RESOLUTION NO. 2024-3310

A RESOLUTION OF THE TOWN COMMISSION OF THE TOWN OF SURFSIDE, FLORIDA, APPROVING A MEMORANDUM OF UNDERSTANDING WITH 9300 COLLINS OWNER, LLC REGARDING A MODIFIED PROJECT PROPOSAL FOR THE PROPERTY AT 9300 COLLINS AVENUE; PROVIDING FOR AUTHORIZATION; PROVIDING FOR IMPLEMENTATION; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the Town Commission of the Town of Surfside ("Town") approved Town Resolutions 2024-3254 and 2024-Z-3255 ("Development Orders") for development of real property in Town located at 9300 Collins Avenue ("Property"); and

WHEREAS, 9300 Collins Owner, LLC ("Owner") and the Town (collectively, the "Parties") remain in dispute regarding the Development Orders but seek to resolve same by entry into a Memorandum of Understanding ("MOU"), in substantially the form attached hereto as Exhibit "A", regarding development of the Property in the form of a Modified Project that reduces the number of units, eliminates underground parking, preserves the Historic Facade, conveys the Harding Parcel to the Town, requires construction of a Sanitary Sewer Pump Station and provides two units within the Modified Project for the benefit of the Town without charge, as more specifically set forth in the MOU; and

WHEREAS, the Town finds this MOU to be in the best interest and welfare of the Town and its residents.

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COMMISSION OF THE TOWN OF SURFSIDE, FLORIDA, AS FOLLOWS:

Section 1. Recitals. The above-stated recitals are true and correct and are incorporated herein by this reference.

Section 2. Approval of MOU. The MOU, in substantially the form attached hereto as Exhibit "A", is approved.

Section 3. **Authorization.** The Town Manager is hereby authorized to execute the MOU, in substantially the form attached hereto as Exhibit "A", subject to review by the Town Attorney as to form, content and sufficiency.

Section 4. **Implementation.** The Town Manager is hereby authorized to take all necessary action to implement the MOU and the purposes of this Resolution.

Section 5. **Effective Date.** This Resolution shall become effective immediately upon adoption.

PASSED AND ADOPTED this 13th day of August, 2024.

Motion By: Commissioner Velasquez

Second By: Vice Mayor Paul

FINAL VOTE ON ADOPTION:

Commissioner Ruben A. Coto	Yes
Commissioner Nelly Velasquez	Yes
Commissioner Gerardo Vildostegui	Yes
Vice Mayor Tina Paul	Yes
Mayor Charles W. Burkett	Yes

_____
Charles W. Burkett, Mayor

ATTEST:

TOWN OF SURFSIDE INCORPORATED SEAL 1935 DADE COUNTY, FLA.

_____
Sandra N. McCready, MMC
Town Clerk

APPROVED AS TO FORM AND LEGALITY FOR THE USE AND BENEFIT OF THE TOWN OF SURFSIDE ONLY:

_____
Mark Blumstein
Interim Town Attorney

MEMORANDUM OF UNDERSTANDING
BETWEEN THE TOWN OF SURFSIDE AND 9300 COLLINS OWNER, LLC

This Memorandum of Understanding ("MOU") is entered into this ___day of August 2024, by and between the Town of Surfside, Florida (the "Town") and 9300 Collins Owner, LLC ("Developer"). Town and Developer are collectively referred to as the "Parties" and individually as a "Party."

WHEREAS, the Town is a municipality located within Miami-Dade County, FL; and

WHEREAS, Developer is the owner of certain real property in Town located at 9300 Collins Avenue, Surfside, FL 33154 the ("Property"); and

WHEREAS, Developer's Property is subject to Town Resolutions 2024-3254 and 2024-Z-3255 dated 9 January 2024 (the "Development Orders"), which approved Developer's application (the "Application") for a site plan (the "Site Plan") concerning a proposed mixed-use development on the Property; and

WHEREAS, the Parties are in dispute regarding the Development Orders; and

WHEREAS, the Parties have agreed to resolve the above-referenced dispute in accordance with the terms of this MOU.

NOW, THEREFORE, the Parties agree as follows regarding the Modified Project, as defined below and set forth as follows:

1. **Recitals:** The above recitals are true and correct and are incorporated herein by reference.

2. **Processing of Site Plan Amendment.** Subject to the terms hereof, Developer shall file an application for an amendment to the Site Plan (the "Amendment Application"), by which Developer shall amend its original Application and Site Plan in accordance with the terms of this MOU. The Town shall consider the Amendment Application in accordance with Sections 90-20, 90-35 and related provisions of Town Code. The Town agrees to use its best efforts to bring the Amendment Application to the Town Commission for consideration within sixty (60) days of the filing of the complete Amendment Application, utilizing the Town's Multi-Family and Non-Residential Site-Plan Application form. Those best efforts shall include, where possible, setting special DRG, Planning and Zoning Board and Town Commission meetings, including quasi-judicial hearings, for consideration of the Amendment Application, as applicable. The Town's approval of the Amendment Application shall be consistent with the terms of this MOU.

3. **Reductions in Density and Intensity:** The "Modified Project" shall be a residential-only development with no more than 75 units, together with amenities associated therewith.

4. **The Historic Façade:** Developer shall secure formal approval and permission ("Approval") from the Miami-Dade County Office of Historical Preservation ("OHP") and its Historical Preservation Board ("HPB") to preserve the portion of the historic facade on the Property that faces Collins Avenue (the "Historic Facade"), which shall be obtained by: (i) an amendment to the currently approved order from the HPB that Developer will attempt to preserve the Historic Façade; or (ii) a new approval from the HPB that preserves the Historic Facade. Notwithstanding the foregoing, Developer shall preserve the Historic Facade, which shall be a condition of this MOU and the Modified Project. While Developer seeks the Approval, the Town shall simultaneously commence review of the Amendment Application.

5. **The Harding Avenue Parcel**: Upon Developer's completion of the foundation for the Modified Project, Developer shall deed to the Town the land described as Lot 19, Block 3 of the Altos Del Mar No. 5 Subdivision recorded in Plat Book 8, Page 92 of the Public Records of Miami-Dade County, Florida (the "Harding Parcel"). Concurrent with the delivery of the deed of the Harding Parcel to the Town, the lease between the parties (a form of which is attached hereto as Exhibit A), shall be executed and commence upon execution of said lease. The Town shall be restricted from constructing a parking structure on the Harding Parcel. Any vehicular parking on the Harding Parcel shall be limited to surface-level parking only. This restriction shall be set forth in a deed restriction on the Harding Parcel, a duly recorded restrictive covenant, or otherwise formalized when conveyed to the Town. In the event the Modified Project requires the Harding Parcel for any zoning requirement under Town Code, the Parties will enter into a "Covenant in Lieu of Unity of Title" providing that the Property is a single property for purposes of the Town's zoning regulations and guaranteeing that any future redevelopment of the Harding Parcel will be designed to ensure that the Modified Project remains in compliance with all applicable standards, including Town Code. The Town shall cooperate with Developer in designating the conveyance of the Harding Parcel as a donation to the Town without impacting the Town's ability to take title to the Harding Parcel. In the event the Town wishes to sell the Harding Parcel, the Developer shall have the right of first refusal ("ROFR") with respect to such sale for up to 10 business days following written notice from the Town to Developer of a pending sale together with the purchase and sale agreement. Developer may exercise said ROFR by delivering notice to the Town of its intent to exercise the ROFR together with a deposit of 10% of the purchase price, absent which the ROFR shall be deemed waived. Notwithstanding anything to the contrary herein, to the extent that any utility easement on the Harding Parcel is required by any governmental agency or public utility, the Town shall not unreasonably delay, condition or withhold its approval of such utility easement, to the extent such approval is necessary, provided all costs, including any future maintenance costs, shall be borne by Developer.

6. **Underground Parking and Parking Lifts:** The Modified Project shall not include below-grade parking, as reflected in the Site Plan. Parking for the Modified Project shall be at or above Grade, as defined in Town Code. To satisfy the Town's parking requirements, and notwithstanding anything to the contrary contained herein, Developer shall be entitled to construct parking lifts on the west side of the Modified Project's first floor as reflected in **Exhibit B** attached hereto. The Town has determined (as evidenced by execution of this MOU), that the parking design and traffic queuing analysis provided in **Exhibit B** satisfies all parking requirements for the Modified Project of up to 75-units to be accommodated by the parking lifts, subject to the approval of the Amendment Application and compliance with the remaining design and operational requirements of Town Code, including Section 90-77(f).

