



# PLAN COMMISSION STAFF REPORT

**To:** Members of the Plan Commission

**From:** Tom Vander Woude, Planning Director

**Meeting Date:** November 10, 2020

**Agenda Item:** Discussion

**Hearing:** N/A

**Summary:** Saxon Partners requesting discussion of a proposal to develop the Lansing Country Club.

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**Applicant:** Saxon Partners of Hingham, MA represented by Gary Warfel and Kimley-Horn

**Property Address:** Indiana Tract 1, Parcel 45-06-25-100.005.000-027

**Current Zoning:** CD-4.B General Urban B Character District

**Adjacent Zoning:** North: CD-4.B  
South: SD-M, SD-PUD  
East: SD-PUD  
West: Village of Lansing, Illinois

**Action Requested:** Discussion

**Additional Actions Required:** N/A

**Staff Recommendation:** N/A

**Attachments:** LCC-Saxon Indiana Tract 1 plan set prepared by Kimley-Horn dated 10.23.2020  
Fisher Street Widening Concept exhibit prepared by Kimley-Horn undated  
ALTA/NSPS LAND TITLE SURVEY prepared by DVG Team Inc. dated 09.03.2020  
Mixed-Use Development Traffic Impact Study prepared by Kimley-Horn dated September 2020

## BACKGROUND

Saxon Partners, represented by Gary Warfel and Kimley-Horn, have presented plans to redevelop a portion of the Lansing Country Club as a mixed-use medical office district. The 58.82 acre area is bounded on the west by the Village of Lansing, on the north by Fisher Street and a NIPSCO right of way, on the east by a NIPSCO right of way and the NICTD railroad tracks, and on the south by the CN railroad. The most current plans attached to this memo include 381,500 square feet of office space within 9 buildings, 291,000 square feet of flex/innovation space within 6 buildings, and a 9.4 acres of public open space. (Note: previous versions of the plans, including those analyzed by the attached traffic impact study include slightly different square foot totals.)

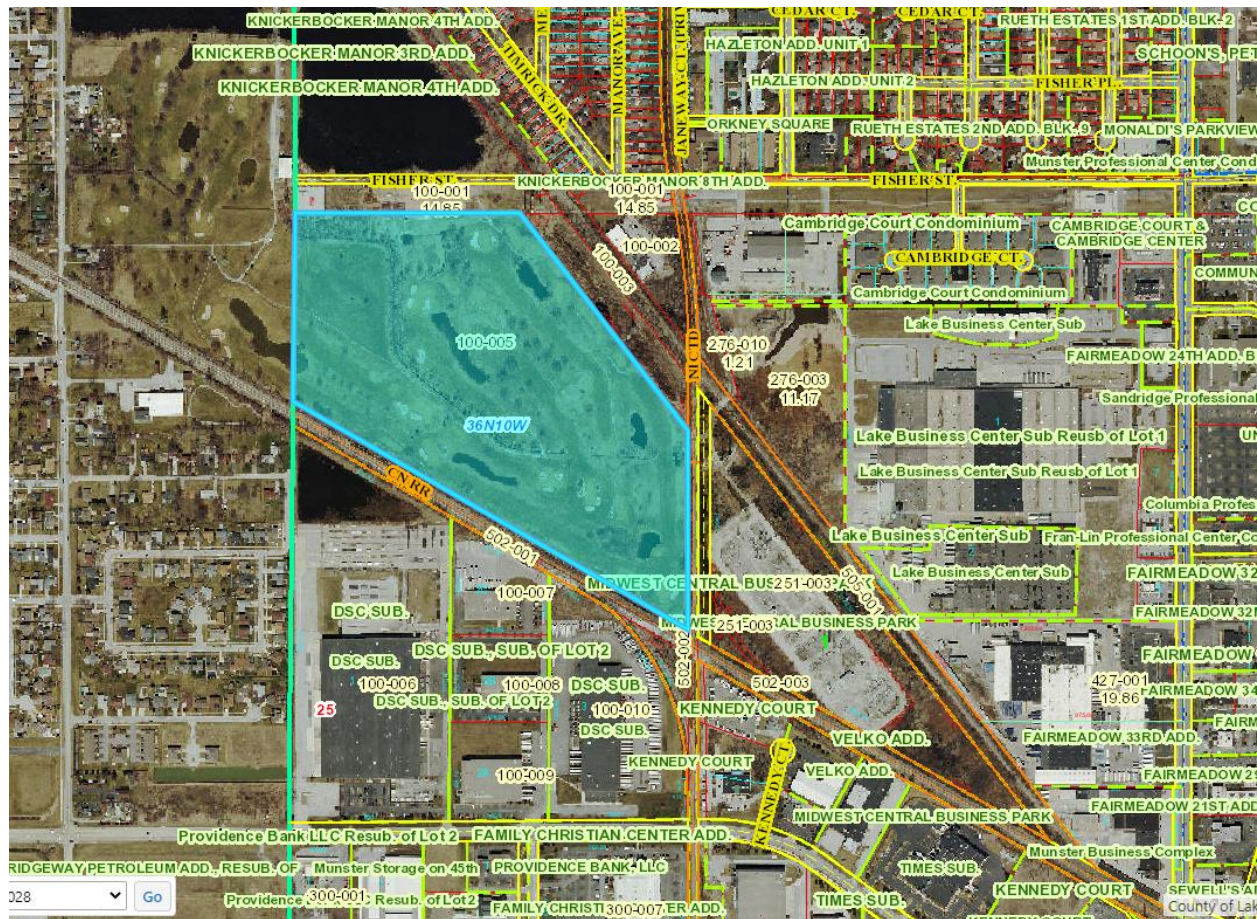


Figure 1: Subject parcel in blue

The Town staff and members of the Town Council have met with the development team on multiple occasions to discuss the project and provide information about the CD-4.B zoning district and the entitlement process.

Saxon Partners presented a Development Parcel Plan at a formal Site Plan Review Committee meeting on October 15, 2020. The plan has since been revised in accordance with committee comments and is

attached for Plan Commission review. Staff has certified that the plan presented here meets the standards of the Munster Zoning Ordinance.

A Traffic Impact Study was prepared by the developer and is attached. The study identifies six recommendations:

1. *Improve the existing northwest-southeast roadway along the west side of the Pepsi facility to the Town of Munster public road standards.*
2. *Provide an underpass at the Northern Indiana Transit Commuter District's (NITCD) West Lake Corridor rail alignment (South Access) in order to facilitate secondary access to the proposed Development.*
3. *Install a single-lane roundabout at the intersection of Fisher Street/Timrick Drive/Manor Avenue/Commercial Driveway A/North Access in order to facilitate access to the five-leg intersection.*
4. *Install dual left-turn lanes on the east and west legs of Fisher Street at Calumet Avenue. The existing permitted/protected left-turn phase should be modified to reflect a protected left-turn phase on both legs of Fisher Street.*
5. *Install dedicated right-turn lanes on the east and west legs of the intersection of Calumet Avenue/Fisher Street. According to the INDOT IDM, the turn lane on the east leg should provide 150 feet of storage and a 100-foot taper. Based on the projected 95th percentile queues, the turn lane on the west leg should provide 150 feet of storage with a 100-foot taper.*
6. *Install a new traffic signal at the intersection of Calumet Avenue/Maple Leaf Boulevard per INDOT and Town of Munster requirements.*

The attached plans include all the recommendations except #6, which is proposed to be implemented by Maple Leaf Crossing LLC in connection with the Maple Leaf Crossing Planned Unit Development.

The plan is presented to the Plan Commission for discussion only. Key steps still need to be completed before the developer can submit a formal application for subdivision and development plan approval. These include, but are not necessarily limited to:

1. Acquisition of all property within the footprint of the development
2. Securing various easements through NIPSCO right-of-way and NICTD right-of-way
3. Negotiation with the Town of Munster and NIPSCO to improve the former Pennsy right-of-way from the NICTD right-of-way to Maple Leaf Crossing.

If a formal application is initiated, the following steps will be required:

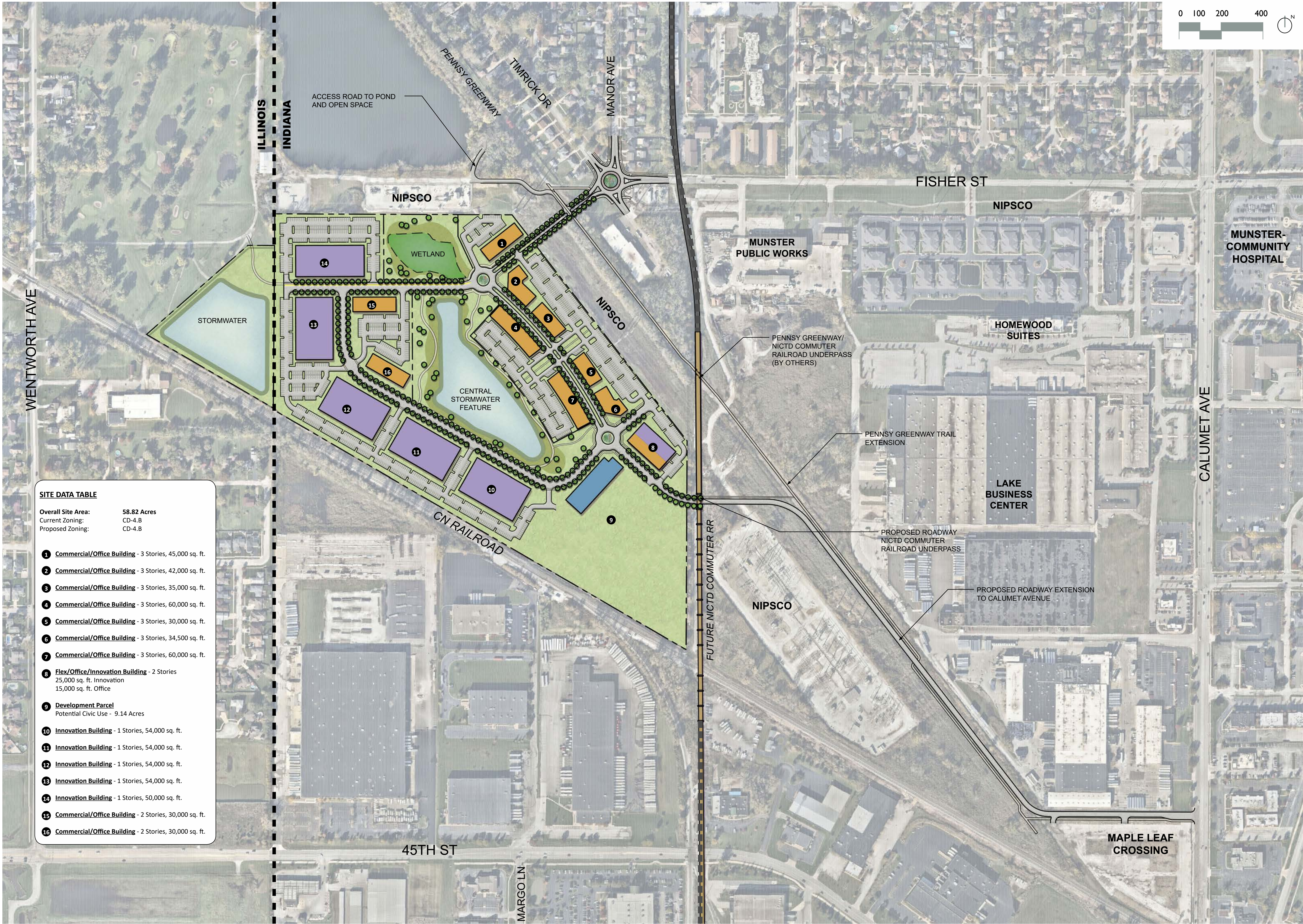
1. Subdivision of the property – which will include the platting of individual lots, dedication of easements, roadways, and other public improvements.
2. Approval of development plans for all individual buildings and lots.

## **Recommendation**

Staff recommends the Plan Commission discuss the attached plans and provide comments to Saxon Partners.



Drawing name: K:\GIS\LEVA\88879000\_Saxon Reg Munster\IN\2\_Design\CAD\Exhibits\2020-1021\_Saxon Commercial Office Concept.dwg    User: dpg    Date: 10/23/2020 1:28pm    By: Daniel Gross  
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**SITE DATA TABLE**

Overall Site Area: 58.82 Acres  
Current Zoning: CD-4.8  
Proposed Zoning: CD-4.8

- 1 Commercial/Office Building - 3 Stories, 45,000 sq. ft.
- 2 Commercial/Office Building - 3 Stories, 42,000 sq. ft.
- 3 Commercial/Office Building - 3 Stories, 35,000 sq. ft.
- 4 Commercial/Office Building - 3 Stories, 60,000 sq. ft.
- 5 Commercial/Office Building - 3 Stories, 30,000 sq. ft.
- 6 Commercial/Office Building - 3 Stories, 34,500 sq. ft.
- 7 Commercial/Office Building - 3 Stories, 60,000 sq. ft.
- 8 Flex/Office/Innovation Building - 2 Stories  
25,000 sq. ft. Innovation  
15,000 sq. ft. Office
- 9 Development Parcel  
Potential Civic Use - 9.14 Acres
- 10 Innovation Building - 1 Stories, 54,000 sq. ft.
- 11 Innovation Building - 1 Stories, 54,000 sq. ft.
- 12 Innovation Building - 1 Stories, 54,000 sq. ft.
- 13 Innovation Building - 1 Stories, 54,000 sq. ft.
- 14 Innovation Building - 1 Stories, 50,000 sq. ft.
- 15 Commercial/Office Building - 2 Stories, 30,000 sq. ft.
- 16 Commercial/Office Building - 2 Stories, 30,000 sq. ft.

LCC-SAXON INDIANA TRACT 1  TOWN OF MUNSTER, IN	CONCEPT PLAN	SAXON PARTNERS	Kimley»Horn KIMLEY-HORN AND ASSOCIATES, INC. 4201 WINFIELD ROAD, SUITE 600 MUNSTER, IN 46320 PHONE: (330) 487-2550 WWW.KIMLEY-HORN.COM	SCALE:	AS NOTED										
				DESIGNED BY: DPG											
				DRAWN BY: CM											
				CHECKED BY: AF											
ORIGINAL ISSUE: 10/23/2020	KHA PROJECT NO. 168879000	SHEET NUMBER	DPP-01												



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by: Daniel Brown  
Date: Oct 23, 2020, 1:28pm  
Project: LCC-Saxon Indiana Tract 1

WENTWORTH AVE

ILLINOIS  
INDIANA

45TH ST

MARGO LN

CN RAILROAD

FUTURE NICTD COMMUTER RR

NIPSCO

NIPSCO

FISHER ST

MUNSTER  
PUBLIC WORKS

NIPSCO

PENNSY GREENWAY  
TIMRICK DR

MANOR AVE

BLOCK PERIMETER: 1,480'

THOROUGHFARE 2  
NEIGHBORHOOD STREET  
WITH BUFFERED BIKE LANE

THOROUGHFARE 3  
NEIGHBORHOOD STREET

SHARED USE PATH

THOROUGHFARE 1  
2-LANE AVENUE

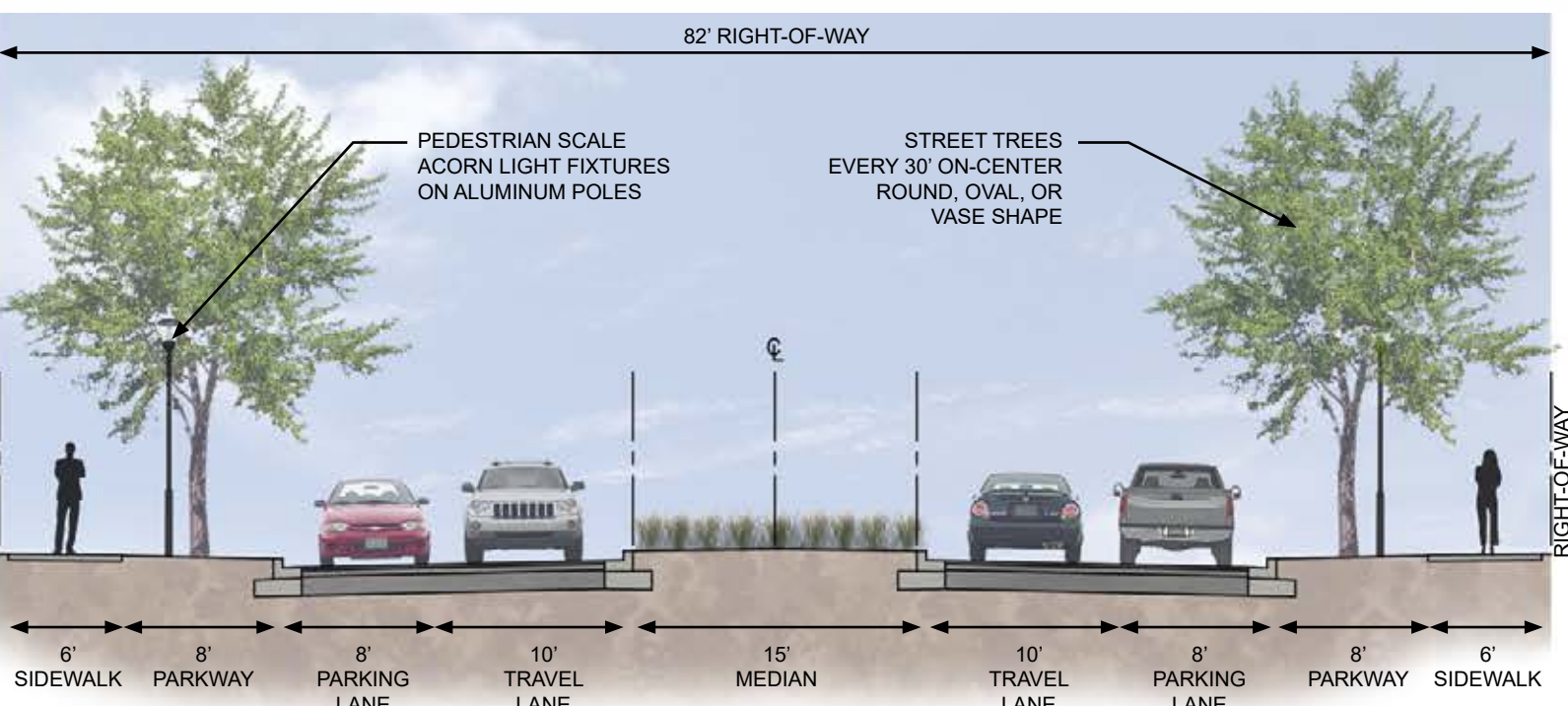
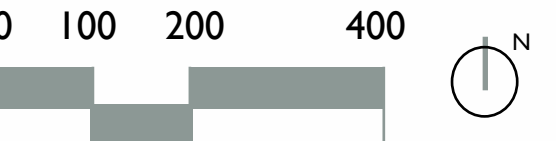
BLOCK PERIMETER: 1,800'

THOROUGHFARE 1  
2-LANE AVENUE

THOROUGHFARE 3  
NEIGHBORHOOD STREET

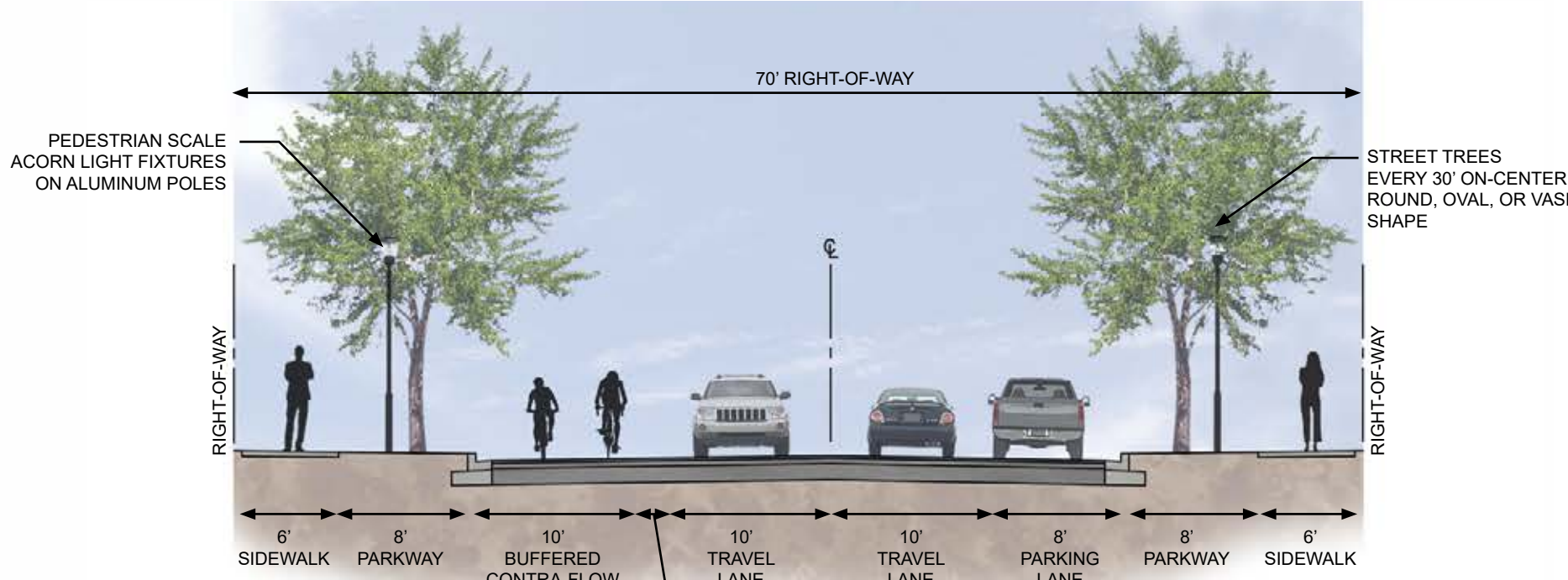
**SITE DATA TABLE**

Overall Site Area:	58.82 Acres
Current Zoning/District:	CD-4.B General Urban B Character District B
Proposed Zoning/District:	CD-4.B General Urban B Character District B
Existing Special Requirements:	Ground Floor Residential Use Restriction
Proposed Block Structure:	2 Interior Blocks - Separated by Civic Open Space Perimeters: 1,480' and 1,800'



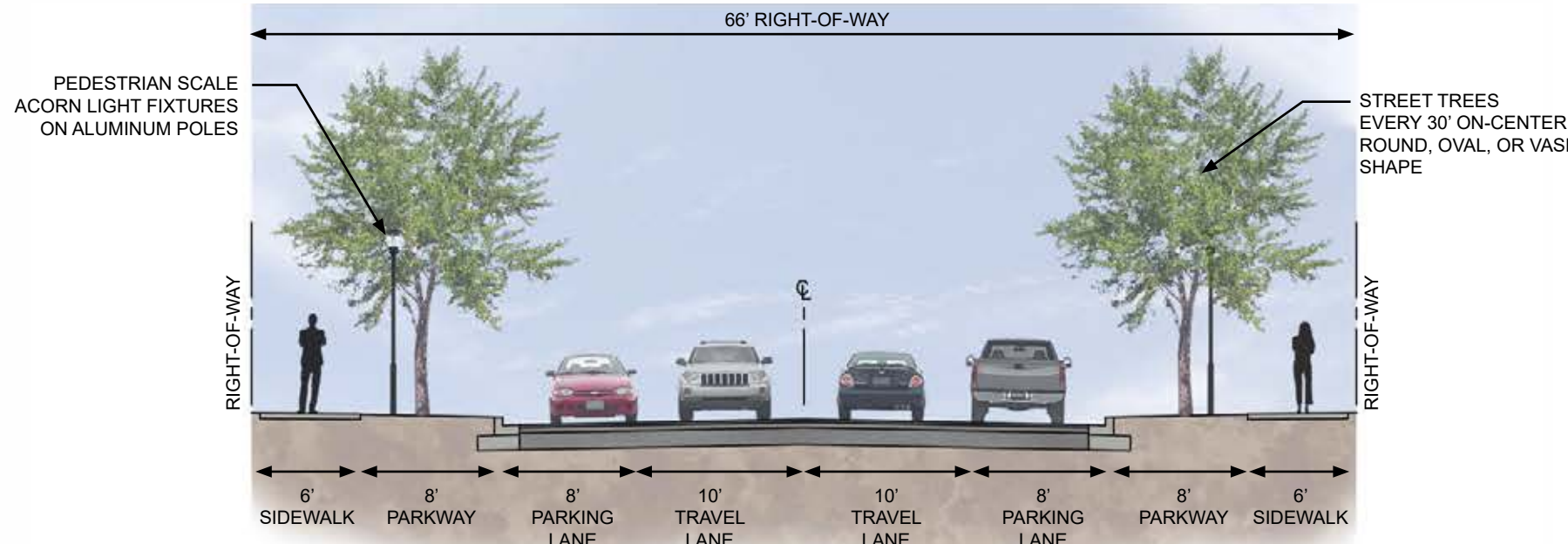
THOROUGHFARE 1  
2-LANE AVENUE

1"=10'



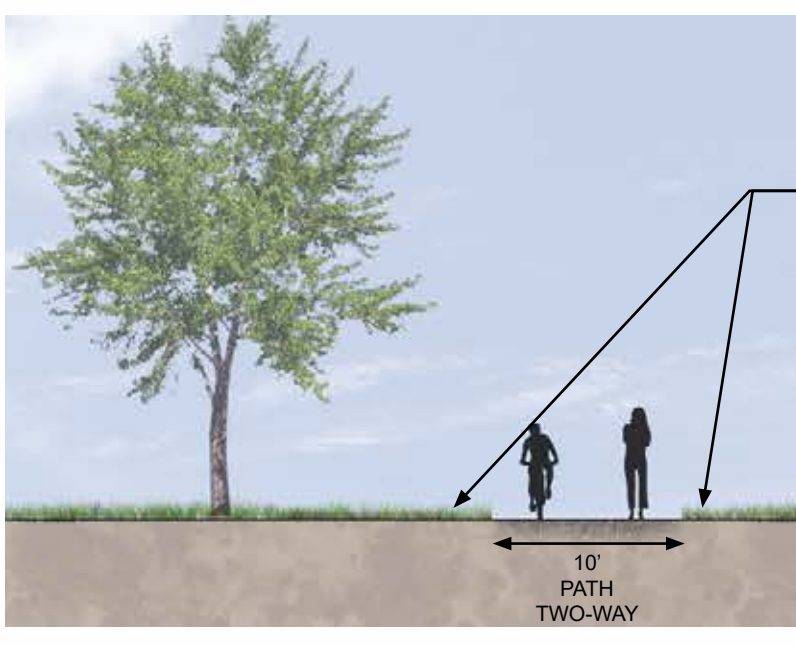
THOROUGHFARE 2  
NEIGHBORHOOD STREET

1"=10'



THOROUGHFARE 3  
NEIGHBORHOOD STREET

1"=10'



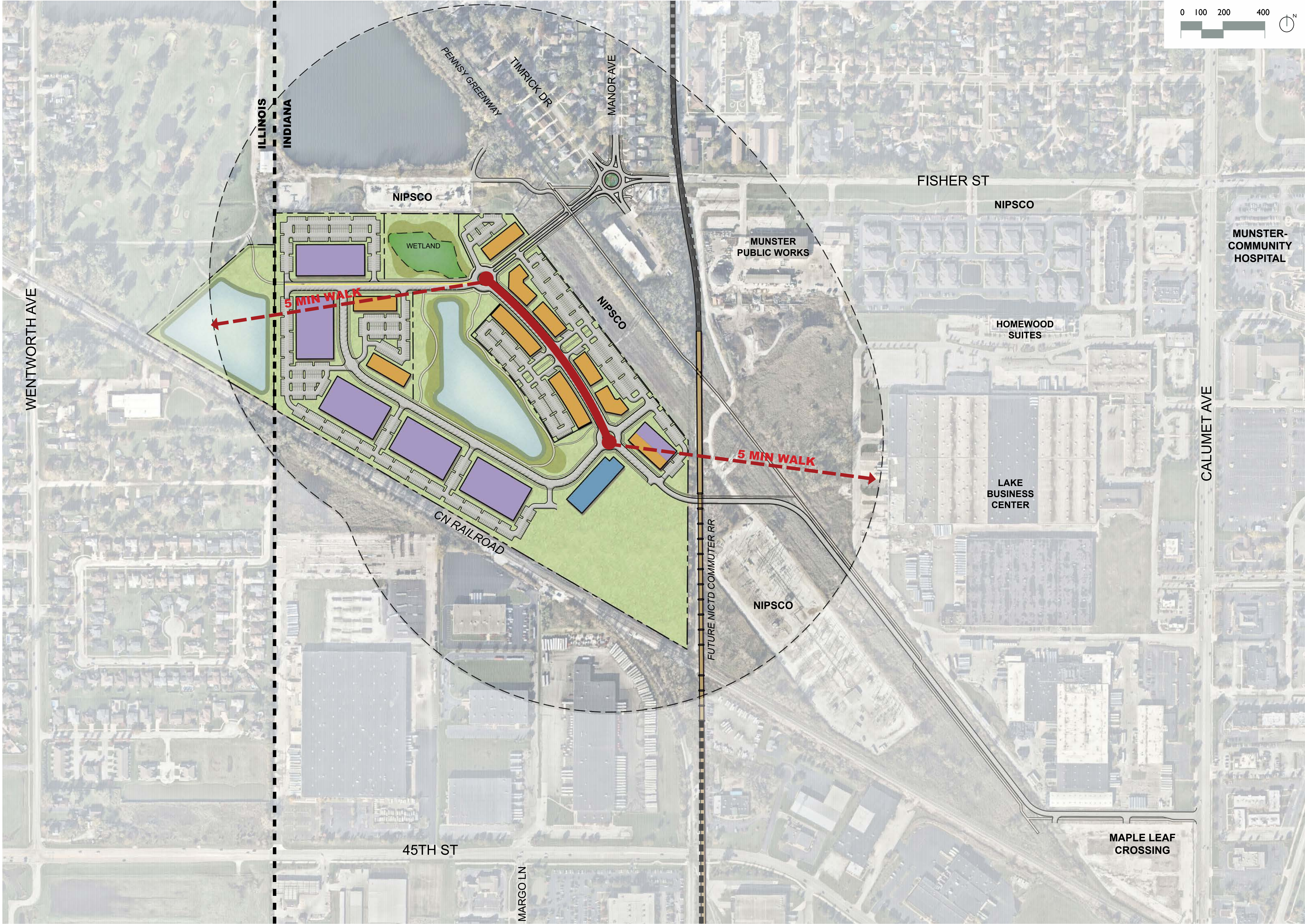
SHARED USE PATH

MAPLE LEAF  
CROSSING

LCC-SAXON INDIANA TRACT 1		TOWN OF MUNSTER, IN	
ORIGINAL ISSUE: 10/23/2020			
KHA PROJECT NO. 168879000			
SHEET NUMBER DPP-02			
SAXON PARTNERS		Kimley»Horn	
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DRAWN BY: CM		DRAWN BY: CM	
CHECKED BY: AF		CHECKED BY: AF	
SCALE: AS NOTED		SCALE: AS NOTED	
DATE		DATE	
BY		BY	



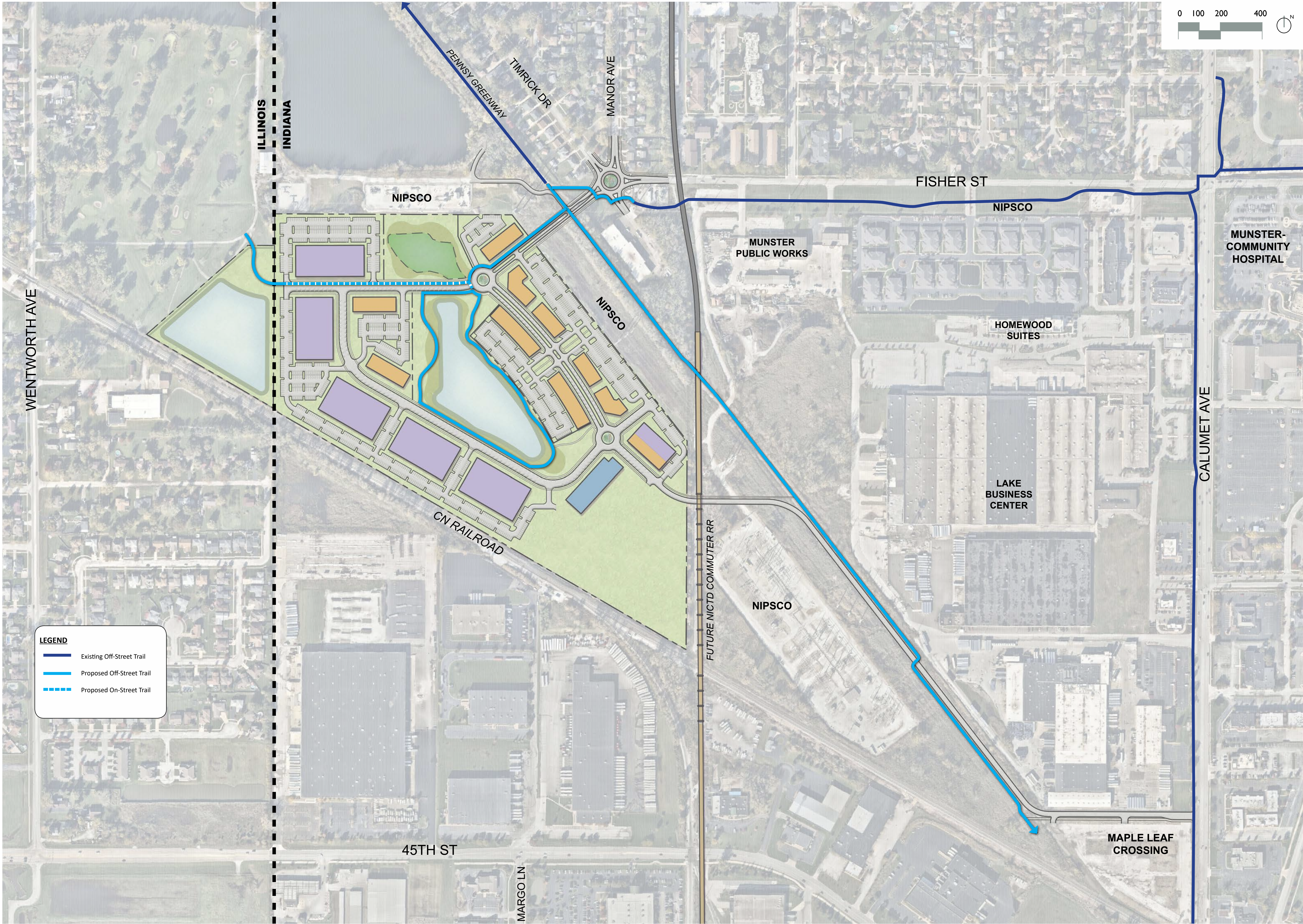
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	SHEET NUMBER DPP-03										



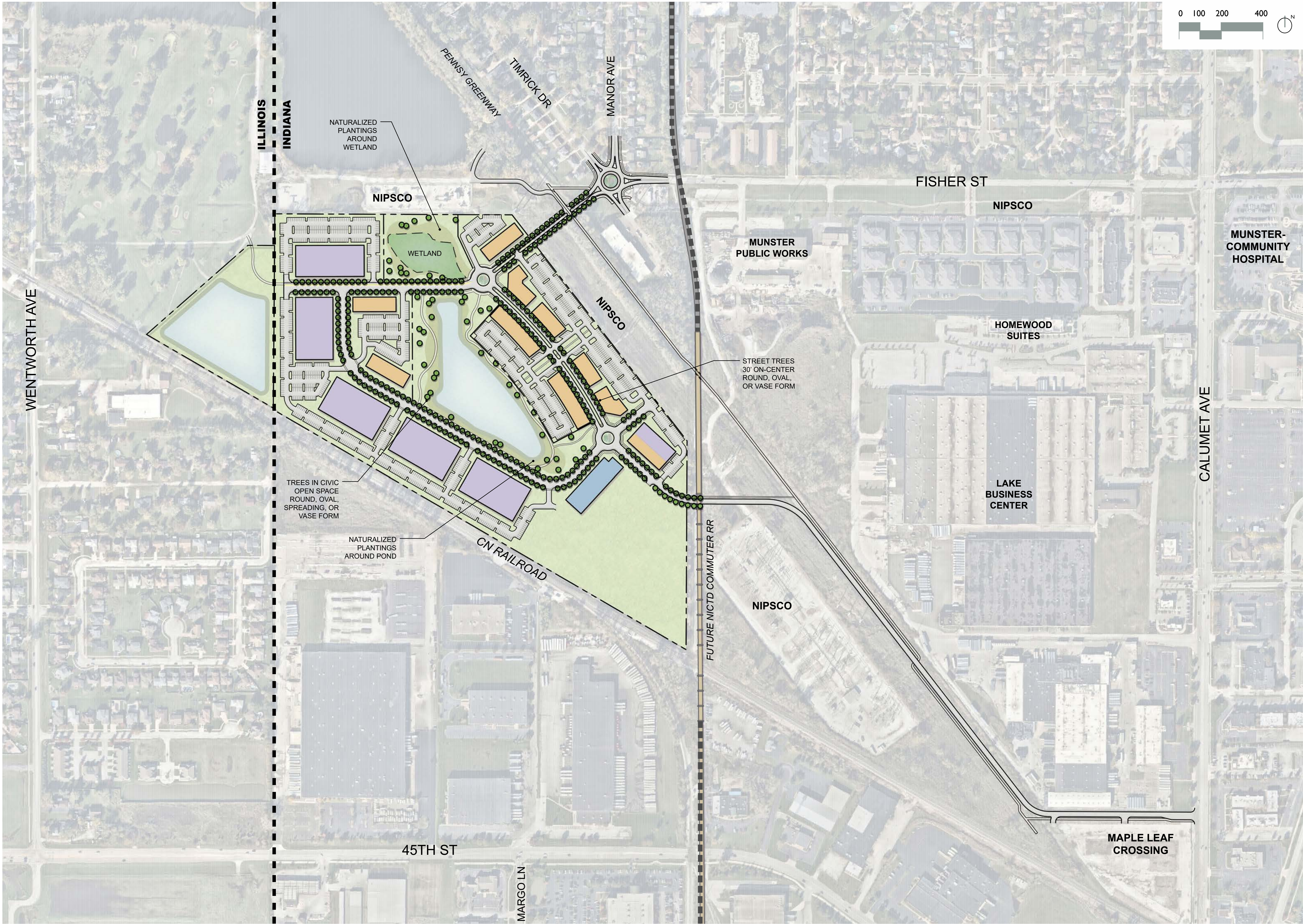
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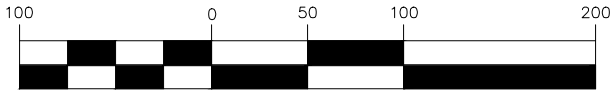
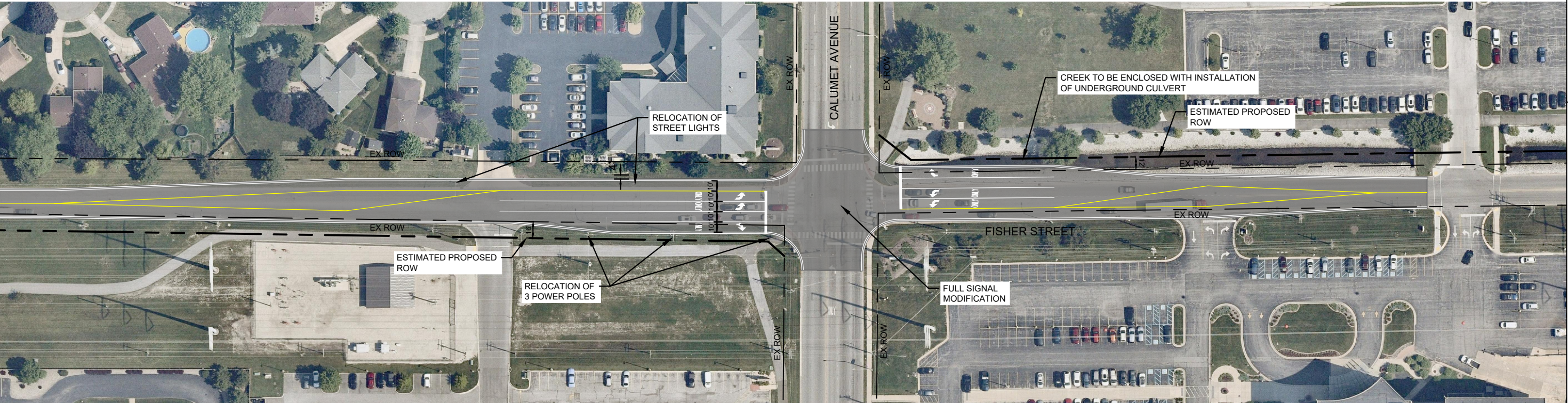


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KHA PROJECT NO. 168879000		PUBLIC LANDSCAPE PLAN		© 2020 KIMLEY-HORN AND ASSOCIATES, INC. 100 SOUTH KANSAS AVE SUITE 600 WARRENVILLE, IL 60555 PHONE: 630-487-8550 WWW.KIMLEY-HORN.COM	
SHEET NUMBER DPP-05		LCC-SAXON INDIANA TRACT 1		SCALE: AS NOTED DESIGNED BY: DPG DRAWN BY: CM CHECKED BY: AF	
TOWN OF MUNSTER, IN		REVISIONS		No.	
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NOTE: EXISTING RIGHT OF WAY IS APPROXIMATE.



# FISHER STREET WIDENING CONCEPT

MUNSTER, IN

# Kimley»»Horn

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4201 WINFIELD ROAD, SUITE 600, WARRENVILLE, IL 60555  
PHONE: 630-487-5550 [WWW.KIMLEY-HORN.COM](http://WWW.KIMLEY-HORN.COM)

SHEET NUMBER  
EX A



# ALTA/NSPS LAND TITLE SURVEY

PARCEL DESCRIPTIONS (PER EXHIBIT "A" IN TITLE COMMITMENT REFERENCED HEREON)

## TRACT I:

THAT PART OF THE FRACTIONAL NORTHWEST QUARTER AND THAT PART OF THE NORTHEAST QUARTER OF SECTION 25, TOWNSHIP 36 NORTH, RANGE 10 WEST OF 2ND PRINCIPAL MERIDIAN, BORDERED ON THE NORTH BY THE NORTHERN INDIANA PUBLIC SERVICE COMPANY'S RIGHTS OF WAY AS CONVEYED IN DEED RECORD 343, PAGE 497, BORDERED ON THE WEST BY THE INDIANA-ILLINOIS STATE LINE, BORDERED ON THE SOUTH BY THE GRAND TRUNK RAILROAD, BORDERED ON THE EAST BY THE LOUISVILLE AND NASHVILLE RAILROAD, FORMERLY THE CHICAGO, INDIANAPOLIS AND LOUISVILLE RAILROAD, AND BORDERED ON THE NORTHEAST BY THE PENN. CENTRAL RAILROAD, ALL IN TOWN OF MUNSTER, LAKE COUNTY, INDIANA.

LESS AND EXCEPTING THAT PORTION OF LAND CONVEYED TO NORTHERN INDIANA PUBLIC SERVICE COMPANY, AN INDIANA CORPORATION BY THAT CERTAIN DEED OF CONVEYANCE RECORDED JANUARY 10, 1980 AS INSTRUMENT NO. 568251 OF THE LAKE COUNTY RECORDS AND DESCRIBED AS FOLLOWS:

PART OF FRACTIONAL SECTION 25, TOWNSHIP 36 NORTH, RANGE 10 WEST, SITUATE IN NORTH TOWNSHIP, LAKE COUNTY, STATE OF INDIANA AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT AN IRON ROD MARKING THE SOUTHEAST CORNER OF SAID FRACTIONAL SECTION 25; THENCE NORTH 1° 54' 30" EAST ALONG THE EAST LINE OF SAID FRACTIONAL SECTION 25 A DISTANCE OF 1151.50 FEET TO A POINT ON THE SOUTHWESTERLY RIGHT-OF-WAY LINE OF THE PENN. CENTRAL RAILROAD, SAID POINT BEING 50 FEET (MEASURED AT RIGHT ANGLES) FROM THE CENTERLINE OF THE SOUTHWEST PENN. CENTRAL RAILROAD TRACKS; THENCE NORTH 80° 18' 10" WEST ALONG THE SOUTHWESTERLY RIGHT-OF-WAY LINE OF SAID PENN. CENTRAL RAILROAD A DISTANCE OF 4032.91 FEET TO THE INTERSECTION OF THE SOUTHWESTERLY RIGHT-OF-WAY LINE OF SAID PENN. CENTRAL RAILROAD AND THE WEST RIGHT-OF-WAY LINE OF THE LOUISVILLE AND NASHVILLE RAILROAD, SAID POINT BEING 25 FEET (MEASURED AT RIGHT ANGLES) FROM THE LOUISVILLE AND NASHVILLE RAILROAD TRACK, SAID POINT BEING THE TRUE POINT OF BEGINNING OF THIS DESCRIPTION; THENCE CONTINUING NORTH 36° 18' 10" WEST ALONG THE SOUTHWESTERLY RIGHT-OF-WAY LINE OF SAID PENN. CENTRAL RAILROAD A DISTANCE OF 1029.88 FEET TO A POINT, SAID POINT BEING 180 FEET (MEASURED AT RIGHT ANGLES) FROM THE NORTH LINE OF SAID FRACTIONAL SECTION 25; THENCE NORTH 88° 17' 20" WEST PARALLEL WITH THE NORTH LINE OF SAID FRACTIONAL SECTION 25 A DISTANCE OF 215.77 FEET TO A POINT, SAID POINT BEING 170 FEET (MEASURED AT RIGHT ANGLES) FROM THE SOUTHWESTERLY RIGHT-OF-WAY LINE OF SAID PENN. CENTRAL RAILROAD; THENCE SOUTH 30° 18' 10" EAST PARALLEL WITH AND 170 FEET (MEASURED AT RIGHT ANGLES) FROM THE SOUTHWESTERLY RIGHT-OF-WAY LINE OF SAID PENN. CENTRAL RAILROAD A DISTANCE OF 3380.01 FEET TO A POINT ON THE WEST RIGHT-OF-WAY LINE OF SAID LOUISVILLE AND NASHVILLE RAILROAD; THENCE NORTH 1° 44' 20" EAST ALONG THE WEST RIGHT-OF-WAY LINE OF SAID LOUISVILLE AND NASHVILLE RAILROAD A DISTANCE OF 175.87 FEET TO THE TRUE POINT OF BEGINNING OF THIS DESCRIPTION.

## TRACT II:

### PARCEL 1:

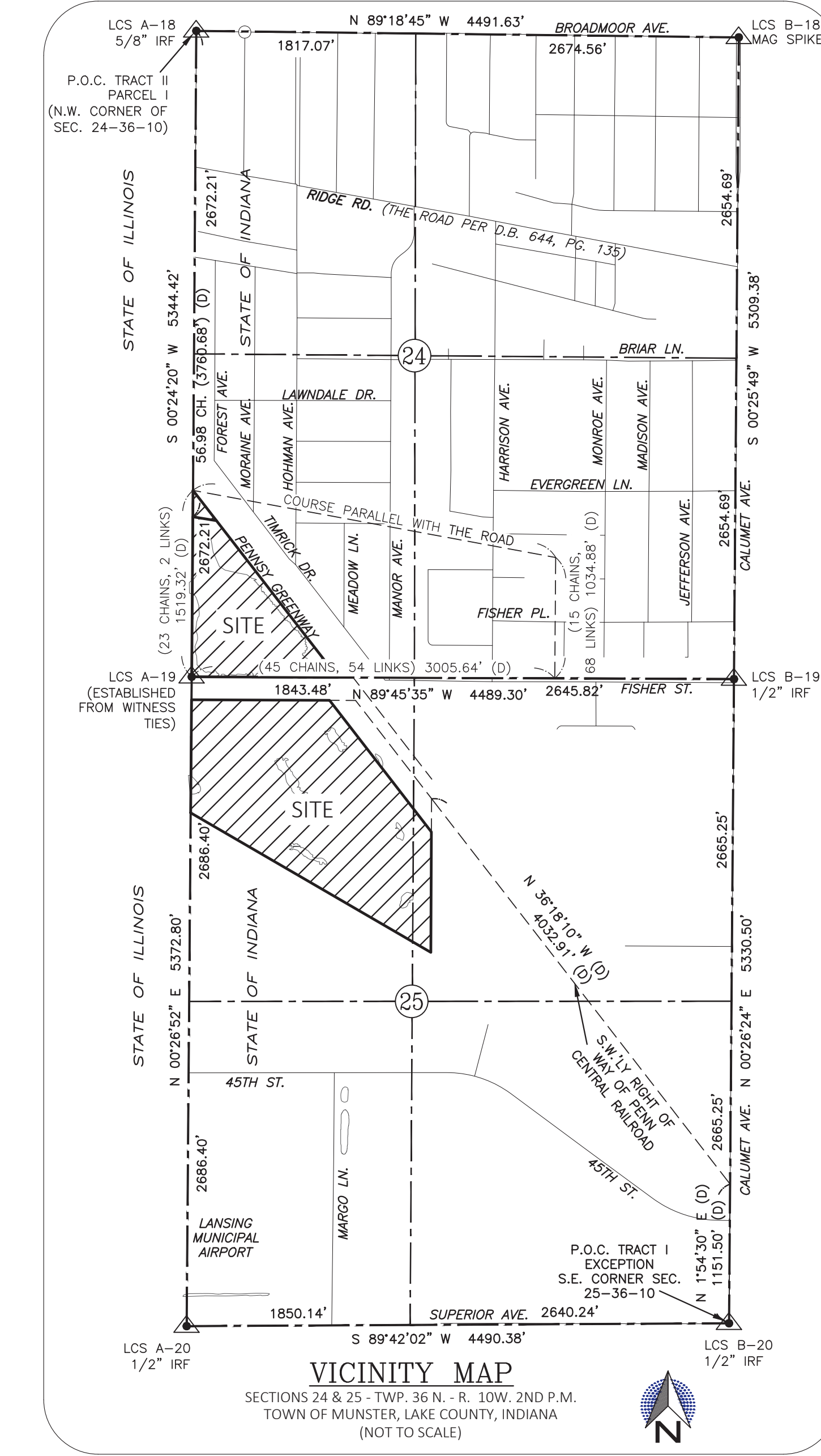
PART OF THE SOUTHWEST QUARTER OF SECTION 24, TOWNSHIP 36 NORTH, RANGE 10 WEST OF THE 2ND P.M., DESCRIBED AS COMMENCING AT A POINT IN THE WEST LINE OF SAID SECTION, 56.98 CHAINS SOUTH OF THE NORTHWEST CORNER THEREOF; THENCE SOUTH 80 3/4 DEGREES EAST ABOUT 3 CHAINS TO THE RIGHT OF WAY OF THE P.C.C. & ST. L. & R.R.; THENCE NORTHWESTERLY ALONG SAID RIGHT OF WAY TO THE WEST LINE OF SAID SECTION; THENCE SOUTH TO THE PLACE OF BEGINNING, IN THE TOWN OF MUNSTER, LAKE COUNTY, INDIANA.

