.2	0.0	0.0	7.0	0.6	0.0	0.0	0.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	8.1	0.0	0.0	44.5	6.1	0.0	0.0	35.4
1st-Term Q (Q1), veh/ln	0.2	0.0	0.0	3.2	1.2	0.0	0.0	0.6
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.4	0.1	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	0.00	1.80	1.80	0.00	0.00	1.80
%ile Back of Q (95%), veh/ln	0.4	0.0	0.0	6.5	2.3	0.0	0.0	1.1
%ile Storage Ratio (RQ%)	0.07	0.00	0.00	1.10	0.25	0.00	0.00	0.23
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T			T				
Lanes in Grp	0	1	0	0	0	2	0	0
Grp Vol (v), veh/h	0	758	0	0	0	797	0	0
Grp Sat Flow (s), veh/h/ln	0	1770	0	0	0	1695	0	0
Q Serve Time (g_s), s	0.0	21.6	0.0	0.0	0.0	9.8	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	21.6	0.0	0.0	0.0	9.8	0.0	0.0
Lane Grp Cap (c), veh/h	0	1162	0	0	0	2103	0	0
V/C Ratio (X)	0.00	0.65	0.00	0.00	0.00	0.38	0.00	0.00
Avail Cap (c_a), veh/h	0	1241	0	0	0	2217	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	8.7	0.0	0.0	0.0	7.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	2.8	0.0	0.0	0.0	0.5	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	11.5	0.0	0.0	0.0	8.4	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	10.3	0.0	0.0	0.0	4.5	0.0	0.0

Future (2025) Build Traffic Projections 4:15 pm 02/04/2019 PM Peak Hour

Synchro 10 Report
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HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

05/24/2019

2nd-Term Q (Q2), veh/ln	0.0	0.9	0.0	0.0	0.0	0.2	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.49	0.00	1.00	0.00	1.76	0.00	1.00
%ile Back of Q (95%), veh/ln	0.0	16.7	0.0	0.0	0.0	8.2	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.69	0.00	0.00	0.00	0.57	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	794	0	79	0	435	0	69
Grp Sat Flow (s), veh/h/ln	0	1852	0	1617	0	1847	0	1640
Q Serve Time (g_s), s	0.0	21.7	0.0	3.7	0.0	9.8	0.0	3.2
Cycle Q Clear Time (g_c), s	0.0	21.7	0.0	3.7	0.0	9.8	0.0	3.2
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.03	0.00	0.86	0.00	0.05	0.00	0.77
Lane Grp Cap (c), veh/h	0	1216	0	231	0	1146	0	234
V/C Ratio (X)	0.00	0.65	0.00	0.34	0.00	0.38	0.00	0.29
Avail Cap (c_a), veh/h	0	1299	0	231	0	1208	0	234
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	8.7	0.0	32.5	0.0	7.9	0.0	32.3
Incr Delay (d2), s/veh	0.0	2.7	0.0	1.9	0.0	1.0	0.0	1.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	11.4	0.0	34.4	0.0	8.9	0.0	33.7
1st-Term Q (Q1), veh/ln	0.0	10.8	0.0	1.6	0.0	4.9	0.0	1.4
2nd-Term Q (Q2), veh/ln	0.0	0.9	0.0	0.1	0.0	0.3	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.48	0.00	1.80	0.00	1.72	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	17.4	0.0	3.2	0.0	9.0	0.0	2.8
%ile Storage Ratio (RQ%)	0.00	0.71	0.00	0.41	0.00	0.63	0.00	0.65
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Ctrl Delay	12.7
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary

600: Rand Road & Access E/Private Driveway

05/24/2019

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations																		
Traffic Volume (veh/h)	130	10	65	25	15	50	145	1450	25	25	1150	20						
Future Volume (veh/h)	130	10	65	25	15	50	145	1450	25	25	1150	20						
Number	7	4	14	3	8	18	5	2	12	1	6	16						
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0						
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00						
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900						
Adj Flow Rate, veh/h	137	11	68	26	16	53	153	1526	26	26	1211	21						
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95						
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2						
Cap, veh/h	225	32	199	215	54	180	406	2339	40	247	3194	55						
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.05	0.66	0.66	0.02	0.62	0.62						
Sat Flow, veh/h	1326	225	1392	1314	380	1260	1774	3561	61	1774	5148	89						
Grp Volume(v), veh/h	137	0	79	26	0	69	153	758	794	26	797	435						
Grp Sat Flow(s),veh/h/ln	1326	0	1617	1314	0	1640	1774	1770	1852	1774	1695	1847						
Q Serve(g_s), s	8.7	0.0	3.7	1.5	0.0	3.2	2.4	21.6	21.7	0.5	9.8	9.8						
Cycle Q Clear(g_c), s	11.8	0.0	3.7	5.2	0.0	3.2	2.4	21.6	21.7	0.5	9.8	9.8						
Prop In Lane	1.00		0.86	1.00		0.77	1.00		0.03	1.00		0.05						
Lane Grp Cap(c), veh/h	225	0	231	215	0	234	406	1162	1216	247	2103	1146						
V/C Ratio(X)	0.61	0.00	0.34	0.12	0.00	0.29	0.38	0.65	0.65	0.11	0.38	0.38						
Avail Cap(c_a), veh/h	225	0	231	215	0	234	471	1241	1299	292	2217	1208						
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00						
Uniform Delay (d), s/veh	37.6	0.0	32.5	34.9	0.0	32.3	5.5	8.7	8.7	7.9	7.9	7.9						
Incr Delay (d2), s/veh	7.0	0.0	1.9	0.5	0.0	1.5	0.6	2.8	2.7	0.2	0.5	1.0						
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0						
%ile BackOfQ(95%),veh/ln	6.5	0.0	3.2	1.1	0.0	2.8	2.3	16.7	17.4	0.4	8.2	9.0						
LnGrp Delay(d),s/veh	44.5	0.0	34.4	35.4	0.0	33.7	6.1	11.5	11.4	8.1	8.4	8.9						
LnGrp LOS	D		C	D		C	A	B	B	A	A	A						
Approach Vol, veh/h	216		95				1705				1258							
Approach Delay, s/veh	40.8		34.2				11.0				8.6							
Approach LOS	D		C				B				A							
Timer	1	2	3	4	5	6	7	8										
Assigned Phs	1	2			4	5	6	8										
Phs Duration (G+Y+Rc), s	4.9	61.2			18.0	7.9	58.2	18.0										
Change Period (Y+Rc), s	3.5	6.0			6.0	3.5	6.0	6.0										
Max Green Setting (Gmax), s	3.5	59.0			12.0	7.5	55.0	12.0										
Max Q Clear Time (g_c+I1), s	2.5	23.7			13.8	4.4	11.8	7.2										
Green Ext Time (p_c), s	0.0	31.6			0.0	0.1	30.3	0.2										
Intersection Summary																		
HCM 2010 Ctrl Delay																		
HCM 2010 LOS																		

HCM 2010 TWSC
100: Arlington Heights Road & Access A (Loading Dock)

05/24/2019

Intersection

Int Delay, s/veh 0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	15	995	20	5	990
Future Vol, veh/h	5	15	995	20	5	990
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	40	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	7	2	2	25	2
Mvmt Flow	5	16	1047	21	5	1042

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1589	534	0
Stage 1	1058	-	-
Stage 2	531	-	-
Critical Hdwy	6.84	7.04	-
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.37	-
Pot Cap-1 Maneuver	98	478	-
Stage 1	295	-	-
Stage 2	554	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	97	478	-
Mov Cap-2 Maneuver	97	-	-
Stage 1	292	-	-
Stage 2	554	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.7	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	- 97 478	528	-
HCM Lane V/C Ratio	-	- 0.054 0.033	0.01	-
HCM Control Delay (s)	-	- 44.2 12.8	11.9	-
HCM Lane LOS	-	- E B	B	-
HCM 95th %tile Q(veh)	-	- 0.2 0.1	0	-

HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

05/24/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	10	20	165	25	325	50	805	155	150	810	55
Future Volume (veh/h)	90	10	20	165	25	325	50	805	155	150	810	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1961	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	95	11	21	174	26	342	53	847	163	158	853	58
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	319	62	118	401	285	342	354	1374	264	361	1703	116
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.06	0.11	0.11	0.10	0.15	0.15	0.03	0.46	0.46	0.07	0.51	0.51
Ln Grp Delay, s/veh	27.4	0.0	31.1	25.4	27.7	77.8	10.7	18.4	18.4	11.7	14.1	14.0
Ln Grp LOS	C		C	C	C	F	B	B	B	B	B	B
Approach Vol, veh/h		127			542			1063			1069	
Approach Delay, s/veh		28.3			58.6			18.0			13.7	
Approach LOS		C			E			B			B	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Case No	1.1	4.0	1.1	4.0	1.1	4.0	1.1	3.0				
Phs Duration (G+Y+Rc), s	8.7	40.4	11.0	14.0	5.6	43.5	8.2	16.8				
Change Period (Y+Rc), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0				
Max Green (Gmax), s	13.5	41.0	7.5	9.0	4.5	50.0	7.5	9.0				
Max Allow Headway (MAH), s	3.8	9.2	3.9	7.6	3.8	9.1	3.9	6.2				
Max Q Clear (g_c+I1), s	5.2	17.9	8.2	3.3	3.2	14.4	5.5	12.8				
Green Ext Time (g_e), s	0.2	16.5	0.0	0.1	0.0	20.2	0.0	0.0				
Prob of Phs Call (p_c)	0.96	1.00	0.97	1.00	0.66	1.00	0.86	1.00				
Prob of Max Out (p_x)	0.02	0.74	1.00	1.00	1.00	0.47	1.00	1.00				
Left-Turn Movement Data												
Assigned Mvmt	1		3		5		7					
Mvmt Sat Flow, veh/h	1774		1774		1774		1774					
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		2962		574		3363		1961				
Right-Turn Movement Data												
Assigned Mvmt		12		14		16		18				
Mvmt Sat Flow, veh/h		570		1096		229		1583				
Left Lane Group Data												
Assigned Mvmt	1	0	3	0	5	0	7	0				
Lane Assignment	(Pr/Pm)		(Pr/Pm)		(Pr/Pm)		(Pr/Pm)					

HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

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Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	158	0	174	0	53	0	95	0
Grp Sat Flow (s), veh/h/ln	1774	0	1774	0	1774	0	1774	0
Q Serve Time (g_s), s	3.2	0.0	6.2	0.0	1.2	0.0	3.5	0.0
Cycle Q Clear Time (g_c), s	3.2	0.0	6.2	0.0	1.2	0.0	3.5	0.0
Perm LT Sat Flow (s_l), veh/h/ln	556	0	1372	0	610	0	1010	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	36.0	0.0	9.3	0.0	34.4	0.0	8.0	0.0
Perm LT Serve Time (g_u), s	18.5	0.0	6.7	0.0	25.1	0.0	8.0	0.0
Perm LT Q Serve Time (g_ps), s	7.0	0.0	0.4	0.0	0.9	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	361	0	401	0	354	0	319	0
V/C Ratio (X)	0.44	0.00	0.43	0.00	0.15	0.00	0.30	0.00
Avail Cap (c_a), veh/h	559	0	401	0	411	0	386	0
Upstream Filter (I)	1.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d1), s/veh	10.9	0.0	24.7	0.0	10.5	0.0	26.9	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.7	0.0	0.2	0.0	0.5	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	11.7	0.0	25.4	0.0	10.7	0.0	27.4	0.0
1st-Term Q (Q1), veh/ln	1.5	0.0	3.0	0.0	0.6	0.0	1.7	0.0
2nd-Term Q (Q2), veh/ln	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	1.80	0.00	1.80	0.00	1.80	0.00
%ile Back of Q (95%), veh/ln	2.9	0.0	5.5	0.0	1.0	0.0	3.1	0.0
%ile Storage Ratio (RQ%)	0.40	0.00	0.91	0.00	0.53	0.00	0.65	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T		T	
Lanes in Grp	0	1	0	0	0	1	0	1
Grp Vol (v), veh/h	0	506	0	0	0	449	0	26
Grp Sat Flow (s), veh/h/ln	0	1770	0	0	0	1770	0	1961
Q Serve Time (g_s), s	0.0	15.9	0.0	0.0	0.0	12.4	0.0	0.9
Cycle Q Clear Time (g_c), s	0.0	15.9	0.0	0.0	0.0	12.4	0.0	0.9
Lane Grp Cap (c), veh/h	0	821	0	0	0	896	0	285
V/C Ratio (X)	0.00	0.62	0.00	0.00	0.00	0.50	0.00	0.09
Avail Cap (c_a), veh/h	0	979	0	0	0	1193	0	285
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	14.9	0.0	0.0	0.0	12.1	0.0	27.5
Incr Delay (d2), s/veh	0.0	3.5	0.0	0.0	0.0	2.0	0.0	0.3
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	18.4	0.0	0.0	0.0	14.1	0.0	27.7
1st-Term Q (Q1), veh/ln	0.0	7.7	0.0	0.0	0.0	6.0	0.0	0.5

HCM 2010 Signalized Intersection Capacity Analysis
200: Arlington Heights Road & Lillian Avenue/Access B

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2nd-Term Q (Q2), veh/ln	0.0	0.8	0.0	0.0	0.0	0.5	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.56	0.00	1.00	0.00	1.64	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	13.3	0.0	0.0	0.0	10.7	0.0	0.9
%ile Storage Ratio (RQ%)	0.00	1.50	0.00	0.00	0.00	0.53	0.00	0.06
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	504	0	32	0	462	0	342
Grp Sat Flow (s), veh/h/ln	0	1762	0	1669	0	1822	0	1583
Q Serve Time (g_s), s	0.0	15.9	0.0	1.3	0.0	12.4	0.0	10.8
Cycle Q Clear Time (g_c), s	0.0	15.9	0.0	1.3	0.0	12.4	0.0	10.8
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1583.3
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2
Prop RT Outside Lane (P_R)	0.00	0.32	0.00	0.66	0.00	0.13	0.00	1.00
Lane Grp Cap (c), veh/h	0	818	0	180	0	923	0	342
V/C Ratio (X)	0.00	0.62	0.00	0.18	0.00	0.50	0.00	1.00
Avail Cap (c_a), veh/h	0	974	0	203	0	1229	0	342
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	14.9	0.0	30.1	0.0	12.1	0.0	29.1
Incr Delay (d2), s/veh	0.0	3.5	0.0	1.0	0.0	1.9	0.0	48.8
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	18.4	0.0	31.1	0.0	14.0	0.0	77.8
1st-Term Q (Q1), veh/ln	0.0	7.7	0.0	0.6	0.0	6.2	0.0	6.9
2nd-Term Q (Q2), veh/ln	0.0	0.8	0.0	0.0	0.0	0.5	0.0	4.6
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.56	0.00	1.80	0.00	1.64	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	13.3	0.0	1.2	0.0	10.9	0.0	20.8
%ile Storage Ratio (RQ%)	0.00	1.50	0.00	0.11	0.00	0.54	0.00	3.41
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3

Intersection Summary

HCM 2010 Ctrl Delay	24.7
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary

200: Arlington Heights Road & Lillian Avenue/Access B

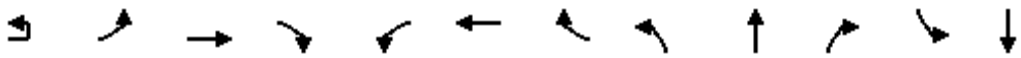
05/24/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	10	20	165	25	325	50	805	155	150	810	55
Future Volume (veh/h)	90	10	20	165	25	325	50	805	155	150	810	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1961	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	95	11	21	174	26	342	53	847	163	158	853	58
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	319	62	118	401	285	342	354	1374	264	361	1703	116
Arrive On Green	0.06	0.11	0.11	0.10	0.15	0.15	0.03	0.46	0.46	0.07	0.51	0.51
Sat Flow, veh/h	1774	574	1096	1774	1961	1583	1774	2962	570	1774	3363	229
Grp Volume(v), veh/h	95	0	32	174	26	342	53	506	504	158	449	462
Grp Sat Flow(s),veh/h/ln	1774	0	1669	1774	1961	1583	1774	1770	1762	1774	1770	1822
Q Serve(g_s), s	3.5	0.0	1.3	6.2	0.9	10.8	1.2	15.9	15.9	3.2	12.4	12.4
Cycle Q Clear(g_c), s	3.5	0.0	1.3	6.2	0.9	10.8	1.2	15.9	15.9	3.2	12.4	12.4
Prop In Lane	1.00		0.66	1.00		1.00	1.00		0.32	1.00		0.13
Lane Grp Cap(c), veh/h	319	0	180	401	285	342	354	821	818	361	896	923
V/C Ratio(X)	0.30	0.00	0.18	0.43	0.09	1.00	0.15	0.62	0.62	0.44	0.50	0.50
Avail Cap(c_a), veh/h	386	0	203	401	285	342	411	979	974	559	1193	1229
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.9	0.0	30.1	24.7	27.5	29.1	10.5	14.9	14.9	10.9	12.1	12.1
Incr Delay (d2), s/veh	0.5	0.0	1.0	0.7	0.3	48.8	0.2	3.5	3.5	0.8	2.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.1	0.0	1.2	5.5	0.9	20.8	1.0	13.3	13.3	2.9	10.7	10.9
LnGrp Delay(d),s/veh	27.4	0.0	31.1	25.4	27.7	77.8	10.7	18.4	18.4	11.7	14.1	14.0
LnGrp LOS	C		C	C	C	F	B	B	B	B	B	B
Approach Vol, veh/h	127			542			1063			1069		
Approach Delay, s/veh	28.3			58.6			18.0			13.7		
Approach LOS	C			E			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.7	40.4	11.0	14.0	5.6	43.5	8.2	16.8				
Change Period (Y+Rc), s	3.5	6.0	3.5	6.0	3.5	6.0	3.5	6.0				
Max Green Setting (Gmax), s	13.5	41.0	7.5	9.0	4.5	50.0	7.5	9.0				
Max Q Clear Time (g_c+I1), s	5.2	17.9	8.2	3.3	3.2	14.4	5.5	12.8				
Green Ext Time (p_c), s	0.2	16.5	0.0	0.1	0.0	20.2	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	24.7											
HCM 2010 LOS	C											
Notes												

User approved pedestrian interval to be less than phase max green.

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

												
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	15	305	950	110	150	820	40	255	820	145	110	755
Future Volume (vph)	15	305	950	110	150	820	40	255	820	145	110	755
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000
Lane Width (ft)	12	13	12	12	13	12	12	12	12	12	12	12
Storage Length (ft)		415		0	215		0	140		175	150	
Storage Lanes		1		0	1		0	1		1	1	
Taper Length (ft)		120			180			170			250	
Lane Util. Factor	0.91	1.00	0.91	0.91	1.00	0.91	0.91	1.00	0.95	1.00	1.00	0.95
Fr _t			0.984			0.993				0.850		
Fl _t Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	1829	5004	0	1829	5050	0	1770	3725	1583	1770	3725
Fl _t Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	1829	5004	0	1829	5050	0	1770	3725	1583	1770	3725
Right Turn on Red				No			No			No		
Satd. Flow (RTOR)												
Link Speed (mph)			35			35			35			35
Link Distance (ft)			601			560			640			500
Travel Time (s)			11.7			10.9			12.5			9.7
Peak Hour Factor	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)	16	321	1000	116	158	863	42	268	863	153	116	795
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	337	1116	0	158	905	0	268	863	153	116	795
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left
Median Width(ft)			52			52			17			17
Link Offset(ft)			0			0			0			0
Crosswalk Width(ft)			16			16			16			16
Two way Left Turn Lane												
Headway Factor	1.00	0.96	1.00	1.00	0.96	1.00	1.00	1.00	0.94	1.00	1.00	0.94
Turning Speed (mph)	9	15		9	15		9	15		9	15	
Number of Detectors	1	1	2		1	2		1	2	1	1	2
Detector Template	Left	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru
Leading Detector (ft)	20	20	100		20	100		20	100	20	20	100
Trailing Detector (ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Position(ft)	0	0	0		0	0		0	0	0	0	0
Detector 1 Size(ft)	20	20	6		20	6		20	6	20	20	6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94			94			94
Detector 2 Size(ft)			6			6			6			6
Detector 2 Type			Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)			0.0			0.0			0.0			0.0
Turn Type	Prot	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA
Protected Phases	7!	7	4		3	8		5	2	3	1	6

Future (2025) Build Traffic Projections 11:45 am 02/04/2019 Saturday Midday Peak Hour

Synchro 10 Report
Page 1

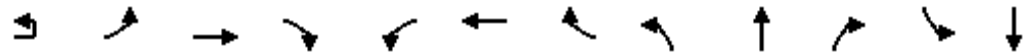
Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	320
Future Volume (vph)	320
Ideal Flow (vphpl)	1900
Lane Width (ft)	12
Storage Length (ft)	280
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1583
Flt Permitted	
Satd. Flow (perm)	1583
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.95
Adj. Flow (vph)	337
Shared Lane Traffic (%)	
Lane Group Flow (vph)	337
Enter Blocked Intersection	No
Lane Alignment	Right
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	1.00
Turning Speed (mph)	9
Number of Detectors	1
Detector Template	Right
Leading Detector (ft)	20
Trailing Detector (ft)	0
Detector 1 Position(ft)	0
Detector 1 Size(ft)	20
Detector 1 Type	Cl+Ex
Detector 1 Channel	
Detector 1 Extend (s)	0.0
Detector 1 Queue (s)	0.0
Detector 1 Delay (s)	0.0
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	pm+ov
Protected Phases	7!

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019



Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Permitted Phases										2		
Detector Phase	7	7	4		3	8		5	2	3	1	6
Switch Phase												
Minimum Initial (s)	3.0	3.0	15.0		3.0	15.0		3.0	15.0	3.0	3.0	15.0
Minimum Split (s)	7.5	7.5	21.5		7.5	21.5		7.5	21.5	7.5	7.5	21.5
Total Split (s)	34.0	34.0	44.0		22.0	32.0		19.0	38.0	22.0	16.0	35.0
Total Split (%)	28.3%	28.3%	36.7%		18.3%	26.7%		15.8%	31.7%	18.3%	13.3%	29.2%
Maximum Green (s)	29.5	29.5	37.5		17.5	25.5		14.5	31.5	17.5	11.5	28.5
Yellow Time (s)	3.5	3.5	4.5		3.5	4.5		3.5	4.5	3.5	3.5	4.5
All-Red Time (s)	1.0	1.0	2.0		1.0	2.0		1.0	2.0	1.0	1.0	2.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5	6.5		4.5	6.5		4.5	6.5	4.5	4.5	6.5
Lead/Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	4.0	4.0	7.0		4.0	7.0		4.0	7.0	4.0	4.0	7.0
Recall Mode	None	None	None		None	None		None	C-Min	None	None	C-Min
Walk Time (s)									7.0			7.0
Flash Dont Walk (s)									11.0			11.0
Pedestrian Calls (#/hr)									0			0
Act Effect Green (s)		26.8	38.9		15.3	27.5		15.3	32.7	54.5	11.1	28.5
Actuated g/C Ratio		0.22	0.32		0.13	0.23		0.13	0.27	0.45	0.09	0.24
v/c Ratio		0.83	0.69		0.68	0.78		1.20	0.85	0.21	0.71	0.90
Control Delay		61.6	38.1		64.6	49.4		168.1	51.1	20.7	76.4	58.6
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay		61.6	38.1		64.6	49.4		168.1	51.1	20.7	76.4	58.6
LOS		E	D		E	D		F	D	C	E	E
Approach Delay			43.6			51.7			71.9			49.7
Approach LOS			D			D			E			D
90th %ile Green (s)	29.5	29.5	37.5		17.5	25.5		14.5	31.5	17.5	11.5	28.5
90th %ile Term Code	Max	Max	Max		Max	Max		Max	Coord	Max	Max	Coord
70th %ile Green (s)	29.5	29.5	37.5		17.5	25.5		14.5	31.5	17.5	11.5	28.5
70th %ile Term Code	Max	Max	Max		Max	Max		Max	Coord	Max	Max	Coord
50th %ile Green (s)	29.0	29.0	38.5		16.5	26.0		14.5	31.5	16.5	11.5	28.5
50th %ile Term Code	Gap	Gap	Max		Gap	Max		Max	Coord	Gap	Max	Coord
30th %ile Green (s)	25.7	25.7	40.8		14.2	29.3		14.5	31.5	14.2	11.5	28.5
30th %ile Term Code	Gap	Gap	Max		Gap	Max		Max	Coord	Gap	Max	Coord
10th %ile Green (s)	20.1	20.1	40.3		10.9	31.1		18.3	37.3	10.9	9.5	28.5
10th %ile Term Code	Gap	Gap	Hold		Gap	Gap		Max	Coord	Gap	Gap	Coord
Queue Length 50th (ft)		244	275		117	246		~260	338	70	88	315
Queue Length 95th (ft)		#355	333		189	301		#431	#446	114	#173	#425
Internal Link Dist (ft)			521			480			560			420
Turn Bay Length (ft)		415			215			140		175	150	
Base Capacity (vph)		449	1622		266	1156		224	1013	747	169	884
Starvation Cap Reductn		0	0		0	0		0	0	0	0	0
Spillback Cap Reductn		0	0		0	0		0	0	0	0	0
Storage Cap Reductn		0	0		0	0		0	0	0	0	0
Reduced v/c Ratio		0.75	0.69		0.59	0.78		1.20	0.85	0.20	0.69	0.90

Intersection Summary

Lanes, Volumes, Timings
300: Arlington Heights Road & Palatine Road

05/24/2019

Lane Group	SBR
Permitted Phases	6
Detector Phase	7
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	7.5
Total Split (s)	34.0
Total Split (%)	28.3%
Maximum Green (s)	29.5
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	0.0
Total Lost Time (s)	4.5
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	4.0
Recall Mode	None
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	61.8
Actuated g/C Ratio	0.52
v/c Ratio	0.41
Control Delay	19.3
Queue Delay	0.0
Total Delay	19.3
LOS	B
Approach Delay	
Approach LOS	
90th %ile Green (s)	29.5
90th %ile Term Code	Max
70th %ile Green (s)	29.5
70th %ile Term Code	Max
50th %ile Green (s)	29.0
50th %ile Term Code	Gap
30th %ile Green (s)	25.7
30th %ile Term Code	Gap
10th %ile Green (s)	20.1
10th %ile Term Code	Gap
Queue Length 50th (ft)	149
Queue Length 95th (ft)	217
Internal Link Dist (ft)	
Turn Bay Length (ft)	280
Base Capacity (vph)	850
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.40
Intersection Summary	

Lanes, Volumes, Timings

300: Arlington Heights Road & Palatine Road

05/24/2019

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 21.6 (18%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.20

Intersection Signal Delay: 54.0

Intersection LOS: D

Intersection Capacity Utilization 86.7%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

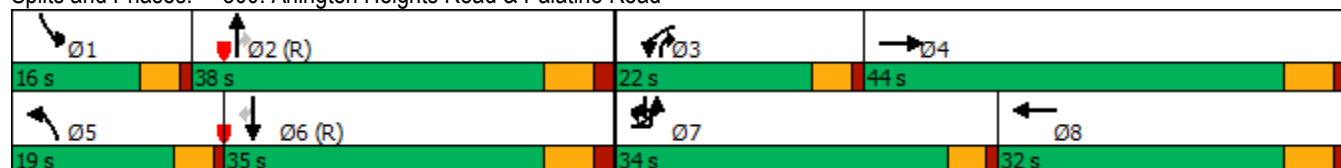
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

! Phase conflict between lane groups.

Splits and Phases: 300: Arlington Heights Road & Palatine Road



Intersection

Int Delay, s/veh 2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑↑		↑
Traffic Vol, veh/h	985	220	0	1010	0	220
Future Vol, veh/h	985	220	0	1010	0	220
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1037	232	0	1063	0	232

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	635
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	7.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	3.92
Pot Cap-1 Maneuver	-	0	361
Stage 1	-	0	-
Stage 2	-	0	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	361
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	31.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	361	-	-	-
HCM Lane V/C Ratio	0.641	-	-	-
HCM Control Delay (s)	31.2	-	-	-
HCM Lane LOS	D	-	-	-
HCM 95th %tile Q(veh)	4.3	-	-	-

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	65	0	1170	1120	260
Future Vol, veh/h	0	65	0	1170	1120	260
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	68	0	1232	1179	274
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	727	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.14	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.92	-	-	-	-
Pot Cap-1 Maneuver	0	314	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	314	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	19.6	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	314	-	-		
HCM Lane V/C Ratio	-	0.218	-	-		
HCM Control Delay (s)	-	19.6	-	-		
HCM Lane LOS	-	C	-	-		
HCM 95th %tile Q(veh)	-	0.8	-	-		

HCM 2010 Signalized Intersection Capacity Analysis

600: Rand Road & Access E/Private Driveway

05/24/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	5	90	30	5	45	160	995	35	35	1125	25
Future Volume (veh/h)	130	5	90	30	5	45	160	995	35	35	1125	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	137	5	95	32	5	47	168	1047	37	37	1184	26
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	296	13	256	252	26	246	408	2032	72	353	2748	60
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.07	0.58	0.58	0.02	0.54	0.54
Ln Grp Delay, s/veh	30.5	0.0	27.0	28.1	0.0	25.2	7.3	10.4	10.3	7.6	10.3	10.9
Ln Grp LOS	C		C	C		C	A	B	B	A	B	B
Approach Vol, veh/h		237			84			1252			1247	
Approach Delay, s/veh		29.1			26.3			9.9			10.5	
Approach LOS		C			C			A			B	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs		1	2		4	5	6		8			
Case No		1.1	4.0		6.0	1.1	4.0		6.0			
Phs Duration (G+Y+Rc), s		5.0	45.9		17.6	8.2	42.8		17.6			
Change Period (Y+Rc), s		3.5	6.0		6.0	3.5	6.0		6.0			
Max Green (Gmax), s		4.5	52.0		18.0	10.5	46.0		18.0			
Max Allow Headway (MAH), s		3.8	9.1		6.7	3.8	9.1		7.1			
Max Q Clear (g_c+I1), s		2.6	14.3		10.6	4.7	11.6		7.4			
Green Ext Time (g_e), s		0.0	25.2		1.1	0.2	25.2		0.4			
Prob of Phs Call (p_c)		0.51	1.00		1.00	0.96	1.00		1.00			
Prob of Max Out (p_x)		1.00	0.59		0.79	0.17	0.67		0.16			
Left-Turn Movement Data												
Assigned Mvmt		1			7	5			3			
Mvmt Sat Flow, veh/h		1774			1347	1774			1290			
Through Movement Data												
Assigned Mvmt			2		4		6		8			
Mvmt Sat Flow, veh/h			3487		80		5121		154			
Right-Turn Movement Data												
Assigned Mvmt			12		14		16		18			
Mvmt Sat Flow, veh/h			123		1516		112		1452			
Left Lane Group Data												
Assigned Mvmt		1	0	0	7	5	0	0	3			
Lane Assignment		(Pr/Pm)			(Pr/Pm)							

HCM 2010 Signalized Intersection Capacity Analysis
600: Rand Road & Access E/Private Driveway

05/24/2019

Lanes in Grp	1	0	0	1	1	0	0	1
Grp Vol (v), veh/h	37	0	0	137	168	0	0	32
Grp Sat Flow (s), veh/h/ln	1774	0	0	1347	1774	0	0	1290
Q Serve Time (g_s), s	0.6	0.0	0.0	6.7	2.7	0.0	0.0	1.5
Cycle Q Clear Time (g_c), s	0.6	0.0	0.0	8.6	2.7	0.0	0.0	5.4
Perm LT Sat Flow (s_l), veh/h/ln	518	0	0	1347	460	0	0	1290
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	36.8	0.0	0.0	11.6	38.4	0.0	0.0	11.6
Perm LT Serve Time (g_u), s	27.7	0.0	0.0	9.7	27.2	0.0	0.0	7.8
Perm LT Q Serve Time (g_ps), s	0.7	0.0	0.0	6.7	6.5	0.0	0.0	1.5
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Lane Grp Cap (c), veh/h	353	0	0	296	408	0	0	252
V/C Ratio (X)	0.10	0.00	0.00	0.46	0.41	0.00	0.00	0.13
Avail Cap (c_a), veh/h	431	0	0	421	559	0	0	372
Upstream Filter (I)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	7.5	0.0	0.0	28.1	6.7	0.0	0.0	27.6
Incr Delay (d2), s/veh	0.1	0.0	0.0	2.4	0.7	0.0	0.0	0.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	7.6	0.0	0.0	30.5	7.3	0.0	0.0	28.1
1st-Term Q (Q1), veh/ln	0.3	0.0	0.0	2.5	1.3	0.0	0.0	0.6
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.80	0.00	0.00	1.80	1.80	0.00	0.00	1.80
%ile Back of Q (95%), veh/ln	0.6	0.0	0.0	4.8	2.4	0.0	0.0	1.1
%ile Storage Ratio (RQ%)	0.10	0.00	0.00	0.81	0.27	0.00	0.00	0.23
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T			T				
Lanes in Grp	0	1	0	0	0	2	0	0
Grp Vol (v), veh/h	0	531	0	0	0	784	0	0
Grp Sat Flow (s), veh/h/ln	0	1770	0	0	0	1695	0	0
Q Serve Time (g_s), s	0.0	12.3	0.0	0.0	0.0	9.6	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	12.3	0.0	0.0	0.0	9.6	0.0	0.0
Lane Grp Cap (c), veh/h	0	1031	0	0	0	1819	0	0
V/C Ratio (X)	0.00	0.52	0.00	0.00	0.00	0.43	0.00	0.00
Avail Cap (c_a), veh/h	0	1342	0	0	0	2274	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	8.5	0.0	0.0	0.0	9.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.8	0.0	0.0	0.0	0.7	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	10.4	0.0	0.0	0.0	10.3	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	5.9	0.0	0.0	0.0	4.5	0.0	0.0

HCM 2010 Signalized Intersection Capacity Analysis

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2nd-Term Q (Q2), veh/ln	0.0	0.5	0.0	0.0	0.0	0.2	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.65	0.00	1.00	0.00	1.76	0.00	1.00
%ile Back of Q (95%), veh/ln	0.0	10.6	0.0	0.0	0.0	8.2	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.44	0.00	0.00	0.00	0.57	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data

Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		T+R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	553	0	100	0	426	0	52
Grp Sat Flow (s), veh/h/ln	0	1841	0	1595	0	1843	0	1607
Q Serve Time (g_s), s	0.0	12.3	0.0	3.8	0.0	9.6	0.0	1.9
Cycle Q Clear Time (g_c), s	0.0	12.3	0.0	3.8	0.0	9.6	0.0	1.9
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.07	0.00	0.95	0.00	0.06	0.00	0.90
Lane Grp Cap (c), veh/h	0	1073	0	270	0	989	0	272
V/C Ratio (X)	0.00	0.52	0.00	0.37	0.00	0.43	0.00	0.19
Avail Cap (c_a), veh/h	0	1396	0	419	0	1236	0	422
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	8.5	0.0	25.2	0.0	9.6	0.0	24.5
Incr Delay (d2), s/veh	0.0	1.8	0.0	1.8	0.0	1.4	0.0	0.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	10.3	0.0	27.0	0.0	10.9	0.0	25.2
1st-Term Q (Q1), veh/ln	0.0	6.1	0.0	1.7	0.0	4.9	0.0	0.8
2nd-Term Q (Q2), veh/ln	0.0	0.5	0.0	0.1	0.0	0.4	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.64	0.00	1.80	0.00	1.72	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	10.9	0.0	3.2	0.0	9.0	0.0	1.6
%ile Storage Ratio (RQ%)	0.00	0.45	0.00	0.42	0.00	0.62	0.00	0.38
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary

HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary

600: Rand Road & Access E/Private Driveway

05/24/2019

																
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations																
Traffic Volume (veh/h)	130	5	90	30	5	45	160	995	35	35	1125	25				
Future Volume (veh/h)	130	5	90	30	5	45	160	995	35	35	1125	25				
Number	7	4	14	3	8	18	5	2	12	1	6	16				
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0				
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00				
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900				
Adj Flow Rate, veh/h	137	5	95	32	5	47	168	1047	37	37	1184	26				
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	3	0				
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95				
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2				
Cap, veh/h	296	13	256	252	26	246	408	2032	72	353	2748	60				
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.07	0.58	0.58	0.02	0.54	0.54				
Sat Flow, veh/h	1347	80	1516	1290	154	1452	1774	3487	123	1774	5121	112				
Grp Volume(v), veh/h	137	0	100	32	0	52	168	531	553	37	784	426				
Grp Sat Flow(s),veh/h/ln	1347	0	1595	1290	0	1607	1774	1770	1841	1774	1695	1843				
Q Serve(g_s), s	6.7	0.0	3.8	1.5	0.0	1.9	2.7	12.3	12.3	0.6	9.6	9.6				
Cycle Q Clear(g_c), s	8.6	0.0	3.8	5.4	0.0	1.9	2.7	12.3	12.3	0.6	9.6	9.6				
Prop In Lane	1.00		0.95	1.00		0.90	1.00		0.07	1.00		0.06				
Lane Grp Cap(c), veh/h	296	0	270	252	0	272	408	1031	1073	353	1819	989				
V/C Ratio(X)	0.46	0.00	0.37	0.13	0.00	0.19	0.41	0.52	0.52	0.10	0.43	0.43				
Avail Cap(c_a), veh/h	421	0	419	372	0	422	559	1342	1396	431	2274	1236				
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Uniform Delay (d), s/veh	28.1	0.0	25.2	27.6	0.0	24.5	6.7	8.5	8.5	7.5	9.6	9.6				
Incr Delay (d2), s/veh	2.4	0.0	1.8	0.5	0.0	0.7	0.7	1.8	1.8	0.1	0.7	1.4				
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
%ile BackOfQ(95%),veh/ln	4.8	0.0	3.2	1.1	0.0	1.6	2.4	10.6	10.9	0.6	8.2	9.0				
LnGrp Delay(d),s/veh	30.5	0.0	27.0	28.1	0.0	25.2	7.3	10.4	10.3	7.6	10.3	10.9				
LnGrp LOS	C		C	C		C	A	B	B	A	B	B				
Approach Vol, veh/h	237					84		1252		1247						
Approach Delay, s/veh	29.1					26.3		9.9		10.5						
Approach LOS	C					C		A		B						
Timer	1	2	3	4	5	6	7	8								
Assigned Phs	1	2			4	5	6	8								
Phs Duration (G+Y+Rc), s	5.0	45.9			17.6	8.2	42.8	17.6								
Change Period (Y+Rc), s	3.5	6.0			6.0	3.5	6.0	6.0								
Max Green Setting (Gmax), s	4.5	52.0			18.0	10.5	46.0	18.0								
Max Q Clear Time (g_c+I1), s	2.6	14.3			10.6	4.7	11.6	7.4								
Green Ext Time (p_c), s	0.0	25.2			1.1	0.2	25.2	0.4								
Intersection Summary																
HCM 2010 Ctrl Delay				12.3												
HCM 2010 LOS				B												

DATA FROM THE ITE MANUAL TRIP GENERATION, TENTH EDITION

Land Use: 820

Shopping Center

Description

A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands. Factory outlet center (Land Use 823) is a related use.

Additional Data

Shopping centers, including neighborhood centers, community centers, regional centers, and super regional centers, were surveyed for this land use. Some of these centers contained non-merchandising facilities, such as office buildings, movie theaters, restaurants, post offices, banks, health clubs, and recreational facilities (for example, ice skating rinks or indoor miniature golf courses).

Many shopping centers, in addition to the integrated unit of shops in one building or enclosed around a mall, include outparcels (peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points). These buildings are typically drive-in banks, retail stores, restaurants, or small offices. Although the data herein do not indicate which of the centers studied included peripheral buildings, it can be assumed that some of the data show their effect.

The vehicle trips generated at a shopping center are based upon the total GLA of the center. In cases of smaller centers without an enclosed mall or peripheral buildings, the GLA could be the same as the gross floor area of the building.

Time-of-day distribution data for this land use are presented in Appendix A. For the 10 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:45 a.m. and 12:45 p.m. and 12:15 and 1:15 p.m., respectively.

The average numbers of person trips per vehicle trip at the 27 general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.31 during Weekday, AM Peak Hour of Generator
- 1.43 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.46 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), British Columbia (CAN), California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nevada, New Jersey, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

Source Numbers

105, 110, 154, 156, 159, 186, 190, 198, 199, 202, 204, 211, 213, 239, 251, 259, 260, 269, 294, 295, 299, 300, 301, 304, 305, 307, 308, 309, 310, 311, 314, 315, 316, 317, 319, 358, 365, 376, 385, 390, 400, 404, 414, 420, 423, 428, 437, 440, 442, 444, 446, 507, 562, 580, 598, 629, 658, 702, 715, 728, 868, 870, 871, 880, 899, 908, 912, 915, 926, 936, 944, 946, 960, 961, 962, 973, 974, 978

Shopping Center (820)

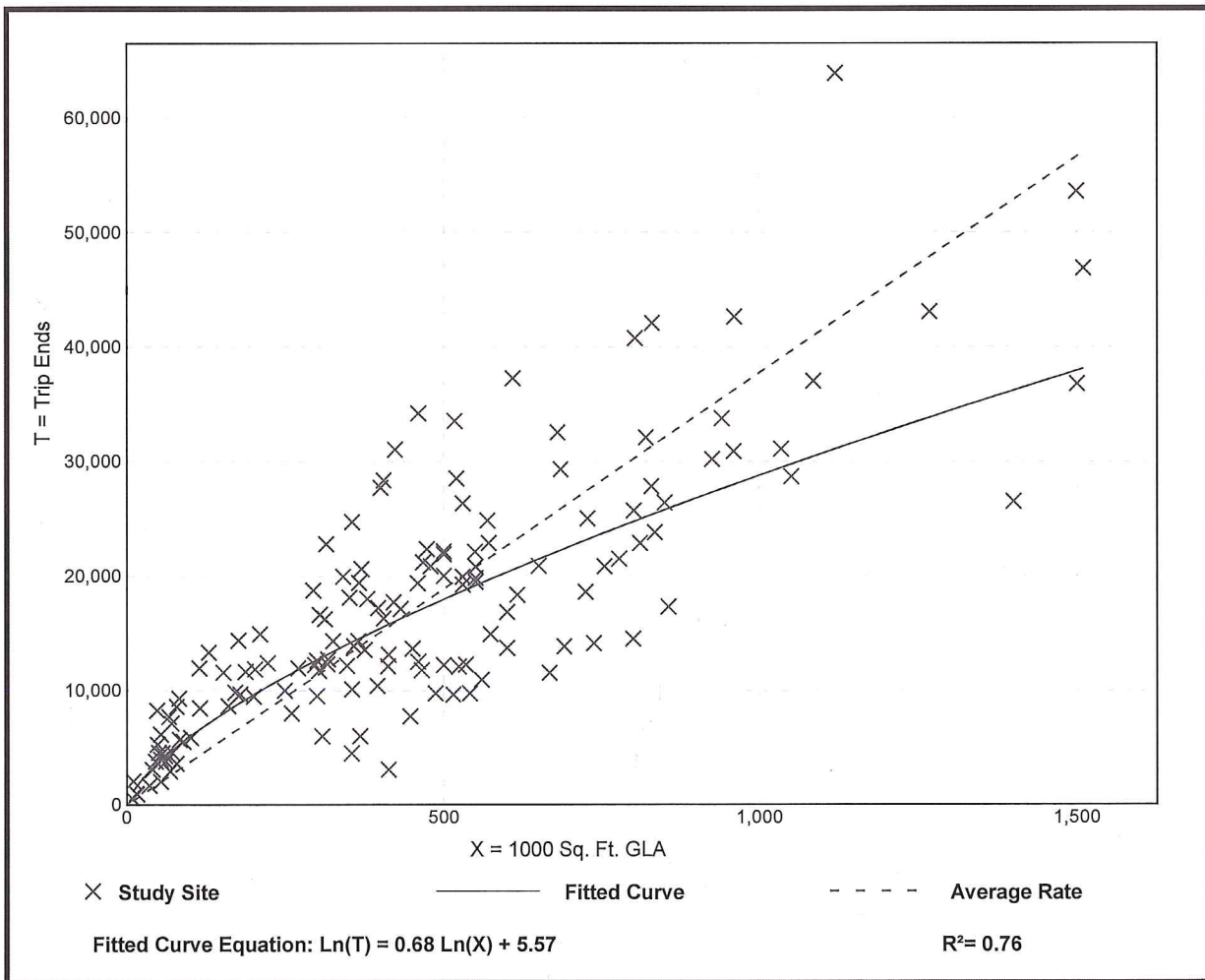
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 147
1000 Sq. Ft. GLA: 453
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
37.75	7.42 - 207.98	16.41

Data Plot and Equation



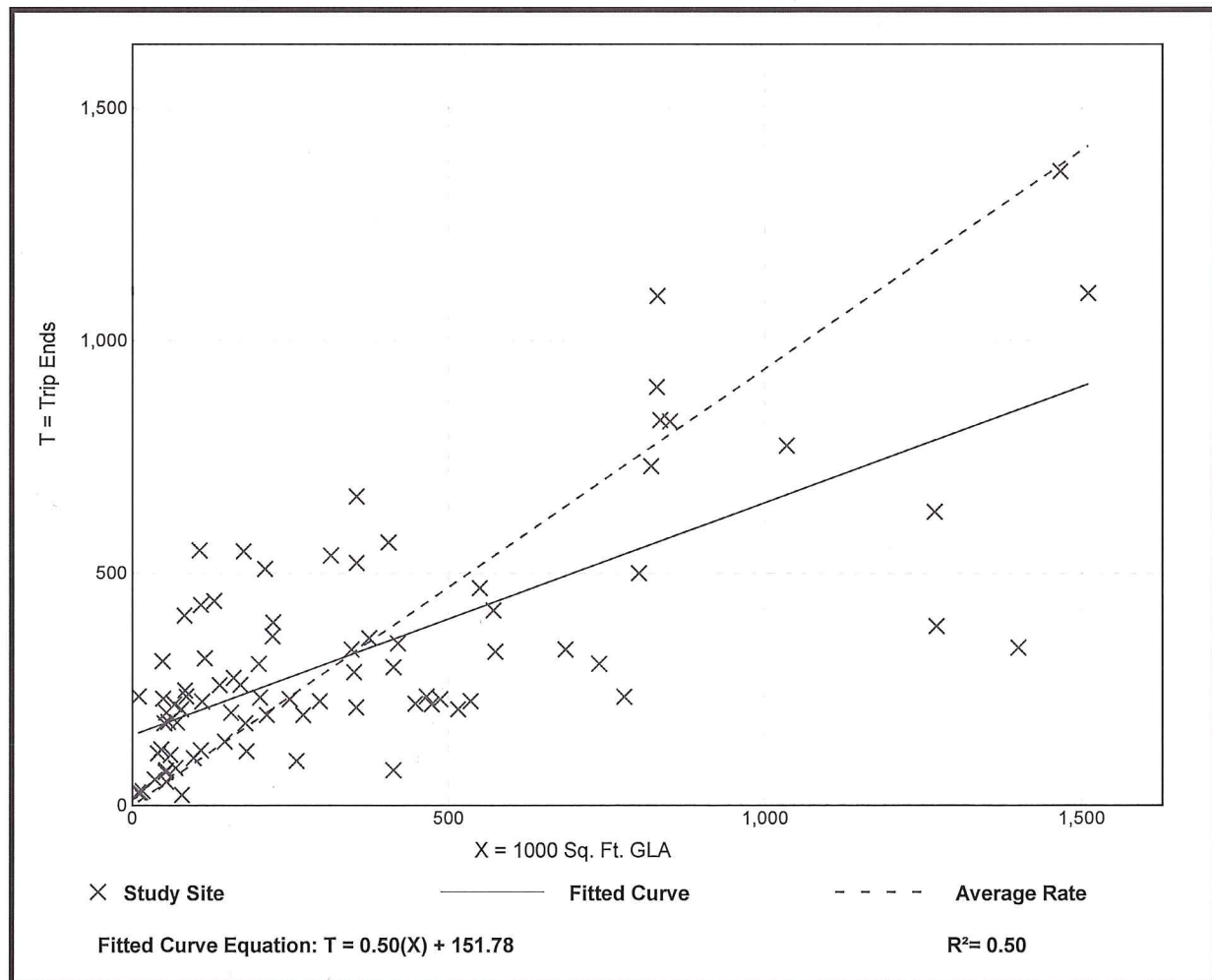
Shopping Center (820)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 84
 1000 Sq. Ft. GLA: 351
 Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.94	0.18 - 23.74	0.87

Data Plot and Equation



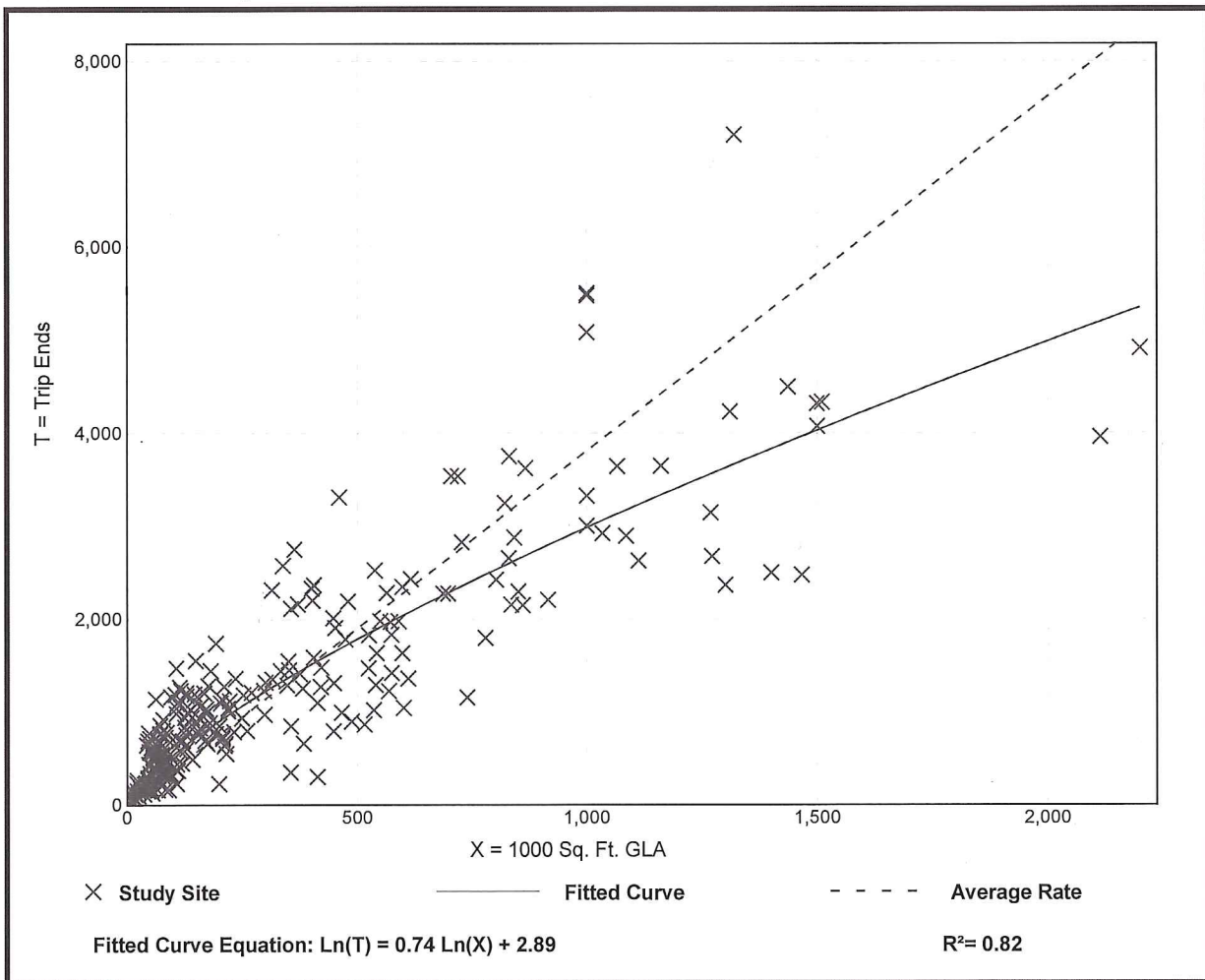
Shopping Center (820)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 261
 1000 Sq. Ft. GLA: 327
 Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.81	0.74 - 18.69	2.04