7. **Surfside Units at the Modified Project**: Upon the Town's issuance of temporary certificates of occupancy or certificates of occupancy for the Town Units (as defined below) for the Modified Project at the Property, Developer shall convey two (2), two-bedroom units of the Modified Project ("Town Units") to the Town. The Town Units shall be located in a location to be determined in the Developer's sole and absolute discretion. The Town Units shall comply with Section 90-42 "Minimum unit sizes" of the Town Code as in effect on the date hereof. Under no circumstances shall the Town Units be smaller than the average size of the two-bedroom units contained in the Modified Project (as determined by (i) adding the square footage of all two-bedroom units contained in the Modified Project and dividing such sum by (ii) the number of two-bedroom units in the Modified Project; by way of example, and for illustrative purposes only, if there are 5 two-bedroom units in the Modified Project with a total of 5,000 square feet in the aggregate, the "average size" of the two -bedroom units would be 1,000 square feet (i.e., 5,000 divided by 5). For purposes of the foregoing calculation, convertible, adaptable or one-bedroom units with an extra room that could be used as a bedroom, shall not be considered two-bedroom units. The Town Units shall (i) be used by the Town for a lawful purpose or public benefit as determined by the Town in its sole and absolute discretion. The Town Units shall be conveyed to the Town by way of a lease agreement acceptable to the Town in its sole and good faith discretion, which shall be irrevocable, perpetual and at zero cost to the Town. If for any reason, the conveyance of the Town Units to the Town is not legally possible by way of the foregoing lease agreement, then the Developer shall be solely responsible to ensure that the Town has unfettered, irrevocable, perpetual and zero cost use of the Town Units via an alternative conveyance. The foregoing conveyance of the Town Units to the Town shall be unfettered, irrevocable, perpetual and at zero cost, which shall be deemed a restrictive covenant running with the land, binding on the Parties' successors in interest, and effected through a duly recorded written instrument. In the event the Developer sells the Property, Developer, and/or its successor, shall have the option to terminate the lease(s) and repossess the Town Units at closing (the "Buyout Option") by paying the Town an amount equal to the sale price per total square foot of the building, as determined by the Miami-Dade County Property Appraiser, times the total square footage of the Town Units. By way of example,

and for illustrative purposes only, if the Town Units total 1000 square feet and the total building size of the Modified Project, as determined by the Miami-Dade County Property Appraiser, was 10,000 square feet, then the Town would be entitled to a payment of 10% of the sales price of the entire Modified Project. Notwithstanding the foregoing and upon conveyance to the Town, the Town Units shall only be occupied for residential uses (as outlined in the Town Code), and this restriction shall be expressly stated in the lease agreement(s) between Developer and the Town; *provided* that any occupant, other than a Town official, employee or dignitary of the Town, who occupies any Town Unit, shall be subject to (and must satisfy) the same standards as Developer applies to other residents of the Modified Project (including, background checks, credit reports, etc.) and (ii) to the extent the Town leases or subleases a Town Unit, such lease or sublease must have a term of six-months or greater. The Town shall not have or incur any expenses associated with said lease(s) of the Town Units. Stated otherwise, the Town shall enjoy the Town Units in perpetuity at no cost.

8. **Sanitary Sewer Pump Station**: Condition 3.A(1)d. of Town Resolution 2024-Z-3255 requires Developer to design, permit and construct the sanitary sewer pump station ("Pump Station") at a location consistent with the location set forth in the Development Orders, unless it is not feasible, in which case the Pump Station shall be relocated as directed by the Town and at Developer's sole and absolute cost and subject to all terms and conditions as stated herein and in the Development Orders. This MOU shall require Developer to design, permit, and construct the Pump Station at its own cost. Developer shall no longer be entitled to make the New Sanitary Sewer System Payment in lieu of the Pump Station, as was previously authorized in the Development Orders. The Town agrees that completion of the Pump Station, which shall be completed expeditiously pursuant to the terms of this Section 8 of the MOU, shall not impact, or in any manner affect or inform, the connection of the Modified Project to a public sewer or issuance of any or all temporary certificates of occupancy or certificates of occupancy. Upon completion of the Pump Station to the satisfaction of the Town in its sole and good faith discretion, the Town shall then assume responsibility for all costs associated with maintenance and repair thereof. Developer shall expeditiously complete the Pump Station by: (i) diligently pursuing the design, permitting and construction of the Pump Station and (ii) posting a performance bond to guaranty completion of the Pump Station in an amount equal to the full value of the Pump Station plus twenty percent (20%) if the Pump Station is not completed to the Town's satisfaction upon issuance of a TCO or CO for the Modified Project.

9. **93rd Street Entrance**: 93rd Street, on the south side of the Modified Project, may be used for vehicular access to and/or from the Modified Project during, upon and after completion of construction of the Modified Project; *provided* that such access shall be closed and restricted for the preparation of, duration of, and cleanup of official Town events, subject to the Town providing a minimum of one-weeks' notice published in the Town Gazette or on its website.

10. **Advancement of the Modified Project and Mutual Cooperation**: The Town agrees to cause the expeditious review and processing of all required approvals and permits necessary to advance and allow completion of the Modified Project. Accordingly, upon the approval of the Amendment Application in compliance with the terms of this MOU and Town Code, the Town shall promptly process all permits associated therewith upon proper application and in accordance with Town Code and applicable law. The Town agrees that it will use its best efforts to advance the Modified Project. The Town further agrees not to unreasonably delay, condition or withhold, and to use its best efforts, to promptly issue any permit applications and/or utility easements necessary to advance the Modified Project in compliance with Town Code and without impact to the Town; *provided* that the Town and Developer agree that the Developer shall be responsible for all costs associated with such easements. "Best efforts" as used herein shall refer to: (1) the Town's issuance of any permits, utility easements or other approvals within a reasonable amount of time of Developer's filing of a complete application or request related thereto, as described above at paragraph 2; and (2) the Town making good faith efforts to grant such permits, utility easements and/or approvals not impacting the Town within sixty (60) days of a complete application, as described above at paragraph 2, or upon request to the extent an application is not necessary.

11. **Development Agreement.** Subject to the terms hereof, the Town agrees to take all reasonable steps, as may be requested by the Developer from time to time, to cooperate with Developer and facilitate the timely review of the Amendment Application pursuant to Section 163.3221, Florida Statutes. The Amendment Application will, at minimum, protect the Modified Project against downzoning, and protect the Town against any upzoning of the Modified Project, or other Code changes that would prevent furtherance of the Modified Project, limit or increase the density, intensity and height of the Modified Project, as provided by this MOU, and memorialize the parties' obligations under this MOU.

12. **Effective Date:** This MOU shall become effective as of the date on which it is fully executed by the Parties ("Effective Date").

13. **Attorney's Fees and Costs**: Each party shall bear its own attorney's fees and costs incurred in connection with drafting and executing this MOU.

14. **Binding Nature of the MOU:** The Parties, and their successors and assigns, agree to be bound by the terms of this MOU following the Effective Date.

15. **Developer's Right to Terminate**: Notwithstanding anything to the contrary contained herein, and in consideration of Developer's efforts to modify the existing Site Plan as contemplated herein, Developer shall have the unilateral right to terminate this MOU at any time through the issuance of all building permits, with or without cause, by providing at least ten (10) days written notice to the Town and satisfaction of all fees due to the Town related to this MOU and/or the Amendment Application. Upon Developer exercising its option to terminate this MOU,

Developer and the Town shall each retain all rights predating this MOU arising out of or related to the Development Orders, and nothing herein shall be deemed a waiver of such rights, except that the Town shall not be liable to anyone, including the Developer, for any delays or costs solely resulting from or relating to this MOU.

16. **Applicable Law and Venue:** This MOU shall be governed by and construed and enforced in accordance with the laws of the State of Florida without giving effect to the principles of conflicts of law thereof. The venue shall be before the Eleventh Judicial Circuit in and for Miami-Dade County, Florida.

17. **Authority.** The individuals executing this MOU in a representative capacity expressly represent and warrant that they are fully authorized and empowered to execute it on behalf of the Party on whose behalf they are signing, and each Party represents that no other persons, entities or parties in interest are required to execute this MOU to effectuate its purpose and intent. This MOU shall be duly notarized by Developer. This MOU shall be attested to by the Town Clerk and approved as to legal form and sufficiency by the Town Attorney.

18. **Amendment:** The terms and provisions of this MOU may not be amended, modified or supplemented orally or by course of conduct or course of dealing, but only in a writing authorized, approved, and signed by each of the Parties.

[SIGNATURES ON FOLLOWING PAGE]

IN WITNESS WHEREOF, the Parties hereto have caused this Memorandum of Understanding to be executed and delivered as of the latest date set forth below.

9300 COLLINS OWNER, LLC

By: _____

Name: Michael Sommer

Title: Authorized Signatory

Date Executed: 8/12/24

Notarization of Execution

STATE OF New York)
COUNTY OF New York)

The foregoing instrument was acknowledged before me this 12th day of August, in the year 2024, as Authorized Signatory (Title), of 9300 Collins Owner, LLC, who is personally known to me or has produced _____ as identification.

My Commission Expires: 5/9/2026

_____
Notary Public, State of New York

JENNIFER VASILCHEK
Notary Public, State of New York
Registration No. 01VA6432778
Qualified In New York County
Commission Expires May 9, 2026

TOWN OF SURFSIDE

By: _____

Name: Enrique Doce

Title: Acting Town Manager

Date Executed: August 15, 2024

Attest:

_____
Sandra N. McCready, MMC, Town Clerk

TOWN OF SURFSIDE INCORPORATED SEAL 1935 DADE COUNTY, FLA.

Approved as to Form and Legal Sufficiency:

_____
Mark Blumstein, Interim Town Attorney

EXHIBIT A

Lease Agreement

[Attached]

TOWN OF SURFSIDE

AND

9300 COLLINS OWNER LLC

LEASE AGREEMENT

Dated: _____

LEASE AGREEMENT

THIS LEASE AGREEMENT, dated _____ (the "Agreement"), is by and between the **TOWN OF SURFSIDE**, a municipal corporation (the "Town") and **9300 COLLINS OWNER LLC**, a limited liability company (the "Developer" and together with the Town, the "Parties").

WITNESSETH:

WHEREAS, the Town agrees to lease to Developer that certain parcel of land located at Surfside, Florida described as Lot 19, Block 3 of the Altos Del Mar No. 5 Subdivision recorded in Plat Book 8, Page 92 of the Public Records of Miami-Dade County, Florida (the "Parcel") so that the Developer may use the Parcel to assist in the development and construction of a residential apartment complex with amenities on the land immediately adjacent thereto at 9300 Collins Avenue, Surfside, Florida 33154 (the "Development Site"); and

WHEREAS, simultaneously with this Agreement, the Town will have taken title in the Parcel such that it leases its interest in said Parcel back to the Developer pursuant to the lease provisions contained herein.

NOW, THEREFORE, for and in consideration of the premises and the mutual covenants hereinafter contained, and other good and valuable consideration the receipt and sufficiency of which is hereby acknowledged, the Parties hereto hereby formally covenant, agree and bind themselves as follows:

ARTICLE I
REPRESENTATIONS AND COVENANTS

Section 1.1. Representations and Covenants of the Town. The Town makes the following representations and covenants as the basis for the undertakings on its part herein contained:

The Town has the power to enter the lease contemplated by this Agreement and to carry out its obligations hereunder.