### PARCEL 2:

ALL TRACT I PART LYING WEST OF THE WEST RIGHT-OF-WAY LINE OF THE PITTSBURGH, CINCINNATI, CHICAGO AND ST. LOUIS RAILROAD (FORMERLY THE CHICAGO, ST. LOUIS AND PITTSBURGH RAILROAD) OF THE FOLLOWING DESCRIBED LAND, TO-WIT: COMMENCING AT THE SOUTH WEST CORNER OF SECTION TWENTY-FOUR (24), TOWNSHIP THIRTY-SIX (36) NORTH, RANGE TEN (10) WEST OF THE SECOND PRINCIPAL MERIDIAN; THENCE EAST FORTY-FOUR (45) CHAINS AND FIFTY-FOUR (54) LINKS TO LAND OWNED BY JOACHIM GRUGEL; THENCE NORTH FIFTEEN (15) CHAINS AND SIXTY-ONE (61) LINKS TO LAND OWNED BY JOACHIM GRUGEL; THENCE A WESTERLY COURSE PARALLEL WITH THE ROAD TO THE WEST LINE OF SAID SECTION AT A POINT TWENTY-THREE (23) CHAINS AND TWO (2) LINKS NORTH FROM THE SOUTH WEST CORNER OF SAID SECTION; THENCE SOUTH TWENTY-THREE (23) CHAINS AND TWO (2) LINKS, TO THE PLACE OF BEGINNING, IN LAKE COUNTY, INDIANA.

## GENERAL NOTES:

- EXCEPT AS SPECIFICALLY STATED OR SHOWN ON THIS PLAT, THIS SURVEY DOES NOT PURPORT TO REFLECT ANY OF THE FOLLOWING WHICH MAY BE APPLICABLE TO THE SUBJECT REAL ESTATE:
  - ASSESSMENTS, OTHER THAN THE POSSIBILITY OF ASSESSMENTS WHEN WERE VISIBLE BY PHYSICAL EVIDENCE AT THE TIME OF THIS SURVEY OR SHOWN BY DOCUMENT PROVIDED AND RECORD PLAT.
  - BUILDING SETBACK LINES, RESTRICTIVE COVENANTS, SUBDIVISION RESTRICTIONS, ZONING OR OTHER LAND-USE REGULATIONS, OTHER THAN THAT SHOWN ON THE RECORD PLAT.
  - OWNERSHIP OR TITLE.
- THIS SURVEY DOES NOT ADDRESS THE EXISTENCE, IF ANY, OF ITEMS THAT WOULD REQUIRE AN INTERPRETATION BY THE SURVEYOR, I.E. COMPLIANCE WITH ALL ZONING REQUIREMENTS) EXISTENCE OF ITEMS BEYOND THE QUALIFICATION OF SURVEYOR I.E. WETLANDS, HAZARDOUS MATERIAL AND ITEMS NOT READILY VISIBLE DURING A REASONABLE INSPECTION OF SITE (PAST CEMETERIES, LANDFILLS, AND MINERAL RIGHTS).
- PARCELS IDENTIFIED BY TITLE DESCRIPTION OR RECORD REFERENCES AS PER 865 IAC 1-12-13 (11) ARE OBTAINED FROM COUNTY AUDITOR'S OFFICE AND/OR RECORDS OFFICE AND ARE NOT CERTIFIED; THE INFORMATION MAY OR MAY NOT REFERENCE THE MOST CURRENT DEED OF RECORD OR THE MOST CURRENT STATUS OR TITLE FOR THAT PARCEL.
- NO ATTEMPT HAS BEEN MADE AS A PART OF THIS SURVEY TO OBTAIN DATA CONCERNING LOCATION OF UNDERGROUND UTILITIES AND/OR SIZE, DEPTH, CONDITION, CAPACITY OF ANY UTILITIES LOCATED WITHIN THE PARCEL SURVEYED OR SERVING THE PARCEL, OTHER THAN WHAT INFORMATION THAT MAY BE SHOWN, NO UTILITY COMPANIES OR LOCAL SERVICES WERE CONTACTED. ONLY SUBSTANTIAL ABOVE GROUND VISIBLE UTILITIES WERE LOCATED AND SHOWN. BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED. NO EXCAVATIONS OR PROBINGS WERE MADE DURING THE PROGRESS OF THIS SURVEY TO LOCATE BURIED UTILITIES/STRUCTURES.
- THIS SURVEY MAY NOT REFLECT ALL UTILITIES OR IMPROVEMENTS IF SUCH ITEMS ARE HIDDEN BY LANDSCAPING OR ARE OBTAINED BY SUCH ITEMS AS DUMPSTERS, TRAILERS, CARS, DIRT, PAVING OR SNOW, AT THE TIME OF THIS SURVEY. SNOW DID NOT COVER THE SITE. LAWN SPRINKLER SYSTEMS, IF ANY, ARE NOT SHOWN ON THIS SURVEY.
- BASIS OF BEARINGS IS ASSUMED.



## ALTA/NSPS OPTIONAL TABLE "A" SURVEY RESPONSIBILITIES AND SPECIFICATIONS ITEM NOTES:

- MONUMENTS SET OR FOUND ARE SHOWN HEREON.
- ADDRESS SHOWN HEREON IS PER THE TITLE COMMITMENT SHOWN HEREON AND WAS NOT OBTAINED DURING THE SURVEY.
- FLOOD ZONE DESIGNATION: THE ACCURACY OF ANY FLOOD HAZARD DATA SHOWN ON THIS PLAT IS SUBJECT TO MAP SCALE UNCERTAINTY AND TO ANY OTHER UNCERTAINTY IN LOCATION OR ELEVATION ON THE FLOOD INSURANCE RATE MAP (FIRM). THE SUBJECT PARCEL DESCRIBED IN THE PARCEL DESCRIPTION SHOWN HEREON APPEARS TO LIE WITHIN THAT FLOOD HAZARD ZONE "X" AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN AS SAID SUBJECT PARCEL PLOTS BY SCALE ON FLOOD INSURANCE RATE FOR THE TOWN OF MUNSTER, LAKE COUNTY, INDIANA, COMMUNITY NUMBER 180109, PANEL NO. 18080C0117E, MAP EFFECTIVE DATE: JANUARY 18, 2012.
- LAND AREA IS SHOWN HEREON.
- VERTICAL RELIEF - ELEVATIONS AND THE RESULTING CONTOURS (1-FOOT INTERVAL UNLESS OTHERWISE SPECIFIED) SHOWN HEREON WERE GENERATED FROM PUBLICLY AVAILABLE 2018 LIDAR DATA (INDIANA SPATIAL DATA PORTAL: 66-1-1-1) AND ARE REFERENCED TO A STATEWIDE GNSS REFERENCE STATION NETWORK KNOWN AS INCORS WHICH IS MAINTAINED BY THE INDIANA DEPARTMENT OF TRANSPORTATION USING THE NORTH AMERICAN VERTICAL DATUM OF 1988.
- SUBSTANTIAL VISIBLE FEATURES SUCH AS PARKING LOTS, BILLBOARDS, SIGNS, SWIMMING POOLS, LANDSCAPED AREAS, AND SUBSTANTIAL AREAS OF REFUSE (IF ANY) ARE SHOWN HEREON.
- THERE ARE NO CLEARLY IDENTIFIABLE PARKING SPACES ON SURFACE PARKING AREAS AND LOTS.

- LOCATION OF UTILITIES EXISTING ON OR SERVING THE SURVEYED PROPERTY WAS DETERMINED BY OBSERVED EVIDENCE AND EVIDENCE FROM PLANS REQUESTED BY THE SURVEYOR AND OBTAINED FROM UTILITY COMPANIES OR PROVIDED BY CLIENT TO DEVELOP A VIEW OF UNDERGROUND UTILITIES. HOWEVER, LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY, AND RELIABLY DEPICTED. LOCATIONS OF UNDERGROUND UTILITIES/STRUCTURES MAY VARY FROM VISIBLE UTILITIES/STRUCTURES. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED. NO EXCAVATIONS OR PROBINGS WERE MADE DURING THE PROGRESS OF THIS SURVEY TO LOCATE BURIED UTILITIES/STRUCTURES, DRAINAGE TILES, UNDERGROUND DITCHES, FEEDERS OR LATERALS. NO ATTEMPT HAS BEEN MADE AS A PART OF THIS SURVEY TO OBTAIN DATA CONCERNING SIZE, DEPTH, CONDITION, CAPACITY OF ANY UTILITIES LOCATED WITHIN THE SITE SURVEYED OR SERVING THE SITE, UNLESS SHOWN HEREON. A UTILITY LOCATE REQUEST WAS NOT MADE FOR THE SITE. IF ADDITIONAL OR MORE DETAILED INFORMATION IS REQUIRED, EXCAVATION AND/OR A PRIVATE UTILITY LOCATE REQUEST MAY BE NECESSARY.
- NAMES OF ADJOINING OWNERS ACCORDING TO PUBLIC RECORDS ARE SHOWN HEREON. PARCELS IDENTIFIED BY TITLE DESCRIPTION OR RECORD REFERENCES AS PER 865 IAC 1-12-13 (11) ARE OBTAINED FROM COUNTY AUDITOR'S OFFICE AND/OR RECORDS OFFICE AND ARE NOT CERTIFIED. THE INFORMATION MAY OR MAY NOT REFERENCE THE MOST CURRENT DEED OF RECORD OR THE MOST CURRENT STATUS OR TITLE FOR THAT PARCEL. A TITLE COMMITMENT OR ABSTRACT MAY BE NECESSARY.
- DISTANCE TO THE NEAREST INTERSECTING STREET AS SPECIFIED BY THE CLIENT IS SHOWN HEREON.
- THERE WAS NO EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS ON THE SITE OBSERVED IN THE PROCESS OF CONDUCTING THE SURVEY.
- THERE ARE NO PROPOSED CHANGES IN STREET RIGHT OF WAY LINES BASED ON LIMITED INFORMATION AVAILABLE FROM THE CONTROLLING JURISDICTION. THERE WAS NO OBSERVABLE EVIDENCE OF RECENT STREET OR SIDEWALK CONSTRUCTION REPAIRS.
- PLOTTABLE OFFSITE EASEMENTS OR SERVITUDES PROVIDED TO OR OBTAINED BY THE SURVEYOR, IF ANY SHOWN HEREON.

## TITLE COMMITMENT NOTES:

THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY THE SURVEYOR. ALL INFORMATION REGARDING RECORD EASEMENTS AND OTHER DOCUMENTS WHICH MIGHT AFFECT THE QUALITY OF TITLE TO PARCEL SHOWN HEREON WAS GAINED FROM A TITLE INSURANCE COMMITMENT NUMBER 10200467 ISSUED BY COMMONWEALTH LAND TITLE INSURANCE COMPANY, ON JULY 7, 2020 AT 8:00 A.M. THE FOLLOWING COMMENTS CORRESPOND TO THE ITEMS NUMBERED IN SCHEDULE B, SECTION 2, EXCEPTIONS IN THE SAID COMMITMENT:

- DEFECTS, EASES, ENCUMBRANCES, ADVERSE CLAIMS, RIGHT OR CLAIMS, EASEMENTS OR CLAIMS OF EASEMENTS, TAXES OR SPECIAL ASSESSMENTS NOT SHOWN BY PUBLIC RECORDS - NON SURVEY ITEMS, NOT PLOTTABLE.
- ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATION, OR ADVERSE CIRCUMSTANCES - SEE SURVEYOR'S REPORT. SURVEYOR ONLY ADDRESSED ITEMS OF RECORD AS PROVIDED.
- PROPERTY TAXES - NON SURVEY ITEM, NOT PLOTTABLE.
- MUNICIPAL ASSESSMENTS, IF ANY - NON SURVEY ITEM, NOT PLOTTABLE.
- RIGHTS OF WAY FOR DRAINAGE TILE, DITCHES, FEEDERS AND LATERALS, IF ANY - EVIDENCE OF ABOVE GROUND DITCHES SHOWN HEREON.
- RIGHTS OF PUBLIC, STATE OR MUNICIPALITY FOR LAND TAKEN OR USED FOR ROADS AND HIGHWAYS, IF ANY - NONE OBSERVED; NO DOCUMENTS PROVIDED.
- ACREAGE INDICATED IN THE LEGAL DESCRIPTION, AND/OR THE ADDRESS SHOWN ON SCHEDULE A, IS SOLELY FOR THE PURPOSES OF IDENTIFYING SAID TRACT AND SHOULD NOT BE CONSTRUED AS INSURING THE QUANTITY OF LAND, AND/OR THE ADDRESS AS SET FORTH IN THE DESCRIPTION OF THE PROPERTY. APPROXIMATE TRACT/PARCEL ACREAGE SHOWN HEREON.
- UN-RECORDED LEASES - NON SURVEY ITEM, NOT PLOTTABLE.
- RAILROAD RIGHT OF WAY, SWITCHES AND SPUR TRACKS, IF ANY, AND ALL RIGHTS THEREIN - RAILROAD RIGHT OF WAYS ON THE SOUTH AND EAST OF SUBJECT PARCELS AS SHOWN HEREON.
- RESTRICTIONS AND CONDITIONS SET FORTH IN ORDINANCE NO. 24 BY THE TOWN OF MUNSTER RECORDED APRIL 30, 1914 IN MISCELLANEOUS RECORD 76, PAGE 223 - DOES NOT AFFECT SUBJECT PARCELS.

## SURVEYOR'S REPORT:

IN ACCORDANCE WITH TITLE 865, ARTICLE 1.0, CHAPTER 1.2 OF THE INDIANA ADMINISTRATIVE CODE, THE FOLLOWING OBSERVATIONS AND OPINIONS ARE SUBMITTED REGARDING THE VARIOUS UNCERTAINTIES IN THE LOCATION OF THE LINES AND CORNERS ESTABLISHED OR REESTABLISHED ON THIS SURVEY. THIS PLAT REPRESENTS A RETIREMENT SURVEY OF PARCELS OF LAND SITUATED IN FRACTIONAL SOUTHWEST QUARTER OF SECTION 24 AND FRACTIONAL NORTHWEST QUARTER SECTION 25, TOWNSHIP 36 NORTH, RANGE 10 WEST OF THE SECOND PRINCIPAL MERIDIAN.

## THEORY OF LOCATION:

MEASUREMENTS WERE PERFORMED ON FOUND SECTION CORNER MONUMENTS CURRENTLY BEING PERPETUATED BY THE LAKE COUNTY SURVEYOR'S (LCS) OFFICE FOR THE SUBJECT FRACTIONAL SECTIONS 24 AND 25. PER LCS CORNER RECORD CARD FOR SECTION CORNER LCS A-19, THE LOCATION OF THE SECTION CORNER WAS DETERMINED BY THE FORMER PENN. CENTRAL RAILROAD, WHICH APPEARS TO HAVE BEEN SET BY SURVEY REFERENCE NO. 5 AND REPRESENT THE NORTHEASTERLY LINE OF SUBJECT TRACT I, PARCELS 1 & 2. THE SOUTHWESTERLY LINE OF SUBJECT TRACT I IS THE NORTHEASTERLY RIGHT OF WAY LINE OF THE CANADIAN NATIONAL RAILROAD (FORMERLY GRAND TRUNK RAILROAD) AND WAS ESTABLISHED BY A SPLIT OF THE SOUTHERLY SET OF RAILS AS THE CENTERLINE OF THE 100 FOOT RIGHT OF WAY. MONUMENTATION FOUND AND SHOWN HEREON ALONG WITH SECTION MEASUREMENTS SHOWN ON SURVEY REFERENCE NO. 5 HEREON, THE WEST LINES OF SAID FRACTIONAL SECTIONS ARE THE INDIANA-ILLINOIS STATE LINE, WHICH ARE THE WEST LINES OF THE SUBJECT TRACTS.

THREE INCH BRASS DISKS IN CONCRETE WERE FOUND ALONG THE SOUTHWESTERLY LINE OF THE FORMER PENN. CENTRAL RAILROAD, WHICH APPEARS TO HAVE BEEN SET BY SURVEY REFERENCE NO. 5 AND REPRESENT THE NORTHEASTERLY LINE OF SUBJECT TRACT I, PARCELS 1 & 2. THE SOUTHWESTERLY LINE OF SUBJECT TRACT I IS THE NORTHEASTERLY RIGHT OF WAY LINE OF THE CANADIAN NATIONAL RAILROAD (FORMERLY GRAND TRUNK RAILROAD) AND WAS ESTABLISHED BY A SPLIT OF THE SOUTHERLY SET OF RAILS AS THE CENTERLINE OF THE 100 FOOT RIGHT OF WAY. MONUMENTATION FOUND AND SHOWN HEREON ALONG WITH SECTION MEASUREMENTS SHOWN ON SURVEY REFERENCE NO. 5 HEREON, THE WEST LINES OF SAID FRACTIONAL SECTIONS ARE THE INDIANA-ILLINOIS STATE LINE, WHICH ARE THE WEST LINES OF THE SUBJECT TRACTS.

A) CONDITION OF FOUND REFERENCE MONUMENTS - UNLESS OTHERWISE STATED ON THIS PLAT, REFERENCE MONUMENTS WERE FOUND UNDISTURBED, AT OR NEAR GRADE AND OF UNKNOWN ORIGIN. UNCERTAINTY IN LOCATION OF FOUND MONUMENTS MEASURED UP TO 1.0 FEET NORTH-SOUTH, AND UP TO 1.1 FEET EAST-WEST.

B) APPARENT UNCERTAINTIES DUE TO SUBSTANTIAL OBSERVED OCCUPATION OR POSSESSION ARE:

- FENCES AT OR NEAR THE NORTHEASTERLY, SOUTHWESTERLY, AND EASTERLY LINES OF THE SUBJECT TRACTS AS SHOWN AND DIMENSIONED HEREON.
- A GRAVEL CARTEL PATH WAS LOCATED NORTHEAST OF THE NORTHEASTERLY LINE OF SUBJECT TRACT I AS SHOWN HEREON.
- VARIOUS IMPROVEMENTS INCLUDING PAVEMENT, BOUCE BALL COURTS, AND GRAVEL AREAS WERE LOCATED WEST OF THE WEST LINE OF SUBJECT TRACT II, PARCELS 1 & 2 AS SHOWN HEREON.

C) APPARENT UNCERTAINTIES IN RECORD DESCRIPTIONS ARE AS FOLLOWS - THE DESCRIPTION FOR TRACT II, PARCEL 1 CALLS FOR A COMMENCEMENT AT A POINT IN THE WEST LINE OF SECTION 24 THAT IS 56.98 CHAINS (3760.81) SOUTH OF THE NORTHWEST CORNER OF SAID SECTION. THIS MATHEMATICALLY OVERLAPS THE DESCRIPTION OF THE SUBJECT TRACT II, PARCEL 1. IT IS CLEAR FROM THE DESCRIPTIONS THAT THE INTENT WAS FOR THE TWO PARCELS TO BE BOUNDED BY THE STATE LINE ON THE WEST AND ON THE EAST BY THE PENN. CENTRAL RAILROAD. THE UNCERTAINTY CREATED BY THE DISTANCE CALLS IS UP TO 200 FEET IN A NORTH-SOUTH DIRECTION. THE INTENT WAS HELD THIS SURVEY WITH THE DIMENSIONS NOTED HEREON.

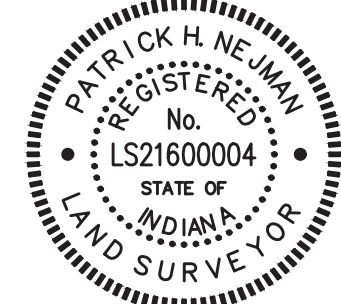
D) THE RELATIVE POSITIONAL ACCURACY (DUE TO RANDOM ERRORS IN MEASUREMENTS FOR THIS SURVEY, BASED ON THE PROCEDURES USED, WAS WITHIN THE ALLOWABLE (0.07 FEET PLUS 50 PARTS PER MILLION) FOR AN URBAN SURVEY, PER 865 IAC 1-12-7.

TO: SAXON PARTNERS, LLC AND COMMONWEALTH LAND TITLE INSURANCE COMPANY;

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2016 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 5, 9, 11, 13, 14, 16, 17, AND 19 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON SEPTEMBER 1, 2020. I FURTHER STATE THAT THIS SURVEY WAS PERFORMED IN ACCORDANCE WITH THE GUIDELINES SET IN TITLE 865 IAC 1-12 (RULE 12).

DATE OF PLAT: SEPTEMBER 3, 2020

*Patrick H. Neuman*  
Professional Surveyor: PATRICK H. NEUMAN  
INDIANA REGISTRATION NUMBER: 1231600004  
pneuman@dgteam.com



DATE: REVISIONS AND NOTES:

DVG TEAM, Inc  
1155 Troutwine Road  
Crown Point, IN 46307  
P: (219) 662-7710  
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www.dvgteam.com



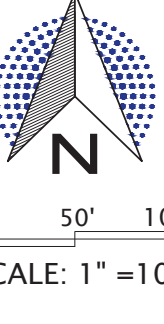
# ALTA/NSPS LAND TITLE SURVEY

STATE NE & SCHOON DITCH  
MUNSTER, IN 46321

PART OF FRACTIONAL S.W. 1/4 SEC. 24 & FRACTIONAL N.W. 1/4 SEC. 25-T36N-R10W

128-1010.dwg  
FILE NO.  
DRAWN BY PHN  
DATE 9/3/2020  
SECTION 24/25-36-10  
COUNTY LAKE, IN  
PROJECT NO. S20-1010

SAXON PARTNERS, LLC



- LEGEND**
- D - DIMENSION SHOWN ON RECORD DEED.  
R - DIMENSION SHOWN ON AUDITOR MAP  
M - DIMENSION MEASURED BETWEEN MONUMENTS  
C - DIMENSION CALCULATED BASED ON DEED/PLAT INFORMATION  
L - LAND FOUND MONUMENTATION  
FF - IRON PIPE FOUND  
IRS "DVS" - 5/8" IRON ROD SET WITH BLUE CAP STAMPED "DVS" TEAM INC. FIRM NO. 0120.  
3"Ø DISKS FOUND - STAMPED "TOWN OF MUNSTER DEPT. OF PARKS & RECREATION - ROBINSON ENGINEERING L5 R29600023"  
"ROBINSON" - YELLOW CAP STAMPED "ROBINSON ENGINEERING"  
"HDC" - YELLOW CAP STAMPED "HDC ENG."  
P.B. - PLAT BOOK - PG. - PAGE  
D.B. - DEED BOOK CONG. - CONCRETE  
A.G. - ABOVE GRADE B.G. - BELOW GRADE  
LCS - LAKE COUNTY SURVEYOR  
P.O.B. - POINT OF BEGINNING  
P.O.C. - POINT OF COMMENCEMENT
- MANHOLE  
FENCE  
GUY/HOLD DOWN WIRE  
OVERHEAD UTILITIES  
STORM SEWER  
SANITARY SEWER  
RAILROAD TRACKS
- MONO-POLE STRUCTURE FOR ELECTRIC TRANSMISSION  
ELECTRIC TRANSMISSION TOWER  
CATCH BASIN  
UTILITY POLE  
LIGHT POLE
- SCHEDULE B TITLE ITEM  
MEASURED WETLAND (LAD LOCATION THIS SURVEY)  
WETLAND AREA DESIGNATION (PER SURVEY REFERENCE NO. 7)  
WETLAND DELINEATION (PER SURVEY REFERENCE NO. 7)
- ASPHALT  
BUILDING  
WATER  
CONCRETE  
GRAVEL
- EXISTING 1-FOOT CONTOUR

## SURVEY REFERENCES:

- RECORD DEEDS REFERENCED HEREON.
- RECORDED SUBDIVISION PLATS REFERENCED HEREON.
- LAKE COUNTY SURVEYOR (LCS) SECTION CORNER RECORD CARDS A-18, A-19, A-20, B-18, B-20, B-21/22, C-20, & C-21.
- LAKE COUNTY AUDITOR MAPS A1028.018 & A1028.021.
- PLAT OF SURVEY OF NORTHEASTERLY ADDITION ABANDONED PENNSYLVANIA RAILROAD RIGHT OF WAY (PITTSBURGH, CINCINNATI, CHICAGO AND ST. LOUIS RAILROAD) BY ROBINSON ENGINEERING, LTD. PROJECT NO. 504-03-017, RECORDED AS DOC. NO. 2004-096538, IN SURVEY BOOK 11, PAGE 95, ON 11/12/2004.
- LOCATION CONTROL ROUTE SURVEY OF EAST ADDITION CSX RAILROAD/NCTO WEST LAKE CORRIDOR, DLT, INC. FILE NAME WL-SV, PLAT, RECORDED AS DOC. NO. 2019-013294, IN SURVEY BOOK 33, PAGE 16, ON 3/5/2019.
- WETLAND DELINEATION AND ASSESSMENT REPORT PREPARED BY V3 COMPANIES, LTD. DATED JULY 27, 2020, PROJECT NUMBER 20359.



# MIXED-USE DEVELOPMENT

*Traffic Impact Study*

**Munster, Indiana**

**September 2020**

Prepared for:

**Saxon Partners, LLC**

**Kimley»Horn**



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## 1. INTRODUCTION

Kimley-Horn and Associates, Inc., (Kimley-Horn) was retained by Saxon Partners, LLC to prepare a traffic impact study for a proposed development located at the western terminus of Fisher Street in Munster, Indiana. The proposed development is comprised of 475,500 square feet of office use and 305,000 square feet of research and development/innovation use. In order to accommodate the development, the existing Lansing Country Club would be removed. Note that the western portion of the golf course, located within the boundary of Lansing, Illinois, is not included as part of the proposed development plan. An aerial view of the study location and the surrounding roadway network is presented in **Exhibit 1**.

Access to the development would be provided via a connection to Fisher Street at its western terminus (referred to herein as North Access). With the proposed development, a single-lane roundabout would be installed at the intersection of Fisher Street/Timrick Drive/Manor Avenue/Private Driveway A/North Access. In addition, access would be provided via Maple Leaf Boulevard, a new east-west roadway located along the northern boundary of Maple Leaf Crossing. Maple Leaf Boulevard will provide access to the existing northwest-southeast roadway located on the west side of the Pepsi facility. As part of the proposed development, this roadway would be improved to public road standards. In order to provide connectivity to the development, an underpass is planned for the Northern Indiana Transit Commuter District's (NITCD) West Lake Corridor rail alignment (referred to herein as South Access). A copy of the conceptual site plan is included in the appendix.

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. Consistent with Indiana Department of Transportation (INDOT) requirements, future traffic conditions were evaluated for the anticipated completion date of the proposed development, assuming full buildout and occupancy (Year 2023).

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.







## 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 Connectivity & Land Uses

The proposed development is located at the western terminus of Fisher Street in Munster, Indiana. The existing Lansing Country Club would be removed to accommodate the proposed development. The western portion of the existing golf course, located in Lansing, Illinois, is not included in the development plan.

The subject property is bounded by Canadian National Railroad on the southwest and the Pennsy Greenway on the northeast. Northern Indiana Transit Commuter District's (NITCD) proposed West Lake Corridor rail alignment is also located on the east side of the subject property. Access to the site is currently provided via an access driveway to Wentworth Avenue in Lansing, Illinois.

Through the study area, Calumet Avenue provides north-south access through the Town of Munster. Located approximately one-half mile east of the subject property, Calumet Avenue provides a full interchange with Interstate 94 approximately one and one-half miles to the north. Interstate 94 provides east-west access across the State of Indiana.

The Town of Munster is currently constructing an underpass for 45<sup>th</sup> Street below the Canadian National Railroad. As part of this project, the east leg of 45<sup>th</sup> Street at Calumet Avenue will be realigned to meet the existing west leg of the intersection, located south of the Canadian National Railroad. The Pennsy Greenway will be extended to provide a continuous multiuse trail through the intersection of Calumet Avenue/45<sup>th</sup> Street.

The area surrounding the subject property is developed with a mix of resident, commercial, and industrial uses. Residential uses are located north, south, and west of the site. Industrial uses are primarily located south of the Canadian National Railroad. Commercial uses front Calumet Avenue through the study area. A mixed-use development, referred to as Maple Leaf Crossing, is currently under construction at the northwest quadrant of the former intersection of Calumet Avenue/45<sup>th</sup> Street.

### 2.2 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.

**Calumet Avenue** is a four-lane, north-south roadway classified by INDOT as a Principal Arterial in the study area. North of Fran Lin Parkway, Calumet Avenue provides two travel lanes in each direction with dedicated left-turn lanes provided at intersections and driveways. South of Fran Lin Parkway, Calumet Avenue provides two travel lanes in each direction with a continuous two-way left-



turn lane (TWLTL) in the center median. At its signalized intersection with Fisher Street, Calumet Avenue provides a dedicated left-turn lane, one through lane, and a shared through/right-turn lane on both the north and south legs. Striped crosswalks and pedestrian pushbuttons are provided on both legs of Calumet Avenue at Fisher Street. At its intersection with Maple Leaf Boulevard, Calumet Avenue provides two travel lanes in each direction and a TWLTL in the center median. Calumet Avenue operates under a free-flow condition with minor-leg stop control posted on Maple Leaf Boulevard. A 35-mile per hour (MPH) speed limit is posted within the vicinity of the project area. Calumet Avenue is under the Town of Munster jurisdiction through the study area.

**Fisher Street** is a two-lane, east-west roadway classified by INDOT as a Major Collector. The typical section of the existing roadway includes one travel lane in each direction. The Pennsy Greenway is located on the south side of Fisher Street from Timrick Drive to Calumet Avenue. At its signalized intersection with Calumet Avenue, Fisher Street provides a dedicated left-turn lane and one shared through/right-turn lane on the east and west legs. Striped crosswalks and pedestrian pushbuttons are provided on both legs of Fisher Street at Calumet Avenue. A 35 MPH speed limit is posted on Fisher Street. Fisher Street is under the Town of Munster jurisdiction.

**Fran Lin Parkway** extends east from Calumet Avenue. Classified by INDOT as a Major Collector, Fran Lin Parkway provides a single travel lane in each direction. Near its intersection with Calumet Avenue, Fran Lin Parkway is a divided roadway with a landscaped center median. Dedicated bike lanes are provided on both the north and south sides of the street. At its signalized intersection with Calumet Avenue, Fran Lin Parkway provides a dedicated left-turn lane and a shared through/right-turn lane on the east leg. A striped crosswalk and pedestrian pushbuttons are provided on Fran Lin Parkway. The west leg of the intersection is Commercial Driveway B. A 35 MPH speed limit is posted on Fran Lin Parkway in the study area.

**Commercial Driveway A** extends south of Fisher Street near its western terminus. This private driveway provides access to an existing office building. Commercial Driveway A provides a single lane in each direction and was assumed to operate under minor-leg stop control. For purposes of this analysis, a 25 MPH speed limit was assumed for Commercial Driveway A.

**Commercial Driveway B** extends west of Calumet Avenue aligned opposite Fran Lin Parkway. At its signalized intersection with Calumet Avenue, Commercial Driveway B provides a shared left-turn/through lane and a dedicated right-turn lane. A striped crosswalk and pedestrian pushbuttons are provided on Commercial Driveway B. Commercial Driveway B is a private driveway. For purposes of this analysis, a 25 MPH speed limit was assumed.

**Timrick Drive** is a two-lane, northwest-southwest roadway which extends northwest from Fisher Street. Classified by INDOT as a Major Collector, Timrick Drive operates under a free-flow condition at Fisher Street. A 25 MPH speed limit is posted on Timrick Drive in the study area. Timrick Drive is under the Town of Munster jurisdiction.

**Manor Avenue** extends north from Fisher Street and provides north-south access through the study area. At its intersection with Fisher Street, Manor Avenue operates under minor-leg stop control and provides a single shared lane. Classified by INDOT as a Minor Collector, Manor Avenue is under the



Town of Munster jurisdiction. A residential speed limit of 25 MPH is posted on Manor Avenue through the study area.

**Maple Leaf Boulevard** was recently dedicated as public right-of-way as part of the Maple Leaf Crossing development, located on the west side of Calumet Avenue north of the former 45<sup>th</sup> Street intersection. The Maple Leaf Crossing development is currently under construction; and therefore, Maple Leaf Boulevard was assumed for the analysis of future conditions only. Upon completion, Maple Leaf Boulevard will provide a single travel lane in each direction and will operate under minor-leg stop control. Maple Leaf Boulevard is under the Town of Munster jurisdiction. For purposes of this analysis, a 25 MPH speed limit was assumed.

## 2.3 Traffic Count Data

At the time of this study, traffic conditions in the study area were considered atypical due to circumstances associated with the COVID-19 public health crisis. In addition, ongoing construction at the Calumet Avenue/45<sup>th</sup> Street intersection and the Maple Leaf Crossing development have impacted traffic patterns along the Calumet Avenue corridor. In lieu of traffic count data collection, Kimley-Horn obtained traffic volume estimates through a service called StreetLight Data that provides anonymized data from mobile phones and GPS devices, aggregated over four months in 2019, to identify traffic volumes and patterns through study intersections. With the availability of past daily traffic counts along study area roadways, the estimated volumes collected through StreetLight Data were compared and adjusted to calibrate with historic traffic levels.

For purposes of this analysis, traffic volume estimates through StreetLight Data was obtained for a typical weekday. The data represents an average of observed volumes on Tuesdays, Wednesdays, and Thursdays in March, April, September, and October 2019. The selected months were chosen to capture traffic patterns prior to COVID-19 while avoiding atypical travel periods around holidays and summer months. Data for typical weekdays was collected from 6:00AM to 9:00AM and 3:00PM to 6:00PM. Based on this data, the resulting peak hours occur from 7:00AM to 8:00AM and 3:00PM to 4:00PM for the weekday morning and evening peak periods.

In order to calibrate the available StreetLight Data traffic volumes for the study area, estimated daily traffic volumes for three roadway segments in the study area were collected from StreetLight Data and compared to INDOT average annual daily traffic volumes (AADT). A comparison of the StreetLight Data estimated daily traffic volumes to actual INDOT AADT data is shown in **Table 2.1**.

**Table 2.1. Comparison of INDOT AADT Counts and Streetlight Estimates**

Count Location	INDOT Count Station ID	2019 AADT		Difference (Percent)
		INDOT Count	StreetLight Data Estimate	
Calumet Avenue North of 45 <sup>th</sup> Street (East Leg)	45X221	31,490	36,524	16%
Fisher Street West of Calumet Avenue	45W226	7,890	8,824	12%
Timrick Drive West of Manor Avenue	45W241	4,963	5,905	19%
Overall		44,343	51,253	16%



As shown in Table 2.1, the estimated daily traffic volumes obtained from StreetLight Data are, overall, approximately 15 percent higher than INDOT AADT. As such, the turning movement counts obtained from StreetLight Data were reduced by 15 percent in order to reflect typical traffic conditions on the area roadways. The adjusted traffic volumes were rounded to the nearest multiple of five and balanced between intersections. The 2019 existing traffic volumes are presented in **Exhibit 2**.

## Existing Capacity Analysis

Capacity analyses were conducted to assess existing and future build operating conditions at the study intersections during the weekday 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).

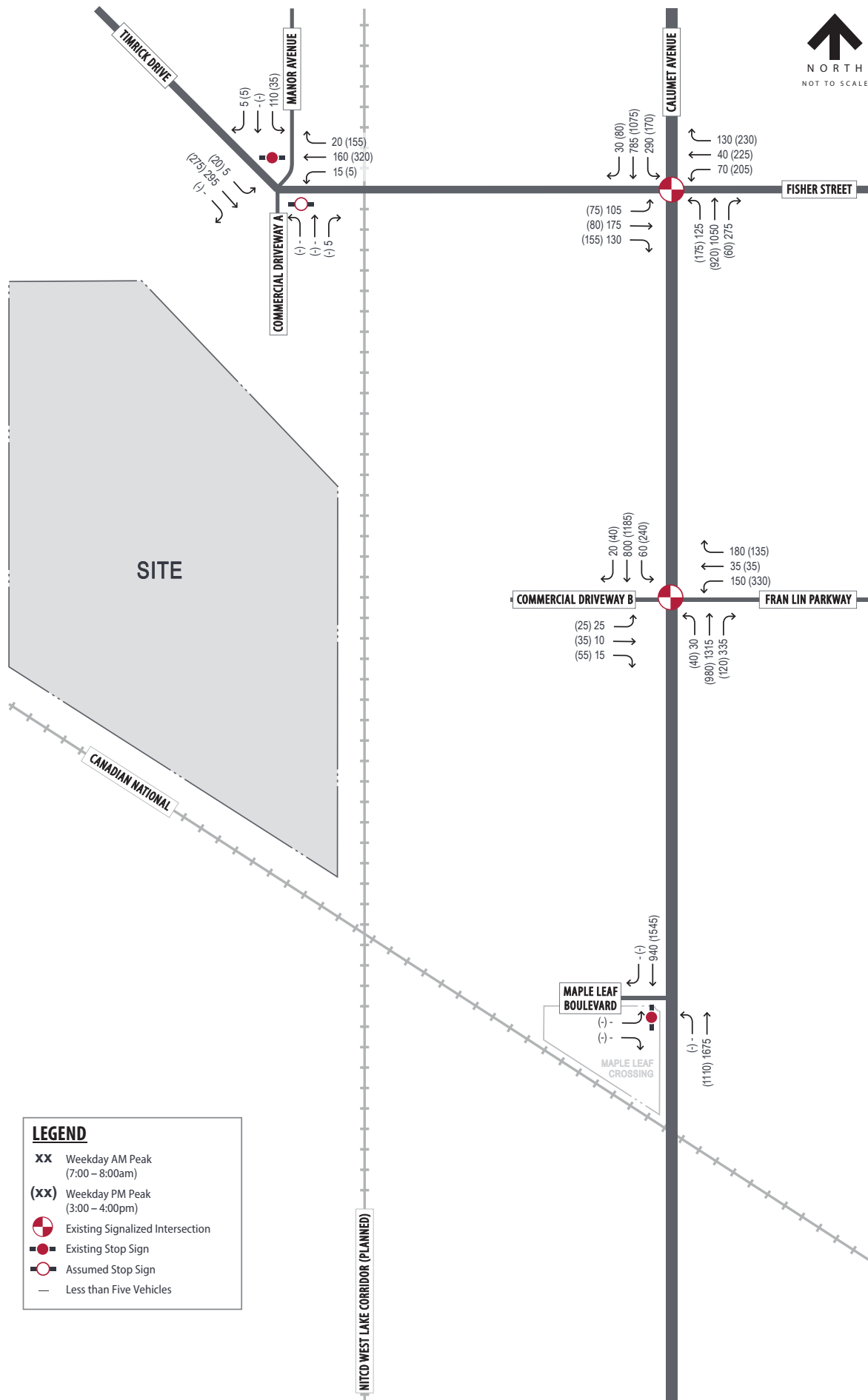
The LOS grades shown below, which are provided in the Transportation Research Board's Highway Capacity Manual (HCM), quantify and categorize the driver's discomfort, frustration, fuel consumption, and travel times experienced as a result of intersection control and the resulting traffic queuing. A detailed description of each LOS rating can be found in **Table 2.2**.

**Table 2.2. Level of Service Grading Descriptions<sup>1</sup>**

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.

<sup>1</sup>Highway Capacity Manual, 6<sup>th</sup> Edition







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 larger volume of vehicles and stopping is required during red time, higher delays are tolerated for the corresponding LOS ratings.

**Table 2.3. Level of Service Grading Criteria<sup>1</sup>**

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 <sup>2</sup>	> 50	> 80

<sup>1</sup>Highway Capacity Manual, 6<sup>th</sup> Edition

<sup>2</sup>All movements with a Volume to Capacity (v/C) ratio greater than 1 receive a rating of LOS F.

Synchro software was utilized to evaluate capacity of the study intersections. Signal timing data for typical conditions (i.e., before COVID-19 and absent area construction activity) was obtained from *Traffic Impact Study for Country Club Business Park*, prepared by Garcia Consulting Engineers (dated April 26, 2017).

**Table 2.4** summarizes the capacity analysis results for existing peak hour traffic conditions. 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 all signalized intersections but 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 6<sup>th</sup> Edition reports. Copies of the capacity analysis reports are provided in the appendix.



**Table 2.4. Existing (2019) Levels of Service**

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Fisher Street / Timrick Drive / Manor Avenue / Commercial Driveway A $\triangle$				
Eastbound (Left)	8	A	9	A
Westbound (Left)	8	A	8	A
Northbound	11	B	15	C
Southbound	16	C	18	C
Calumet Avenue / Fisher Street $\star$				
Eastbound	47	D	33	C
Westbound	31	C	>120	F
Northbound	30	C	21	C
Southbound	48	D <sup>1</sup>	24	C
Intersection	38	D	47	D
Calumet Avenue / Fran Lin Parkway / Commercial Driveway B $\star$				
Eastbound	33	C	36	D
Westbound	32	C	51	D <sup>2</sup>
Northbound	22	C	29	C
Southbound	11	B	22	C
Intersection	20-	B	29	C

$\star$  - Signalized Intersection

$\triangle$  - Two-Way Stop Control Intersection

<sup>1</sup>Left-turn operates at LOS F

<sup>2</sup>Left-turn operates at LOS E

As shown in Table 2.4 the signalized intersections are expected to operate at an overall LOS D or better during the peak hours. However, certain intersection movements and approaches exhibit capacity issues as detailed below.

The southbound left-turn movement at the Calumet Avenue/Fisher Street intersection is estimated to operate at LOS F during the morning peak hour. According to the capacity analysis, the 95<sup>th</sup> percentile queue estimated for the southbound left-turn movement is 425 feet (17 vehicles), which would exceed the existing 150-foot storage lane. The results of this analysis may be conservative and field observations during typical conditions (i.e., following the COVID-19 public health crisis and absent area construction activity) would be needed in order to verify the results of this analysis. During the evening peak hour, the westbound approach of Fisher Street is estimated to operate at LOS F. This is, in part, attributable to the signal timing priority given to north-south traffic on Calumet Avenue. Long periods of green time (67% or 52G + 3.5Y + 0.5R / 90 seconds in morning peak hour; 73% or 58G + 3.5Y + 0.5R / 90 in evening peak hour) are allocated to Calumet Avenue and the minor street approaches (i.e., Fisher Street) receive relatively short green times (38% or 30G + 3.5Y + 0.5R / 90 in morning peak hour; 27% or 24G + 3.5Y + 0.5R / 90 in evening peak hour).



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At the signalized intersection of Calumet Avenue/Fran Lin Parkway/Commercial Driveway B, all intersection approaches and movements are estimated to operate at LOS D or better with one exception. During the evening peak hour, the westbound left-turn is estimated to operate at LOS E. The 95<sup>th</sup> percentile queue is approximately 225 feet (9 vehicles), which would exceed the existing 50-foot storage lane. Again, field observations under typical conditions would be needed in order to verify the results of this analysis.

Minimal delay (LOS C or better) is estimated for all approaches and movements at the unsignalized intersection of Fisher Street/Timrick Drive/Manor Avenue. During the peak hours, the 95<sup>th</sup> percentile queues are approximately 25 feet (1 vehicle) or less.



### 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 development includes 475,500 square feet of office use and 305,000 square feet of research and development/innovation use. For the purposes of this analysis, the entirety of the proposed development is assumed to be completed and occupied in 2023.

Access to the development would be provided via a connection to Fisher Street at its western terminus (referred to herein as North Access). With the proposed development, a single-lane roundabout would be installed at the intersection of Fisher Street/Timrick Drive/Manor Avenue/North Access. In addition, access would be provided via Maple Leaf Boulevard. As part of development of Maple Leaf Crossing, Maple Leaf Boulevard will be extended west of Calumet Avenue to the existing northwest-southeast roadway located on the west side of the Pepsi facility. This roadway would be improved to public road standards as part of the proposed development. In order to provide connectivity to the site, an underpass is planned for the Northern Indiana Transit Commuter District's (NITCD) West Lake Corridor rail alignment. A copy of the conceptual site plan is included in the appendix.

#### 3.2 Trip Generation

In order to calculate trips generated by the proposed development, data was referenced from the Institute of Transportation Engineers (ITE) manual titled *Trip Generation, 10<sup>th</sup> Edition*. Where available, the trip generation equation for each ITE Land Use Code (LUC) corresponding to a proposed use is shown in **Table 3.1**; where a trip generation equation was not provided by ITE, the average rate is shown. Copies of the ITE data are provided in the appendix.

**Table 3.1. ITE Trip Generation Data by Land Use**

ITE Land Use	Unit	AM Peak Hour	PM Peak Hour
Research & Development (LUC 760)	Per 1,000 sq. ft.	$T = 0.42X$ 88% in/12% out	$LN(T) = 0.35LN(X) + 2.36$ 13% in/87% out
General Office (LUC 710)	Per 1,000 sq. ft.	$T = 0.94X + 26.49$ 86% in/14% out	$LN(T) = 0.95LN(X) + 0.36$ 16% in/84% out

T - Number of site-generated trips

X - 1,000 square feet gross floor area

Due to the nature of the proposed land uses and location of the proposed development, site-generated traffic is not expected to exhibit pass-by behavior. Site-generated traffic projections for the proposed development are presented in **Table 3.2**.



**Table 3.2. Site-Generated Traffic Projections<sup>1</sup>**

Land Use	Unit	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
General Office (LUC 710)	475,500 sq. ft.	4,810	410	65	475	80	420	500
Research & Development (LUC 760)	305,000 sq. ft.	3,320	115	15	130	10	70	80
<i>Total Site-Generated Trips</i>		<i>8,130</i>	<i>525</i>	<i>80</i>	<i>605</i>	<i>90</i>	<i>490</i>	<i>580</i>

<sup>1</sup>In/Out volumes are rounded to the nearest multiple of five. For rounding purposes, total volumes are a sum of in and out.

### 3.3 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, and the ease with which motorists can travel various sections of the area roadway network. The anticipated directional distribution of site-generated trips is presented in **Table 3.3**.