Data Plot and Equation



Shopping Center (820)

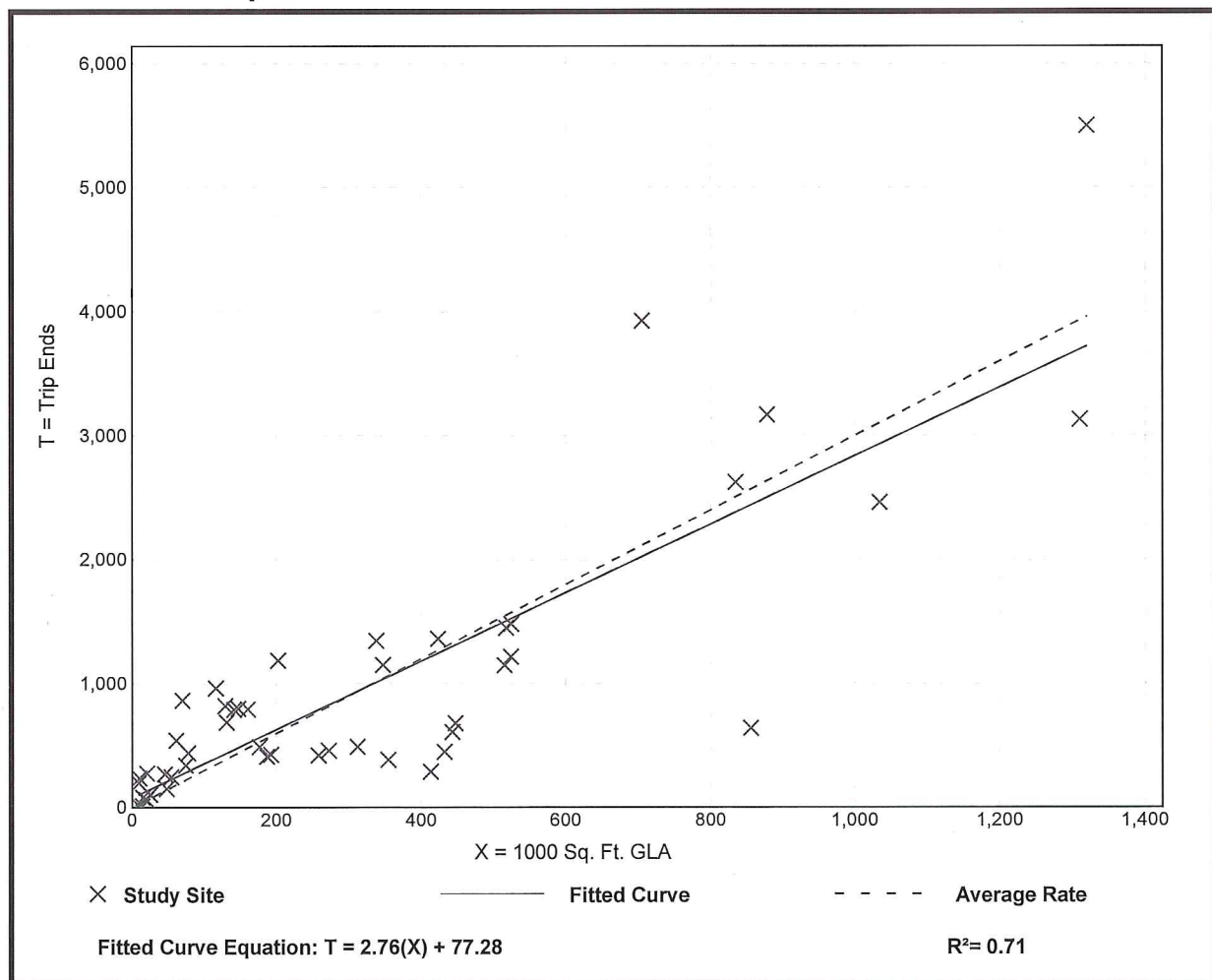
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 47
1000 Sq. Ft. GLA: 323
Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.00	0.70 - 23.74	1.85

Data Plot and Equation



Shopping Center (820)

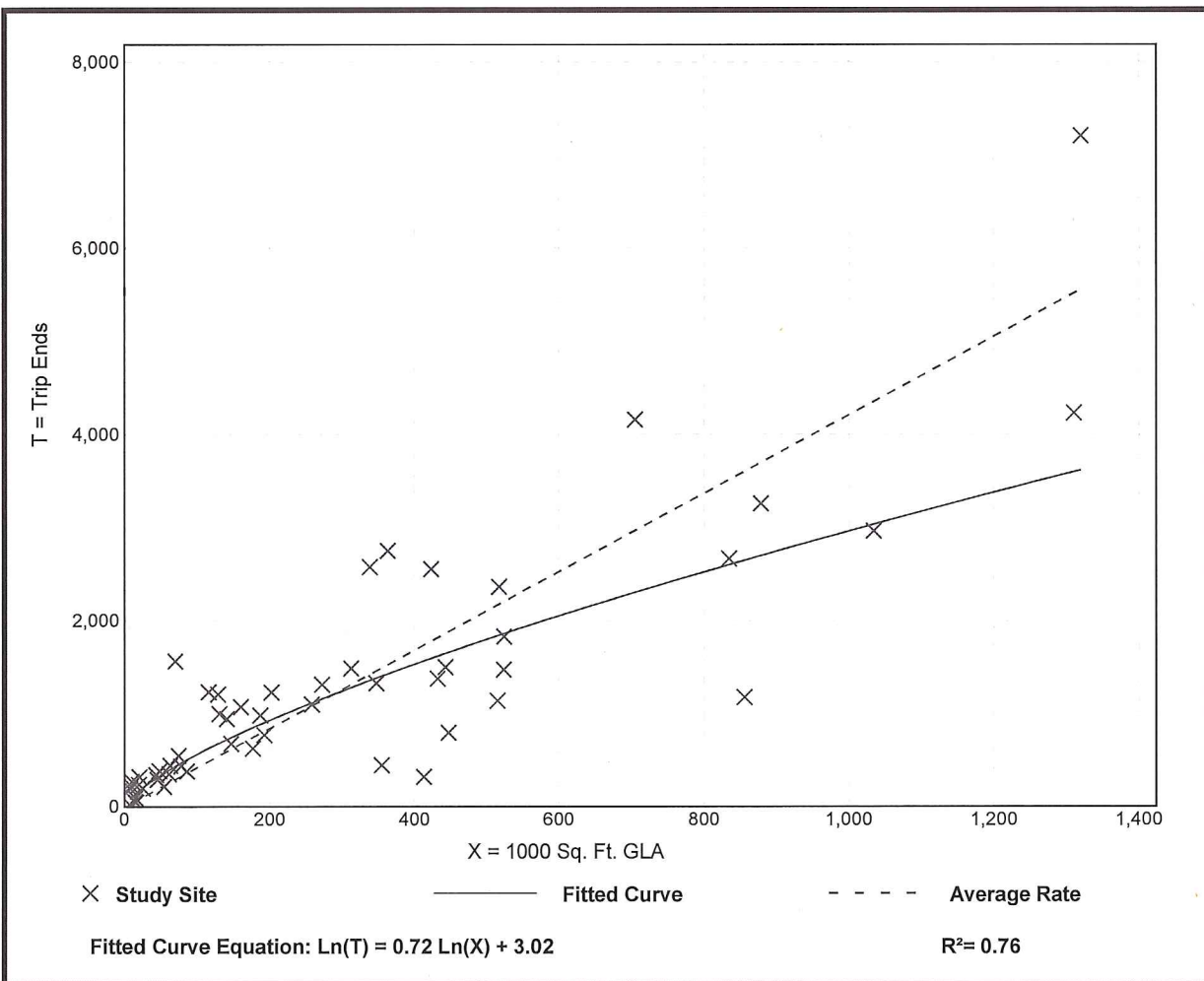
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 53
1000 Sq. Ft. GLA: 298
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
4.21	0.78 - 27.27	2.47

Data Plot and Equation



Shopping Center (820)

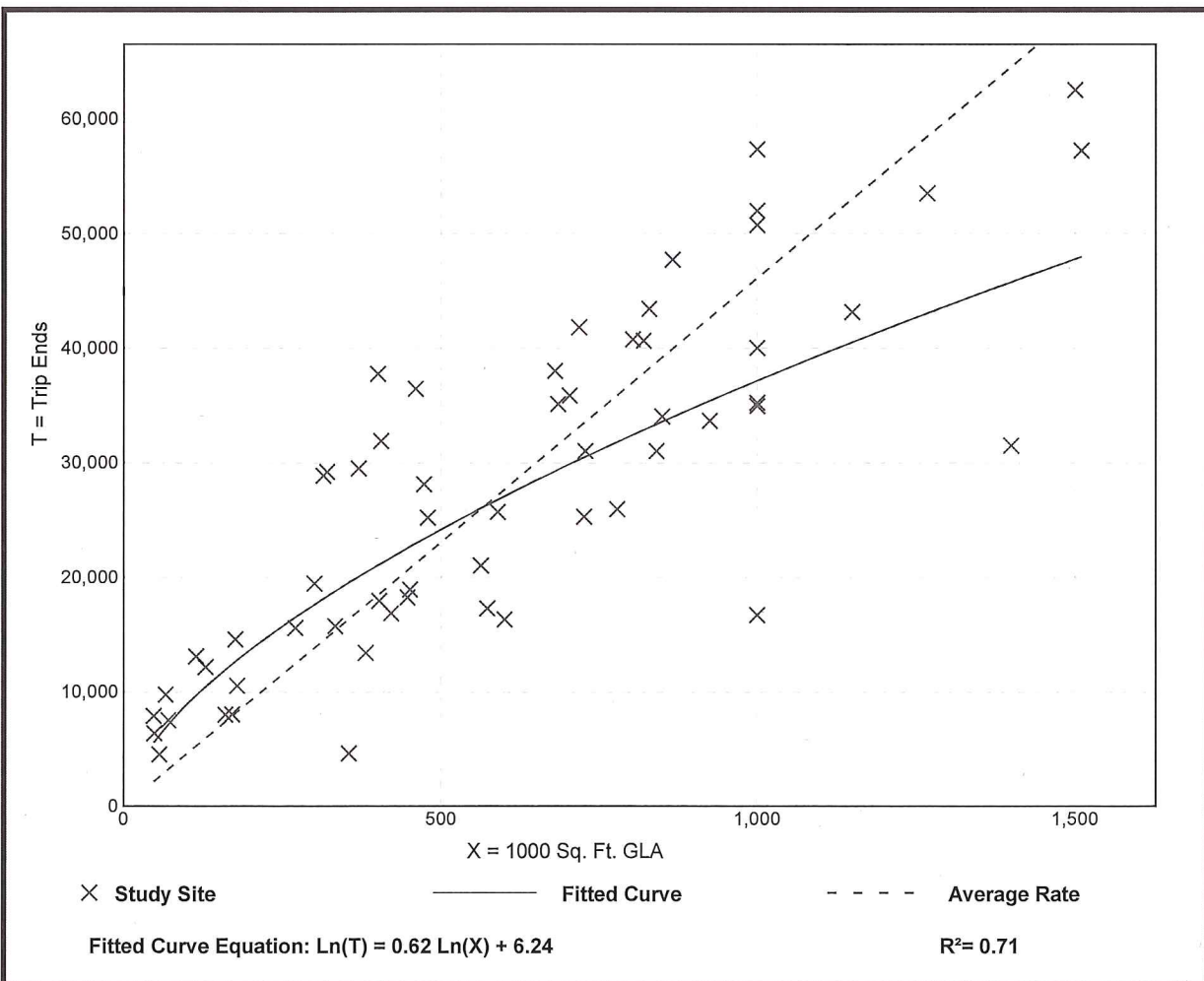
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Saturday

Setting/Location: General Urban/Suburban
Number of Studies: 58
1000 Sq. Ft. GLA: 602
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
46.12	13.01 - 167.89	17.91

Data Plot and Equation



Shopping Center (820)

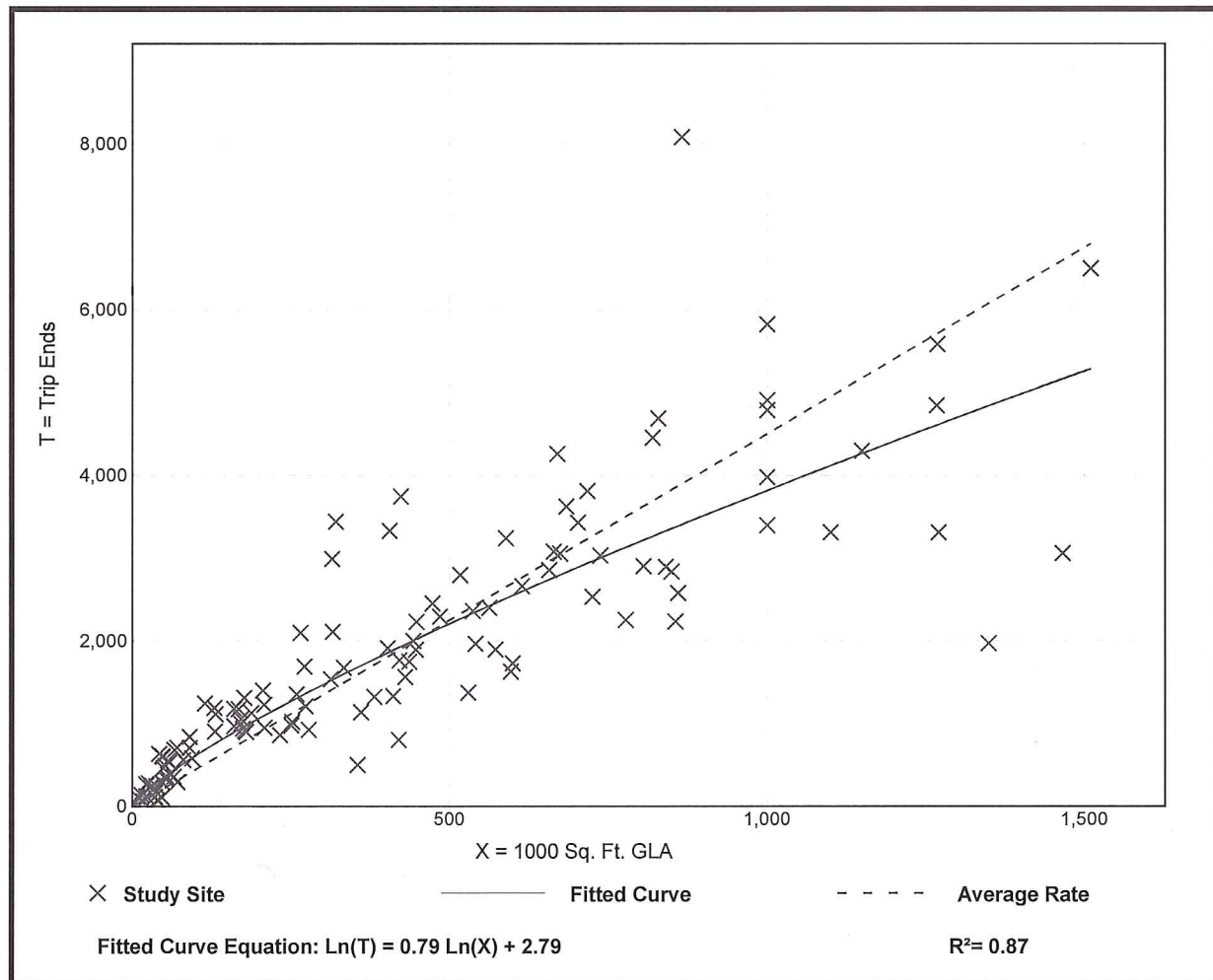
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 119
1000 Sq. Ft. GLA: 416
Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
4.50	1.42 - 15.10	1.88

Data Plot and Equation



Shopping Center (820)

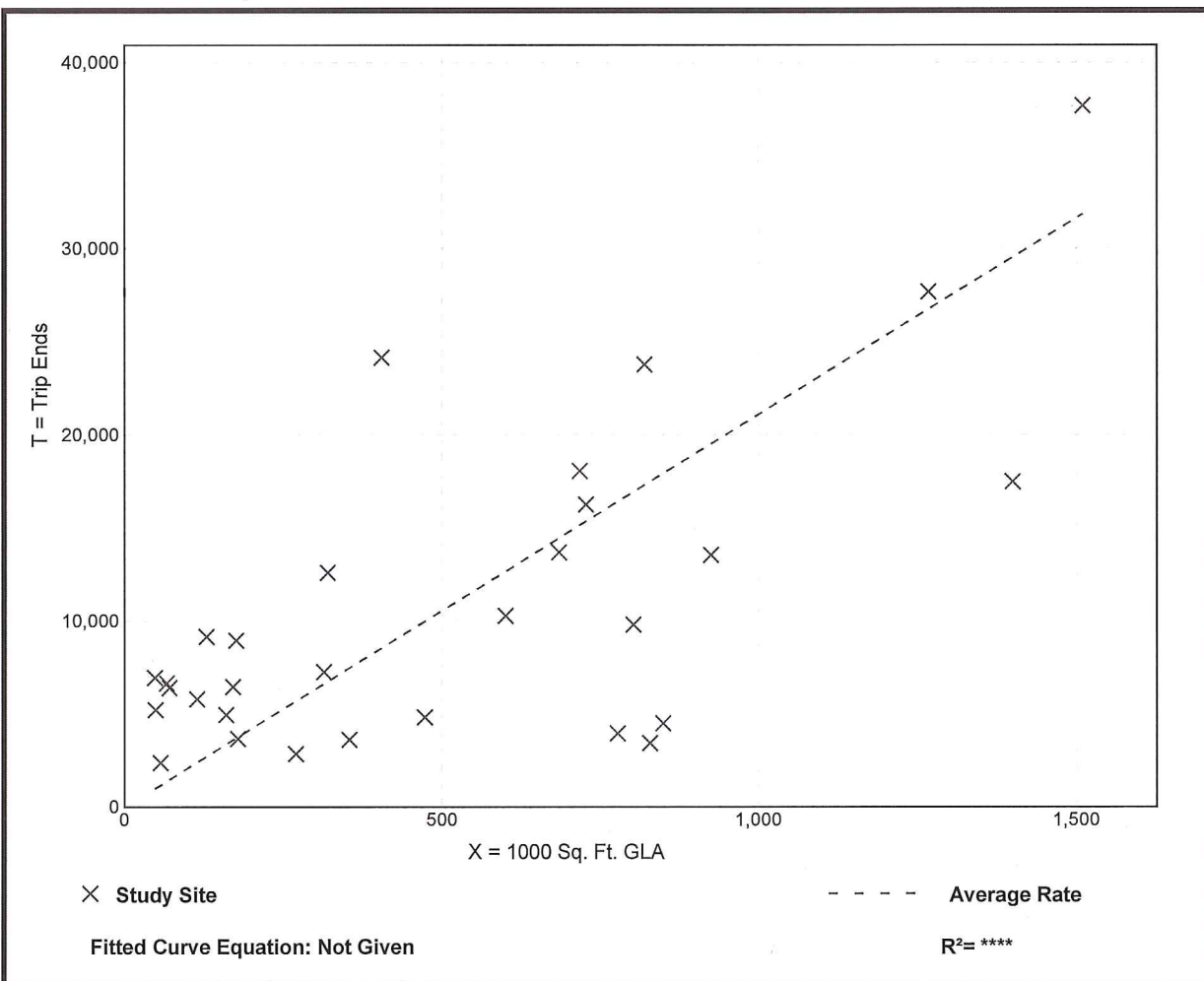
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Sunday

Setting/Location: General Urban/Suburban
Number of Studies: 30
1000 Sq. Ft. GLA: 509
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
21.10	4.15 - 148.15	17.18

Data Plot and Equation



Shopping Center (820)

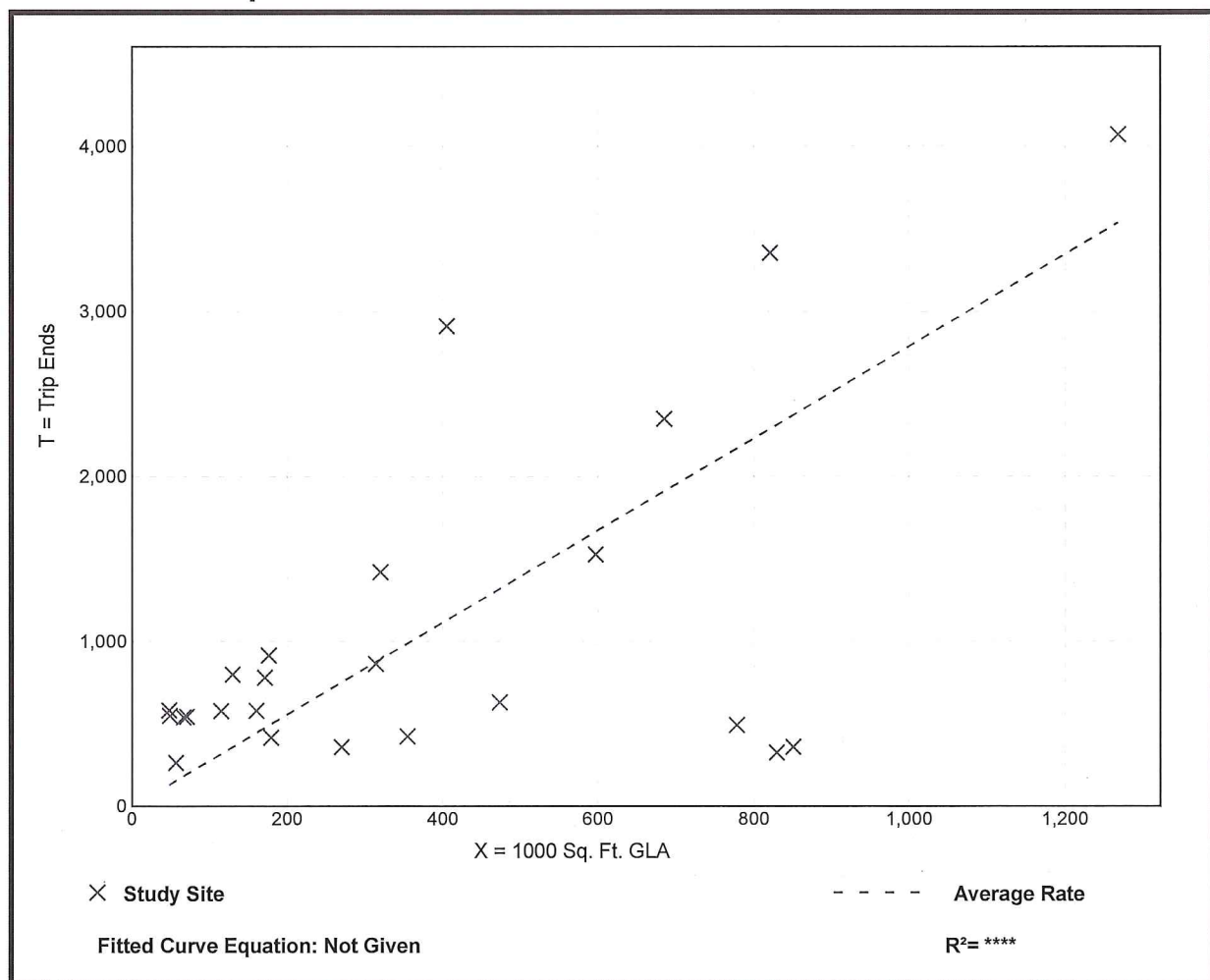
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 24
1000 Sq. Ft. GLA: 382
Directional Distribution: 49% entering, 51% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
2.79	0.39 - 12.40	2.18

Data Plot and Equation



Shopping Center (820)

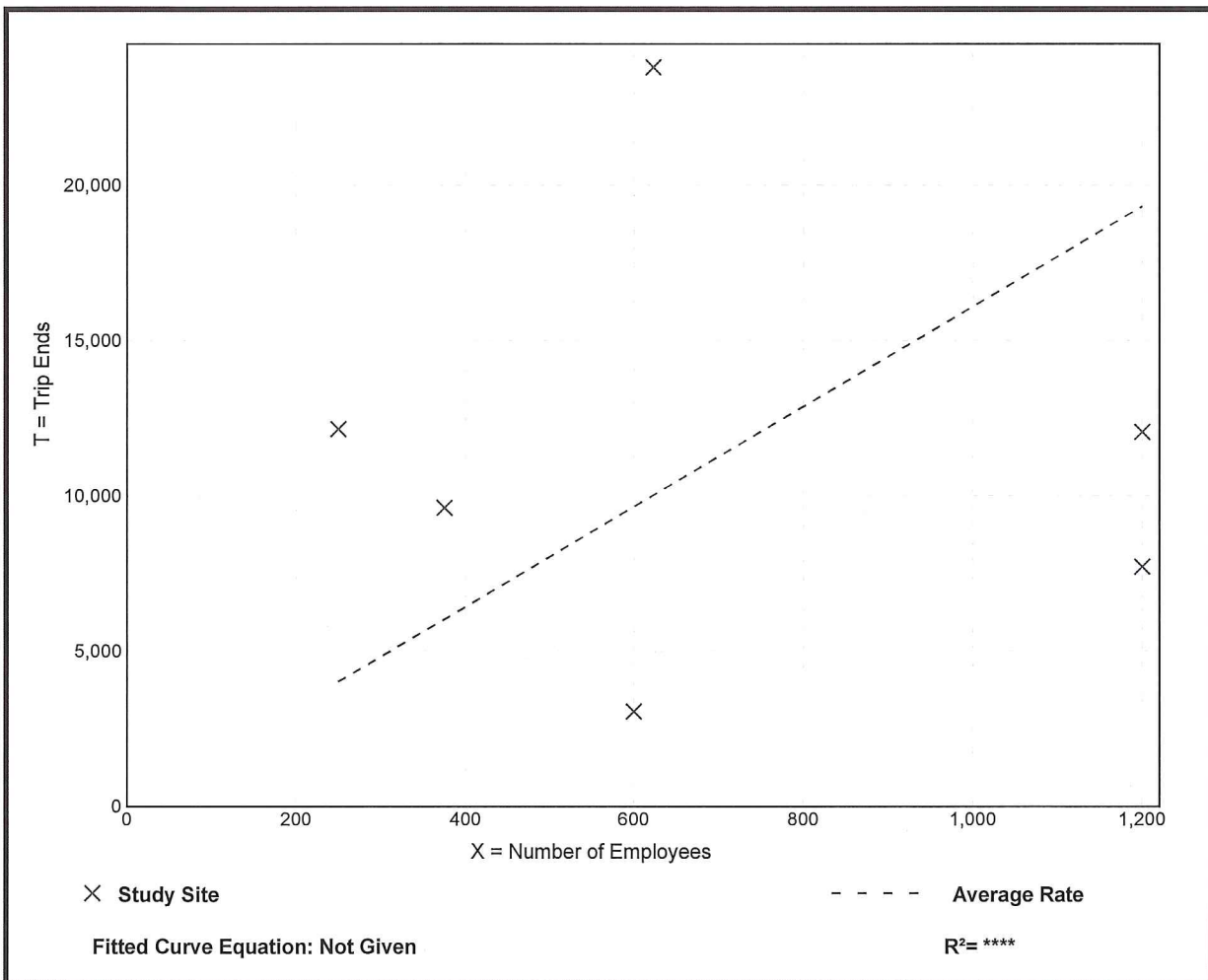
Vehicle Trip Ends vs: Employees
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. Num. of Employees: 708
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
16.11	5.11 - 48.63	15.33

Data Plot and Equation



Shopping Center (820)

Vehicle Trip Ends vs: Employees

On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 5

Avg. Num. of Employees: 610

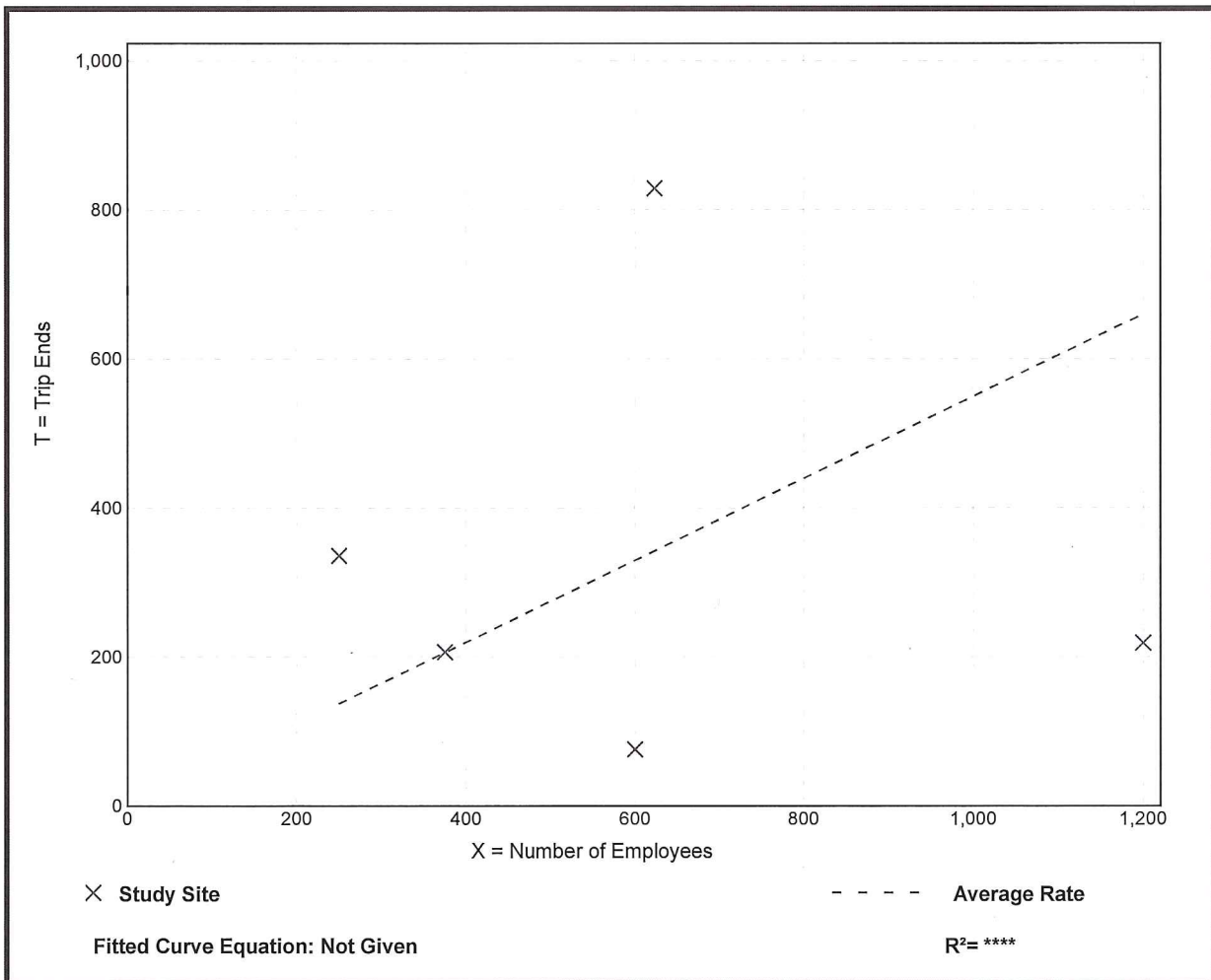
Directional Distribution: 64% entering, 36% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.55	0.13 - 1.34	0.58

Data Plot and Equation

Caution – Small Sample Size



Shopping Center (820)

Vehicle Trip Ends vs: Employees

On a: Weekday,

Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 6

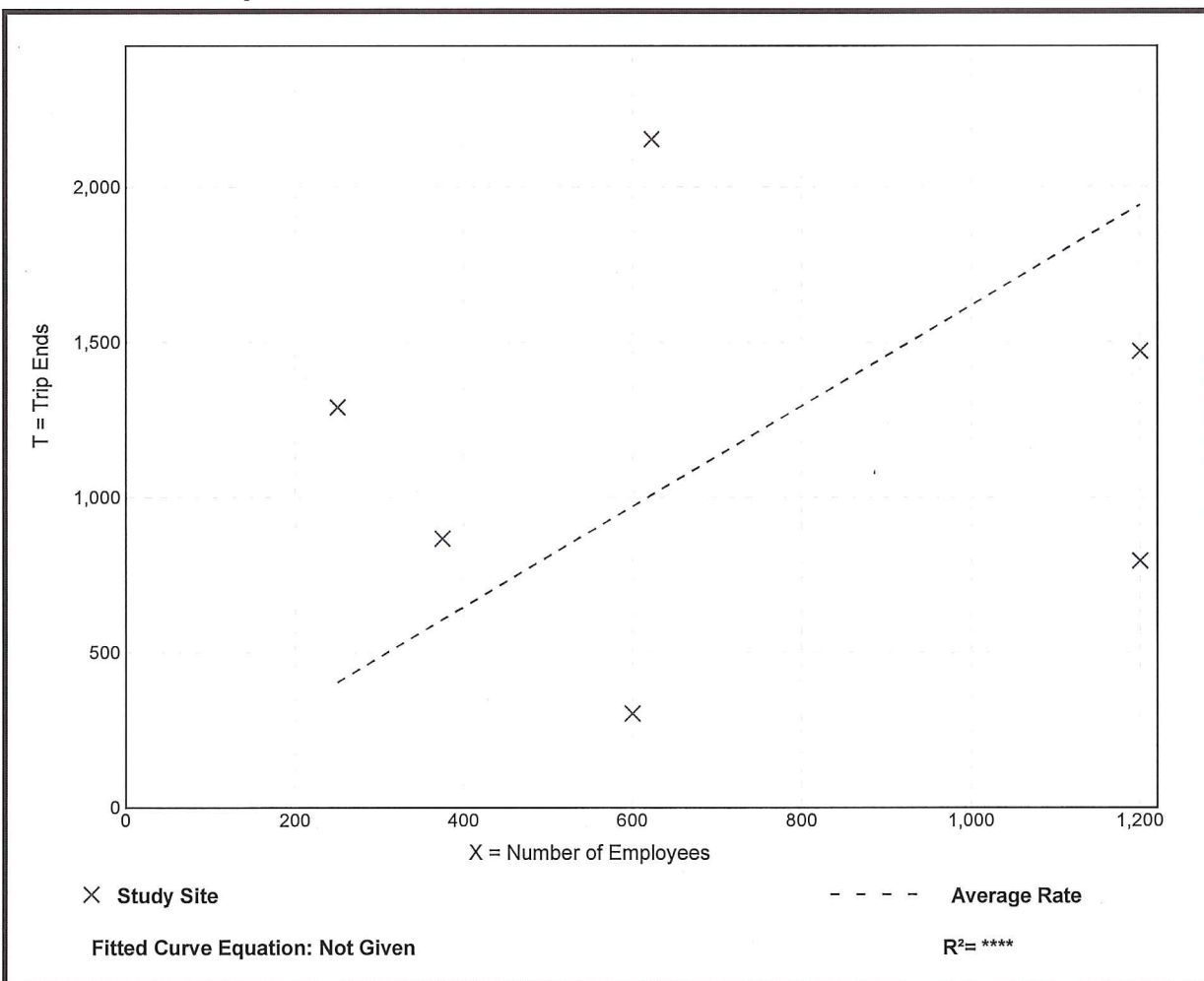
Avg. Num. of Employees: 708

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
1.62	0.51 - 5.16	1.45

Data Plot and Equation



Shopping Center (820)

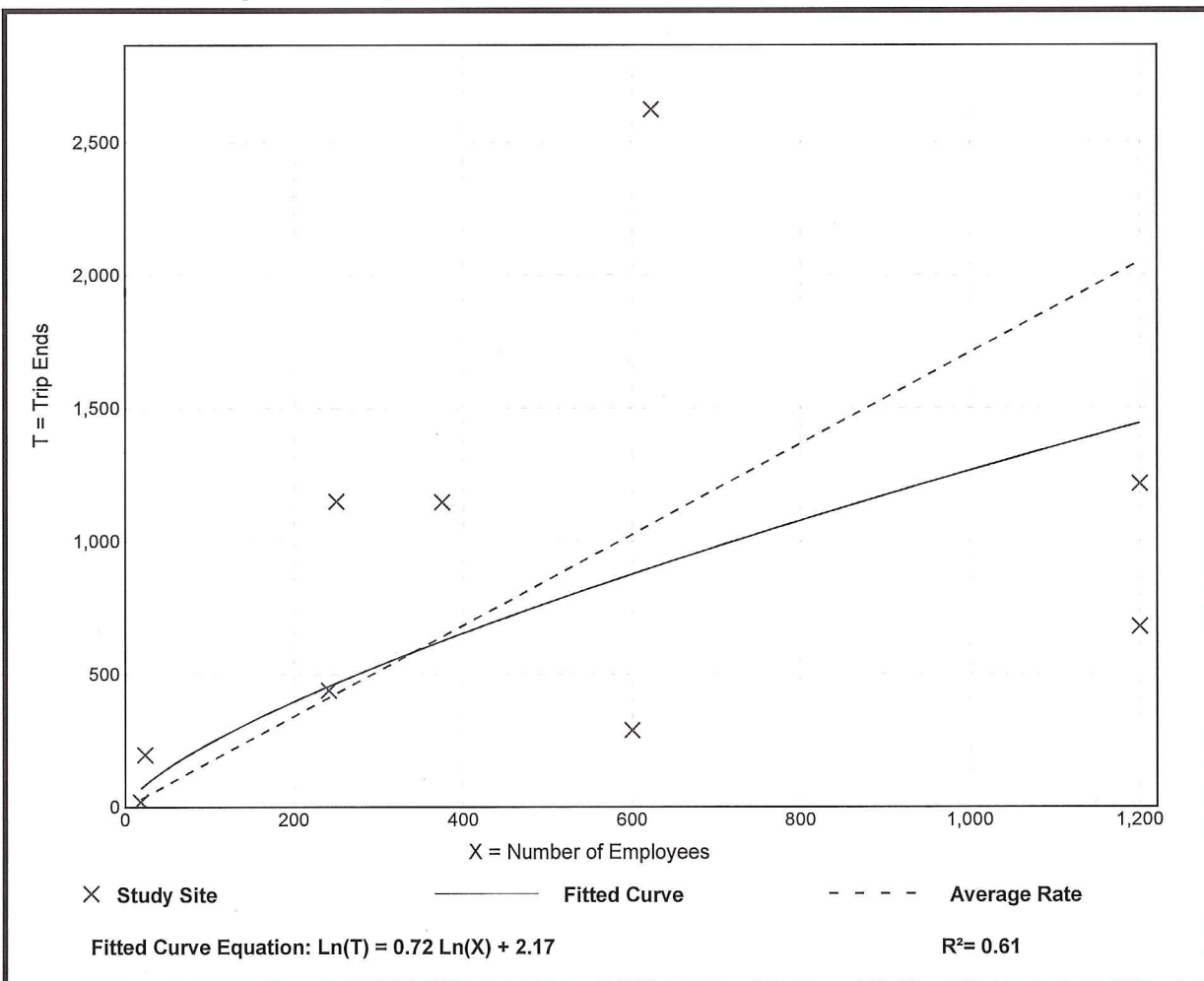
Vehicle Trip Ends vs: Employees
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 9
Avg. Num. of Employees: 503
Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
1.71	0.48 - 8.57	1.64

Data Plot and Equation



Shopping Center (820)

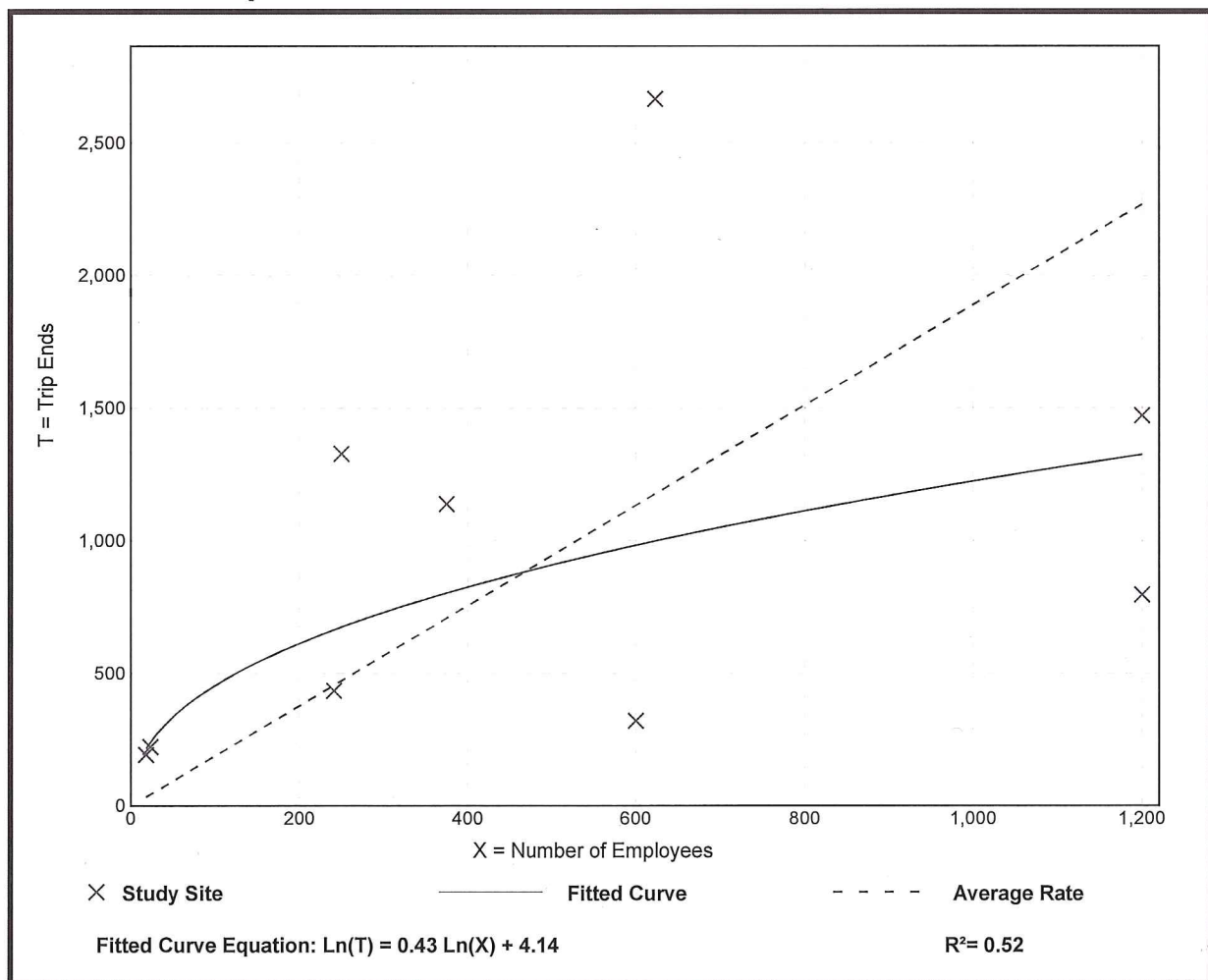
Vehicle Trip Ends vs: Employees
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
 Number of Studies: 9
 Avg. Num. of Employees: 503
 Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
1.89	0.54 - 10.72	1.81

Data Plot and Equation



Shopping Center (820)

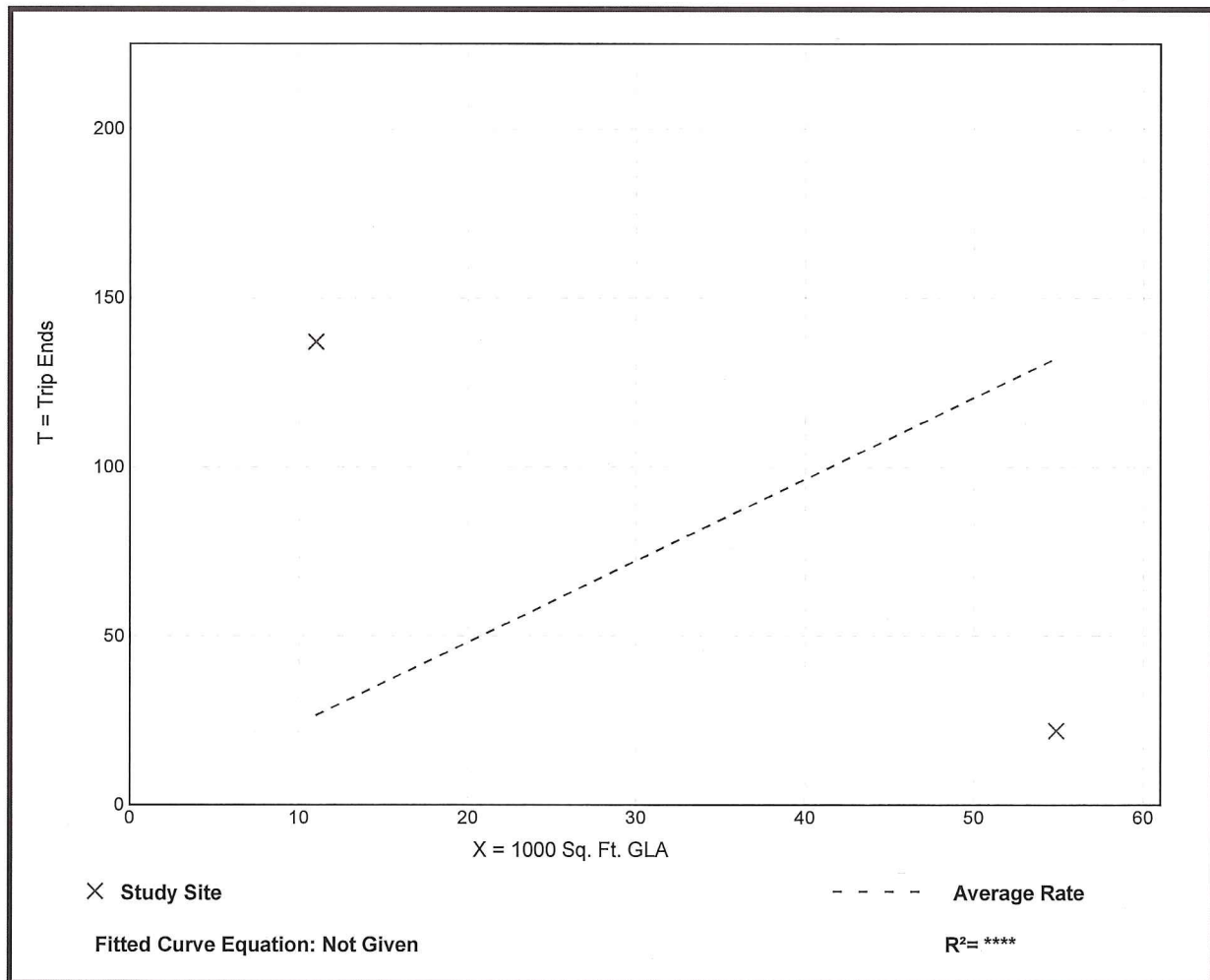
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: Dense Multi-Use Urban
 Number of Studies: 2
 1000 Sq. Ft. GLA: 33
 Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
2.41	0.40 - 12.45	*

Data Plot and Equation

Caution – Small Sample Size



Shopping Center (820)

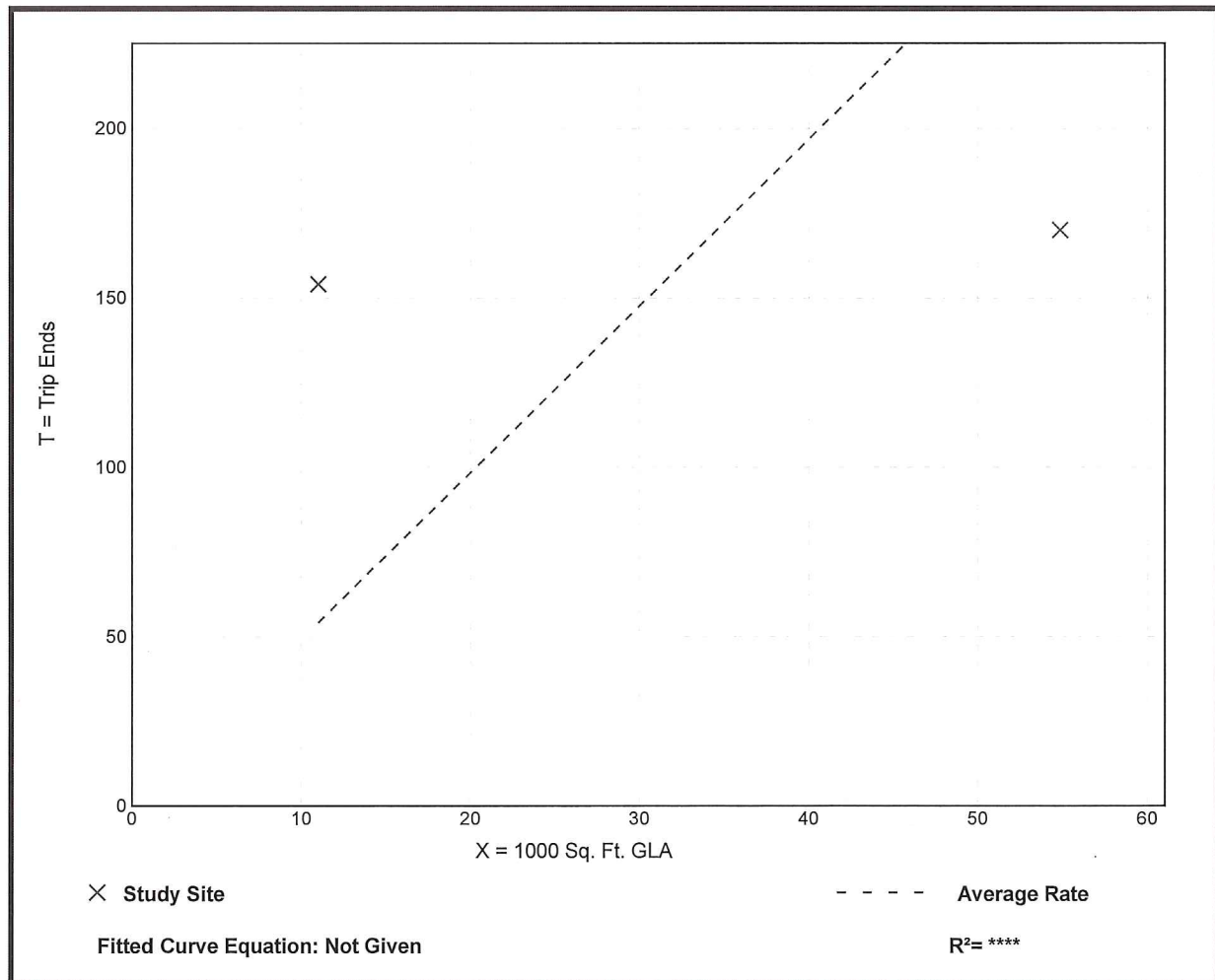
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: Dense Multi-Use Urban
 Number of Studies: 2
 1000 Sq. Ft. GLA: 33
 Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
4.92	3.10 - 13.99	*