Section 1.2. Representations and Covenants of the Developer. The Developer makes the following representations and covenants as the basis for the undertakings on its part herein contained:

The Developer has the authority to enter into this Agreement and has duly authorized the execution and delivery of the same.

ARTICLE II
THE LEASE

Section 2.1. Term. The term ("Term") of the lease (the "Lease") is for a period commencing on the date this Agreement is executed by the Parties (the "Commencement Date") and terminating on the earlier of (i) twenty-four (24) months from the Commencement Date or (ii) the final date by which all Temporary Certificates of Occupancy (TCOs) or Certificates of Occupancy (COs) necessary for the buildings at the Development Site have been obtained.

Section 2.2. Rent. Developer agrees to pay rent to Town for the full Term in the one-time amount of One ($1.00) Dollar.

Section 2.3. Use of Premises. .The Town and Developer enter the Lease for the purpose of providing the Developer with an area for a laydown yard, staging area and/or any other construction activities ("Construction") in connection with its ongoing development and construction of the Development Site. Developer and Developer's employees, contractors, subcontractors, licensees, invitees, affiliates, partners, subsidiaries, representatives and agents may use and occupy the Parcel for Construction relating to the project at the Development Site, including, without limitation, the storage, staging or use, as applicable, of construction-related equipment, supplies, materials, vehicles, trailers, poles, wires, cable, gates, fences, landscaping and other equipment and materials, and together with rights of ingress and egress on, over and across the Parcel, subject to Town Code and a Release and Hold Harmless agreement executed by Developer in favor of the Town attached hereto as Exhibit A1. The Town agrees that one or more construction trailers, in compliance with Town Code and payment of applicable permit fees, shall be permitted to be on the Parcel during the Term and Developer shall have the right to remove shrubs, vegetation and other obstructions that interfere with the work to be performed by Developer or that interferes with the reasonable use of the Parcel for Construction.

Section 2.4. Quiet Enjoyment. The Town covenants and agrees that Developer shall peaceably and quietly enjoy the Parcel and Developer's rights hereunder during the Term without hindrance by the Town and subject to Town Code.

Section 2.5. Remedies. Upon expiration of the Term of this Lease, the Town shall be entitled to re-enter or obtain possession of the Parcel, including by summary proceedings or any other legal action or proceeding or by any other legal act (without liability or obligation to Developer or any subtenant or any other occupant of the Parcel), and the following provisions shall apply:

(a) Developer shall immediately vacate and surrender the Parcel to the Town in good order, condition, and repair, reasonable wear and tear and damage that Developer is not obligated under the terms of this Lease to repair excepted.

(b) Developer shall promptly pay to the Town all monies due and payable to the date on which this Lease is terminated or the date on which the Town re-enters or obtains possession of the Parcel.

(c) Notwithstanding anything to the contrary contained herein, the Town shall have no duty or obligation whatsoever to mitigate its damages hereunder.

(d) The Town shall be entitled to an award of its reasonable attorney fees and costs, through and including all appeals, whether it utilizes the services of its Town Attorney or an outside attorney or firm, related to enforcement of the terms of this Lease.

ARTICLE III

MISCELLANEOUS

Section 3.1. **Notices.** All notice, payment, requests, consents and approvals required or permitted to be given pursuant to the terms of this Agreement shall be given in writing by depositing the same in the United States mail, registered, or by nationally recognized overnight courier, and addressed to the Parties at the below addresses:

To the Town: Town of Surfside
9293 Harding Avenue
Surfside, FL 33154
Attn: Town Clerk

To the Developer: 9300 Collins Owner LLC
c/o 767 Fifth Avenue, 50th Floor
New York, New York, 10153
Attn: Michael Sommer

or at such other address as the Parties may from time to time furnish to the other Party by notice given in accordance with the provisions of this Section. All notices shall be deemed given when mailed in the manner provided in this Section.

Section 3.2. **Binding Effect.** This Agreement shall inure to the benefit of and shall be binding upon the Parties and their respective successors and assigns.

Section 3.3. **Severability.** In the event any provision of this Agreement shall be held invalid or unenforceable by any court of competent jurisdiction, such holding shall not invalidate or render unenforceable any other provision hereof.

Section 3.4. **Amendments, Changes and Modifications.** This Agreement may not be amended, changed, modified, altered or terminated without the concurring written consent of the Parties hereto.

Section 3.5. **Execution of Counterparts.** This Agreement may be executed in several counterparts, each of which shall be an original and all of which together shall constitute but one and the same instrument.

Section 3.6. **Applicable Law and Venue.** This Agreement shall be governed, construed and enforced in accordance with the laws of the State of Florida for contracts to be wholly performed therein and without giving effect to the principles of conflicts of law thereof. The venue shall be before the Eleventh Judicial Circuit in and for Miami-Dade County, Florida.

Section 3.7. **No Broker.** The Parties represent and warrant to the other that neither the Town nor the Developer has dealt with any broker or finder entitled to any commission, fee, or other compensation by reason of the execution of this Agreement.

Section 3.8. **No Joint Venture Created.** The Town and the Developer mutually agree that by entering into this Agreement the Parties hereto are not entering into a joint venture.

Section 3.9. **Ownership and Access to Records and Audits.**

Notice Pursuant to Section 119.0701(2)(a), Florida Statutes. IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS AGREEMENT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS: TOWN CLERK, 9293 HARDING AVENUE, SURFSIDE, FL 33154, 305-861-4863, SMCREADY@TOWNOFSURFSIDEFL.GOV.

(Remainder of page intentionally left blank.)

IN WITNESS WHEREOF, the Parties hereto have caused Agreement to be executed and delivered as of the date set forth above.

9300 COLLINS OWNER, LLC

By: _____
Name: _____
Title: _____
Date Executed: _____

Notarization of Execution

STATE OF _____)
COUNTY OF _____)

The foregoing instrument was acknowledged before me this ____day of _____, in the year 2024, as _____, of _____, who is personally known to me or has produced _____ as identification.

My Commission Expires:

_____
Notary Public, State of _____

TOWN OF SURFSIDE

By: _____
Name: _____
Title: _____
Date Executed: _____

Attest:

_____
Sandra N. McCready, Town Clerk

Approved as to Form and Legal Sufficiency:

_____
Mark Blumstein, Interim Town Attorney

RELEASE OF LIABILITY AND ASSUMPTION OF RISK

9300 Collins Owner, LLC, its members, officers, employees, agents, representatives, contractors, subcontractors, or anyone else performing the Activity, as defined below, on the Harding Parcel, as defined in the MOU between the Parties (referred to as "Developer") desires to participate in construction of the Development Site, as defined in the Lease by and between the Parties of said Lease, (the **"Activity"**) provided by the Town of Surfside, Florida, a municipal corporation, with offices located at 9293 Harding Avenue, Surfside, FL 33154 (the **"Town"**). In consideration of being permitted by the Town to participate in the Activity/the intangible value that Developer will gain by participating in the Activity and in recognition of the Town's reliance hereon, Developer agrees to all the terms and conditions set forth herein (this **"Release"**).

DEVELOPER IS AWARE AND UNDERSTANDS THAT THE ACTIVITY IS A POTENTIALLY DANGEROUS ACTIVITY AND INVOLVES THE RISK OF PERSONAL OR PSYCHOLOGICAL INJURY, PAIN, SUFFERING, TEMPORARY OR PERMANENT DISABILITY, DEATH, PROPERTY DAMAGE, AND/OR FINANCIAL LOSS. DEVELOPER ACKNOWLEDGES THAT ANY INJURIES THAT IT SUSTAINS MAY RESULT FROM OR BE COMPOUNDED BY THE ACTIONS, OMISSIONS, OR NEGLIGENCE OF THE TOWN, INCLUDING NEGLIGENT EMERGENCY RESPONSE OR RESCUE OPERATIONS OF THE TOWN. **NOTWITHSTANDING THE RISK, DEVELOPER ACKNOWLEDGES THAT IT IS KNOWINGLY AND VOLUNTARILY PARTICIPATING IN THE ACTIVITY WITH AN EXPRESS UNDERSTANDING OF THE DANGER INVOLVED AND HEREBY AGREES TO ACCEPT AND ASSUME ANY AND ALL RISKS OF INJURY, DISABILITY, DEATH, AND/OR PROPERTY DAMAGE ARISING FROM ITS PARTICIPATION IN THE ACTIVITY, WHETHER CAUSED BY THE ORDINARY NEGLIGENCE OF THE TOWN OR OTHERWISE.**

Developer hereby expressly waives and releases any and all claims, now known or hereafter known, against the Town, and its officers, directors, manager(s), employees, agents, affiliates, elected officials/members, the Town's successors and assigns (collectively, "Releasees"), on account of injury, disability, death, or property damage arising out of or attributable to Developer's participation in the Activity, whether arising out of the ordinary negligence of the Town or any Releasees or otherwise. Developer covenants not to make or bring any such claim against the Town or any other Releasee, and forever releases and discharges the Town and all other Releasees from liability under such claims. This waiver and release does not extend to claims for gross negligence, willful misconduct, or any other liabilities that the State of Florida law does not permit to be released by agreement.

Developer shall defend, indemnify, and hold harmless the Town [and all other Releasees] against any and all losses, damages, liabilities, deficiencies, claims, actions, judgments, settlements, interest, awards, penalties, fines, costs, or expenses of whatever kind, including [reasonable] attorney fees, fees, the costs of enforcing any right to indemnification under this Release, and the cost of pursuing any insurance providers, incurred by/awarded against the Town [or any other Releasees] as awarded in each

instance by a final, non-appealable judgment, arising out or resulting from any claim of a third party related to Developer's participation in the Activity, including any claim related to Developer's own negligence or the ordinary negligence of the Town.