**Table 3.3. Directional Distribution Percentages**

Traveling to/from	Site-Generated Trips
North via Calumet Avenue	30%
North via Timrick Drive	10%
South via Calumet Avenue	50%
East via Fisher Street	10%
Total	100%

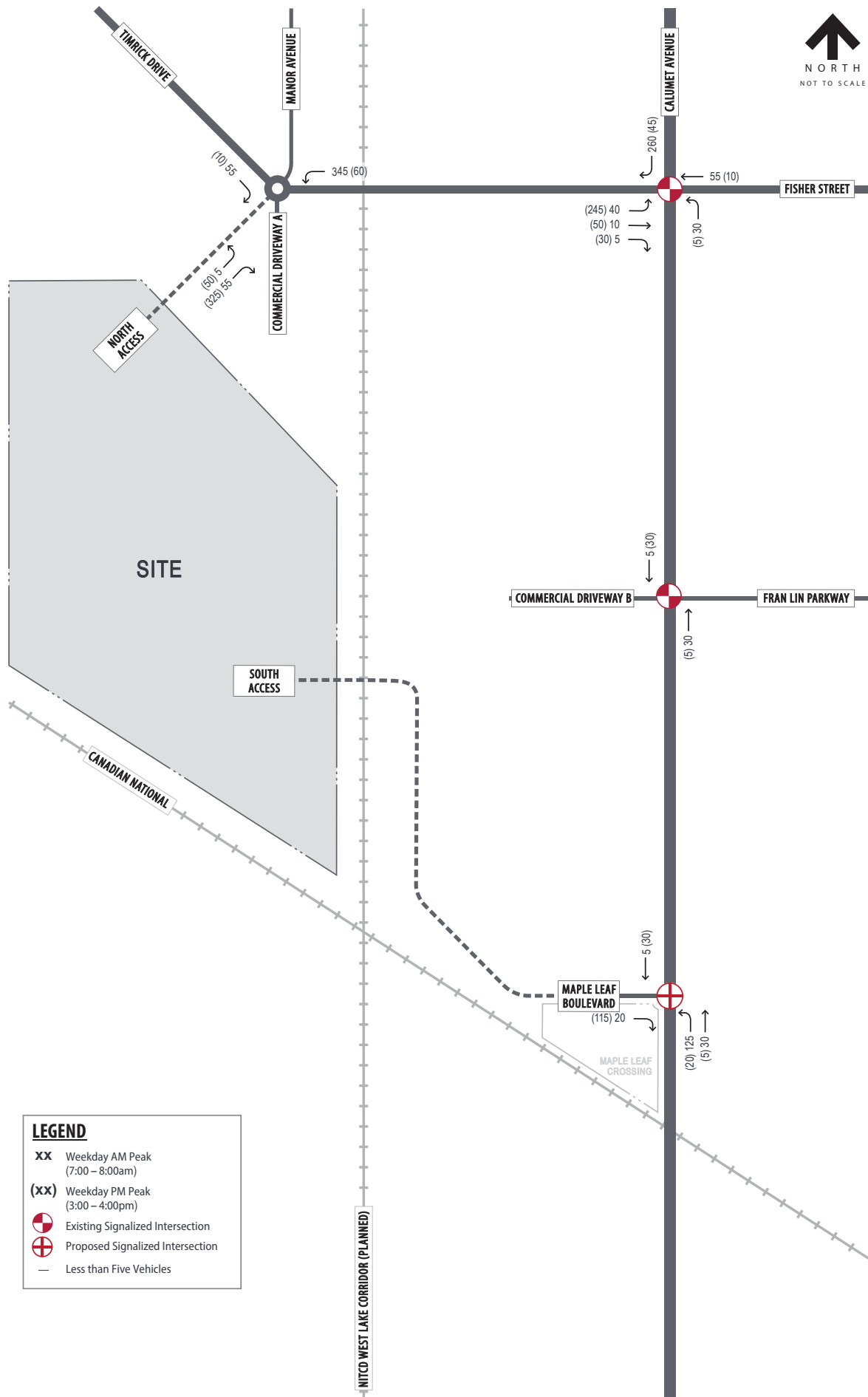
### 3.4. Site Traffic Assignment

The site traffic assignment, representing traffic volumes associated with the proposed redevelopment at the study intersections, is a function of the estimated trip generation (Table 3.2) and the directional distribution (Table 3.3). The total trip assignment for the proposed development is provided in **Exhibit 3**.

### 3.5 Future Traffic Projections

The proposed development is expected to be constructed and occupied by Year 2023. Consistent with INDOT *Applicant's Guide to Traffic Impact Studies (May 2015)*, the future year analysis reflects the anticipated completion date of the proposed development, assuming full buildout and occupancy. Based on information obtained from Saxon Partners, LLC, the proposed development is assumed to be completed and occupied by Year 2023.







### Background Traffic

Background traffic was assumed to be comprised of two main parts: overall background traffic growth (applied in the form of an annual growth rate) and development-specific traffic projections. In order to estimate overall background traffic growth, historical traffic count data was obtained from the INDOT Traffic Count Database System (TCDS). Based traffic count data from 2015 to 2019 for Calumet Avenue (Location ID 45X221), Fisher Street (Location ID 45W226), and Timrick Drive (Location ID 45W241), a negative annual growth rate was calculated for each roadway segment. However, for purposes of a conservative analysis, and consistent with INDOT guidelines, a 0.50 percent annual growth rate was assumed. This annual growth rate was applied to existing traffic estimates (Exhibit 2) through Year 2023 in order to estimate overall background traffic growth.

In addition to Year 2023 background traffic, trips estimated for the Maple Leaf Crossing development were added to the roadway network based on the trip generation and assignment presented in the *Technical Memorandum Maple Leaf Crossing Traffic and Parking Study (dated June 2020)*, prepared by Ciorba Group. A summary of the estimated trip generation and assignment for Maple Leaf Crossing is included in the appendix. The Year 2023 background traffic volumes are presented in **Exhibit 4**.

### Future (2023) Build Traffic Projections

Future (2023) Build traffic projections represent the sum of site-generated traffic (Exhibit 3) and background traffic projections (Exhibit 4). Future (2023) Build traffic projections are depicted in **Exhibit 5**.

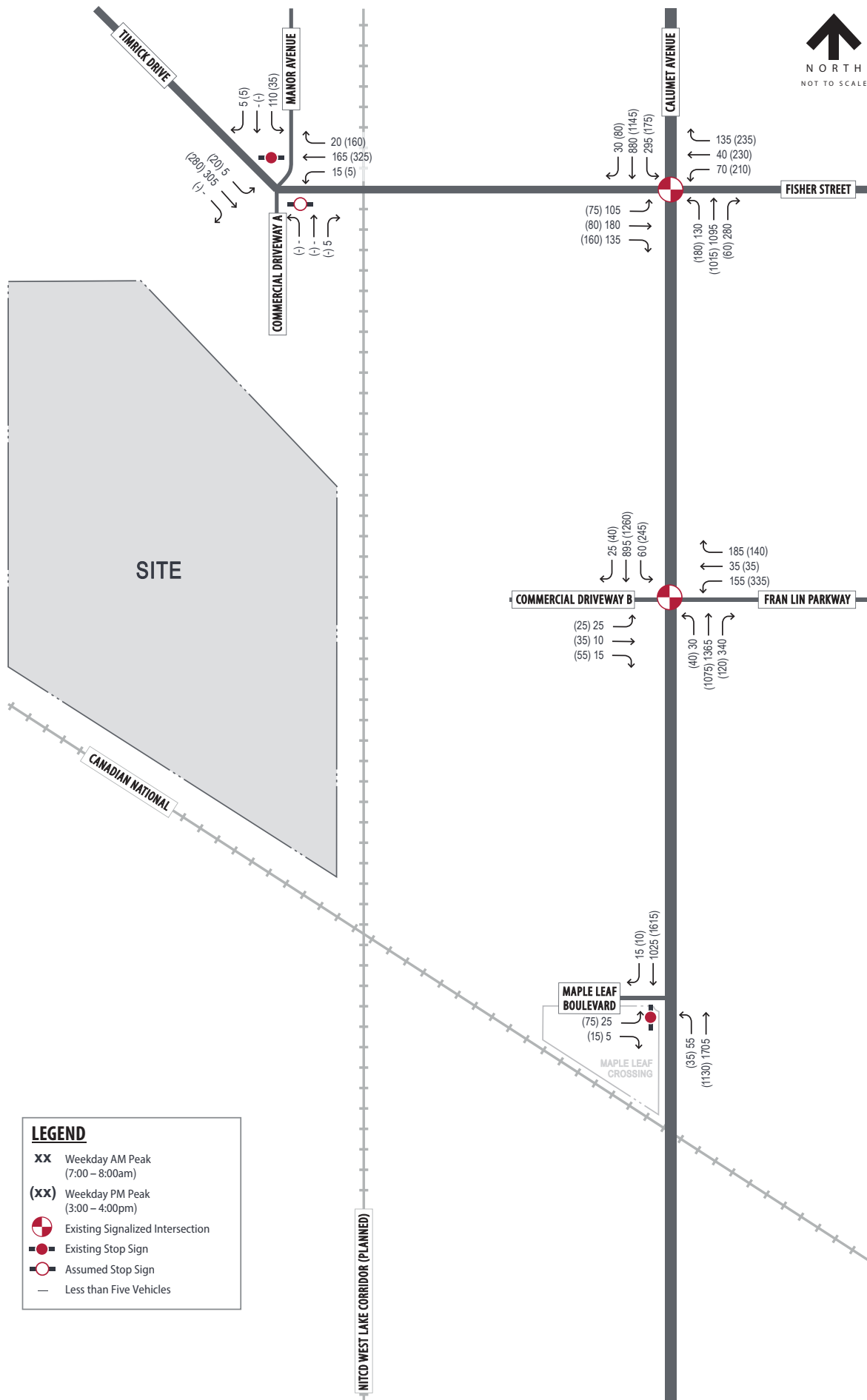
### Future Geometry

For the analysis of future traffic conditions, turn lane warrants were evaluated for the study intersections using guidelines in Chapter 46 of the INDOT *Indiana Design Manual (IDM)*. Dedicated left-turn lanes are currently provided along Calumet Avenue at Fisher Street and Fran Lin Parkway. At the intersection of Calumet Avenue/Maple Leaf Boulevard, a TWLTL is currently provided. Based on current geometry, left-turn lane warrants were not conducted for the study intersections.

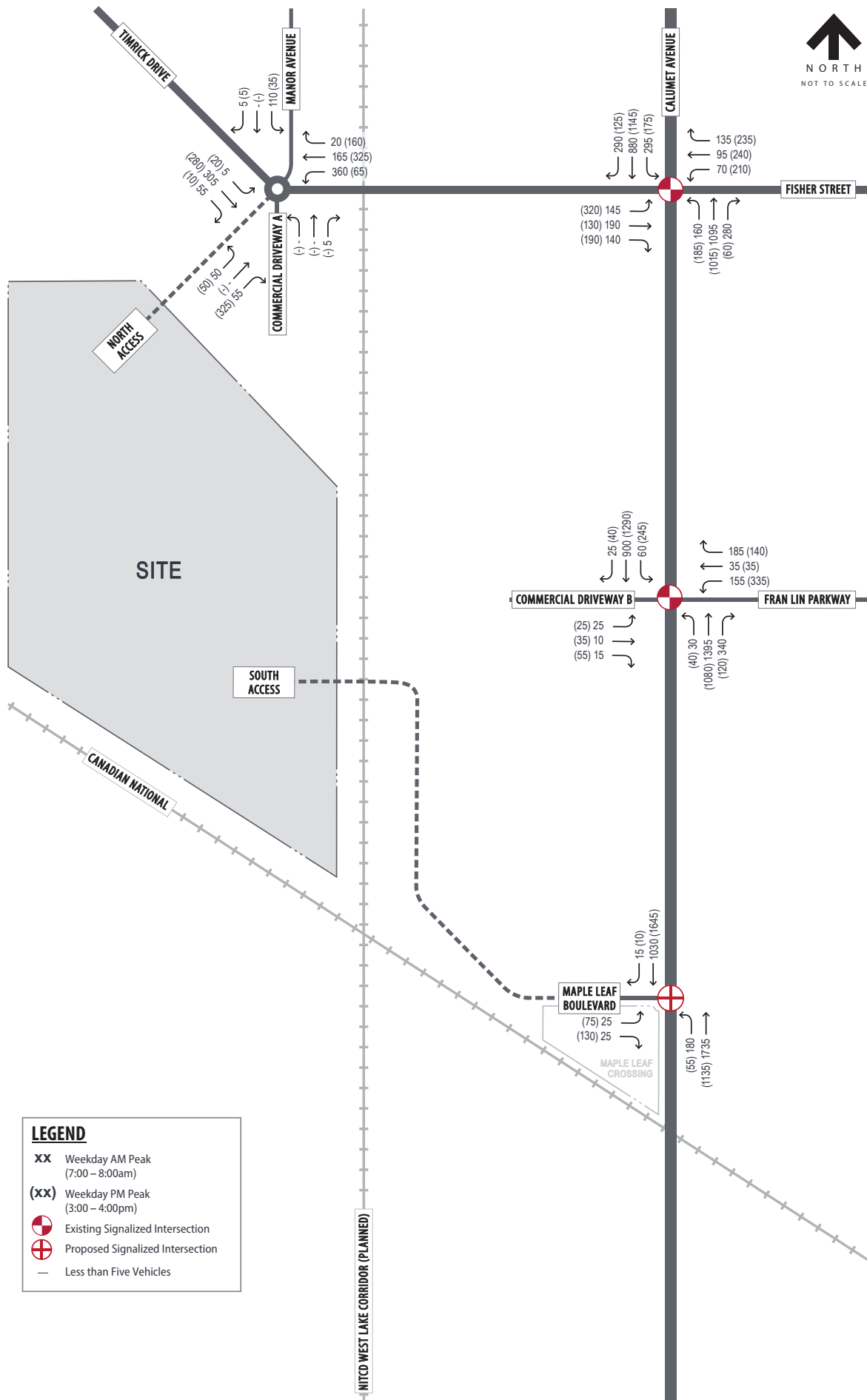
Based on the projected traffic volumes and results of the capacity analysis, dual left-turn lanes are recommended on the west leg of Fisher Street at Calumet Avenue. Dual left-turn lanes are also recommended on the east leg to mirror the west leg and accommodate the projected traffic volume. With the dual left-turn lanes, the existing permitted/protected left-turn signal phase should be modified to reflect a protected-only left-turn phase. For the analysis of future conditions with the dual left-turn lanes, the signal timing splits were optimized.

Right-turn warrants were reviewed for the signalized intersections of Calumet Avenue/Fisher Street and Calumet Avenue/Fran Lin Parkway. According to the INDOT *IDM*, for signalized intersections, a right-turn lane may be warranted where a capacity analysis determines the turn lane is needed to meet the level-of-service criteria; for uniformity of intersection design along a corridor; or where significant conflicts (e.g., accidents, sight distance, etc.) are noted. Based on this criteria, right-turn lanes are recommended on the east and west legs of Fisher Street at its intersection with Calumet











Avenue. According to guidelines outlined in Chapter 46 of the INDOT *IDM*, on the east leg the right-turn lane should provide 150 feet of storage with a 100-foot taper. Based on the projected 95<sup>th</sup> percentile queues, the turn lane on the west leg should provide 150 feet of storage with a 100-foot taper.

The projected traffic volumes on Calumet Avenue at Maple Leaf Boulevard do not meet the INDOT minimum criteria for a southbound right-turn lane; and therefore, the turn lane was not included in the analysis of future conditions.

### Signal Warrant Analysis

In addition to the turn lane warrants, a signal warrant analysis was performed according to criteria set by the *Indiana Manual for Uniform Traffic Control Devices* (IMUTCD) (2011) for future traffic volumes at the intersection of Calumet Avenue/Maple Leaf Boulevard.

To perform the signal warrant analysis, 14-hour counts were obtained from StreetLight Data and calibrated using the methodology described under *Section 2.3 Data Collection*. A 14-hour period was assumed based on the nature of the proposed uses; the selected time period captures both the morning and evening commute periods. In order to estimate future traffic volumes, background traffic growth was applied at an annual rate of 0.5 percent as described under *Section 3.5 Background Traffic Projections*. Maple Leaf Crossing traffic was also added using the same methodology applied to estimate 14-hour traffic for the proposed development (see below). Site-generated traffic was added to the background traffic volumes in order to develop the Future (2023) Build traffic projections.

In order to obtain 14-hour site-generated traffic projections, hourly trip generation data from Appendix A of the ITE *Trip Generation Manual, 10<sup>th</sup> Edition* was applied to the daily trips presented in Table 3.2. For purposes of the analysis, the peak hour directional distribution percentages were applied to the 14-hour trip generation estimate. These volumes were compared to the IMUTCD criteria for Warrant 1 (Eight-Hour Vehicular Volume), which are summarized in **Table 3.4**. Warrant 2 (Four-Hour Vehicular Volume) and Warrant 3 (Peak-Hour Vehicular Volume) exhibits are presented in the appendix.



**Table 3.4. Signal Warrant 1 – Calumet Avenue / Maple Leaf Boulevard**

Hour	Major Street Volume (sum of both approaches)			Minor Street Volume (high volume approach)		Warrant 1A Criteria		Warrant 1B Criteria		Results	
	Northbound	Southbound	Total	Eastbound	High Volume*	Major > 600	Minor > 150	Major > 900	Minor > 75	Warrant 1A	Warrant 1B
6:00 AM	1163	567	1730	19	19	Yes	No	Yes	No	No	No
7:00 AM	4016	1010	5026	38	38	Yes	No	Yes	No	No	No
8:00 AM	2431	999	3430	50	50	Yes	No	Yes	No	No	No
9:00 AM	2027	824	2851	44	44	Yes	No	Yes	No	No	No
10:00 AM	2098	1013	3111	45	45	Yes	No	Yes	No	No	No
11:00 AM	2178	934	3112	55	55	Yes	No	Yes	No	No	No
12:00 PM	2166	1033	3199	262	262	Yes	Yes	Yes	Yes	Yes	Yes
1:00 PM	2152	1089	3240	207	207	Yes	Yes	Yes	Yes	Yes	Yes
2:00 PM	2372	1136	3507	185	185	Yes	Yes	Yes	Yes	Yes	Yes
3:00 PM	2329	1744	4072	188	188	Yes	Yes	Yes	Yes	Yes	Yes
4:00 PM	2575	1546	4122	237	237	Yes	Yes	Yes	Yes	Yes	Yes
5:00 PM	2743	1567	4310	258	258	Yes	Yes	Yes	Yes	Yes	Yes
6:00 PM	2537	1370	3906	114	114	Yes	No	Yes	Yes	No	Yes
7:00 PM	2002	1120	3122	86	86	Yes	No	Yes	Yes	No	Yes
Total Hours Signal Warrant Met						14	6	14	8	No	Yes

As shown in Table 3.4, based on the results of Warrant 1 (Eight-Hour Vehicular Volume), a signal is warranted under Warrant 1B. Additionally, as shown in the figures in the appendix, a signal is warranted under Warrant 2 (Four-Hour Vehicular Volume) and Warrant 3 (Peak-Hour Vehicular Volume). Therefore, a traffic signal was assumed for the intersection of Calumet Avenue/Maple Leaf Boulevard under the Future (2023) Build condition. A cycle length of 90 seconds was assumed for consistency with other signals on the Calumet Avenue corridor. The splits were optimized for purposes of the analysis.

Based on the turn lane improvements and signal recommended for the intersection of Calumet Avenue/Maple Leaf Boulevard, the capacity results for the Future (2023) Build condition are provided in **Table 3.5**. Consistent with existing conditions, the results are based on Synchro's HCM 6<sup>th</sup> Edition reports. Copies of the capacity analysis reports are provided in the appendix.



**Table 3.5. Future (2023) Build Levels of Service**

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Fisher Street / Timrick Drive / Manor Avenue / Commercial Driveway A / North Access ○				
Eastbound	12	B	6	A
Westbound	7	A	8	A
Northbound	5	A	6	A
Northeast (North Access)	5	A	9	A
Southbound	7	A	5	A
Overall	8	A	8	A
Calumet Avenue / Fisher Street *				
Eastbound	38	D	40	D
Westbound	39	D	42	D
Northbound	29	C	25	C
Southbound	21	C	32	C
Intersection	28	C	33	C
Calumet Avenue / Fran Lin Parkway / Commercial Driveway B *				
Eastbound	33	C	36	D
Westbound	33	C	54	D <sup>1</sup>
Northbound	25	C	36	D
Southbound	11	B	23	C
Intersection	22	C	32	C
Calumet Avenue / Maple Leaf Boulevard *				
Eastbound	28	C	37	D
Northbound	3	A	4	A
Southbound	2	A	6	A
Intersection	3	A	7	A

\* - Signalized Intersection

△ - Two-Way Stop Control Intersection

○ - Roundabout

<sup>1</sup>Left-turn operates at LOS E

With the addition of background traffic, site-generated trips, and the recommended improvements, the study intersections are expected to operate with acceptable delay and queues. The signalized intersections are projected to operate at an overall LOS C or better during each peak hour.

The intersection of Calumet Avenue/Fisher Street is projected to operate at LOS C during both peak hours. The projected 95<sup>th</sup> percentile queues would be accommodated within the existing and proposed storage with one exception. According to the results of the capacity analysis, the 95<sup>th</sup> percentile queue projected for the southbound left-turn movement would continue to exceed the storage lane, consistent with the existing conditions analysis.

At the signalized intersection of Calumet Avenue/Fran Lin Parkway/Commercial Driveway B, the westbound left-turn movement is projected to operate at LOS E. The projected delay is generally



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consistent with existing conditions. The proposed development is not expected to materially impact operations at this intersection.

With installation of a roundabout at Fisher Street/Timrick Drive/Manor Avenue/Commercial Driveway A/North Access, delays and queues would be minimal. Overall, the intersection is projected to operate at LOS A during each peak hour.

The future signalized intersection of Calumet Avenue/Maple Leaf Boulevard is projected to operate at an overall LOS A during each peak hour. The eastbound approach is projected to operate at LOS C during the morning peak hour and LOS D during the evening peak hour. The 95<sup>th</sup> percentile queues estimated for the eastbound left- and right-turn movements are approximately 75 feet (3 vehicles) and 125 feet (5 vehicles) during the evening peak hour; limited queues are anticipated during the morning peak hour. The 95<sup>th</sup> percentile queue projected for the northbound left-turn movement is approximately 25 feet (1 vehicle) or less during both peak hours.



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## **4. RECOMMENDATIONS & CONCLUSION**

Based on Kimley-Horn's review of the proposed site plan and evaluation of existing and future traffic conditions, the study intersections are projected to adequately accommodate the proposed redevelopment with the implementation of the following improvements:

- Improve the existing northwest-southeast roadway along the west side of the Pepsi facility to the Town of Munster public road standards.
- Provide an underpass at the Northern Indiana Transit Commuter District's (NITCD) West Lake Corridor rail alignment (South Access) in order to facilitate secondary access to the proposed development.
- Install a single-lane roundabout at the intersection of Fisher Street/Timrick Drive/Manor Avenue/Commercial Driveway A/North Access in order to facilitate access to the five-leg intersection.
- Install dual left-turn lanes on the east and west legs of Fisher Street at Calumet Avenue. The existing permitted/protected left-turn phase should be modified to reflect a protected left-turn phase on both legs of Fisher Street.
- Install dedicated right-turn lanes on the east and west legs of the intersection of Calumet Avenue/Fisher Street. According to the INDOT *IDM*, the turn lane on the east leg should provide 150 feet of storage and a 100-foot taper. Based on the projected 95<sup>th</sup> percentile queues, the turn lane on the west leg should provide 150 feet of storage with a 100-foot taper.
- Install a new traffic signal at the intersection of Calumet Avenue/Maple Leaf Boulevard per INDOT and Town of Munster requirements.

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 development. 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 maintained. 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

Data from the ITE *Trip Generation Manual*, 10<sup>th</sup> Edition

Maple Leaf Crossing Trip Assignment

Existing (2020) Capacity Reports

Future (2023) Build Capacity Reports

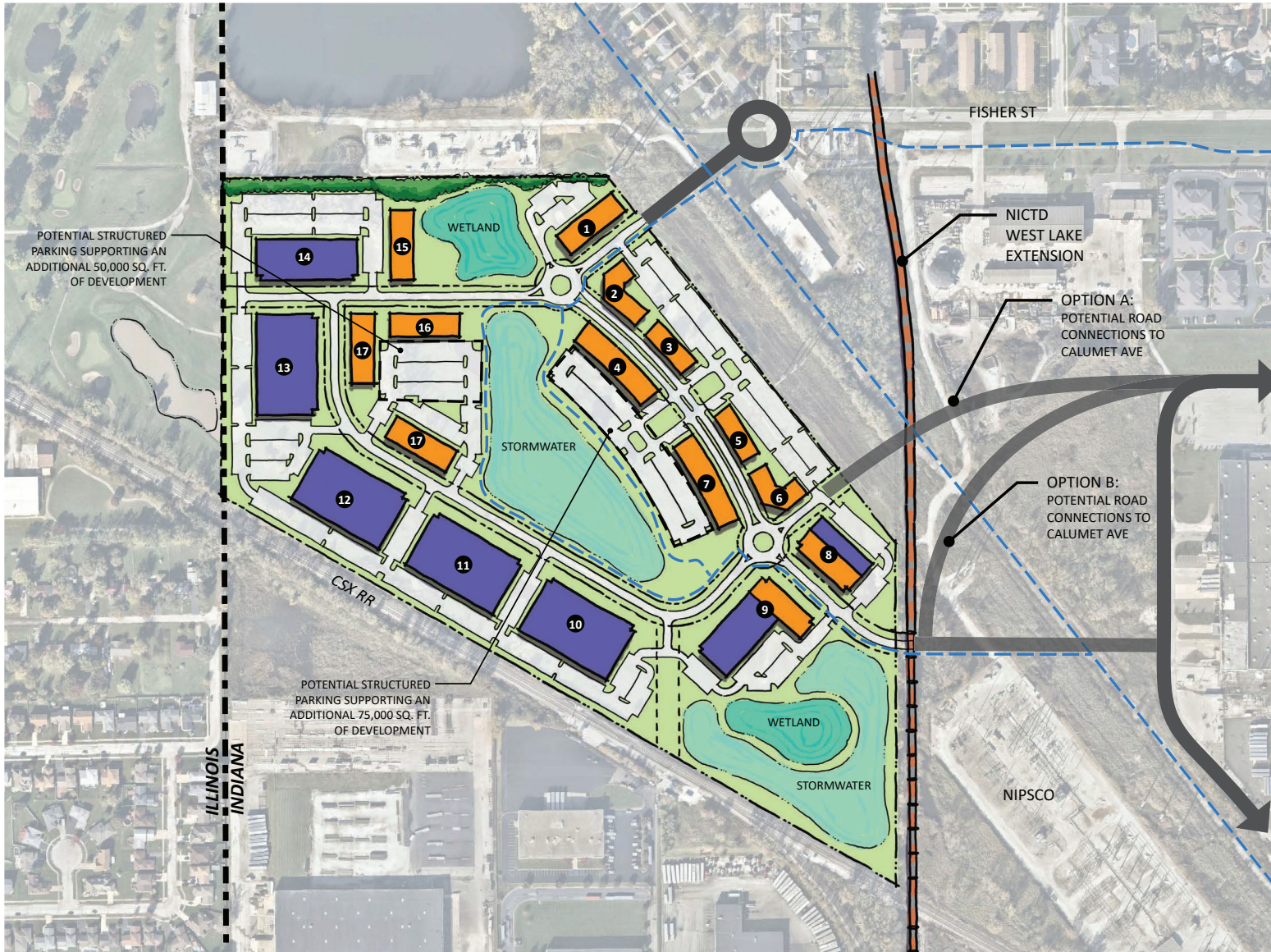
Signal Warrant Analysis

StreetLight Data



## CONCEPTUAL SITE PLAN





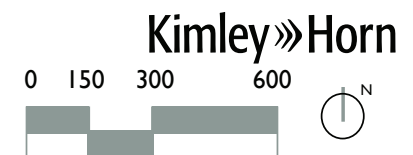
#### SITE DATA TABLE

Overall Site Area: 59.13 Acres  
 Total Commercial/Office: 475,500 sq. ft.  
 Total Innovation: 305,000 sq. ft.

- 1 Commercial/Office Building - 3 Stories, 45,000 sq. ft.
- 2 Commercial/Office Building - 3 Stories, 36,000 sq. ft.
- 3 Commercial/Office Building - 3 Stories, 30,000 sq. ft.
- 4 Commercial/Office Building - 3 Stories, 60,000 sq. ft.
- 5 Commercial/Office Building - 3 Stories, 30,000 sq. ft.
- 6 Commercial/Office Building - 3 Stories, 34,500 sq. ft.
- 7 Commercial/Office Building - 3 Stories, 60,000 sq. ft.
- 8 Flex/Office/Innovation Building - 2 Stories  
25,000 sq. ft. Innovation  
15,000 sq. ft. Office
- 9 Flex/Office/Innovation Building - 2 Stories  
28,000 sq. ft. Innovation  
30,000 sq. ft. Office
- 10 Innovation Building - 1 Stories, 54,000 sq. ft.
- 11 Innovation Building - 1 Stories, 54,000 sq. ft.
- 12 Innovation Building - 1 Stories, 54,000 sq. ft.
- 13 Innovation Building - 1 Stories, 54,000 sq. ft.
- 14 Innovation Building - 1 Stories, 36,000 sq. ft.
- 15 Commercial/Office Building - 3 Stories, 45,000 sq. ft.
- 16 Commercial/Office Building - 2 Stories, 30,000 sq. ft.
- 17 Commercial/Office Building - 2 Stories, 30,000 sq. ft.
- 18 Commercial/Office Building - 2 Stories, 30,000 sq. ft.

## SAXON CONCEPTUAL SITE PLAN | MUNSTER, IN

JULY 2, 2020





**DATA FROM THE ITE *TRIP GENERATION*, 10<sup>TH</sup> EDITION**



## **Land Use: 710**

### **General Office Building**

#### **Description**

A general office building houses multiple tenants; it is a location where affairs of businesses, commercial or industrial organizations, or professional persons or firms are conducted. An office building or buildings may contain a mixture of tenants including professional services, insurance companies, investment brokers, and tenant services, such as a bank or savings and loan institution, a restaurant, or cafeteria and service retail facilities. A general office building with a gross floor area of 5,000 square feet or less is classified as a small office building (Land Use 712). Corporate headquarters building (Land Use 714), single tenant office building (Land Use 715), office park (Land Use 750), research and development center (Land Use 760), and business park (Land Use 770) are additional related uses.

If information is known about individual buildings, it is suggested that the general office building category be used rather than office parks when estimating trip generation for one or more office buildings in a single development. The office park category is more general and should be used when a breakdown of individual or different uses is not known. If the general office building category is used and if additional buildings, such as banks, restaurants, or retail stores are included in the development, the development should be treated as a multiuse project. On the other hand, if the office park category is used, internal trips are already reflected in the data and do not need to be considered.

When the buildings are interrelated (defined by shared parking facilities or the ability to easily walk between buildings) or house one tenant, it is suggested that the total area or employment of all the buildings be used for calculating the trip generation. When the individual buildings are isolated and not related to one another, it is suggested that trip generation be calculated for each building separately and then summed.

#### **Additional Data**

The average building occupancy varied considerably within the studies for which occupancy data were provided. The reported occupied gross floor area was 88 for general urban/suburban sites and 96 percent for the center city core and dense multi-use urban sites.

Time-of-day distribution data for this land use for a weekday, Saturday, and Sunday are presented in Appendix A. For the 16 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:30 and 8:30 a.m. and 4:30 and 5:30 p.m., respectively.

For the three general urban/suburban sites with person trip data, the overall highest volumes during the AM and PM on a weekday were counted between 8:45 and 9:45 a.m. and 12:45 and 1:45 p.m., respectively. For the three dense multi-use urban sites with person trip data, the overall highest volumes during the AM and PM on a weekday were counted between 8:30 and 9:30 a.m. and 4:45 and 5:45 p.m., respectively. For the four center city core sites with person trip data, the overall highest volumes during the AM and PM on a weekday were counted between 9:00 and 10:00 a.m. and 12:45 and 1:45 p.m., respectively.



The average numbers of person trips per vehicle trip at the eight center city core sites at which both person trip and vehicle trip data were collected were as follows:

- 2.76 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 2.90 during Weekday, AM Peak Hour of Generator
- 2.91 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 3.02 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 18 dense multi-use urban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.47 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.47 during Weekday, AM Peak Hour of Generator
- 1.46 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.53 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 23 general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.30 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.34 during Weekday, AM Peak Hour of Generator
- 1.32 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.41 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Colorado, Connecticut, Georgia, Illinois, Indiana, Kansas, Kentucky, Maine, Maryland, Michigan, Minnesota, Missouri, Montana, New Hampshire, New Jersey, New York, Pennsylvania, Texas, Utah, Virginia, and Washington.

## Source Numbers

161, 175, 183, 184, 185, 207, 212, 217, 247, 253, 257, 260, 262, 273, 279, 297, 298, 300, 301, 302, 303, 304, 321, 322, 323, 324, 327, 404, 407, 408, 418, 419, 423, 562, 734, 850, 859, 862, 867, 869, 883, 884, 890, 891, 904, 940, 944, 946, 964, 965, 972



# General Office Building (710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 66

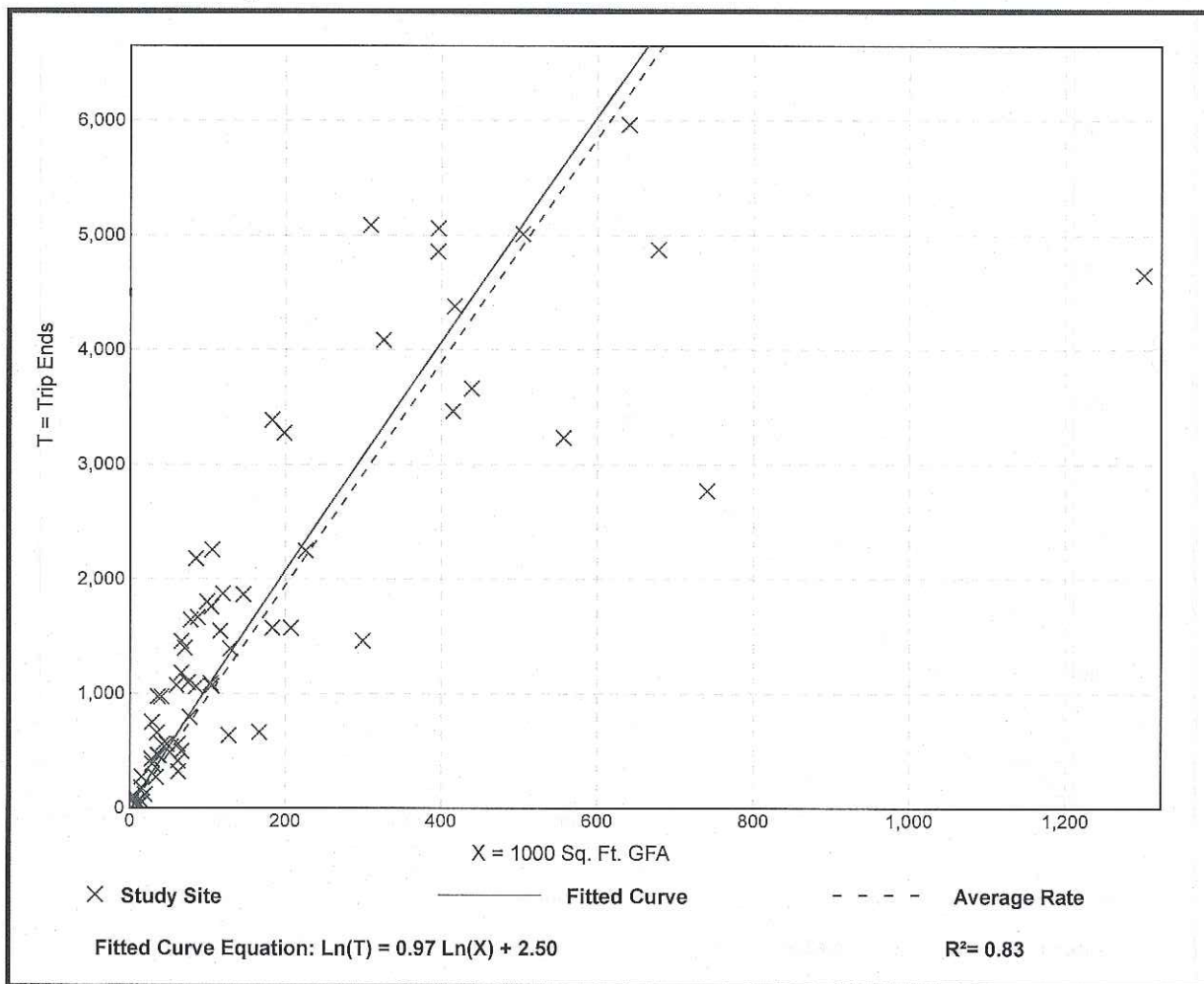
1000 Sq. Ft. GFA: 171

Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.74	2.71 - 27.56	5.15

## Data Plot and Equation





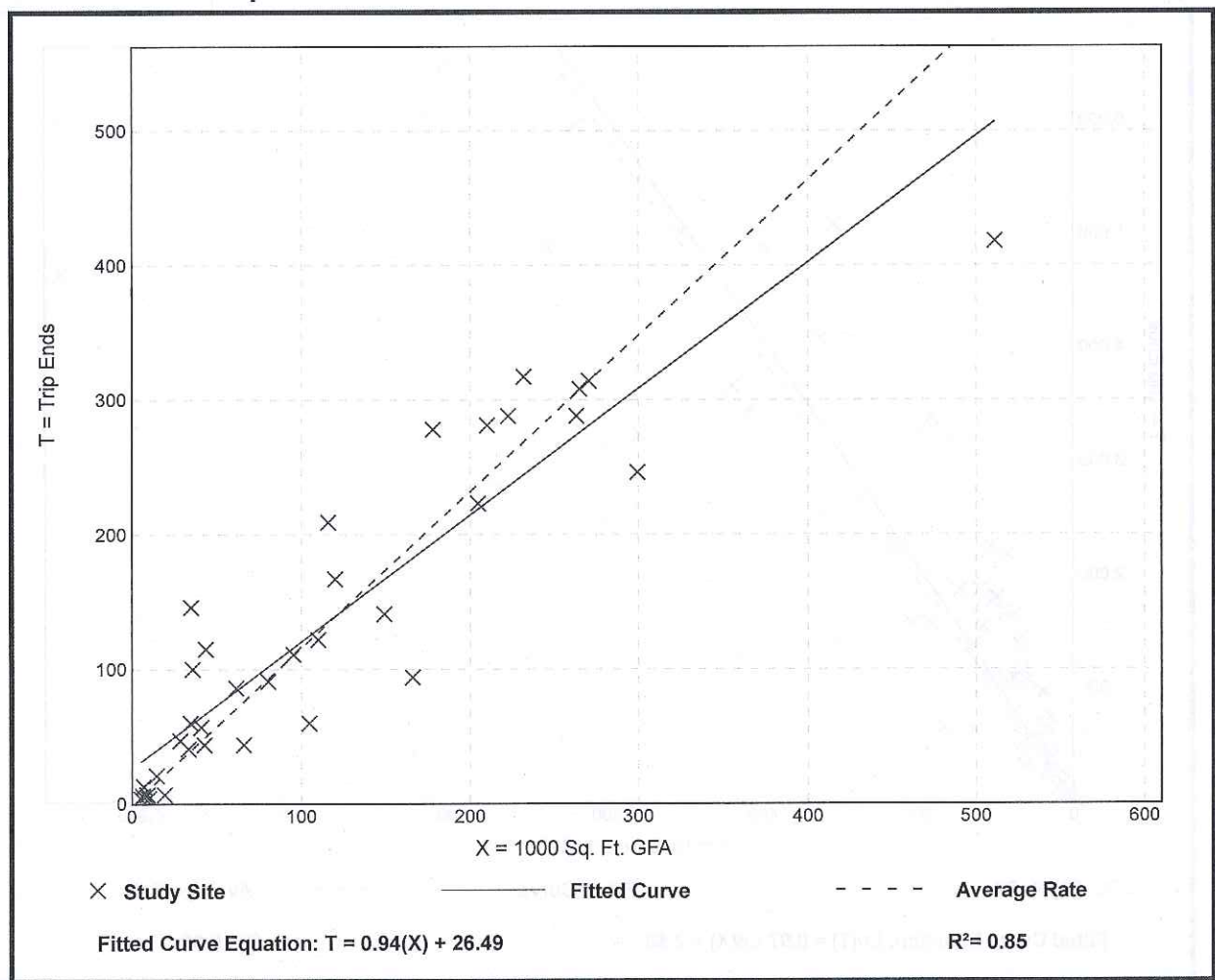
# General Office Building (710)

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: 35  
 1000 Sq. Ft. GFA: 117  
 Directional Distribution: 86% entering, 14% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.16	0.37 - 4.23	0.47

## Data Plot and Equation





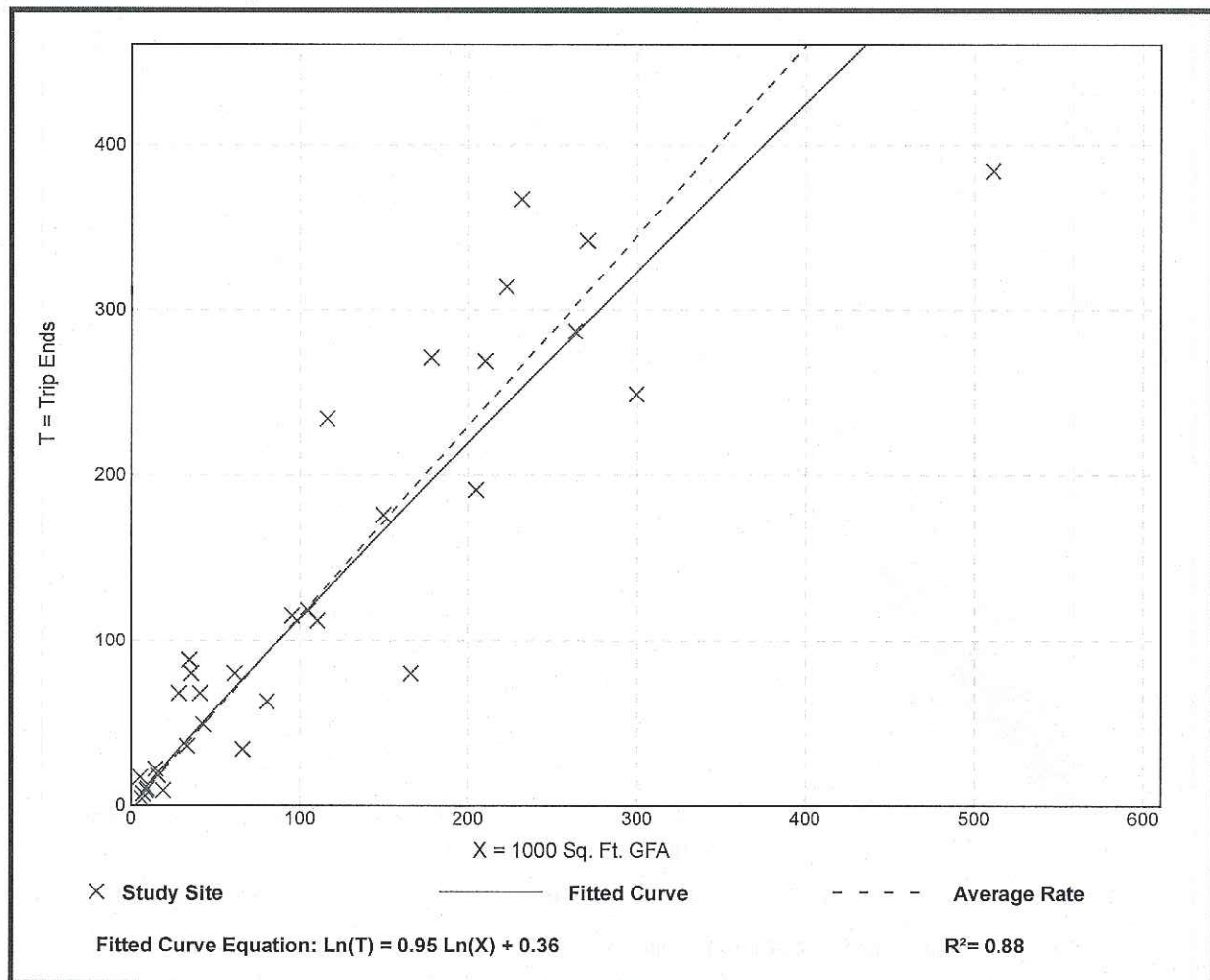
# General Office Building (710)

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: 32  
 1000 Sq. Ft. GFA: 114  
 Directional Distribution: 16% entering, 84% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.15	0.47 - 3.23	0.42

## Data Plot and Equation





# General Office Building (710)

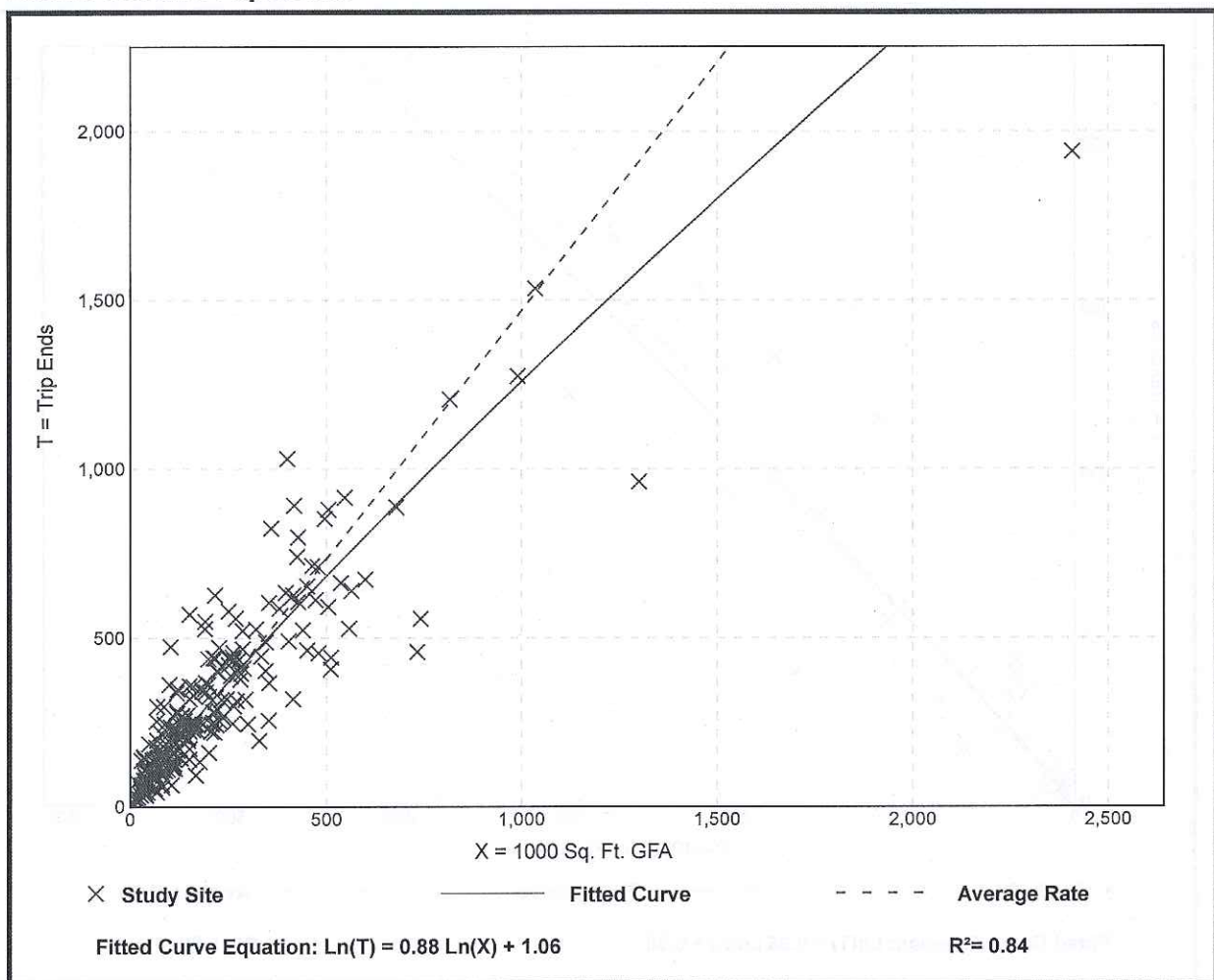
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday,  
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban  
Number of Studies: 228  
1000 Sq. Ft. GFA: 209  
Directional Distribution: 88% entering, 12% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.47	0.57 - 4.93	0.60