Data Plot and Equation

Caution – Small Sample Size



Shopping Center (820)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Saturday, Peak Hour of Generator

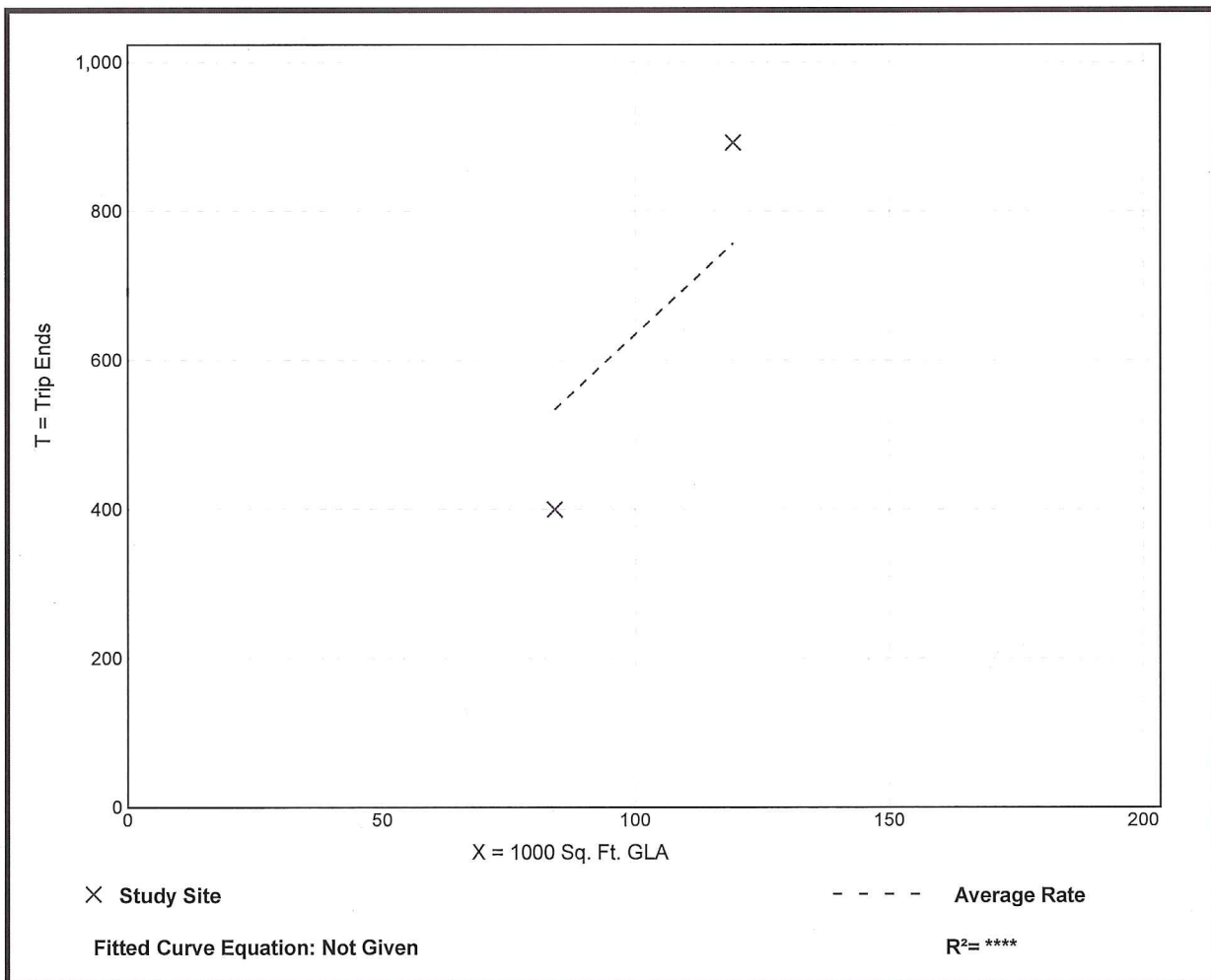
Setting/Location: Dense Multi-Use Urban
Number of Studies: 2
1000 Sq. Ft. GLA: 102
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
6.35	4.76 - 7.48	*

Data Plot and Equation

Caution – Small Sample Size



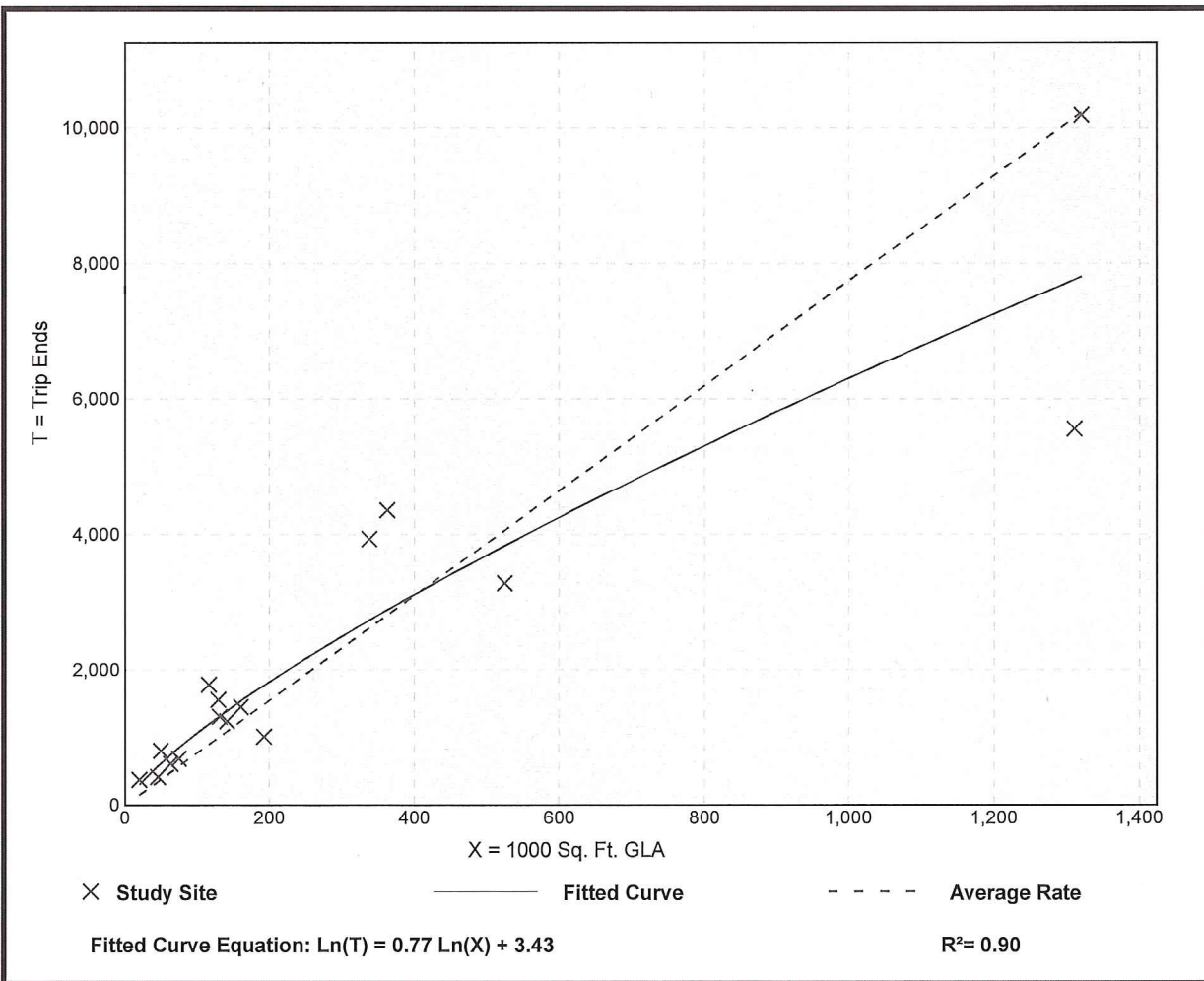
Shopping Center (820)

Person Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 16
 1000 Sq. Ft. GLA: 311
 Directional Distribution: 50% entering, 50% exiting

Person Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
7.75	4.24 - 19.12	3.19

Data Plot and Equation



Shopping Center (820)

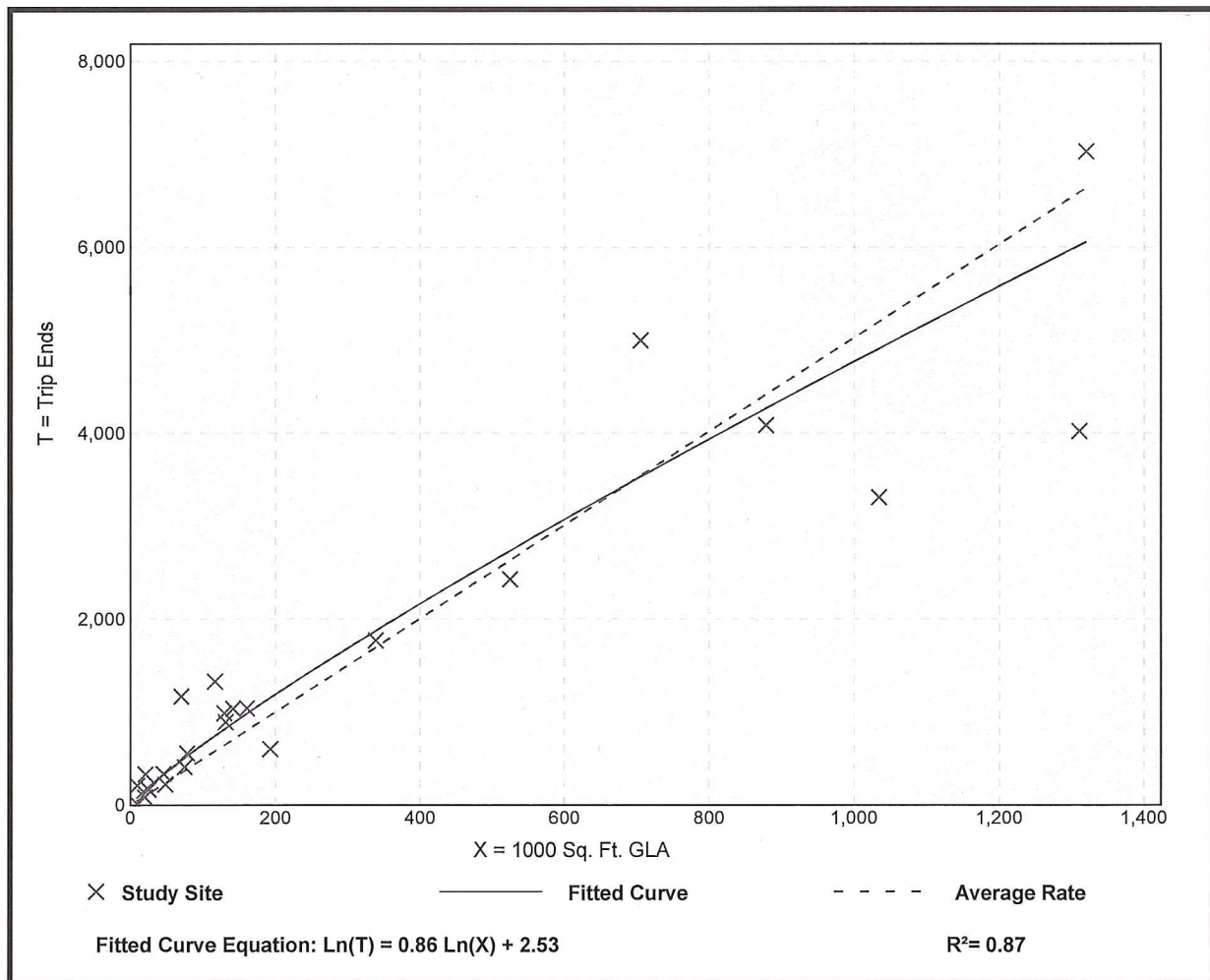
Person Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
 Number of Studies: 23
 1000 Sq. Ft. GLA: 321
 Directional Distribution: 54% entering, 46% exiting

Person Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
5.03	2.52 - 23.03	2.25

Data Plot and Equation



Shopping Center (820)

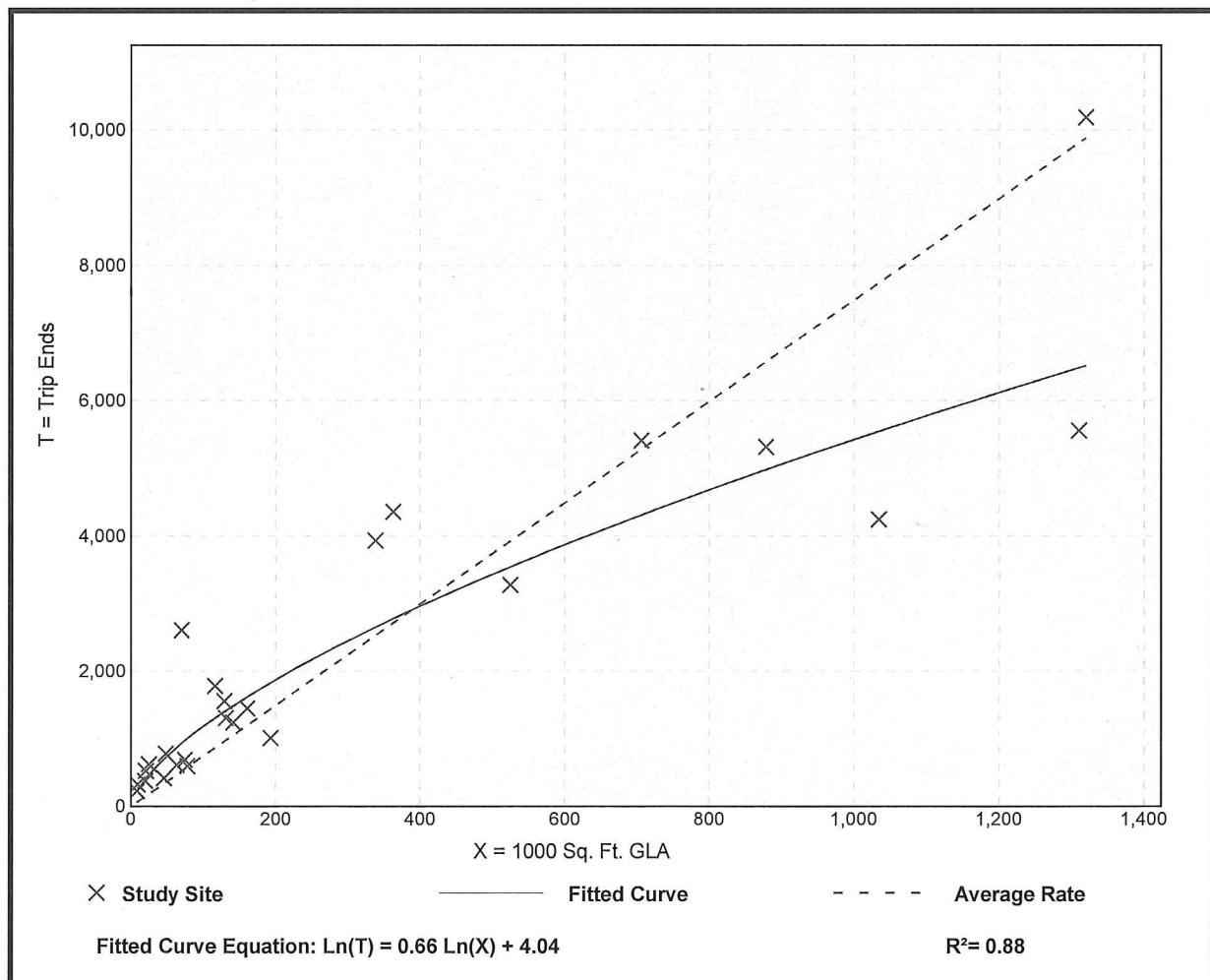
Person Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
 Number of Studies: 25
 1000 Sq. Ft. GLA: 312
 Directional Distribution: 50% entering, 50% exiting

Person Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
7.49	4.11 - 37.41	4.45

Data Plot and Equation



Shopping Center (820)

Person Trip Ends vs: Employees
On a: Weekday,
AM Peak Hour of Generator

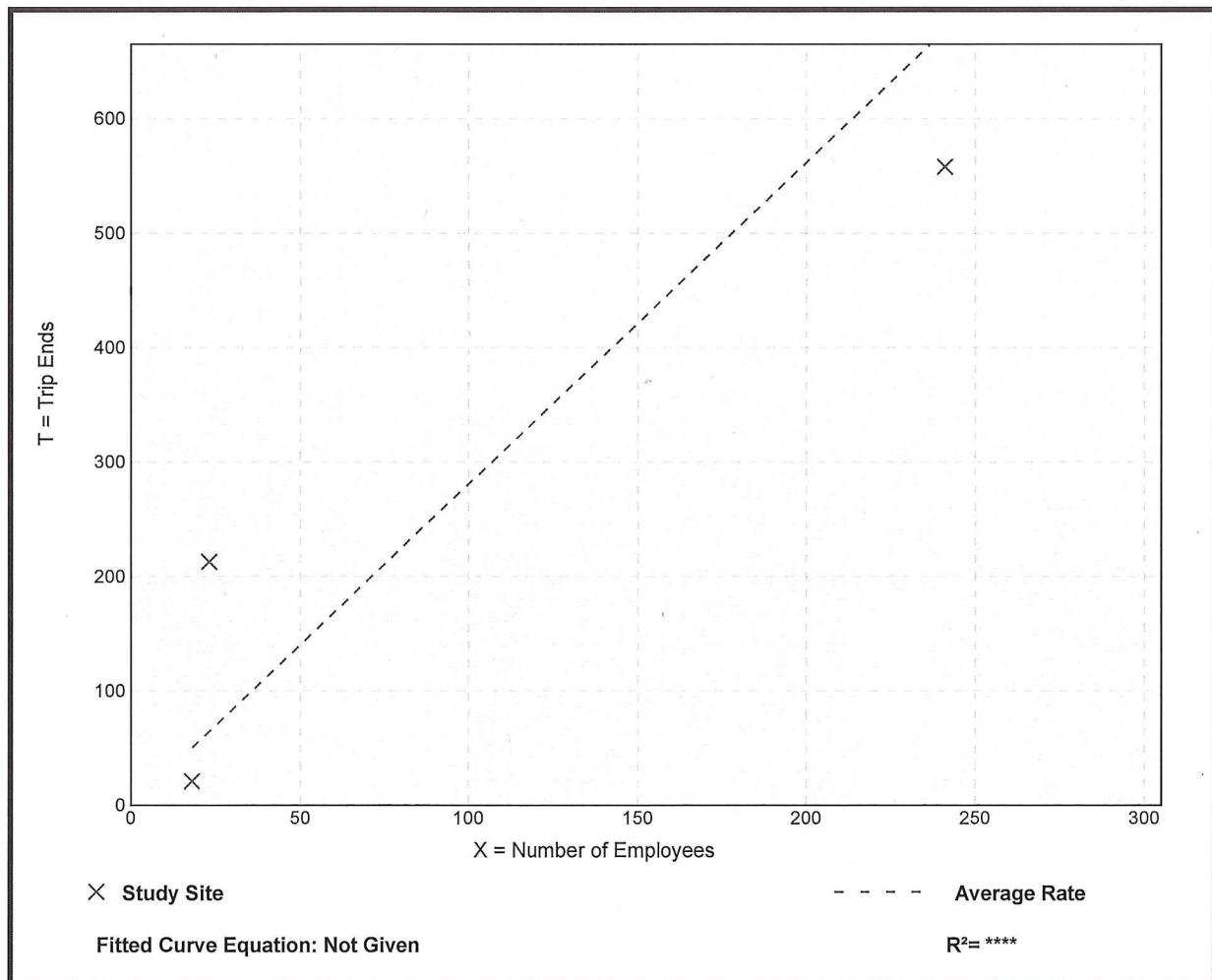
Setting/Location: General Urban/Suburban
 Number of Studies: 3
 Avg. Num. of Employees: 94
 Directional Distribution: 46% entering, 54% exiting

Person Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
2.81	1.17 - 9.26	6.80

Data Plot and Equation

Caution – Small Sample Size



Shopping Center (820)

Person Trip Ends vs: Employees
On a: Weekday,
PM Peak Hour of Generator

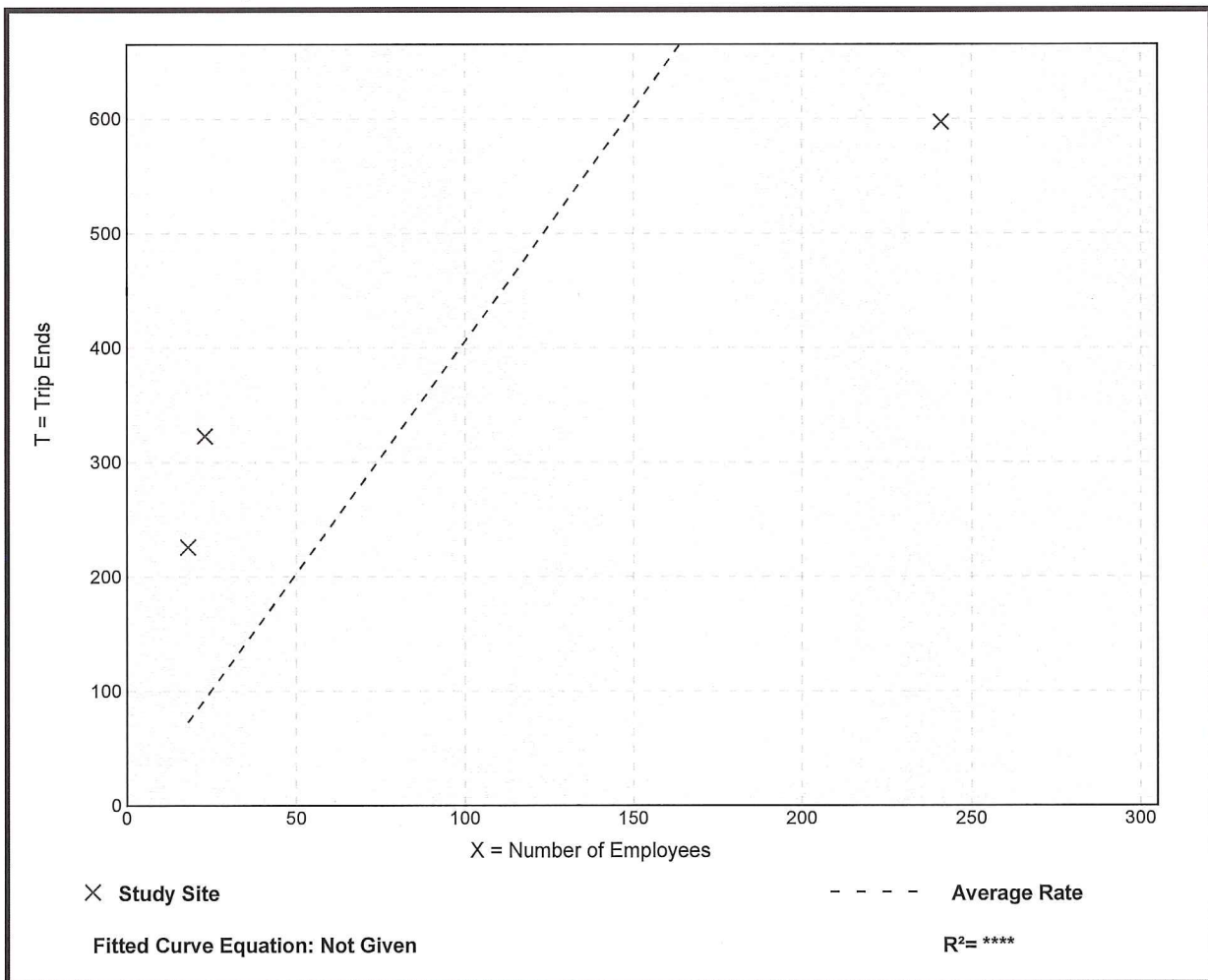
Setting/Location: General Urban/Suburban
Number of Studies: 3
Avg. Num. of Employees: 94
Directional Distribution: 55% entering, 45% exiting

Person Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
4.06	2.48 - 14.04	13.43

Data Plot and Equation

Caution – Small Sample Size



Shopping Center (820)

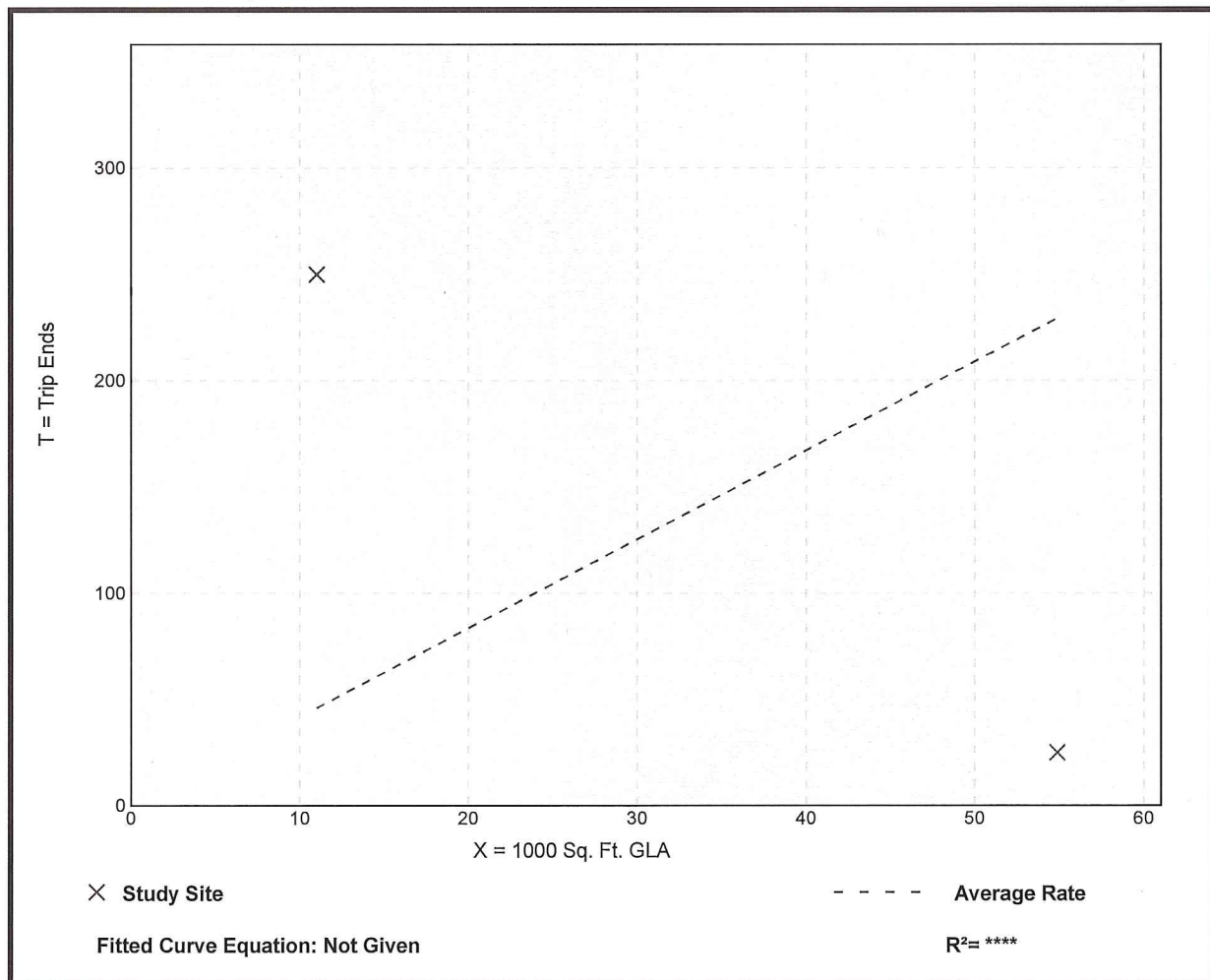
Person Trip Ends vs: 1000 Sq. Ft. GLA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: Dense Multi-Use Urban
 Number of Studies: 2
 1000 Sq. Ft. GLA: 33
 Directional Distribution: 52% entering, 48% exiting

Person Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
4.18	0.46 - 22.72	*

Data Plot and Equation

Caution – Small Sample Size



Shopping Center (820)

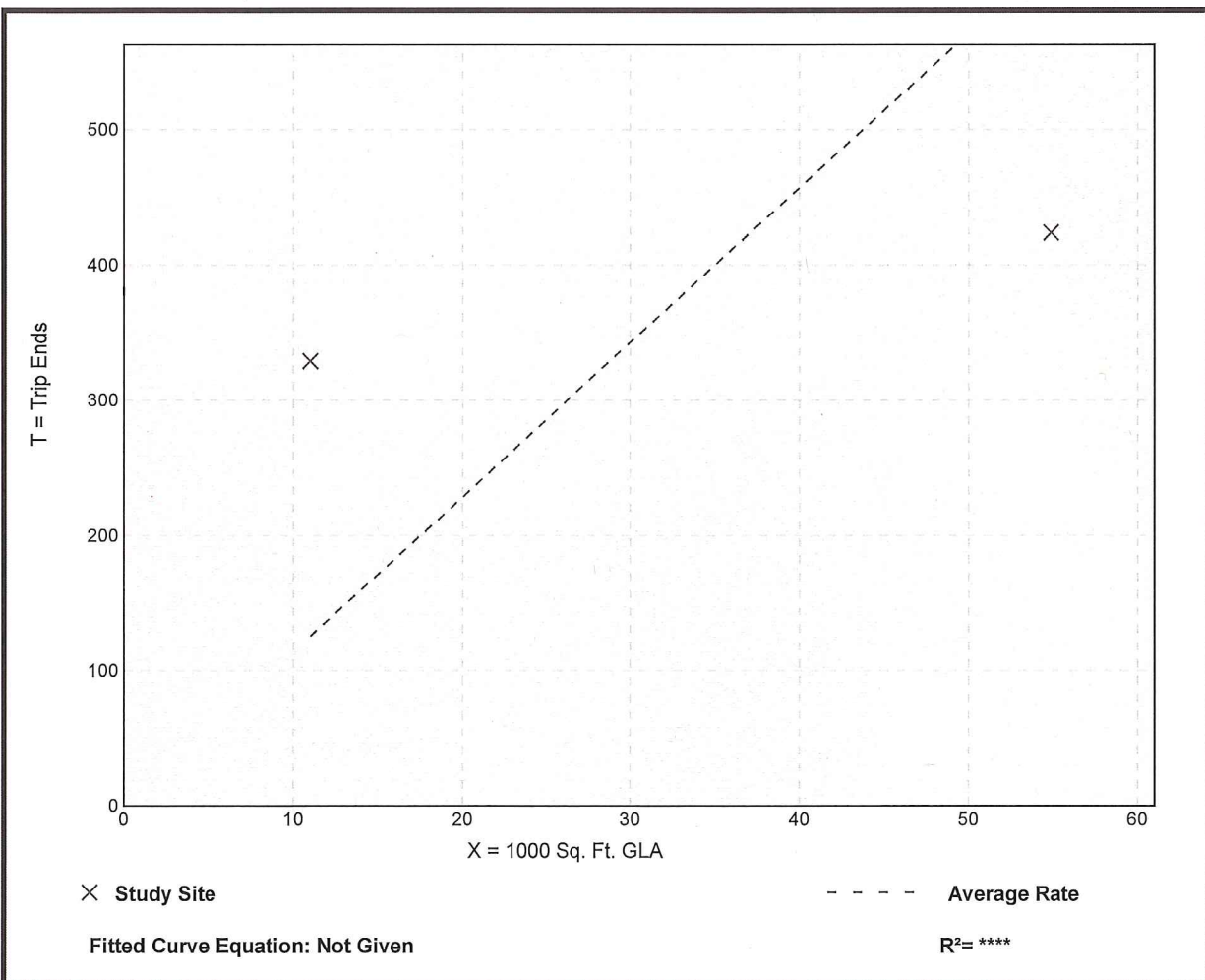
Person Trip Ends vs: 1000 Sq. Ft. GLA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: Dense Multi-Use Urban
 Number of Studies: 2
 1000 Sq. Ft. GLA: 33
 Directional Distribution: 47% entering, 53% exiting

Person Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
11.43	7.73 - 29.90	*

Data Plot and Equation

Caution – Small Sample Size



Land Use: 934

Fast-Food Restaurant with Drive-Through Window

Description

This category includes fast-food restaurants with drive-through windows. This type of restaurant is characterized by a large drive-through clientele, long hours of service (some are open for breakfast, all are open for lunch and dinner, some are open late at night or 24 hours a day) and high turnover rates for eat-in customers. These limited-service eating establishments do not provide table service. Non-drive-through patrons generally order at a cash register and pay before they eat. Fast casual restaurant (Land Use 930), high-turnover (sit-down) restaurant (Land Use 932), fast-food restaurant without drive-through window (Land Use 933), and fast-food restaurant with drive-through window and no indoor seating (Land Use 935) are related uses.

Additional Data

Users should exercise caution when applying statistics during the AM peak periods, as the sites contained in the database for this land use may or may not be open for breakfast. In cases where it was confirmed that the sites were not open for breakfast, data for the AM peak hour of the adjacent street traffic were removed from the database.

The outdoor seating area is not included in the overall gross floor area. Therefore, the number of seats may be a more reliable independent variable on which to establish trip generation rates for facilities having significant outdoor seating.

Time-of-day distribution data for this land use for a weekday, Saturday, and Sunday are presented in Appendix A. For the 46 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:45 a.m. and 12:45 p.m. and 12:00 and 1:00 p.m., respectively. For the one dense multi-use urban site with data, the same AM and PM peak hours were observed.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alaska, Alberta (CAN), California, Colorado, Florida, Indiana, Kentucky, Maryland, Massachusetts, Minnesota, Montana, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, South Dakota, Texas, Vermont, Virginia, Washington, and Wisconsin.

Source Numbers

163, 164, 168, 180, 181, 241, 245, 278, 294, 300, 301, 319, 338, 340, 342, 358, 389, 438, 502, 552, 577, 583, 584, 617, 640, 641, 704, 715, 728, 810, 866, 867, 869, 885, 886, 927, 935, 962, 977

Fast-Food Restaurant with Drive-Through Window (934)

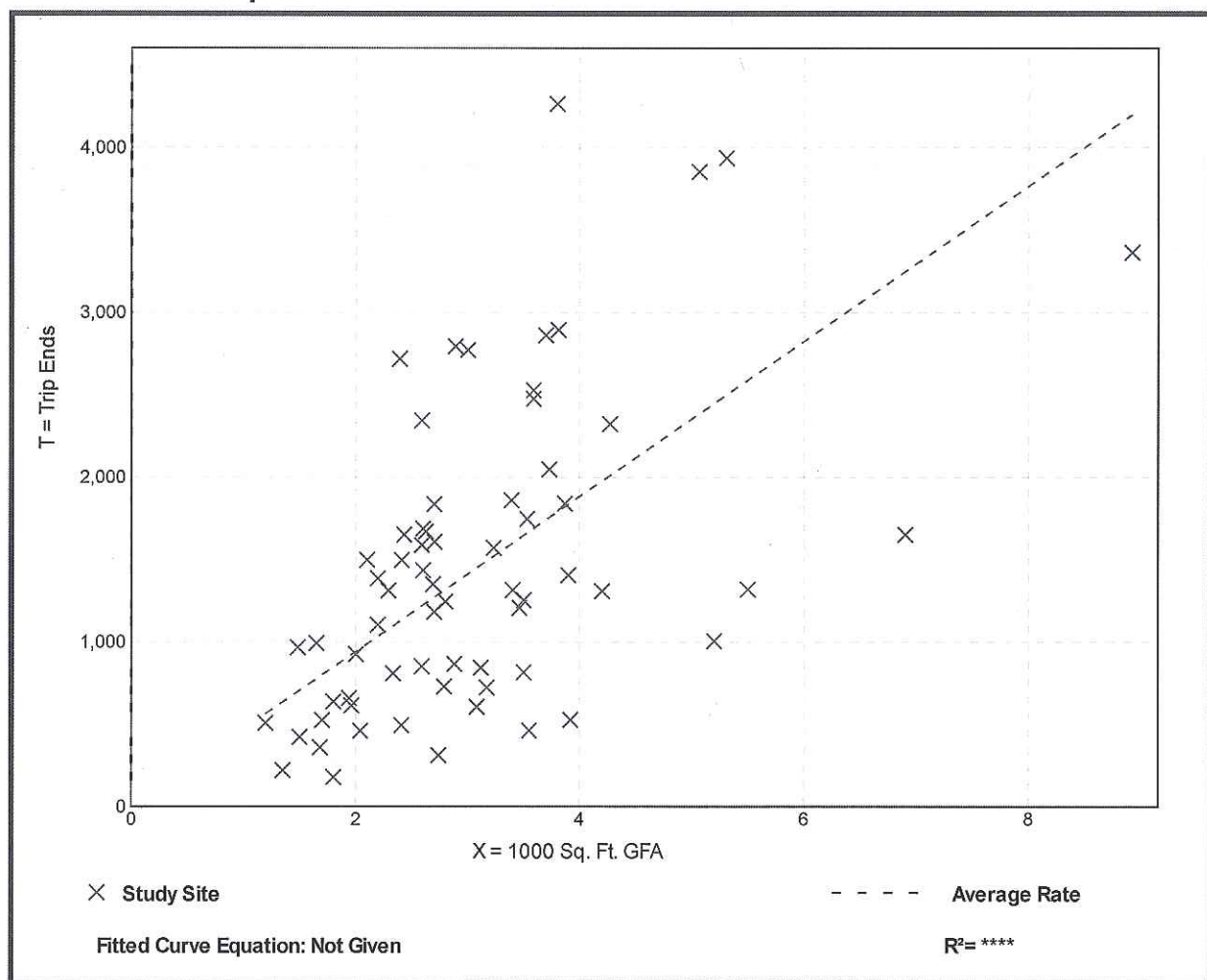
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 67
1000 Sq. Ft. GFA: 3
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
470.95	98.89 - 1137.66	244.44

Data Plot and Equation



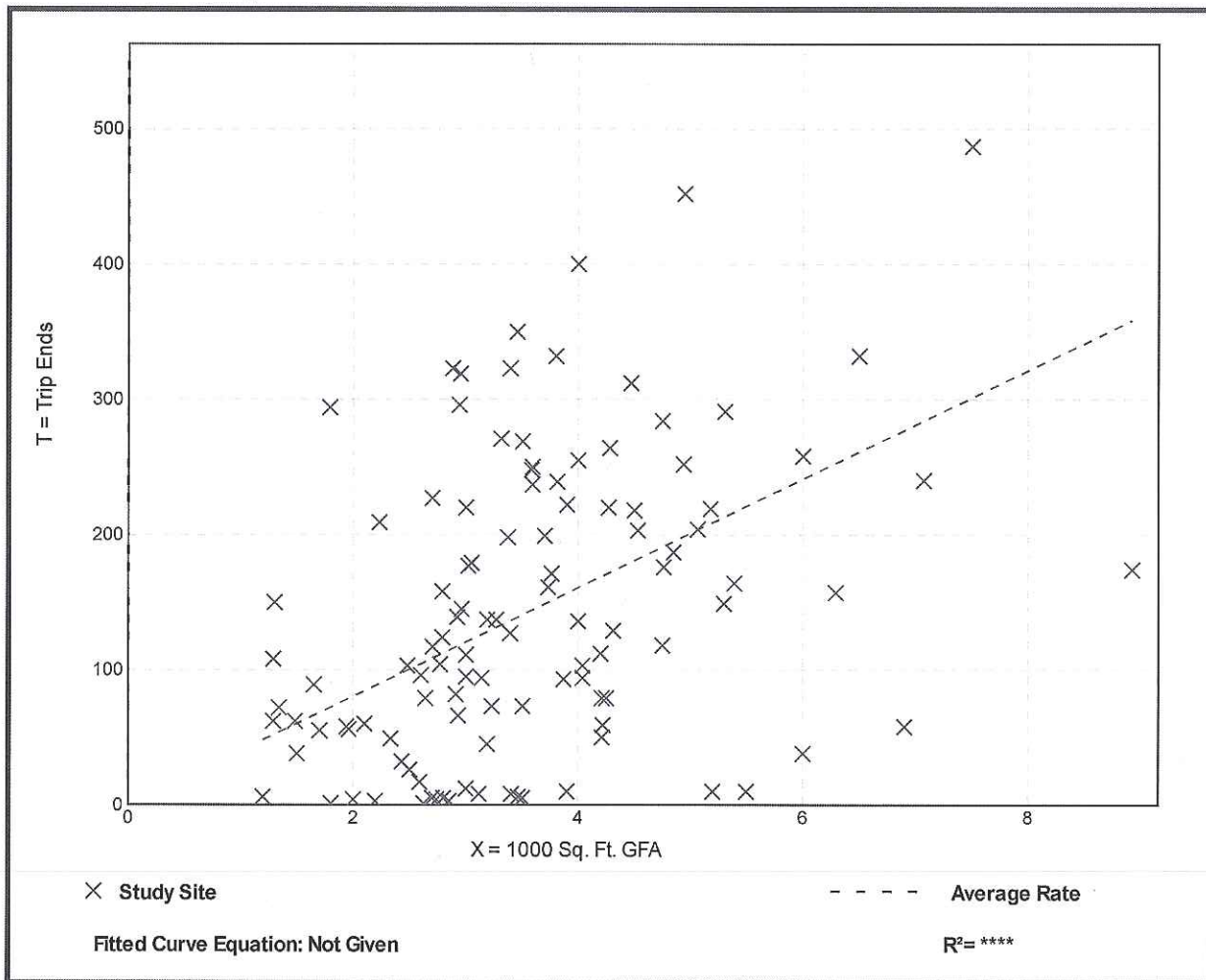
Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 111
 1000 Sq. Ft. GFA: 4
 Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
40.19	0.38 - 164.25	28.78

Data Plot and Equation



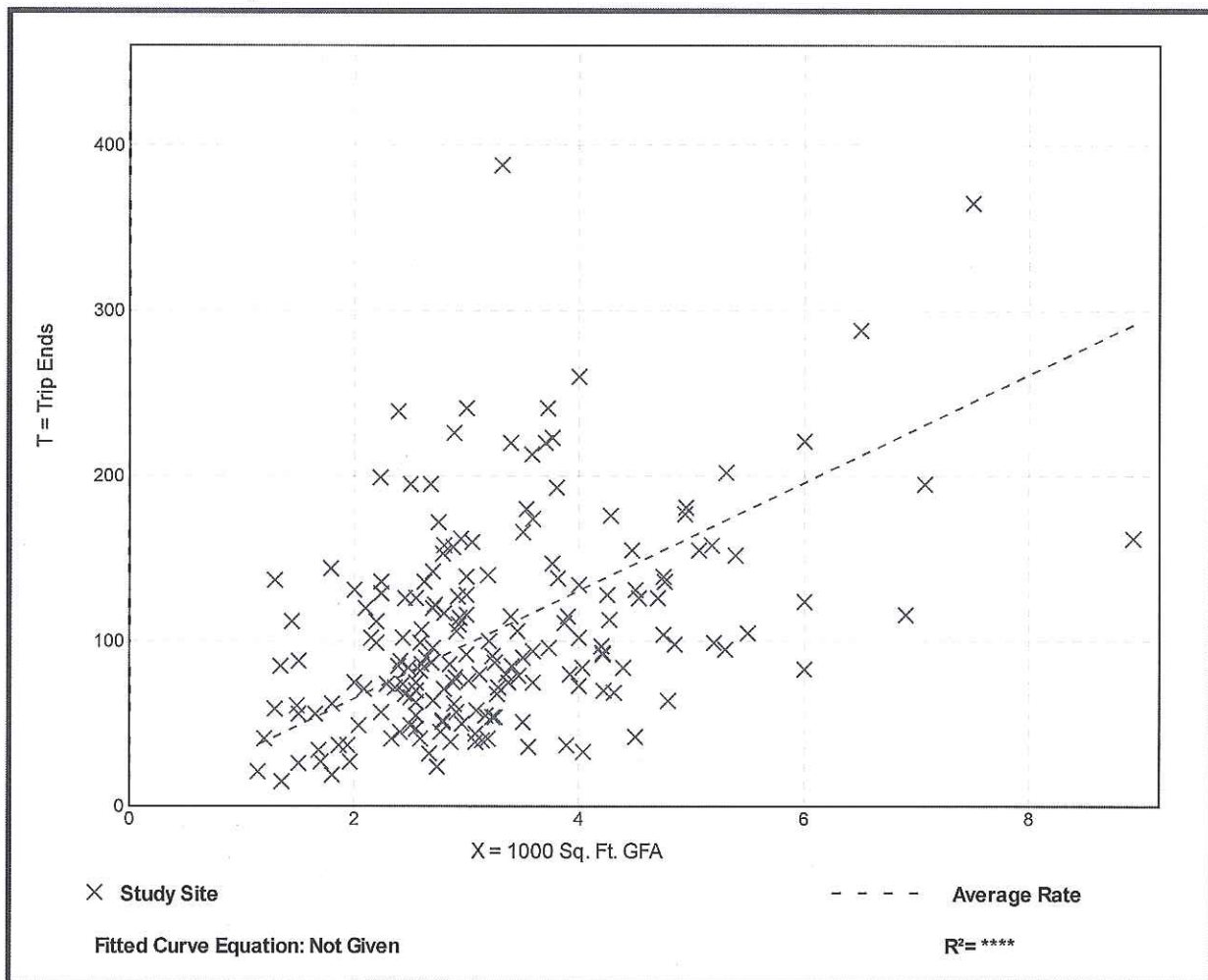
Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 185
 1000 Sq. Ft. GFA: 3
 Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
32.67	8.17 - 117.22	17.87

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

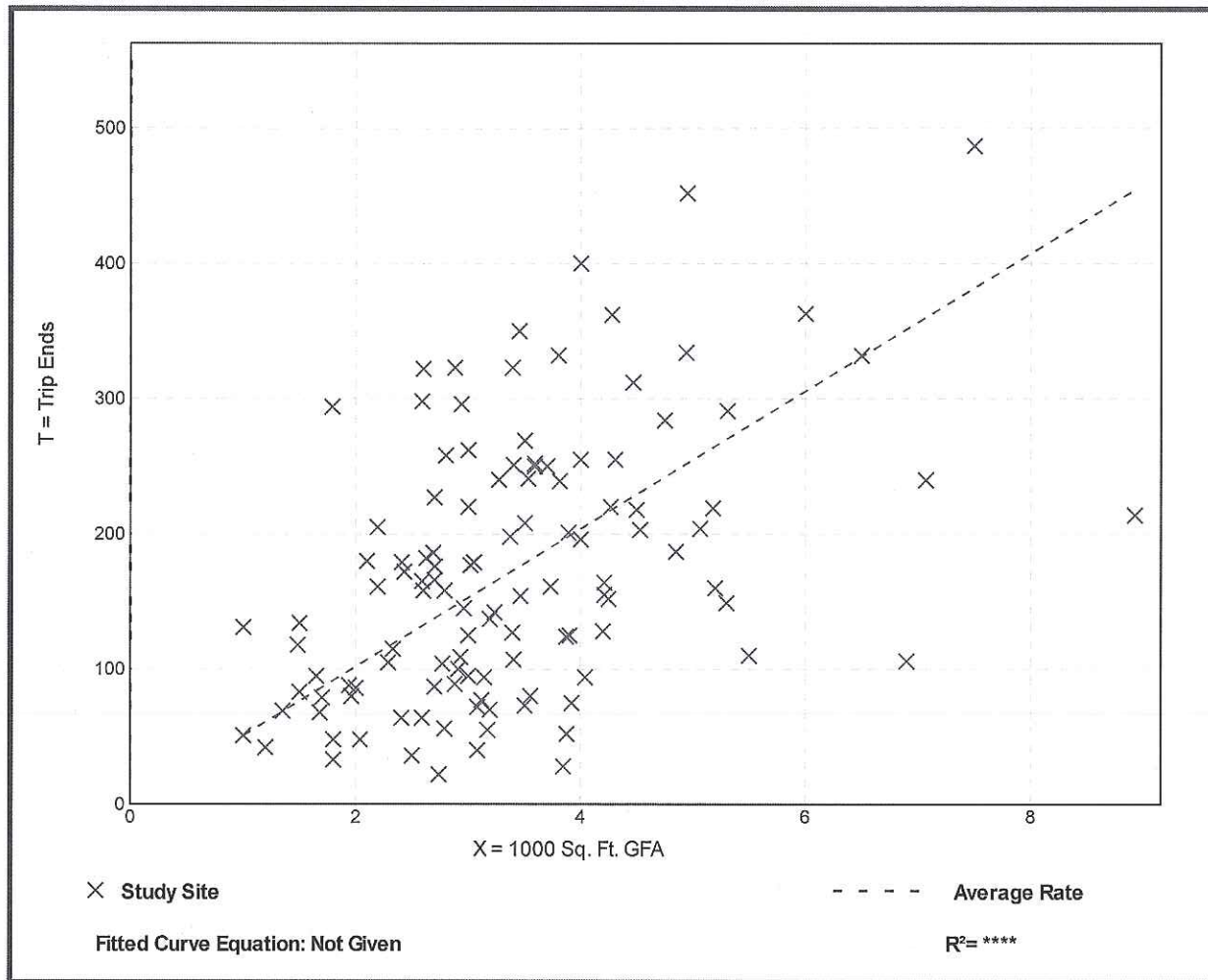
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 117
1000 Sq. Ft. GFA: 3
Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
50.97	7.28 - 164.25	26.22

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

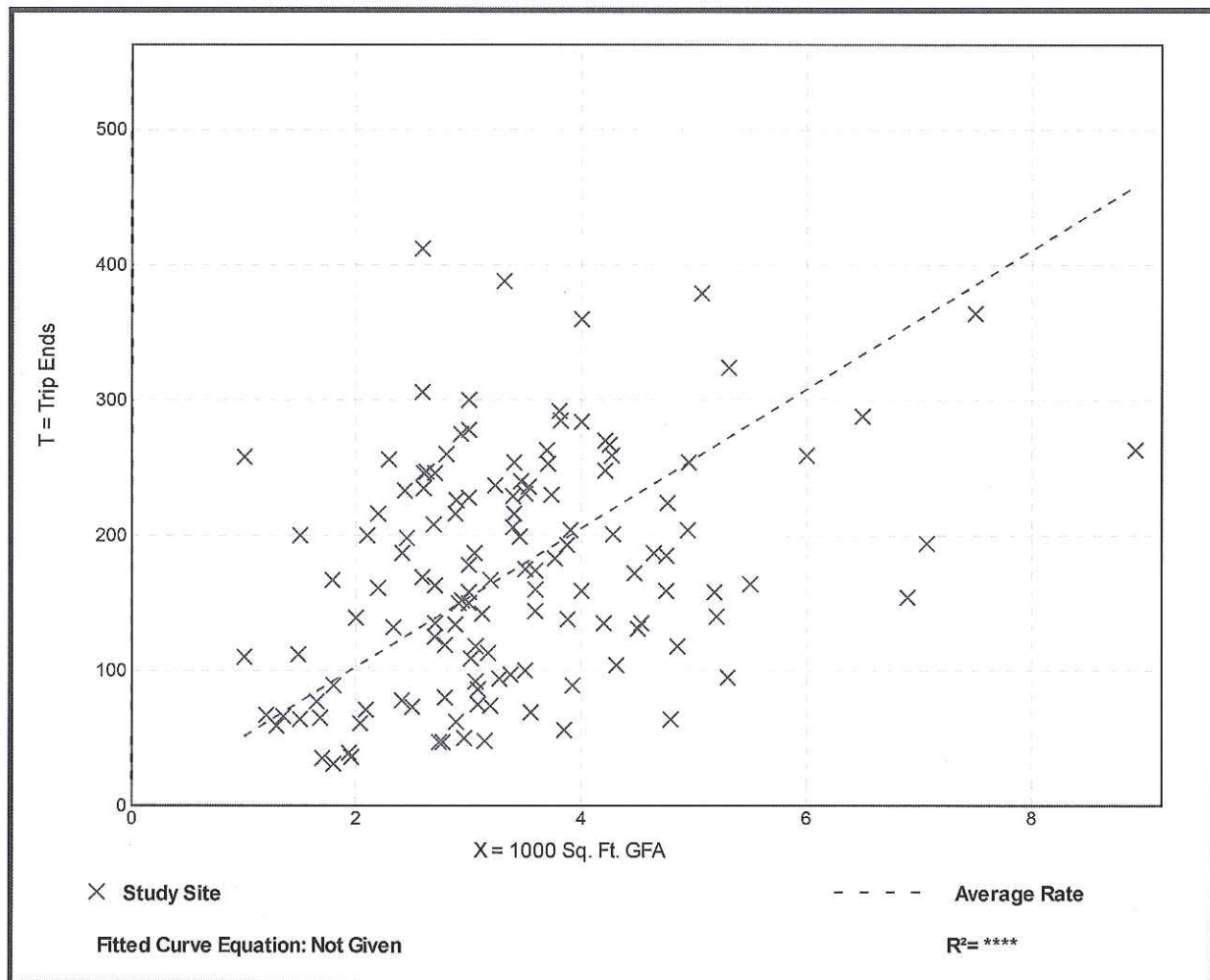
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 132
1000 Sq. Ft. GFA: 3
Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
51.36	13.36 - 258.00	27.47