Developer hereby consents to receive medical treatment deemed necessary if it is injured or requires medical attention during its participation in the Activity. Developer understands and agrees that it is solely responsible for all costs related to such medical treatment and any related medical transportation and/or evacuation. Developer hereby releases, forever discharges, and holds harmless the Town from any claim based on such treatment or other medical services.

This Release constitutes the sole and entire agreement of the Town and Developer with respect to the subject matter contained herein and supersedes all prior and contemporaneous understandings, agreements, representations, and warranties, both written and oral, with respect to such subject matter. If any term or provision of this Release is invalid, illegal, or unenforceable in any jurisdiction, such invalidity, illegality, or unenforceability shall not affect any other term or provision of this Release or invalidate or render unenforceable such term or provision in any other jurisdiction. This Release is binding on and shall inure to the benefit of the Town and Developer and our respective heirs, successors, and assigns. All matters arising out of or relating to this Release shall be governed by and construed in accordance with the internal laws of the State of Florida without giving effect to any choice or conflict of law provision or rule, whether of the State of Florida or any other jurisdiction. Any claim or cause of action arising under this Release may be brought only in the federal and state courts located in the State of Florida within Miami-Dade County, and Developer hereby consents to the exclusive jurisdiction of such courts.

BY SIGNING, DEVELOPER ACKNOWLEDGES THAT IT HAS READ AND UNDERSTOOD ALL OF THE TERMS OF THIS RELEASE AND THAT IT IS VOLUNTARILY GIVING UP SUBSTANTIAL LEGAL RIGHTS, INCLUDING THE RIGHT TO SUE THE TOWN. DEVELOPER ACKNOWLEDGES THAT PRIOR TO SIGNING THIS AGREEMENT, IT HAD THE OPPORTUNITY TO CONSULT WITH AN ATTORNEY TO REVIEW THIS AGREEMENT. THE PERSON SIGNING THIS RELEASE ON BEHALF OF DEVELOPER IS AT LEAST EIGHTEEN (18) YEARS OF AGE AND FULLY COMPETENT.

9300 COLLINS OWNER, LLC
By: _____
Name: _____
Title: _____
Date Executed: _____

Notarization of Execution

STATE OF _____)
COUNTY OF _____)

The foregoing instrument was acknowledged before me this ____day of _____, in the year 2024, as _____, of _____, who is personally known to me or has produced _____ as identification.

My Commission Expires: _____
Notary Public, State of _____

EXHIBIT B

Traffic Queuing Analysis

[Attached]

LANGAN

Technical Excellence
Practical Experience
Client Responsiveness

5 August 2024

Scarlet Hammons
Town Planner
Town of Surfside
9293 Harding Avenue
Surfside, FL 33154

Re: Traffic Statement
9300 Collins Avenue
Surfside, Florida
Langan Project No.: 300329201

Dear Ms. Hammons:

Langan Engineering & Environmental Services, LLC prepared this traffic statement for the proposed 75-unit residential development at 9300 Collins Avenue in Surfside, Florida. We determined that the proposed development would generate no more than 28 new peak hour trips and that the proposed valet operations will not cause entering traffic to back into the adjacent public roadways with a minimum of two parking attendants to serve the expected demand. In addition, we determined that the proposed development would generate less traffic compared to the previously approved development. This letter report includes daily and peak-hour trip-generation calculations for the development and a valet queueing analysis. **Figure 1** below shows aerial photograph of the site location.

Figure 1: Site Location Aerial Photograph

Project Description

The proposed development comprises 75 low-rise multifamily dwelling units expected to be built by 2027 or sooner. The 2.23-acre vacant site (Folio No.: 14-2235-006-0220) was recently approved by the Town of Surfside for an 87-unit low-rise residential development. The previously approved development proposed to have a full-access driveway along 93rd Street and a one-way pair driveway along Collins Avenue (SR-A1A) to serve the proposed drop-off area. The development program and access are now being revised to remove the previous proposed basement and reduce to 75 units. The revised development will have access through two full-access driveway connections, one to each 93rd Street and 94th Street and an ingress only driveway along Collins Avenue. The proposed driveway along 94th Street will serve residents and visitors, while the driveway to 93rd Street will operate as serve residents only access, while the driveway on Collins Avenue is intended to serve rideshare and commercial drop-off operations. **Attachment A** contains the site plan showing the proposed development program and driveway connections.

Trip Generation Analysis

We conducted a trip generation analysis for the proposed development and determined that it is expected to generate 28 morning and 21 afternoon new peak hour trips. In addition, we determined that the proposed development is expected to generate less traffic compared to the previously approved development. The results of the trip comparison are summarized in **Table 1**, using equations from the 11th Edition of the *ITE Trip Generation Manual*. **Attachment B** contains excerpts from the ITE manual.

Table 1.- Trip Generation Analysis

Morning Peak Hour

Land Use	ITE Code	Size	Trip Generation Rate	In	Out	Total Trips		
						In	Out	Total
Approved Uses								
Multifamily Housing (Low-Rise)	220	87 DU	T = 0.24 (X) + 9.56	10%	90%	3	27	30
Proposed Uses								
Multifamily Housing (Low-Rise)	220	75 DU	T = 0.24 (X) + 9.56	10%	90%	3	25	28
Difference (Approves less Proposed)						**0**	**-2**	**-2**

Afternoon Peak Hour

Land Use	ITE Code	Size	Trip Generation Rate	In	Out	Total Trips		
						In	Out	Total
Approved Uses								
Multifamily Housing (Low-Rise)	220	87 DU	T = 0.24 (X) + 3.25	90%	10%	22	2	24
Proposed Uses								
Multifamily Housing (Low-Rise)	220	75 DU	T = 0.24 (X) + 3.25	90%	10%	19	2	21
Difference (Approves less Proposed)						**-3**	**-0**	**-3**

Driveway Analysis & Turn Lane Analysis

As previously stated, the development will have access through two full-access driveway connections, one to each 93rd Street and 94th Street. **Figure 2** below shows the expected site-driveway peak-hour volumes. Based on the expected traffic generated by the proposed development exclusive turn lanes are not warranted at the proposed driveways.

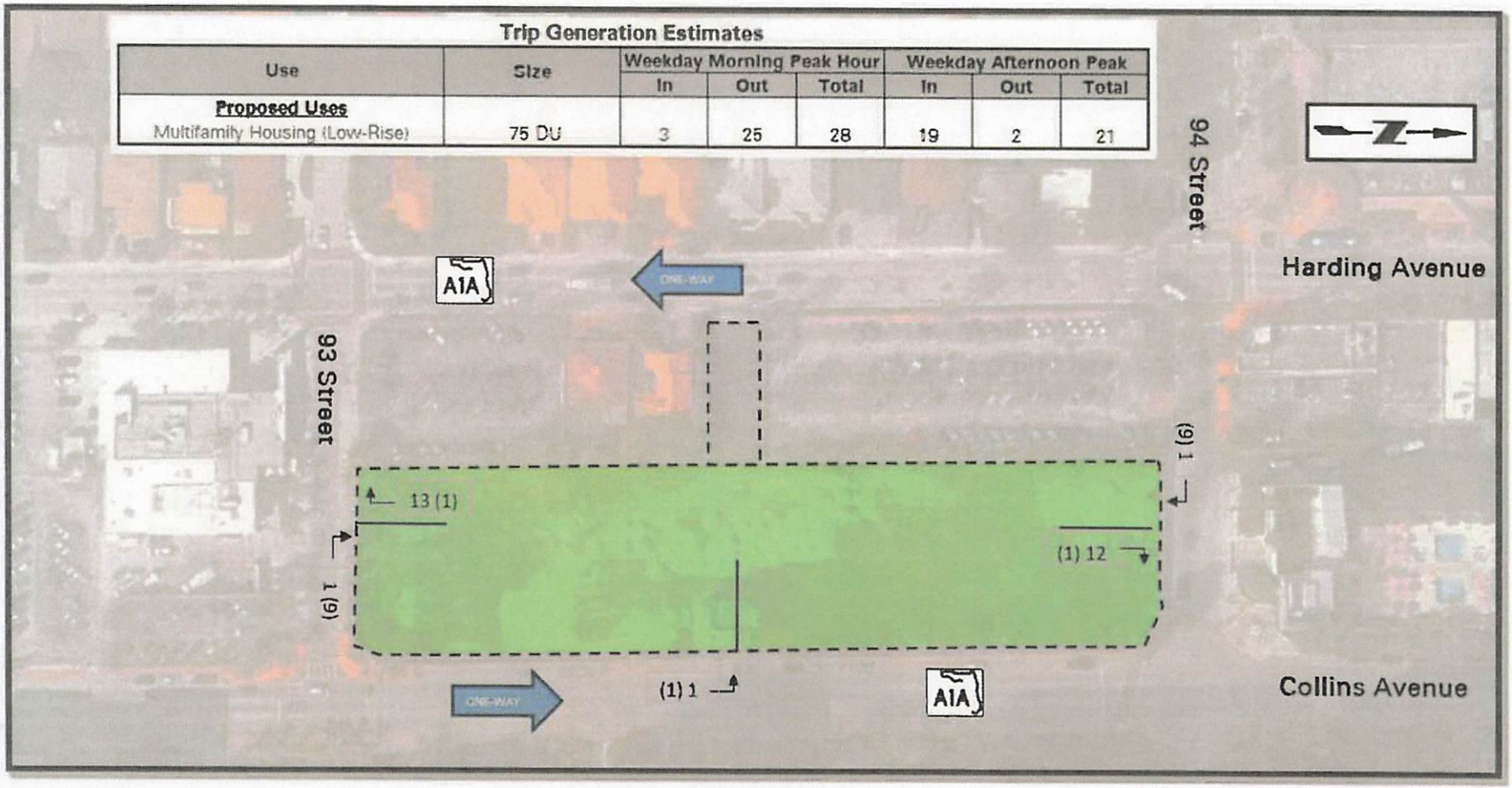


Figure 2: Driveway Volumes

Valet Operations and Queuing Analysis

We prepared a queuing analysis for the proposed development's valet operation and found that it will not cause entering traffic to back onto the adjacent public roadways. The proposed development will have a valet-parking station on the ground floor with on-site vehicle-stacking area for six vehicles. All visitors and residents will be required to use the valet operation to park their vehicles. The site plan in Attachment B shows the location of the valet stacking/queuing area. We used the queuing-analysis methodology from the Transportation and Land Development published by the ITE. This methodology requires hourly rates of vehicle arrival and service times for the valet operation to determine vehicle-queue lengths. The queues resulting from this analysis are 95th percentile queues, which are those expected to be generated 95 percent of the time.