## Data Plot and Equation





# General Office Building (710)

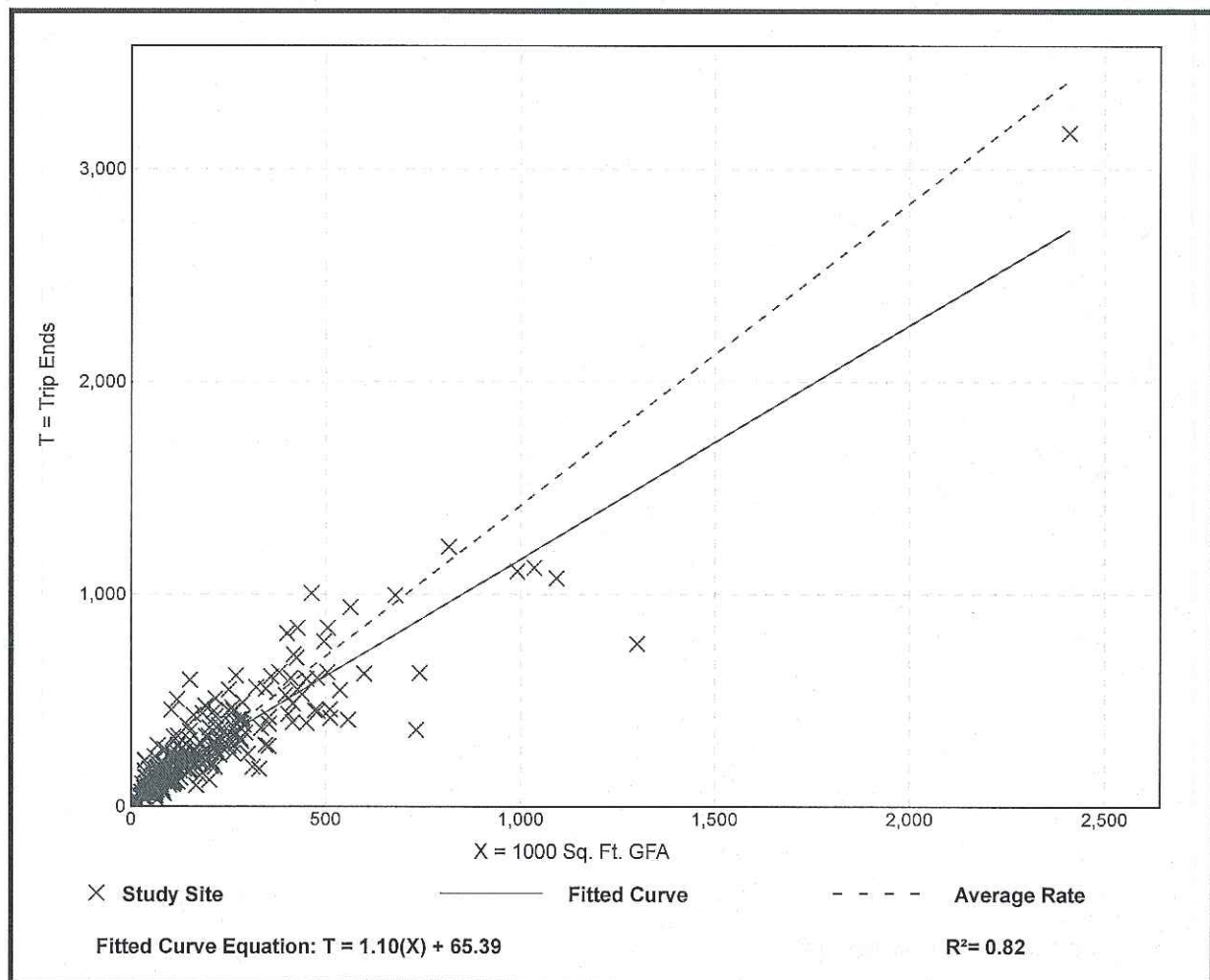
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday,  
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban  
Number of Studies: 243  
1000 Sq. Ft. GFA: 205  
Directional Distribution: 18% entering, 82% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.42	0.49 - 6.20	0.61

## Data Plot and Equation





# General Office Building (710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Saturday

Setting/Location: General Urban/Suburban

Number of Studies: 5

1000 Sq. Ft. GFA: 94

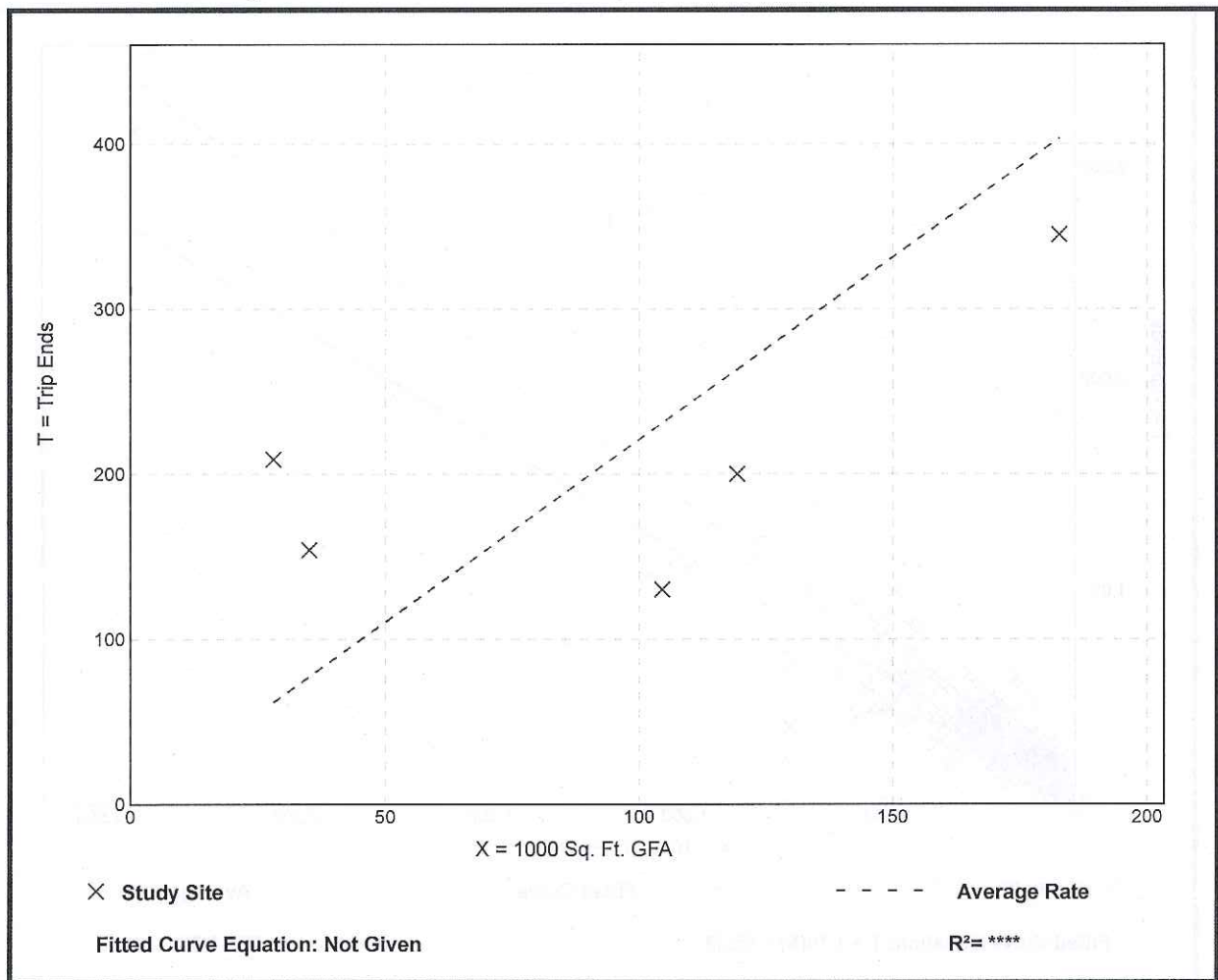
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.21	1.24 - 7.46	1.70

## Data Plot and Equation

Caution – Small Sample Size





# General Office Building (710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Saturday, Peak Hour of Generator

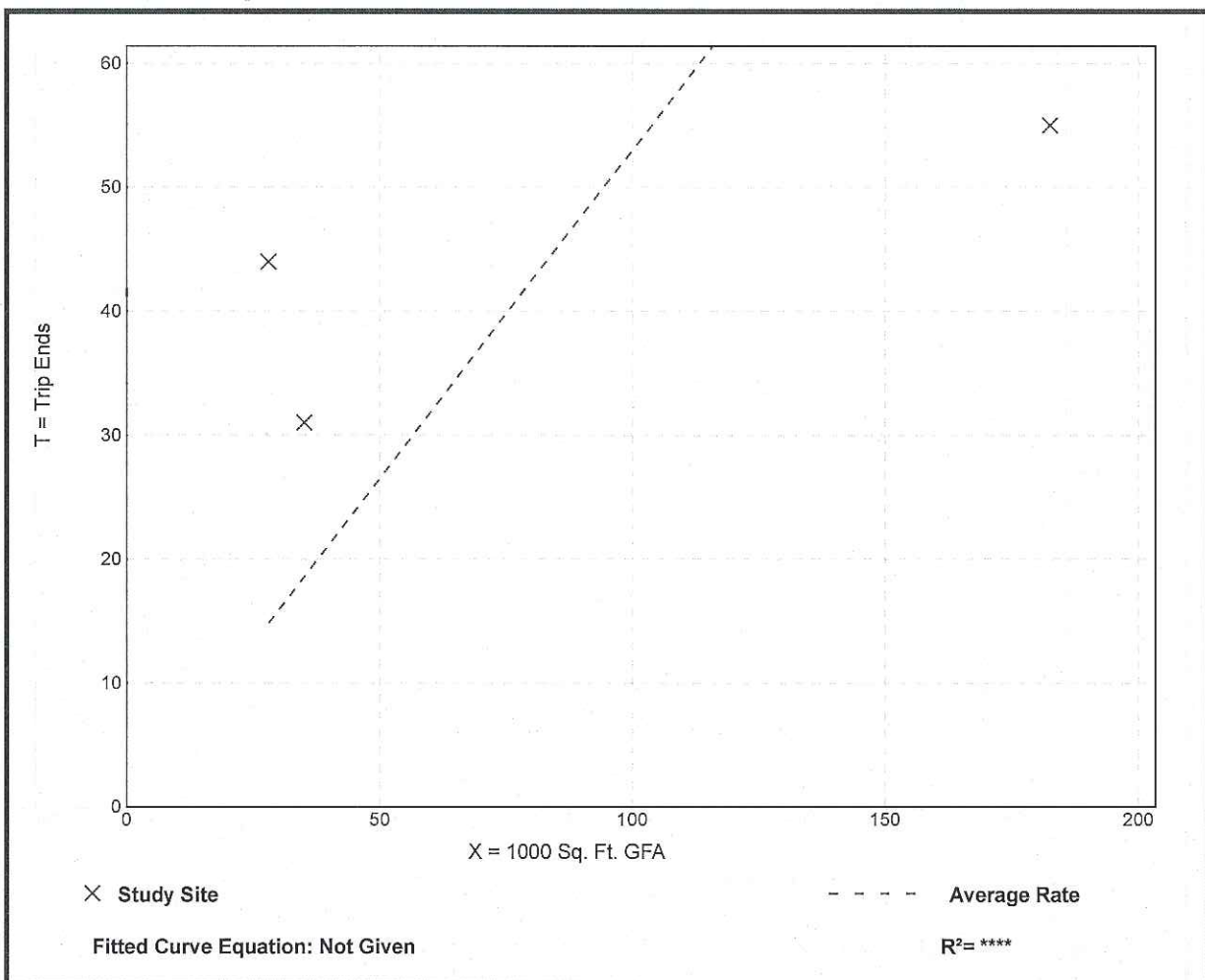
Setting/Location: General Urban/Suburban  
Number of Studies: 3  
1000 Sq. Ft. GFA: 82  
Directional Distribution: 54% entering, 46% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.53	0.30 - 1.57	1.29

## Data Plot and Equation

Caution – Small Sample Size





# General Office Building (710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Sunday

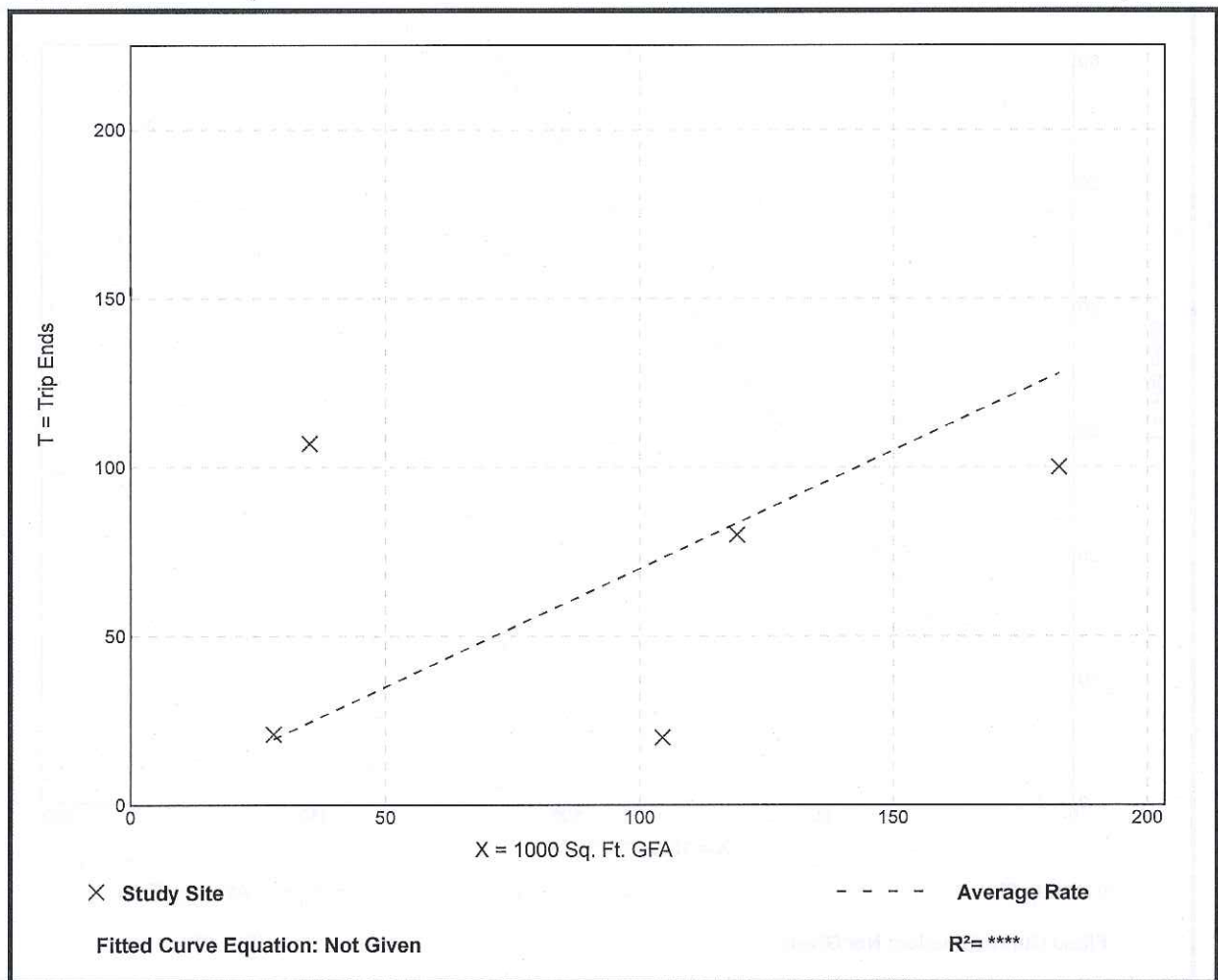
Setting/Location: General Urban/Suburban  
Number of Studies: 5  
1000 Sq. Ft. GFA: 94  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.70	0.19 - 3.05	0.77

## Data Plot and Equation

Caution – Small Sample Size





## General Office Building (710)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Sunday, Peak Hour of Generator

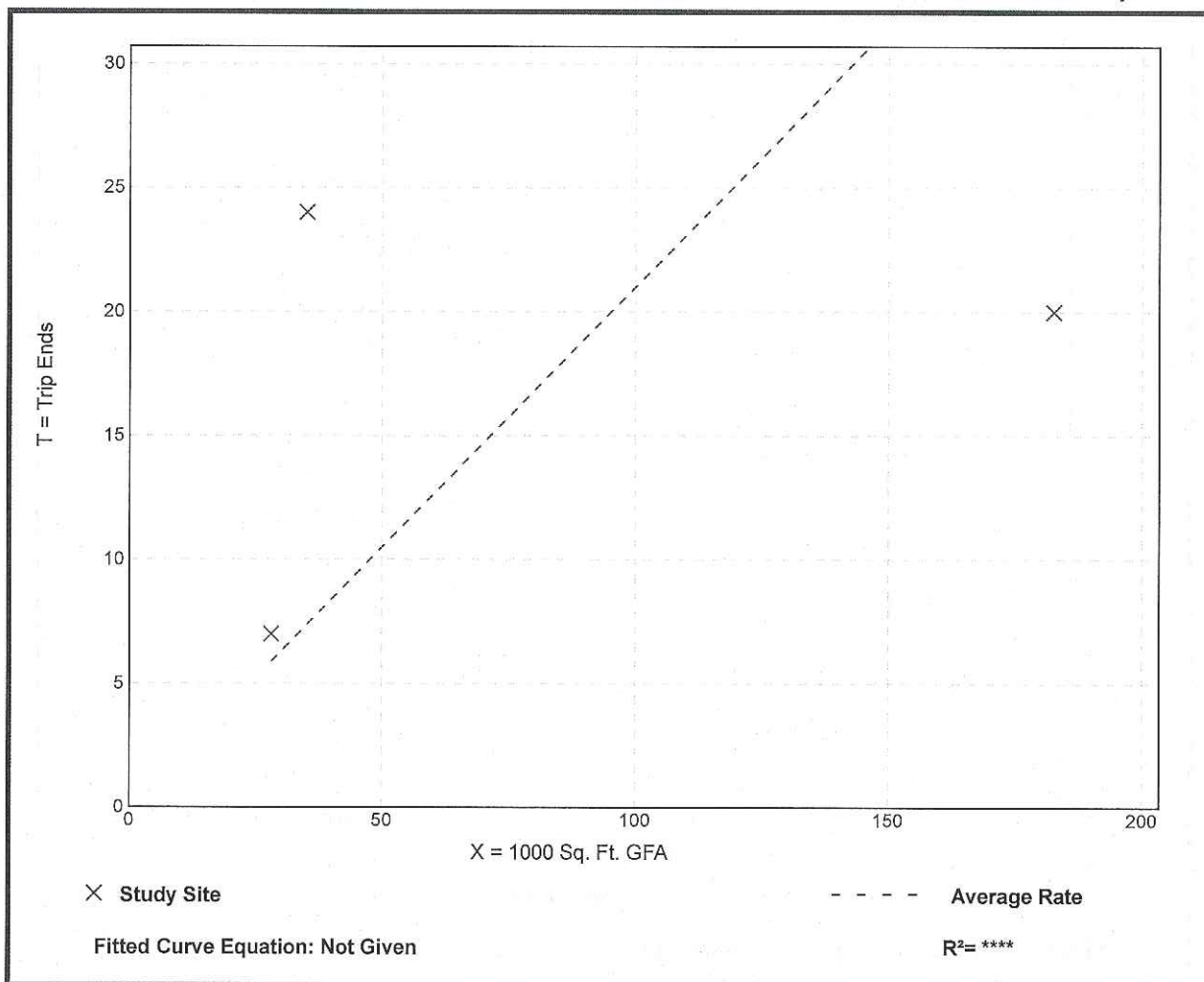
Setting/Location: General Urban/Suburban  
Number of Studies: 3  
1000 Sq. Ft. GFA: 82  
Directional Distribution: 58% entering, 42% exiting

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.21	0.11 - 0.68	0.52

### Data Plot and Equation

*Caution – Small Sample Size*





# General Office Building (710)

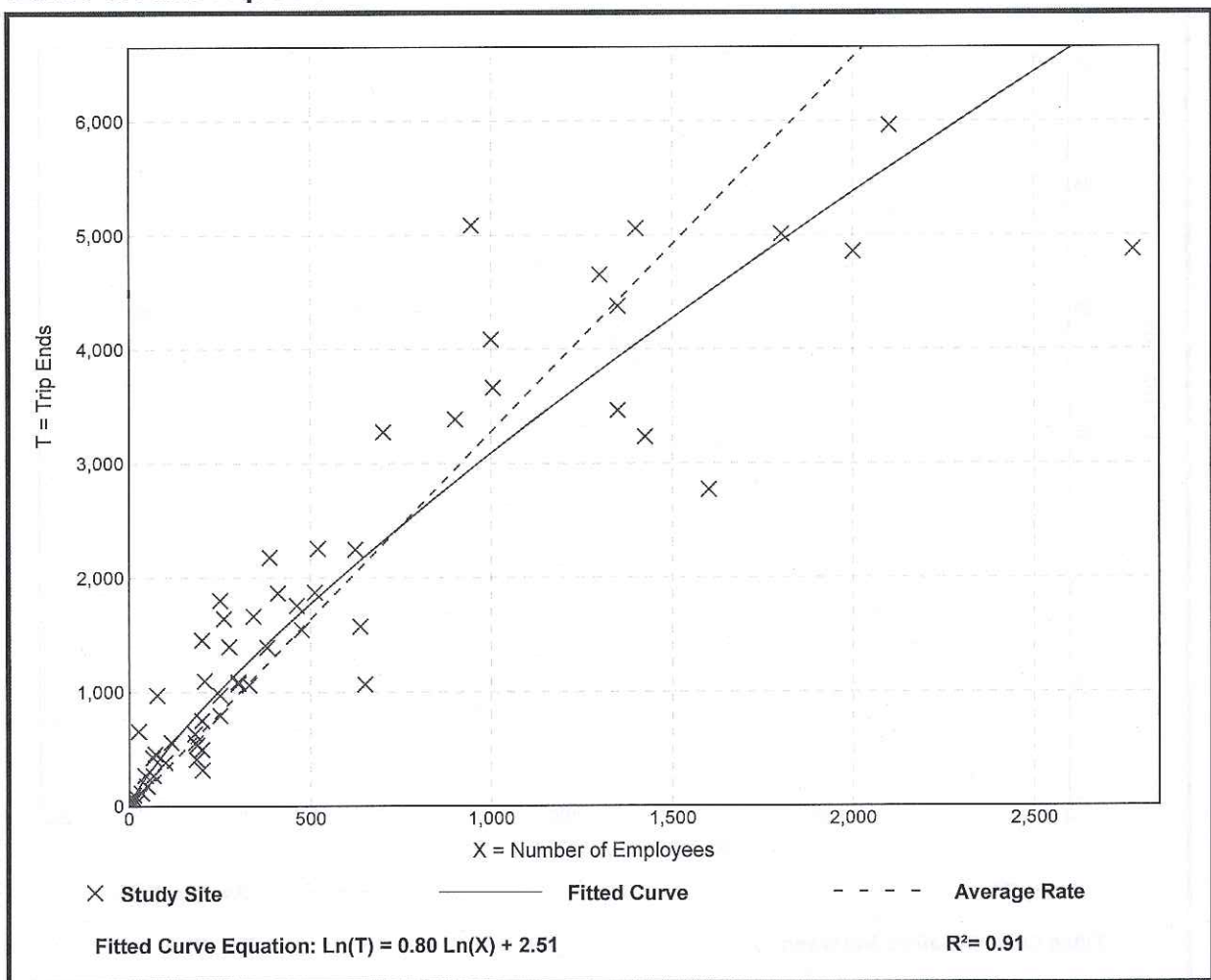
Vehicle Trip Ends vs: Employees  
On a: Weekday

Setting/Location: General Urban/Suburban  
Number of Studies: 60  
Avg. Num. of Employees: 528  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
3.28	1.59 - 26.24	1.44

## Data Plot and Equation





## General Office Building (710)

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: 19

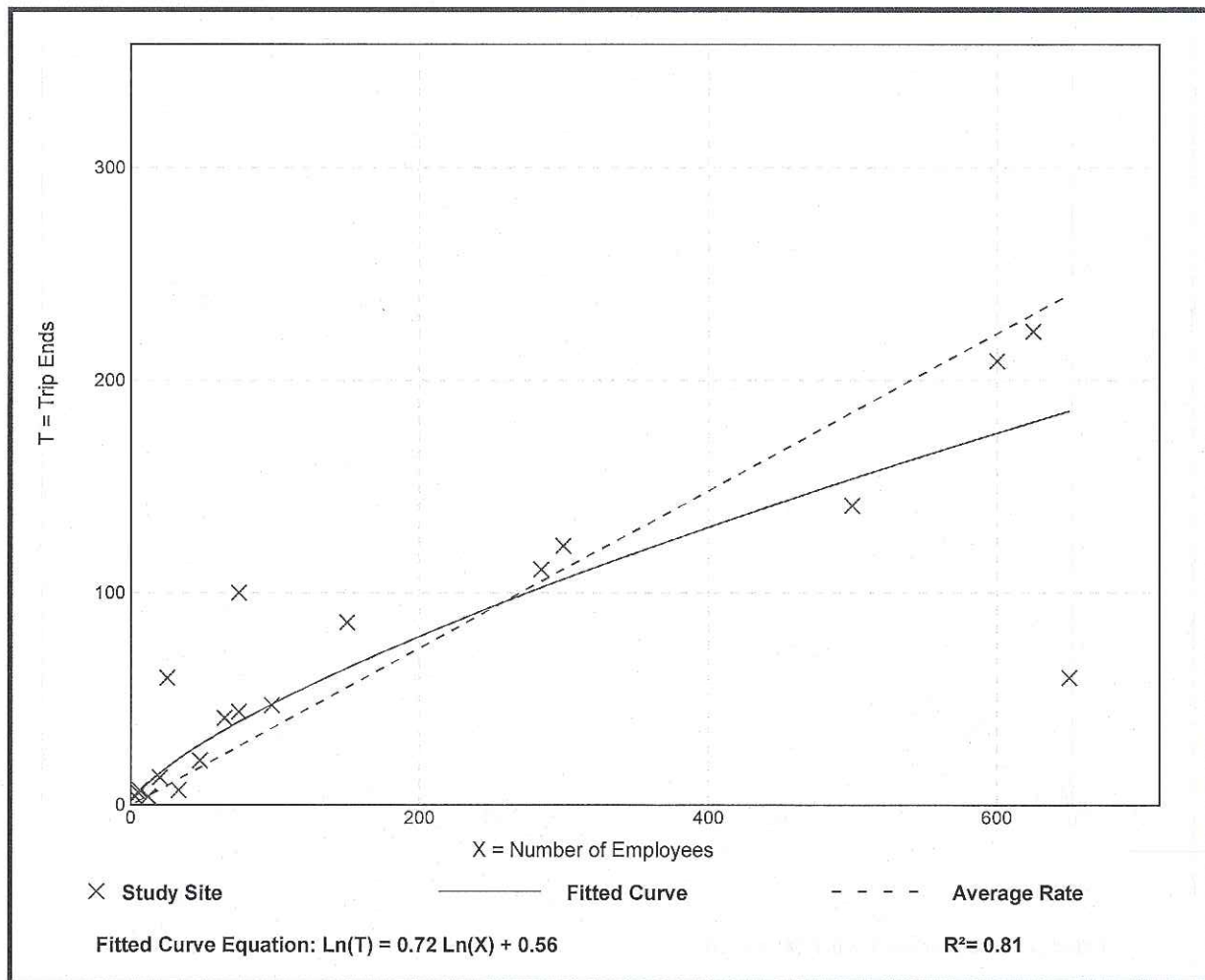
Avg. Num. of Employees: 188

Directional Distribution: 83% entering, 17% exiting

### Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.37	0.09 - 2.40	0.27

### Data Plot and Equation





## General Office Building (710)

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: 20

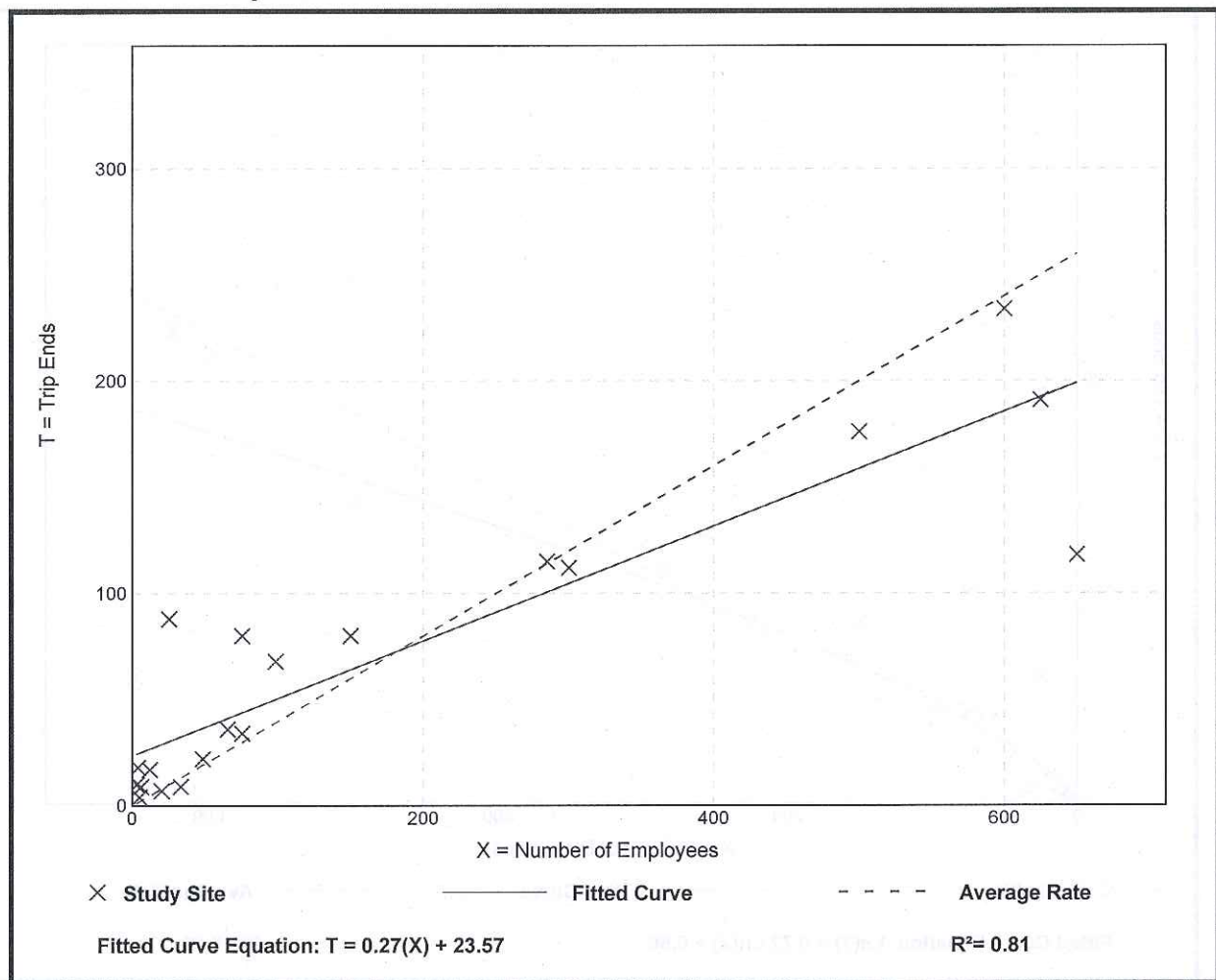
Avg. Num. of Employees: 179

Directional Distribution: 20% entering, 80% exiting

### Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.40	0.18 - 4.50	0.36

### Data Plot and Equation





## General Office Building (710)

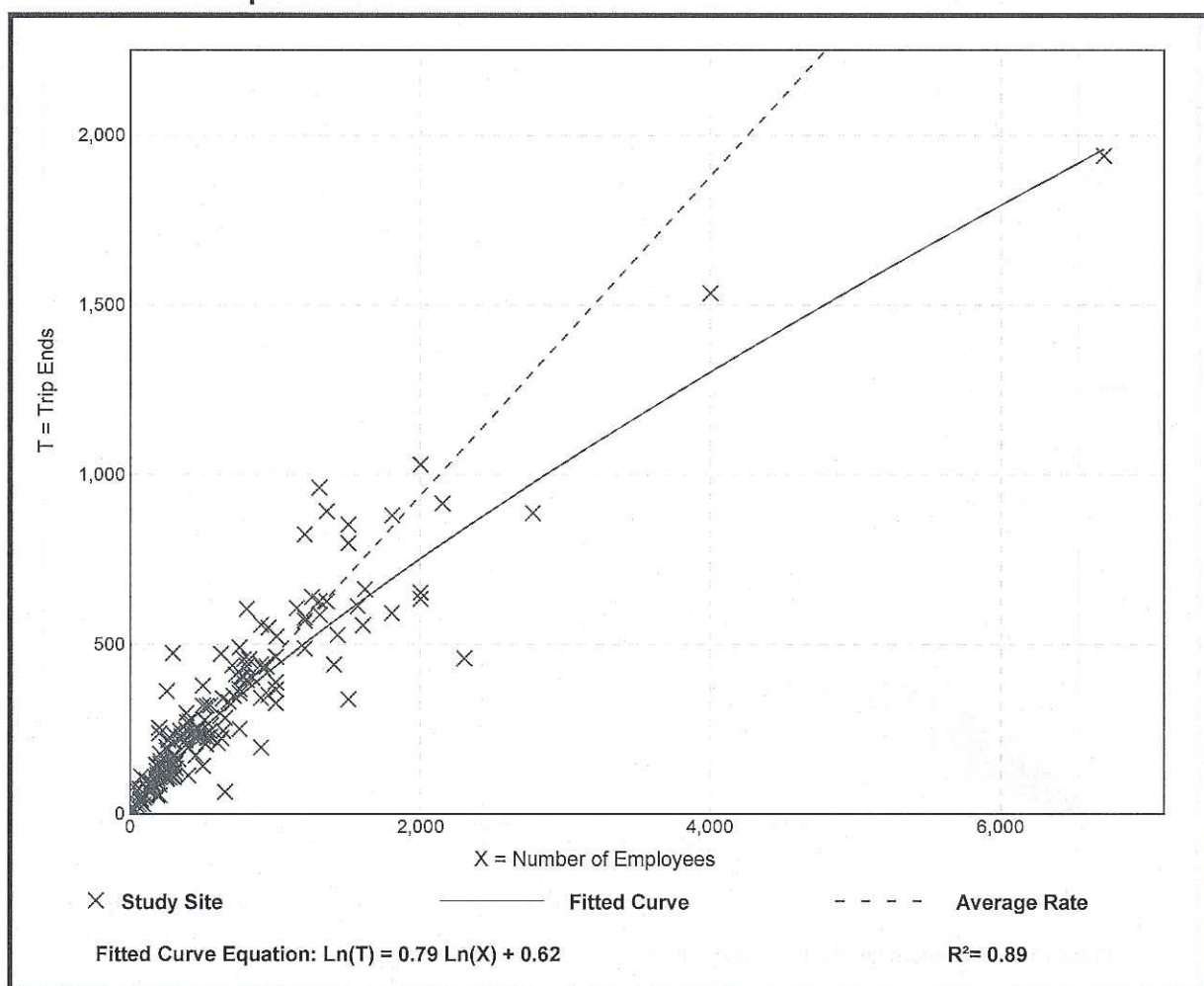
Vehicle Trip Ends vs: Employees  
On a: Weekday,  
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban  
Number of Studies: 165  
Avg. Num. of Employees: 656  
Directional Distribution: 88% entering, 12% exiting

### Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.47	0.10 - 3.20	0.17

### Data Plot and Equation





# General Office Building (710)

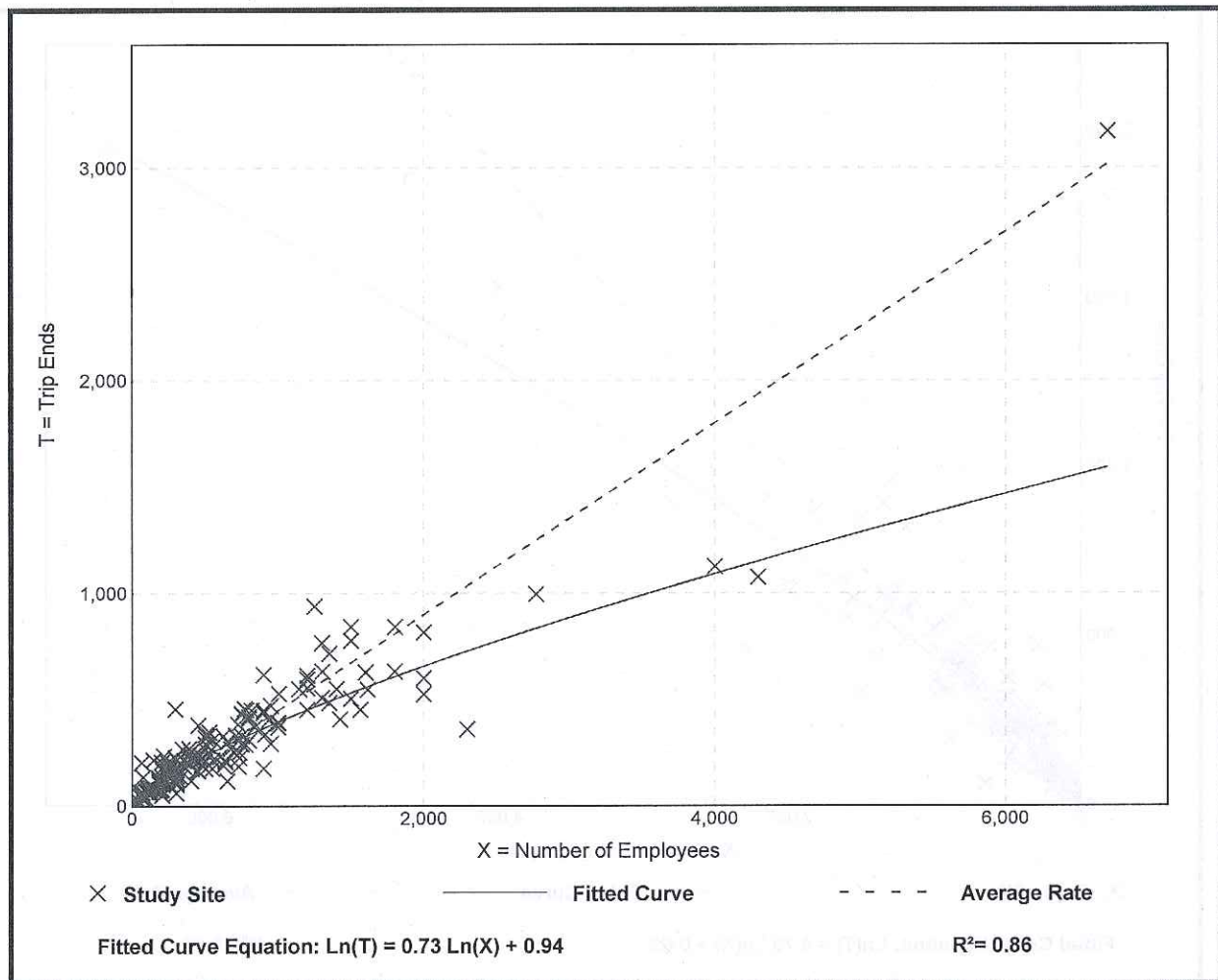
Vehicle Trip Ends vs: Employees  
On a: Weekday,  
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban  
Number of Studies: 175  
Avg. Num. of Employees: 651  
Directional Distribution: 17% entering, 83% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.45	0.16 - 8.00	0.19

## Data Plot and Equation





# General Office Building (710)

Vehicle Trip Ends vs: Employees  
On a: Saturday

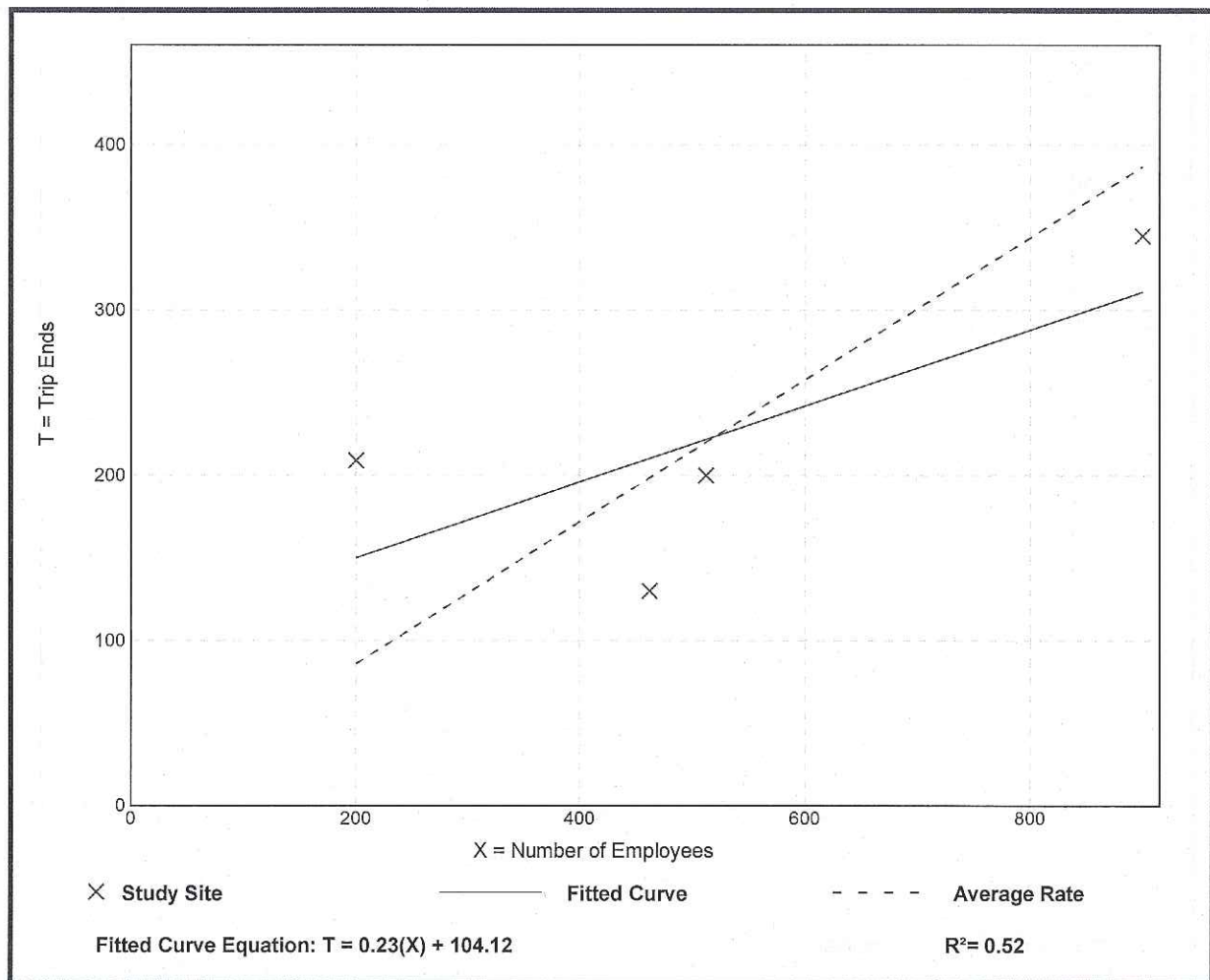
Setting/Location: General Urban/Suburban  
Number of Studies: 4  
Avg. Num. of Employees: 519  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.43	0.28 - 1.05	0.24

## Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Vehicle Trip Ends vs: Employees  
On a: Saturday, Peak Hour of Generator

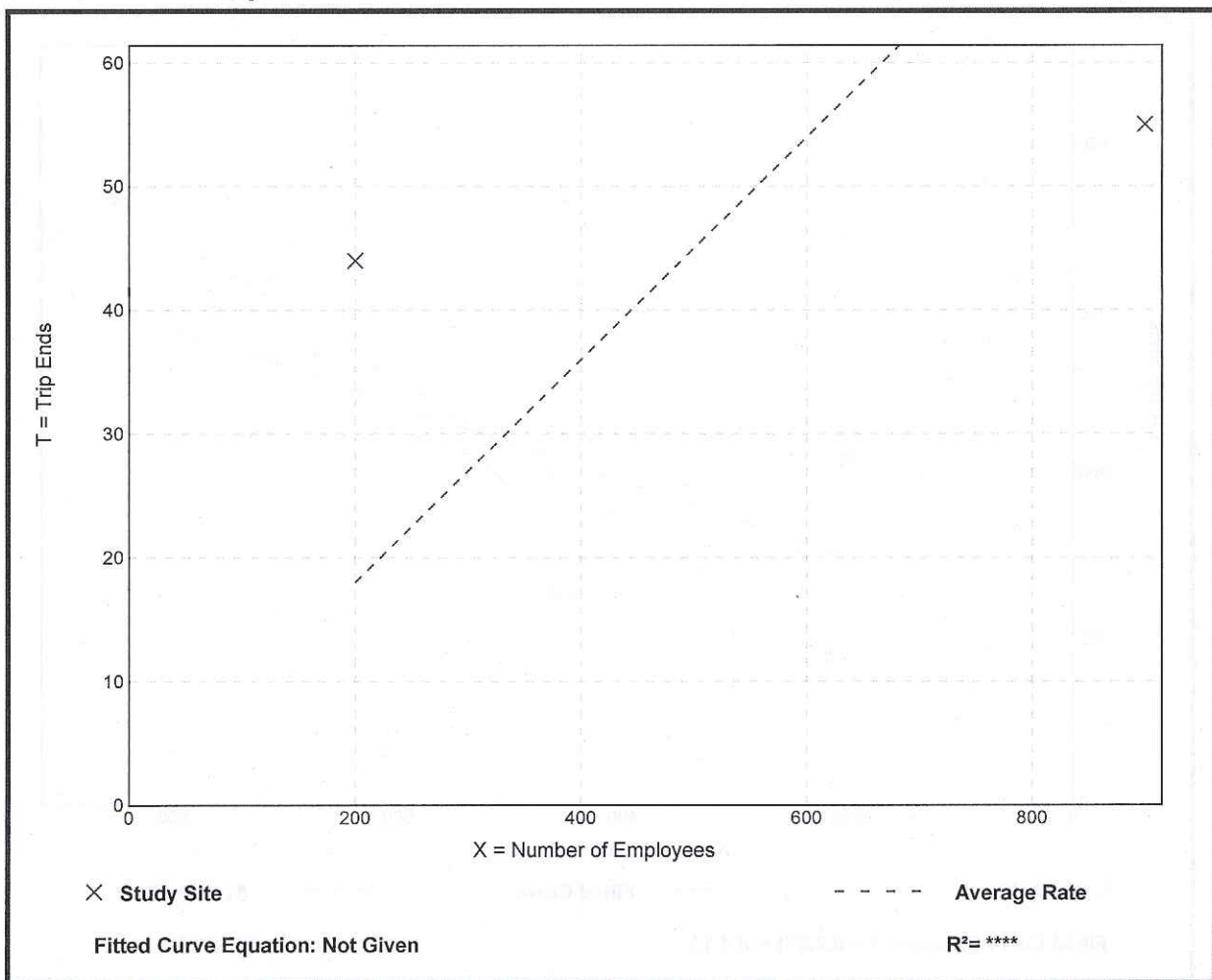
Setting/Location: General Urban/Suburban  
Number of Studies: 2  
Avg. Num. of Employees: 550  
Directional Distribution: 54% entering, 46% exiting

### Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.09	0.06 - 0.22	*

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

**Vehicle Trip Ends vs: Employees**  
**On a: Sunday**

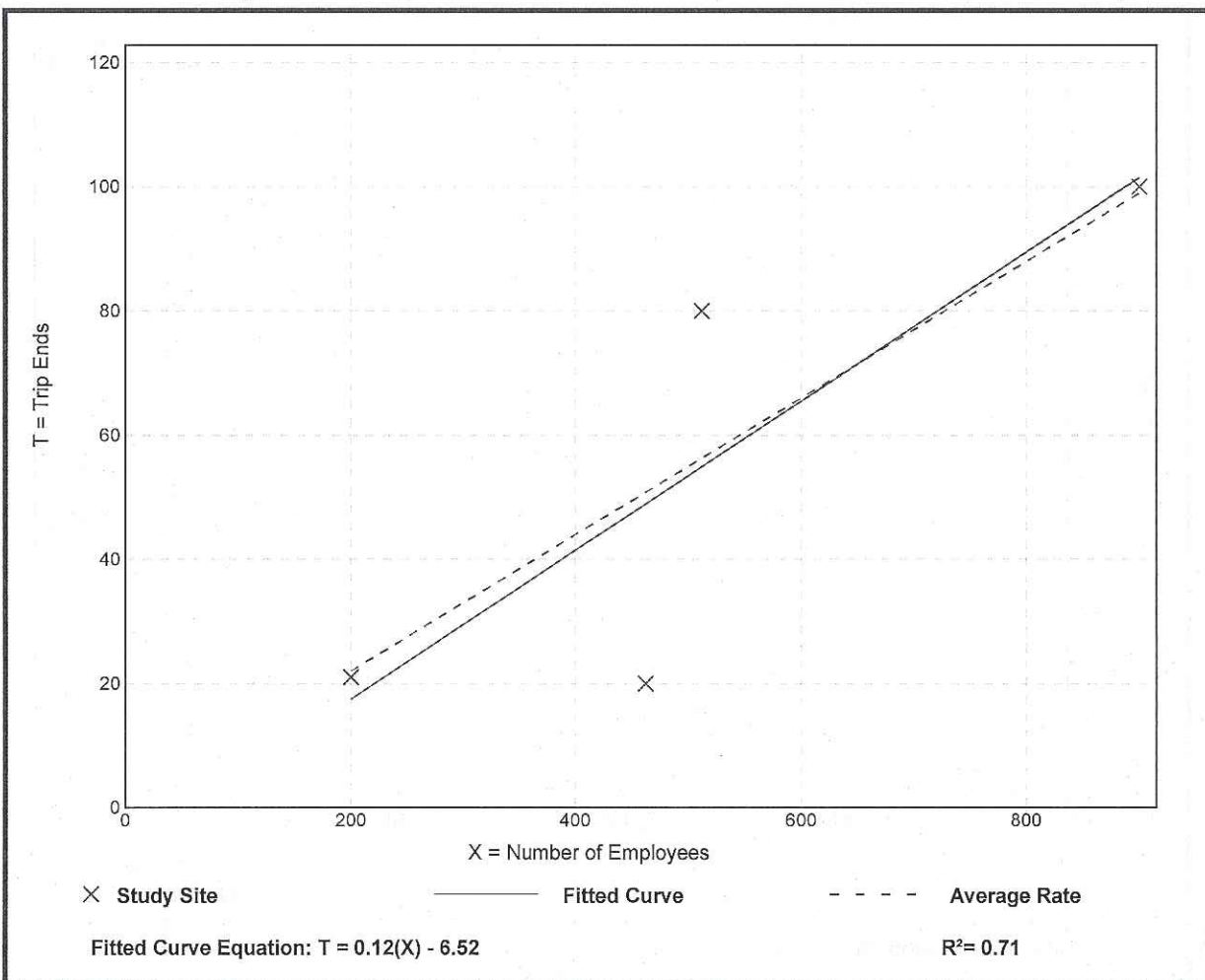
**Setting/Location: General Urban/Suburban**  
Number of Studies: 4  
Avg. Num. of Employees: 519  
Directional Distribution: 50% entering, 50% exiting

### Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.11	0.04 - 0.16	0.04

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Vehicle Trip Ends vs: Employees  
On a: Sunday, Peak Hour of Generator

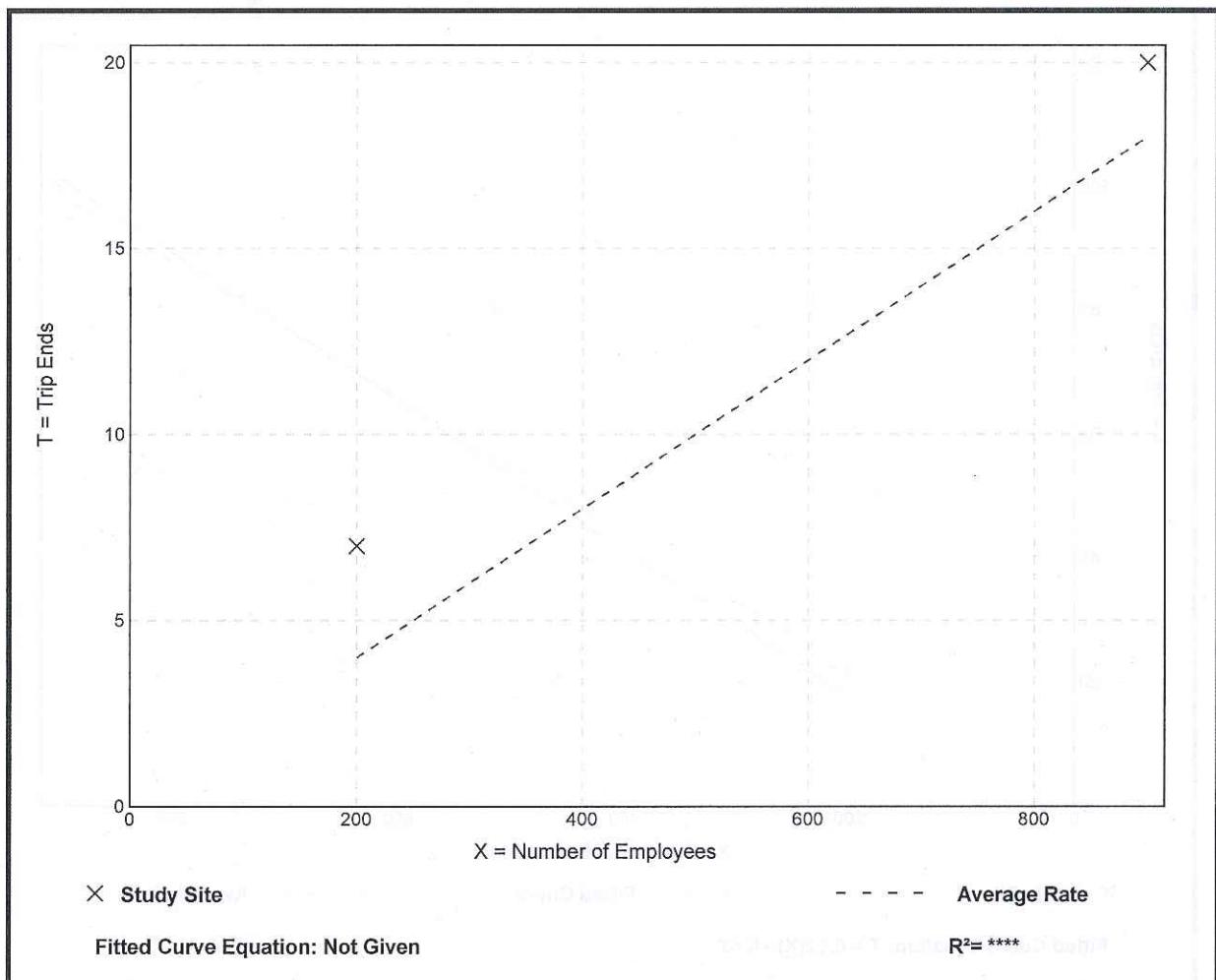
Setting/Location: General Urban/Suburban  
Number of Studies: 2  
Avg. Num. of Employees: 550  
Directional Distribution: 58% entering, 42% exiting

### Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.02	0.02 - 0.04	*

### Data Plot and Equation

*Caution – Small Sample Size*





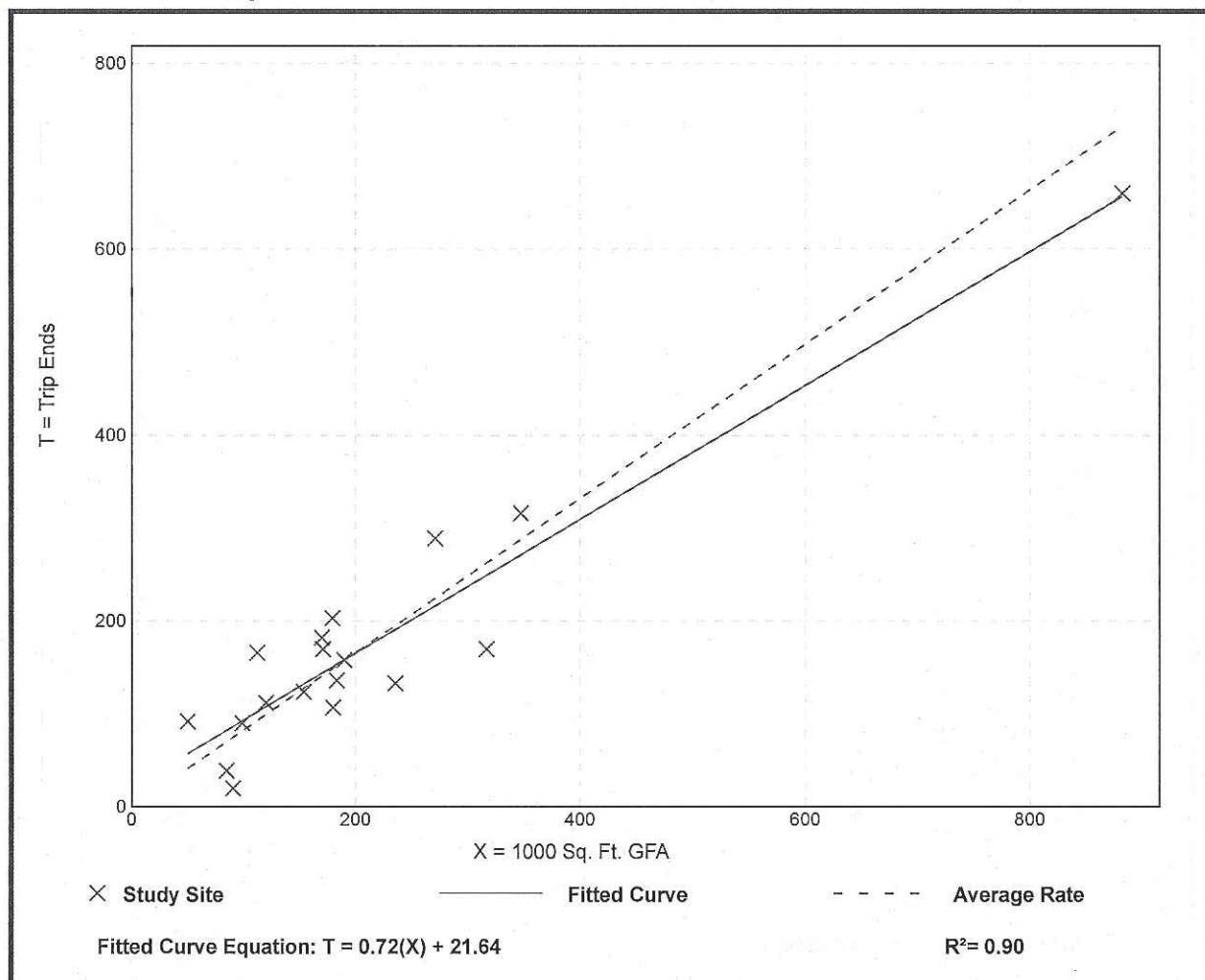
## General Office Building (710)

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: 18  
 1000 Sq. Ft. GFA: 213  
 Directional Distribution: 86% entering, 14% exiting

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.83	0.22 - 1.84	0.27

### Data Plot and Equation





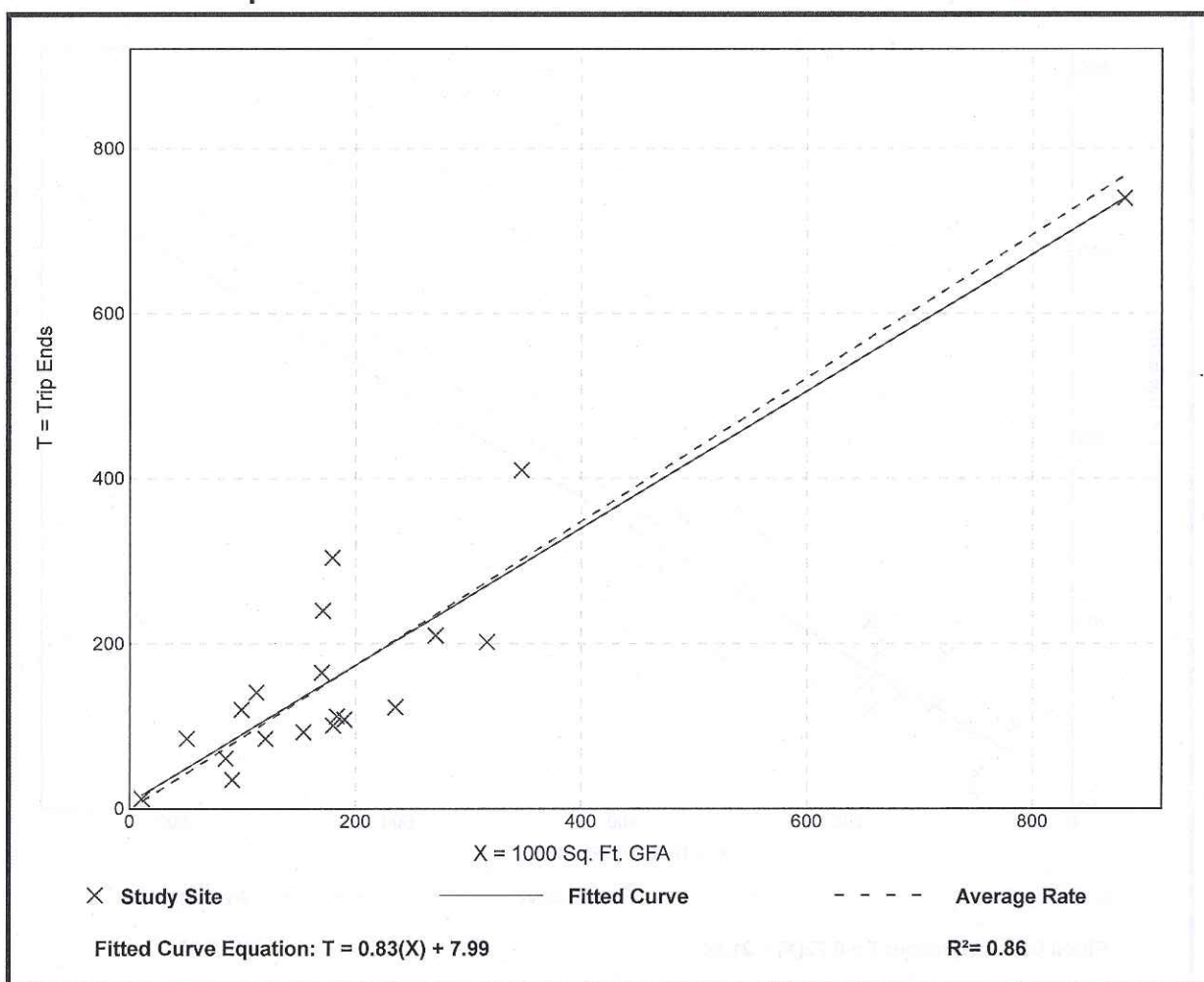
## General Office Building (710)

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: 19  
 1000 Sq. Ft. GFA: 202  
 Directional Distribution: 17% entering, 83% exiting

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.87	0.39 - 1.70	0.33

### Data Plot and Equation





# General Office Building (710)

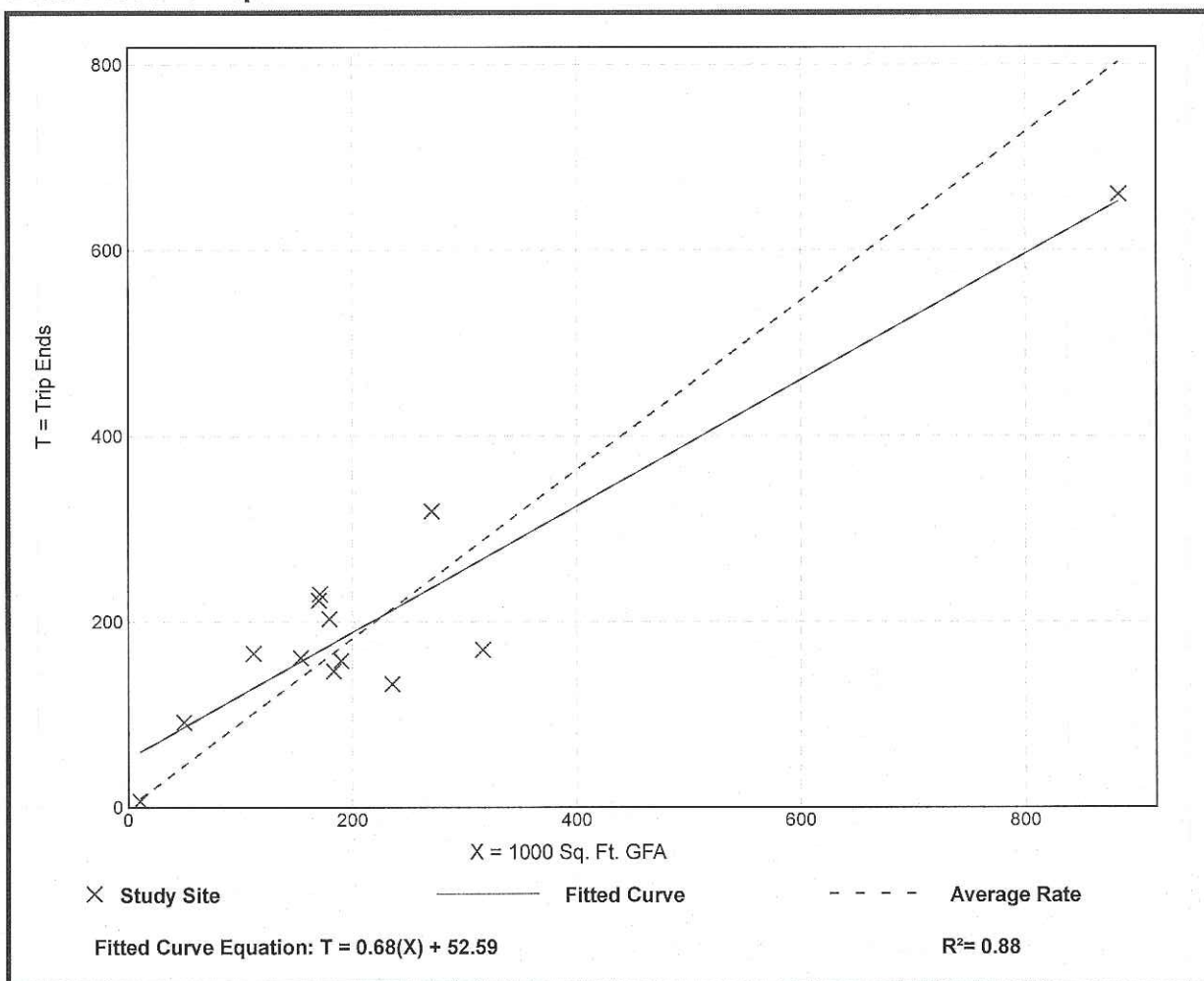
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday,  
AM Peak Hour of Generator

Setting/Location: Dense Multi-Use Urban  
Number of Studies: 13  
1000 Sq. Ft. GFA: 225  
Directional Distribution: 87% entering, 13% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.91	0.54 - 1.84	0.32

## Data Plot and Equation





## General Office Building (710)

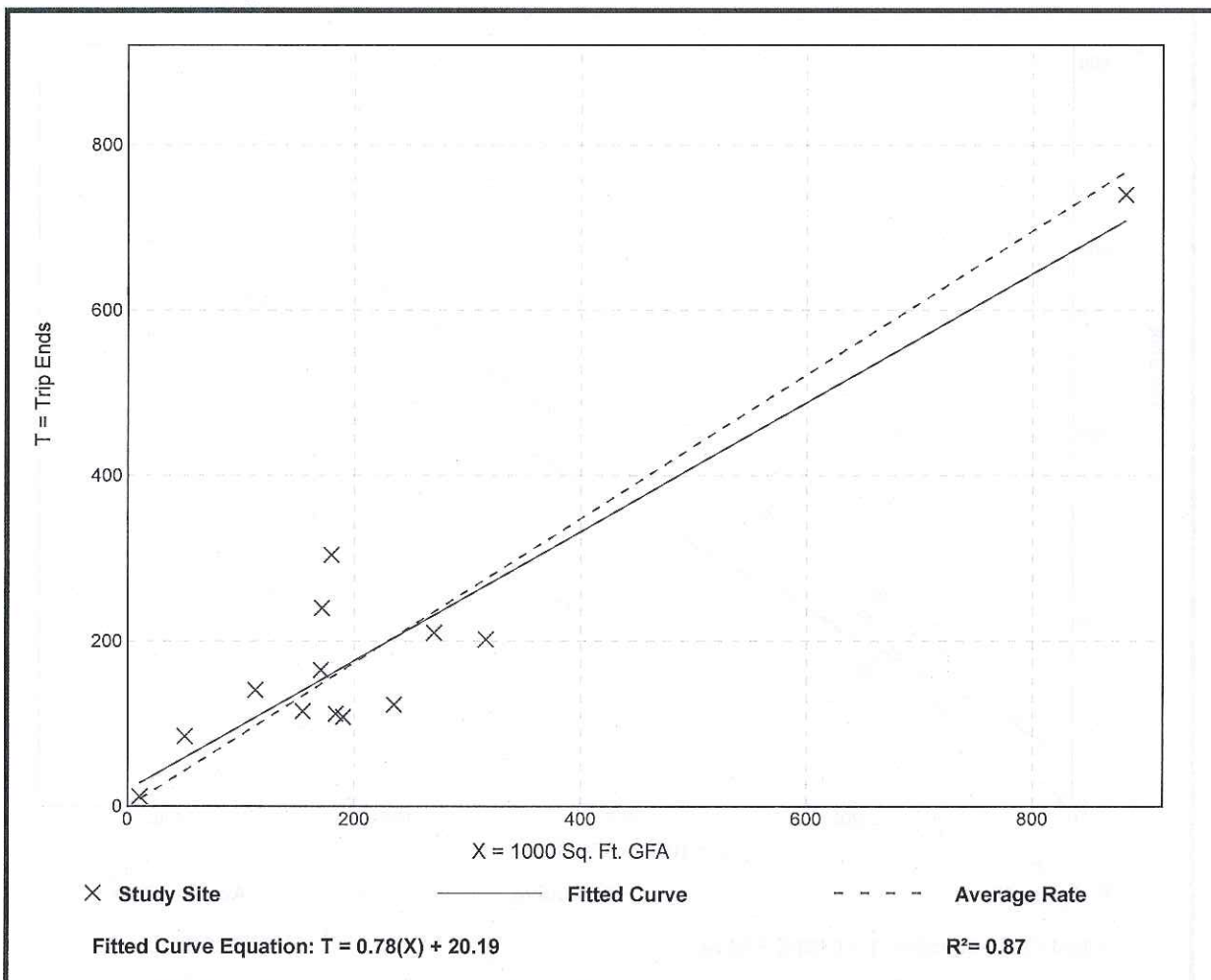
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday,  
PM Peak Hour of Generator

Setting/Location: Dense Multi-Use Urban  
Number of Studies: 13  
1000 Sq. Ft. GFA: 225  
Directional Distribution: 19% entering, 81% exiting

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.87	0.52 - 1.70	0.34

### Data Plot and Equation





## General Office Building (710)

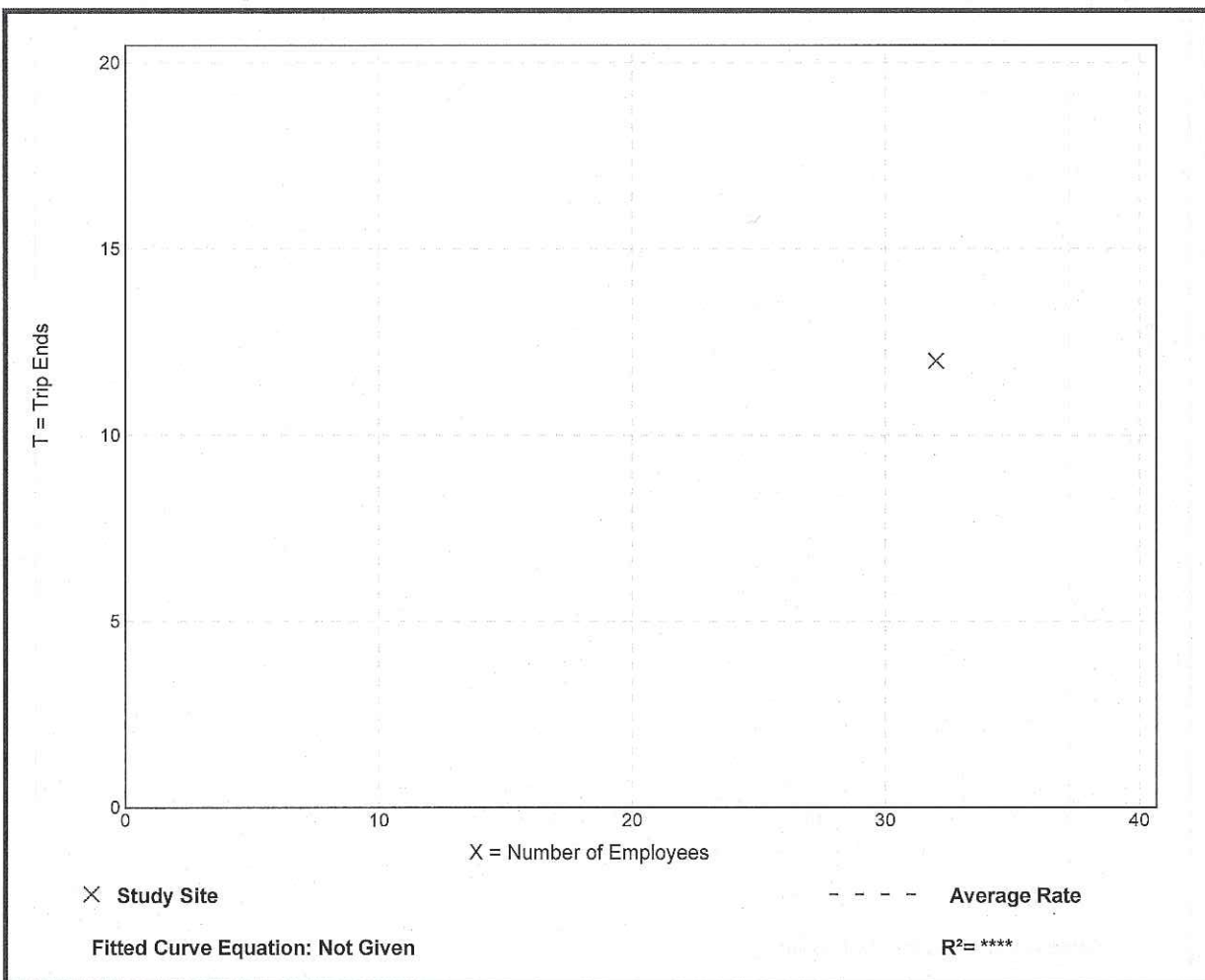
**Vehicle Trip Ends vs:** Employees  
**On a:** Weekday,  
 Peak Hour of Adjacent Street Traffic,  
 One Hour Between 4 and 6 p.m.  
**Setting/Location:** Dense Multi-Use Urban  
**Number of Studies:** 1  
**Avg. Num. of Employees:** 32  
**Directional Distribution:** 25% entering, 75% exiting

### Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.38	0.38 - 0.38	*

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Vehicle Trip Ends vs: Employees  
On a: Weekday,  
AM Peak Hour of Generator

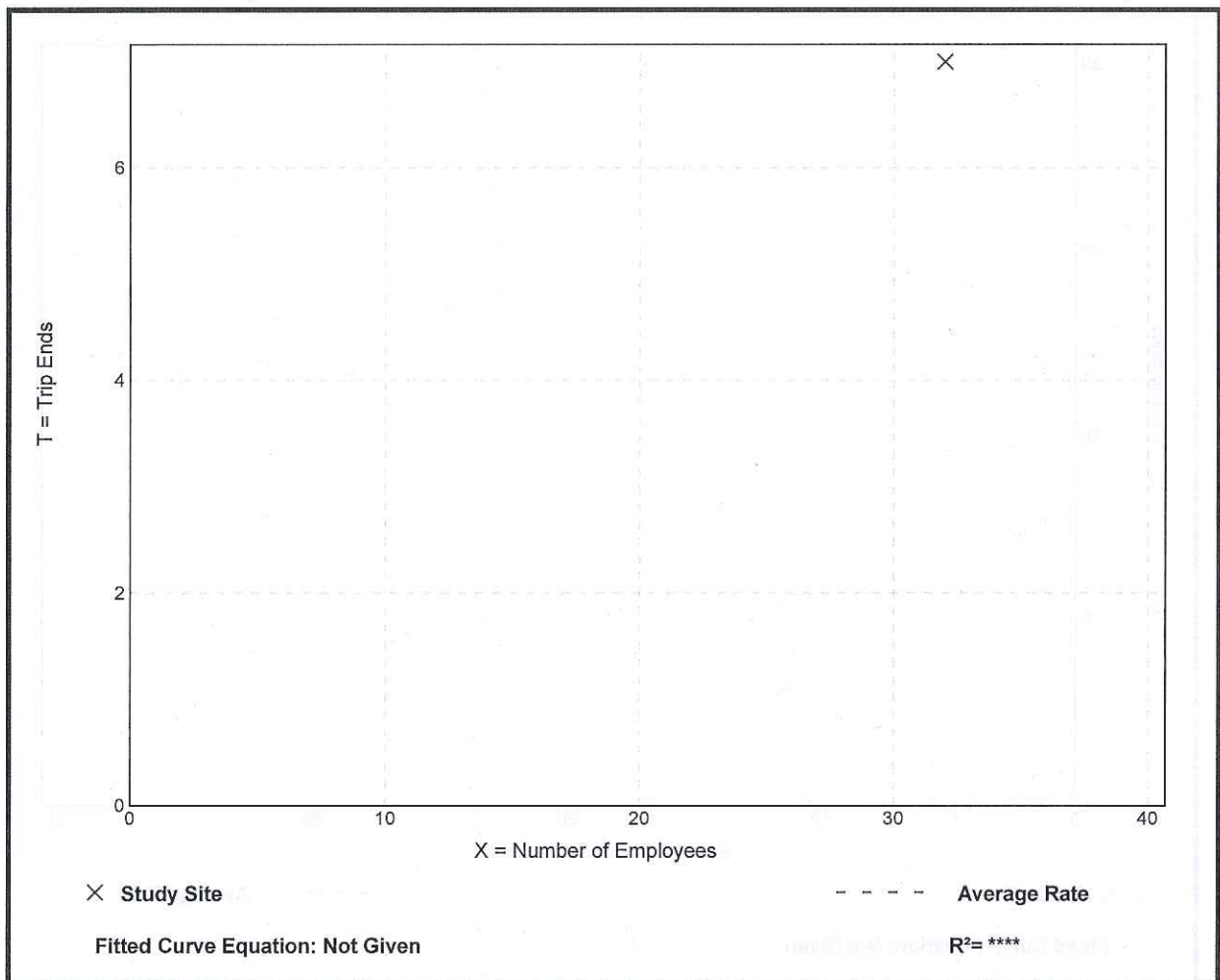
Setting/Location: Dense Multi-Use Urban  
Number of Studies: 1  
Avg. Num. of Employees: 32  
Directional Distribution: 86% entering, 14% exiting

### Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.22	0.22 - 0.22	*

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Vehicle Trip Ends vs: Employees  
On a: Weekday,  
PM Peak Hour of Generator

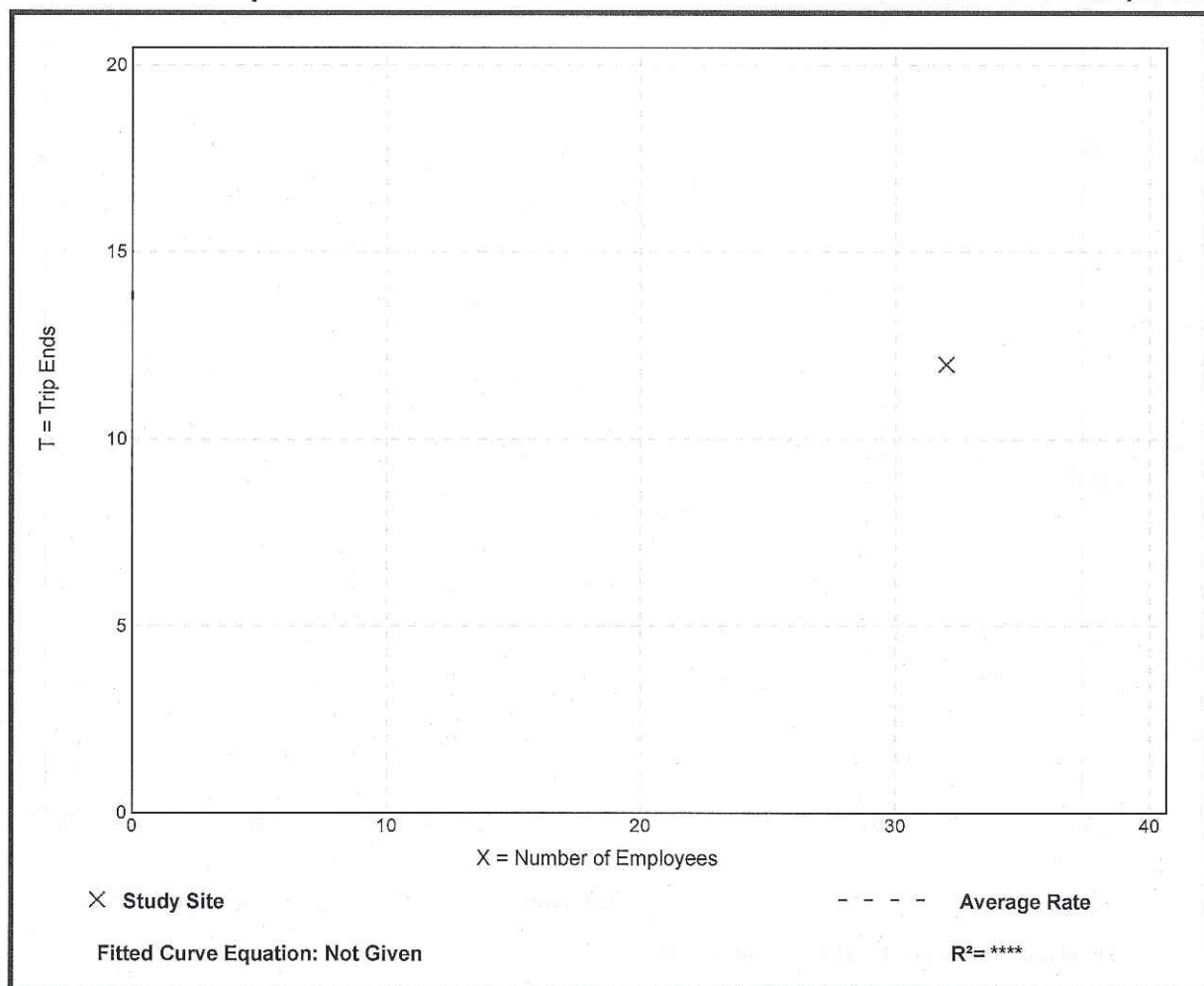
Setting/Location: Dense Multi-Use Urban  
Number of Studies: 1  
Avg. Num. of Employees: 32  
Directional Distribution: 25% entering, 75% exiting

### Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.38	0.38 - 0.38	*

### Data Plot and Equation

*Caution – Small Sample Size*





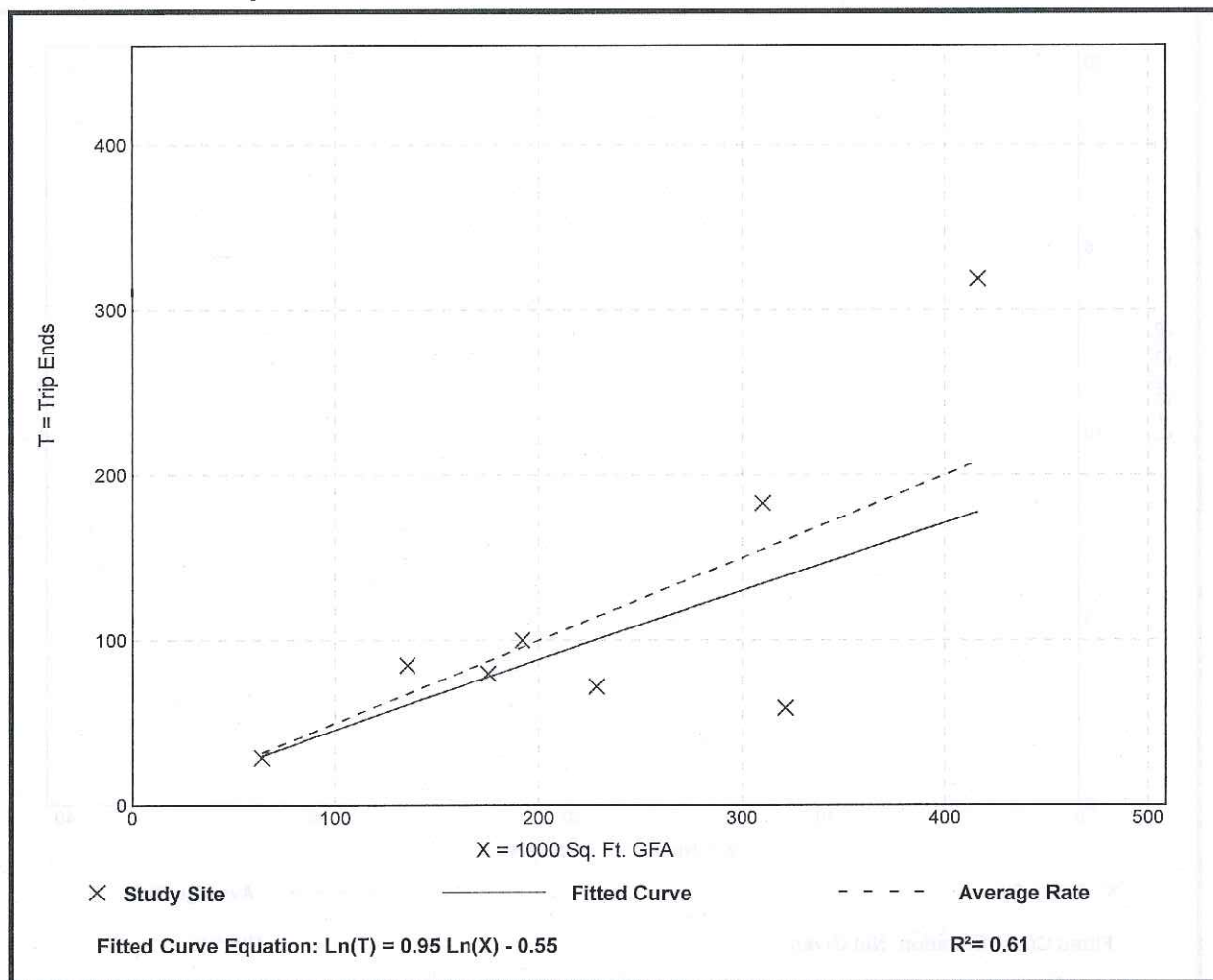
## General Office Building (710)

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: Center City Core  
 Number of Studies: 8  
 1000 Sq. Ft. GFA: 230  
 Directional Distribution: Not Available

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.50	0.18 - 0.77	0.22

### Data Plot and Equation





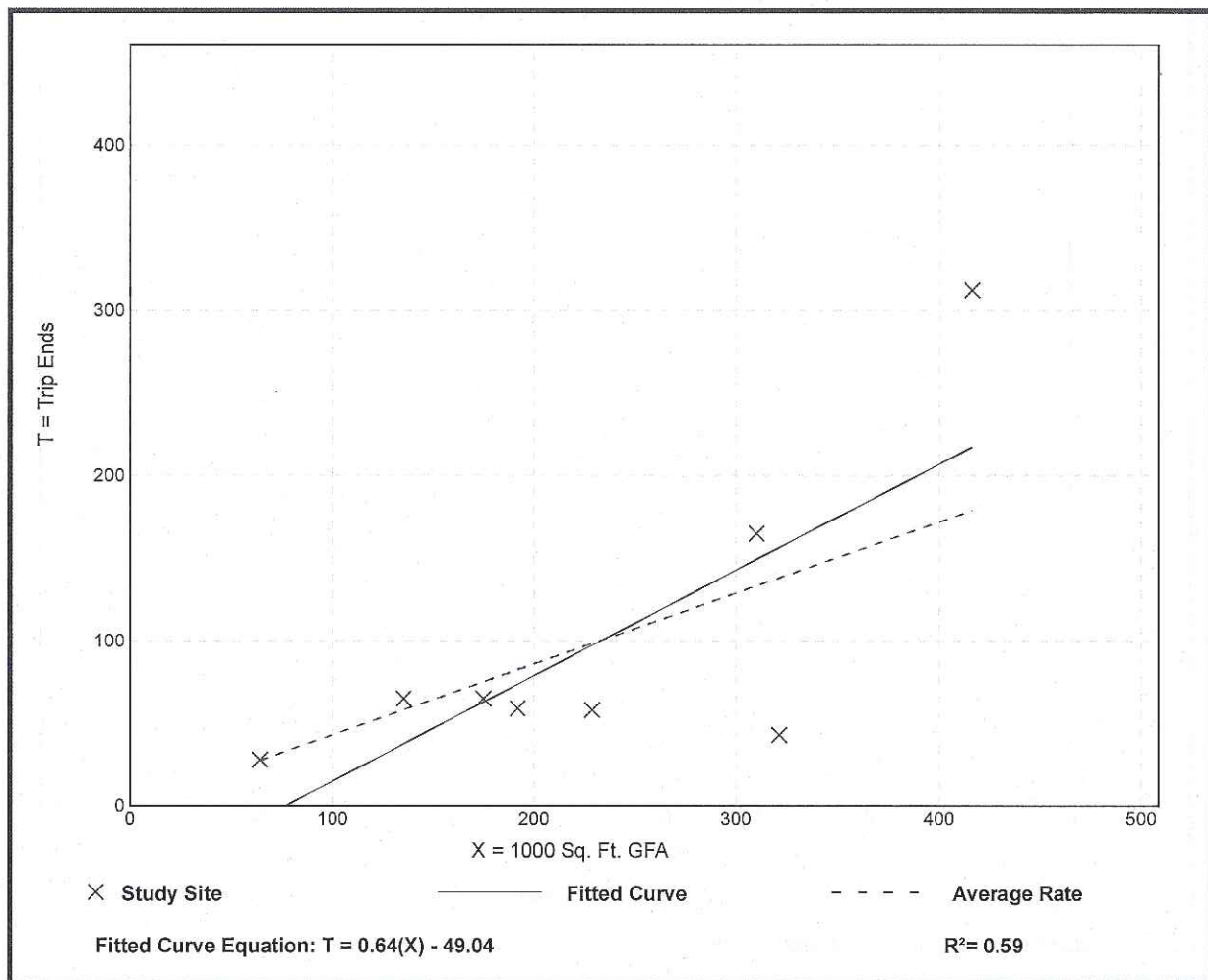
## General Office Building (710)

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: Center City Core  
 Number of Studies: 8  
 1000 Sq. Ft. GFA: 230  
 Directional Distribution: Not Available

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.43	0.13 - 0.75	0.23

### Data Plot and Equation





## General Office Building (710)

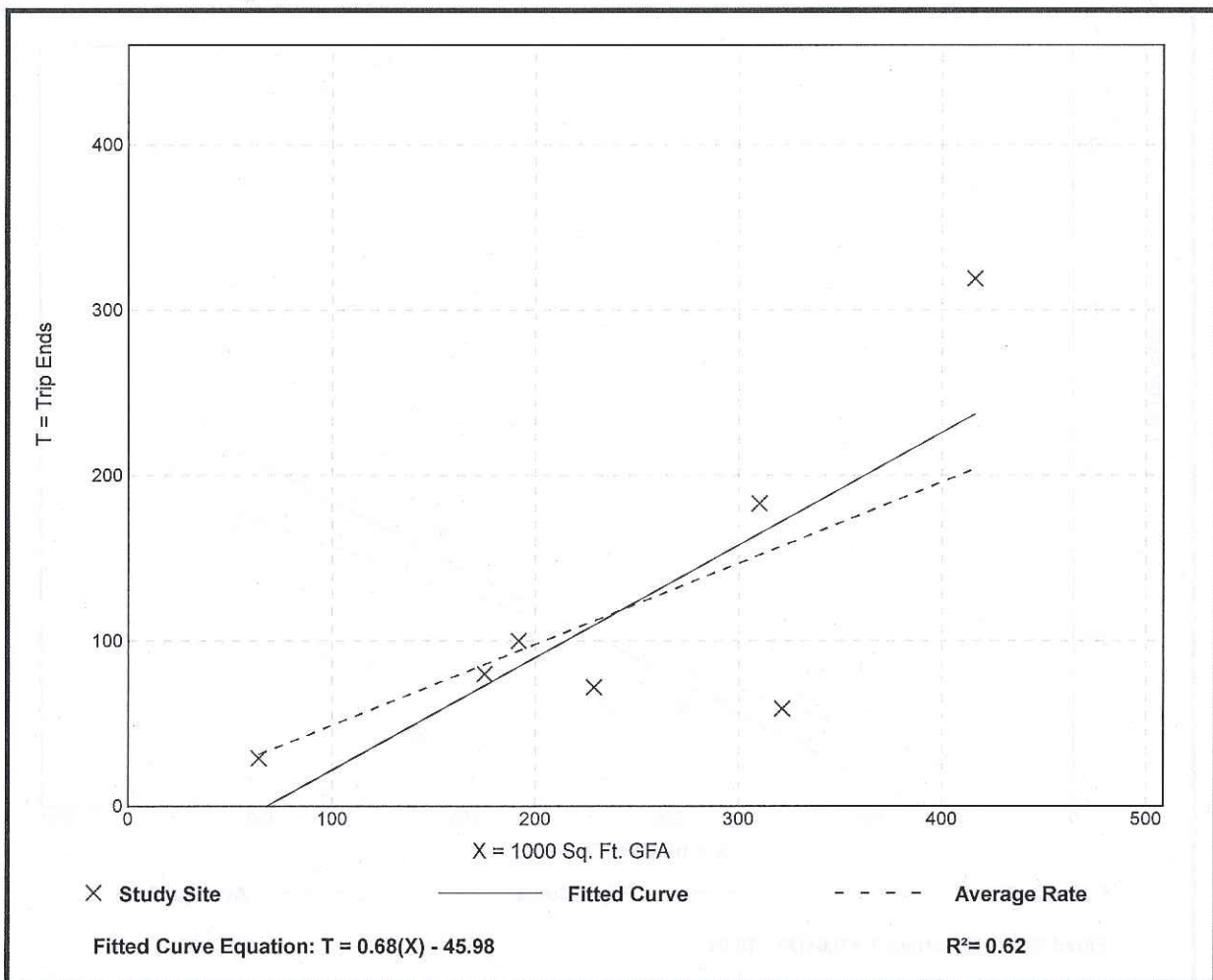
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday,  
AM Peak Hour of Generator

Setting/Location: Center City Core  
Number of Studies: 7  
1000 Sq. Ft. GFA: 244  
Directional Distribution: Not Available

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.49	0.18 - 0.77	0.22

### Data Plot and Equation





## General Office Building (710)

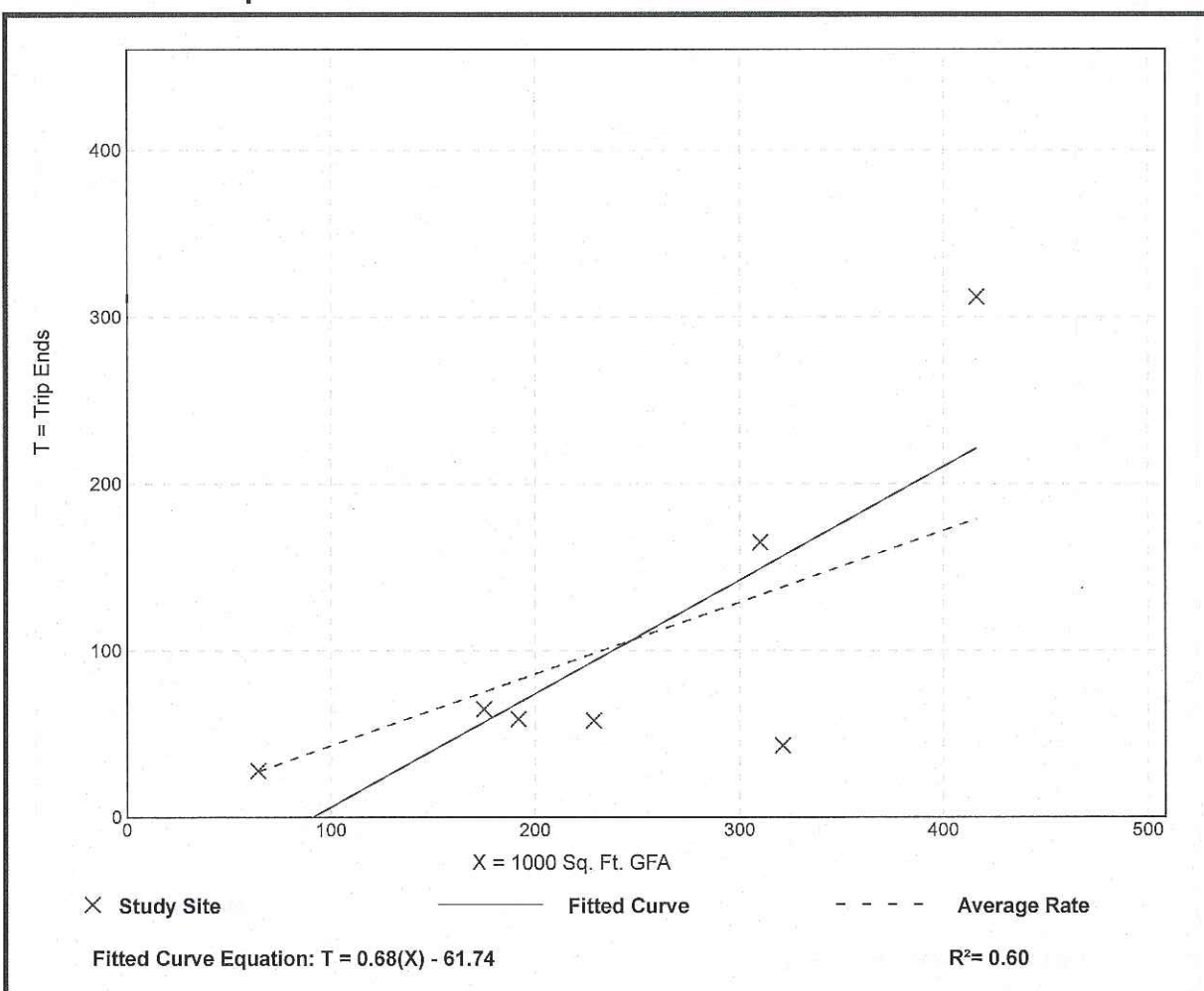
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday,  
PM Peak Hour of Generator