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

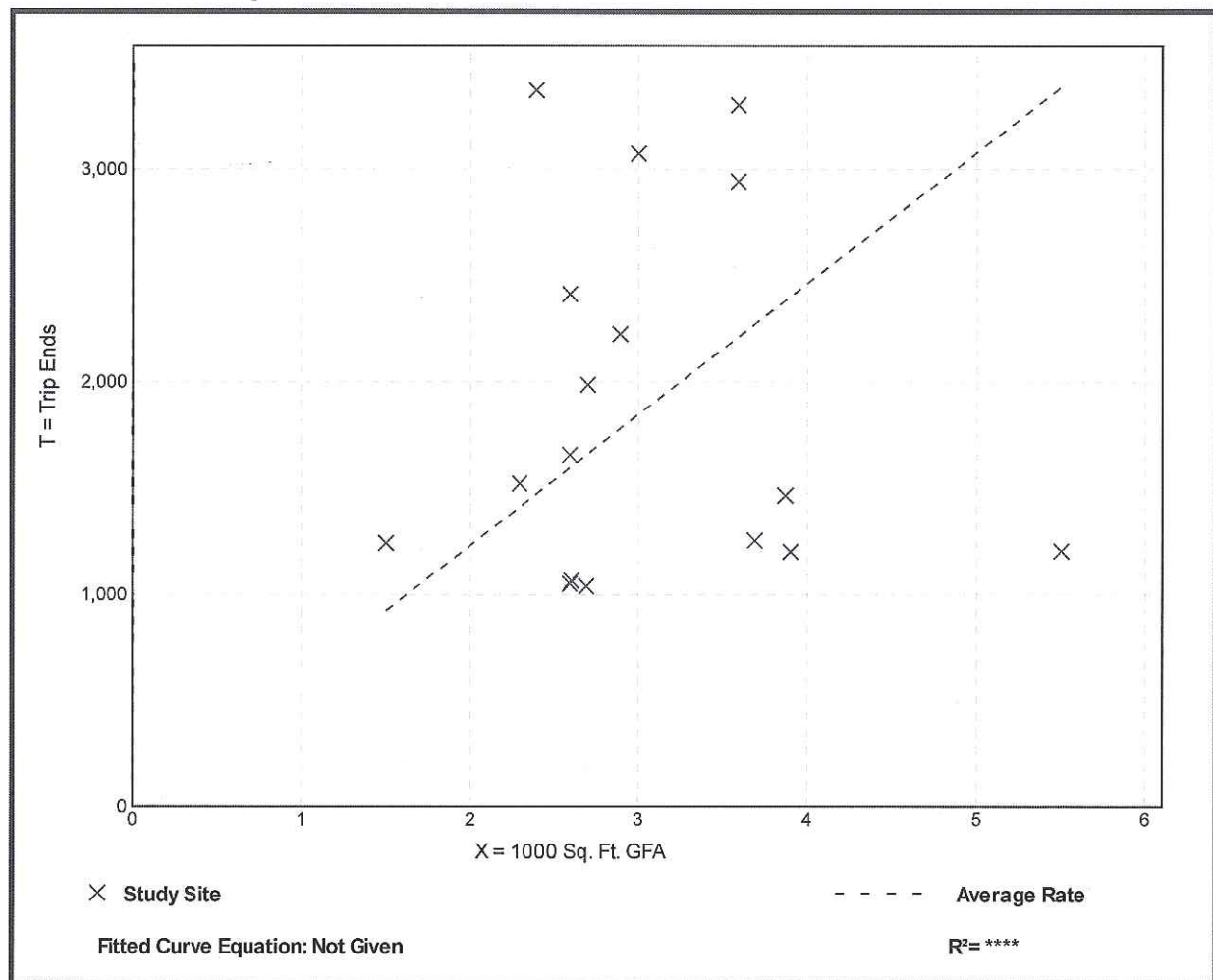
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Saturday

Setting/Location: General Urban/Suburban
Number of Studies: 17
1000 Sq. Ft. GFA: 3
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
616.12	218.91 - 1410.88	320.90

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

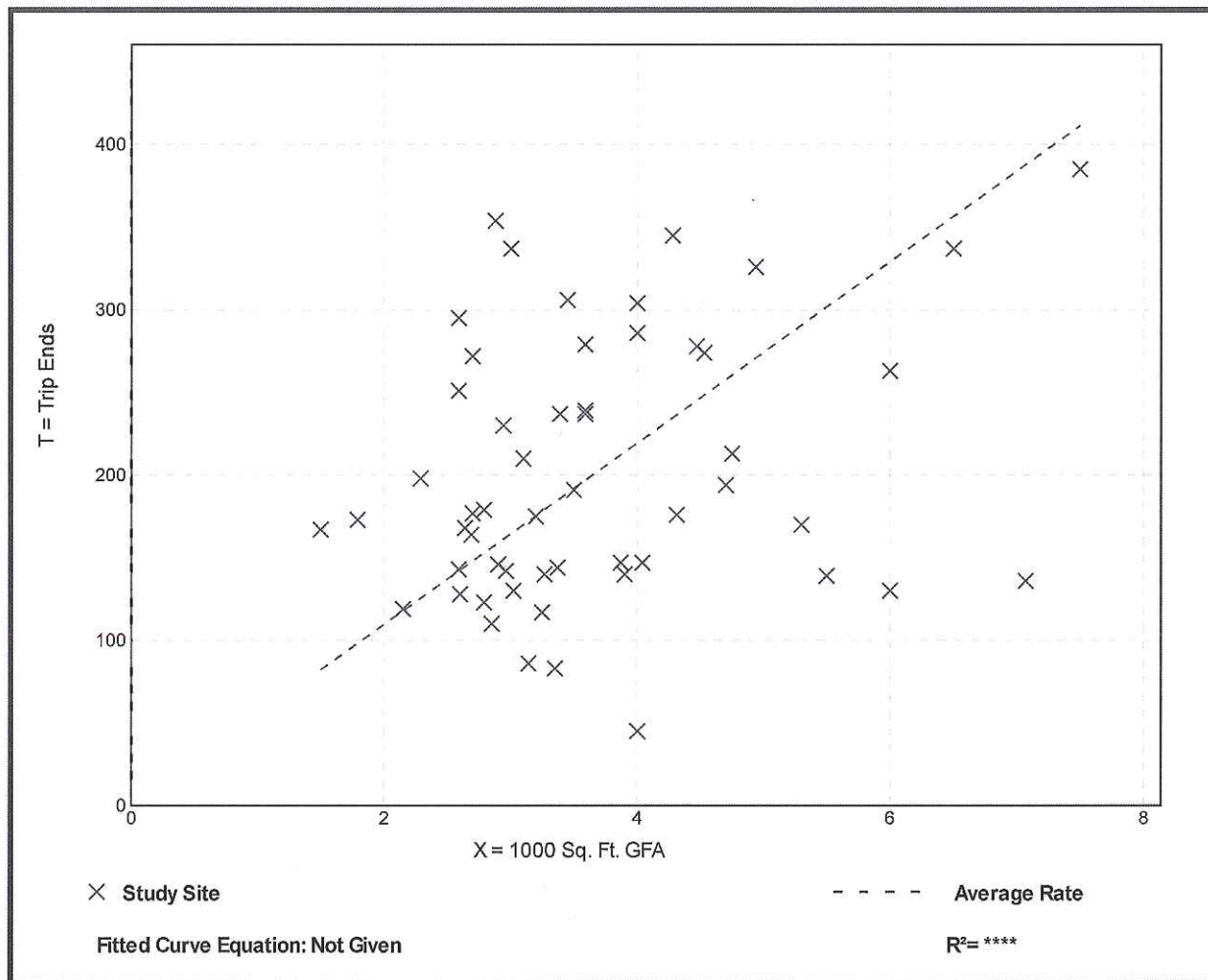
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 54
1000 Sq. Ft. GFA: 4
Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
54.86	11.25 - 122.92	24.51

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

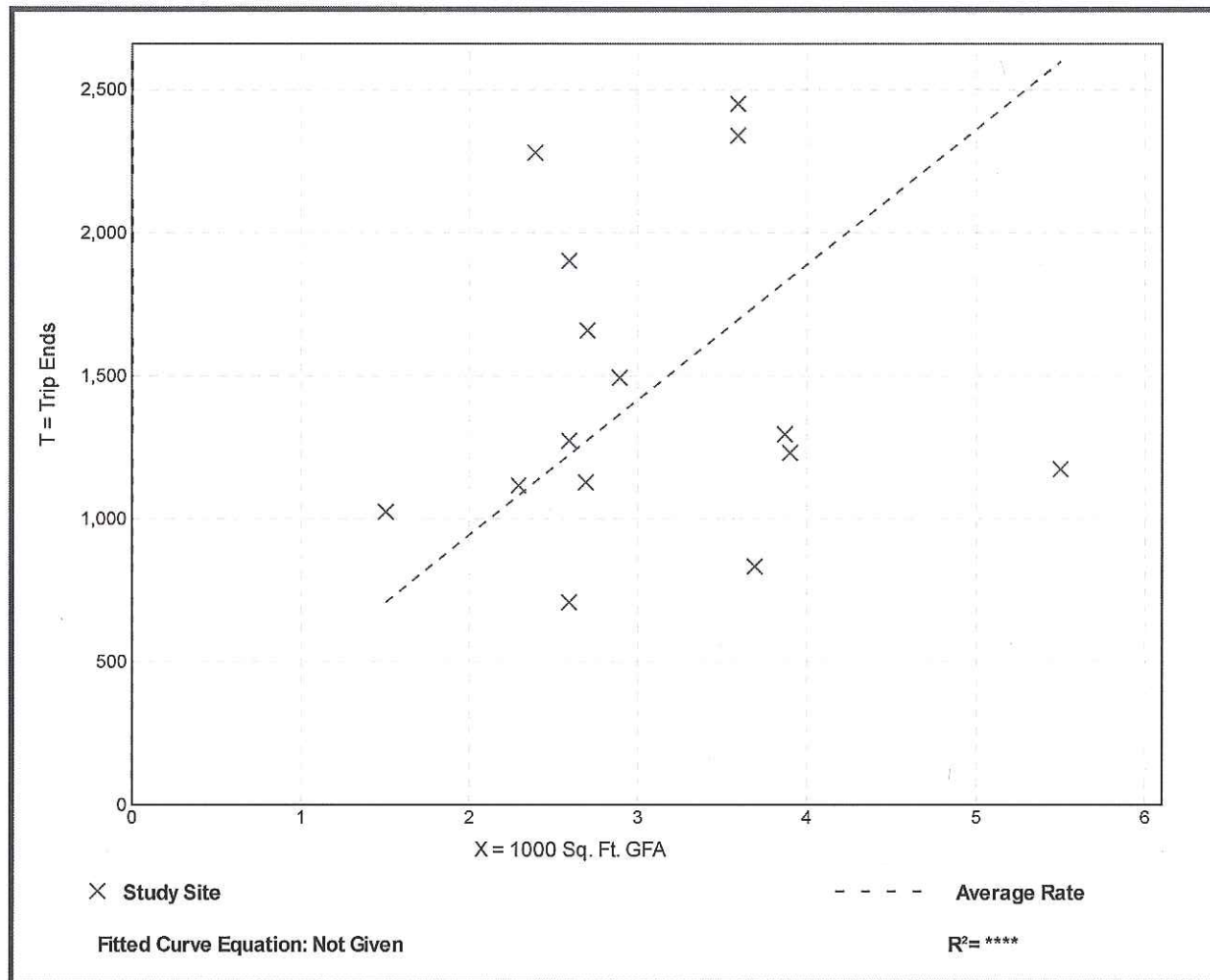
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Sunday

Setting/Location: General Urban/Suburban
Number of Studies: 15
1000 Sq. Ft. GFA: 3
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
472.58	213.45 - 953.97	215.31

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

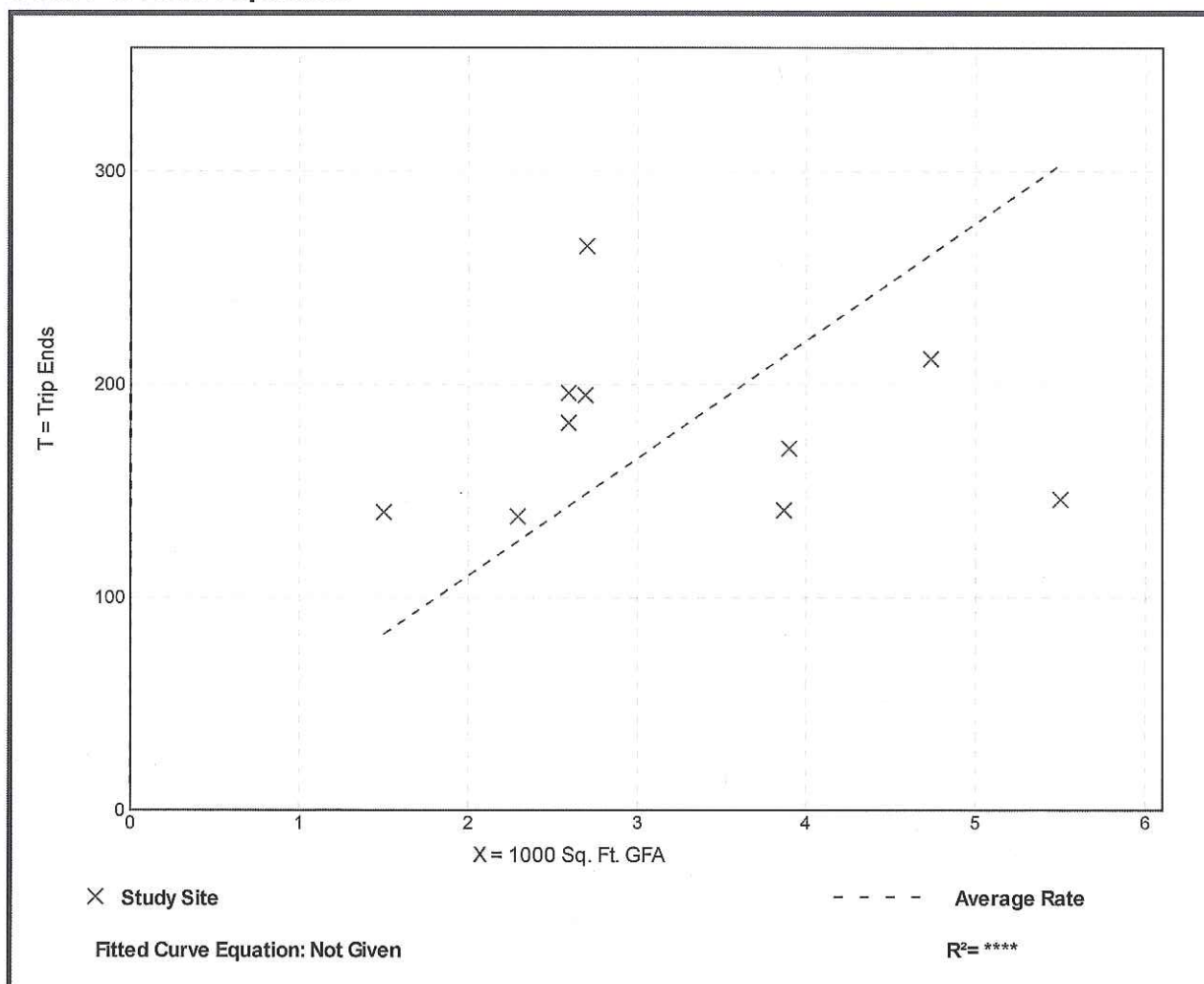
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 10
1000 Sq. Ft. GFA: 3
Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
55.15	26.55 - 98.15	23.88

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: AM Peak Hour Traffic on Adj. St.

On a: Weekday,

Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 5

AM Peak Hour Traffic on Adj. St.: 1351

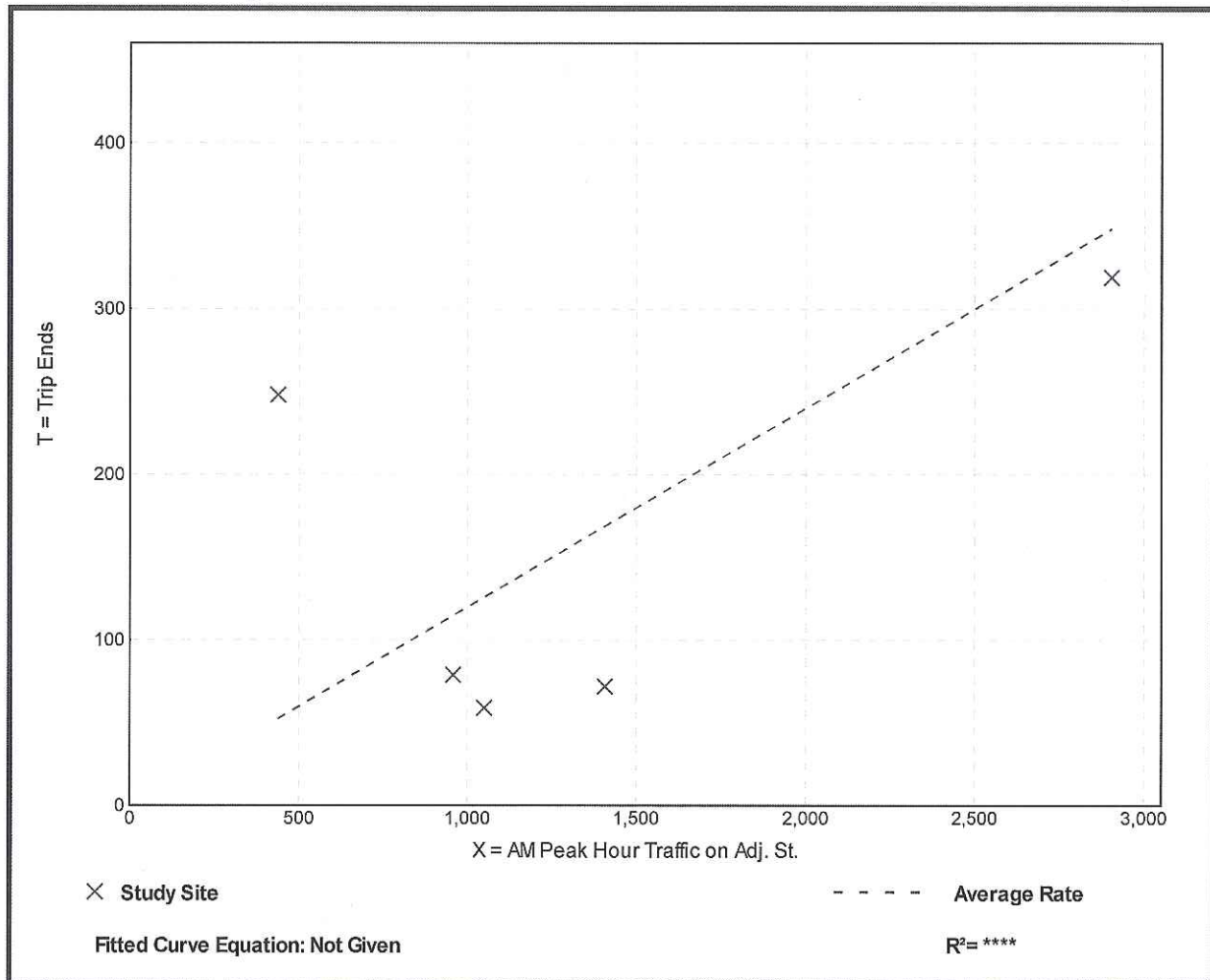
Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per AM Peak Hour Traffic on Adj. St.

Average Rate	Range of Rates	Standard Deviation
0.12	0.05 - 0.57	0.14

Data Plot and Equation

Caution – Small Sample Size



Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: PM Peak Hour Traffic on Adj. St.

On a: Weekday,

Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 14

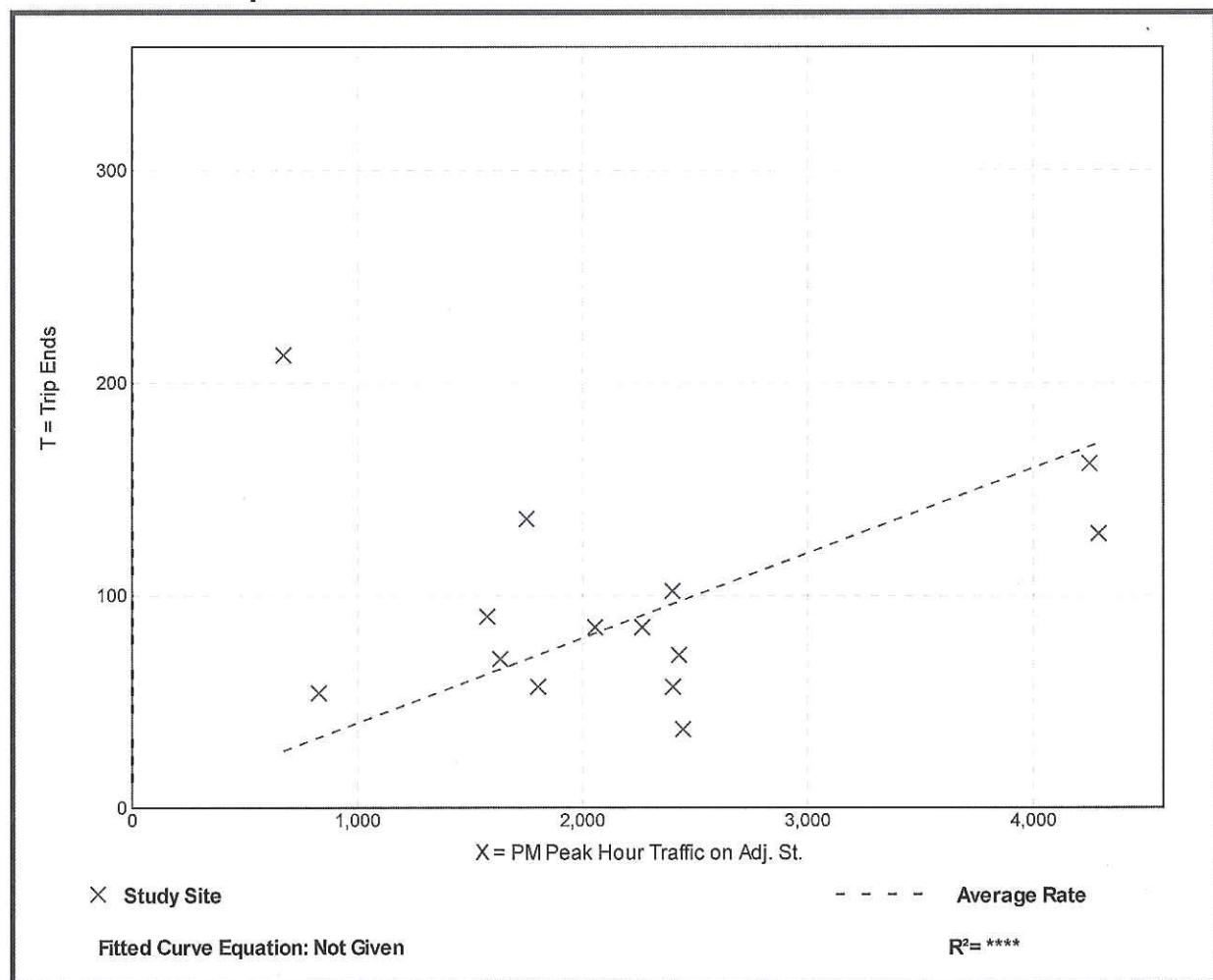
PM Peak Hour Traffic on Adj. St.: 2199

Directional Distribution: 53% entering, 47% exiting

Vehicle Trip Generation per PM Peak Hour Traffic on Adj. St.

Average Rate	Range of Rates	Standard Deviation
0.04	0.02 - 0.32	0.04

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: Employees

On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 26

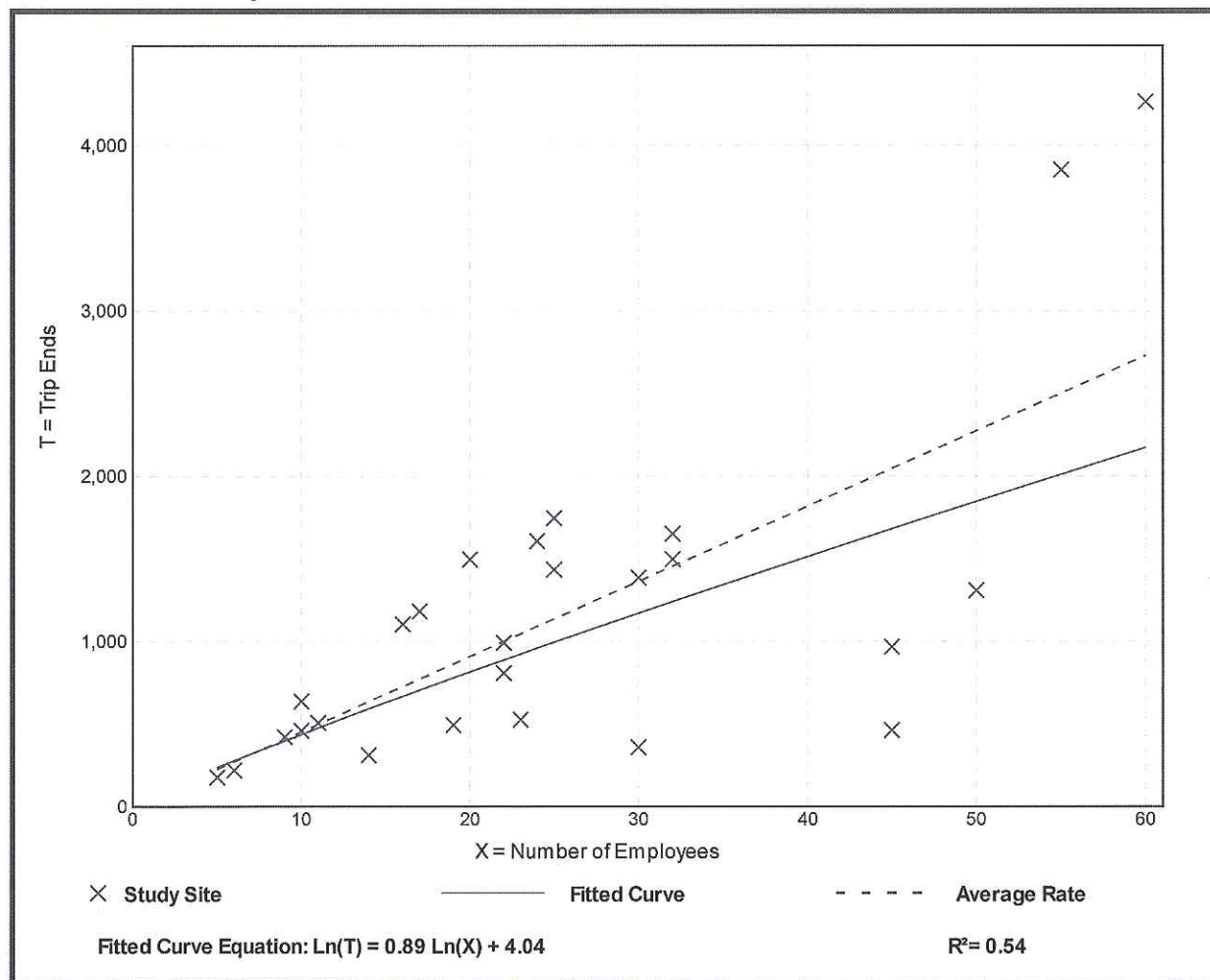
Avg. Num. of Employees: 25

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
45.49	10.27 - 74.85	22.00

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: Employees

On a: Weekday,

Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 13

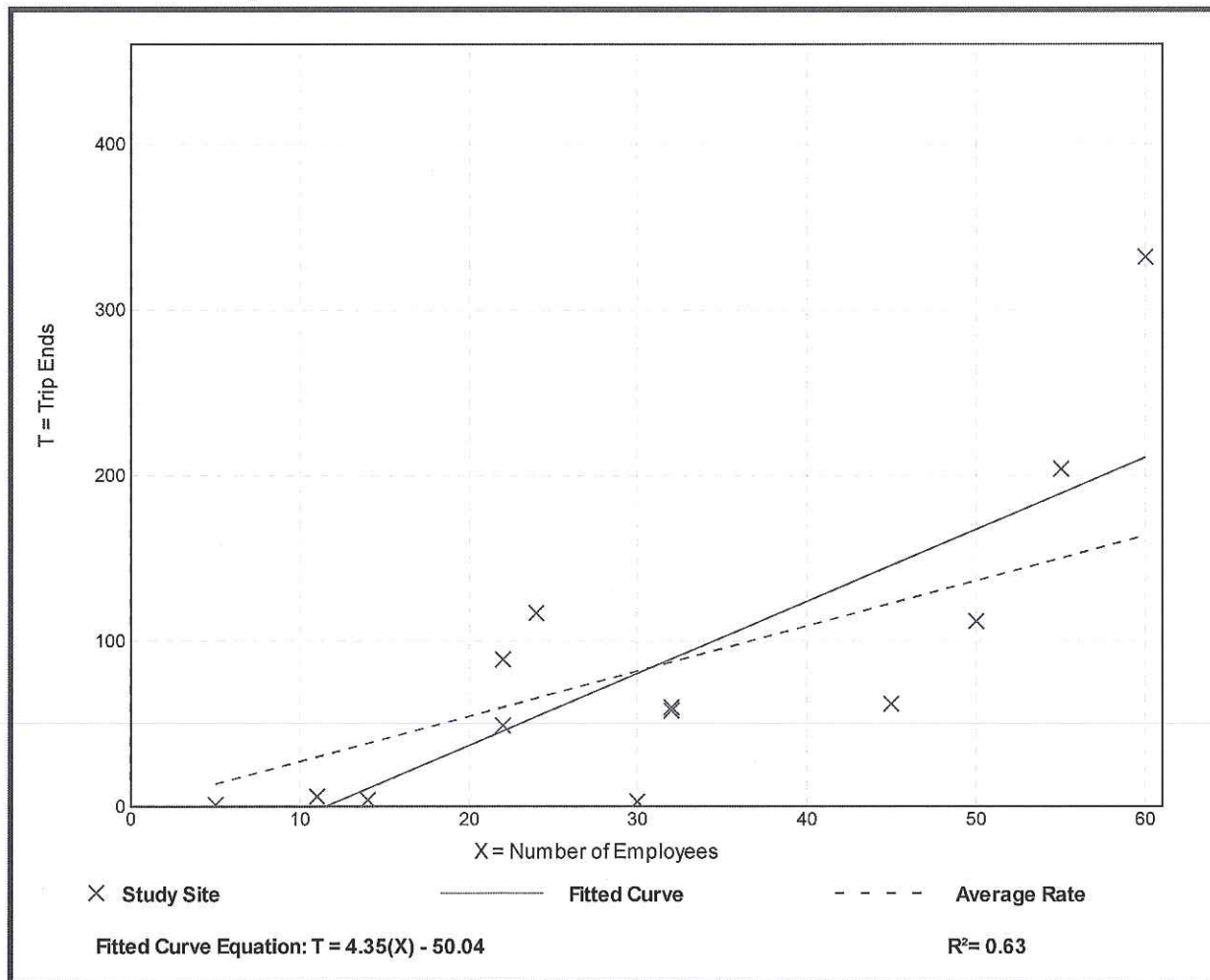
Avg. Num. of Employees: 31

Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
2.73	0.10 - 5.53	1.80

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: Employees

On a: Weekday,

Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 26

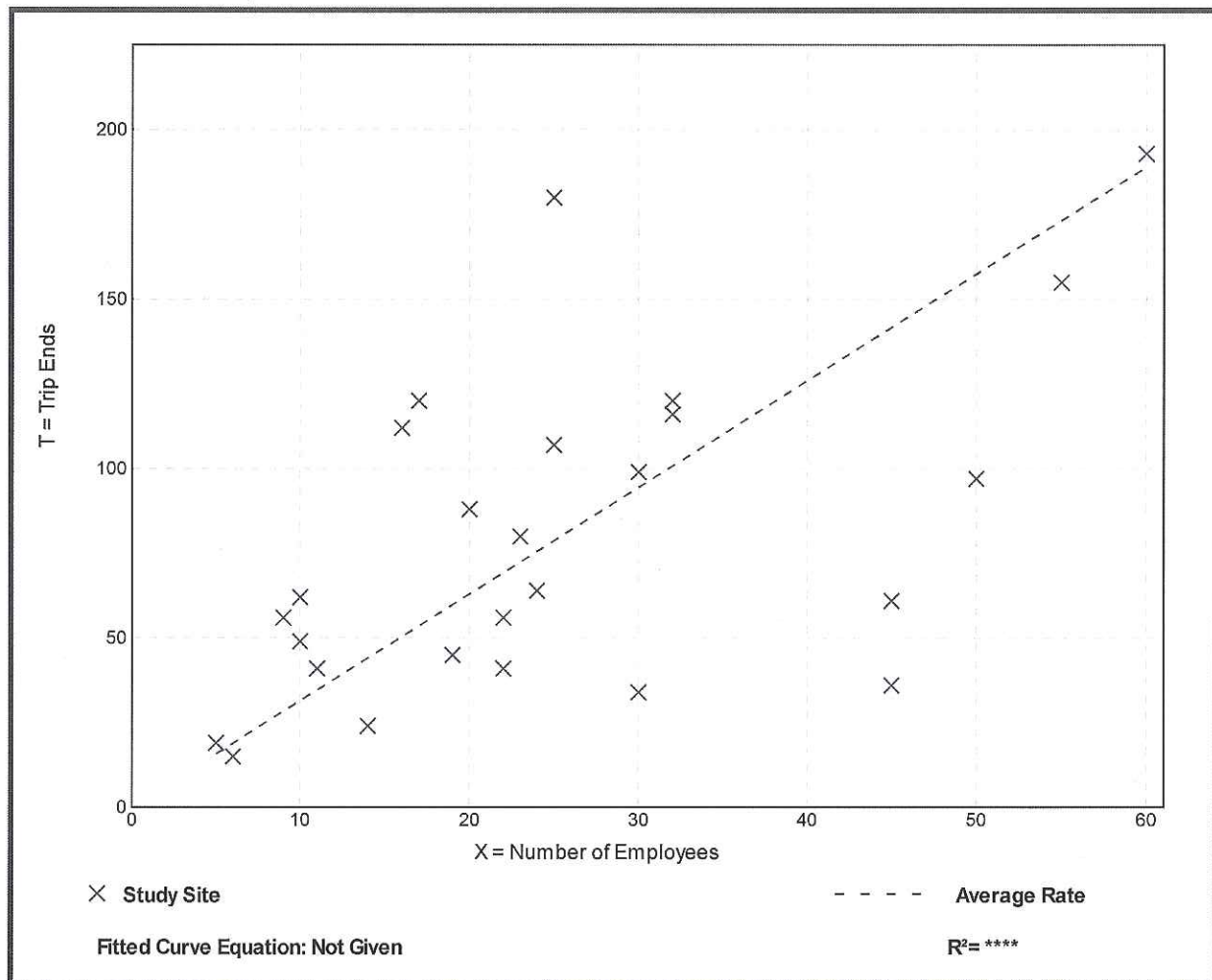
Avg. Num. of Employees: 25

Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
3.15	0.80 - 7.20	1.73

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

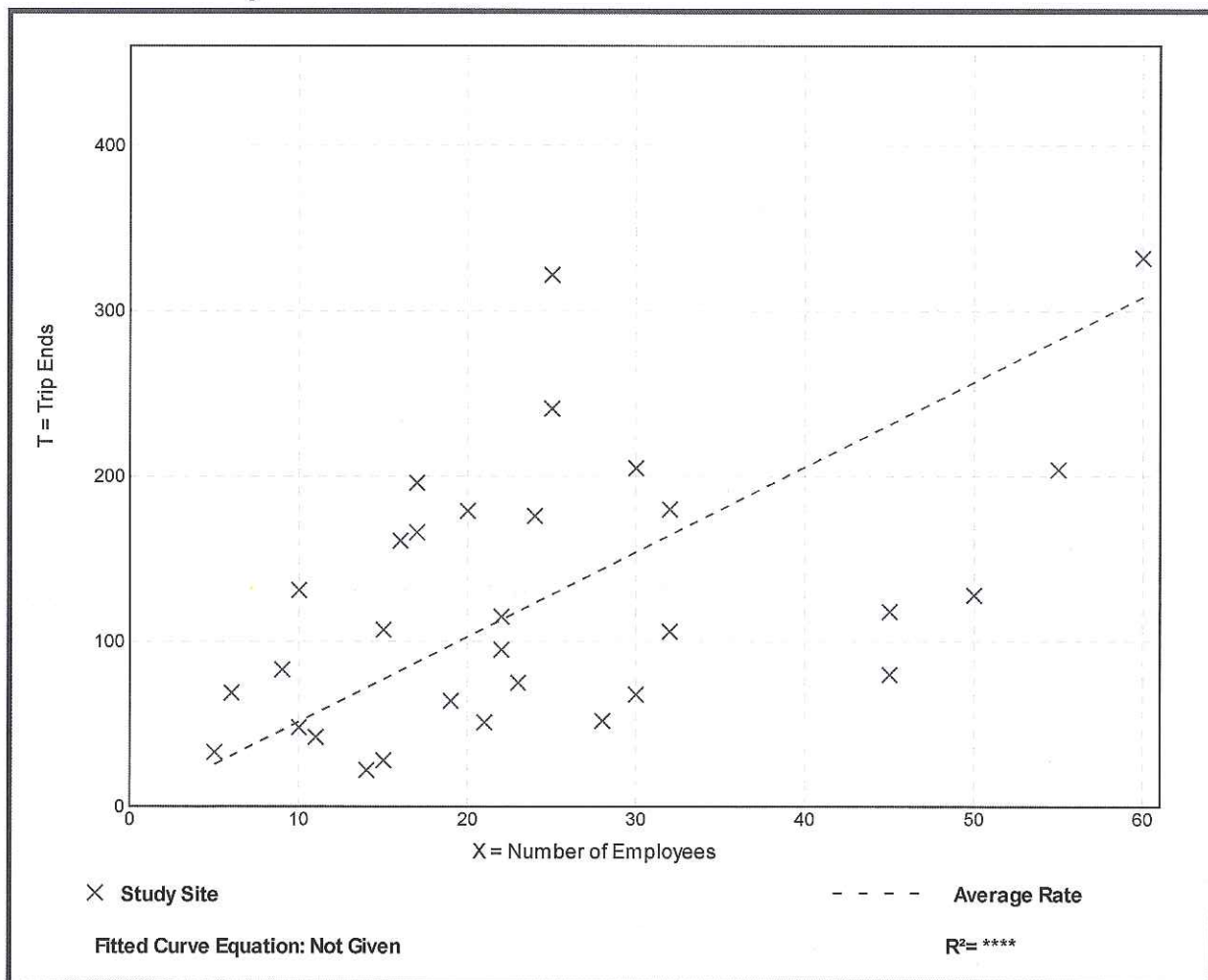
Vehicle Trip Ends vs: Employees
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 32
Avg. Num. of Employees: 24
Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
5.14	1.57 - 13.10	3.21

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

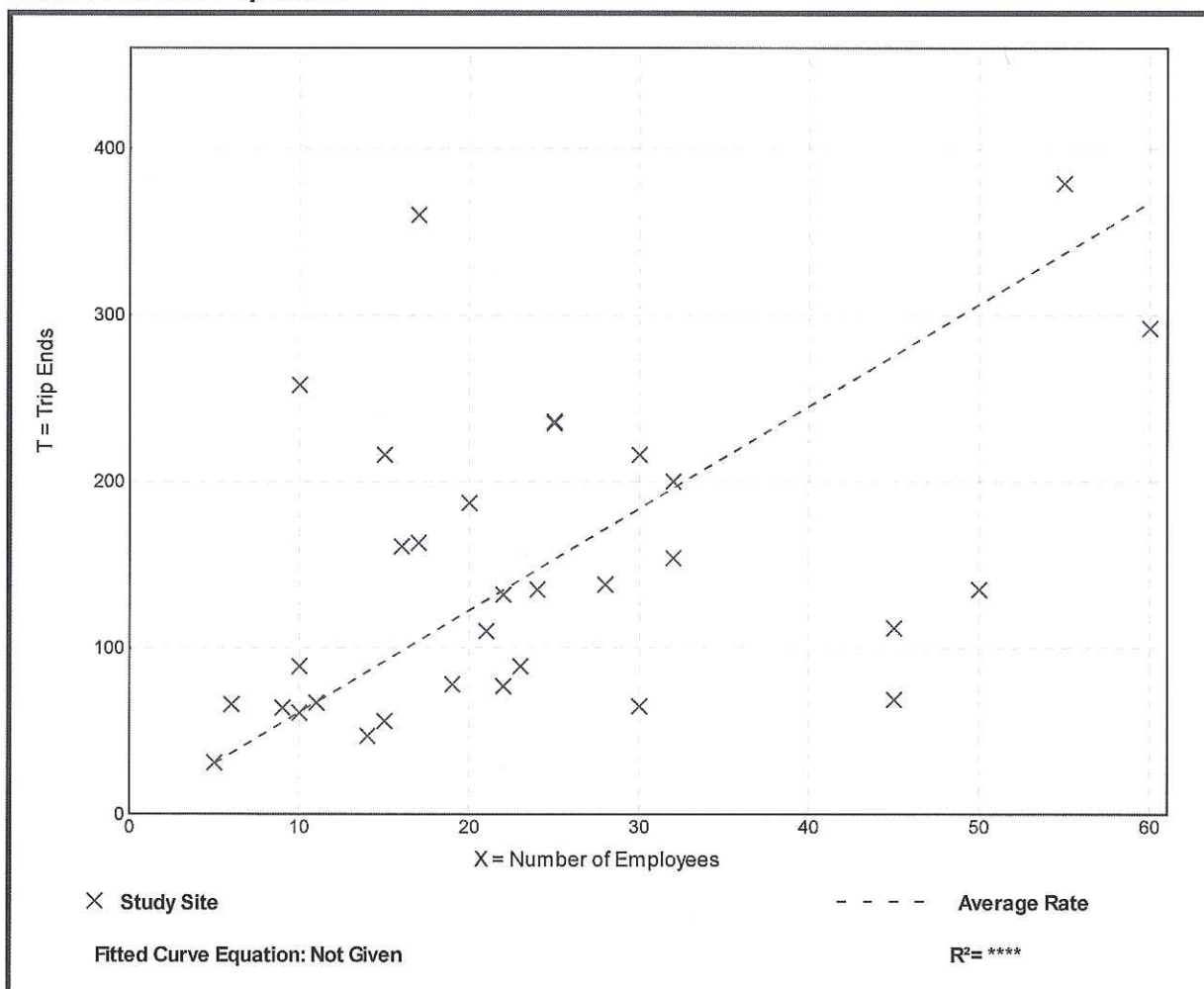
Vehicle Trip Ends vs: Employees
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 32
Avg. Num. of Employees: 24
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
6.13	1.53 - 25.80	4.29

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: Employees

On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 1

Avg. Num. of Employees: 30

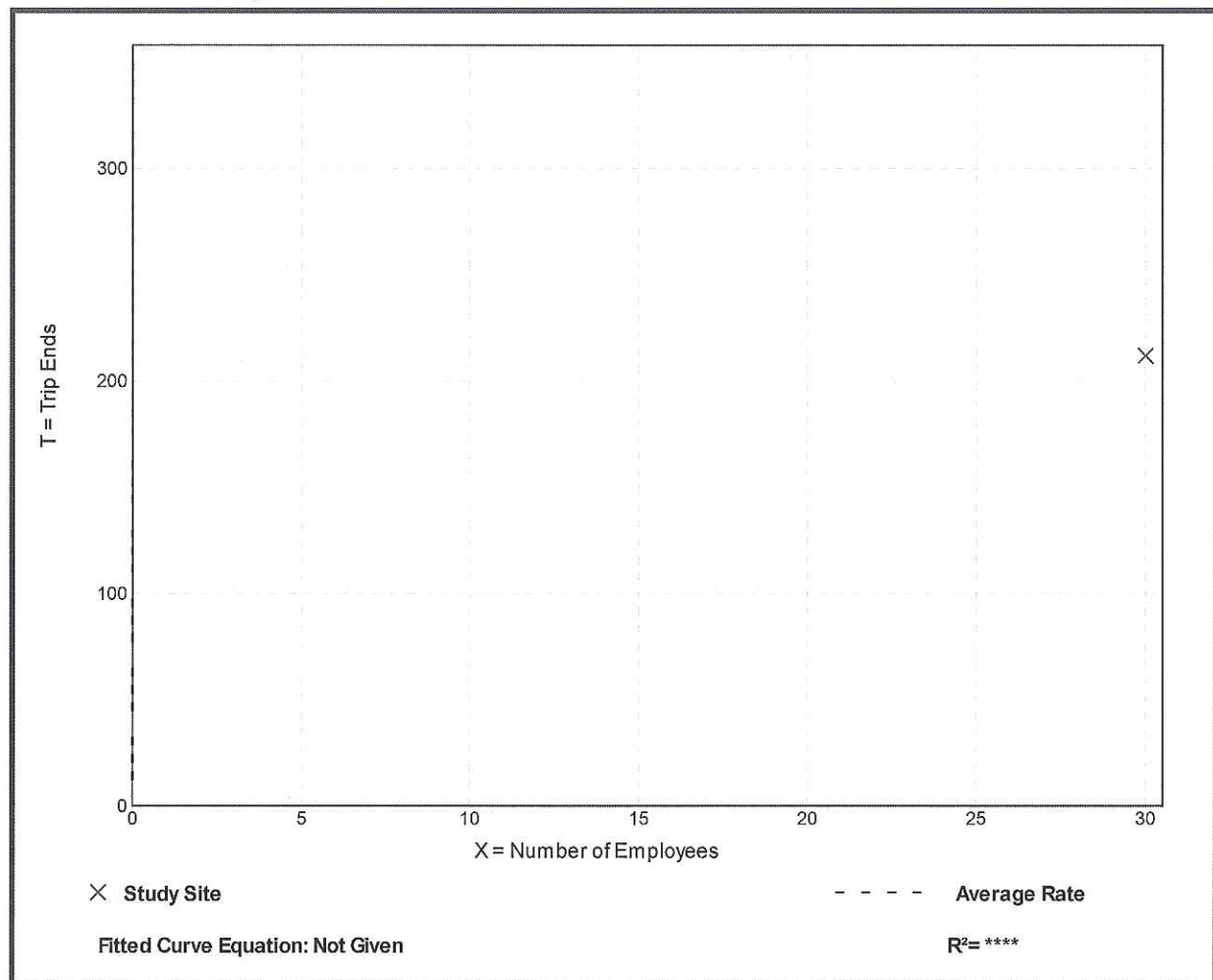
Directional Distribution: 47% entering, 53% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
7.07	7.07 - 7.07	*

Data Plot and Equation

Caution – Small Sample Size



Fast-Food Restaurant with Drive-Through Window (934)

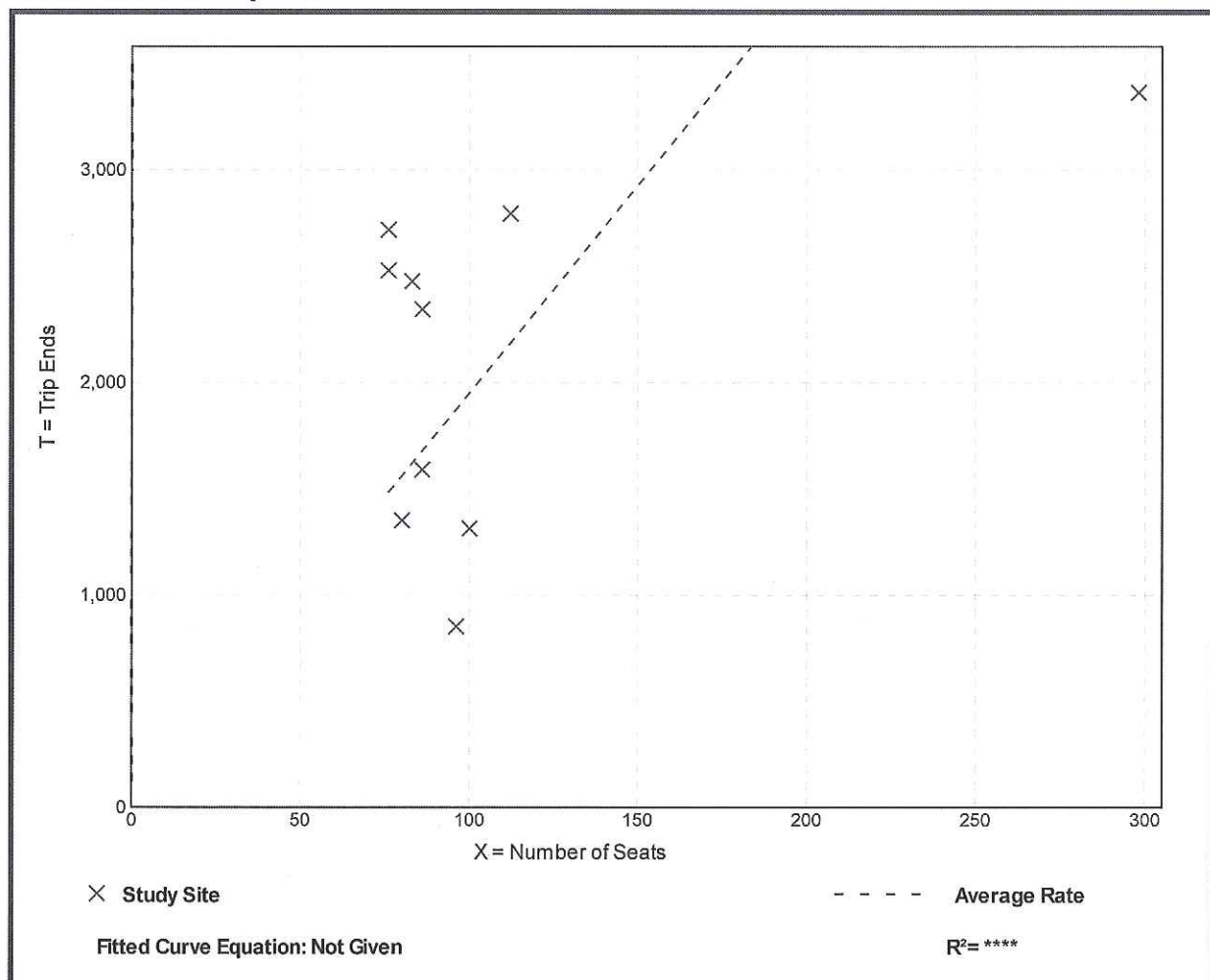
Vehicle Trip Ends vs: **Seats**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 10
Avg. Num. of Seats: 109
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
19.52	8.88 - 35.78	9.43