The development will provide 72 parking spaces with double-stack car lifts and one (1) single parking space on the ground floor of the parking garage for a total of 145 parking spaces. Vehicle lifts allow two vehicles to occupy one parking space by lifting vehicles above the ground and allowing a second vehicle to park underneath one another.

The vehicle-arrival rate was based on the project's peak-hour trip generation, summarized in Table 1. We estimated the average service time for the valet operation of 2.65 minutes for the drop-off and 2.84 minutes for the pick-up operations. The service time accounts for the time required for the valet attendant to pick-up/drop-off the car, operate the lift, and return to the valet station. The analysis indicates that the valet operation will need a minimum of two attendants at the valet stand to serve the expected demand. We used 25 feet to convert the number of queued vehicles to linear feet. Table 2 summarizes the results of the queuing analysis and indicates that queues for the proposed valet operation are not expected to exceed four vehicles and indicate that the expected 95th percentile queue lengths will not exceed the length of the queue-storage area. Attachment D contains excerpts from ITE, the queuing-analysis and service-time calculations, and figures showing the turning movements within the parking area.

Table 2 - Valet Operation Queuing Analysis Summary

Time	Storage Capacity (feet)	95th Percentile Queue Length		Exceeds Capacity?
		Vehicles	Feet	
AM	120	4	100	**NO**
PM	120	2	50	**NO**

Conclusion

We determined that the 9300 Collins Avenue residential development is not expected to generate more than eight 28 new peak-hour trips. In addition, we determined that the proposed development is expected to generate less traffic compared to the previous approved development for this site. The proposed valet operation will need a minimum of two valet attendants to serve the expected demand from the proposed development and avoid queuing along public roadways. Please contact me at (954) 320-2155 with any questions or comments.

Sincerely,

Langan Engineering and Environmental Services, Inc.

This item has been digitally signed and sealed by Maximo Polanco, PE on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Maximo G Polanco

Maximo G. Polanco, P.E.
P.E. License No. 91355
Project Manager

Eric Schwarz, P.E., LEED AP
Principal/Vice President

MGP:mgp

Attachments:

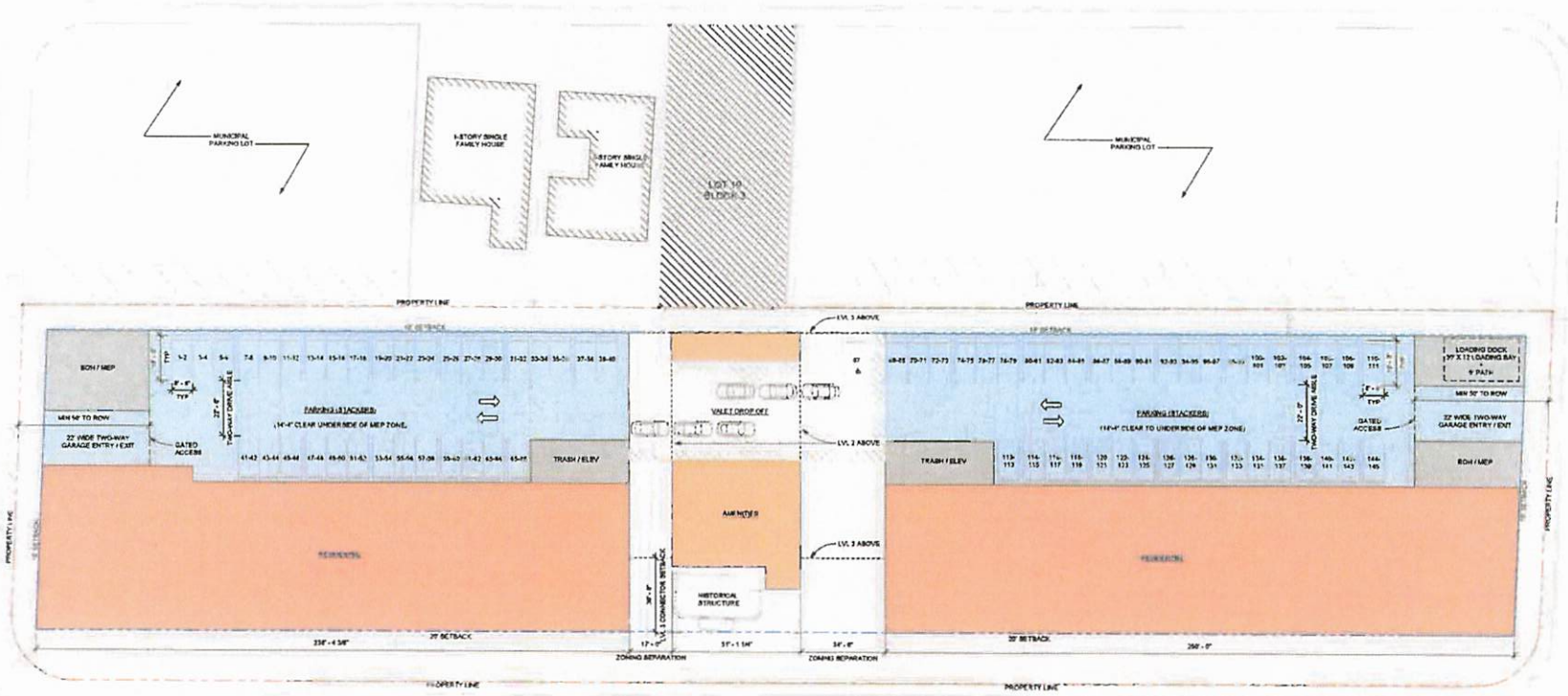
Attachment A – Site Plan
Attachment B – ITE Excerpts
Attachment C – Valet Queuing Analysis Calculations

ATTACHMENT A
SITE PLAN

HARDING AVENUE

93RD STREET

94TH STREET



COLLINS AVENUE

UNIT MIX & PARKING CALCULATIONS

Unit Type	# of Units (approximate)	% of total	Parking Required
1 BD	25	33%	37.5
2 BD	44	59%	66.0
3 BD	6	8%	12.0
TOTALS	75	100%	141.25 *incl. 1 stall per 20 units guest parking*
			145 provided

ATTACHMENT B
ITE EXCERPTS

Land Use: 220
Multifamily Housing (Low-Rise)

Description

Low-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have two or three floors (levels). Various configurations fit this description, including walkup apartment, mansion apartment, and stacked townhouse.

- A walkup apartment typically is two or three floors in height with dwelling units that are accessed by a single or multiple entrances with stairways and hallways.
- A mansion apartment is a single structure that contains several apartments within what appears to be a single-family dwelling unit.
- A fourplex is a single two-story structure with two matching dwelling units on the ground and second floors. Access to the individual units is typically internal to the structure and provided through a central entry and stairway.
- A stacked townhouse is designed to match the external appearance of a townhouse. But, unlike a townhouse dwelling unit that only shares walls with an adjoining unit, the stacked townhouse units share both floors and walls. Access to the individual units is typically internal to the structure and provided through a central entry and stairway.

Multifamily housing (mid-rise) (Land Use 221), multifamily housing (high-rise) (Land Use 222), affordable housing (Land Use 223), and off-campus student apartment (low-rise) (Land Use 225) are related land uses.

Land Use Subcategory

Data are presented for two subcategories for this land use: (1) not close to rail transit and (2) close to rail transit. A site is considered close to rail transit if the walking distance between the residential site entrance and the closest rail transit station entrance is ½ mile or less.

Additional Data

For the three sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.72 residents per occupied dwelling unit.

For the two sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 96.2 percent of the total dwelling units were occupied.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation

resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

For the three sites for which data were provided for both occupied dwelling units and residents, there was an average of 2.72 residents per occupied dwelling unit.

It is expected that the number of bedrooms and number of residents are likely correlated to the trips generated by a residential site. To assist in future analysis, trip generation studies of all multifamily housing should attempt to obtain information on occupancy rate and on the mix of residential unit sizes (i.e., number of units by number of bedrooms at the site complex).

The sites were surveyed in the 1980s, the 1990s, the 2000s, the 2010s, and the 2020s in British Columbia (CAN), California, Delaware, Florida, Georgia, Illinois, Indiana, Maine, Maryland, Massachusetts, Minnesota, New Jersey, Ontario (CAN), Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, and Washington.