Setting/Location: Center City Core  
Number of Studies: 7  
1000 Sq. Ft. GFA: 244  
Directional Distribution: Not Available

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.43	0.13 - 0.75	0.24

### Data Plot and Equation





## General Office Building (710)

Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday

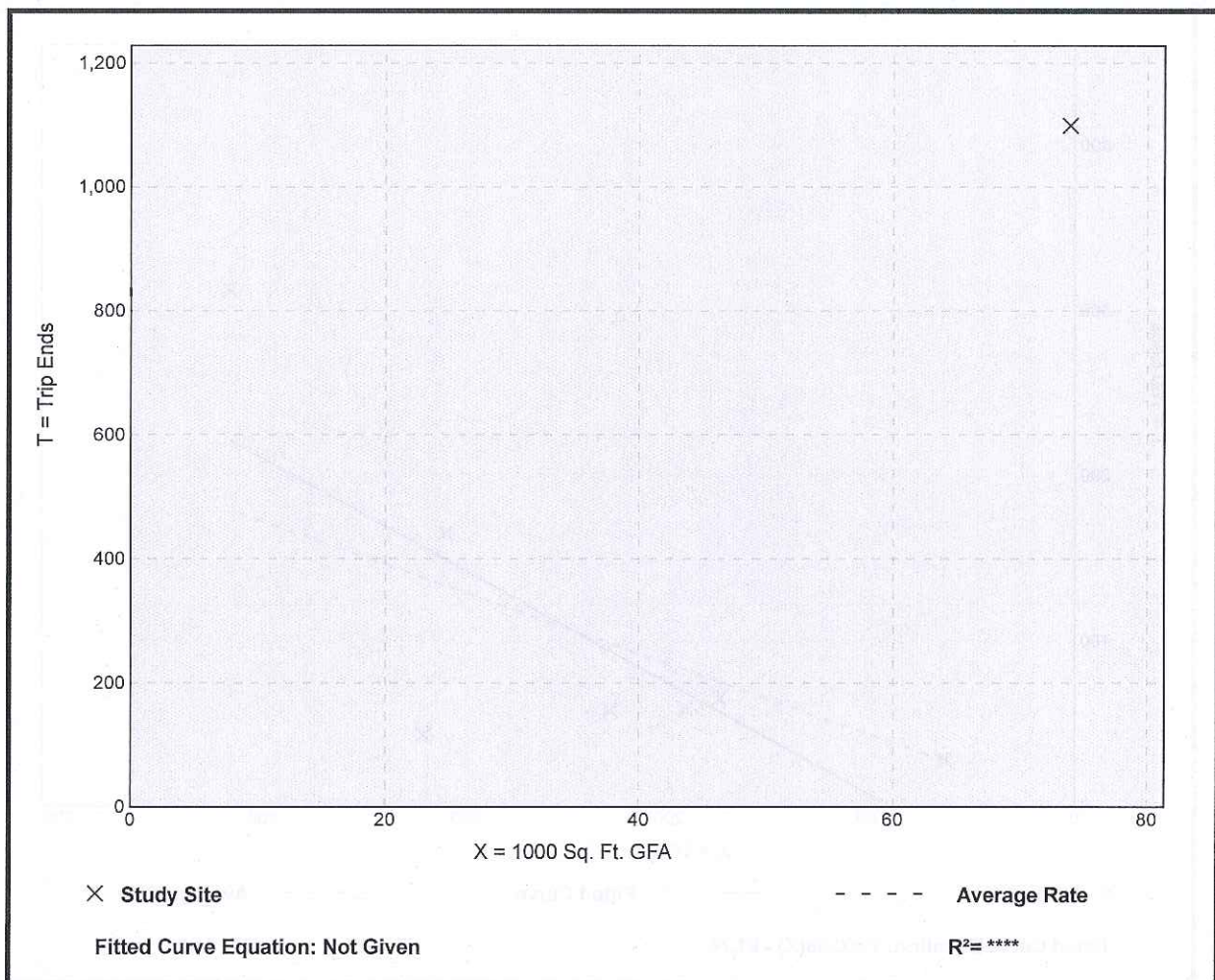
Setting/Location: General Urban/Suburban  
Number of Studies: 1  
1000 Sq. Ft. GFA: 74  
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
14.87	14.87 - 14.87	*

### Data Plot and Equation

*Caution – Small Sample Size*





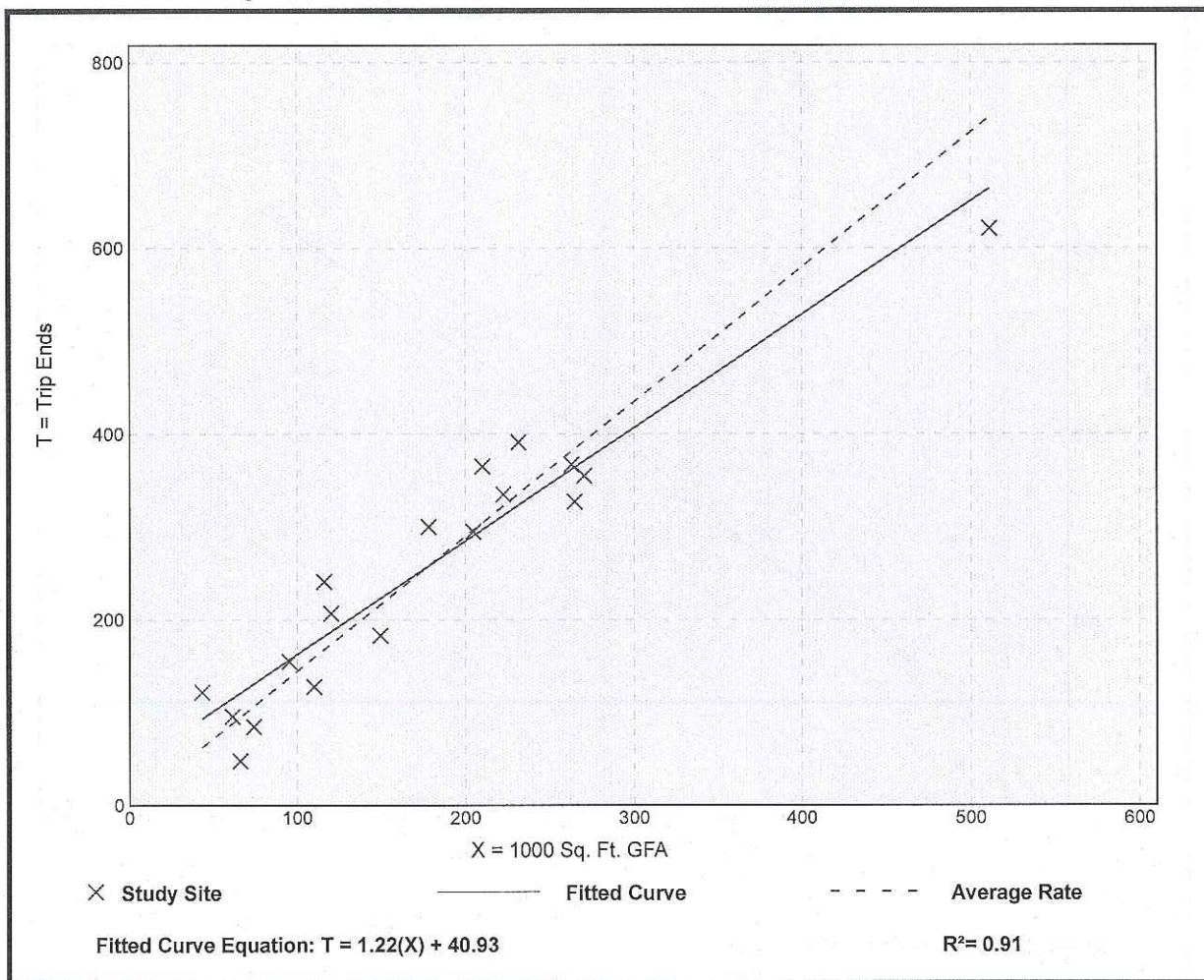
## General Office Building (710)

Person 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: 18  
 1000 Sq. Ft. GFA: 177  
 Directional Distribution: 87% entering, 13% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.45	0.73 - 2.82	0.31

### Data Plot and Equation





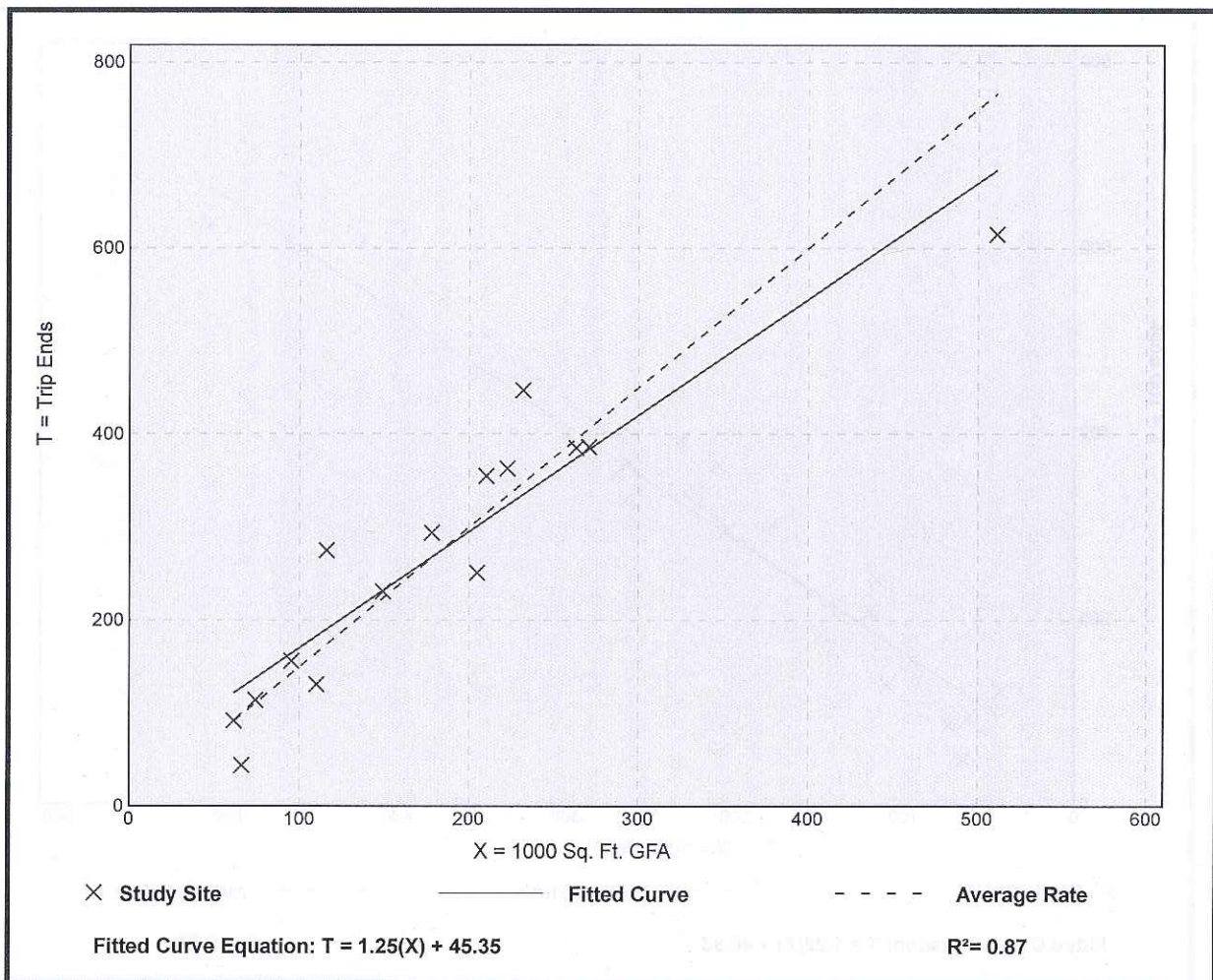
## General Office Building (710)

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: 15  
 1000 Sq. Ft. GFA: 184  
 Directional Distribution: 15% entering, 85% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.50	0.67 - 2.37	0.32

### Data Plot and Equation





## General Office Building (710)

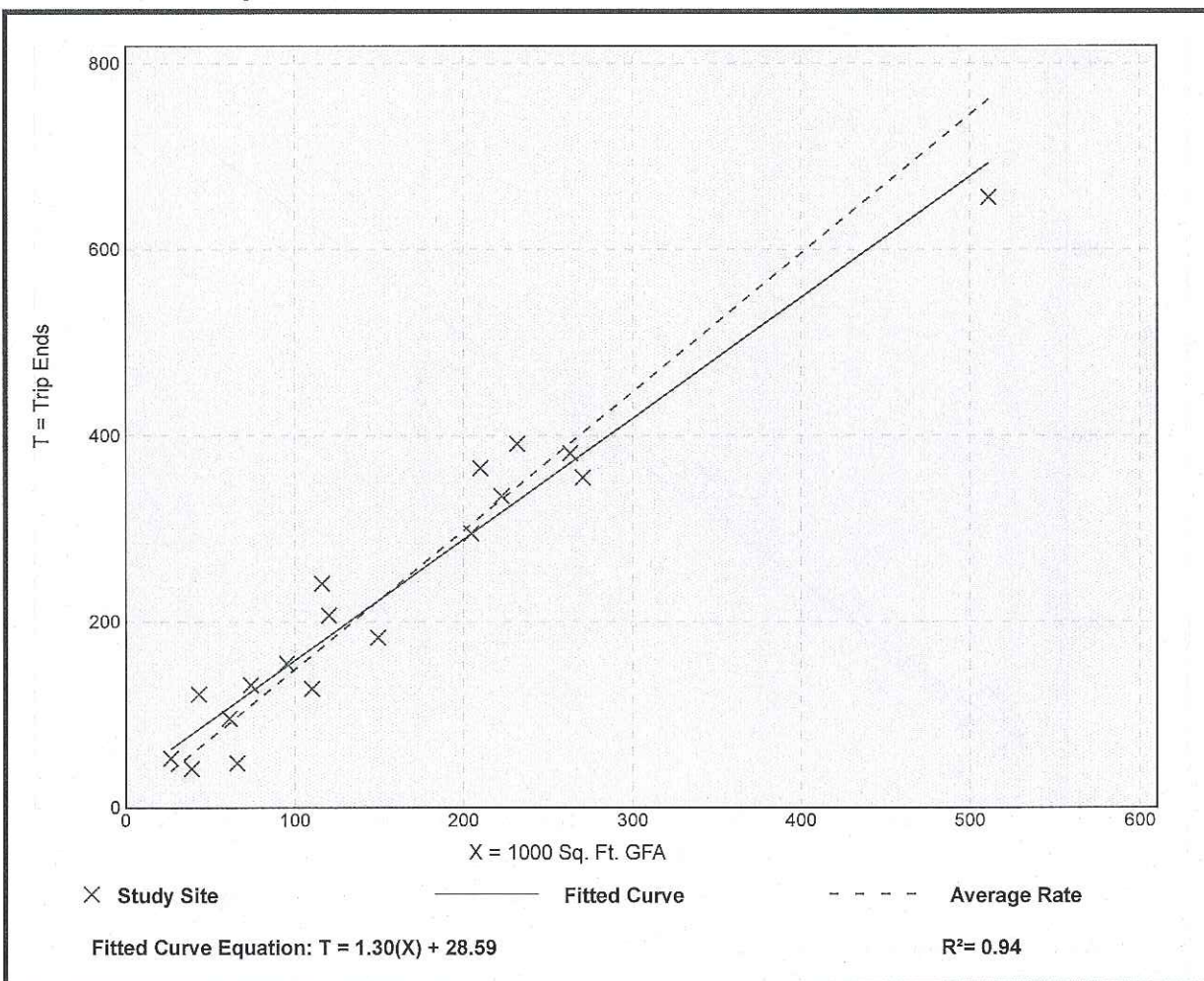
Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday,  
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban  
Number of Studies: 18  
1000 Sq. Ft. GFA: 156  
Directional Distribution: 85% entering, 15% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.49	0.73 - 2.82	0.31

### Data Plot and Equation





## General Office Building (710)

Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday,  
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 18

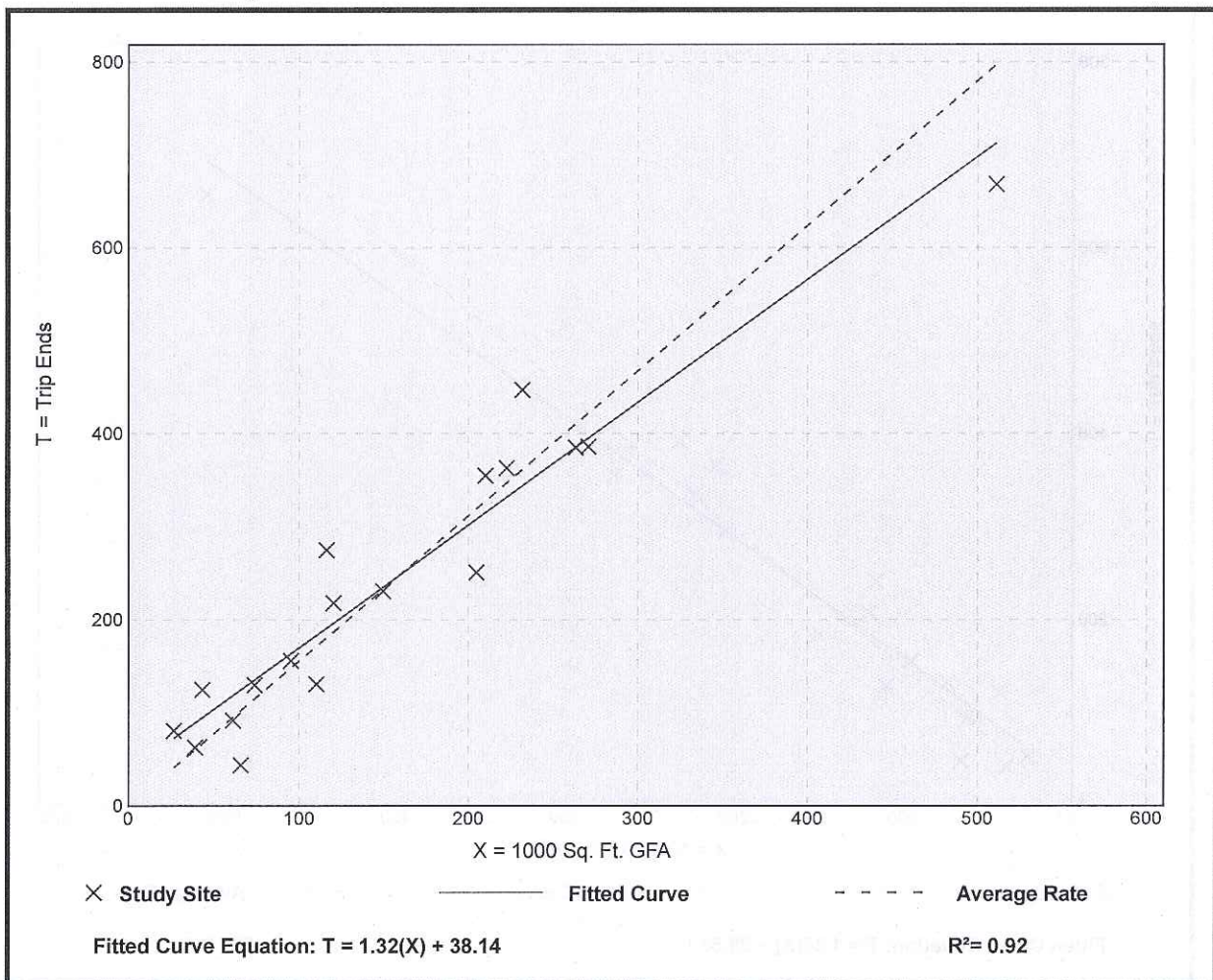
1000 Sq. Ft. GFA: 156

Directional Distribution: 20% entering, 80% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.56	0.67 - 3.06	0.38

### Data Plot and Equation





# General Office Building (710)

Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Saturday

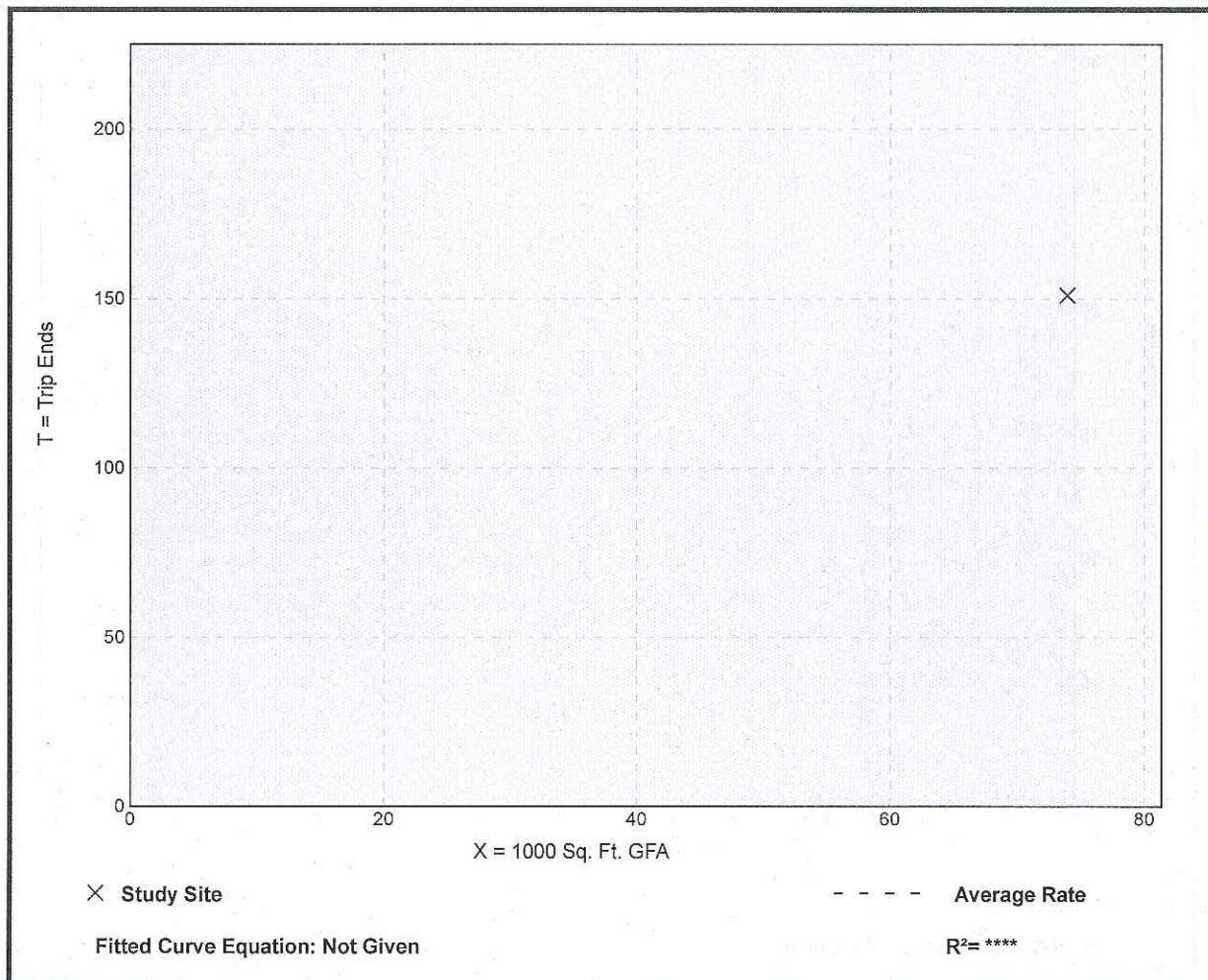
Setting/Location: General Urban/Suburban  
Number of Studies: 1  
1000 Sq. Ft. GFA: 74  
Directional Distribution: 50% entering, 50% exiting

## Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.04	2.04 - 2.04	*

## Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Saturday, Peak Hour of Generator

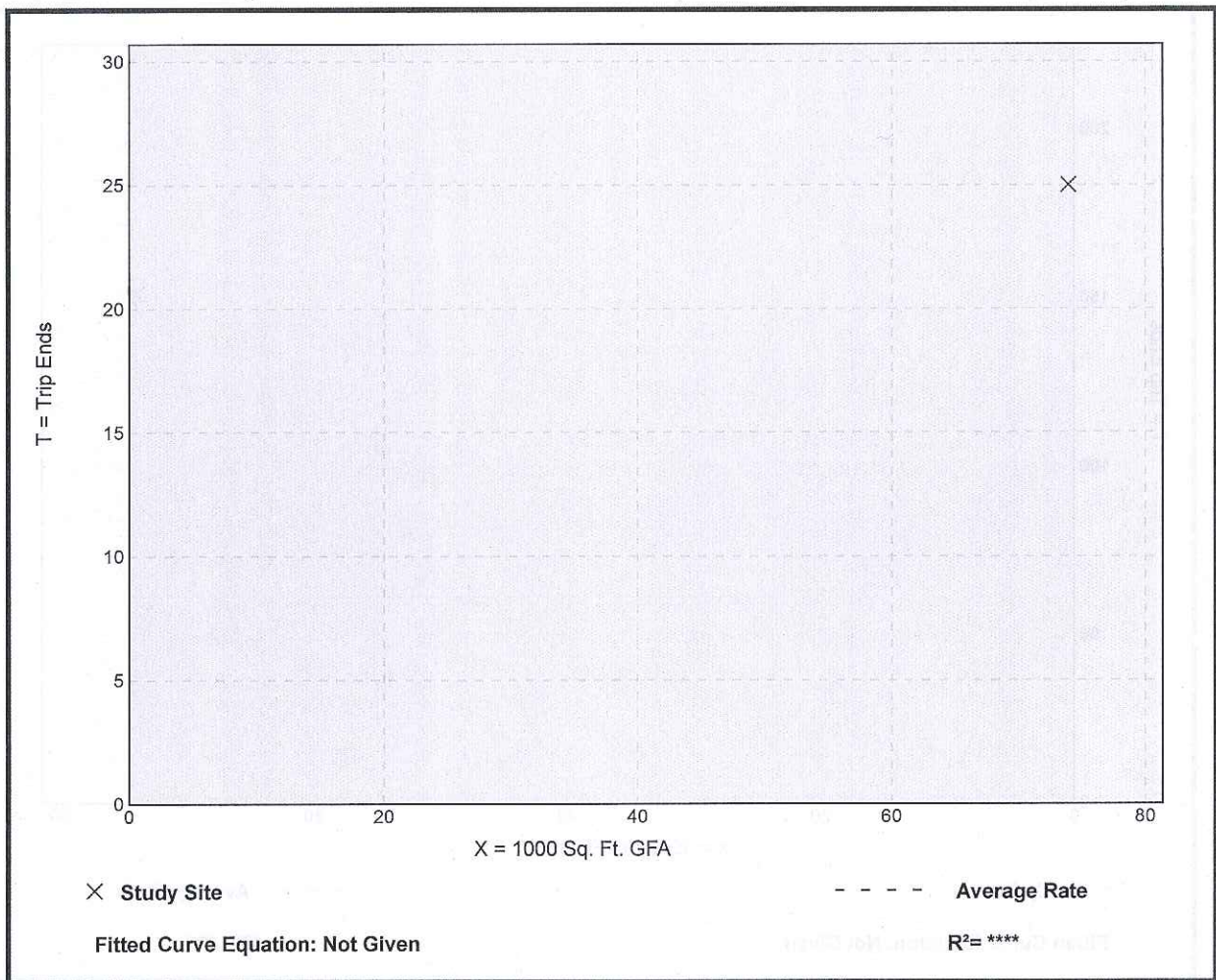
Setting/Location: General Urban/Suburban  
Number of Studies: 1  
1000 Sq. Ft. GFA: 74  
Directional Distribution: 48% entering, 52% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.34	0.34 - 0.34	*

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Sunday

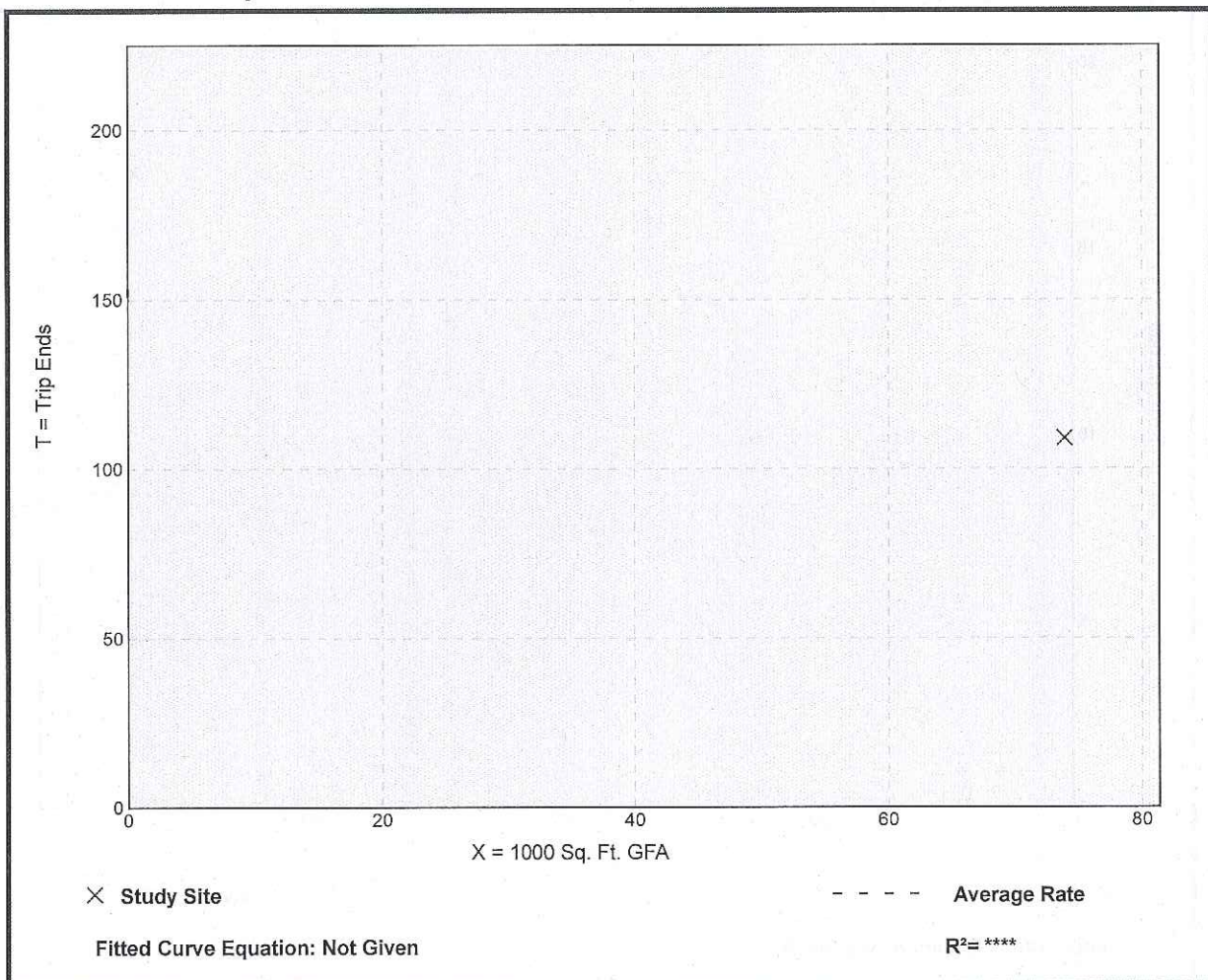
Setting/Location: General Urban/Suburban  
Number of Studies: 1  
1000 Sq. Ft. GFA: 74  
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.47	1.47 - 1.47	*

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Sunday, Peak Hour of Generator

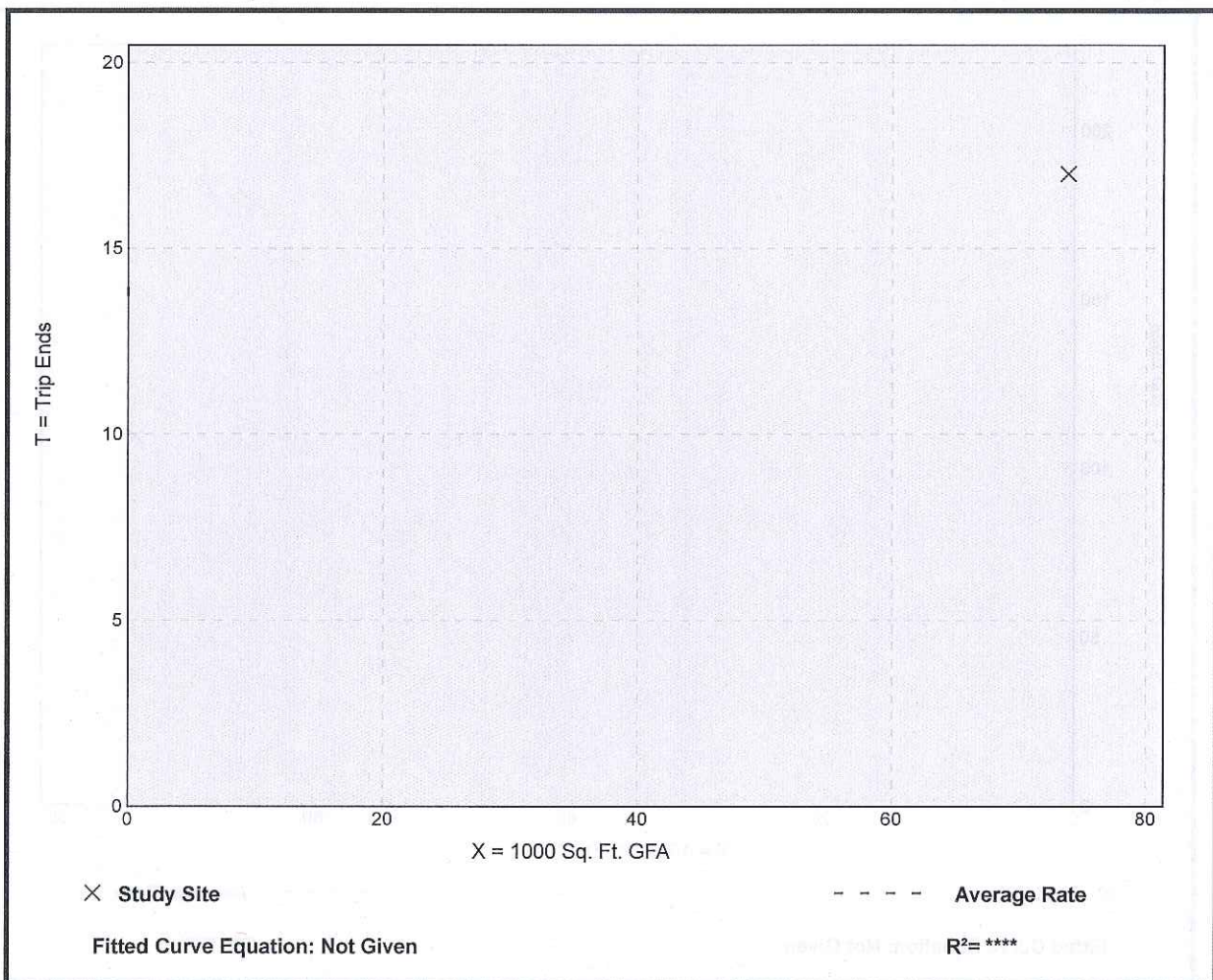
Setting/Location: General Urban/Suburban  
Number of Studies: 1  
1000 Sq. Ft. GFA: 74  
Directional Distribution: 41% entering, 59% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.23	0.23 - 0.23	*

### Data Plot and Equation

*Caution – Small Sample Size*





# General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
On a: Weekday

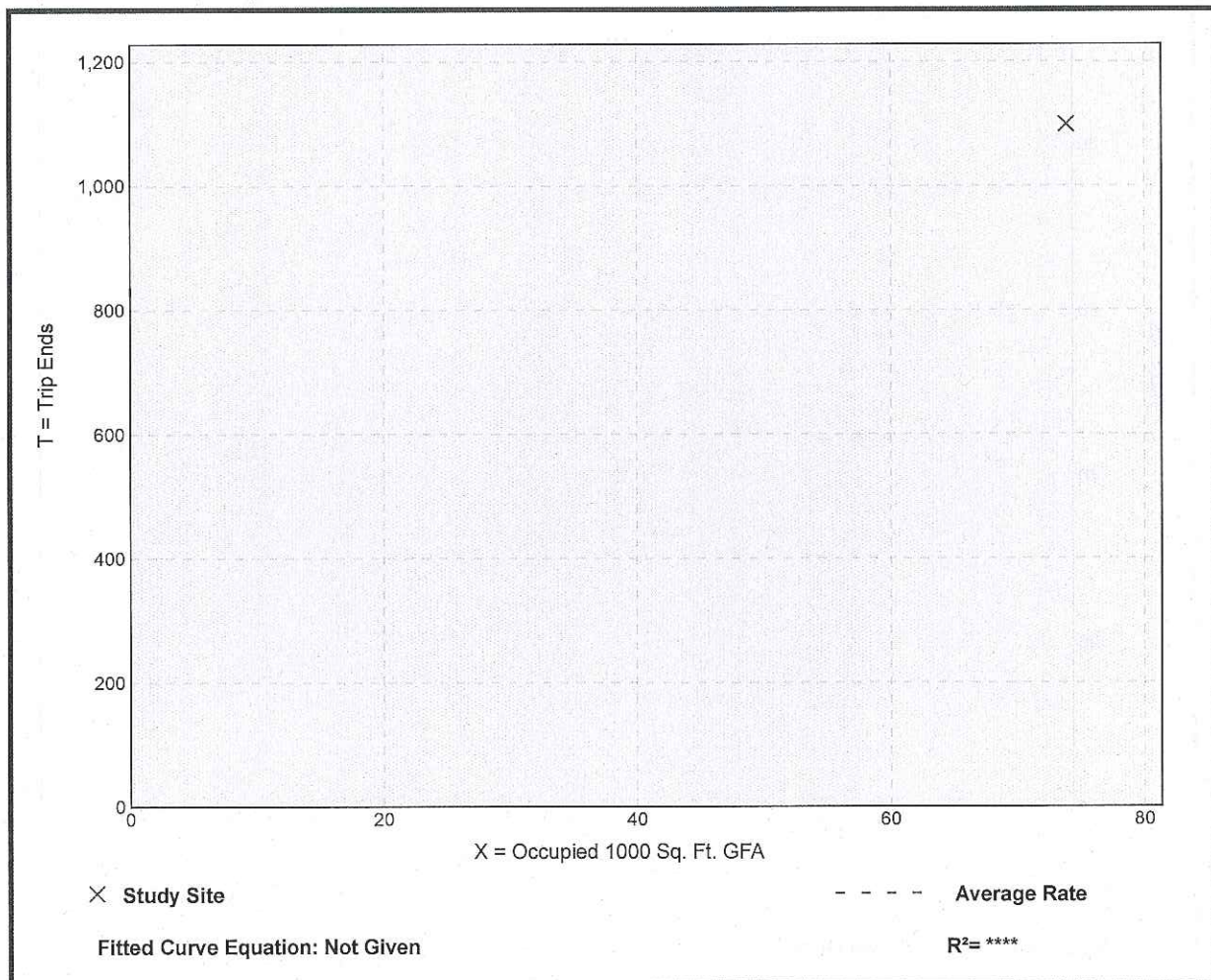
Setting/Location: General Urban/Suburban  
Number of Studies: 1  
Occupied 1000 Sq. Ft. GFA: 74  
Directional Distribution: 50% entering, 50% exiting

## Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
14.87	14.87 - 14.87	*

## Data Plot and Equation

Caution – Small Sample Size





## General Office Building (710)

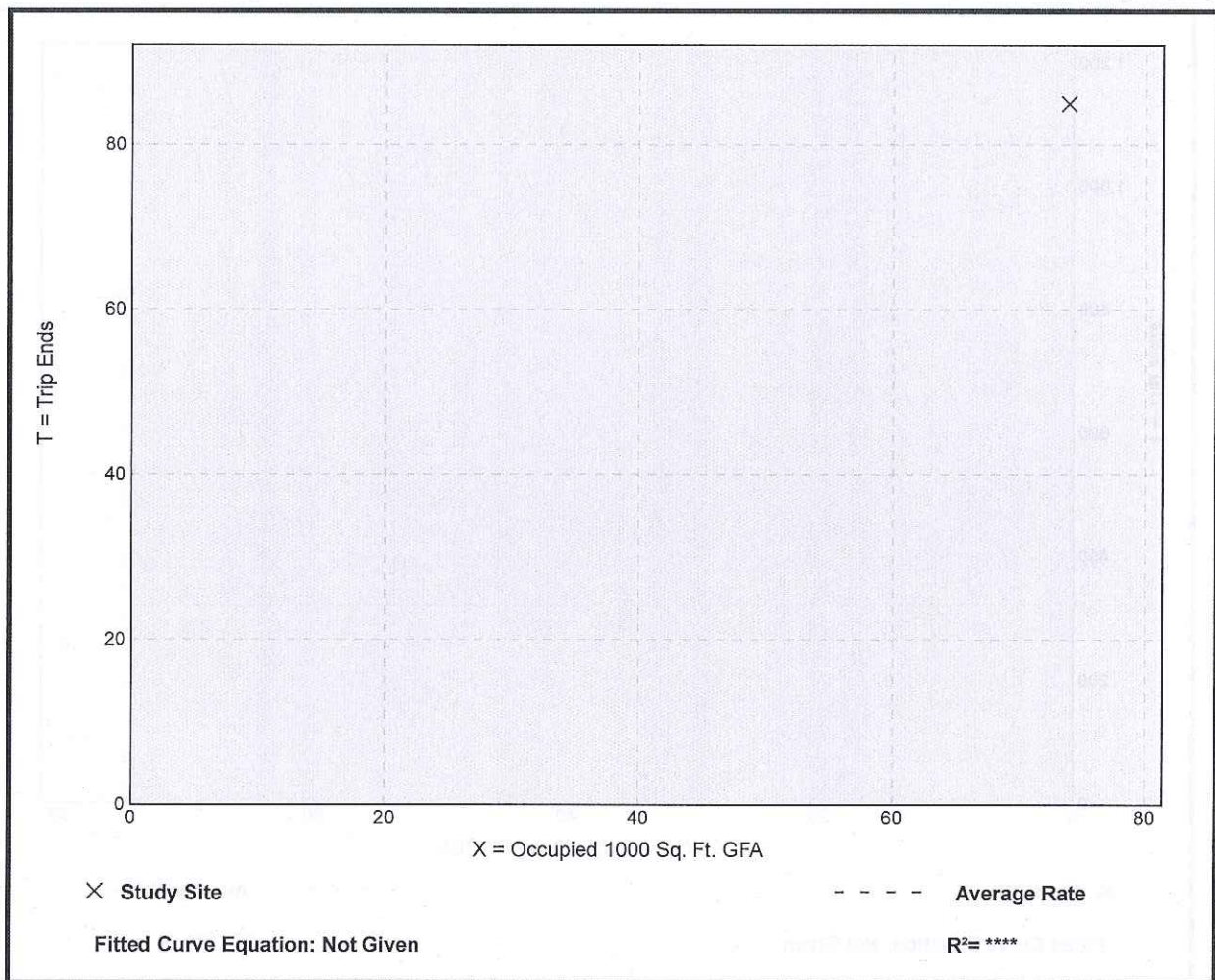
Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
 On a: Weekday,  
 Peak Hour of Adjacent Street Traffic,  
 One Hour Between 7 and 9 a.m.  
 Setting/Location: General Urban/Suburban  
 Number of Studies: 1  
 Occupied 1000 Sq. Ft. GFA: 74  
 Directional Distribution: 89% entering, 11% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.15	1.15 - 1.15	*

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: Occupied 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

Occupied 1000 Sq. Ft. GFA: 74

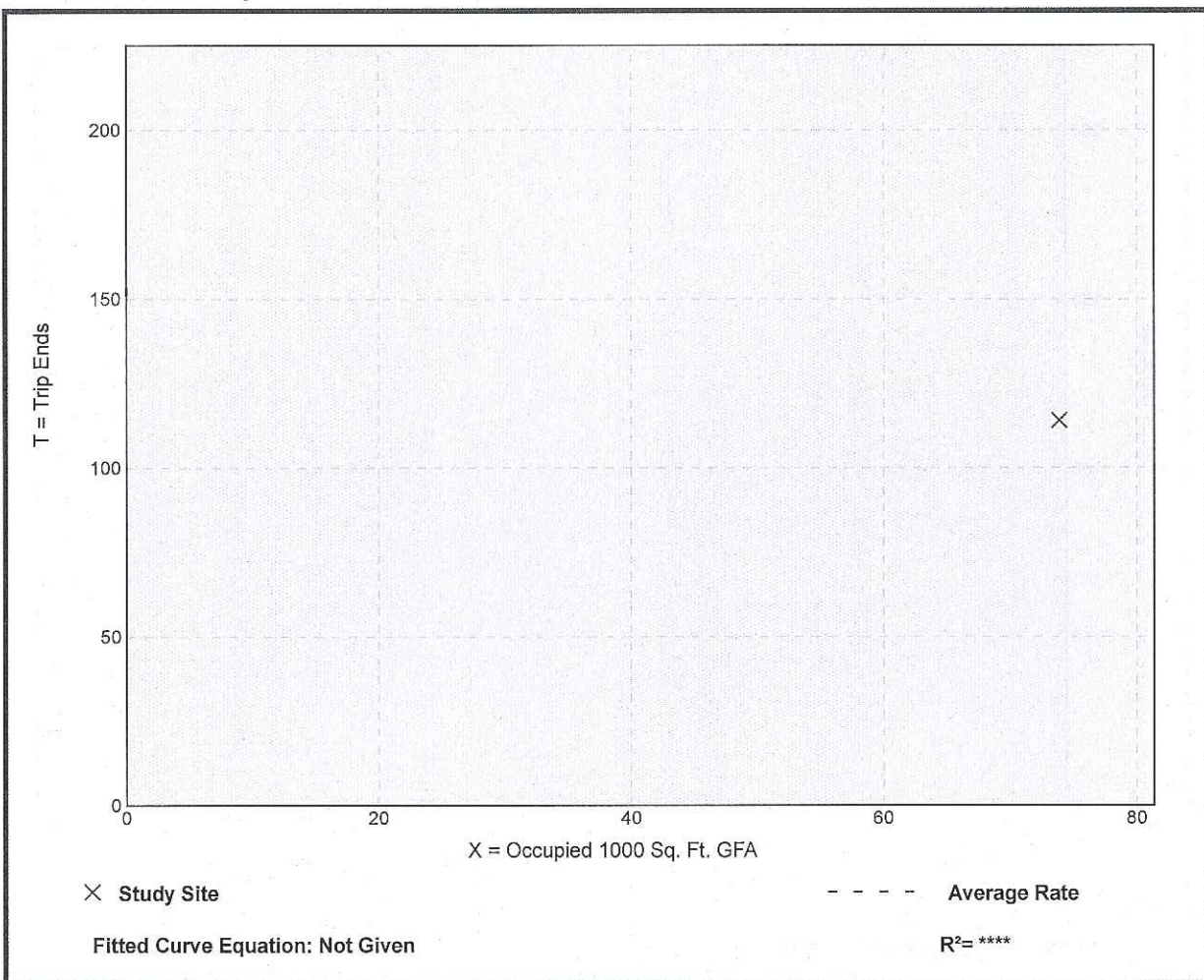
Directional Distribution: 16% entering, 84% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.54	1.54 - 1.54	*

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
On a: Weekday,  
AM Peak Hour of Generator