Data Plot and Equation



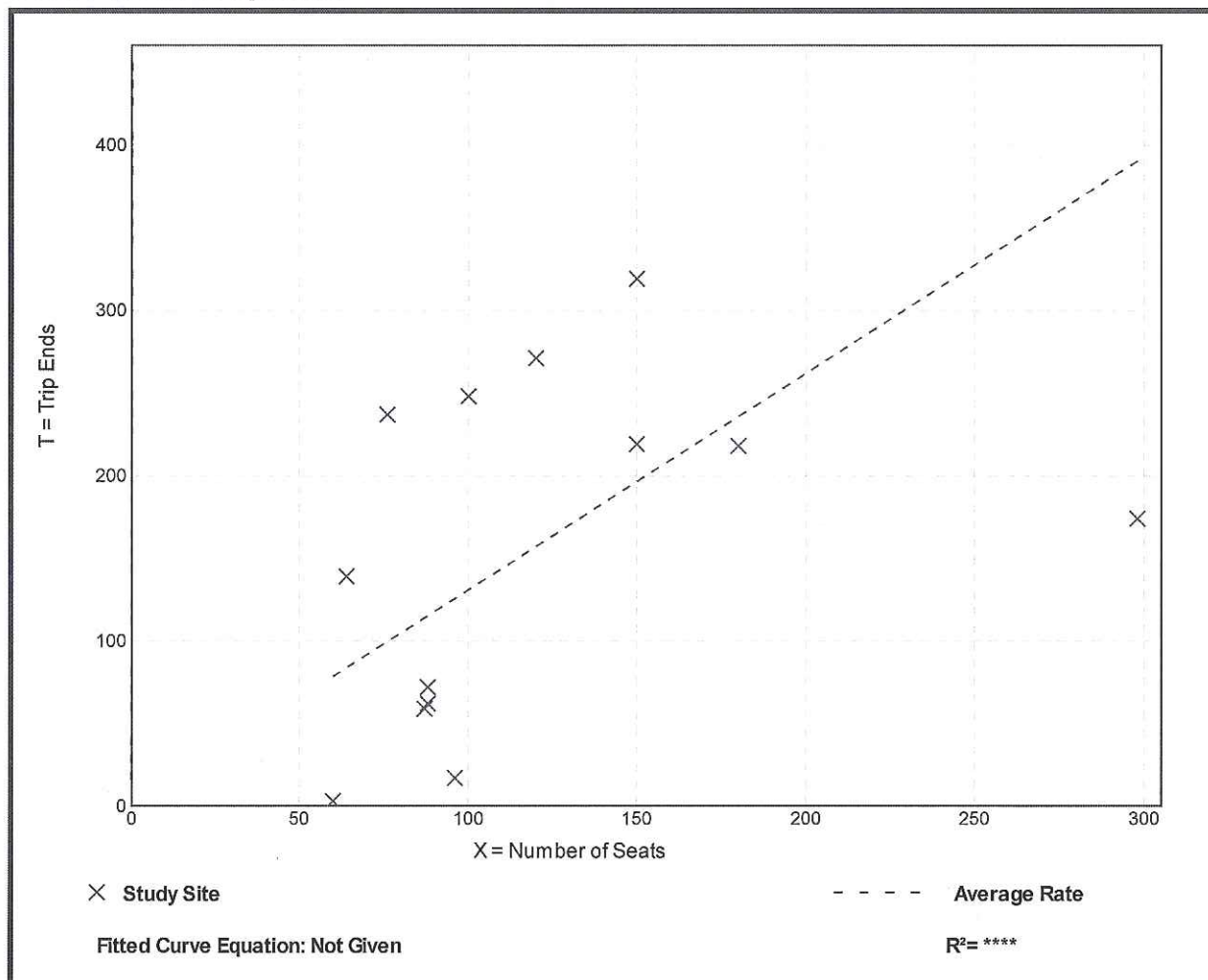
Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: Seats
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 13
 Avg. Num. of Seats: 120
 Directional Distribution: 53% entering, 47% exiting

Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
1.31	0.05 - 3.12	0.88

Data Plot and Equation



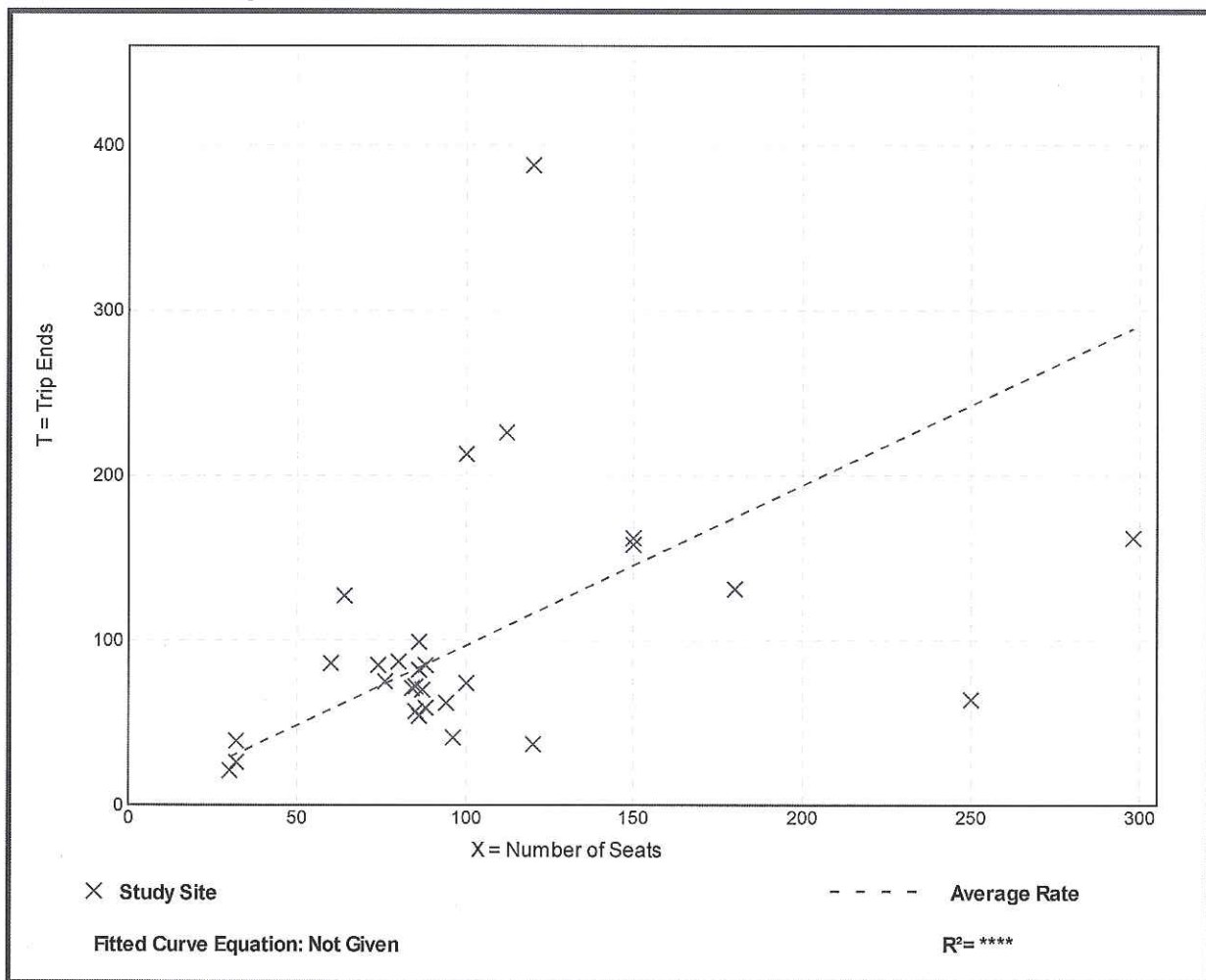
Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: **Seats**
 On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 29
 Avg. Num. of Seats: 103
 Directional Distribution: 53% entering, 47% exiting

Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
0.97	0.26 - 3.23	0.67

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

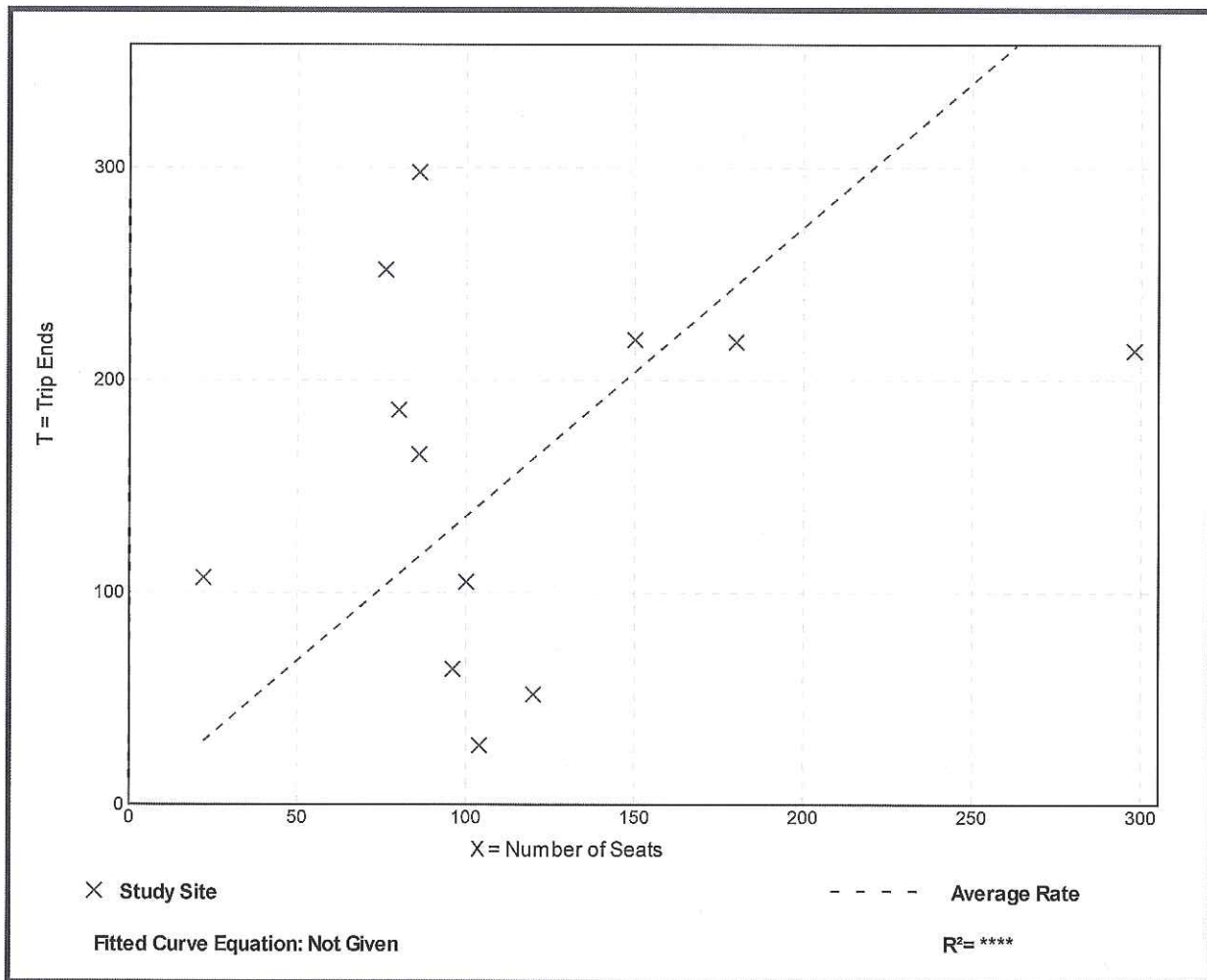
Vehicle Trip Ends vs: Seats
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 12
Avg. Num. of Seats: 117
Directional Distribution: 53% entering, 47% exiting

Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
1.36	0.27 - 4.86	1.07

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

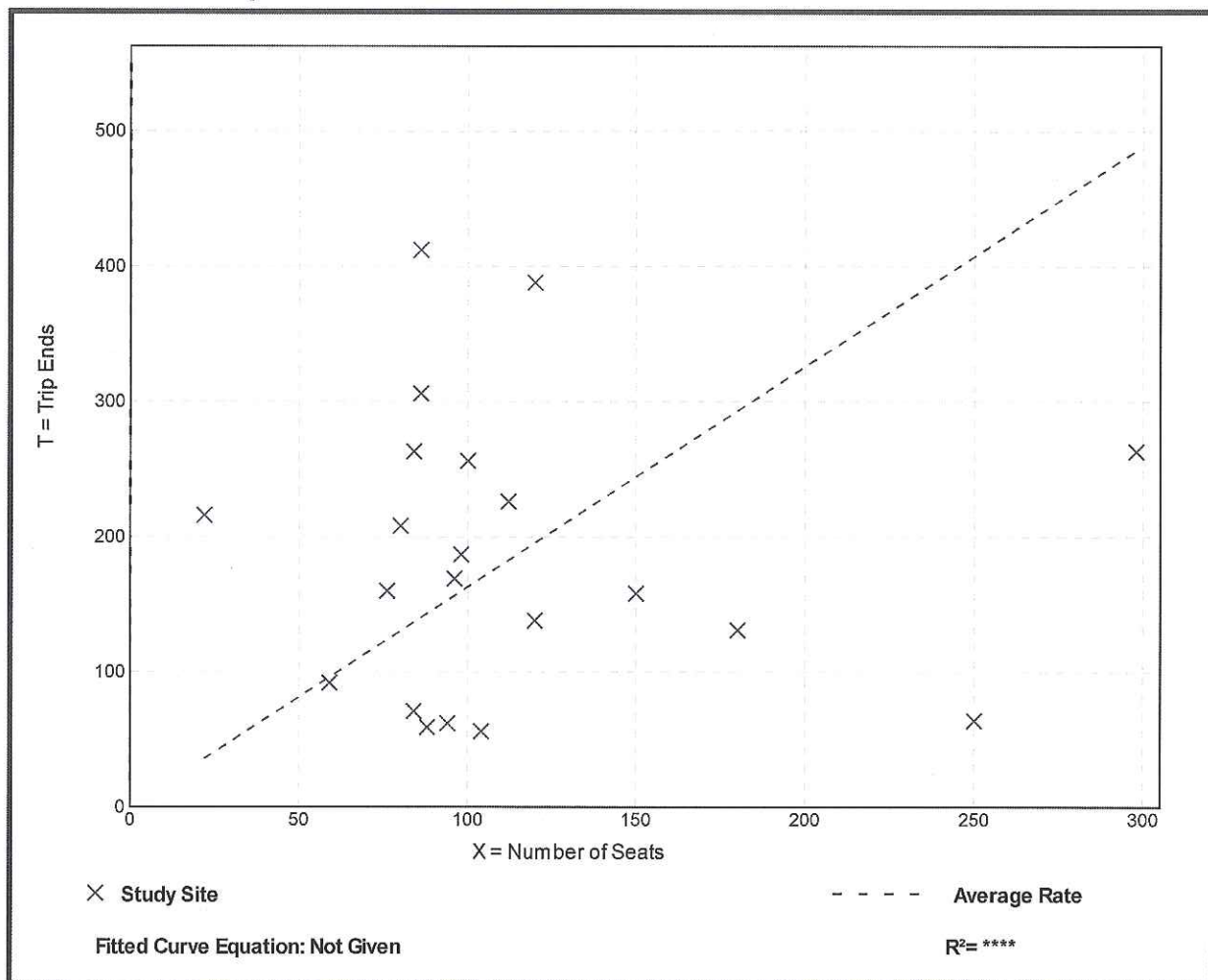
Vehicle Trip Ends vs: Seats
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 21
Avg. Num. of Seats: 114
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
1.63	0.26 - 9.82	1.42

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

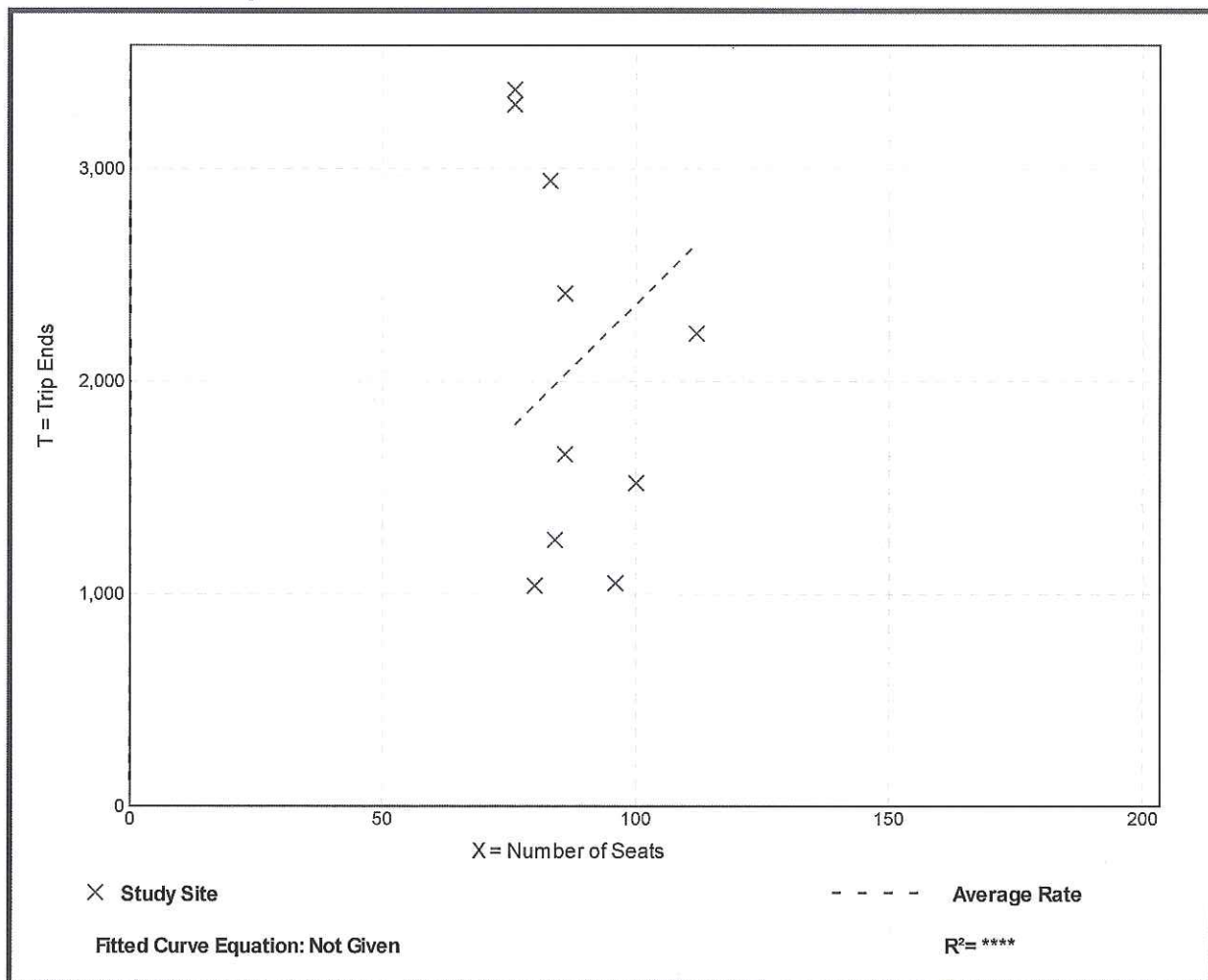
Vehicle Trip Ends vs: **Seats**
On a: **Saturday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 10
Avg. Num. of Seats: 88
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
23.64	10.94 - 44.37	12.17

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

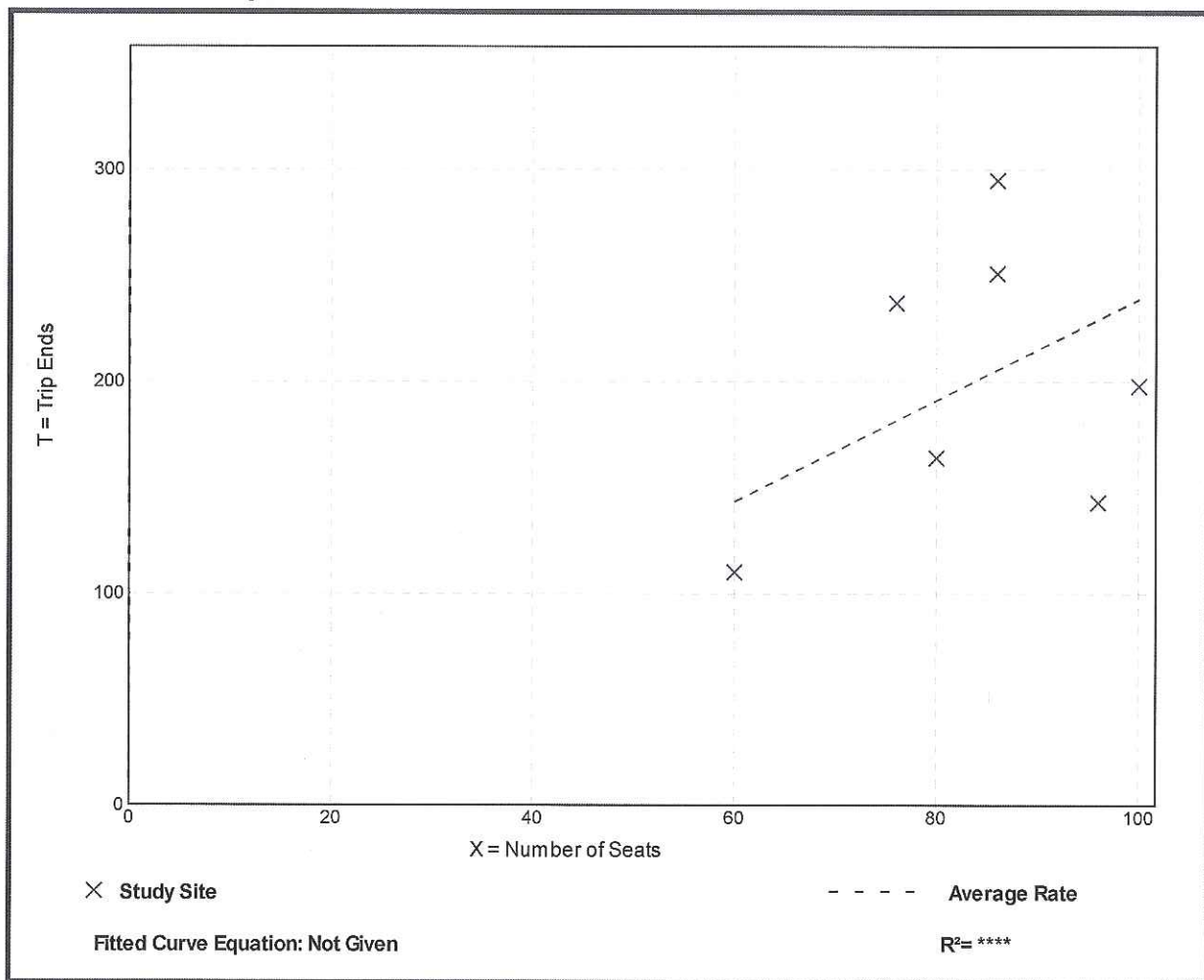
Vehicle Trip Ends vs: Seats
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 7
Avg. Num. of Seats: 83
Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
2.39	1.49 - 3.43	0.75

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: **Seats**

On a: **Sunday**

Setting/Location: **General Urban/Suburban**

Number of Studies: 10

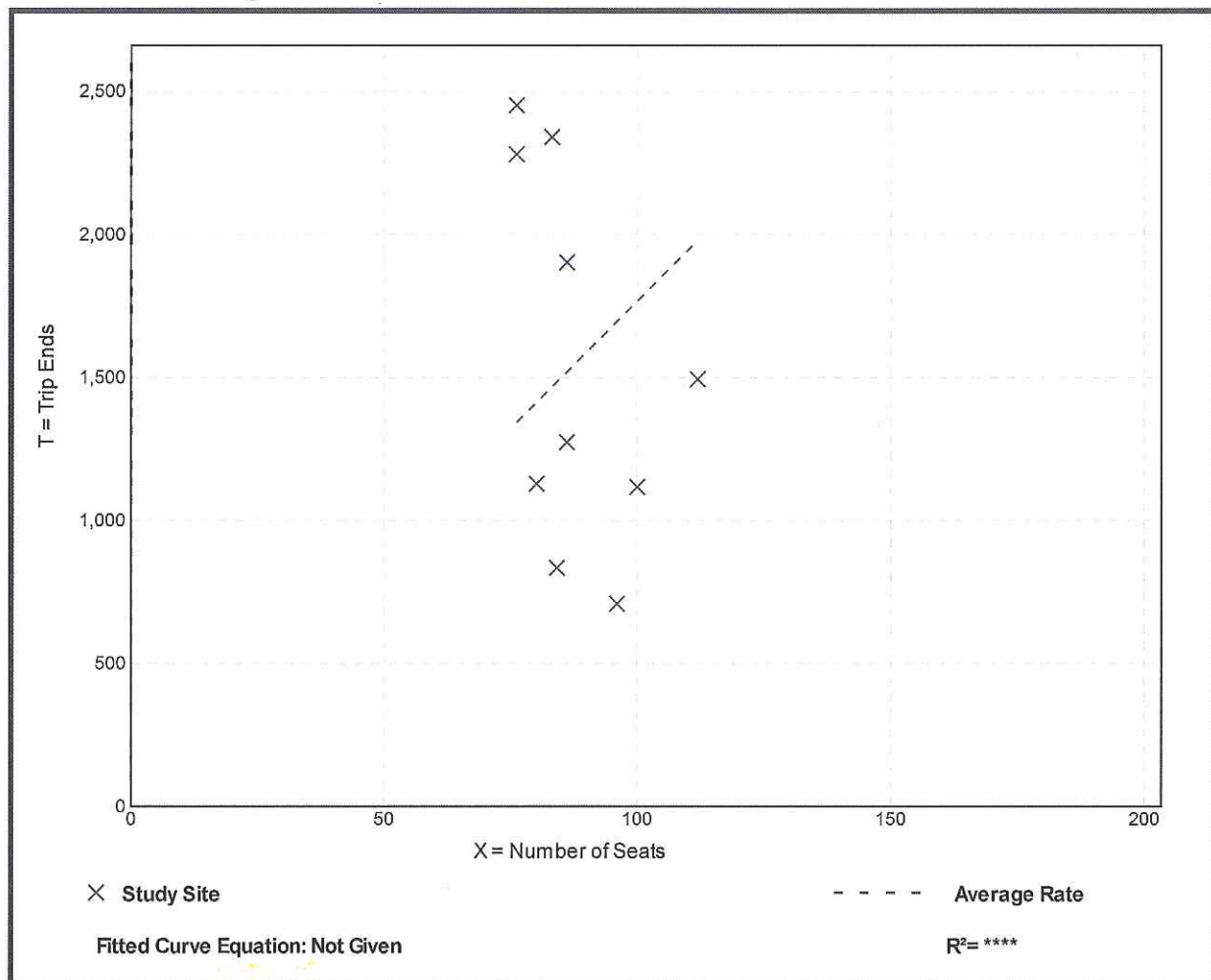
Avg. Num. of Seats: 88

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
17.67	7.39 - 32.25	8.84

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: Seats
On a: Sunday, Peak Hour of Generator

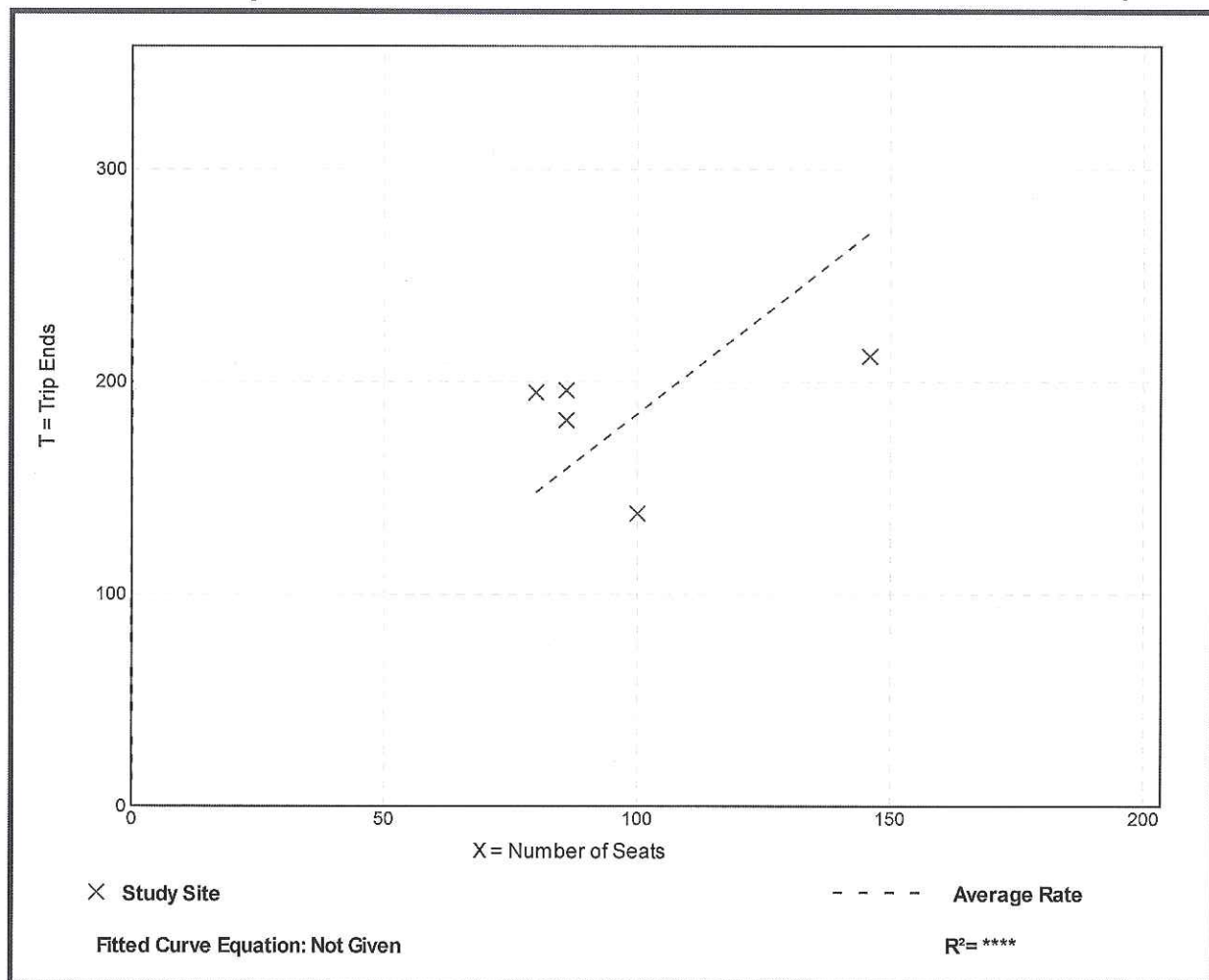
Setting/Location: General Urban/Suburban
Number of Studies: 5
Avg. Num. of Seats: 100
Directional Distribution: 49% entering, 51% exiting

Vehicle Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
1.85	1.38 - 2.44	0.49

Data Plot and Equation

Caution – Small Sample Size



Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

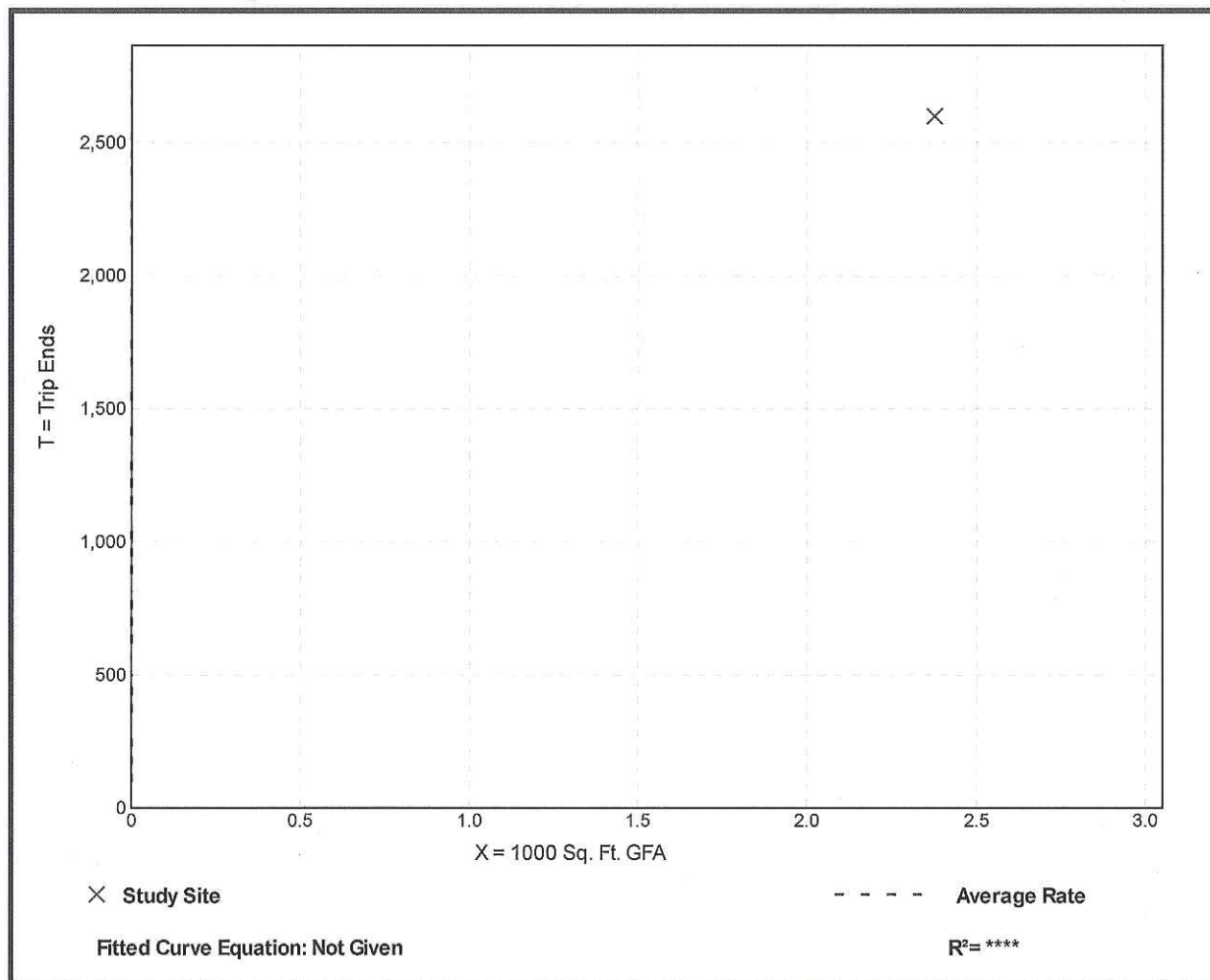
Setting/Location: Dense Multi-Use Urban
Number of Studies: 1
1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1094.74	1094.74 - 1094.74	*

Data Plot and Equation

Caution – Small Sample Size



Fast-Food Restaurant with Drive-Through Window (934)

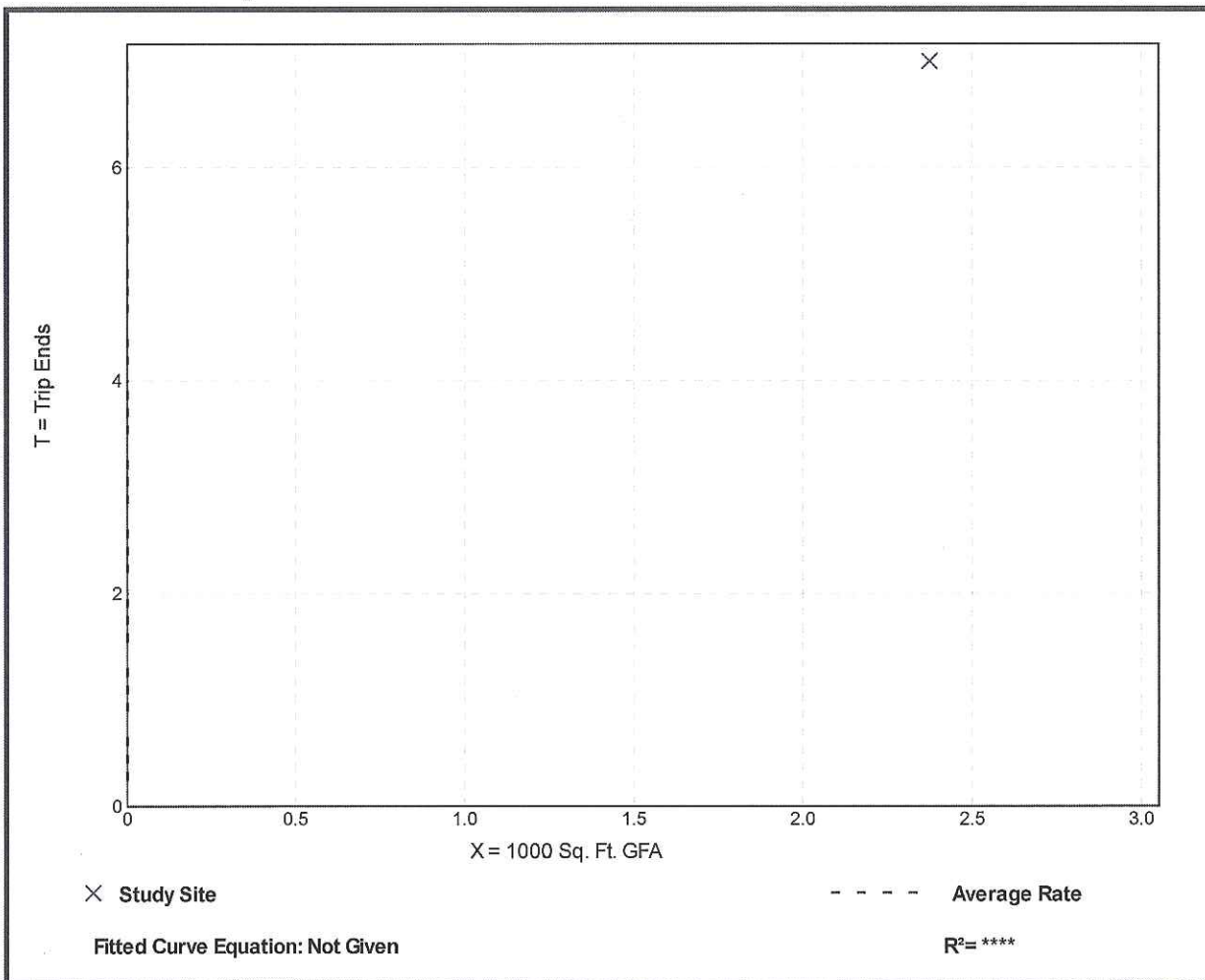
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: Dense Multi-Use Urban
 Number of Studies: 1
 1000 Sq. Ft. GFA: 2
 Directional Distribution: 71% entering, 29% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.95	2.95 - 2.95	*

Data Plot and Equation

Caution – Small Sample Size



Fast-Food Restaurant with Drive-Through Window (934)

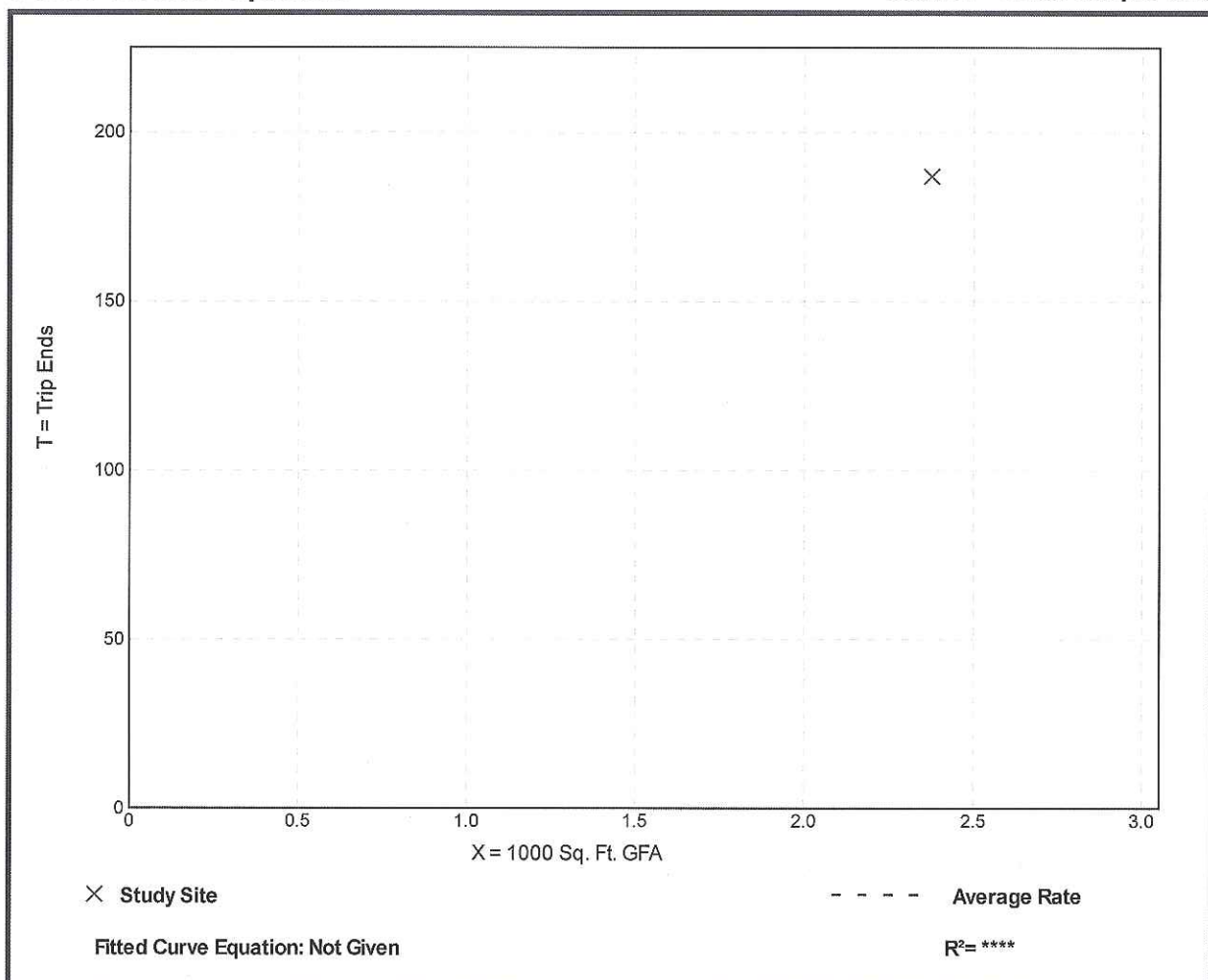
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: Dense Multi-Use Urban
 Number of Studies: 1
 1000 Sq. Ft. GFA: 2
 Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
78.74	78.74 - 78.74	*

Data Plot and Equation

Caution – Small Sample Size



Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
AM Peak Hour of Generator

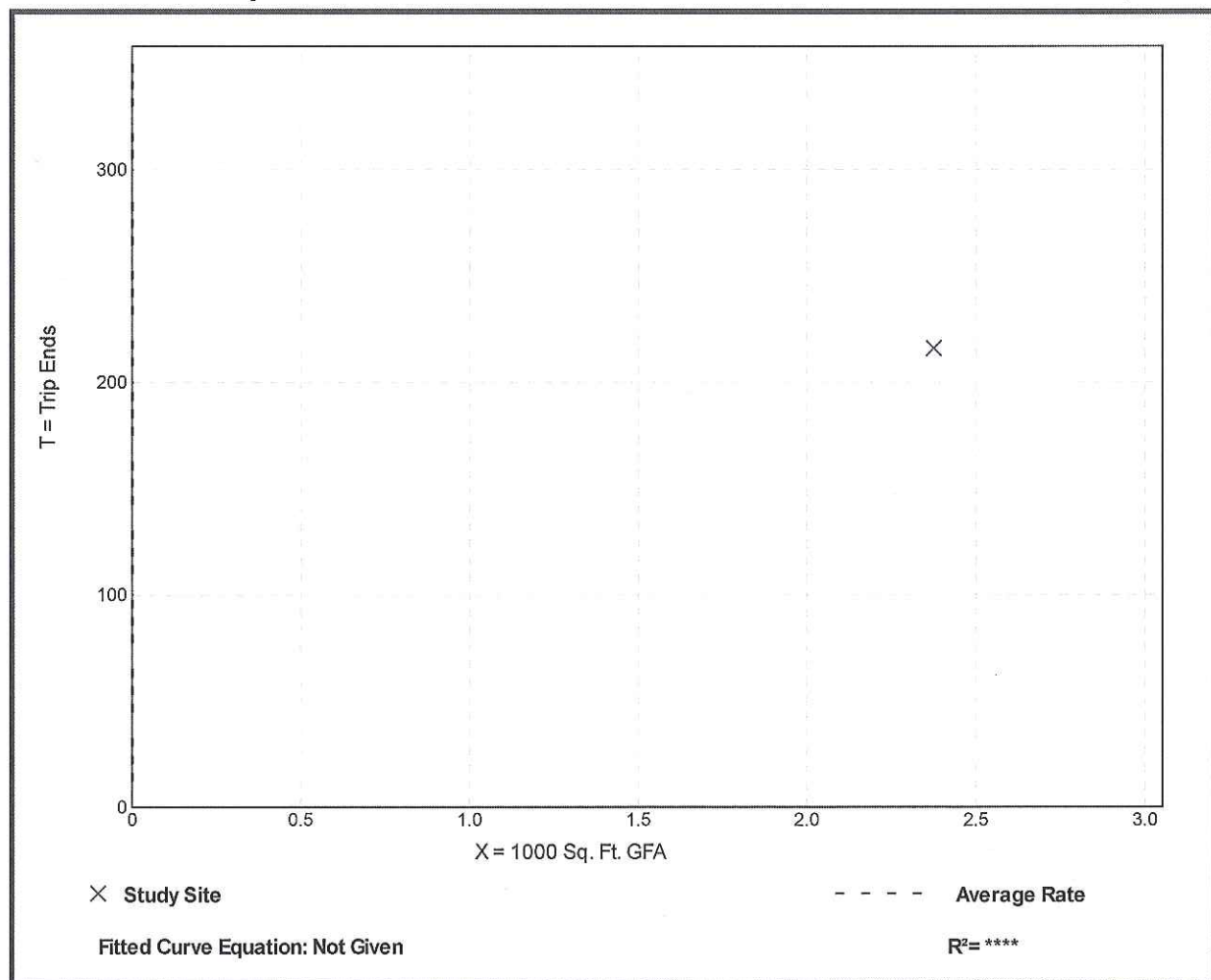
Setting/Location: Dense Multi-Use Urban
Number of Studies: 1
1000 Sq. Ft. GFA: 2
Directional Distribution: 57% entering, 43% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
90.95	90.95 - 90.95	*

Data Plot and Equation

Caution – Small Sample Size



Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
PM Peak Hour of Generator

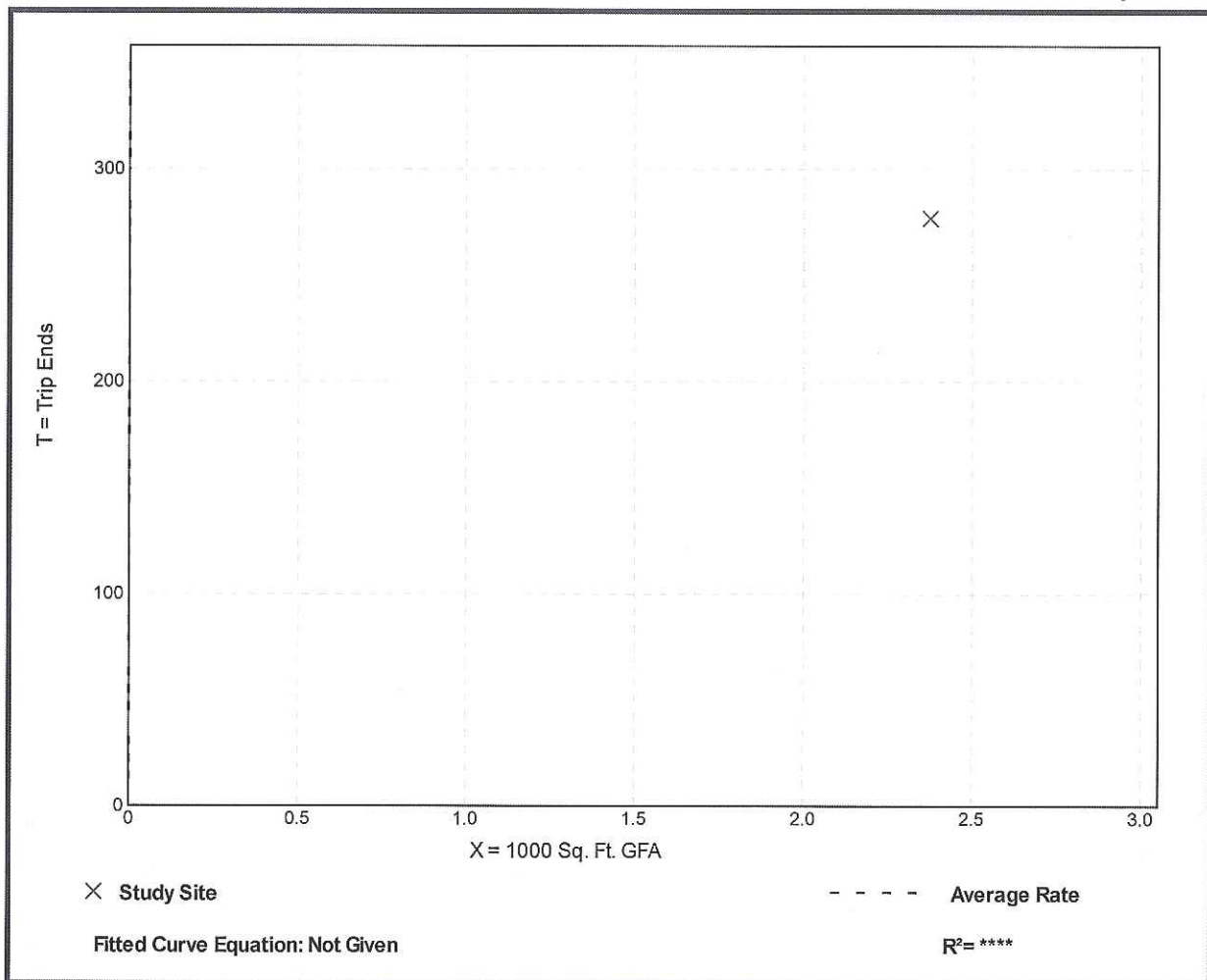
Setting/Location: Dense Multi-Use Urban
Number of Studies: 1
1000 Sq. Ft. GFA: 2
Directional Distribution: 49% entering, 51% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
116.63	116.63 - 116.63	*