Source Numbers

188, 204, 237, 300, 305, 306, 320, 321, 357, 390, 412, 525, 530, 579, 583, 638, 864, 866, 896, 901, 903, 904, 936, 939, 944, 946, 947, 948, 963, 964, 966, 967, 1012, 1013, 1014, 1036, 1047, 1056, 1071, 1076

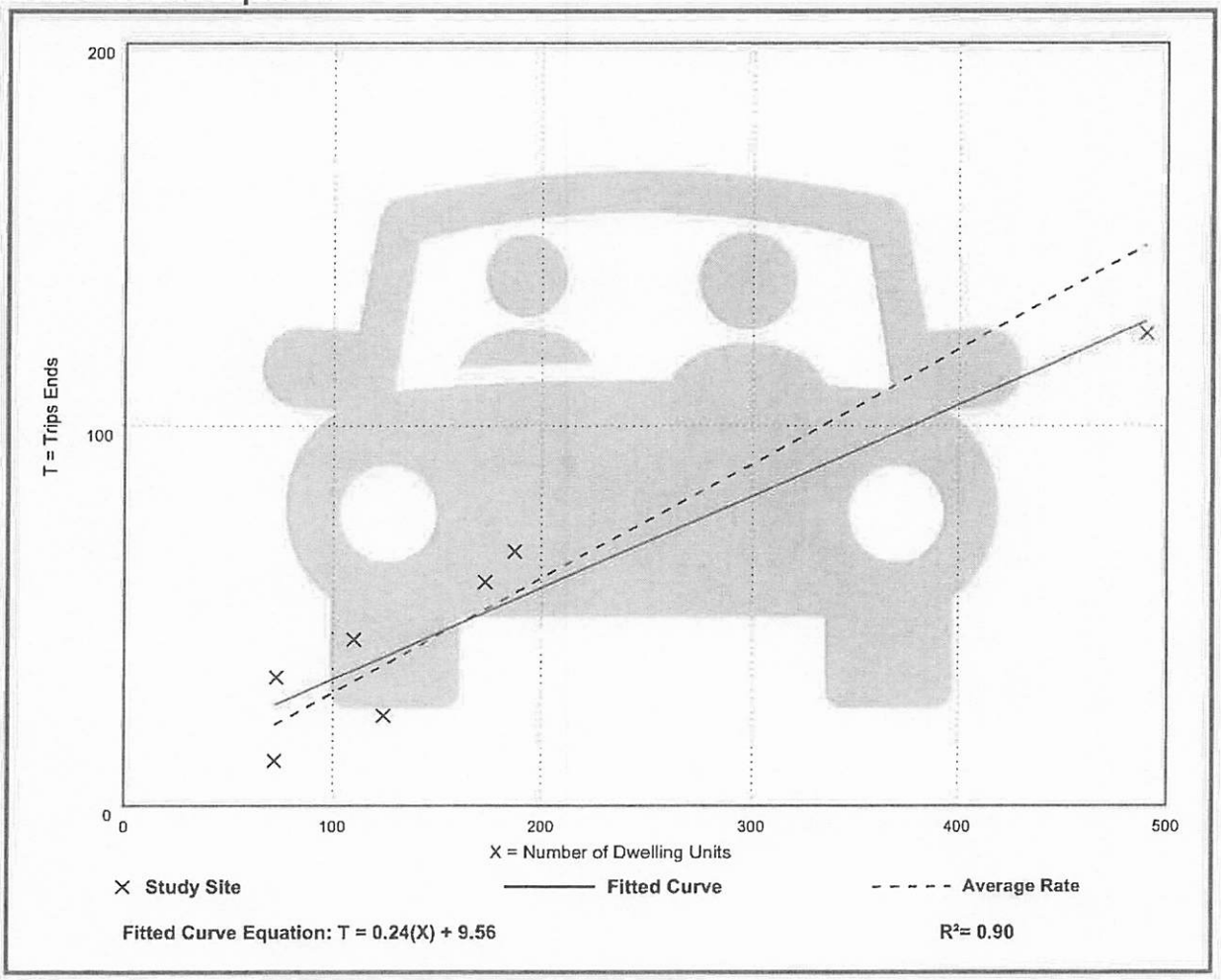
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units
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: 7
Avg. Num. of Dwelling Units: 176
Directional Distribution: 10% entering, 90% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.30	0.17 - 0.47	0.09

Data Plot and Equation



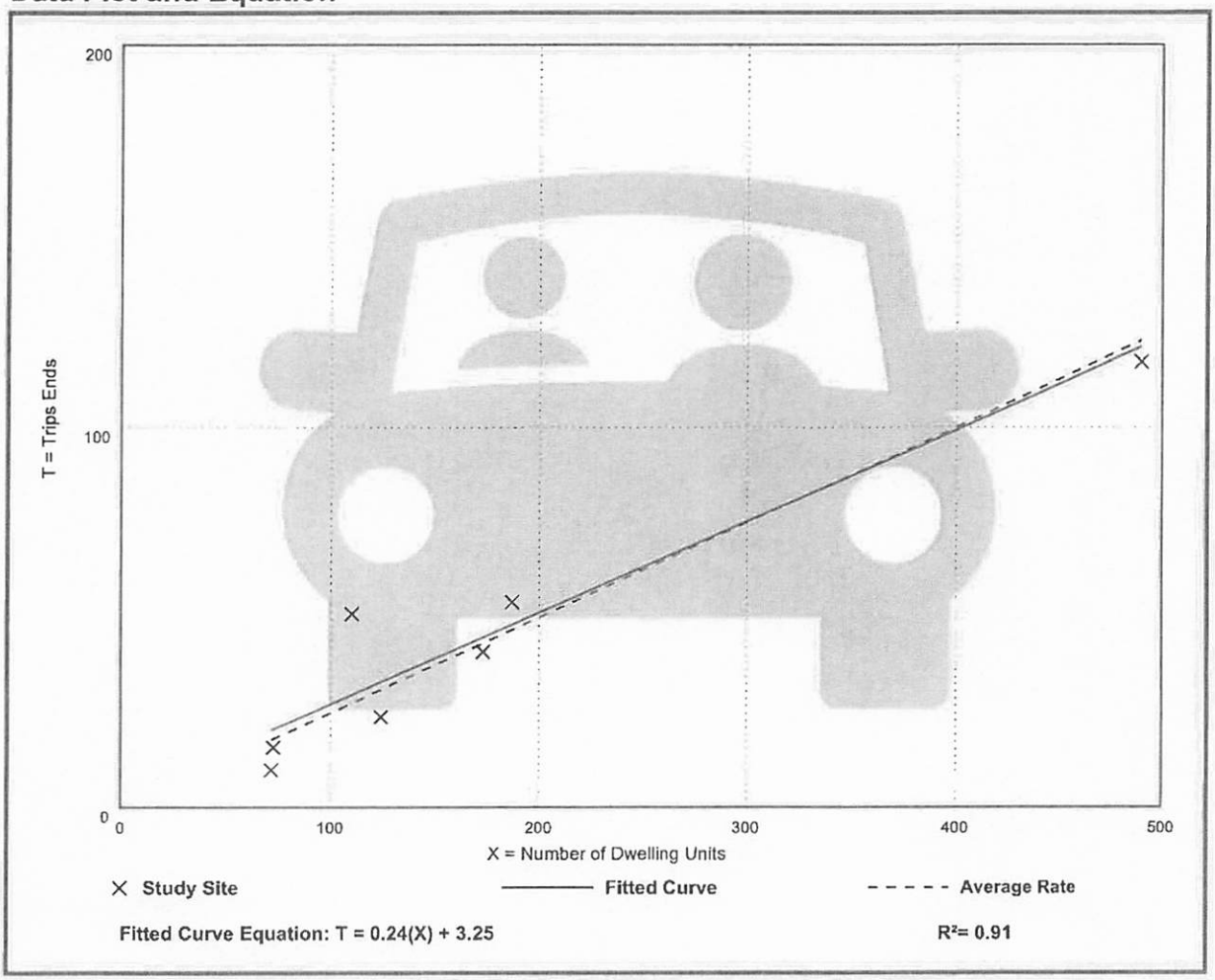
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units
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: 7
Avg. Num. of Dwelling Units: 176
Directional Distribution: 90% entering, 10% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.25	0.14 - 0.46	0.08

Data Plot and Equation



Fitted Curve Equation: T = 0.24(X) + 3.25

R^2= 0.91

ATTACHMENT C
VALET QUEUING ANALYSIS CALCULATIONS

Valet Service Time Calculations

9300 Collins Avenue

Valet Service Time Drop-off	
Activity	**Service Time (min)**
Vehicle Pick-Up	0.40
Vehicle Travel Time	0.75
Lift Time Get on	1.00
Return to Valet booth	0.50
Total Service Time*	2.65

*Assumes that all vehicles will have to get on lift

Valet Service Time Pick-up Vehicle on Stacker	
Activity	**Service Time (min)**
Get Ticket/Keys	0.15
Pickup Car Time	0.50
Lift Time Get off	1.50
Take/Remove vehicle parked below	1.00
Vehicle Travel Time	0.75
Return car	0.20
Total Service Time	4.10

Valet Service Time Pick-up Vehicle not on Stacker	
Activity	**Service Time (min)**
Get Ticket/Keys	0.15
Pickup Car Time	0.50
Vehicle Travel Time	0.75
Return car	0.20
Total Service Time	1.60

Travel Time from Valet Booth to Valet Parking Spaces

	Speed (mph)	Speed (mps)	Distance to Vehicle Parking (m)	Travel Time (sec)
From Valet Stand	5	2.22	100.00	45.00

Travel Time from Parking Garage to Valet Drop-Off

	Speed (mph)	Speed (mps)	Distance to Valet Stand (m)	Travel Time (sec)
From Valet Parking	5	2.22	100.00	45.00

Valet Operator time to return tot Booth		
Return to Valet booth from Valet Parking	0.5	min

Lift Time Get On		
Double Stackers Lift-Time*	1	min

Lift Time Get Off		
Double Stackers Lift-Time*	1.5	min

Valet Parking Spaces			Time to Pick Up (min)
Single Parking Space	73	spaces	1.60
Double Stackers	72	spaces	4.10
Valet Service Pick up Time Weighted Average			2.84

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9300 Collins Avenue

Estimated Service Time

Entrance Type	Time (min)*
Drop-off Valet Operation	2.65
Pick-up Valet Operation	2.84

Morning Ingress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): 3
Probablity of Back-up on Adjacent Street: 5%
Service Time (min): 2.65
Number of Operators: 2