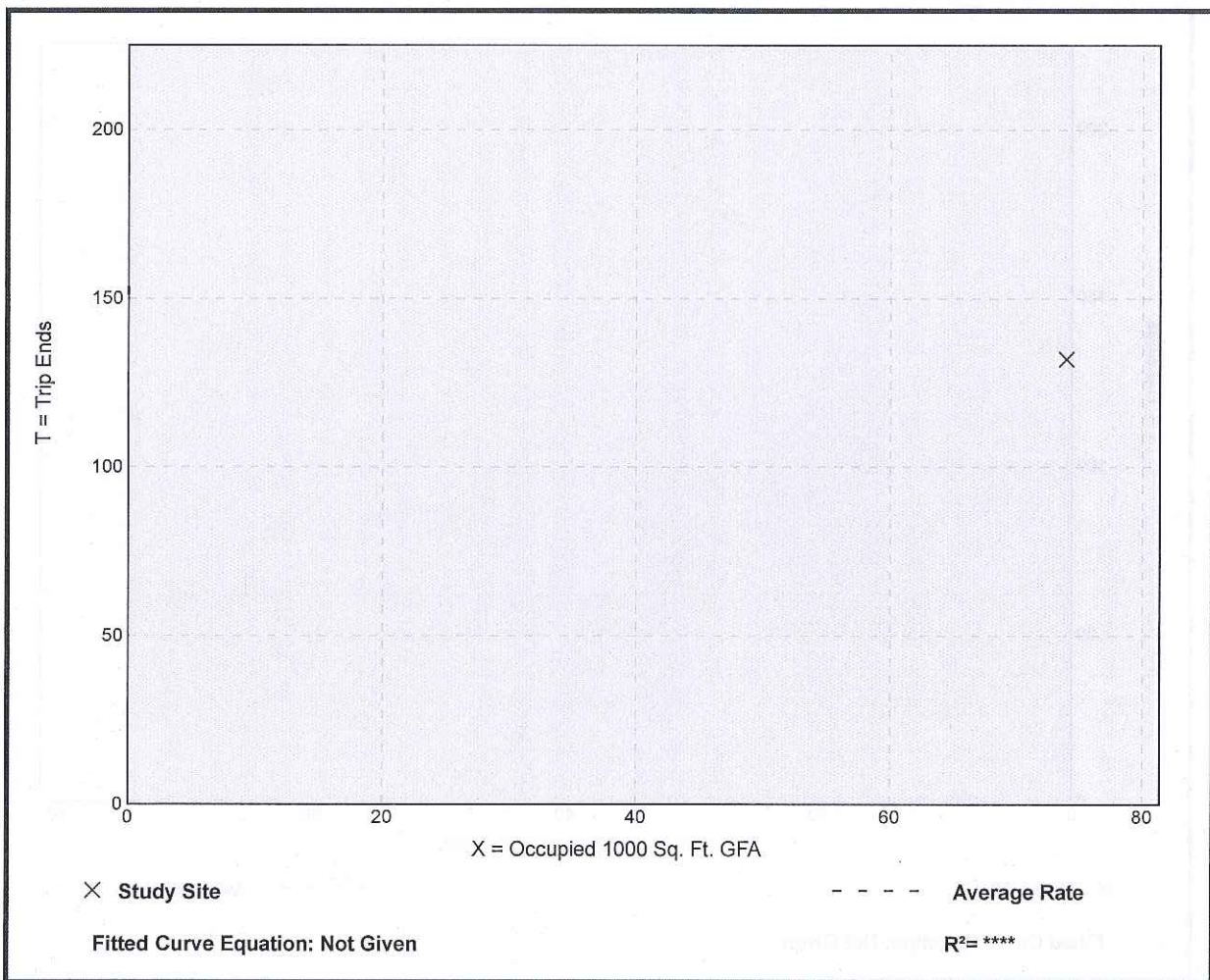
Setting/Location: General Urban/Suburban  
Number of Studies: 1  
Occupied 1000 Sq. Ft. GFA: 74  
Directional Distribution: 83% entering, 17% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.79	1.79 - 1.79	*

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
On a: Weekday,  
PM Peak Hour of Generator

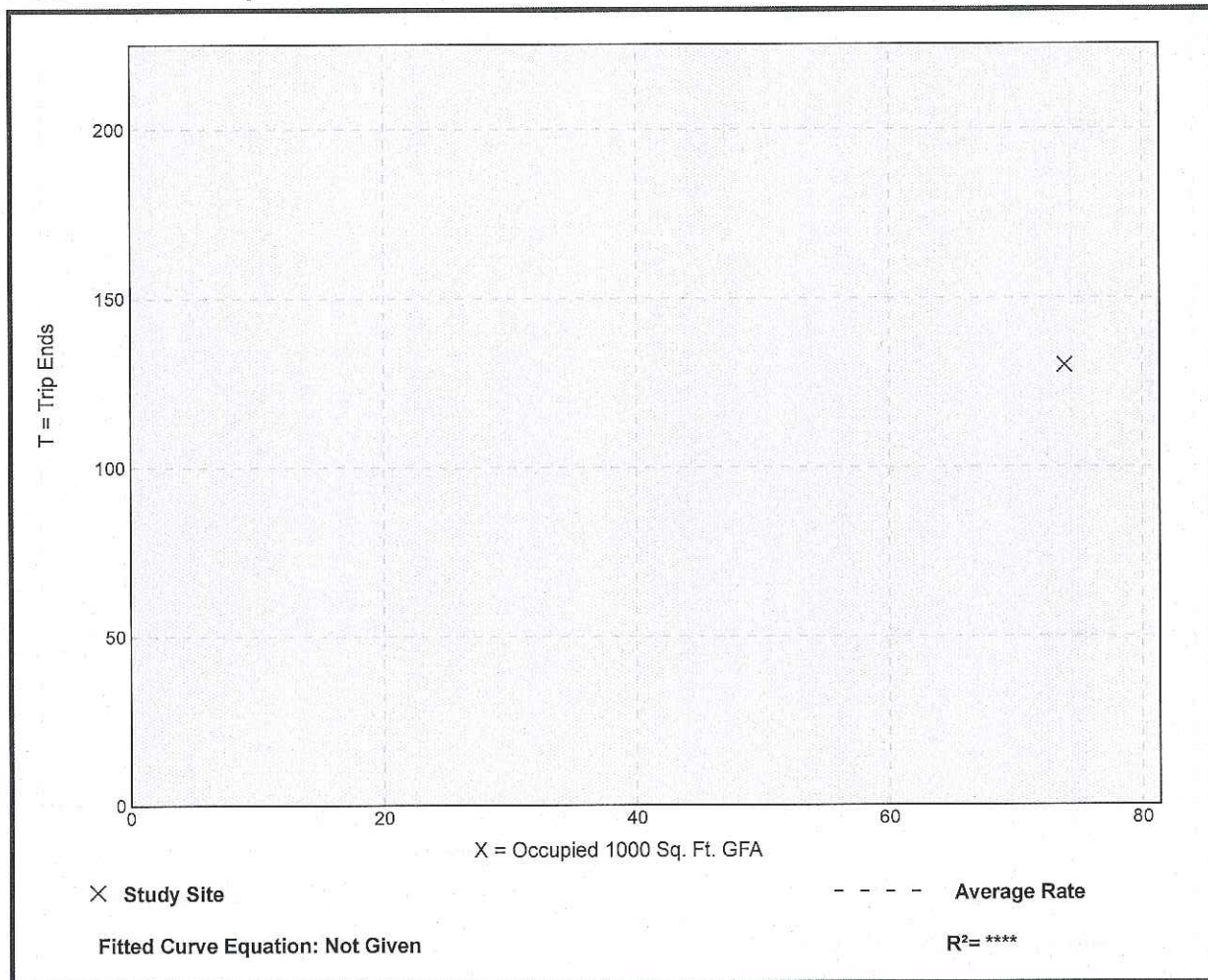
Setting/Location: General Urban/Suburban  
Number of Studies: 1  
Occupied 1000 Sq. Ft. GFA: 74  
Directional Distribution: 55% entering, 45% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.76	1.76 - 1.76	*

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
On a: Saturday

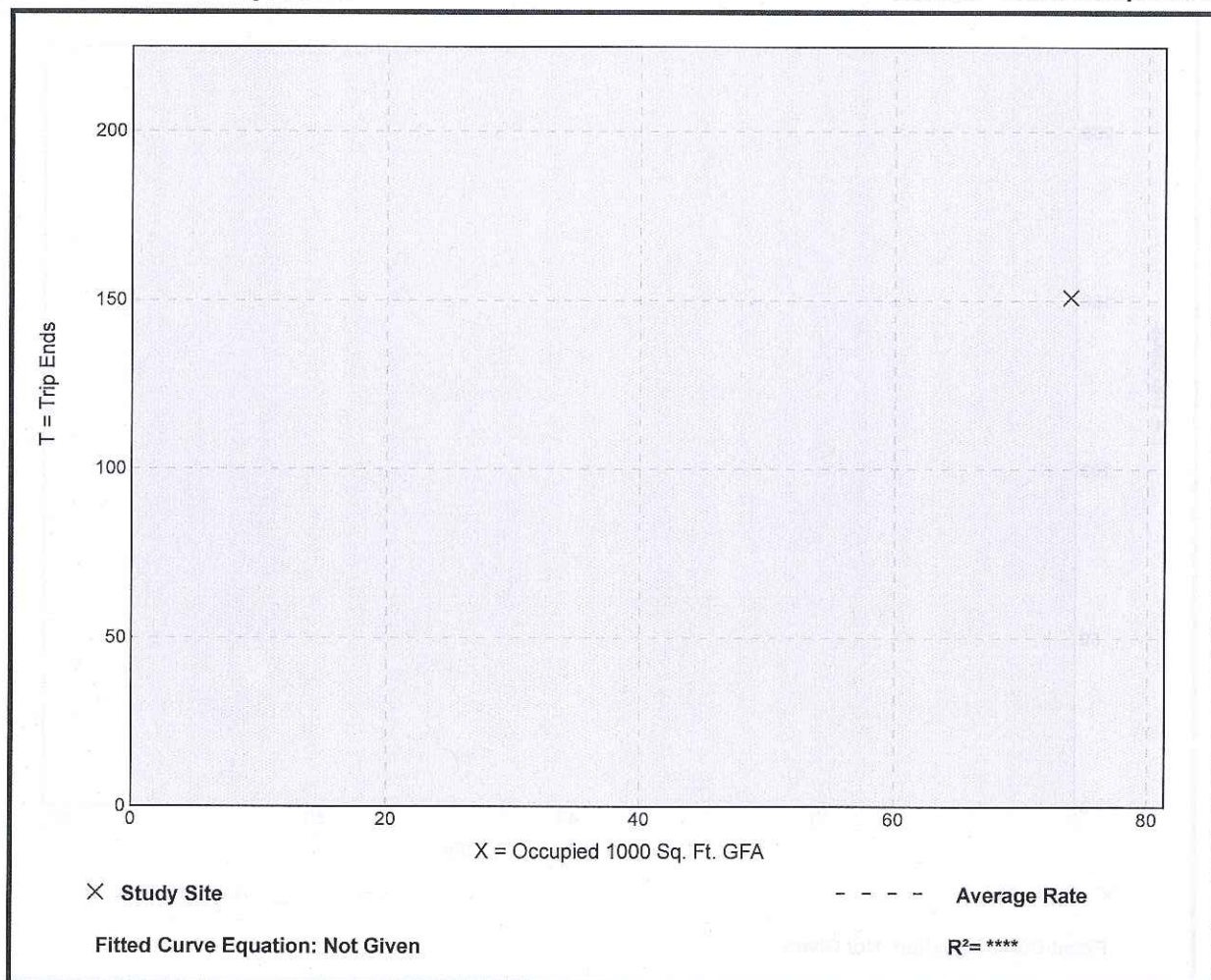
Setting/Location: General Urban/Suburban  
Number of Studies: 1  
Occupied 1000 Sq. Ft. GFA: 74  
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.04	2.04 - 2.04	*

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

**Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA**  
**On a: Saturday, Peak Hour of Generator**

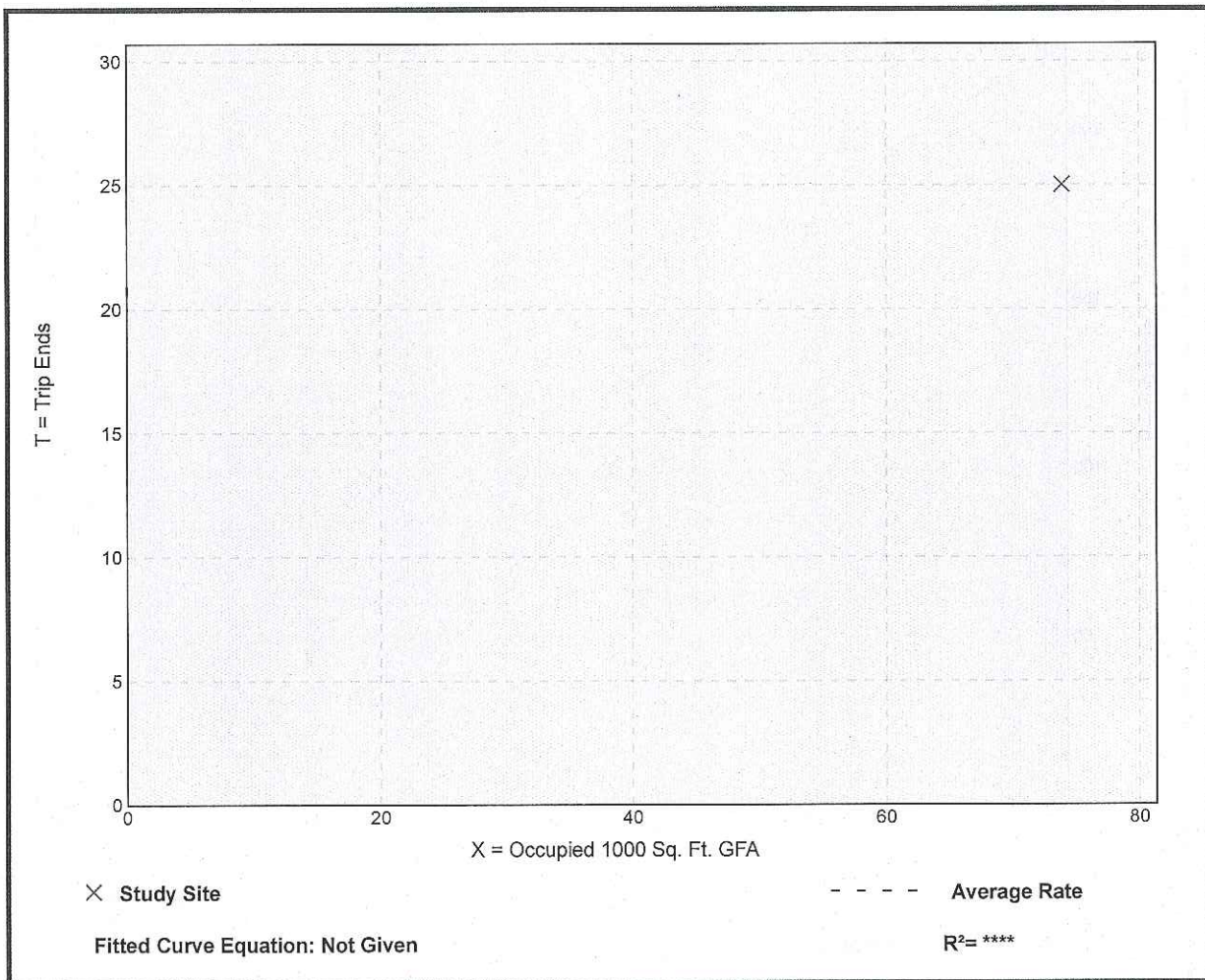
**Setting/Location: General Urban/Suburban**  
**Number of Studies: 1**  
**Occupied 1000 Sq. Ft. GFA: 74**  
**Directional Distribution: 48% entering, 52% exiting**

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.34	0.34 - 0.34	*

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
On a: Sunday

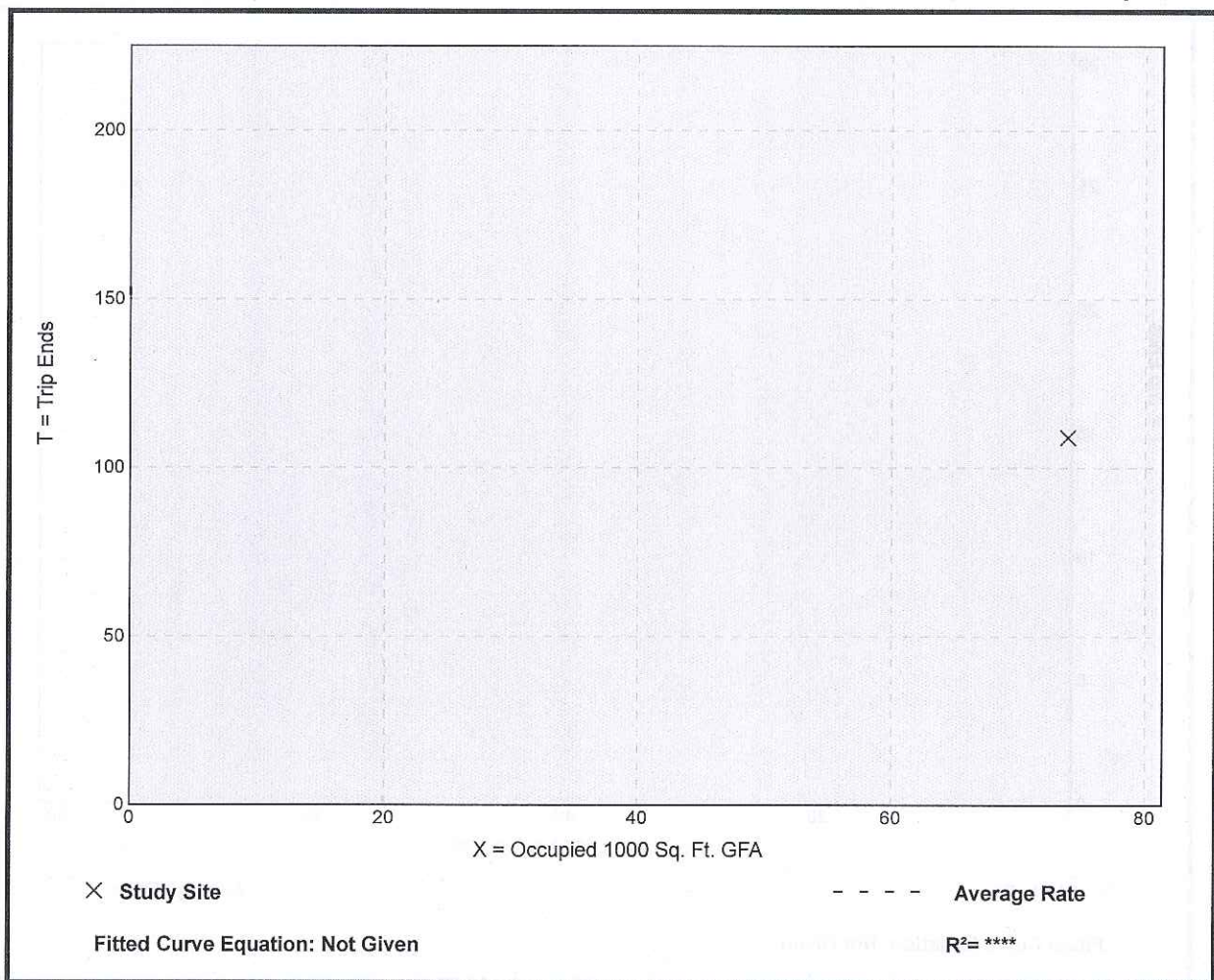
Setting/Location: General Urban/Suburban  
Number of Studies: 1  
Occupied 1000 Sq. Ft. GFA: 74  
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.47	1.47 - 1.47	*

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
On a: Sunday, Peak Hour of Generator

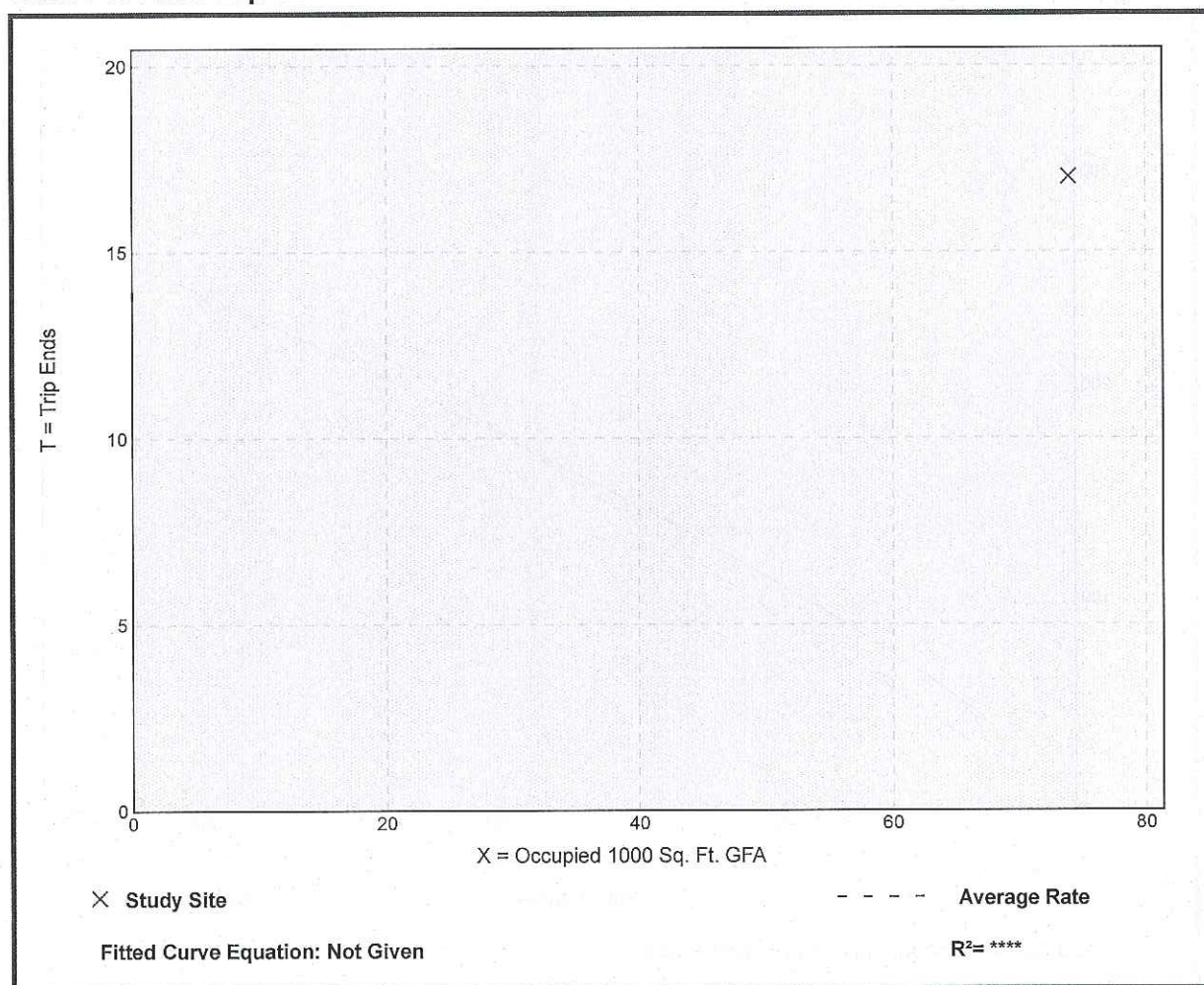
Setting/Location: General Urban/Suburban  
Number of Studies: 1  
Occupied 1000 Sq. Ft. GFA: 74  
Directional Distribution: 41% entering, 59% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.23	0.23 - 0.23	*

### Data Plot and Equation

*Caution – Small Sample Size*





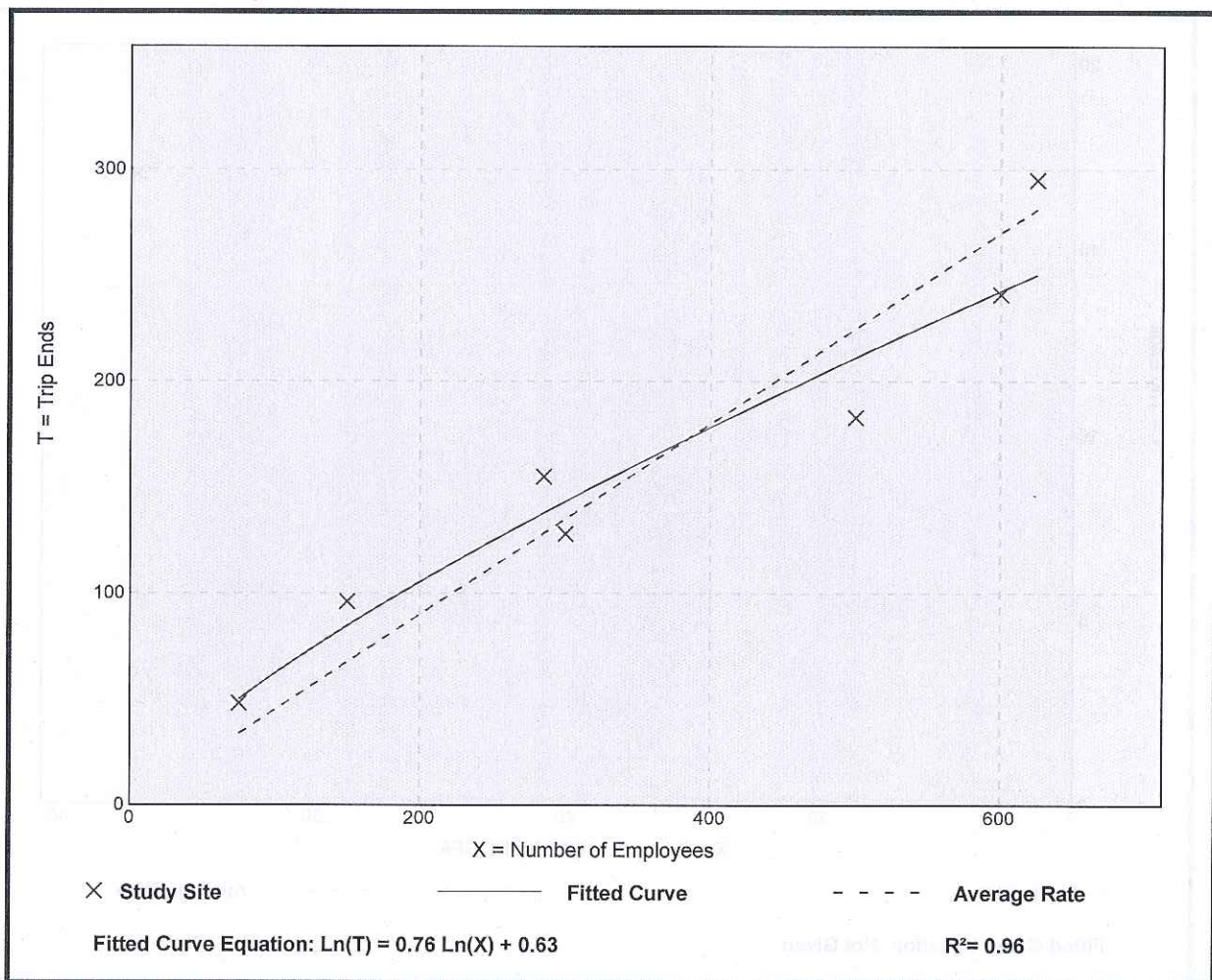
## General Office Building (710)

Person 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: 7  
 Avg. Num. of Employees: 362  
 Directional Distribution: 88% entering, 12% exiting

### Person Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.45	0.37 - 0.64	0.09

### Data Plot and Equation





## General Office Building (710)

Person 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: 7

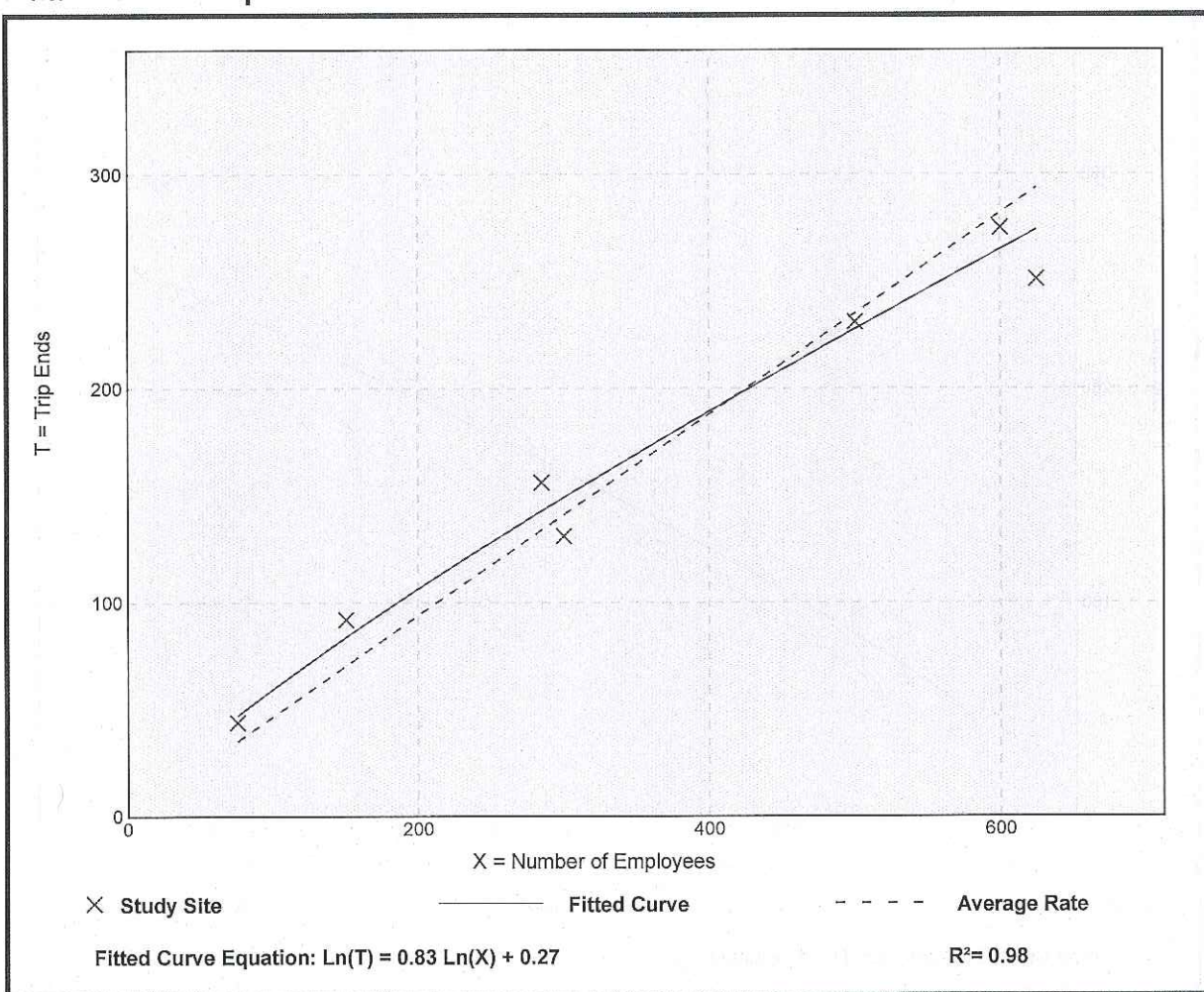
Avg. Num. of Employees: 362

Directional Distribution: 15% entering, 85% exiting

### Person Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.47	0.40 - 0.61	0.06

### Data Plot and Equation





## General Office Building (710)

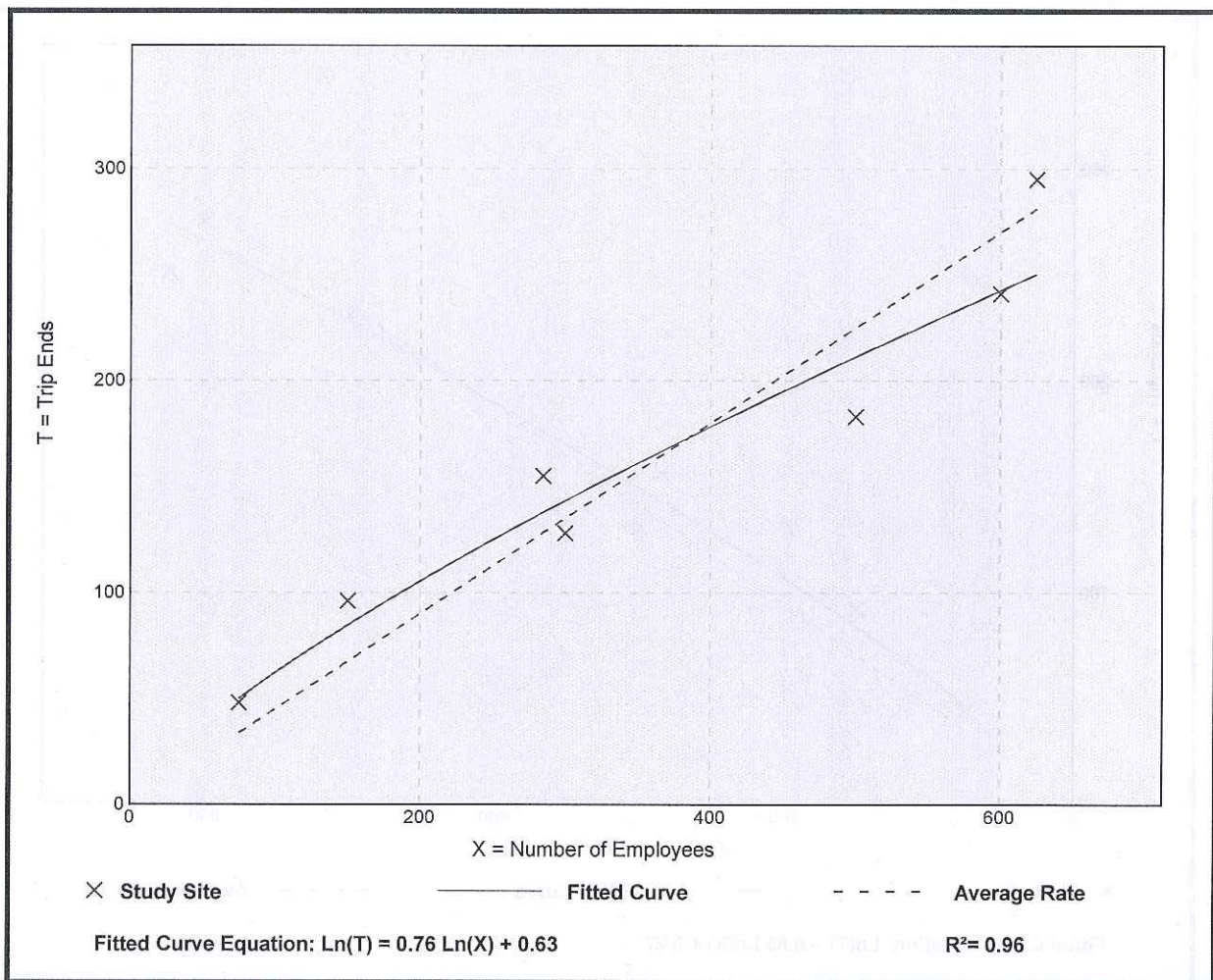
Person Trip Ends vs: Employees  
On a: Weekday,  
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban  
Number of Studies: 7  
Avg. Num. of Employees: 362  
Directional Distribution: 88% entering, 12% exiting

### Person Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.45	0.37 - 0.64	0.09

### Data Plot and Equation





## General Office Building (710)

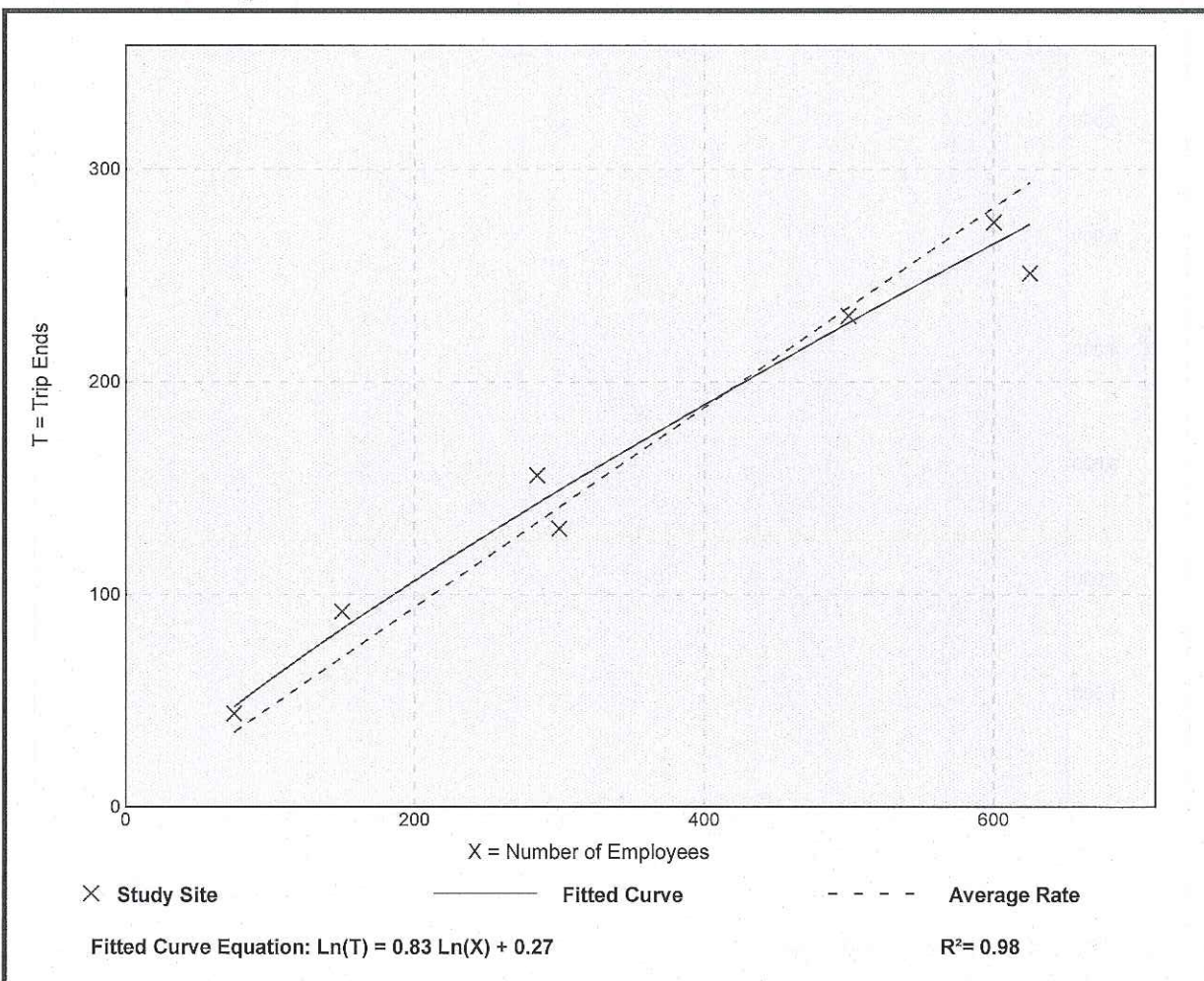
Person Trip Ends vs: **Employees**  
On a: **Weekday,**  
**PM Peak Hour of Generator**

**Setting/Location:** **General Urban/Suburban**  
Number of Studies: 7  
Avg. Num. of Employees: 362  
Directional Distribution: 15% entering, 85% exiting

### Person Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.47	0.40 - 0.61	0.06

### Data Plot and Equation





## General Office Building (710)

Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday

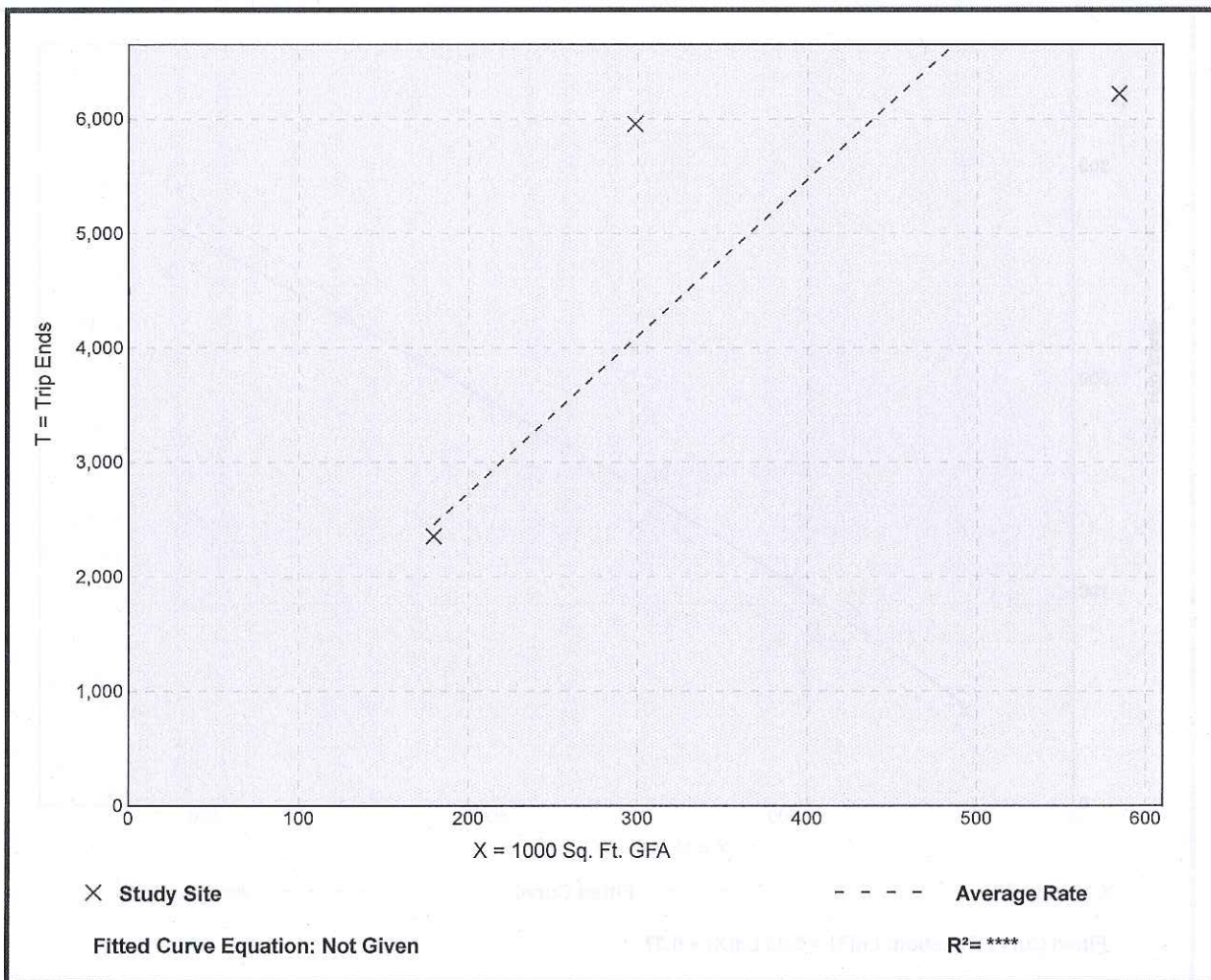
Setting/Location: Dense Multi-Use Urban  
Number of Studies: 3  
1000 Sq. Ft. GFA: 354  
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
13.68	10.65 - 19.96	18.49

### Data Plot and Equation

*Caution – Small Sample Size*





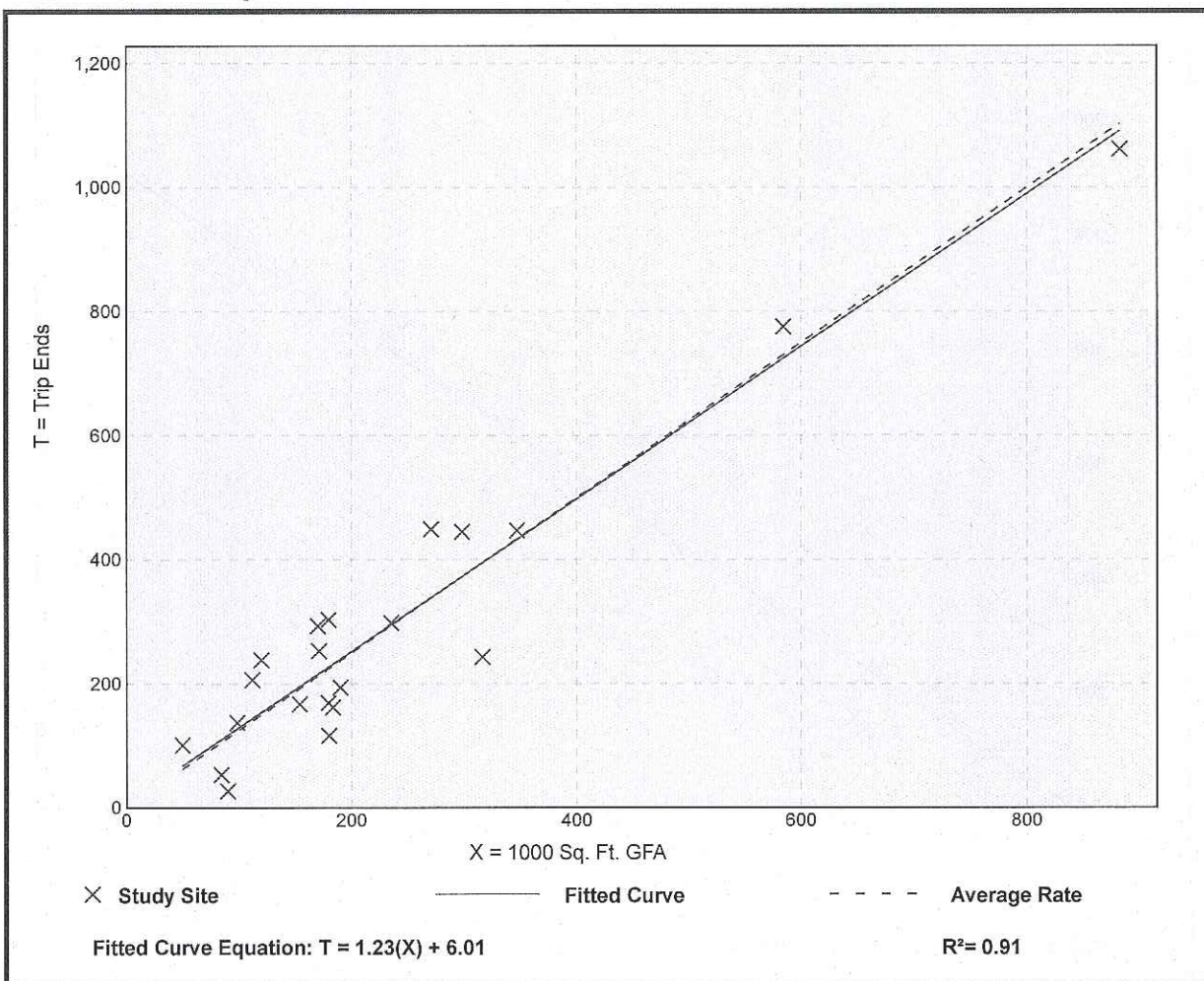
## General Office Building (710)

**Person 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: 21  
 1000 Sq. Ft. GFA: 233  
 Directional Distribution: 87% entering, 13% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.25	0.30 - 2.02	0.36

### Data Plot and Equation





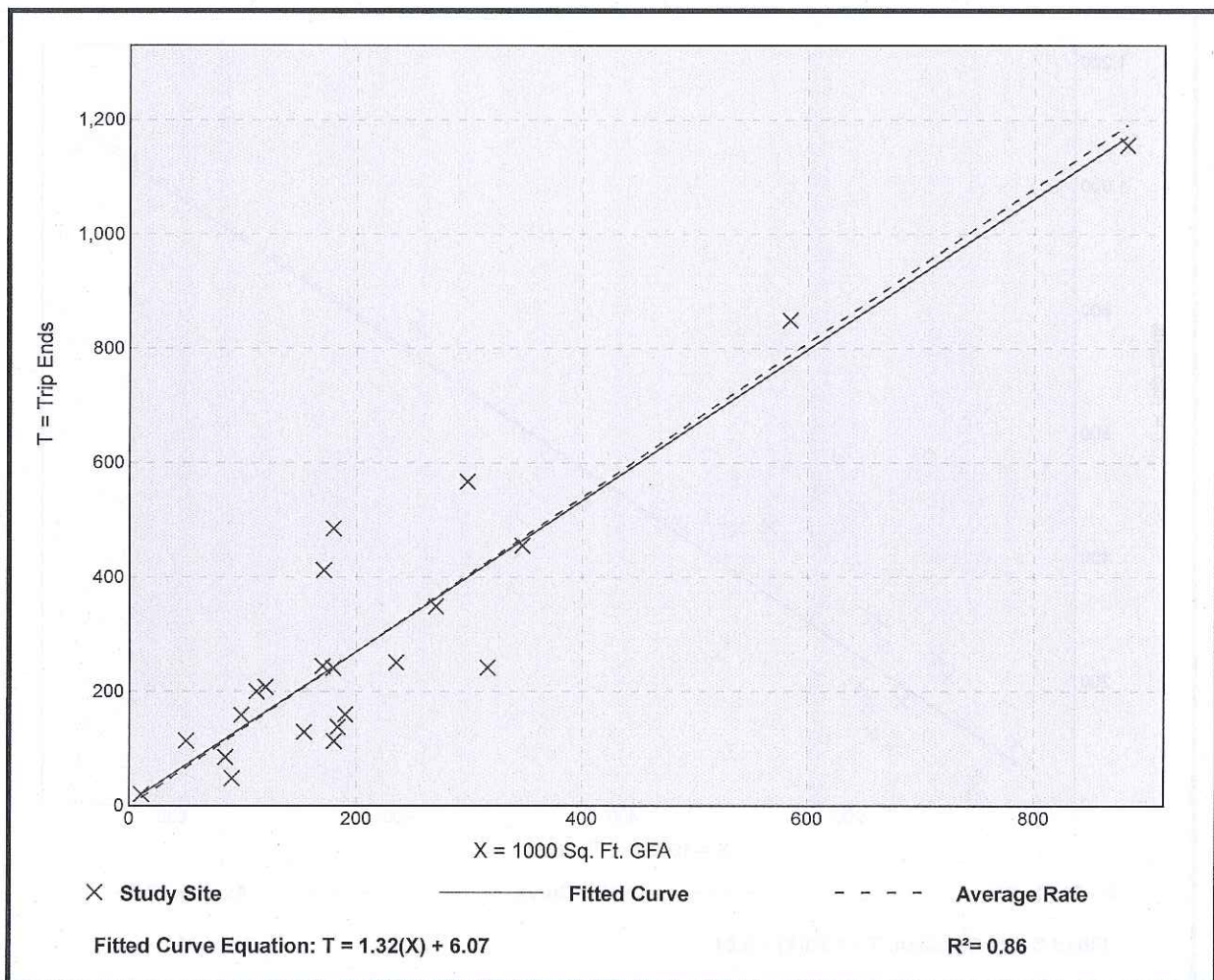
## General Office Building (710)