Data Plot and Equation

Caution – Small Sample Size



Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Saturday

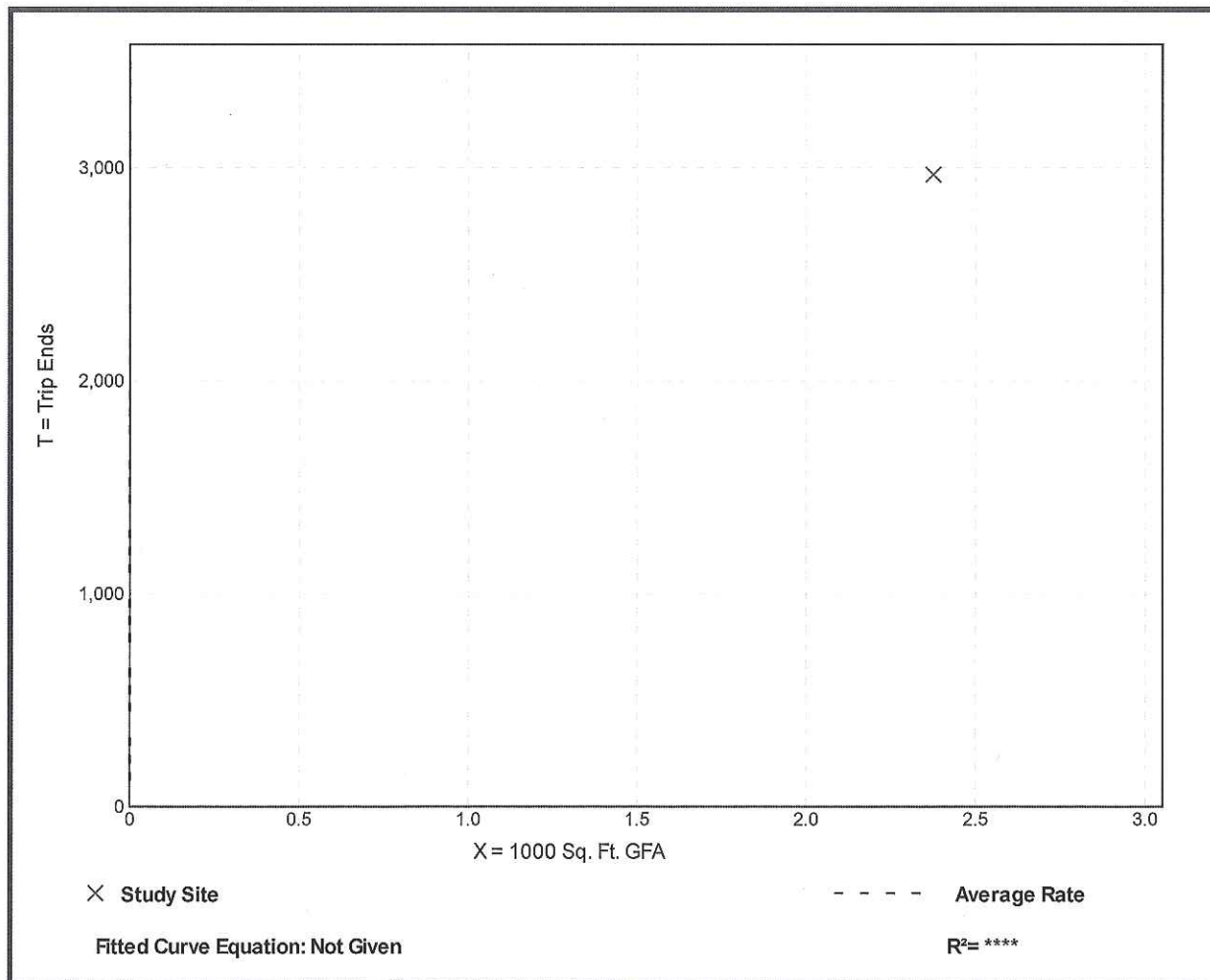
Setting/Location: Dense Multi-Use Urban
Number of Studies: 1
1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1250.11	1250.11 - 1250.11	*

Data Plot and Equation

Caution – Small Sample Size



Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Saturday, Peak Hour of Generator

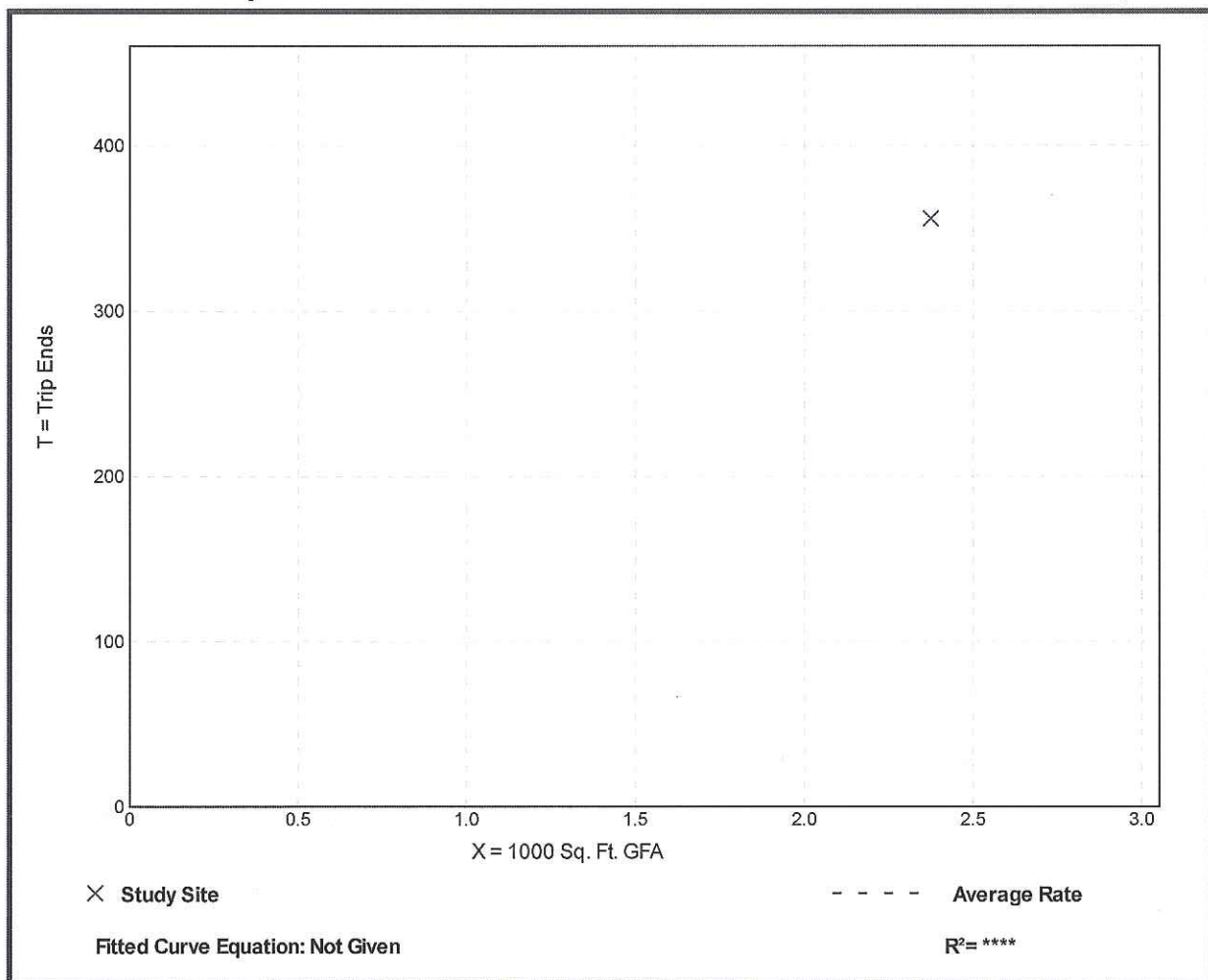
Setting/Location: Dense Multi-Use Urban
Number of Studies: 1
1000 Sq. Ft. GFA: 2
Directional Distribution: Not Available

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
149.89	149.89 - 149.89	*

Data Plot and Equation

Caution – Small Sample Size



Fast-Food Restaurant with Drive-Through Window (934)

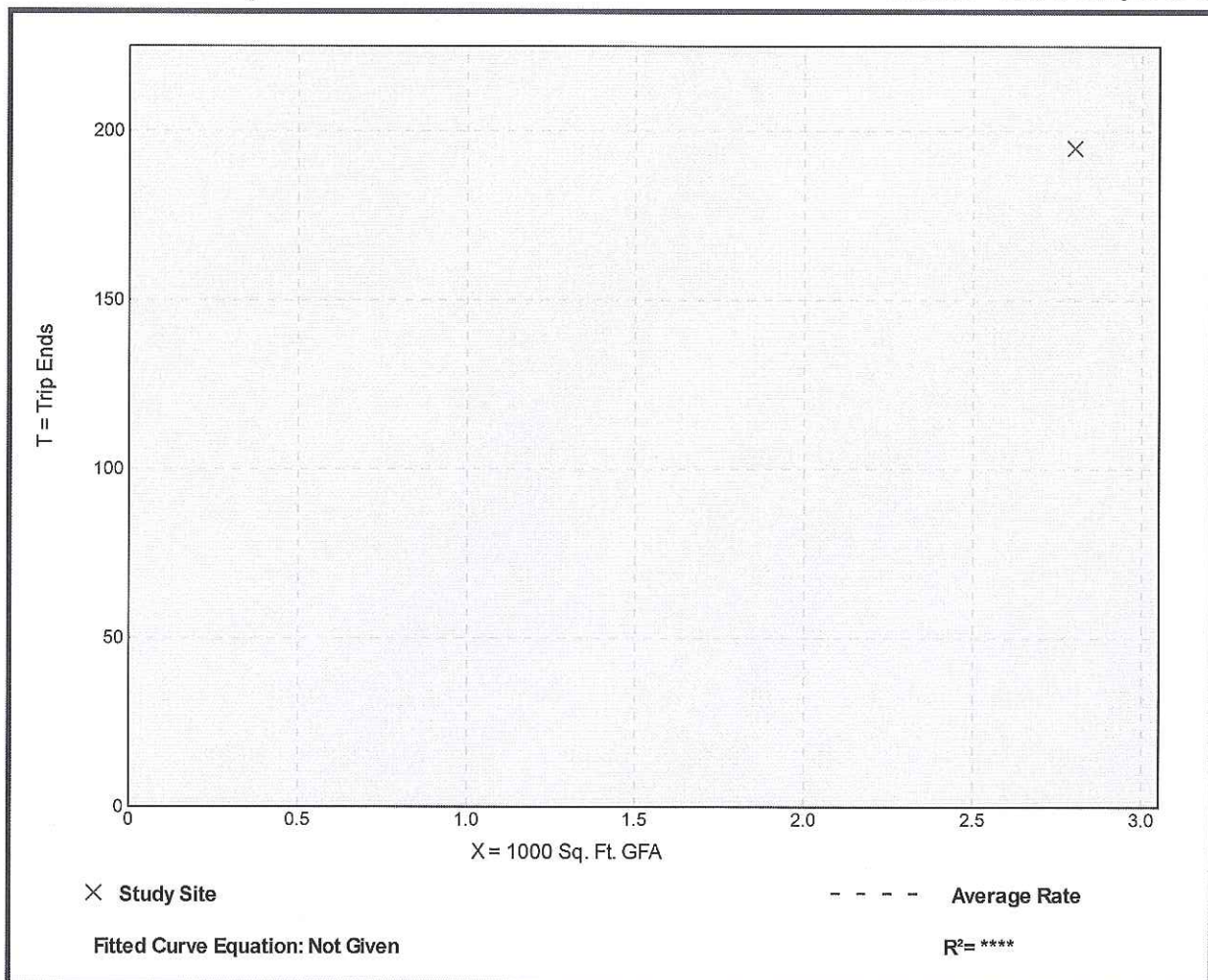
Person Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 1
 1000 Sq. Ft. GFA: 3
 Directional Distribution: 46% entering, 54% exiting

Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
69.64	69.64 - 69.64	*

Data Plot and Equation

Caution – Small Sample Size



Fast-Food Restaurant with Drive-Through Window (934)

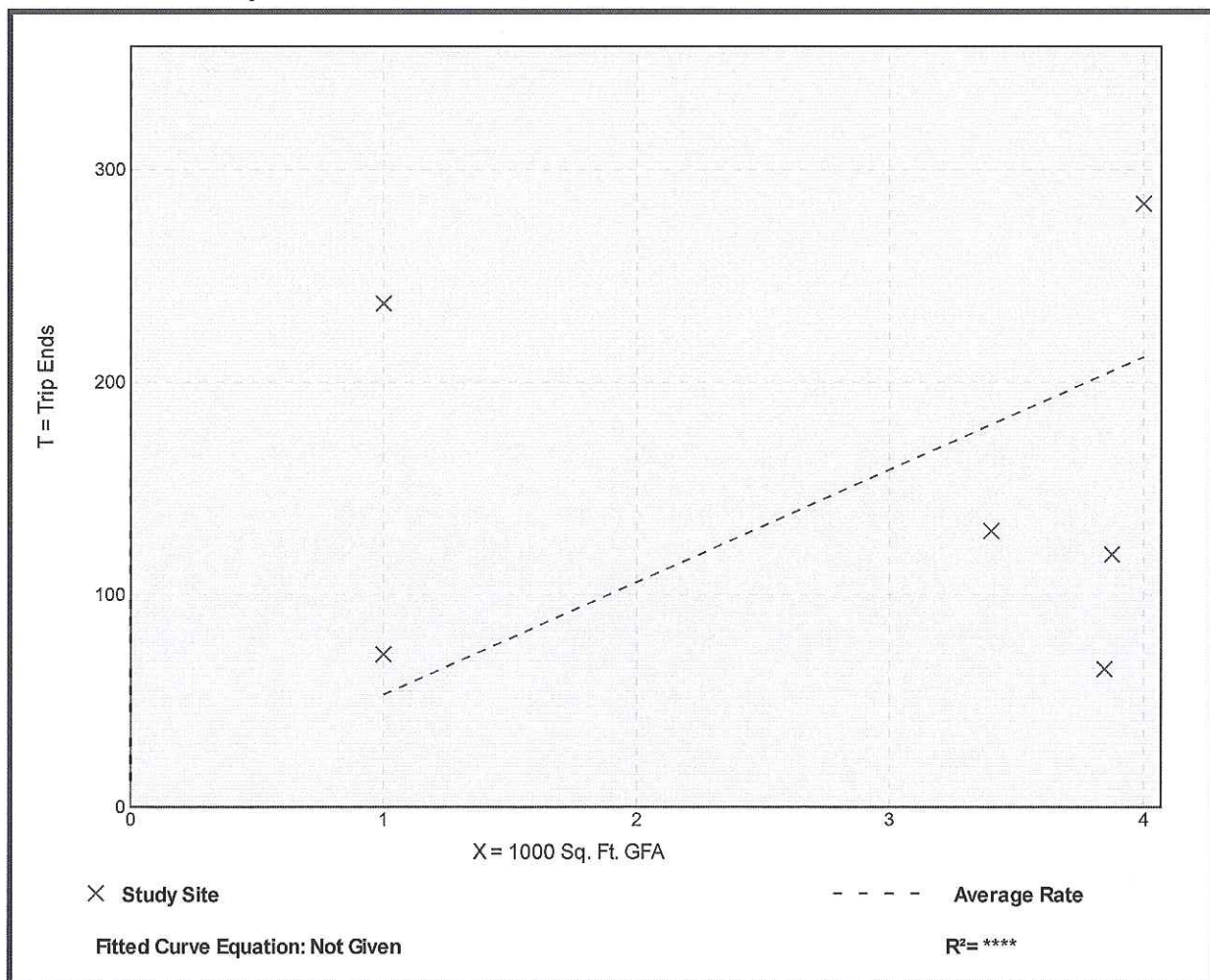
Person Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 6
1000 Sq. Ft. GFA: 3
Directional Distribution: 54% entering, 46% exiting

Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
52.98	16.91 - 237.00	55.02

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

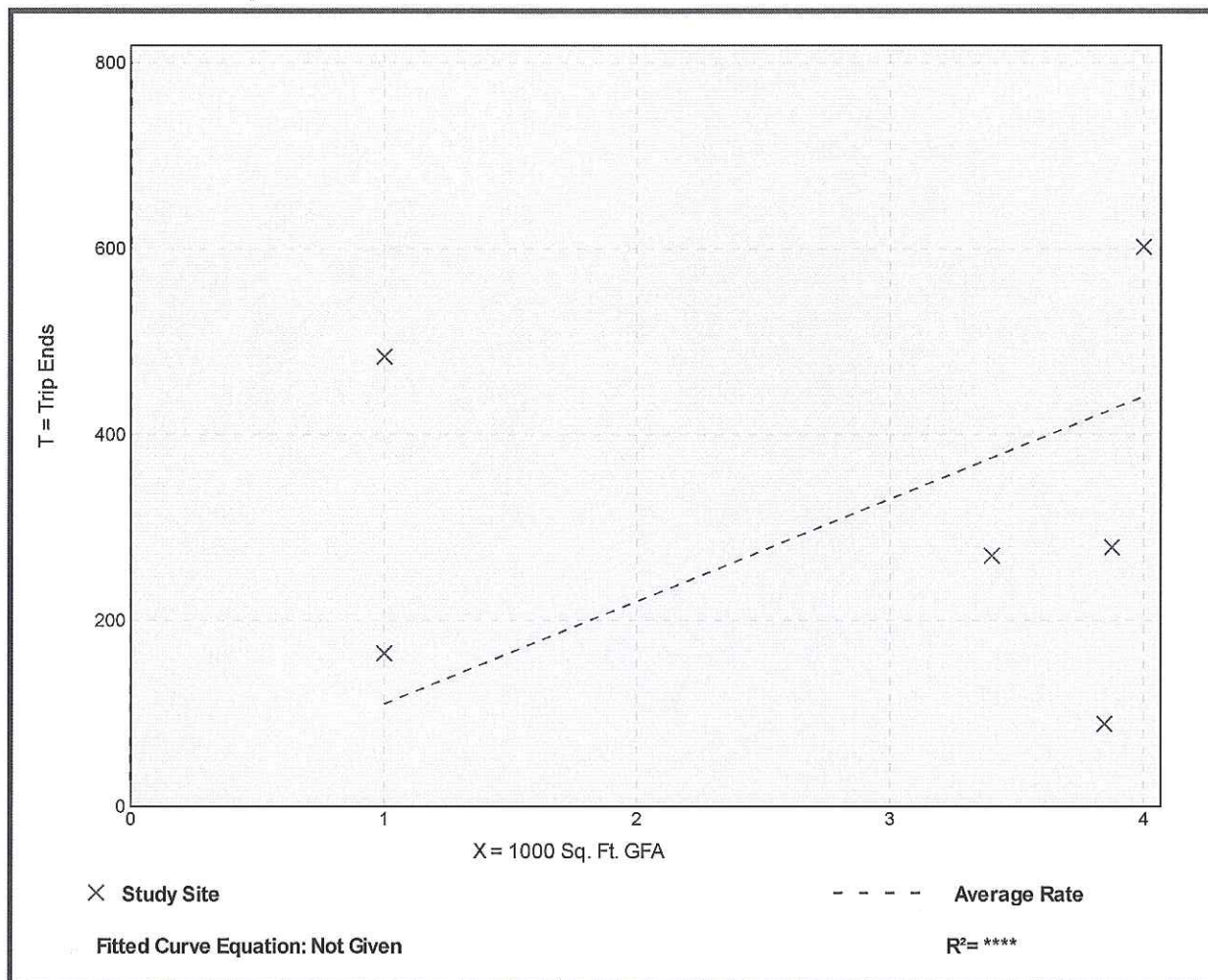
Person Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 6
1000 Sq. Ft. GFA: 3
Directional Distribution: 50% entering, 50% exiting

Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
110.34	23.15 - 484.00	114.56

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

Person Trip Ends vs: 1000 Sq. Ft. GFA
On a: Sunday, Peak Hour of Generator

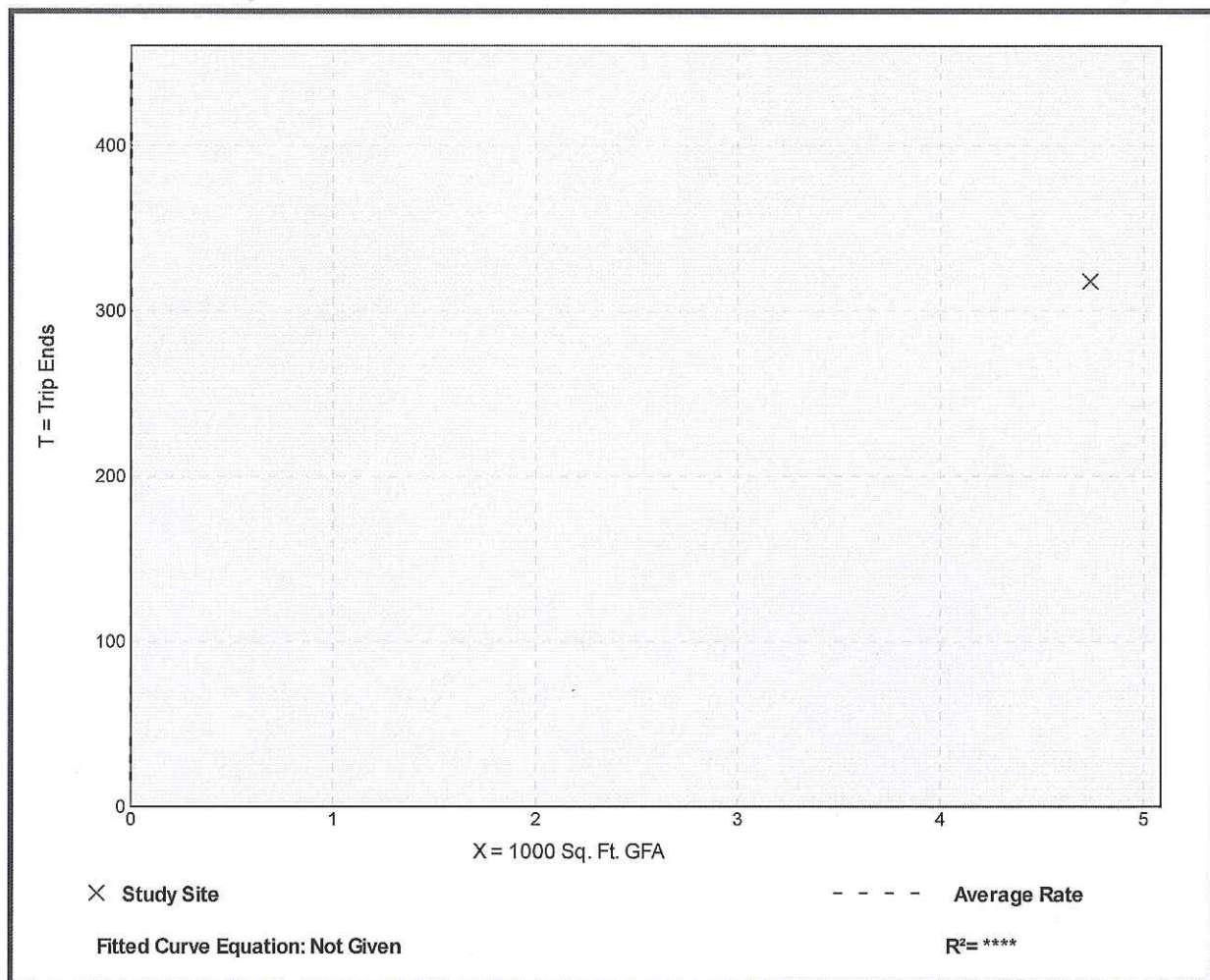
Setting/Location: General Urban/Suburban
Number of Studies: 1
1000 Sq. Ft. GFA: 5
Directional Distribution: 47% entering, 53% exiting

Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
67.16	67.16 - 67.16	*

Data Plot and Equation

Caution – Small Sample Size



Fast-Food Restaurant with Drive-Through Window (934)

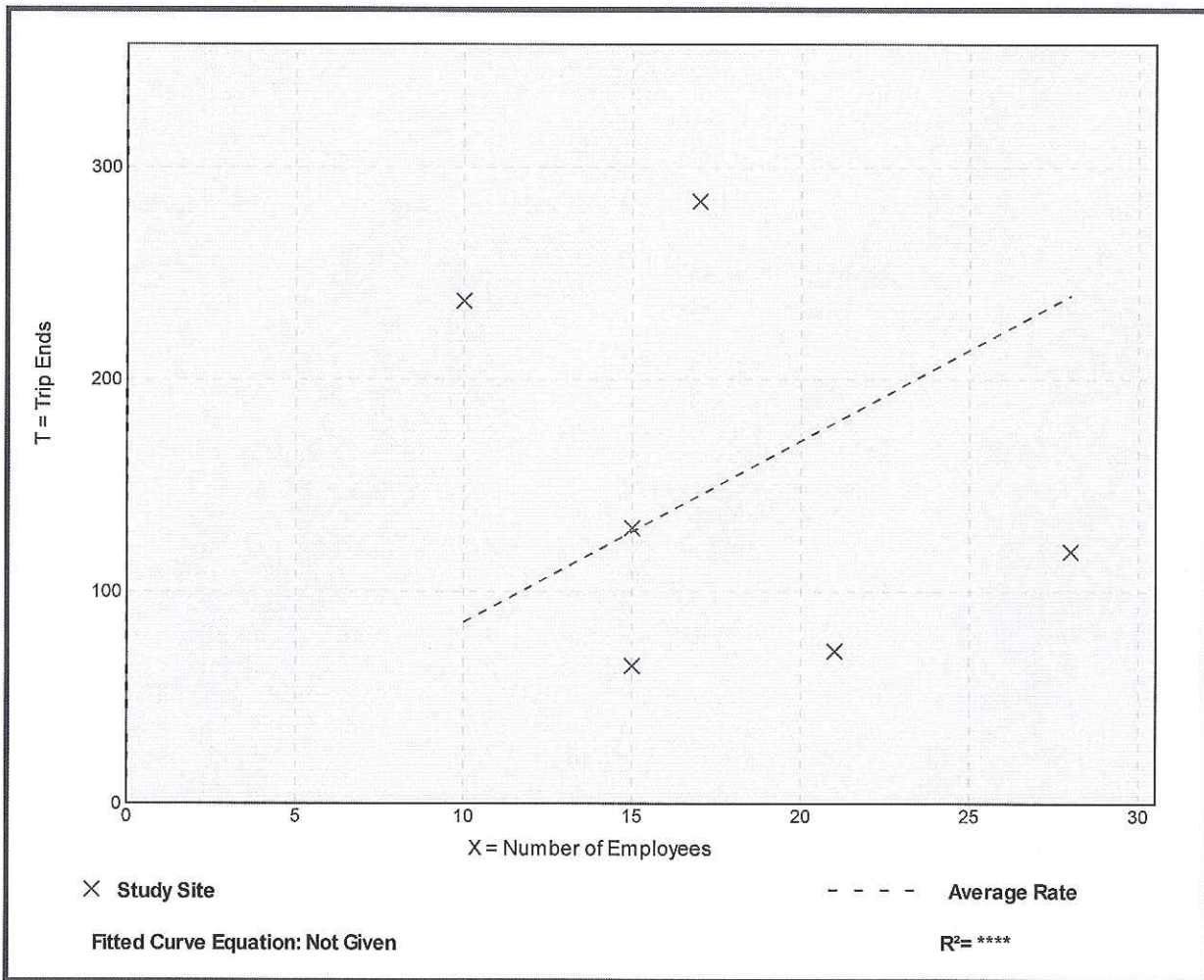
Person Trip Ends vs: Employees
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. Num. of Employees: 18
Directional Distribution: 54% entering, 46% exiting

Person Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
8.56	3.43 - 23.70	7.34

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

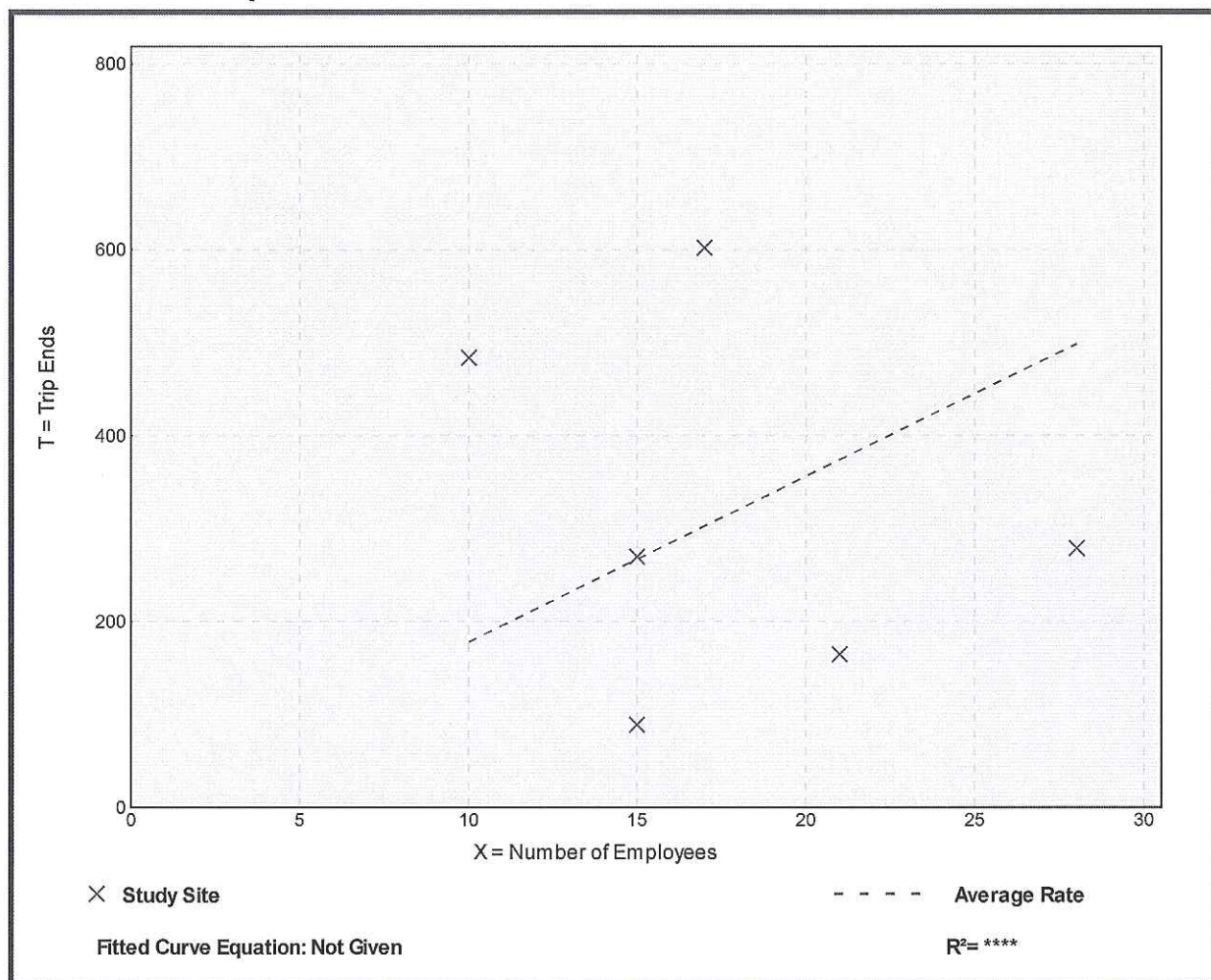
Person Trip Ends vs: Employees
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. Num. of Employees: 18
Directional Distribution: 50% entering, 50% exiting

Person Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
17.82	5.93 - 48.40	15.25

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

Person Trip Ends vs: Employees
On a: Sunday, Peak Hour of Generator

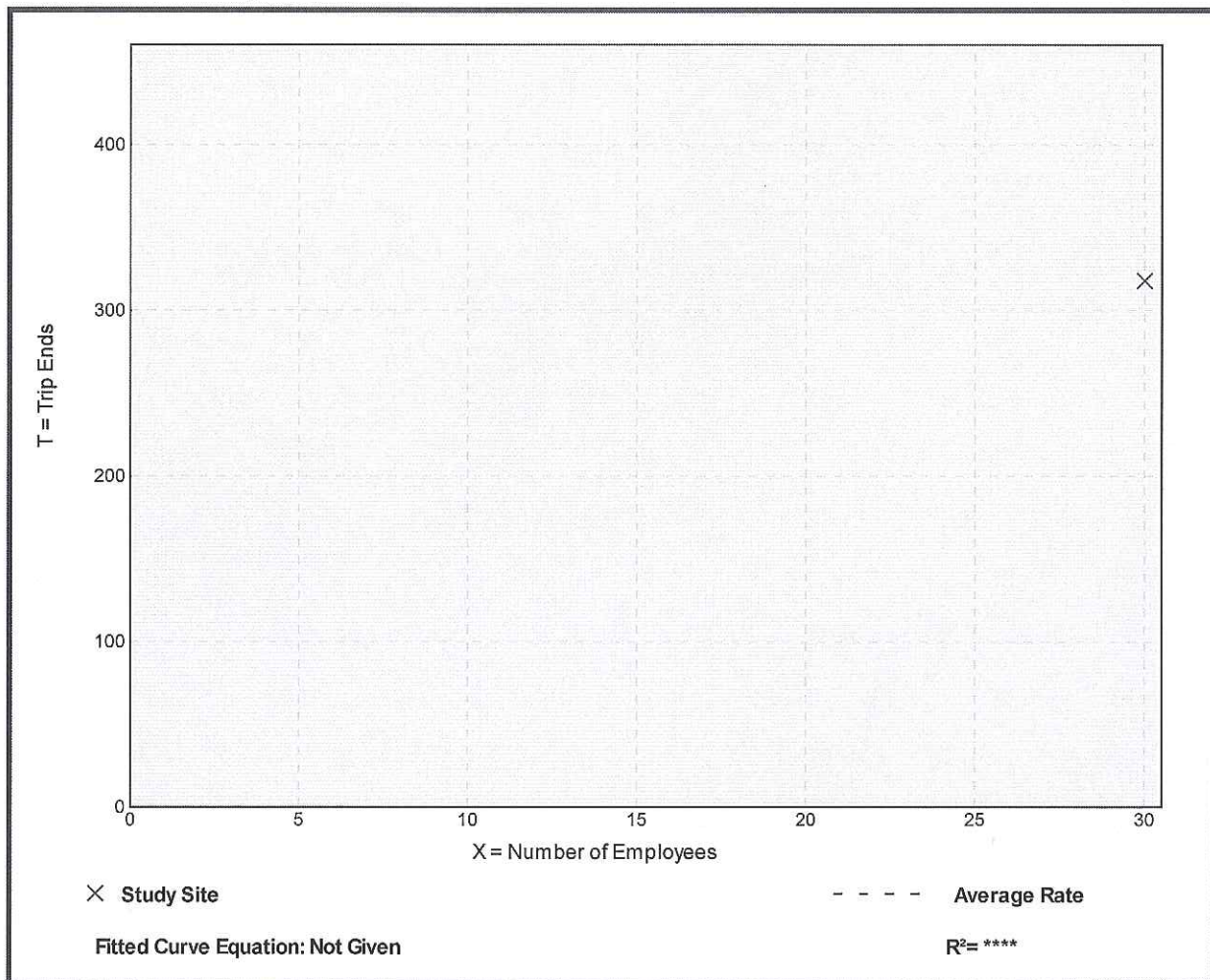
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Employees: 30
Directional Distribution: 47% entering, 53% exiting

Person Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
10.60	10.60 - 10.60	*

Data Plot and Equation

Caution – Small Sample Size



Fast-Food Restaurant with Drive-Through Window (934)

Person Trip Ends vs: Seats
On a: Weekday,
AM Peak Hour of Generator

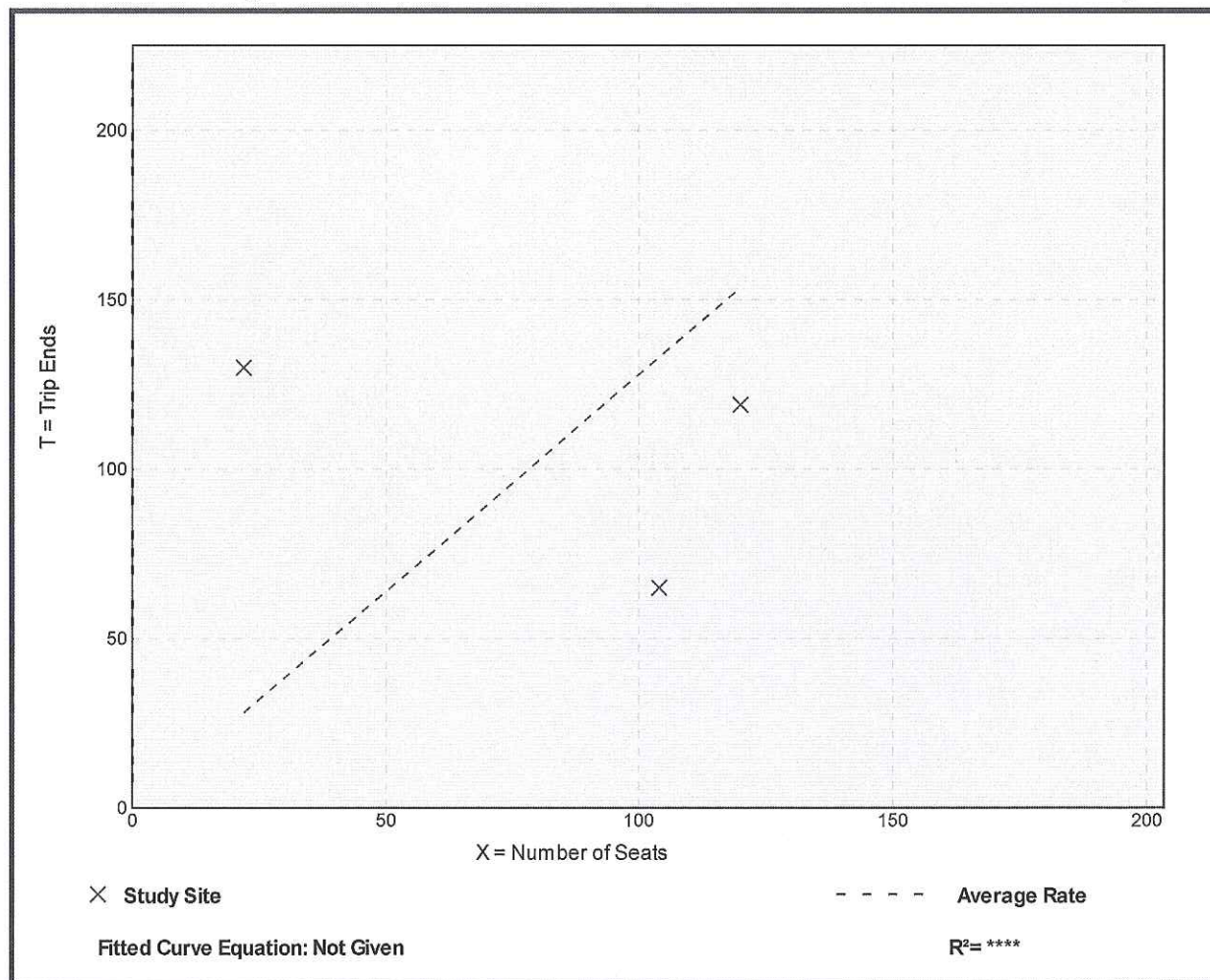
Setting/Location: General Urban/Suburban
Number of Studies: 3
Avg. Num. of Seats: 82
Directional Distribution: 57% entering, 43% exiting

Person Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
1.28	0.63 - 5.91	4.26

Data Plot and Equation

Caution – Small Sample Size



Fast-Food Restaurant with Drive-Through Window (934)

Person Trip Ends vs: Seats
On a: Weekday,
PM Peak Hour of Generator

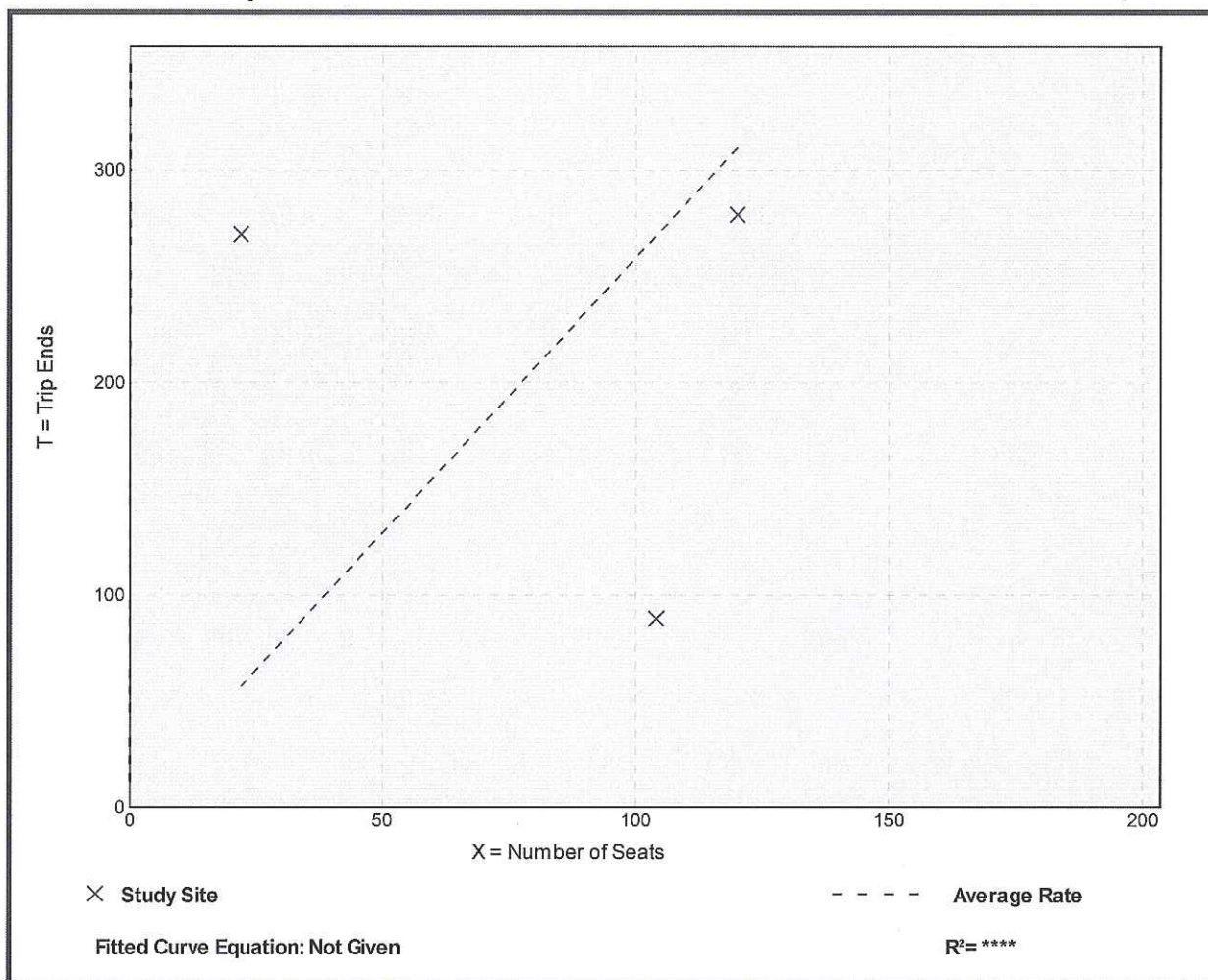
Setting/Location: General Urban/Suburban
Number of Studies: 3
Avg. Num. of Seats: 82
Directional Distribution: 50% entering, 50% exiting

Person Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
2.59	0.86 - 12.27	8.85

Data Plot and Equation

Caution – Small Sample Size



Fast-Food Restaurant with Drive-Through Window (934)

Person Trip Ends vs: Seats
On a: Sunday, Peak Hour of Generator

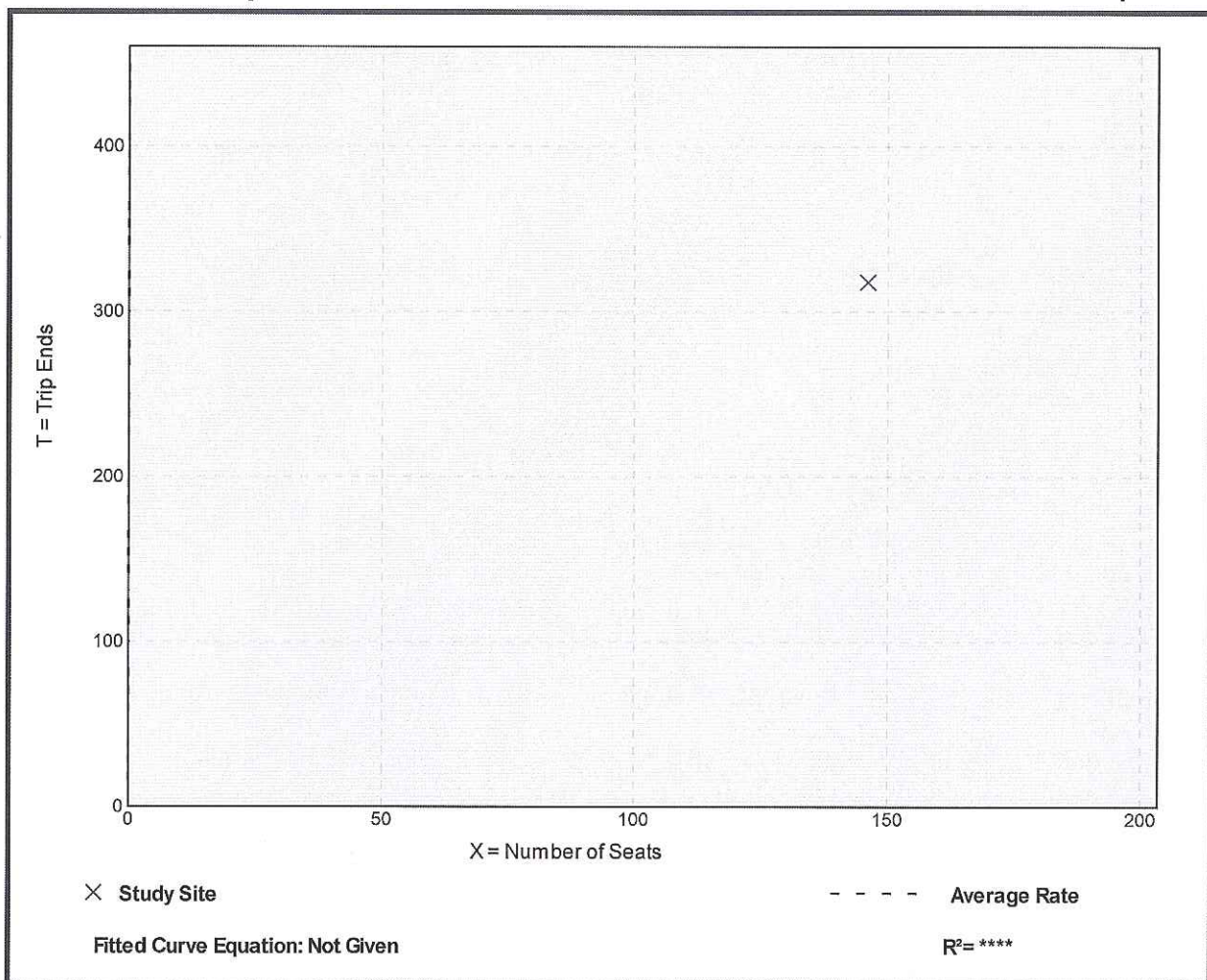
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. Num. of Seats: 146
Directional Distribution: 47% entering, 53% exiting

Person Trip Generation per Seat

Average Rate	Range of Rates	Standard Deviation
2.18	2.18 - 2.18	*

Data Plot and Equation

Caution – Small Sample Size



DATA FROM THE ITE TRIP GENERATION HANDBOOK, THIRD EDITION

**Table E.9 Pass-By and Non-Pass-By Trips Weekday, PM Peak Period
Land Use Code 820—Shopping Center**

SIZE (1,000 SQ. FT. GLA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS-BY TRIP (%)	NON-PASS-BY TRIP (%)			ADJ. STREET PEAK HOUR VOLUME	AVERAGE 24-HOUR TRAFFIC	SOURCE
						PRIMARY	DIVERTED	TOTAL			
53	Port Orange, FL	1993	162	2:00–6:00 p.m.	59	—	—	41	—	—	TPD Inc.
9	Kissimmee, FL	1994	107	2:00–6:00 p.m.	66	20	14	34	—	—	TPD Inc.
77	Edgewater, FL	1992	365	2:00–6:00 p.m.	46	—	—	54	—	—	TPD Inc.
82	Deltona, FL	1992	336	2:00–6:00 p.m.	34	—	—	66	—	—	TPD Inc.
78	Orlando, FL	1991	702	2:00–6:00 p.m.	55	23	22	45	—	—	TPD Inc.
45	Orlando, FL	1992	844	2:00–6:00 p.m.	56	24	20	44	—	—	TPD Inc.
50	Orlando, FL	1992	555	2:00–6:00 p.m.	41	41	18	59	—	—	TPD Inc.
52	Orlando, FL	1995	665	2:00–6:00 p.m.	42	33	25	58	—	—	TPD Inc.
17	Orlando, FL	1994	196	2:00–6:00 p.m.	66	—	—	34	—	—	TPD Inc.
60	Orlando, FL	1995	1,583	3:00–7:00 p.m.	40	38	22	60	—	—	TPD Inc.
158	Crestwood, KY	June 1993	129	4:00–6:00 p.m.	36	39	25	64	759	—	Barton- Aschman Assoc.
118	Louisville area, KY	June 1993	133	4:00–6:00 p.m.	22	51	27	78	3,555	—	Barton- Aschman Assoc.
74	Louisville, KY	June 1993	187	4:00–6:00 p.m.	30	43	27	70	922	—	Barton- Aschman Assoc.
59	Louisville area, KY	June 1993	247	4:00–6:00 p.m.	31	52	17	69	2,659	—	Barton- Aschman Assoc.
145	Louisville area, KY	June 1993	210	4:00–6:00 p.m.	53	30	17	47	2,636	—	Barton- Aschman Assoc.
104	Louisville area, KY	June 1993	281	4:00–6:00 p.m.	28	50	22	72	2,111	—	Barton- Aschman Assoc.
235	Louisville, KY	June 1993	211	4:00–6:00 p.m.	35	29	36	65	2,593	—	Barton- Aschman Assoc.
71	Louisville, KY	June 1993	109	4:00–6:00 p.m.	25	42	33	75	1,559	—	Barton- Aschman Assoc.
350	Worcester, MA	Apr. 1994	224	4:00–6:00 p.m.	18	45	37	82	2,112	—	ICSC
738	East Brunswick, NJ	Apr. 1994	283	4:00–6:00 p.m.	14	79	7	86	8,059	—	ICSC
294	Philadelphia, PA	Apr. 1994	213	4:00–6:00 p.m.	25	51	24	75	4,055	—	ICSC
256	Hamden, CT	Apr. 1994	208	4:00–6:00 p.m.	27	51	22	73	3,422	—	ICSC
418	Glen Burnie, MD	Apr. 1994	281	4:00–6:00 p.m.	20	51	29	80	5,610	—	ICSC
560	Harrisonburg, VA	Apr. 1994	437	4:00–6:00 p.m.	19	49	32	81	3,051	—	ICSC

**Table E.9 (Cont'd) Pass-By and Non-Pass-By Trips Weekday,
PM Peak Period Land Use Code 820—Shopping Center**

SIZE (1,000 SQ. FT. GLA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS-BY TRIP (%)	NON-PASS-BY TRIP (%)			ADJ. STREET PEAK HOUR VOLUME	AVERAGE 24-HOUR TRAFFIC	SOURCE
						PRIMARY	DIVERTED	TOTAL			
361	Glen Allen, VA	Apr. 1994	315	4:00–6:00 p.m.	17	54	29	83	2,034	—	ICSC
375	Shelby, NC	May 1994	214	4:00–6:00 p.m.	30	48	22	70	3,053	—	ICSC
413	Texas City, TX	May 1994	228	4:00–6:00 p.m.	28	52	20	72	589	—	ICSC
488	Texas City, TX	May 1994	257	4:00–6:00 p.m.	12	75	13	88	1,094	—	ICSC
293	Berwyn, IL	May 1994	282	4:00–6:00 p.m.	24	70	6	76	4,606	—	ICSC
667	Bourbonais, IL	May 1994	200	4:00–6:00 p.m.	16	53	31	84	2,770	—	ICSC
225	Bellevue, IL	May 1994	264	4:00–6:00 p.m.	35	32	33	65	1,970	—	ICSC
255	Bettendorf, IA	May 1994	222	4:00–6:00 p.m.	24	37	39	76	3,706	—	ICSC
808	Laguna Hills, CA	June 1994	240	4:00–6:00 p.m.	13	73	14	87	4,035	—	ICSC
450	Hanford, CA	May 1994	321	4:00–6:00 p.m.	23	49	28	77	2,787	—	ICSC
800	San Jose, CA	May 1994	205	4:00–6:00 p.m.	21	51	28	79	7,474	—	ICSC
598	Greeley, CO	May 1994	205	4:00–6:00 p.m.	17	55	28	83	3,840	—	ICSC
581	Pueblo, CO	May 1994	296	4:00–6:00 p.m.	18	53	29	82	2,939	—	ICSC
476	Bellevue, WA	May 1994	234	4:00–6:00 p.m.	26	54	20	74	3,427	—	ICSC
720	Framingham, MA	Dec. 1982	92	3:30–7:00 p.m.	23	39	38	77	—	73,628	Raymond Keyes Assoc.
890	Newark, DE	July 1984	179	3:00–8:00 p.m.	12	49	39	88	—	—	Raymond Keyes Assoc.
402	Manassas, VA	June 1984	87	4:00–6:00 p.m.	48	25	27	52	—	—	Raymond Keyes Assoc.
462	Ross, PA	June 1980	175	5:30–7:00 p.m.	36	—	—	64	—	27,200	Raymond Keyes Assoc.
234	Huntington LI, NY	Nov. 1985	181	4:00–7:00 p.m.	46	21	33	54	—	34,630	Raymond Keyes Assoc.
658	Wayne, NJ	Sept. 1984	243	3:00–6:00 p.m.	27	61	12	73	—	85,600	Raymond Keyes Assoc.
1,200	Washington, DC	1980	364	4:00–6:00 p.m.	25	35	40	75	—	—	Gorove-Slade
800	Southern CA	—	1,000	4:00–6:00 p.m.	12	45	43	88	—	—	Frischer
451	Portland, OR	—	—	5:00–6:00 p.m.	25	—	—	75	—	—	Buttke
113	Portland, OR	—	—	5:00–6:00 p.m.	17	—	—	83	—	—	Buttke

**Table E.9 (Cont'd) Pass-By and Non-Pass-By Trips Weekday, PM
Peak Period Land Use Code 820—Shopping Center**

SIZE (1,000 SQ. FT. GLA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS-BY TRIP (%)	NON-PASS-BY TRIP (%)			ADJ. STREET PEAK HOUR VOLUME	AVERAGE 24-HOUR TRAFFIC	SOURCE
						PRIMARY	DIVERTED	TOTAL			
622	Ramsey, MN	Nov. 1985	46	4:00–9:00 p.m.	44	26	30	56	—	36,370	Raymond Keyes Assoc.
736	Pensacola, FL	Oct. 1985	383	3:00–7:00 p.m.	26	35	39	74	—	—	Raymond Keyes Assoc.
84	Dover, DE	July 1985	218	3:30–7:00 p.m.	50	6	44	50	—	—	Raymond Keyes Assoc.
500	Meriden, CT	Apr. 1985	—	4:00–6:00 p.m.	8	—	—	92	—	—	Connecticut DOT
660	Enfield, CT	Apr. 1985	—	4:00–6:00 p.m.	22	—	—	78	—	—	Connecticut DOT
845	Waterford, CT	Apr. 1985	—	4:00–6:00 p.m.	14	—	—	86	—	—	Connecticut DOT
1,060	West Hartford, CT	Apr. 1985	—	4:00–6:00 p.m.	17	—	—	83	—	—	Connecticut DOT
131	Pr. Georges Co., MD	1982/83	88	4:00–6:00 p.m.	74	—	—	26	—	—	JHK
181	Pr. Georges Co., MD	1982/83	105	4:00–6:00 p.m.	36	—	—	64	—	—	JHK
100	Pr. Georges Co., MD	1982/83	93	4:00–6:00 p.m.	36	—	—	64	—	—	JHK
475	Pr. Georges Co., MD	1982/83	130	4:00–6:00 p.m.	20	—	—	80	—	—	JHK
60	Pr. Georges Co., MD	1982/83	72	4:00–6:00 p.m.	72	—	—	28	—	—	JHK
90	Pr. Georges Co., MD	1982/83	91	4:00–6:00 p.m.	58	—	—	42	—	—	JHK
78	Pr. Georges Co., MD	1982/83	113	4:00–6:00 p.m.	59	—	—	41	—	—	JHK
44	Pr. Georges Co., MD	1982/83	97	4:00–6:00 p.m.	51	—	—	49	—	—	JHK
467	Pr. Georges Co., MD	1982/83	99	4:00–6:00 p.m.	56	—	—	44	—	—	JHK
352	W. Orange, NJ	Mar. 1986	149	4:00–6:00 p.m.	38	19	43	62	—	21,520	Raymond Keyes Assoc.
176	Tarpon Springs, FL	May 1986	124	3:00–7:00 p.m.	37	28	35	63	—	34,080	Raymond Keyes Assoc.
762	Orlando, FL	Fall 1985	182	4:00–6:00 p.m.	25	52	23	75	—	—	Kimley-Horn and Assoc. Inc.
166	Orlando, FL	Fall 1985	124	4:00–6:00 p.m.	27	48	25	73	—	—	Kimley-Horn and Assoc. Inc.
129	Orlando, FL	Fall 1985	116	4:00–6:00 p.m.	28	50	22	72	—	—	Kimley-Horn and Assoc. Inc.
71	Orlando, FL	Fall 1985	81	4:00–6:00 p.m.	50	44	6	50	—	—	Kimley-Horn and Assoc. Inc.