N	Q	q	r	Q_m	M
1	46.00	3	0.0652	0.0652	0.0

Morning Egress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): 25
Probablity of Back-up on Adjacent Street: 5%
Service Time (min): 2.84
Number of Operators: 2

N	Q	q	r	Q_m	M
1	43.00	25	0.5814	0.5814	3.5

Afternoon Ingress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): 19
Probablity of Back-up on Adjacent Street: 5%
Service Time (min): 2.65
Number of Operators: 2

N	Q	q	r	Q_m	M
1	46.00	19	0.4130	0.4130	1.4

Afternoon Egress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): 2
Probablity of Back-up on Adjacent Street: 5%
Service Time (min): 2.84
Number of Operators: 2

N	Q	q	r	Q_m	M
1	43.00	2	0.0465	0.0465	0.0

Morning Peak Hour Trip Generation Summary

Land Use	ITE Code	In	Out	Total Trips
Multifamily Housing (Low-Rise)	220	3	25	28
	Total	**3**	25	**28**

Afternoon Peak Hour Trip Generation Summary

Land Use	ITE Code	In	Out	Total Trips
Multifamily Housing (Low-Rise)	215	19	2	21
	Total	19	2	**21**

r	N=1	2	3	4	6	8	10
0.1	0.1000	0.0182	0.0037	0.0008	0.0000	0.0000	0.0000
0.2	0.2000	0.0666	0.0247	0.0093	0.0015	0.0002	0.0000
0.3	0.3000	0.1385	0.0700	0.0370	0.0111	0.0036	0.0011
0.4	0.4000	0.2286	0.1411	0.0907	0.0400	0.0185	0.0088
0.5	0.5000	0.3333	0.2368	0.1739	0.0991	0.0591	0.0360
0.6	0.6000	0.4501	0.3548	0.2870	0.1965	0.1395	0.1013
0.7	0.7000	0.5766	0.4923	0.4286	0.3359	0.2706	0.2218
0.8	0.8000	0.7111	0.6472	0.5964	0.5178	0.4576	0.4093
0.9	0.9000	0.8526	0.8172	0.7878	0.7401	0.7014	0.6687
1.0	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

** ITE Transportation and Development Table 8.11*

Required queuing storage equation:

$$M = \frac{\ln(0.05) - \ln(Q_m)}{\ln \rho} - 1$$

where:

N = Number of Lanes
Q = Average Service Rate (veh/hr)
q = Peak Hour Arrival Rate (veh/hr)
r = Coefficient of Utiliation (q/NQ)
Q_m = ITE table value of relationship between queue length, number of attendants and utilization factor (ITE Transportation and Land Development Table 8.11
M = Queue length which is exceeded 5% of the time (veh)

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INSTITUTE
OF
TRANSPORTATION ENGINEERS

Transportation and Land Development

Vergil G. Stover
Texas A & M University

Frank J. Koepke
The Traffic Institute, Northwestern University

Prentice Hall, *Englewood Cliffs, New Jersey 07632*

APPLICATIONS OF QUEUEING ANALYSIS

Providing an adequate and well-defined storage area for drive-thru traffic is particularly critical, especially at fast-food restaurants and drive-thru bank facilities where queues can, and do, become quite long. Waiting vehicles should be stored on private property clear of driveways so that traffic back-up does not interfere with movement on the arterial street. At fast-food restaurants, the menu board should be installed upstream of the service window to permit drive-thru customers to place their orders prior to their arrival at the service window. Preparation of their order can then begin before they reach the service window, thus minimizing their time at the service window. A well-defined storage area for the waiting traffic should be located so that the waiting vehicles do not block or impede the movement of driveway traffic.

Where a single service position is involved, the situation is referred to as a *single-channel problem*. *Multiple-channel problems* arise when two or more service positions are available. Such problems commonly arise with bank tellers (indoor as well as drive-in windows), entrances and exits at large parking lots and garages, at passenger pick-up areas at transit stations and taxi stands, truck terminals or loading/unloading areas, supermarket checkout counters, telephone calls, building entrances, and transit-station turnstiles. The assumptions of Poisson arrivals and negative exponential service time are commonly acceptable and used for both single- and multiple-channel problems. Thurgood [11] found these assumptions to be representative of drive-in facilities.

Customers arriving randomly at a drive-in facility may enter into service immediately or may have to enter the queue until they can be served. Waiting lines occur whenever the immediate demand for service exceeds the current capacity of the facility providing that service.

Basic Notation and Terminology

The following notation is employed throughout this section:

n = number of customers in the drive-in system
M = number of customers in the queue waiting to be served (number of customers in the system minus the number being served)
$P(n)$ = steady-state probability that exactly n customers are in the queueing system
$P(0)$ = probability that zero vehicles are in the queueing system
N = number of parallel service positions
q = mean average arrival rate of vehicles into the system (vehicles/hour)
Q = mean average service rate per service position (vehicles/hour/position)
Avg (t) = $\%$ = mean service time expressed in minutes per vehicle
ρ = q/NQ = coefficient of utilization
$E(n)$ = expected (average) number of customers in the system
$E(n)$ = expected (average) number of customers waiting in the queue
$E(t)$ = expected (average) waiting time in system (includes service time)
$E(w)$ = expected (average) waiting time in queue (excludes service time)

The equations employed in the analysis of queueing problems are given in Table 8-10.

Jones, Woods, and Thurgood [4] have developed a graph (Figure 8-6) for determining the probability that there will be no customers in the system—values for $P(0)$. They also developed graphs for determining the average number of waiting customers (Figure 8-7), the average waiting time (Figure 8-8), and average queue length (Figure 8-9). These figures avoid the necessity to perform the time-consuming, although simple, queueing-analysis calculations. See pp. 228–30.

TABLE 8-10
Queueing System Equations

Equation Number	Variable	Equation
(8-1)	Coefficient of utilization	$\rho = \frac{q}{NQ}$
(8-2)	Probability of no customers in the system	$P(0) = \left[\sum_{n=0}^{N-1} \frac{\left(\frac{q}{Q}\right)^n}{n!} + \frac{\left(\frac{q}{Q}\right)^N}{N!(1-\rho)}\right]^{-1}$
(8-3)	Mean number in the queue	$E(m) = \left[\frac{\rho\left(\frac{q}{Q}\right)^N}{N!(1-\rho)^2}\right]P(0)$
(8-4)	Mean number in the system	$E(n) = E(m) + \frac{q}{Q}$
(8-5)	Mean wait time in queue (hours)	$E(w) = \frac{E(m)}{q}$
(8-6)	Mean time in the system (hours)	$E(t) = E(w) + \frac{1}{Q}$ $= E(w) + \text{Avg } (t)$
(8-7)	Proportion of customers who wait	$P[E(w) > 0] = \left[\frac{\left(\frac{q}{Q}\right)^N}{N!(1-\rho)}\right]P(0)$
(8-8)	Probability of a queue exceeding a length M	$P(x > M) = (\rho^{N+1})P[E(w) > 0]$
(8-9a)	Queue storage required	$M = \left[\frac{\ln P(x > M) - \ln E(w) > 0}{\ln \rho}\right] - 1$
(8-9b)*	Queue storage required	$M = \left[\frac{\ln P(x > M) - \ln Q_M}{\ln \rho}\right] - 1$

*Q_M is a statistic which is a function of the utilization rate and the number of service channels (service positions); see Table 8-11. The table of Q_M values and use of Equation (8-9b) greatly simplifies the calculations compared to those using Equations (8-9a).

Use of the equations and the graphs may be illustrated by the following example of a drive-in bank.

Conditions:

Number of drive-in windows, $N = 3$

Demand on the system, $q = 70$

Service capacity per channel, $Q = 28.6$ for an average service time, Avg $(t) = 2.1$ minutes

Solution Using Graphs:

- Coefficient of utilization $= 70/(3)(28.6) = 0.816$
- Probability that there are customers waiting in the system, Figure 8-6: $P(0) = 0.05$
- Expected average number of customers waiting in the queue, Figure 8-7: $E(m)/N = 1.0$; and the average number $E(m) = (3)(1.0) = 3$

location, a 5% probability of back-up onto the adjacent street is judged to be acceptable. Demand on the system for design is expected to be 110 vehicles in a 45-minute period. Average service time was expected to be 2.2 minutes. Is the queue storage adequate?

Such problems can be quickly solved using Equation (8–9b) given in Table 8-10 and repeated below for convenience.

$$M = \left[\frac{\ln P(x > M) - \ln Q_M}{\ln \rho}\right] - 1$$

where:

M = queue length which is exceeded p percent of the time
N = number of service channels (drive-in positions)
Q = service rate per channel (vehicles per hour)
$\rho = \dfrac{\text{demand rate}}{\text{service rate}} = \dfrac{q}{NQ}$ = utilization factor
q = demand rate on the system (vehicles per hour)
Q_M = tabled values of the relationship between queue length, number of channels, and utilization factor (see Table 8.11)

TABLE 8-11
Table of Q_M Values

	$N = 1$	2	3	4	6	8	10
0.0	0.0000	0.0000	0.0000	0.0000			
0.1	.1000	.0182	.0037	.0008	.0000	0.0000	0.0000
.2	.2000	.0666	.0247	.0096	.0015	.0002	.0000
.3	.3000	.1385	.0700	.0370	.0111	.0036	.0011
.4	.4000	.2286	.1411	.0907	.0400	.0185	.0088
.5	.5000	.3333	.2368	.1739	.0991	.0591	.0360
.6	.6000	.4501	.3548	.2870	.1965	.1395	.1013
.7	.7000	.5766	.4923	.4286	.3359	.2706	.2218
.8	.8000	.7111	.6472	.5964	.5178	.4576	.4093
.9	.9000	.8526	.8172	.7878	.7401	.7014	.6687
1.0	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

$\rho = \dfrac{q}{NQ} = \dfrac{\text{arrival rate, total}}{\text{(number of channels) (service rate per channel)}}$
N = number of channels (service positions)

Solution

Step 1: $Q = \dfrac{60 \text{ min/hr}}{2.2 \text{ min/service}} = 27.3$ services per hour

Step 2: $q = (110 \text{ veh}/45 \text{ min}) \times (60 \text{ min/hr}) = 146.7$ vehicles per hour

Step 3: $\rho = \dfrac{q}{NQ} = \dfrac{146.7}{(6)(27.3)} = 0.8956$

Step 4: $Q_M = 0.7303$ by interpolation between 0.8 and 0.9 for $N = 6$ from the table of Q_M values (see Table 8-11).

Step 5: The acceptable probability of the queue, M, being longer than the storage, 18 spaces in this example, was stated to be 5%. $P(x > M) = 0.05$, and:

$$M = \left[\frac{\ln 0.05 - \ln 0.7303}{\ln 0.8956}\right] - 1 = \left[\frac{-2.996 - (-0.314)}{-0.110}\right] - 1$$

$$= 24.38 - 1 = 23.38, \text{ say } 23 \text{ vehicles.}$$

The number of vehicles in the queue would be expected to exceed 23 more than 5% of the time. Since the site plan will accommodate a queue of 18 vehicles, the storage is not sufficient for the conditions stated.

It is important to realize that, for any $P\ (x > M)$ value, the queue length required increases very rapidly for values of $\rho > 0.85$ (see Figure 8-9). When $\rho > 1.0$, the solution is indeterminate and the queue length theoretically becomes infinite.

Analysis of Service Times. In many instances it is effective to demonstrate that a proposed design not only is inadequate to store vehicles waiting for service but will result in unacceptable wait times as well. The necessary equations are given in Table 8-10.

For purposes of checking computations it is convenient to know that the limit of $P(0)$, as the number of channels approaches infinity (in practical terms when $N > 10$), is:

$$\lim_{N \to \infty} P(0) = e^{-\lambda} \qquad \text{where } \lambda = q/Q$$

Drive-In Bank Example: Under the site-development approval requirements, representatives of a bank presented a site plan for the construction of a new bank having three service positions. Information provided by bank officials and observations at other local banks provided the following data:

- Expected average arrival rate during the design hour (4:30–5:30 p.m. on Fridays) = 70 vehicles per hour (vph)
- Average service time per customer = 2.1 minutes

Does the site plan provide for sufficient storage to accommodate all vehicles arriving 95% of the time?

$$q = 70 \text{ vph arrival rate}$$

$$Q = \frac{60 \text{ minutes per hour}}{2.1 \text{ minutes per service}} = 28.6 \text{ vph service rate}$$

$$\rho = \frac{70}{(3)(28.6)} = 0.816$$

$$\frac{q}{Q} = \frac{70}{28.6} = 2.45$$

$$Q_M = 0.674 \text{ by interpolation from Table 8-11}$$

$$P(x > M) = 1.00 - 0.95 = 0.05$$

By Equation (8-9b)

$$M = \left[\frac{\ln 0.05 - \ln 0.674}{\ln 0.816}\right] - 1 = \left[\frac{-2.996 - (-0.396)}{-0.203}\right] - 1 = 11.8, \text{ say } 12$$

Thus, it would be necessary to store 12 vehicles, exclusive of the three service positions, in order to accommodate the arriving vehicles 95% of the time; or alternatively, to have waiting vehicles extending back into the adjacent street no more than 5% of the time between 4:30 and 5:30 p.m. on Fridays. Since the site plan provides for six spaces, the site plan as submitted is inadequate and should be disapproved.

A solution to the problem would be to increase the storage, or if this is not possible add a service position in order to reduce the average service time.

Addition of a service position would reduce the number of storage spaces needed to three (three storage plus four service positions)—assuming the same arrival rate and service time:

$$M = \left[\frac{\ln 0.05 - \ln 0.301}{\ln 0.612}\right] - 1 = 2.7, \text{ say } 3$$

A redesign to provide four service positions would have the additional benefit of substantially reducing the expected waiting time (from over 4 minutes to less than $\frac{1}{2}$ minute) for the bank customers using the drive-in windows:

With Three Service Positions:

$$q = 70 \text{ vph}$$
$$Q = 28.6 \text{ vph}$$
$$\frac{q}{Q} = 2.45$$
$$\rho = \frac{70}{(3)(28.6)} = 0.816$$
$$P(0) = \left[\frac{(2.45)^0}{0!} + \frac{(2.45)^1}{1!} + \frac{(2.45)^2}{2!} + \frac{(2.45)^3}{3!\left[1 - \left(\frac{2.45}{3}\right)\right]}\right]^{-1}$$
$$= [1 + 2.45 + 3.00 + 13.37]^{-1} = 0.0505$$
$$E(m) = \left[\frac{(0.816)\left(\frac{70}{28.6}\right)^3}{3!(1 - 0.816)^2}\right]0.0505 = 2.97$$
$$E(n) = 2.97 + \frac{70}{28.6} = 5.42$$
$$E(t) = \frac{2.97}{70} = 0.0424 \text{ hours or } 2.55 \text{ minutes}$$
$$E(w) = 0.0424 + \frac{1}{28.6} = 0.0774 \text{ hours or } 4.64 \text{ minutes}$$

With Four Service Positions:

$$q = 70 \text{ vph}$$
$$Q = 28.6 \text{ vph}$$
$$\frac{q}{Q} = 2.45$$
$$\rho = \frac{70}{(4)(28.6)} = 0.612$$
$$P(0) = \left[\frac{(2.45)^0}{0!} + \frac{(2.45)^1}{1!} + \frac{(2.45)^2}{2!} + \frac{(2.45)^3}{3!} + \frac{(2.45)^4}{4!\left[1 - \left(\frac{2.45}{4}\right)\right]}\right]^{-1}$$
$$= 0.0783$$
$$E(m) = \left[\frac{(0.612)(2.45)^4}{4!(1 - 0.612)^2}\right]0.0783 = 0.48$$
$$E(n) = 0.48 + 2.45 = 2.93$$
$$E(t) = 0.007 + \frac{1}{28.6} = 0.042 \text{ hours or } 2.51 \text{ minutes}$$
$$E(w) = \frac{0.48}{70} = 0.007 \text{ hours or } 0.41 \text{ minutes}$$

However, the service time would increase somewhat unless an additional teller were also added. Nevertheless, an increase to 2.5 minutes, or more, would still reduce the storage space required and result in better service (less time in the system). Besides, time spent being served is less irritating to the customer than an equal time spent waiting.

Conversion of a Residence. An existing single-family residence was situated on a 2.5-acre tract fronting on the major north–south arterial in the urbanizing fringe of a metropolitan area of 100,000 population. The 85th percentile speed exceeded 50 mph; however, it was anticipated that the speed limit would be reduced to 45 mph as further urbanization occurred.

Requests for rezoning from single-family residential to general commercial had received negative recommendations from the Planning and Zoning Commission and denied by the City Council. Nevertheless, the fact that changing conditions in the vicinity of the site were making the property less desirable as a single-family residence was generally recognized. Therefore, when an application was submitted for a Conditional Use Permit to establish a private school using the existing residence for classrooms, the Planning and Zoning Commission was very favorably disposed to the request. The applicant provided the following information prior to the public hearing.

1. The completed application for a conditional use
2. A statement that the intended use was for a Montessori school using the existing structure
3. A site plan as required for all proposed development, other than single-family and duplex residential development, before a building permit will be issued for a new structure and for remodeling of an existing one

The following information was presented at the public hearing by the applicant:

1. At least 40 students would be enrolled before any change would be made in the site circulation.
2. Eighty percent of the students were expected to be picked up within a 20-minute period—a substantial additional fee was to be charged for children picked up more than 30 minutes after school.
3. A strong parent–school relationship was intended, so that average pick-up time of at least 2 minutes and visits of 5 minutes or longer would not be unusual.

The following were agreed upon at the public hearing:

1. The probability of vehicles backing up onto the main lane of the major arterial should be negligible, less than 1%.
2. The site plan, with no change in the circulation pattern, would provide for four service positions and three storage positions.

Based upon these conditions, the following analysis was performed using Equation (8-9b):

$$M = 3$$

$$N = 4$$

$$Q = 60 \text{ minutes per hour} \div 2 \text{ minutes per service} = 30 \text{ vph}$$

$$q = (40 \text{ students})(80\% \text{ in } 20 \text{ minutes})\left(\frac{60}{20}\right) = 96 \text{ vph}$$

$$\rho = \frac{96}{(4)(30)} = 0.8000$$

$$P(x > 3) = 0.01 \text{ (a 1\% chance of vehicles backing up onto the arterial)}$$

$$Q_M = 0.8585, \text{ from Table 8-11}$$

$$3 = \left[\frac{\ln P(x > 3) - \ln 0.5964}{\ln 0.8000}\right] - 1$$

$$3 = \left[\frac{\ln P(x > 3) - (-0.5168)}{-0.2231}\right] - 1$$

Then,

$$\ln P(x > 3) = (4)(-0.2231) - 0.5168 = -1.4092$$

and

$$P(x > 3) = e^{-1.4092} = 0.244 \text{ or } 24\%$$

Thus, the calculated probability that the queue could back up onto the arterial is 24% (given the stated conditions), which is considerably greater than the acceptable probability of less than 1%, and the application was denied. The Planning and Zoning Commission suggested various compromises of redesign of the site and issuance of a conditional use permit for a school (under the ordinance, a school can be located in any zoning district by condition) with the condition that the maximum enrollment would not exceed 24 students, which is the number necessary to achieve a value of $P(x > 3) < 0.01$. All such proposals were rejected by the applicant. The site was subsequently rezoned to the Administrative and Professional District (a restricted office district) and is now being used as a dentist's office.

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