**Table E.9 (Cont'd) Pass-By and Non-Pass-By Trips Weekday, PM
Peak Period Land Use Code 820—Shopping Center**

SIZE (1,000 SQ. FT. GLA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS-BY TRIP (%)	NON-PASS-BY TRIP (%)			ADJ. STREET PEAK HOUR VOLUME	AVERAGE 24-HOUR TRAFFIC	SOURCE
						PRIMARY	DIVERTED	TOTAL			
921	Albany, NY	July & Aug. 1985	196	4:00–6:00 p.m.	23	42	35	77	—	60,950	Raymond Keyes Assoc.
108	Overland Park, KS	July 1988	111	4:30–5:30 p.m.	26	61	13	74	—	34,000	—
118	Overland Park, KS	Aug. 1988	123	4:30–5:30 p.m.	25	55	20	75	—	—	—
256	Greece, NY	June 1988	120	4:00–6:00 p.m.	38	62	—	62	—	23,410	Sear Brown
160	Greece, NY	June 1988	78	4:00–6:00 p.m.	29	71	—	71	—	57,306	Sear Brown
550	Greece, NY	June 1988	117	4:00–6:00 p.m.	48	52	—	52	—	40,763	Sear Brown
51	Boca Raton, FL	Dec. 1987	110	4:00–6:00 p.m.	33	34	33	67	—	42,225	Kimley-Horn and Assoc. Inc.
1,090	Ross Twp, PA	July 1988	411	2:00–8:00 p.m.	34	56	10	66	—	51,500	Wilbur Smith and Assoc.
97	Upper Dublin Twp, PA	Winter 1988/89	—	4:00–6:00 p.m.	41	—	—	59	—	34,000	McMahon Associates
118	Tredyffrin Twp, PA	Winter 1988/89	—	4:00–6:00 p.m.	24	—	—	76	—	10,000	Booz Allen & Hamilton
122	Lawnside, NJ	Winter 1988/89	—	4:00–6:00 p.m.	37	—	—	63	—	20,000	Pennoni Associates
126	Boca Raton, FL	Winter 1988/89	—	4:00–6:00 p.m.	43	—	—	57	—	40,000	McMahon Associates
150	Willow Grove, PA	Winter 1988/89	—	4:00–6:00 p.m.	39	—	—	61	—	26,000	Booz Allen & Hamilton
153	Broward Cnty., FL	Winter 1988/89	—	4:00–6:00 p.m.	50	—	—	50	—	85,000	McMahon Associates
153	Arden, DE	Winter 1988/89	—	4:00–6:00 p.m.	30	—	—	70	—	26,000	Orth-Rodgers & Assoc. Inc.
154	Doylestown, PA	Winter 1988/89	—	4:00–6:00 p.m.	32	—	—	68	—	29,000	Orth-Rodgers & Assoc. Inc.
164	Middletown Twp, PA	Winter 1988/89	—	4:00–6:00 p.m.	33	—	—	67	—	25,000	Booz Allen & Hamilton
166	Haddon Twp, NJ	Winter 1988/89	—	4:00–6:00 p.m.	20	—	—	80	—	6,000	Pennoni Associates
205	Broward Cnty., FL	Winter 1988/89	—	4:00–6:00 p.m.	55	—	—	45	—	62,000	McMahon Associates

**Table E.9 (Cont'd) Pass-By and Non-Pass-By Trips Weekday, PM Peak Period
Land Use Code 820—Shopping Center**

SIZE (1,000 SQ. FT. GLA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS-BY TRIP (%)	NON-PASS-BY TRIP (%)			ADJ. STREET PEAK HOUR VOLUME	AVERAGE 24-HOUR TRAFFIC	SOURCE
						PRIMARY	DIVERTED	TOTAL			
237	W. Windsor Twp, NJ	Winter 1988/89	—	4:00–6:00 p.m.	48	—	—	52	—	46,000	Booz Allen & Hamilton
242	Willow Grove, PA	Winter 1988/89	—	4:00–6:00 p.m.	37	—	—	63	—	26,000	McMahon Associates
297	Whitehall, PA	Winter 1988/89	—	4:00–6:00 p.m.	33	—	—	67	—	26,000	Orth-Rodgers & Assoc. Inc.
360	Broward Cnty., FL	Winter 1988/89	—	4:00–6:00 p.m.	44	—	—	56	—	73,000	McMahon Associates
370	Pittsburgh, PA	Winter 1988/89	—	4:00–6:00 p.m.	19	—	—	81	—	33,000	Wilbur Smith
150	Portland, OR	—	519	4:00–6:00 p.m.	68	6	26	32	—	25,000	Kittelson and Associates
150	Portland, OR	—	655	4:00–6:00 p.m.	65	7	28	35	—	30,000	Kittelson and Associates
760	Calgary, Alberta	Oct.-Dec. 1987	15,436	4:00–6:00 p.m.	20	39	41	80	—	—	City of Calgary DOT
178	Bordentown, NJ	Apr. 1989	154	2:00–6:00 p.m.	35	—	—	65	—	37,980	Raymond Keyes Assoc.
144	Manalapan, NJ	July 1990	176	3:30–6:15 p.m.	32	44	24	68	—	69,347	Raymond Keyes Assoc.
549	Natick, MA	Feb. 1989	—	4:45–5:45 p.m.	33	26	41	67	—	48,782	Raymond Keyes Assoc.

Average Pass-By Trip Percentage: 34

“—” means no data were provided

Figure E.7 Shopping Center (820)

Average Pass-By Trip Percentage vs: 1000 Sq. Feet Gross Leasable Area
On a: Weekday, P.M. Peak Period
Number of Studies: 100
Average 1000 Sq. Feet GLA: 329

Data Plot

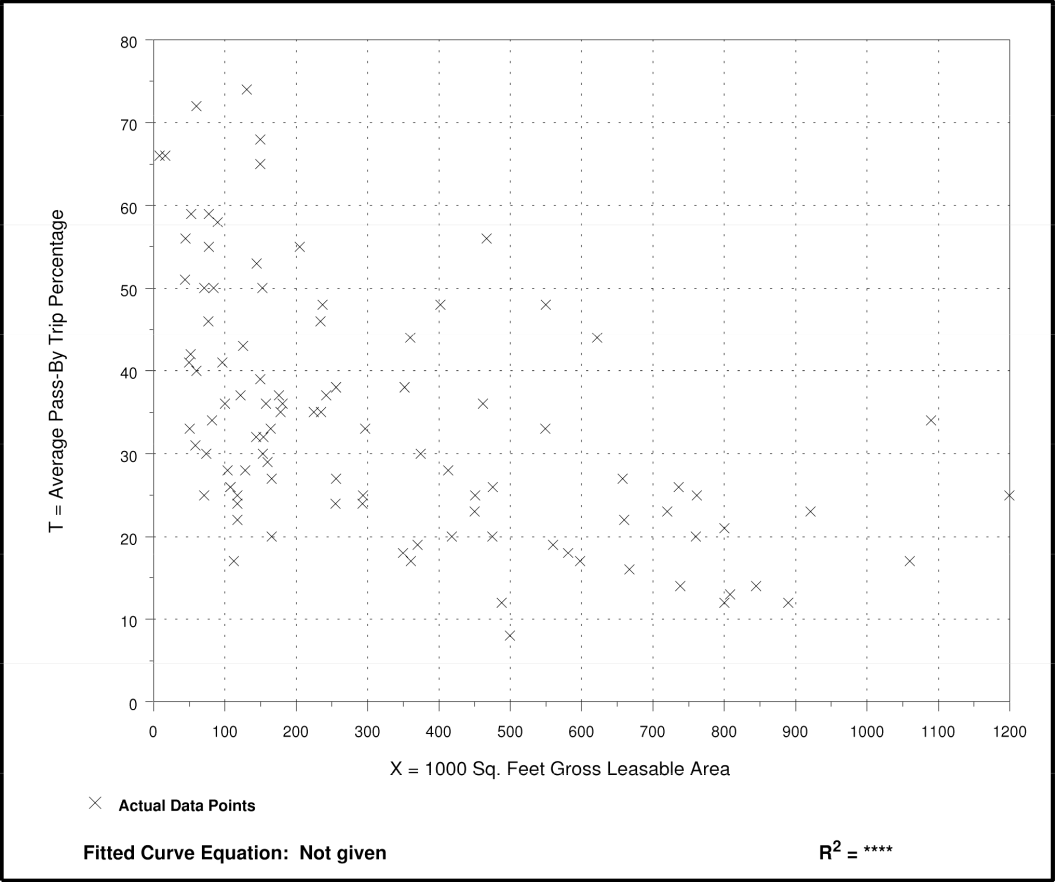


Figure E.8 Shopping Center (820)

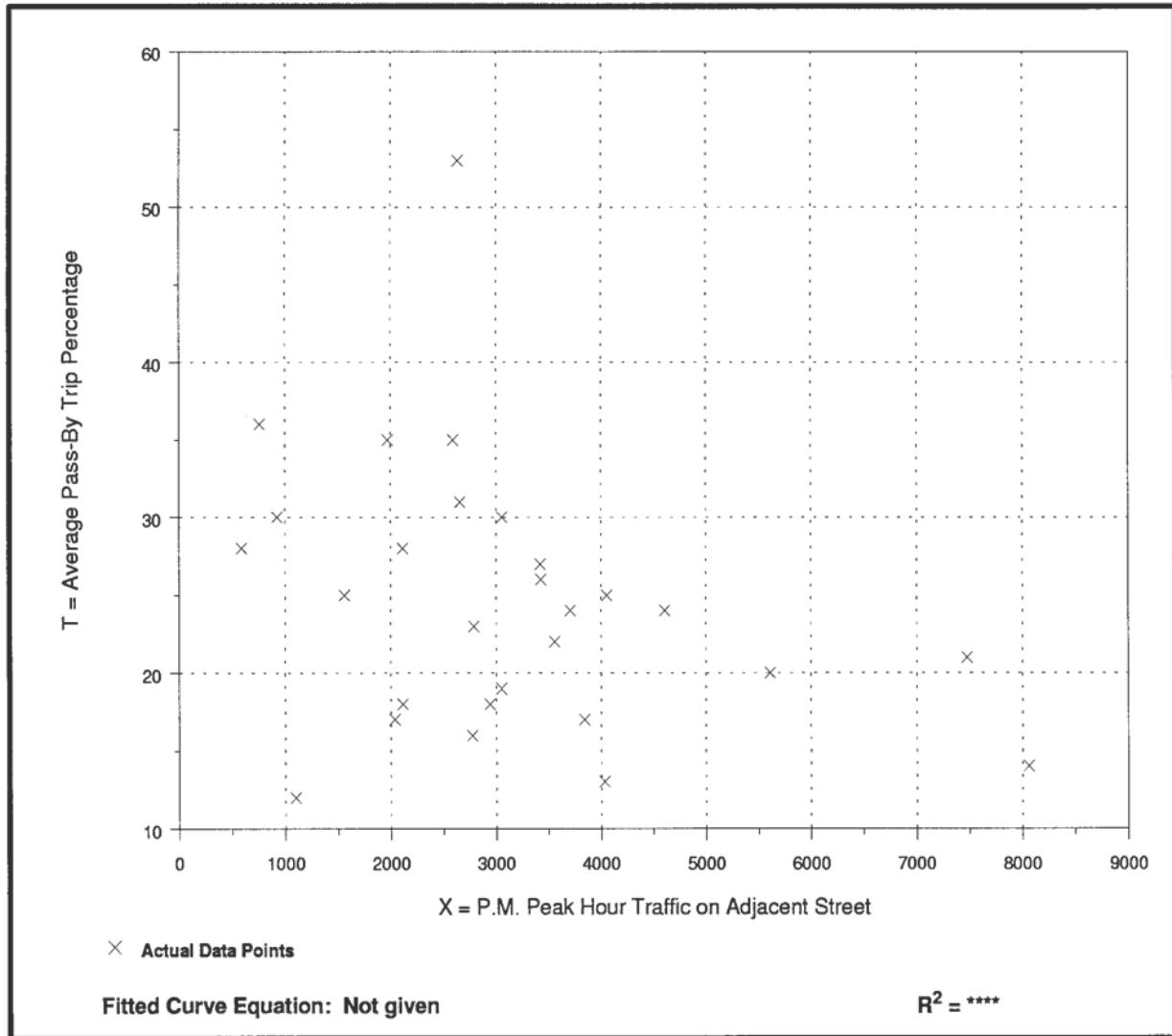
Average Pass-By-Trip Percentage vs: PM Peak Hour Traffic on Adjacent Street

On a: Weekday, PM Peak Period

Number of Studies: 28

Average PM Peak Hr. Traf. On Adj. Street: 3,122

Data Plot



**Table E.10 Pass-By and Non-Pass-By Trips Saturday, Mid-Day Peak Period
Land Use Code 820—Shopping Center**

SIZE (1,000 SQ. FT. GFA)	LOCATION	SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS-BY TRIP (%)	NON-PASS-BY TRIPS (%)			ADJ. STREET PEAK HOUR VOLUME	SOURCE
						PRIMARY	DIVERTED	TOTAL		
720	Framingham, MA	Feb. 1984	258	11:00 a.m.–4:00 p.m.	23	34	43	77	—	Raymond Keyes Assoc.
600	Brandywine, DE	Apr. 1983	256	10:00 a.m.–3:00 p.m.	17	50	33	83	—	Raymond Keyes Assoc.
880	Christiana, DE	July 1984	198	11:00 a.m.–4:00 p.m.	5	55	40	95	—	Raymond Keyes Assoc.
234	Huntington LI, NY	Nov. 1985	223	11:00 a.m.–3:00 p.m.	39	22	39	61	—	Raymond Keyes Assoc.
658	Wayne, NJ	Sept. 1984	329	11:00 a.m.–4:00 p.m.	46	44	10	54	—	Raymond Keyes Assoc.
622	Ramsey Cnty, MN	Nov. 1985	119	11:00 a.m.–3:00 p.m.	23	21	56	77	—	Raymond Keyes Assoc.
736	Pensacola, FL	Oct. 1985	680	11:00 a.m.–3:00 p.m.	20	31	49	80	—	Raymond Keyes Assoc.
430	Ross, PA	June 1980	425	11:00 a.m.–4:00 p.m.	22	—	—	78	—	Raymond Keyes Assoc.
176	Tampa Springs, FL	May 1986	188	11:00 a.m.–3:00 p.m.	31	42	27	69	—	Raymond Keyes Assoc.
144	Manalapan, NJ	July 1990	264	11:00 a.m.–3:15 p.m.	31	47	22	69	63,362	Raymond Keyes Assoc.
549	Natick, MA	Feb. 1989	—	2:15–3:15 p.m.	28	39	33	72	48,782	Raymond Keyes Assoc.

Average Pass-By Trip Percentage: 26

“—” means no data were provided

Figure E.9 Shopping Center (820)

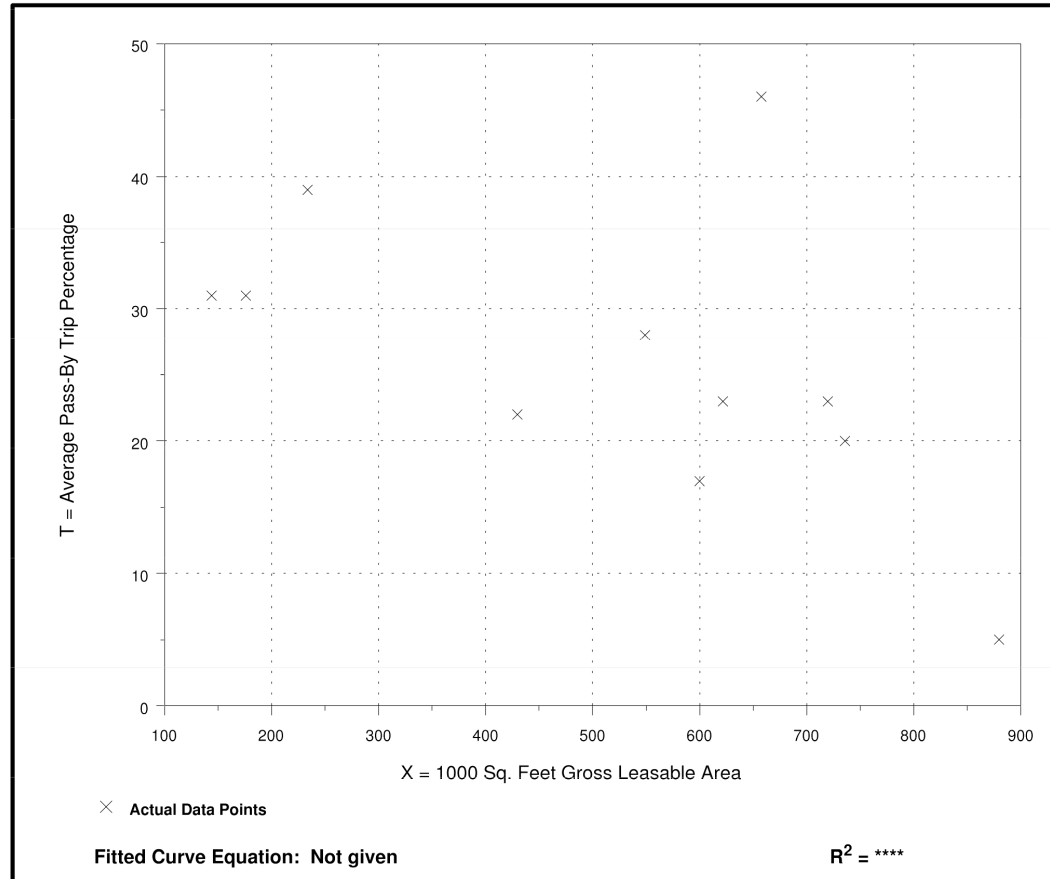
Average Pass-By Trip Percentage vs: 1000 Sq. Feet Gross Leasable Area

On a: Saturday

Number of Studies: 11

Average 1000 Sq. Feet GLA: 523

Data Plot



**Table E.31 Pass-By and Non-Pass-By Trips Weekday, AM Peak Period
Land Use Code 934—Fast-Food Restaurant with Drive-Through Window**

SEATS	SIZE (1,000 SQ. FT. GFA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS-BY TRIP (%)	NON-PASS-BY TRIPS (%)			ADJ. STREET PEAK HOUR VOLUME	SOURCE
							PRIMARY	DIVERTED	TOTAL		
—	<5	Chicago suburbs, IL	1987	84	7:00–9:00 a.m.	44	—	—	56	—	Kenig, O'Hara, Humes, Flock
88	1.4	Louisville area, KY	1993	—	7:00–9:00 a.m.	62	22	16	38	1,407	Barton-Aschman Assoc.
100	3.6	Louisville, KY	1993	—	7:00–9:00 a.m.	32	47	21	68	437	Barton-Aschman Assoc.
87	4.2	New Albany, IN	1993	—	7:00–9:00 a.m.	46	23	31	54	1,049	Barton-Aschman Assoc.
150	3.0	Louisville area, KY	1993	—	7:00–9:00 a.m.	43	14	43	57	2,903	Barton-Aschman Assoc.
—	3.3	varies	1996	—	6:00–9:00 a.m.	68	—	—	32	—	Oracle Engineering

Average Pass-By Trip Percentage: 49

“—” means no data were provided

**Table E.32 Pass-By and Non-Pass-By Trips Weekday, PM Peak Period
Land Use Code 934—Fast-Food Restaurant with Drive-Through Window**

SEATS	SIZE (1,000 SQ. FT. GFA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS- BY TRIP (%)	NON-PASS-BY TRIPS (%)			ADJ. STREET PEAK HOUR VOLUME	SOURCE
							PRIMARY	DIVERTED	TOTAL		
—	~2.6	Minn-St. Paul, MN	1987	50	3:00–7:00 p.m.	25	27	48	75	—	—
—	<5.0	Chicago suburbs, IL	1987	80	3:00–6:00 p.m.	38	—	—	62	—	Kenig, O'Hara, Humes, Flock
—	<5.0	Chicago suburbs, IL	1987	100	3:00–6:00 p.m.	55	—	—	45	—	Kenig, O'Hara, Humes, Flock
—	<5.0	Chicago suburbs, IL	1987	159	3:00–6:00 p.m.	56	—	—	44	—	Kenig, O'Hara, Humes, Flock
—	<5.0	Chicago suburbs, IL	1987	225	3:00–6:00 p.m.	48	—	—	52	—	Kenig, O'Hara, Humes, Flock
—	<5.0	Chicago suburbs, IL	1987	88	3:00–6:00 p.m.	35	—	—	65	—	Kenig, O'Hara, Humes, Flock
—	<5.0	Chicago suburbs, IL	1987	84	3:00–6:00 p.m.	44	—	—	56	—	Kenig, O'Hara, Humes, Flock
88	1.3	Louisville area, KY	1993	—	4:00–6:00 p.m.	68	22	10	32	2,055	Barton- Aschman Assoc.
120	1.9	Louisville area, KY	1993	33	4:00–6:00 p.m.	67	24	9	33	2,447	Barton- Aschman Assoc.
87	4.2	New Albany, IN	1993	—	4:00–6:00 p.m.	56	25	19	44	1,632	Barton- Aschman Assoc.
150	3.0	Louisville area, KY	1993	—	4:00–6:00 p.m.	31	31	38	69	4,250	Barton- Aschman Assoc.
—	3.1	Kissimmee, FL	1995	28	2:00–6:00 p.m.	71	—	—	29	—	TPD Inc.
—	3.1	Apopka, FL	1996	29	2:00–6:00 p.m.	38	—	—	62	—	TPD Inc.
—	2.8	Winter Springs, FL	1995	47	2:00–6:00 p.m.	66	—	—	34	—	TPD Inc.
—	4.3	Longwood, FL	1994	304	2:00–6:00 p.m.	62	—	—	38	—	TPD Inc.
—	3.2	Altamonte Springs, FL	1996	202	2:00–6:00 p.m.	40	39	21	60	—	TPD Inc.
—	2.9	Winter Park, FL	1996	271	2:00–6:00 p.m.	41	41	18	59	—	TPD Inc.
—	3.3*	several	1996	varies	4:00–6:00 p.m.	62	—	—	38	—	Oracle Engineering

*Average of several combined studies.

Average Pass-By Trip Percentage: 50

“—” means no data were provided

Figure E.17 Fast-Food Restaurant with Drive-Through Window (934)

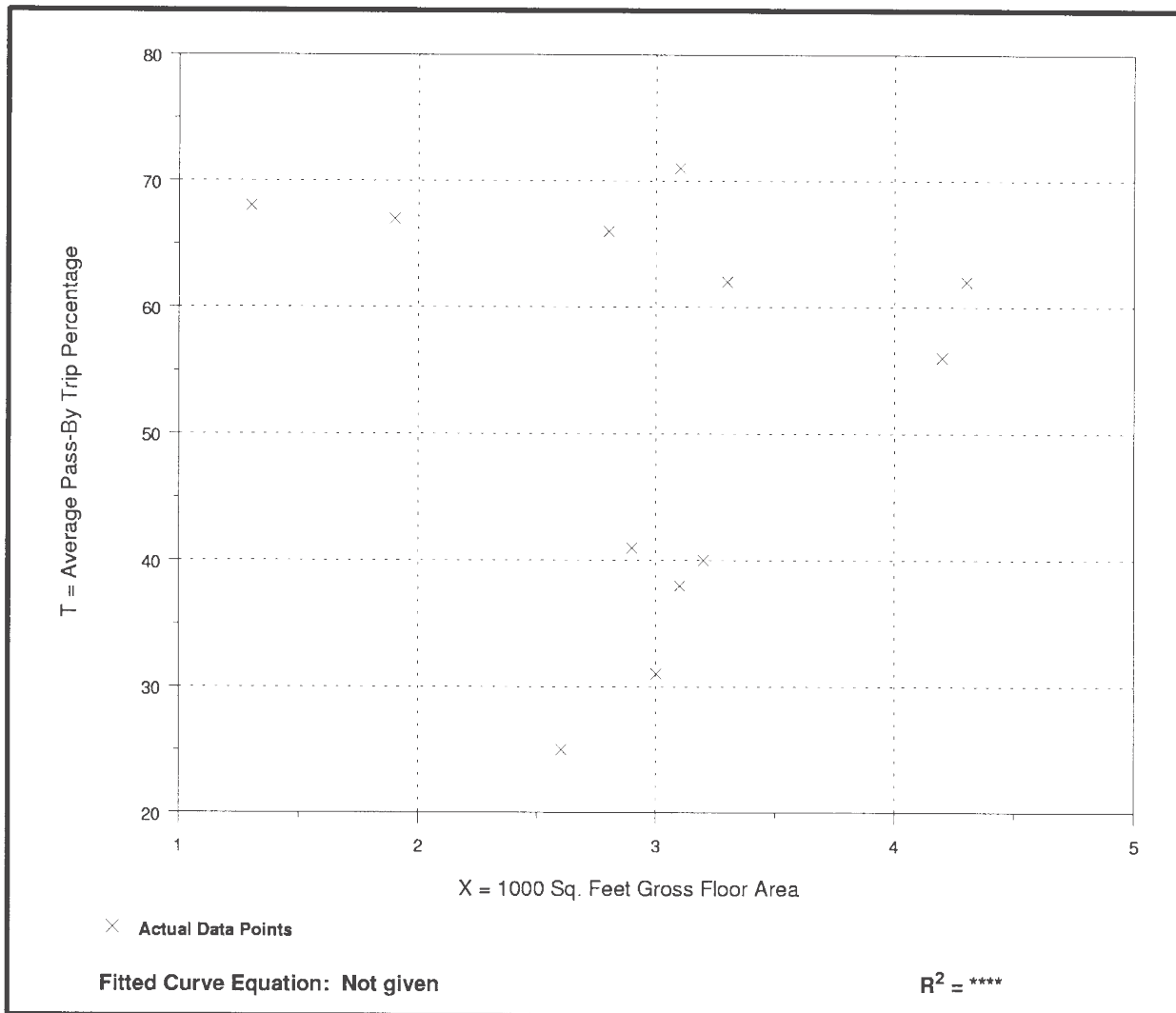
Average Pass-By/Trip Percentage vs: 1,000 Sq. Ft. Gross Floor Area

On a: Weekday, PM Peak Period

Number of Studies: 12

Average 1,000 Sq. Ft. GFA: 3.0

Data Plot



VACANT TENANT SPACES TRIP ASSIGNMENT – PRIMARY TRIPS



VACANT TENANT SPACES TRIP ASSIGNMENT – PASS-BY TRIPS



TRAFFIC COUNTS – STUDY INTERSECTIONS

Study Name 01 Arlington Heights & Palatine
Date Thursday, January 10, 2019

Report Summary

		Eastbound						Westbound						Northbound						Southbound						Crosswalk				
Time Period	Class.	U	L	T	R	I	O	U	L	T	R	I	O	U	L	T	R	I	O	U	L	T	R	I	O	Total	on Crce	stria	Total	
AM Peak Period	Lights	11	248	1852	147	2258	1190	0	176	808	9	993	2023	0	132	593	136	1597	1251	0	35	736	239	1938	993	6786	W	0	2	2
Specified Period	%	100%	99%	98%	98%	98%	95%	0%	97%	95%	100%	95%	98%	0%	91%	97%	99%	96%	98%	0%	97%		97%	97%	97%	97%	0%	100%		
7:00 AM - 9:00 AM	Mediums	0	2	20	2	24	43	0	4	34	0	38	22	0	4	21	1	51	27	0	1	18	5	45	27	158	E	0	0	0
One Hour Peak	%	0%	1%	1%	1%	1%	3%	0%	2%	4%	0%	4%	1%	0%	3%	3%	1%	3%	2%	0%	3%		2%	3%	2%	2%	0%	0%		
7:15 AM - 8:15 AM	ticated Truc	0	0	16	1	17	14	0	1	11	0	12	16	0	0	5	0	10	5	0	0	1	3	7	5	46	S	0	0	0
	%	0%	0%	1%	1%	1%	1%	0%	1%	1%	0%	1%	1%	0%	0%	1%	0%	1%	0%	0%	0%		1%	0%	0%	1%	0%	0%		
	icycles on Roa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	N	0	0	0
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%		
	Total	11	250	1888	150	2299	1247	0	181	853	9	1043	2061	0	145	610	137	1658	1283	0	36	768	247	1990	1025	6990		0	2	2
	PHF	0	0.79	0.83	0.83	0.85	0	0	0.78	0.82	0.56	0	0.84	0	0.85	0.84	0.95	0.86	0.89	0	0.82	0.86	0.82	0.87	0.9	0.94				
	HV%	0%	1%	2%	2%	2%	5%	0%	3%	5%	0%	5%	2%	0%	3%	4%	1%	4%	2%	0%	3%	2%	3%	3%	3%	3%				
PM Peak Period	Lights	18	280	1187	138	1623	2158	2	184	1609	39	1834	1418	0	160	894	163	2289	1234	0	66	710	371	2059	1391	7805	W	0	1	1
Specified Period	%	100%	99%	97%	100%	98%	99%	100%	100%	99%	98%	99%	98%	0%	97%	100%	99%	99%	100%	0%	100%		99%	100%	99%	99%	0%	100%		
4:00 PM - 6:00 PM	Mediums	0	2	25	0	27	10	0	0	8	1	9	26	0	1	3	1	9	2	0	0	3	1	6	7	51	E	0	0	0
One Hour Peak	%	0%	1%	2%	0%	2%	0%	0%	0%	0%	3%	0%	2%	0%	1%	0%	1%	0%	0%	0%	0%		0%	1%	1%	0%	0%			
4:15 PM - 5:15 PM	ticated Truc	0	0	9	0	9	14	0	0	13	0	13	9	0	0	2	0	4	0	0	0	0	1	1	2	27	S	0	0	0
	%	0%	0%	1%	0%	1%	1%	0%	0%	1%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%		
	icycles on Roa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	N	0	0	0
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%		
	Total	18	282	1221	138	1659	2182	2	184	1630	40	1856	1453	0	165	895	164	2302	1236	0	66	729	373	2067	1400	7884		0	1	1
	PHF	0	0.92	0.91	0.88	0.92	0	0	0.78	0.96	0.83	0	0.95	0	0.85	0.84	0.82	0.92	0.93	0	0.71	0.86	0.9	0.93	0.94	0.98				
	HV%	0%	1%	3%	0%	2%	1%	0%	0%	1%	3%	1%	2%	0%	1%	1%	1%	1%	0%	0%	0%	1%	0%	1%	1%	1%				
Saturday Midday Peak	Lights	14	298	866	107	1285	1308	0	147	808	40	995	1078	0	174	730	135	1957	1101	0	77	684	312	1920	1256	6157	W	0	2	2
Specified Period	%	100%	99%	99%	99%	99%	99%	0%	99%	100%	95%	99%	99%	0%	95%	100%	99%	99%	98%	0%	99%		99%	98%	99%	99%	0%	100%		
11:00 AM - 1:00 PM	Mediums	0	2	3	1	6	4	0	2	1	2	5	5	0	1	8	1	19	18	0	1	13	2	31	13	61	E	0	0	0
One Hour Peak	%	0%	1%	0%	1%	0%	0%	0%	1%	0%	5%	0%	0%	0%	1%	1%	1%	1%	2%	0%	1%		1%	2%	1%	1%	0%	0%		
11:45 AM - 12:45 PM	ticated Truc	0	0	5	0	5	5	0	0	3	0	3	5	0	0	0	0	0	1	0	0	0	2	3	0	11	S	0	1	1
	%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		1%	0%	0%	0%	0%	100%		
	icycles on Roa	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	N	0	0	0
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%		
	Total	14	300	874	108	1296	1317	0	149	812	42	1003	1088	0	183	730	136	1976	1120	0	78	711	316	1954	1269	6229		0	3	3
	PHF	0	0.89	0.92	0.9	0.94	0	0	0.93	0.85	0.75	0	0.94	0	0.85	0.84	0.79	0.86	0.88	0	0.81	0.86	0.94	0.9	0.88	0.92				
	HV%	0%	1%	1%	1%	1%	1%	0%	1%	0%	5%	1%	1%	0%	1%	1%	1%	1%	2%	0%	1%	2%	1%	2%	1%	1%				

Study Name Arlington Heights & Lillian - Town & Country Access
Date Saturday, January 12, 2019 1:15 PM

Report Summary

		Eastbound						Westbound						Northbound						Southbound						Crosswalk				
Time Period	Class.	U	L	T	R	I	O	U	L	T	R	I	O	U	L	T	R	I	O	U	L	T	R	I	O	Total	Bicycles c	Pedestrians	Total	
AM Peak	Lights	0	84	6	49	139	82	0	27	8	52	87	62	0	47	747	33	827	1109	0	23	1033	27	1083	883	2136	W	0	2	2
Specified Period	%	0%	99%	100%	96%	98%	96%	0%	96%	89%	100%	98%	91%	0%	98%	96%	85%	96%	97%	0%	100%	98%	96%	98%	97%	97%	0%	100%		
7:00 AM - 9:00 AM	Mediums	0	1	0	2	3	2	0	1	1	0	2	6	0	0	26	6	32	25	0	0	22	1	23	27	60	E	0	0	0
One Hour Peak	%	0%	1%	0%	4%	2%	2%	0%	4%	11%	0%	2%	9%	0%	0%	3%	15%	4%	2%	0%	0%	2%	4%	2%	3%	3%	0%	0%		
7:15 AM - 8:15 AM	Articulated Trucks	0	0	0	0	0	1	0	0	0	0	0	0	0	1	4	0	5	4	0	0	4	0	4	4	9	S	0	1	1
	%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	2%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%		
	Total	0	85	6	51	142	85	0	28	9	52	89	68	0	48	777	39	864	1138	0	23	1059	28	1110	914	2205	N	0	0	0
	PHF																								0.88		0%	0%		
	HV %	0%	1%	0%	4%	2%	4%	0%	4%	11%	0%	2%	9%	0%	2%	4%	15%	4%	3%	0%	0%	2%	4%	2%	3%	3%	0	3	3	3
	Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
PM Peak	Lights	0	77	21	10	108	111	0	66	30	132	228	187	0	27	1028	78	1133	996	0	88	920	54	1062	1237	2531	W	0	0	0
Specified Period	%	0%	100%	100%	100%	100%	100%	0%	100%	100%	100%	100%	100%	0%	100%	99%	100%	99%	100%	0%	100%	100%	100%	100%	100%	100%	0%	0%		
4:00 PM - 6:00 PM	Mediums	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	1	0	0	1	0	1	3	4	E	0	0	0
One Hour Peak	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
4:15 PM - 5:15 PM	Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	3	3	S	0	6	6
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%		
	Total	0	77	21	10	108	111	0	66	30	132	228	187	0	27	1034	78	1139	997	0	88	921	54	1063	1243	2538	N	0	0	0
	PHF																								0.94		0%	0%		
	HV %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0	6	6	6
	Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Study Name Arlington Heights & Lillian - Town & Country Access
Date Saturday, January 12, 2019

Report Summary

Time Period	Class.	Eastbound						Westbound						Northbound						Southbound						Crosswalk				
		U	L	T	R	I	O	U	L	T	R	I	O	U	L	T	R	I	O	U	L	T	R	I	O	Total	Bicycles	Pedestrians	Total	
Saturday Peak	Lights	0	89	12	19	120	125	1	82	24	180	287	174	0	48	807	71	926	907	0	90	806	53	949	1076	2282	W	0	0	0
Specified Period	%	0%	99%	100%	100%	99%	100%	50%	100%	100%	100%	100%	99%	0%	100%	99%	100%	99%	98%	0%	100%	98%	100%	98%	99%	99%	0%	0%	0%	0
11:00 AM - 12:00 PM	Mediums	0	1	0	0	1	0	1	0	0	0	1	1	0	0	7	0	7	14	0	0	14	0	14	8	23	E	0	0	0
One Hour Peak	%	0%	1%	0%	0%	1%	0%	50%	0%	0%	0%	0%	1%	0%	0%	1%	0%	1%	2%	0%	0%	2%	0%	1%	1%	1%	0%	0%	0%	0
11:45 AM - 12:45 PM	Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	S	0	3	3
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%
	Total	0	90	12	19	121	125	2	82	24	180	288	175	0	48	814	71	933	922	0	90	821	53	964	1084	2306	N	0	0	0
	PHF																								0.95		0%	0%	0%	0
	HV %	0%	1%	0%	0%	1%	0%	50%	0%	0%	0%	0%	1%	0%	0%	1%	0%	1%	2%	0%	0%	2%	0%	2%	1%	1%	0	3	3	3
	Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Study Name	Arlington Heights & Town & Country Loading Dock Access
Date	Thursday, January 10, 2019

Report Summary

[illegible]

Study Name	Arlington Heights & Town & Country Loading Dock Access
Date	Saturday, January 12, 2019

Report Summary

		Westbound					Northbound					Southbound					Crosswalk				
Time Period	Class.	U	L	R	I	O	U	T	R	I	O	U	L	T	I	O	Total	Bicycles o	Pedestrians	Total	
Saturday Peak	Lights	0	4	13	17	21	0	891	18	909	869	0	3	865	868	904	1794	E	0	3	3
Specified Period	%	0%	100%	93%	94%	95%	0%	99%	100%	99%	99%	0%	75%	99%	98%	99%	99%	0%	100%		
11:00 AM - 12:00 PM	Mediums	0	0	1	1	1	0	8	0	8	12	0	1	12	13	9	22	S	0	0	0
One Hour Peak	%	0%	0%	7%	6%	5%	0%	1%	0%	1%	1%	0%	25%	1%	1%	1%	1%	0%	0%		
11:45 AM - 12:45 PM	Articulated Trucks	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	1	N	0	0	0
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
	Total	0	4	14	18	22	0	899	18	917	882	0	4	878	882	913	1817		0	3	3
	PHF																0.91				
	HV %	0%	0%	7%	6%	5%	0%	1%	0%	1%	1%	0%	25%	1%	2%	1%	1%				
	Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Study Name Town & Country RIRO Access & Palatine
Date Thursday, January 10, 2019

Report Summary

		Eastbound					Northbound					Crosswalk				
Time Period	Class.	U	T	R	I	O	U	L	R	I	O	Total		Bicycles or	Pedestrians	Total
AM Peak	Lights	0	2019	25	2044	832	0	0	22	22	25	2898	W	0	0	0
Specified Period	%	0%	98%	96%	98%	95%	0%	0%	100%	100%	96%	97%		0%	0%	
7:00 AM - 9:00 AM	Mediums	0	17	1	18	30	0	0	0	0	1	48	E	0	0	0
One Hour Peak	%	0%	1%	4%	1%	3%	0%	0%	0%	0%	4%	2%		0%	0%	
7:15 AM - 8:15 AM	Articulated Trucks	0	15	0	15	12	0	0	0	0	0	27	S	0	0	0
	%	0%	1%	0%	1%	1%	0%	0%	0%	0%	0%	1%		0%	0%	
	Total	0	2051	26	2077	874	0	0	22	22	26	2973		0	0	0
	PHF											0.89				
	HV %	0%	2%	4%	2%	5%	0%	0%	0%	0%	4%	3%				
	Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0				
PM Peak	Lights	0	1287	93	1380	1476	0	0	53	53	93	2909	W	0	0	0
Specified Period	%	0%	98%	99%	98%	99%	0%	0%	100%	100%	99%	98%		0%	0%	
4:00 PM - 6:00 PM	Mediums	0	20	1	21	7	0	0	0	0	1	28	E	0	0	0
One Hour Peak	%	0%	2%	1%	1%	0%	0%	0%	0%	0%	1%	1%		0%	0%	
4:15 PM - 5:15 PM	Articulated Trucks	0	12	0	12	13	0	0	0	0	0	25	S	0	0	0
	%	0%	1%	0%	1%	1%	0%	0%	0%	0%	0%	1%		0%	0%	
	Total	0	1319	94	1413	1496	0	0	53	53	94	2962		0	0	0
	PHF											0.96				
	HV %	0%	2%	1%	2%	1%	0%	0%	0%	0%	1%	2%				
	Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0				

Study Name Town & Country RIRO Access & Palatine
Date Saturday, January 12, 2019

Report Summary

Time Period	Class.	Eastbound					Northbound					Total		Crosswalk		
		U	T	R	I	O	U	L	R	I	O			Bicycles or	Pedestrians	Total
Saturday Peak	Lights	0	987	81	1068	879	0	0	76	76	81	2023	W	0	0	0
Specified Period	%	0%	99%	99%	99%	99%	0%	0%	99%	99%	99%	99%		0%	0%	
11:00 AM - 12:00 PM	Mediums	0	4	0	4	5	0	0	1	1	0	10	E	0	0	0
One Hour Peak	%	0%	0%	0%	0%	1%	0%	0%	1%	1%	0%	0%		0%	0%	
11:45 AM - 12:45 PM	Articulated Trucks	0	4	1	5	3	0	0	0	0	1	8	S	0	0	0
	%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%	0%		0%	0%	
	Total	0	995	82	1077	887	0	0	77	77	82	2041		0	0	0
	PHF											0.97				
	HV %	0%	1%	1%	1%	1%	0%	0%	1%	1%	1%	1%				
	Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0				

Study Name	Town & Country RIRO Access & Rand
Date	Thursday, January 10, 2019

Report Summary

[illegible]

Study Name	Town & Country RIRO Access & Rand
Date	Saturday, January 12, 2019

Report Summary

		Eastbound					Northbound					Southbound					Crosswalk				
Time Period	Class.	U	L	R	I	O	U	L	T	I	O	U	T	R	I	O	Total		Bicycles c	Pedestrians	Total
Saturday Peak	Lights	0	1	48	49	99	0	2	1106	1108	1120	0	1072	97	1169	1107	2326	W	0	1	1
Specified Period	%	0%	100%	100%	100%	99%	0%	100%	99%	99%	99%	0%	99%	99%	99%	99%	99%		0%	100%	
11:00 AM - 12:00 PM	Mediums	0	0	0	0	1	0	0	12	12	11	0	11	1	12	12	24	S	0	0	0
One Hour Peak	%	0%	0%	0%	0%	1%	0%	0%	1%	1%	1%	0%	1%	1%	1%	1%	1%		0%	0%	
11:45 AM - 12:45 PM	Articulated Trucks	0	0	0	0	0	0	0	2	2	2	0	2	0	2	2	4	N	0	0	0
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		0%	0%	
	Total	0	1	48	49	100	0	2	1120	1122	1133	0	1085	98	1183	1121	2354		0	1	1
	PHF																0.94				
	HV %	0%	0%	0%	0%	1%	0%	0%	1%	1%	1%	0%	1%	1%	1%	1%	1%				
	Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Study Name Town & Country Full Access & Rand
Date Thursday, January 10, 2019

Report Summary

		Eastbound						Westbound						Northbound						Southbound						Crosswalk				
Time Period	Class.	U	L	T	R	I	O	U	L	T	R	I	O	U	L	T	R	I	O	U	L	T	R	I	O	Total	Bicycles c	Pedestrians	Total	
AM Peak	Lights	0	10	2	17	29	47	0	12	8	7	27	16	0	29	702	3	734	1500	0	11	1471	10	1492	719	2282	W	0	0	0
Specified Period	%	0%	100%	100%	100%	100%	96%	0%	92%	89%	100%	93%	89%	0%	100%	97%	75%	97%	98%	0%	92%	98%	91%	98%	97%	98%	0%	0%	0%	0
7:00 AM - 9:00 AM	Mediums	0	0	0	0	0	0	0	1	0	0	1	2	0	0	16	1	17	19	0	1	18	0	19	16	37	E	0	0	0
One Hour Peak	%	0%	0%	0%	0%	0%	0%	0%	8%	0%	0%	3%	11%	0%	0%	2%	25%	2%	1%	0%	8%	1%	0%	1%	2%	2%	0%	0%	0%	0
7:15 AM - 8:15 AM	Articulated Trucks	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3	0	3	5	0	0	5	1	6	3	9	S	0	0	0
	%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	0%	0%	0%	0%	0%	0%	0
	Total	0	10	2	17	29	49	0	13	9	7	29	18	0	29	721	4	754	1524	0	12	1494	11	1517	738	2329	N	0	0	0
	PHF																								0.87		0%	0%	0%	0
	HV %	0%	0%	0%	0%	0%	2%	0%	8%	0%	0%	3%	11%	0%	0%	3%	25%	3%	2%	0%	8%	2%	9%	2%	3%	2%	0	0	0	0
	Bicycles on Road	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1				
PM Peak	Lights	0	58	10	66	134	143	0	27	14	49	90	57	0	109	1438	24	1571	1185	0	23	1092	20	1135	1545	2930	W	0	0	0
Specified Period	%	0%	100%	100%	99%	99%	99%	0%	100%	100%	100%	100%	100%	0%	99%	99%	100%	99%	99%	0%	100%	99%	100%	99%	99%	99%	0%	0%	0%	0
4:00 PM - 6:00 PM	Mediums	0	0	0	1	1	1	0	0	0	0	0	0	0	1	8	0	9	11	0	0	10	0	10	8	20	E	0	0	0
One Hour Peak	%	0%	0%	0%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	1%	1%	0%	0%	1%	0%	1%	1%	1%	0%	0%	0%	0
4:15 PM - 5:15 PM	Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4	0	0	4	0	4	4	8	S	0	5	5
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0
	Total	0	58	10	67	135	144	0	27	14	49	90	57	0	110	1450	24	1584	1200	0	23	1106	20	1149	1557	2958	N	0	0	0
	PHF																								0.94		0%	0%	0%	0
	HV %	0%	0%	0%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	1%	1%	0%	0%	1%	0%	1%	1%	1%	0	5	5	5
	Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

Study Name Town & Country Full Access & Rand
Date Saturday, January 12, 2019

Report Summary

Time Period	Class.	Eastbound						Westbound						Northbound						Southbound						Crosswalk					
		U	L	T	R	I	O	U	L	T	R	I	O	U	L	T	R	I	O	U	L	T	R	I	O	Total		Bicycles o	Pedestrians	Total	
Saturday Peak	Lights	0	56	6	89	151	135	0	30	3	43	76	76	1	109	941	35	1086	1169	0	35	1049	23	1107	1040	2420	W	0	1	1	
Specified Period	%	0%	98%	100%	100%	99%	99%	0%	100%	100%	100%	100%	100%	100%	99%	99%	100%	99%	99%	0%	100%	99%	100%	99%	99%	99%		0%	100%		
11:00 AM - 12:00 PM	Mediums	0	1	0	0	1	1	0	0	0	0	0	0	0	1	9	0	10	12	0	0	12	0	12	10	23	E	0	0	0	
One Hour Peak	%	0%	2%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	1%	1%	0%	0%	1%	0%	1%	1%	1%		0%	0%		
11:45 AM - 12:45 PM	Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	0	0	1	0	1	2	3	S	0	0	0	
	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		0%	0%		
	Total	0	57	6	89	152	136	0	30	3	43	76	76	1	110	952	35	1098	1182	0	35	1062	23	1120	1052	2446	N	0	0	0	
	PHF																								0.93		0%	0%			
	HV %	0%	2%	0%	0%	1%	1%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	1%	1%	0%	0%	1%	0%	1%	1%	1%		0	1	1	
	Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					

TRAFFIC COUNTS – EXISTING RAISING CANE’S RESTAURANT

**Raising Cane's Oak Lawn
Empirical Trip Generation
January 2019**

TIME	NORTH DRIVEWAY			SOUTH DRIVEWAY			TOTAL SITE		
	INBOUND	OUTBOUND	TOTAL	INBOUND	OUTBOUND	TOTAL	INBOUND	OUTBOUND	TOTAL
Tuesday, January 15, 2019									
7:00AM	0	0	0	0	0	0	0	0	0
7:15AM	1	0	1	0	0	0	1	0	1
7:30AM	1	1	2	0	0	0	1	1	2
7:45AM	0	0	0	0	0	0	0	0	0
8:00AM	2	0	2	0	0	0	2	0	2
8:15AM	1	0	1	0	0	0	1	0	1
8:30AM	1	1	2	0	1	1	1	2	3
8:45AM	1	0	1	0	0	0	1	0	1
4:00PM	8	10	18	10	7	17	18	17	35
4:15PM	11	16	27	5	2	7	16	18	34
4:30PM	4	9	13	5	4	9	9	13	22
4:45PM	8	12	20	7	2	9	15	14	29
5:00PM	12	6	18	9	9	18	21	15	36
5:15PM	10	13	23	7	11	18	17	24	41
5:30PM	5	7	12	7	8	15	12	15	27
5:45PM	9	11	20	1	1	2	10	12	22
Saturday, January 12, 2019									
11:00AM	3	0	3	5	4	9	8	4	12
11:15AM	14	8	22	5	8	13	19	16	35
11:30AM	6	7	13	4	7	11	10	14	24
11:45AM	5	5	10	5	5	10	10	10	20
12:00PM	12	6	18	6	7	13	18	13	31
12:15PM	7	10	17	3	2	5	10	12	22
12:30PM	6	7	13	5	6	11	11	13	24
12:45PM	13	7	20	6	9	15	19	16	35



Kimley»»Horn

1001 Warrenville Road | Suite 350 | Lisle, IL | 60532
630-487-5550



April 26, 2019

RE: Raising Cane's Arlington Heights

To whom it may concern:

Strategy: We strategize every market that we decide to enter in order to identify the highest potential sites that will maximize sales, brand awareness, and represents active community involvement opportunities. Opportunities that make a good fit for the community and the community a good fit for Raising Cane's.

Our Chicago strategy identified Arlington Heights and this intersection as one of those Tier 1 opportunities based on several factors, including favorable demographics, the need for high quality chicken tender meals at fast food speed and convenience, and community involvement opportunities.

Demographics: We look for at least 125,000 trade area population to support our restaurants sales expectations. We define the trade area as 3 miles and less than 10 minutes' drive time. We also define trade area population as total residential population plus half of the day time population. We only use half of the day time population due to the fact in most cases half of the work force lives in the trade area and already included in the residential number.

Our demographics indicate there is a total trade area population of roughly 201,000. This is well above our standard of 125,000 needed to meet our average sales volume. In addition, we also look at households in the trade area from a median income standard but also the number of our top 10 successful lifestyle segments represented. Life style segments are a study of how people spend their money and Cane's has identified, through extensive study, which lifestyle segments are most likely to frequent our restaurants. Both the median incomes and lifestyle segments we desire meet and exceed our standards for this site.

Trade Area Demographics	1 Mile Rad	3 Mile Rad	5 Mile Rad	10 Min Drive Time
Residential Population	12,788	132,808	318,723	157,541
Percent Change 2014 to 2019	-2.11%	-0.76%	-0.36%	-0.73%
Day Time Population	7,403	75,561	209,870	86,906
Trade Area Population	16,489	170,588	423,658	200,994
Average Household Income	\$109,715	\$98,249	\$95,768	\$97,423
Median Household Income	\$89,883	\$81,181	\$78,555	\$79,816
Median Age	46	43	42	43
Average House Size	2.6	2.5	2.5	2.5

Competition and Need: In order to understand our evaluation of competition you have understand where Raising Cane's falls in the brand positioning conversation. Raising Cane's is considered upscale fast food between quick serve and fast casual.

This location has some quick serve such as McDonald's and Burger King and in the fast-causal segment there is Chipotle and Panera. But what is missing is upscale fast food that offers quality but at fast food speed and convenience. There are also no major chicken focused operations here and specifically no deboned chicken. This indicates a strong need for both chicken and

upscale fast food considering the larger demographics this retail corridor supports. We consider the competition to be light compared to many trade areas we are represented in.

Active Community Involvement: Raising Cane's strives for a global presence but with a focus on local community support at the local restaurant level. We feel this is a sustainable model that gives back to the local community versus writing one large check to a national charity. We partner with local schools, churches, community centers, etc. in order to support our communities which in turn drives loyalty to our brand. We give over \$10 million back to our communities annually and this all done at the local level.

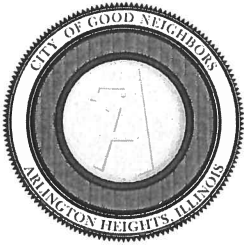
This site represents several opportunities to be involved in the community with many public and private schools including: John Hersey High School, Thomas Middle School, Ivy Hill Elementary, Betsy Ross Elementary, Patton Elementary, Saint Viator High School, Olive Elementary, Prospect, Wheeling and many more. There also many churches and local residential HOA's we traditional seek to support.

In conclusion, this site was specifically targeted because not only meets our real estate standards for site criteria but also our desired community attributes. We are confident this site will meet or exceed our sales expectations and an opportunity for Raising Cane's to further our brand awareness and serve our local communities.

One Love



Jeremy Hudson
Regional Director for Real Estate
Raising Cane's Restaurants, L.L.C



Village of Arlington Heights Building & Life Safety Department

Interoffice Memorandum

To: Sam Hubbard, Development Planner, Planning and Community Development
From: Deb Pierce, Plan Reviewer, Building & Life Safety Department
Subject: Raising Canes – PUD Amendment and SUP for Restaurant with Drive-Thru
PC#: 19-006
Date: May 3, 2019

General Comments:

The information provided is conceptual only and subject to a formal plan review.

Sam –

I do not have any objections or comments to the requests.

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PLANNING & COMMUNITY
DEVELOPMENT DEPARTMENT



Village of Arlington Heights, IL Building & Life Safety Department

Fire Safety Review

Date: 4/24/2019

P.C. Number: 19-006 Round 1

Project Name: Raising Canes

Project Location: Rand and Palatine Rd.

Planning Department Contact: Sam Hubbard, Planning and Community Development

General Comments:

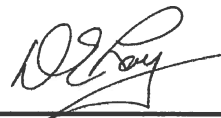
The information provided is conceptual only and subject to a formal plan review.

1. All currently adopted codes shall apply.
2. Fire department connections shall be located at an approved location, fully visible and within a maximum travel distance of 100 feet to the nearest fire hydrant and in accordance with the NFPA standard applicable to the system design.
3. A complete NFPA compliant fire suppression system is required. Supervised indicating control valves shall be provided at the point of connection to the riser on each floor.
4. An approved water supply capable of supplying the required fire flow for fire protection shall be provided.
5. Fire protection equipment and service rooms shall be identified in an approved manner.
6. A fully functional fire alarm shall be installed per NFPA 72. The alarm annunciator panel shall be located at the front entrance.
7. Shop drawings for fire alarm systems shall be submitted for review and approval prior to system installation.
8. Visible alarm notification appliances shall be provided in public areas and common areas. A visible exterior weatherproof alarm notification device shall be located within closest proximity to the front main entrance of the building or tenant space.
9. A zoning indicator panel and the associated controls, or, fire alarm control panel shall be located within the closest proximity to the front main entrance.
10. A key box (Know Box) shall be provided and contain keys to gain necessary access as required by the fire code official.

Rand and Palatine Rd.
PC #19-006 Round 1
April 14, 2019
Page 2

11. Exit signs shall be illuminated at all times and have emergency power backup.
12. Buildings shall have approved address numbers.

Date 04-24-19

Reviewed By: 
Fire Safety Supervisor/Fire Marshal

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APR 25 2019
PLANNING & COMMUNITY
DEVELOPMENT DEPARTMENT

Memorandum

To: Sam Hubbard, Planning & Community Development
From: Cris Papierniak, Assistant Director of Public Works
Date: May 13, 2019
Subject: Raising Cane's, Arlington Heights & Palatine Roads P.C. #19-006

With regard to the proposed PUD addendum for Raising Cane's, I have the following comments:

- 1) The ¾" water connection must be deleted. Only one source for water per customer is allowed. The 6" connection must branch off inside the proposed building for fire and domestic use.
- 2) Approved RPZ devices must be installed for fire, domestic (and irrigation if installed).
- 3) RPZ devices will be sized after plumbing plans have been submitted.
- 4) Provide a detail for ST-1 and the restrictor within the structure.
- 5) Ensure proper separation for X3, X4, X5 and X6.
- 6) What is the plan for the referenced water main extension by "others"?
- 7) Provide a maintenance plan (utilized by owners) for bio-retention basins #1 & #2.
- 8) Verify the condition of the sidewalk fronting the property after the construction. If damage has occurred as a result of the construction, or drainage is not adequate (ponding), permittee must replace the affected squares.
- 9) The directory of contacts on the front page needs to be corrected. Replace Dave Nordin in the place of Kurt Caley
- 10) The grease trap need to be located in a more accessible/maintainable location.

Arlington Heights Public Works will make further comments after final engineering plans have been submitted.

If you have any questions, please feel free to contact me.

C. file

PETITIONER'S APPLICATION - ARLINGTON HEIGHTS PLAN COMMISSION

Petition #: P.C. 19-006
 Petitioner: Joseph Bibat, RA, ALA
3632 N. Clairmont Avenue
Chicago, IL 60618
 Owner: Town & Country Chicago Associates, LLC
30050 Chagrin Blvd. Ste 360
Pepper Pike, OH 44124
 Contact Person: Greg Barrow
 Address: 30050 Chagrin Blvd. Ste. 360
Pepper Pike, OH 44124
 Phone #: (216) 464-5550
 Fax #: (216) 464-7219
 E-Mail: gbarrow@visconsi.com

P.I.N.# 03-20-101-016
 Location: N. Arlington Heights Rd. at E. Palatine Rd.
 Rezoning: Current: B-2 Proposed: B-2
 Subdivision:
 # of Lots: Current: Proposed:
 PUD: ✓ For: Amend. to PUD
 Special Use: ✓ For: Rest. with Drive-thru
 Land Use Variation: For:
 Land Use: Current:
Proposed:
 Site Gross Area: 44,334 sq. ft.
 # of Units Total:
 1BR: 2BR: 3BR: 4BR:

(Petitioner: Please do not write below this line.)

1. PUBLIC IMPROVEMENTS

REQUIRED: YES NO COMMENTS

a. Underground Utilities

Water NO

Sanitary Sewer NO

Storm Sewer NO

b. Surface Improvement

Pavement NO

Curb & Gutter NO

Sidewalks NO

Street Lighting NO

c. Easements

Utility & Drainage NO

Access NO

2. PERMITS REQUIRED OTHER THAN VILLAGE:

a. MWRDGC ✓

b. IDOT

c. ARMY CORP

d. IEPA

e. CCHD

3. R.O.W. DEDICATIONS? 4. SITE PLAN ACCEPTABLE? 5. PRELIMINARY PLAT ACCEPTABLE? 6. TRAFFIC STUDY ACCEPTABLE? 7. STORM WATER DETENTION REQUIRED? 8. CONTRIBUTION ORDINANCE EXISTING? 9. FLOOD PLAIN OR FLOODWAY EXISTING? 10. WETLAND EXISTING?

YES NO COMMENTS

 X

 SEE COMMENTS

 N/A

 X

X

X #79-114 PD 5/1/1980

 X

 X

GENERAL COMMENTS ATTACHED

PLANS PREPARED BY: KIMLEY-HORN

DATE OF PLANS: 4/12/19

Director

VILLAGE ENGINEER

Date

5/3/19

RECEIVED

MAY 07 2019

PLANNING & COMMUNITY
DEVELOPMENT DEPARTMENT

PLAN COMMISSION PC #19-006

Raising Canes

Town and Country Mall (N Arlington Heights Rd & E Palatine Rd)

PUD Amendment, SUP for restaurant with drive thru

Round 1

11. The petitioner is notified that these comments are being provided to ensure that the project meets the requirements for submittal to the Plan Commission. Approval by the Plan Commission is not an endorsement or approval of these documents to obtain the required building permits, engineering approval, or permits required by other government or permitting agencies for construction. Detailed plan review with associated comments will be provided upon submittal of plans for a building permit. The petitioner shall acknowledge that they accept this understanding.
12. Final engineering plans shall be georeferenced by using State Plane Coordinate System – Illinois East. Below are details about projection:

Projected Coordinate System:	NAD_1983_StatePlane_Illinois_East_FIPS_1201_Feet
Projection:	Transverse_Mercator
False_Easting:	984250.00000000
False_Northing:	0.00000000
Central_Meridian:	-88.33333333
Scale_Factor:	0.99997500
Latitude_Of_Origin:	36.66666667
Linear Unit:	Foot_US
Geographic Coordinate System:	GCS_North_American_1983
Datum:	D_North_American_1983
Prime Meridian:	Greenwich
Angular Unit:	Degree

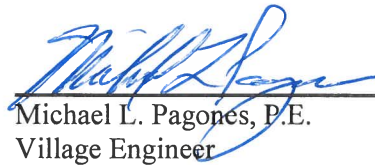
13. The proposed bio-retention facilities will be a private system and as such will not be the Village's responsibility to maintain. An Onsite Utility Maintenance Agreement must be executed prior to final engineering approval. Please contact the Village Engineer for an editable version of the OUMA. If there is an existing OUMA for the complex, the OUMA should be updated to include the new facilities. Please contact the Village Engineer for an editable version of the OUMA.
14. Final approval will require final engineering plans including detention calculations showing HWL, storage required, storage provided, and restrictor sizing calculations. Provide sufficient information to show the proposed conditions compared to existing conditions and the increase or decrease in impervious area. If the proposed conditions increase the impervious area, the Village's allowable release rate is 0.18 cfs/Ac. Use $C=0.50$ for pervious areas, $C=0.95$ for impervious areas. Use Bulletin 70 rainfall data. Clearly show the overflow route for the site. Minimum restrictor size allowed, for maintenance reasons, is 2". Restrictors between 2" and 4" must be in a trap in a catch basin. Show the location and size of the restrictor. Provide a detail showing the restrictor catch basin. If the restrictor required to meet the allowable release rate is less than 2", calculate the amount of detention storage provided with a 2" restrictor. Subtract this amount from the required storage based on the allowable release rate to show the storage deficiency. This deficiency can be paid as money in lieu of detention at the rate of \$1.00 per cubic foot.

15. Provide an exhibit to engineering scale showing the turning path of the Fire Department's responding vehicle, in this case a Pierce Quantum Engine. Exhibit must show front and rear wheel paths and the extent of the front and rear overhangs, as provided in an "Autoturn" exhibit. The vehicle shall be shown maneuvering through the site in all possible directions of travel. Attached are the specifications for the tower apparatus.
16. Fire lanes adjacent to buildings must have a minimum pavement width as directed by the Fire Department to accommodate the tower truck's outriggers. Fire lanes require a heavy duty pavement section. Asphalt pavement section to consist of: 2" Surface, 2-1/4" N-50 Binder, 5" N-50 Binder, and 4" CA-6 Stone Subbase. Concrete driveway apron to be 8" thick.
17. Verify and show on the plans that the fire hose connection is within 100 ft of a fire hydrant. Show the Fire Department Connection on the plans. The Utility Keynote Legend on sheet C7.0 references item P, proposed fire hydrant. Show proposed fire hydrant on the plans.
18. Water Structure Table, Water Service W1 on sheet C7.0 references a 3/4" water building connection, however; note N on the Utility Keynote Legend references a 2" domestic tap off the 6" water line. Clarify the size of the water service to the building.
19. Water Service W1 and shown on sheet C7.0 is less than 10 ft from the 8" PVC roof drain and shall be constructed in accordance with the water and sewer separation requirements in the Standard Specifications for Water & Sewer Construction in Illinois.
20. All work within the Palatine Rd right-of-way requires a permit from the Illinois Department of Transportation.
21. Provide a diagram to show how trucks will maneuver into and out of the trash collection area and how it will affect the drive through aisle and southbound exit aisle.

TRAFFIC

22. The four angle parking stalls on the northwest corner of the parking lot should have wheel stops to prohibit cars parked in these stalls from projecting into the perpendicular stalls to the west.
23. The exit lane passing south of the trash corrals as it intersects the main mall drive lane must be posted with a 'One Way' sign so that traffic travelling east and west can see the limitations of this driveway in advance of arriving at the intersection.
24. The existing parking lot site lighting, and underground circuits, are not shown for modification or removal in the plans. Provide a description for what the site parking lot lighting plan will be. When on-site lighting is proposed, provide a site photometric lighting diagram indicating lighting intensities. Also provide the associated catalog cut sheets for lighting fixtures, poles, building mounted luminaires, and circuit wiring. All fixtures must be flat bottom, sharp cut-off, and no wall pack fixtures will be permitted.
25. The ability to provide less paved surface and more green area, with less detention volume could be realized by compressing the parking stall depths to 16.5 ft. with a 1.5 ft. overhang. This is achievable for the parking area east of the building and along the north property line.

26. The trip distribution percentages provided in Table 3.4 of the Traffic Impact Study do not seem to be accurately represented in Exhibits 3, 4, & 5. For example, if percentages of traffic are indicated coming from the north, Arlington Heights Road S.B. left turns should be contributing to the projected volumes.
27. The Traffic Impact Study states that the conservative values in Table 3.3 are comparable to the ITE projections in Table 3.2. However, it is not clear which values are being used for the tabulations of in/out traffic projections for the Exhibits.
28. The summary of values into and out of the site for site generated traffic volumes do not seem to sum correctly, (i.e. trips into Access 'C'), do not add up correctly if just E.B. Palatine Road with no contribution of right or left turns from Arlington Heights Road contribute to the projections.
29. Based upon the revisions mentioned, please revise affected Tables projecting Build/No Build Levels of Service.

 5/3/19
Michael L. Pagones, P.E. Date
Village Engineer

Attachments:

Fire Apparatus Pierce Quantum Specifications

Received Fax: 06/03/2005 9:40AM Fax Station: Norman J. Toberman Assoc

06/03/05 FRI 10:45 FAX 920 832 3280

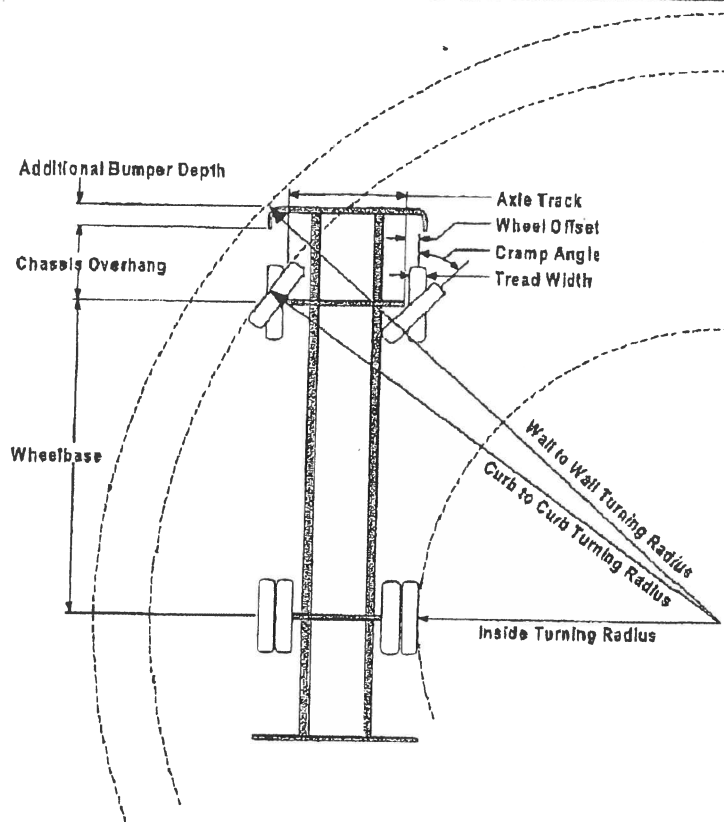
TECH SERVICE

004



Turning Performance Analysis

6/3/2005



Parameters:

Inside Cramp Angle:	40.00 °
Axle Track:	82.92 in.
Wheel Offset:	5.25 in.
Tread Width:	17.40 in.
Chassis Overhang:	65.99 in.
Additional Bumper Depth:	22.00 in.
Front Overhang:	146.60 in.
Wheelbase:	257.00 in.

Calculated Turning Radii:

Inside Turn:	24 ft. 4 in.
Curb to Curb:	40 ft. 0 in.
Wall to Wall:	47 ft. 6 in.

Comments:

Aerial Application

JOB# 11807 FOR REFERENCE ONLY

Components	PRIDE #	Description
Front Axle	0090913	Axle, Front, Oshkosh TAK-4, Non Drive, 24,000 lb, DLX/Qtm/AXT
Front Tires	0052978	Tires, Goodyear, 425/65R22.50 20 ply G286 tread
Chassis	0050220	Dash-2000 Chassis
Front Bumper	0012246	Bumper, 22" extended - all chassis'
Aerial Device	0022160	Aerial, 100' Pierce Platform

Notes:

Actual Inside Cramp Angle may be less due to highly specialized options.

Curb to Curb turning radius calculated for a 9.00 inch curb.

Reduce turning radius by 33% if vehicle is equipped with all-wheel steer.

Received Fax: Jun 03 2005 9:40AM Fax Station: Norman J. Toberman Assoc

06/03/05 FRI 10:45 FAX 920 832 3260

TECH SERVICE

005



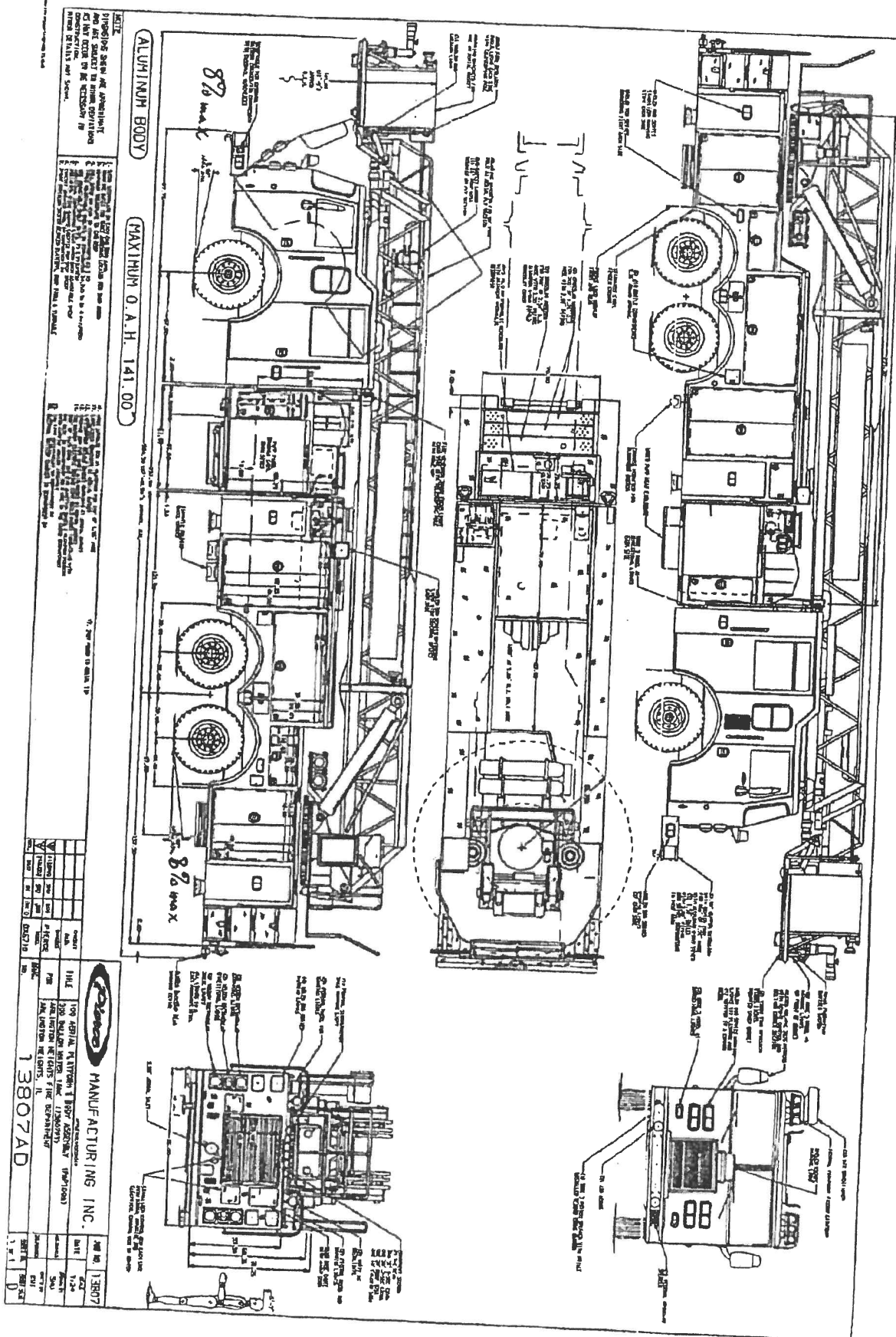
Turning Performance Analysis

6/3/2005

Definitions:

Inside Cramp Angle	Maximum turning angle of the front inside tire.
Axle Track	King-pin to king-pin distance of the front axle.
Wheel Offset	Offset from the center-line of the wheel to the king-pin.
Tread Width	Width of the tire tread.
Chassis Overhang	Distance from the center-line of the front axle to the front edge of the cab. This does not include the bumper depth.
Additional Bumper Depth	Depth that the bumper assembly adds to the front overhang.
Wheelbase	Distance between the center lines of the vehicle's front and rear axles.
Inside Turning Radius	Radius of the smallest circle around which the vehicle can turn.
Curb to Curb Turning Radius	Radius of the smallest circle inside of which the vehicle's tires can turn. This measurement assumes a curb height of 9 inches.
Wall to Wall Turning Radius	Radius of the smallest circle inside of which the entire vehicle can turn. This measurement takes into account any front overhang due to the chassis, bumper extensions and/or aerial devices.

006





Arlington Heights Fire Department Plan Review Sheet

P. C. Number 19-006

Project Name

Raising Canes

Project Location

Town and Country Shopping Center

Planning Department Contact Sam Hubbard

General Comments

Round 1

General Comments:

- 1)Building is to be sprinkled per code.
- 2) The Fire Department Connection shall be located at the main front entrance. It shall be fully visible and accessible and within 100 feet of the nearest accessible fire hydrant capable of delivering the required flow.
- 3) A Knox Box shall be located at the main front entrance.
- 4) Install a fully operational annunciator panel or alarm panel at the main front entrance.

**NOTE: PLAN IS CONCEPTUAL ONLY
SUBJECT TO DETAILED PLAN REVIEW**

Date April 23, 2019

Reviewed By: LT. Mark Aleckson

Arlington Heights Fire Department

ARLINGTON HEIGHTS POLICE DEPARTMENT

Community Services Bureau

DEPARTMENT PLAN REVIEW SUMMARY

Raising Canes Town and Country Shopping Center PUD Amendment, SUP for restaurant with drive-through

Round 1 Review Comments

04/23/2019

1. Character of use:

The character of use is consistent with the area and is not a concern.

2. Are lighting requirements adequate?

Lighting should be up to Village of Arlington Heights code. The exterior of the building should be illuminated especially during nighttime hours for safety, to deter criminal activity and increase surveillance/visibility- potentially reducing theft, trespassing, vandalism, underage drinking, and other criminal activity.

3. Present traffic problems?

There are no traffic problems at this location.

4. Traffic accidents at particular location?

This is not a problem area in relation to traffic accidents.

5. Traffic problems that may be created by the development.

This development should not create any additional traffic problems.

6. General comments:

- Please ensure that there is an emergency information/contact card on file with the Arlington Heights Police Department and that it is up-to-date. Agent contact information must be provided to the Arlington Heights Police Department during all construction phases. The form is attached. Please complete and return. This allows police department personnel to contact an agent during emergency situations or for suspicious/criminal activity on the property during all hours.

A.O. #330

Alexandra Ovington, Crime Prevention Officer
Community Services Bureau

RECEIVED

APR 23 2019

PLANNING & COMMUNITY
DEVELOPMENT DEPARTMENT

Approved by:

#557

Supervisor's Signature



**Village of Arlington Heights
Health & Human Services Department**

Memorandum

To: Sam Hubbard, Development Planner

From: Sean Freres, Environmental Health Officer

A handwritten signature in black ink, appearing to be 'SF' or similar, written over the printed name of Sean Freres.

CC: James McCalister, Health & Human Services Director

Handwritten initials 'Jm' in black ink, written over the printed name of James McCalister.

Date: May 1, 2019

Re: PC# 19-006. Raising Cane's, Town & Country Shopping Center, Round 1

Building permit plans must comply with the attached Food Service Plan Review Requirements.

Openable windows must be protected against the entry of insects by screening. An alternative would be to meet the attached minimum requirements for "Open Air Dining".

The drive-thru window must be self-closing and equipped with a mechanical air curtain.

Provide an exterior hose bibb for cleaning of the outdoor dining area.

RECEIVED
MAY 01 2019
PLANNING & COMMUNITY
DEVELOPMENT DEPARTMENT



Village of Arlington Heights
Health & Human Services Department
33 S. Arlington Heights Rd.
Arlington Heights, IL 60005
(847) 368-5760

Food Service Plan Review Requirements

The Village of Arlington Heights has adopted the Illinois Department of Public Health Food Service Sanitation Code. Copies may be obtained by visiting www.idph.state.il.us or calling 630/293-6800.

For a complete plan review, drawings to scale must be submitted containing the information noted below. This list, while not necessarily complete, highlights areas of concern and common reasons for plan rejection.

- 1. Floor Plan for Operation.** Designation of various areas (service areas, food preparation, dry storage, numbers and locations of seats, restrooms, break areas, etc).
- 2. General Layout.** Location of equipment fixtures (cross-reference to an equipment schedule) including distances above the floor, between other pieces of equipment, whether on legs or casters, etc.
- 3. Food Service Equipment.** All equipment must be commercial and listed with NSF or equivalent in both construction and installation. Used equipment must be inspected for approval prior to installation. Equipment schedules must contain manufacturer and model numbers for each piece of food service equipment. Equipment spec sheets are required for all new equipment.
- 4. Plumbing fixtures.** Location and type must be shown in overhead and schematic design. Include provisions for drainage from condensate for refrigerators and freezers, ice machines, soda or water stations, steam tables, etc. The location of all floor drains and sinks must also be shown. All 3 compartment sinks, dish machines, prep sinks, ice machines, steam tables, and condensate lines must have an air-gap (open-site drain) on the waste line. All hub drains, floor sinks, and floor drains must be located on the toe-edge of, or adjacent to, the equipment to facilitate cleaning. Facilities cooking or performing food prep must have a grease trap. Newly constructed facilities having cooking that produces grease or vapors, or where 3 compartment sinks or food prep sinks are located in two or more areas are required to have an exterior grease trap. Dish machines and garbage grinders may not drain through the grease trap. All ice machines must be air cooled.
- 5. Sinks.** Sinks that are mandatory to be installed include:
 - three compartment sink with integral drain boards
 - mop/utility sink
 - hand sink in preparation areas (including bars) and dish areas (more than one may be required)
 - food prep sink (depending on type of operation)Hot and cold running water are required at all sinks. The water must be tempered by means of a mixing valve. A metering faucet must provide at least 10 seconds of running water.
- 6. Ventilation Requirements.** Adequate ventilation must be provided throughout the facility to remove excessive heat, steam, vapors, smoke, fumes, and noxious odors. Submit specifics on ventilation hoods for Fire Code review.
- 7. Floors, Walls, and Ceilings.** The surfaces in all food preparation, dishwashing rooms, and toilet rooms must be smooth, light colored, non-porous, and easily cleanable. Ceiling tiles may not contain fissures, and must be vinyl coated above food prep areas. Cove base must be provided at all floor/wall junctures. Grouting for all floor tiles must be sealed to be non-porous. Non-slip finishes may only be installed in traffic areas, not under equipment.
- 8. Lighting.** Artificial light sources must be installed to provide at least 20 footcandles of light in all food prep areas, dish areas, and wash rooms. All walk-in refrigeration/freezer units, dry storage areas, dining rooms during cleaning, and other areas must be provided with at least 10 footcandles of light. All light fixtures over, near, or within food preparation, display, or service areas, and dish areas, must be shielded to prevent broken glass from falling onto food. This includes heat lamps.
- 9. Dry Storage Areas.** A minimum of 25% of the food preparation area must be set aside for dry storage. Provide calculations showing how the dry storage requirement is met. Show dimensions and numbers of tiers for each shelving unit. All shelving must be at least 6 inches above the floor, and 18 inches below the ceiling. Remember that carry-out operations require more storage space for disposable containers.

Village of Arlington Heights

Open Air Dining – Minimum Requirements

The Village of Arlington Heights will permit open air dining in approved restaurant establishments subject to submittal of detailed plans and specifications in accordance with the following requirements:

1. An Air Curtain is required to be installed at the top of windows proposed to be open. Manufacturer specifications on the best and quietest model must be provided for review and approval by the Health Department. The Air Curtain must provide sufficient air flow to prevent entry of pests into the establishment.
2. The number of windows permitted to be open shall be pre-established and subject to approval by the Village.
3. Open Air windows shall not be allowed at grade level. A minimum 2 foot high knee wall must be provided. Window opening from top of knee wall to top of window shall be approximately 6 feet in height.
4. The Air Curtain must be on when windows/doors are open – and must be accomplished via automatic switching.
5. Kitchen must be completely enclosed with walls and doors e.g. no open kitchen concept. The establishment must be pre wired to allow for easy installation of an air curtain at the kitchen doors should such installation become necessary in the future in order to prevent entry of pests.
6. Open food prep areas such as a Sushi bar need not be enclosed but shall have an enclosure to protect the food when food prep is not in progress.
7. Monthly pest control service is required by a licensed pest control company.
8. Other measures will be required by the Village if the air curtains are ineffective and pest control becomes a continuous problem.
9. No construction may begin without submitting detailed Building Permit Plans and Specifications and subject to receipt of an approved Building Permit.

As with all Building and Health Code requirements if the above measures are ineffective and other measures to prevent pests within the establishment are not taken, citations will be issued.

November 3, 2016

PLANNING & COMMUNITY DEVELOPMENT DEPARTMENT

7

PETITIONER'S APPLICATION - ARLINGTON HEIGHTS PLAN COMMISSION

Petition #: P.C. 19-006
 Petitioner: Joseph Bibat, RA, ALA
3632 N. Clairmont Avenue
Chicago, IL 60618
 Owner: Town & Country Chicago Associates, LLC
30050 Chagrin Blvd. Ste 360
Pepper Pike, OH 44124
 Contact Person: Greg Barrow
 Address: 30050 Chagrin Blvd. Ste. 360
Pepper Pike, OH 44124
 Phone #: (216) 464-5550
 Fax #: (216) 464-7219
 E-Mail: gbarrow@visconsi.com

P.I.N.# 03-20-101-016
 Location: N. Arlington Heights Rd. at E. Palatine Rd.
 Rezoning: Current: B-2 Proposed: B-2
 Subdivision:
 # of Lots: Current: Proposed:
 PUD: ✓ For: Amend. to PUD
 Special Use: ✓ For: Rest. with Drive-thru
 Land Use Variation: For:
 Land Use: Current:
 Proposed:
 Site Gross Area: 44,334 sq. ft.
 # of Units Total:
 1BR: 2BR: 3BR: 4BR:

(Petitioner: Please do not write below this line.)

YES NO

1. X COMPLIES WITH COMPREHENSIVE PLAN?
2. X COMPLIES WITH THOROUGHFARE PLAN?
3. X VARIATIONS NEEDED FROM ZONING REGULATIONS?
 (See below.)
4. X VARIATIONS NEEDED FROM SUBDIVISION REGULATIONS?
 (See below.)
5. X SUBDIVISION REQUIRED?
6. X SCHOOL/PARK DISTRICT CONTRIBUTIONS REQUIRED?
 (See below.)

Comments:

PLEASE SEE ATTACHED COMMENTS



Date



16. Please revise the plans to include details on the proposed dumpster enclosure (height, materials, gates, etc.).
17. Please provide details on any fencing/seat walls proposed around the outdoor dining area.
18. Other than the proposed transformer in the southwest corner of the site, will there be any ground mounted mechanical equipment (AC units, generators, utility pedestals, switchgear, etc.)?
19. Please explore the construction of a pedestrian connection/route from the existing shopping center to the proposed outlot.

Signage:

20. Signage shall be reviewed as part of the Design Commission application. Please see preliminary signage comments below:
 - a. Drive-Through Signage. The basic layout appears to be code compliant. Detailed plans will be required for a complete review. Refer to Chapter 30, Section 30-208 for detailed requirements.
 - b. Wall Signs - North Elevation:
 - i. Section 30-402, Number. One wall sign is allowed per street frontage. Two wall signs proposed. Variation required.
 - ii. Section 30-403, Dimensions. Signs shall be no larger than 25% of the signable wall area. Both signs exceed 25%. Variations required.
 - c. Wall Signs - West Elevation:
 - i. Section 30-402, Number. One wall sign is allowed per street frontage. The west elevation does not have street frontage. Variation required for the proposed sign.
 - d. Ground Sign. Variation may be required for the proposed ground sign. Additional research will be needed.

Parking/Loading:

21. How was the net seating area calculated? Please provide an exhibit showing a dashed line around the seating areas (including the square footage within the dashed lines), both indoor and outdoor.
22. Where will loading occur? How often are deliveries expected per week and what time of day will they occur?
23. Please revise both the traffic and parking study to project for future conditions with a fully occupied shopping center. Parking study should project total parking demand with occupancy of the vacant spaces as retail (however, 35,000 sq. ft. of the vacant 50,041 sq. ft. space should be classified as a grocery use) using ULI projections for parking demand based on use. Total parking demand should be Raising Canes parking demand (based on Oak Lawn surveys) + Shopping Center demand (based on surveys) + vacant space demand (based on ULI parking rates). Similarly, the traffic study should be revised to project total future trips based on full occupancy of the shopping center (using ITE trip generation rates for the vacant spaces based on their future use as retail – however 35,000 sq. ft. of the vacant 50,041 sq. ft. space should be classified as a grocery use). The capacity analysis should be adjusted accordingly.
24. Page 25 of the traffic study states that under future build conditions, the LOS for only one movement is different than under the no-build scenario. However, Table 3.7 appears to show more than one movement to be different under the future build scenario. Please address.
25. Does the westbound right-turn queue at Access B have capacity to handle the increase in queuing based on the future build scenario, or will the queue block access aisles?

Prepared by:



Raising Canes
PC 19-006
May 2, 2019

Landscape Issues

- 1) Provide a detailed landscape plan that includes sizes, species and quantities for all proposed plant material.
- 2) Per Chapter 28, Section 6.15-1.2a, a three foot high screen must be provided in order to screen the parking/paved areas that are adjacent to the public way. Increase the size of the proposed shrubs along Palatine Road so that they are a minimum of 3 foot high at time of installation. The plant material must be salt and drought tolerant.
- 3) The ends of all parking rows must include a 4" caliper shade tree (Chapter 28, section 6.16-1.2b). Please provide a curbed island and a 4 inch caliper shade tree north of the refuse area at the end of the parking row.
- 4) For the parking row located along the eastern side of the site, reduce the depth of the stalls and incorporate shrubs within the median/green space. Code allows for 16.5 feet depth for parking stalls with 1.5 foot of overhang. Please evaluate the depth of the stalls and reduce if feasible to allow for additional green space. The parking stalls should not exceed a depth of 18 feet.
- 5) For the bio-retention facility that consists of low profile prairie mix, incorporate 2-3 feet of turf along the back of curb between the prairie mix and curb.
- 6) On sheet FS1 it appears that a fence is proposed along the perimeter of the outdoor eating area. Consider a seat wall that matches the building in place of the proposed fence. Please provide details for the proposed barrier. In addition, it is recommended that specialty pavement such as colored concrete be incorporated for the eating area and the walkways.
- 7) Provide details of the proposed site furnishings.
- 8) If there are any utility meters or mechanical units, they must be screened with landscaping or another appropriate method of screening. Evaluate the location of the transformer in the southwest corner and provide evergreens adjacent to the transformer in order to provide year round screening.
- 9) A landscape compliance bond in the amount of 30% of the landscaping costs will be required at the time of building permit. In addition, a \$4 tree fee is required for each lineal foot of frontage.



17710 DETROIT AVENUE
LAKEWOOD, OHIO 44107
TEL (216) 521-5134
FAX (216) 521-4824

June 5, 2019

Village of Arlington Heights
Department of Planning &
Community Development
33 South Arlington Heights Road
Arlington Heights, IL 60005
Attention: Sam Hubbard

RECEIVED

JUN 06 2019

PLANNING & COMMUNITY
DEVELOPMENT DEPARTMENT

Regarding:
Raising Cane's Chicken Fingers
N. Arlington Hts. Road & E. Palatine Rd
Arlington Heights, IL 60005
Our Project No. 19064

PC Number: 19-006

Mr. Hubbard:

The following letter gives either a direct written response to your comments or describes revisions made to the plan in response to your Plan Review dated May 3, 2019 for the Raising Cane's Chicken Fingers located at N. Arlington Hts. Road & E. Palatine Road, Arlington Hts., IL 60005.

Any revisions made to the drawings in response to these comments have been clouded on the drawings and are marked with **Delta #1**, labeled **Development Review** and dated **5/24/19**

Fire Safety Review:

1. Acknowledged.
2. Acknowledged. The FDC location will be coordinated with Fire Department.
3. Acknowledged. Will be part of separate submittal.
4. Acknowledged.
5. Acknowledged. Rooms/Doors will be provided will appropriate labeling.
6. Acknowledged.
7. Acknowledged. Will be part of separate submittal.
8. Acknowledged. Location of exterior alarm will be coordinated with Fire Department.
9. Acknowledged.
10. Acknowledged. Location of Knox box will be coordinated with Fire Department.
11. Acknowledged.
12. Acknowledged.

Engineering:

- 1-10. N/A
- 11. Acknowledged.
- 12. Acknowledged. Plans are referenced to the State Plane Coordinate System – Illinois East
- 13. Acknowledged. An OUMA will be completed prior to Final Engineering Approval.
- 14. Detention for the existing site is currently provided as part of the overall shopping center per MWRD Permit No. 79-0408. The proposed improvements will decrease impervious area; thus, additional detention is not required. Refer the Preliminary Stormwater Management Report for additional information.
- 15. An Auto turn Plan showing the routes has been included with this submittal.
- 16. Final Engineering plans will specify adequate pavement.
- 17. A proposed Fire Hydrant has been added to the plans within 100 feet of the Fire Department Connection. The Fire Department Connection is labeled as item O on the plan.
- 18. The proposed water line servicing the building is a 6" Ductile Iron Water Line (W3). The ¾" line (W1) is exiting the building and will be providing water service to a post hydrant in the trash enclosure.
- 19. Acknowledged. Final Engineering plans will specify.
- 20. Acknowledged.
- 21. Truck route for trash vehicle is included on the Auto Turn exhibit. The trash will be serviced when the restaurant is closed and/or during off peak hours. The drive through aisle and southbound exit aisle are not anticipated to be affected.

Traffic:

- 22. Wheel stops have been added as requested.
- 23. 'One Way – Exit Only' signs have been added to the plan.
- 24. Two existing light poles will be removed as part of the development. New lights will be proposed for the development. A photometric plan has been included with this submittal.
- 25. Acknowledged. Raising Cane's prefers 20' deep parking stalls; however, per Planning and Community Development comments, the site plan has been revised to provide 18' deep parking stalls.
- 26. The initial analysis reflected an 80/20 split with 80% of traffic from the north on Arlington Heights Road traveling south to Access B, and 20% completing a left-turn onto eastbound Palatine Road to Access C. Based on the limited traffic assumed traveling from the north on Arlington Heights Road (15%), no southbound right-turns were included. Based on the Village review comment, the analysis has been updated to reflect a 50/50 split with 50% of traffic from the north on Arlington Heights traveling south to Access B, and 50% completing a left turn onto eastbound Palatine Road to Access C. The total site trip assignment is depicted in Exhibit 5.
- 27. The report text has been modified to clarify the ITE data is assumed for the analysis. The site trip assignment depicted in Exhibit 3 through Exhibit 5 is based on ITE data.
- 28. The site trip assignment has been updated per Comment 26, and Exhibit 3 through Exhibit 5 revised accordingly.
- 29. The capacity analysis has been updated to reflect the revisions noted above and in Parking/Loading Comment.

Fire Department:

1. Acknowledged.
2. Acknowledged. The FDC location will be coordinated with Fire Department.
3. Acknowledged. Location of Knox box will be coordinated with Fire Department.
4. Acknowledged.

Community Services Bureau:

1. No response required.
2. No response required.
3. No response required.
4. No response required.
5. No response required.
6. Acknowledged. Emergency contact information will be provided prior to store opening.

Health & Human Services Department:

1. Acknowledged.
2. Acknowledged. Screens will be provided at overhead doors.
3. Acknowledged. Windows are self-closing and an air curtain will be provided.
4. Acknowledged. Hose bibb will be provide at patio areas.

Food Service Plan Review Requirements:

- 1.-9. Acknowledged. A full set of plans will all required information will be provided with permit submission for review.

Open-Air Dining – Minimum Requirements:

1. Acknowledged. Per Sean Freres (Environmental Health), the screen at the operable overhead doors will be acceptable to prevent pests from entering building and permit the open kitchen concept.
2. Acknowledged.
3. Acknowledged. Overhead doors have sill at 3'-2" a.f.f.
4. Acknowledged. See 1. Above.
5. N/A. See 1. Above.
6. N/A.
7. Acknowledged.
8. Acknowledged.
9. Acknowledged.

Planning & Community Development Department:

- 1-6. N/A.
7. Acknowledged.
8. Acknowledged. This will be provided.
9. Raising Cane's will be leasing.
10. The project description has been revised.
11. Acknowledged. Photometrics plan provided.
12. Acknowledged.
13. Acknowledged.
14. Parking stalls have been revised to 18' deep.
15. Revised as requested.
16. Propose dumpster enclosure details have been included in this submittal.

17. Details for fencing/seat walls have been included in this submittal.
18. No.
19. Based on the layout of the existing shopping center, there is not an easily constructed pedestrian route to the proposed outlot. Pedestrians have access to the sidewalks along Arlington Heights Road which will route them to Palatine Road and to the front of the Restaurant.
20. Acknowledged. Design Commission application submitted 5.13.19.
21. Seating was calculated based on the actual number of seats. The area of the seating was indicated by a dashed line included the square footage and seats.
22. Deliveries are made 3-4 times a week and are made in early morning.
23. The traffic and parking studies have been updated to include future conditions with a fully occupied shopping center. For the traffic study, the capacity analysis was updated accordingly.
24. The capacity analysis has been updated to reflect Village comments. Table 3.6 and Table 3.7 have been revised accordingly.
25. The 95th percentile queues projected for the westbound right-turn movement at Access B are expected to exceed the available storage length under the future no-build condition. The capacity analysis is considered conservative as it does not include right-turn-on-red movements, which were observed in the field. Furthermore, the current site access and onsite circulation configuration provides flexibility for motorists to select an alternate outbound access driveway if long delays or queues are observed at Access B.

Landscape Issues:

1. Detailed landscape plan showing sizes, species and quantities provided.
2. Shrubs along Palatine Road increased in size to be a minimum of 3-foot height at time of installation. Plant material is salt and drought tolerant.
3. 4" caliper shade trees provided at the ends of all parking rows.
4. Parking stall have been revised to 18' deep.
5. Turf provided along back of curb.
6. Details for the railings has been added.
7. Pictures of furniture provided to illustrate the patio design.
8. Acknowledged. Utility locations will be looked at in detail at time of final landscape plan submittal to provide proper screening.
9. Acknowledged.

Public Works Department:

1. The proposed water line servicing the building is a 6" Ductile Iron Water Line (W3). The ¾" line (W1) is exiting the building and will be providing water service to a post hydrant in the trash enclosure from interior to the building. It is not a separate water source.
2. Acknowledged.
3. Acknowledged.
4. Structure ST-1 will not have a restrictor within the structure. Per MWRD WMO, detention is not required for this site. Final Construction details will be included with Final Engineering Plans.
5. Proper separation will be provided at X3, X4, X5, and X6.
6. The owner of the shopping center will be preparing separate plans and obtaining permit to install the proposed water main extension prior to the start of construction for the Raising Cane's Lot.

7. An OUMA will be completed prior to Final Engineering Approval. In addition, an Exhibit R including maintenance requirements will be completed and recorded against the property as part of the MWRD Permit process.
8. Acknowledged.
9. Revised as requested.
10. Acknowledged. Final grease trap location will be coordinated/confirmed with Public Works during Final Engineering Review.

Please contact me directly if you have any questions or concerns regarding these drawing revisions, attached responses, or if there is any further information needed to expedite the permit. Thank you.

Respectfully Submitted,

Jeff H. Pountney

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ADA Architects, Inc.