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: Dense Multi-Use Urban  
 Number of Studies: 22  
 1000 Sq. Ft. GFA: 223  
 Directional Distribution: 22% entering, 78% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.35	0.53 - 2.70	0.50

### Data Plot and Equation





## General Office Building (710)

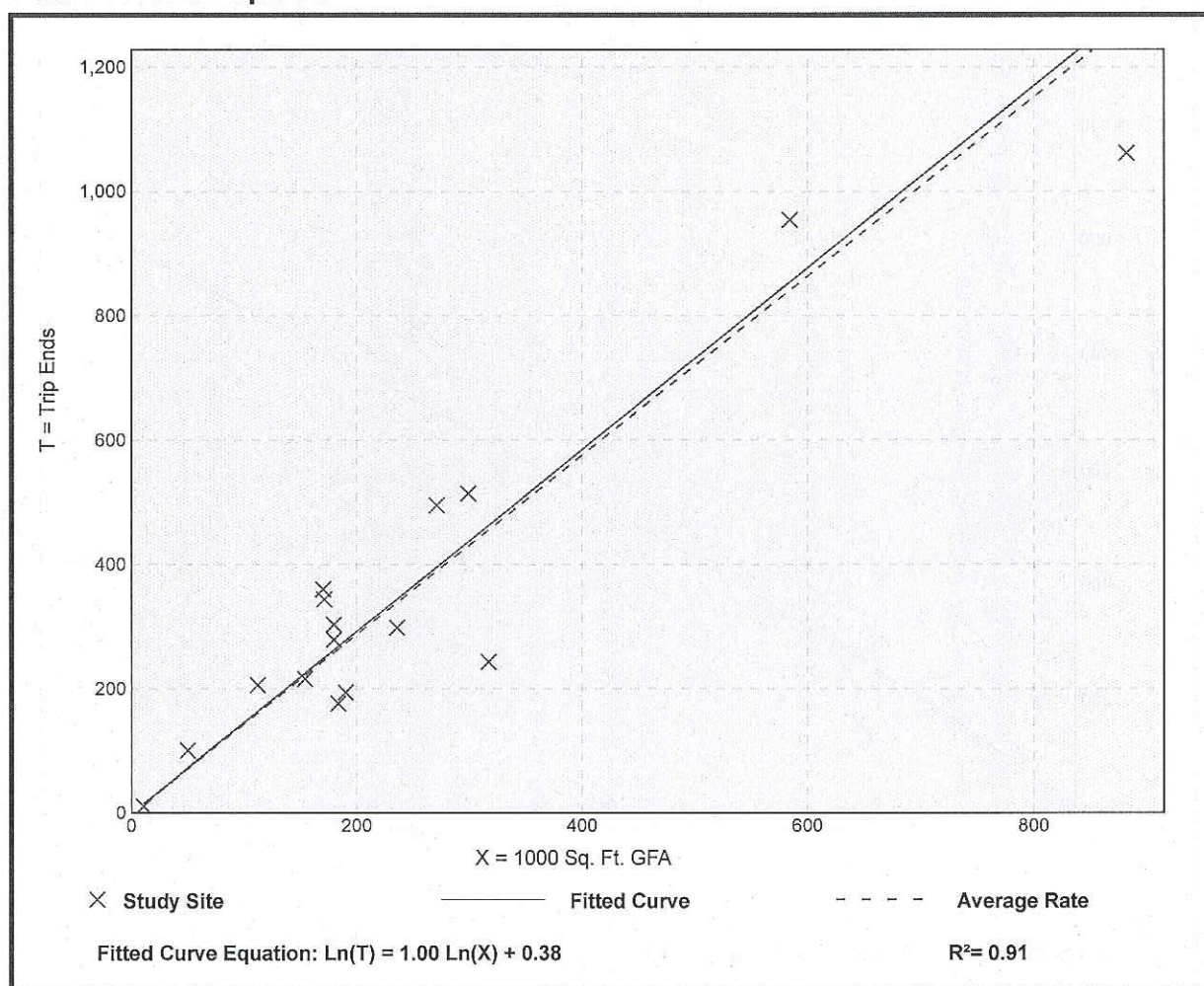
Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday,  
AM Peak Hour of Generator

Setting/Location: Dense Multi-Use Urban  
Number of Studies: 16  
1000 Sq. Ft. GFA: 249  
Directional Distribution: 83% entering, 17% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.44	0.77 - 2.12	0.38

### Data Plot and Equation





## General Office Building (710)

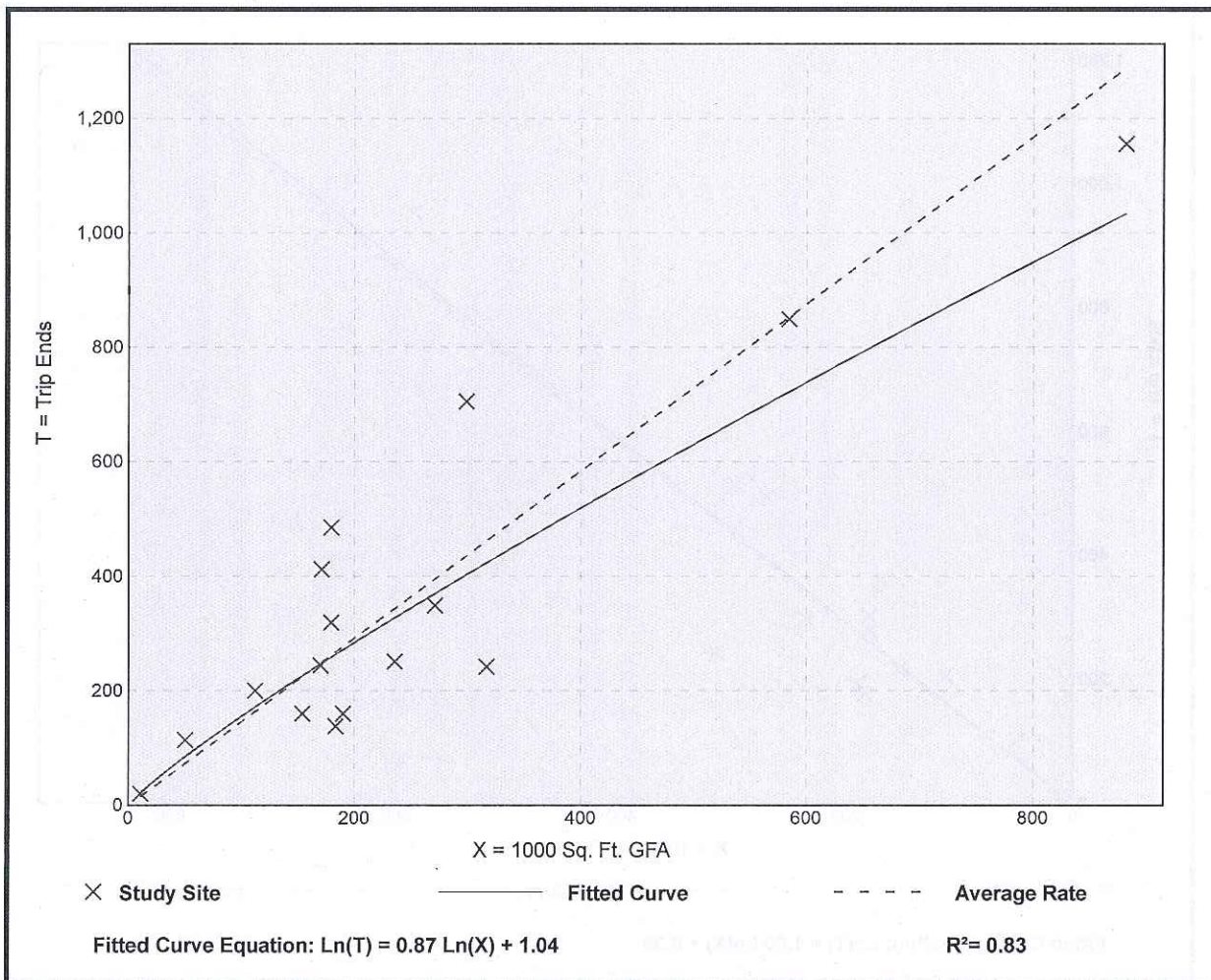
Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday,  
PM Peak Hour of Generator

Setting/Location: Dense Multi-Use Urban  
Number of Studies: 16  
1000 Sq. Ft. GFA: 249  
Directional Distribution: 25% entering, 75% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.46	0.75 - 2.70	0.55

### Data Plot and Equation





## General Office Building (710)

Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Saturday

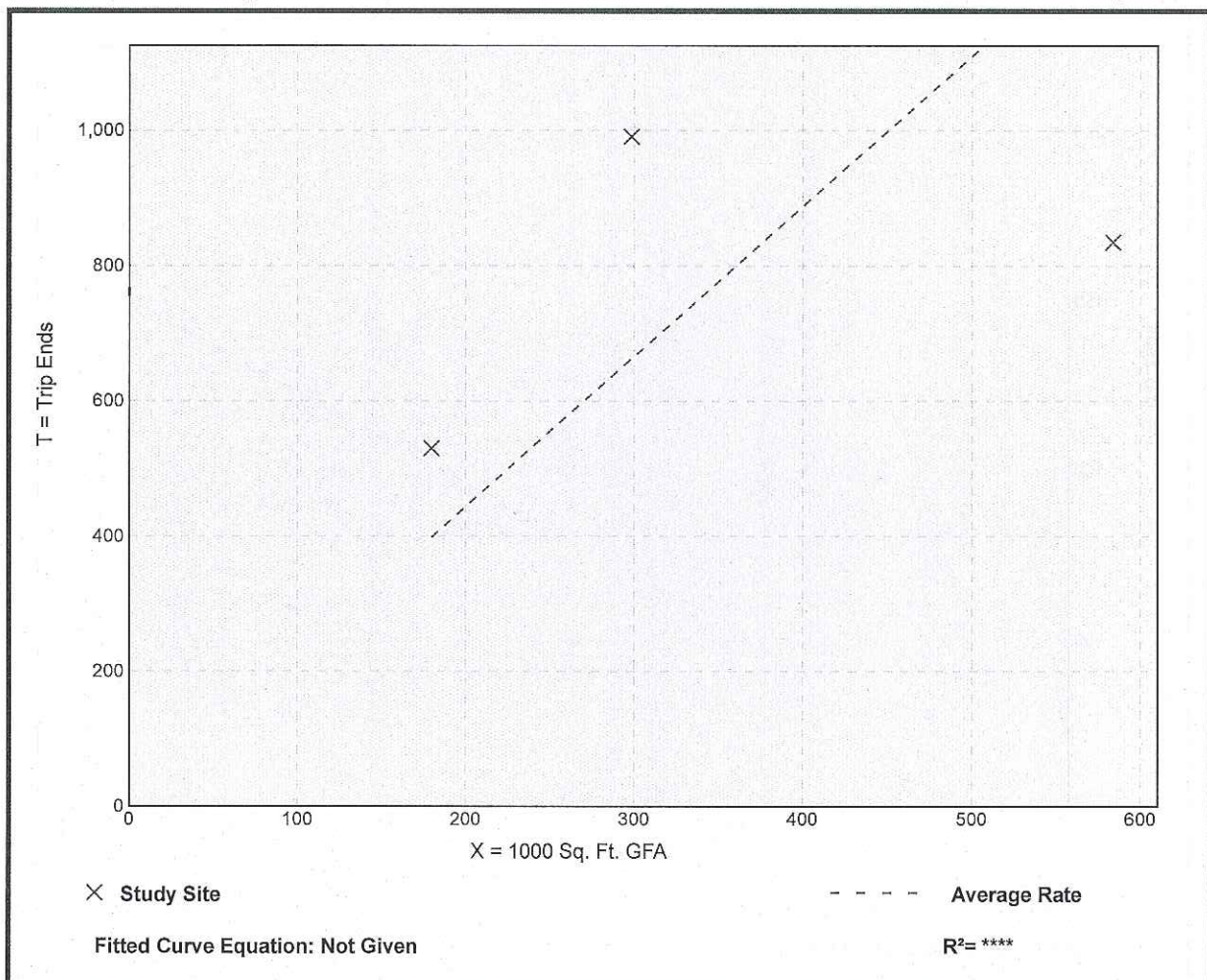
Setting/Location: Dense Multi-Use Urban  
Number of Studies: 3  
1000 Sq. Ft. GFA: 354  
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.22	1.43 - 3.32	3.30

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Saturday, Peak Hour of Generator

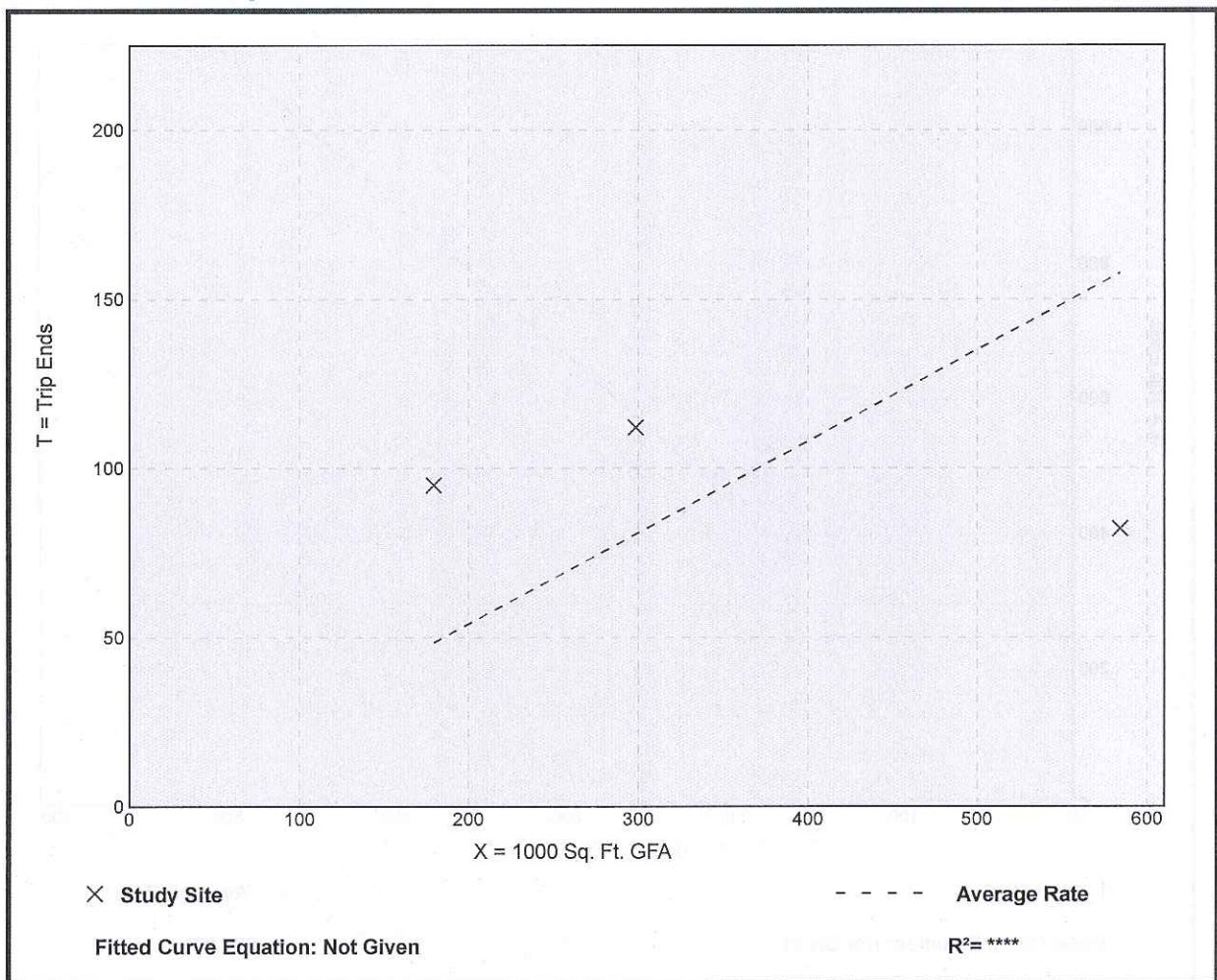
Setting/Location: Dense Multi-Use Urban  
Number of Studies: 3  
1000 Sq. Ft. GFA: 354  
Directional Distribution: 48% entering, 52% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.27	0.14 - 0.53	0.47

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: 1000 Sq. Ft. GFA

On a: Sunday

Setting/Location: Dense Multi-Use Urban

Number of Studies: 3

1000 Sq. Ft. GFA: 354

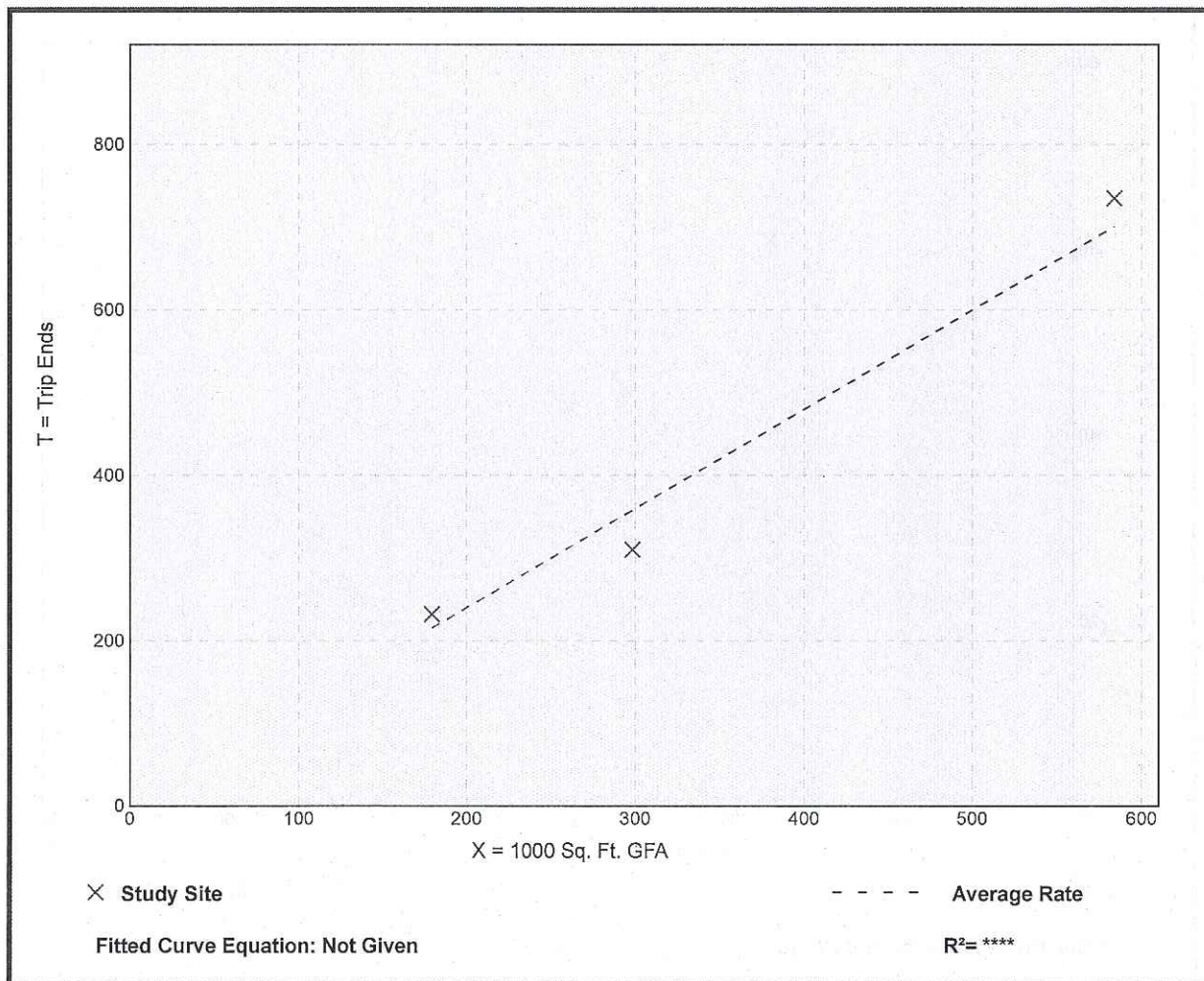
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.20	1.04 - 1.29	1.47

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Sunday, Peak Hour of Generator

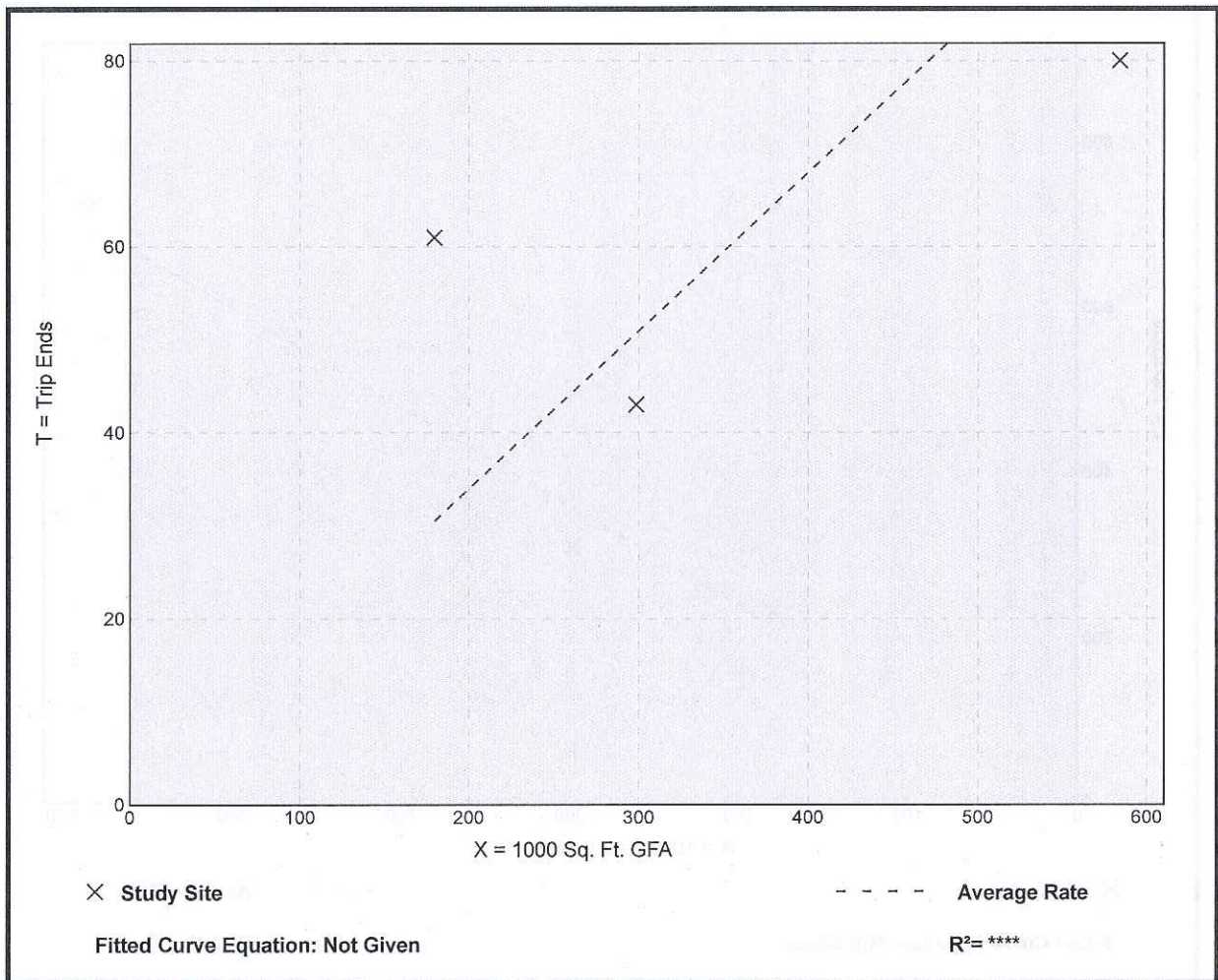
Setting/Location: Dense Multi-Use Urban  
Number of Studies: 3  
1000 Sq. Ft. GFA: 354  
Directional Distribution: 36% entering, 64% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.17	0.14 - 0.34	0.28

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA

On a: Weekday

Setting/Location: Dense Multi-Use Urban

Number of Studies: 3

Occupied 1000 Sq. Ft. GFA: 354

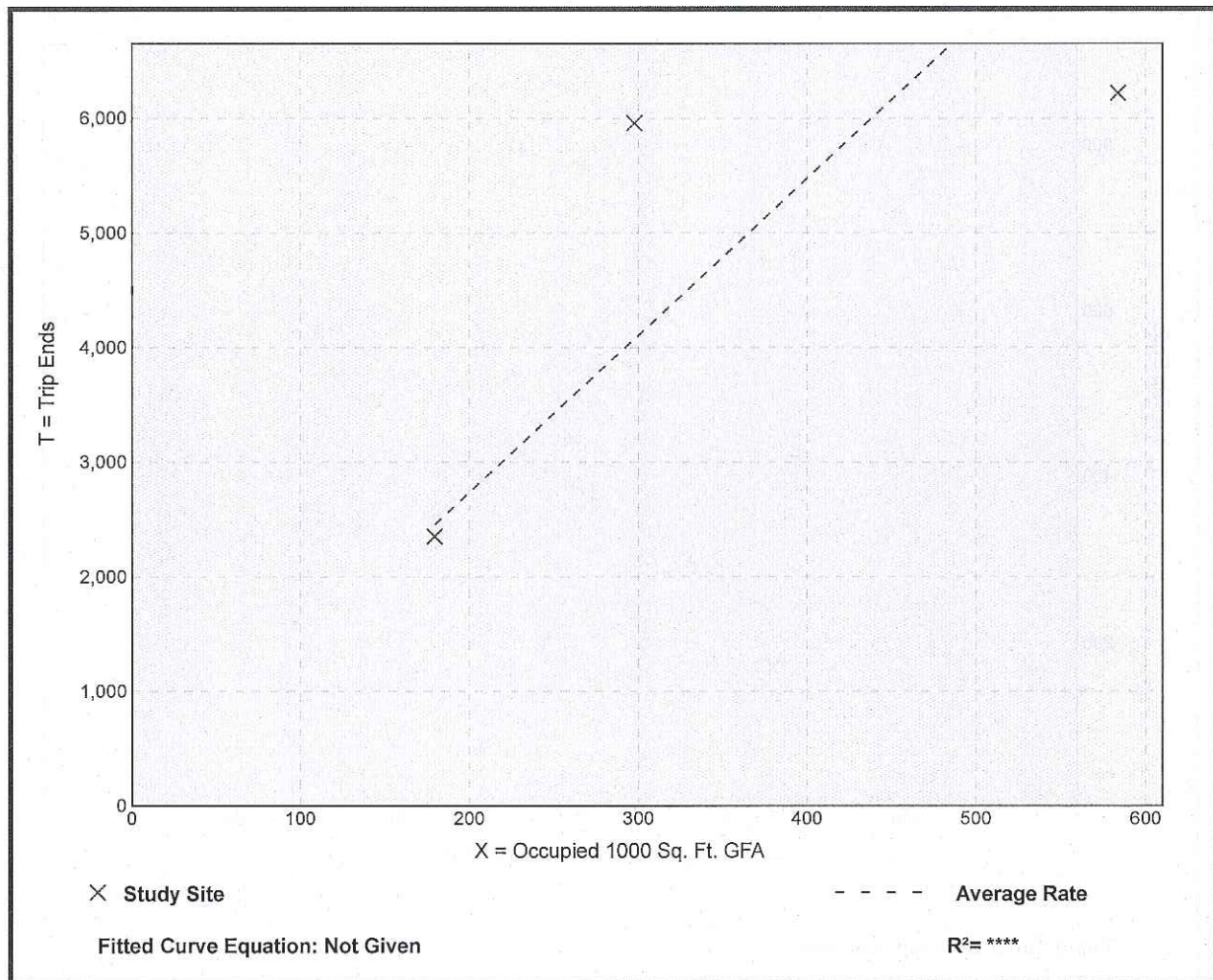
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
13.69	10.65 - 20.02	18.52

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

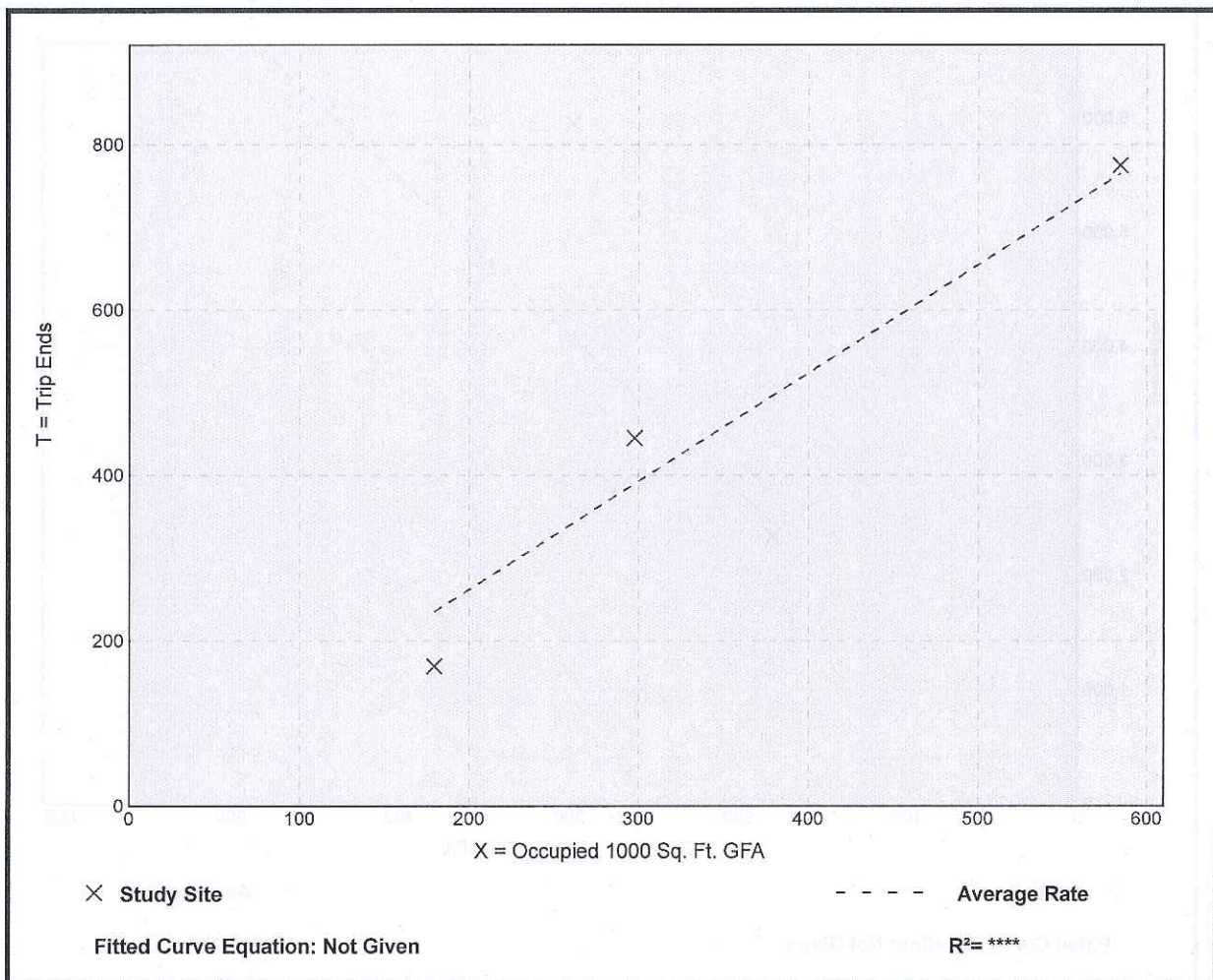
**Person Trip Ends vs:** Occupied 1000 Sq. Ft. GFA  
**On a:** Weekday,  
 Peak Hour of Adjacent Street Traffic,  
 One Hour Between 7 and 9 a.m.  
**Setting/Location:** Dense Multi-Use Urban  
 Number of Studies: 3  
 Occupied 1000 Sq. Ft. GFA: 354  
 Directional Distribution: 92% entering, 8% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.31	0.94 - 1.50	1.56

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

**Person Trip Ends vs: Occupied 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: 3

Occupied 1000 Sq. Ft. GFA: 354

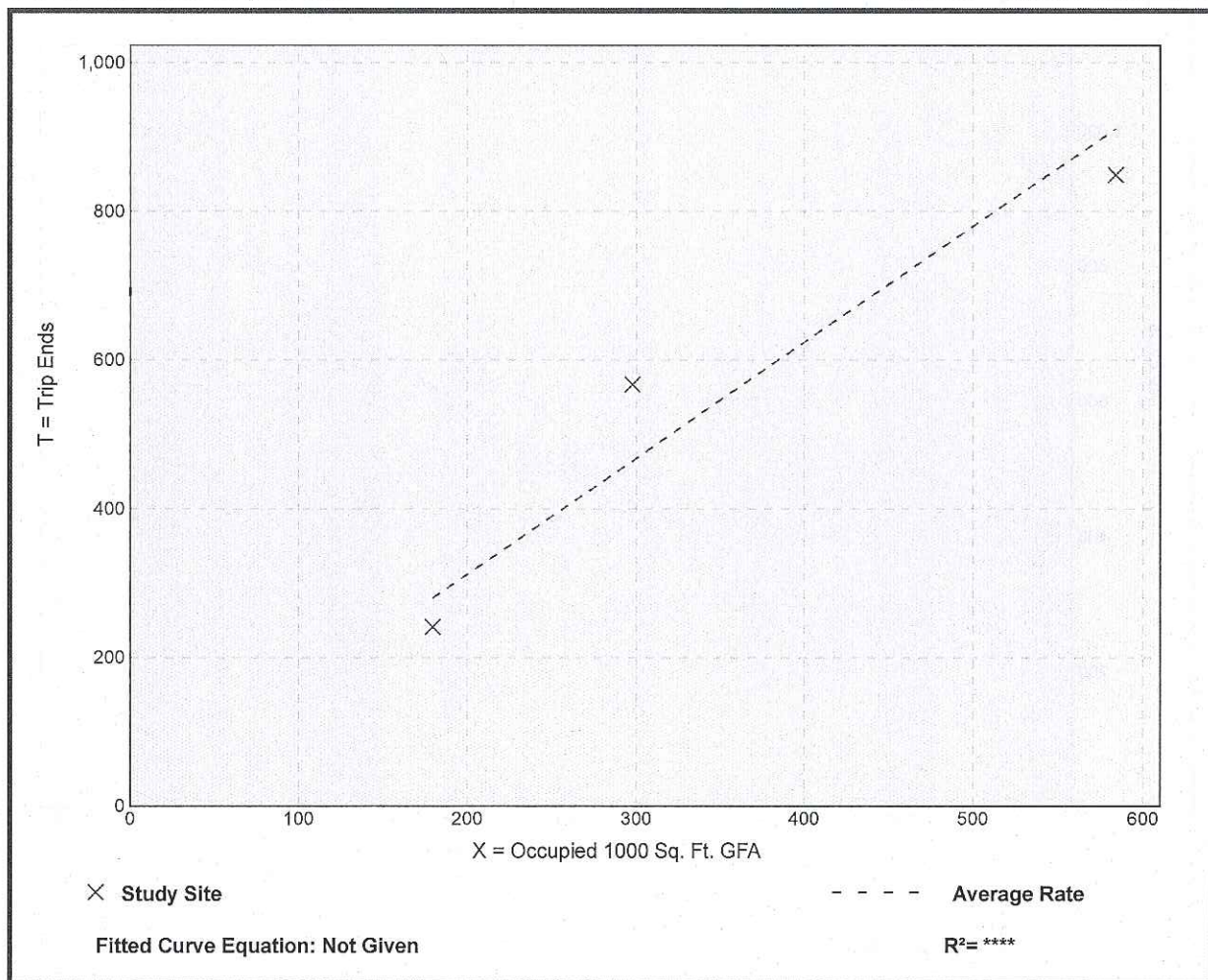
Directional Distribution: 16% entering, 84% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.56	1.34 - 1.91	1.94

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
On a: Weekday,  
AM Peak Hour of Generator

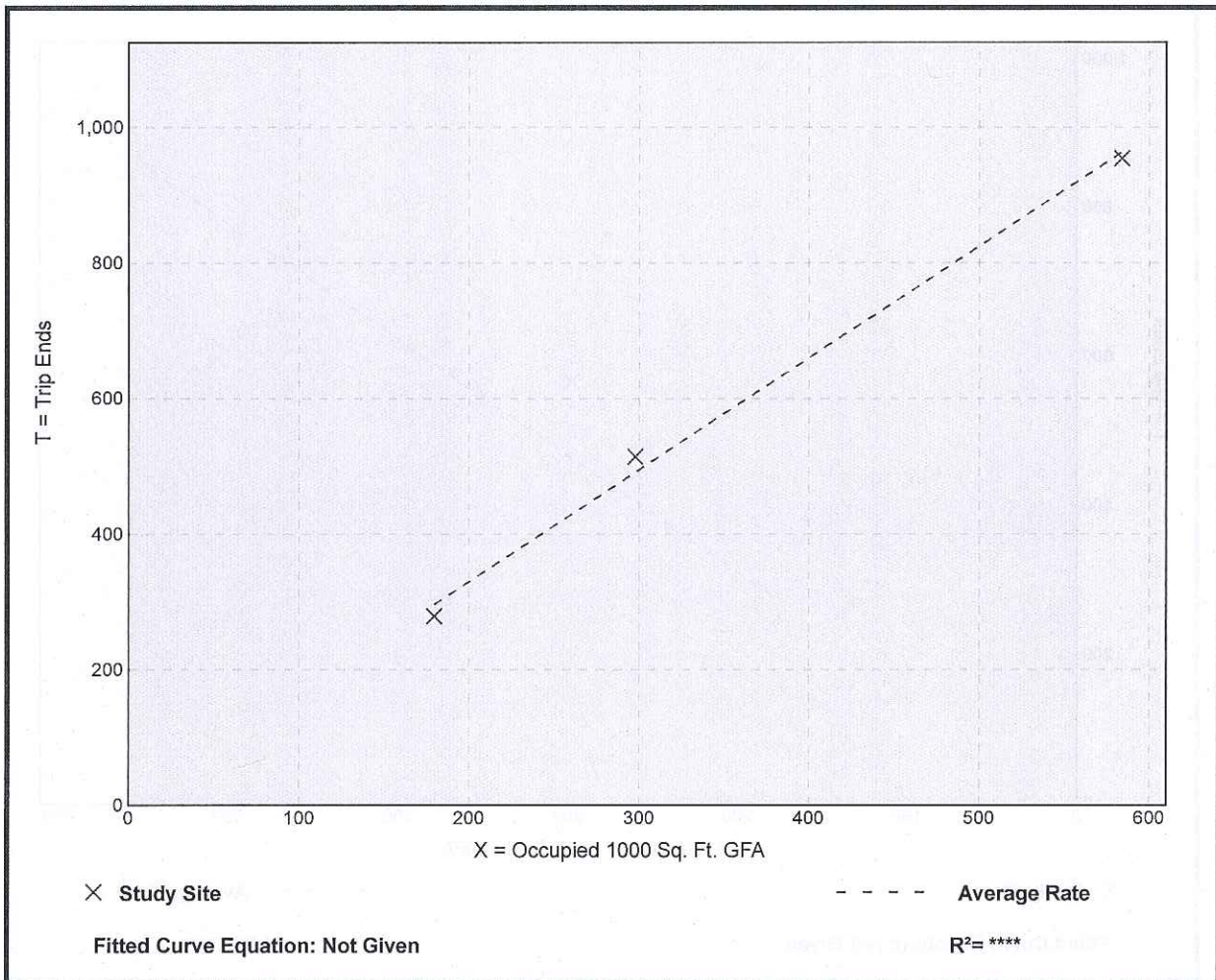
Setting/Location: Dense Multi-Use Urban  
Number of Studies: 3  
Occupied 1000 Sq. Ft. GFA: 354  
Directional Distribution: 78% entering, 22% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.65	1.55 - 1.73	2.01

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
On a: Weekday,  
PM Peak Hour of Generator

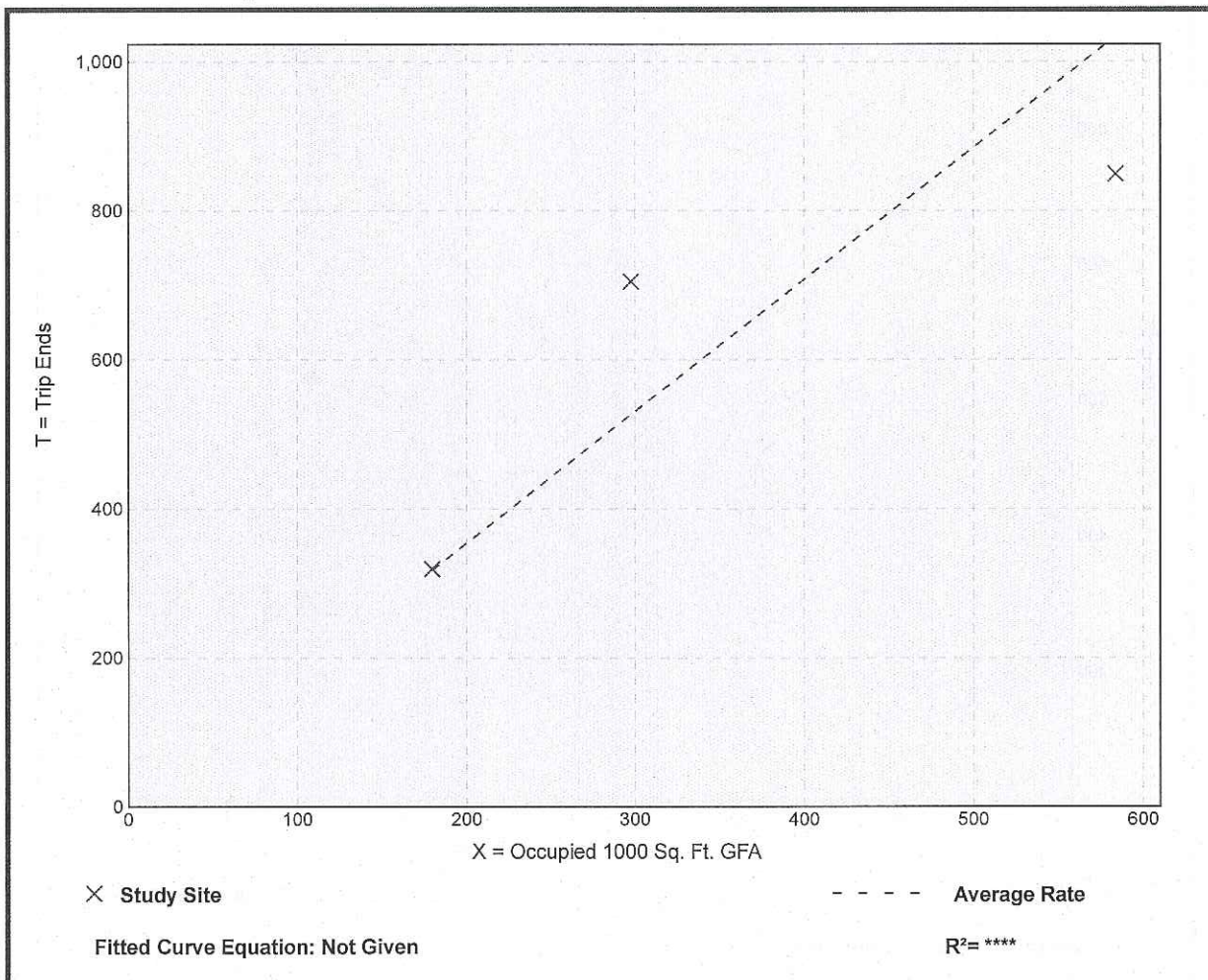
Setting/Location: Dense Multi-Use Urban  
Number of Studies: 3  
Occupied 1000 Sq. Ft. GFA: 354  
Directional Distribution: 26% entering, 74% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.77	1.45 - 2.37	2.33

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA

On a: Saturday

Setting/Location: Dense Multi-Use Urban

Number of Studies: 3

Occupied 1000 Sq. Ft. GFA: 354

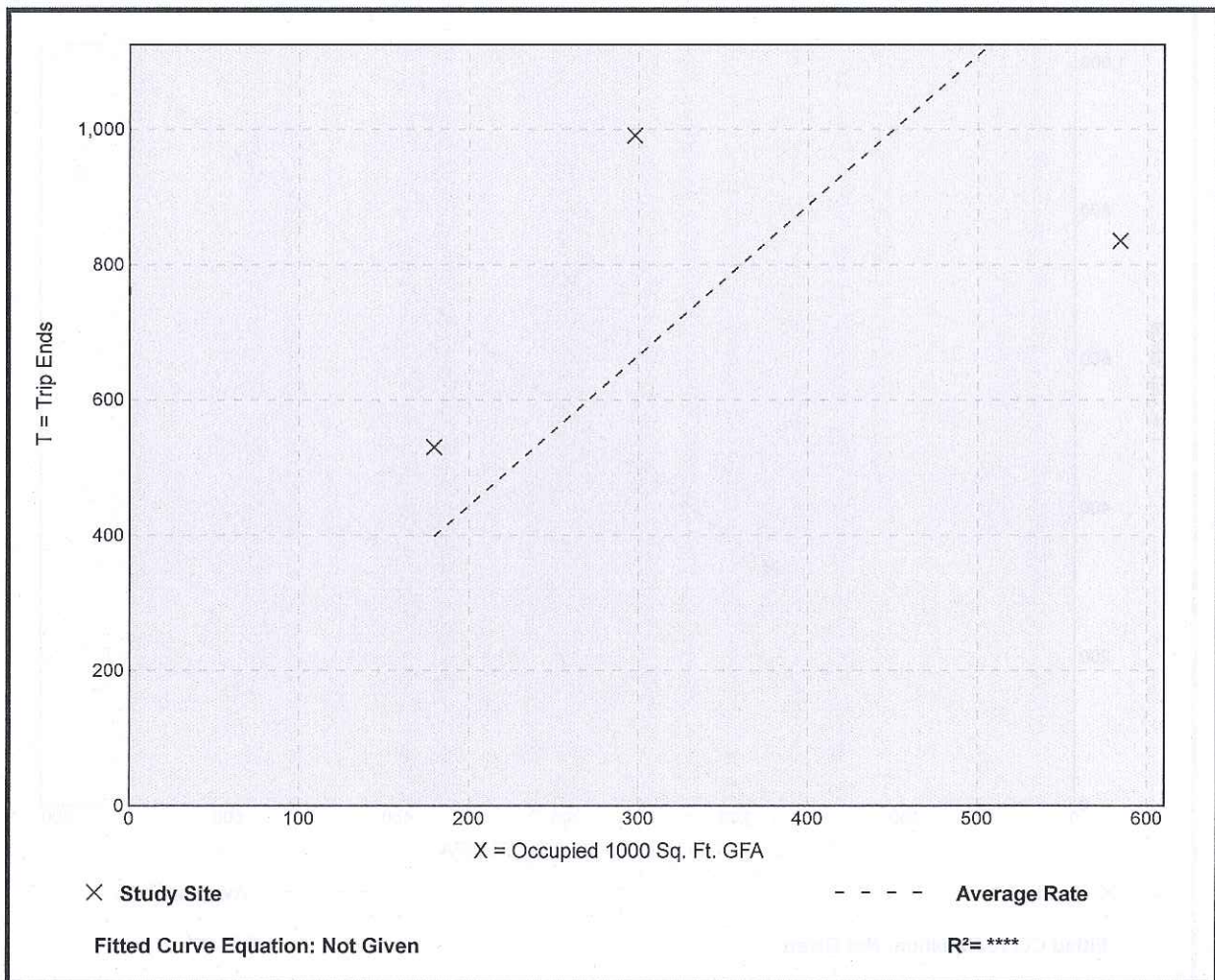
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.22	1.43 - 3.33	3.31

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
On a: Saturday, Peak Hour of Generator

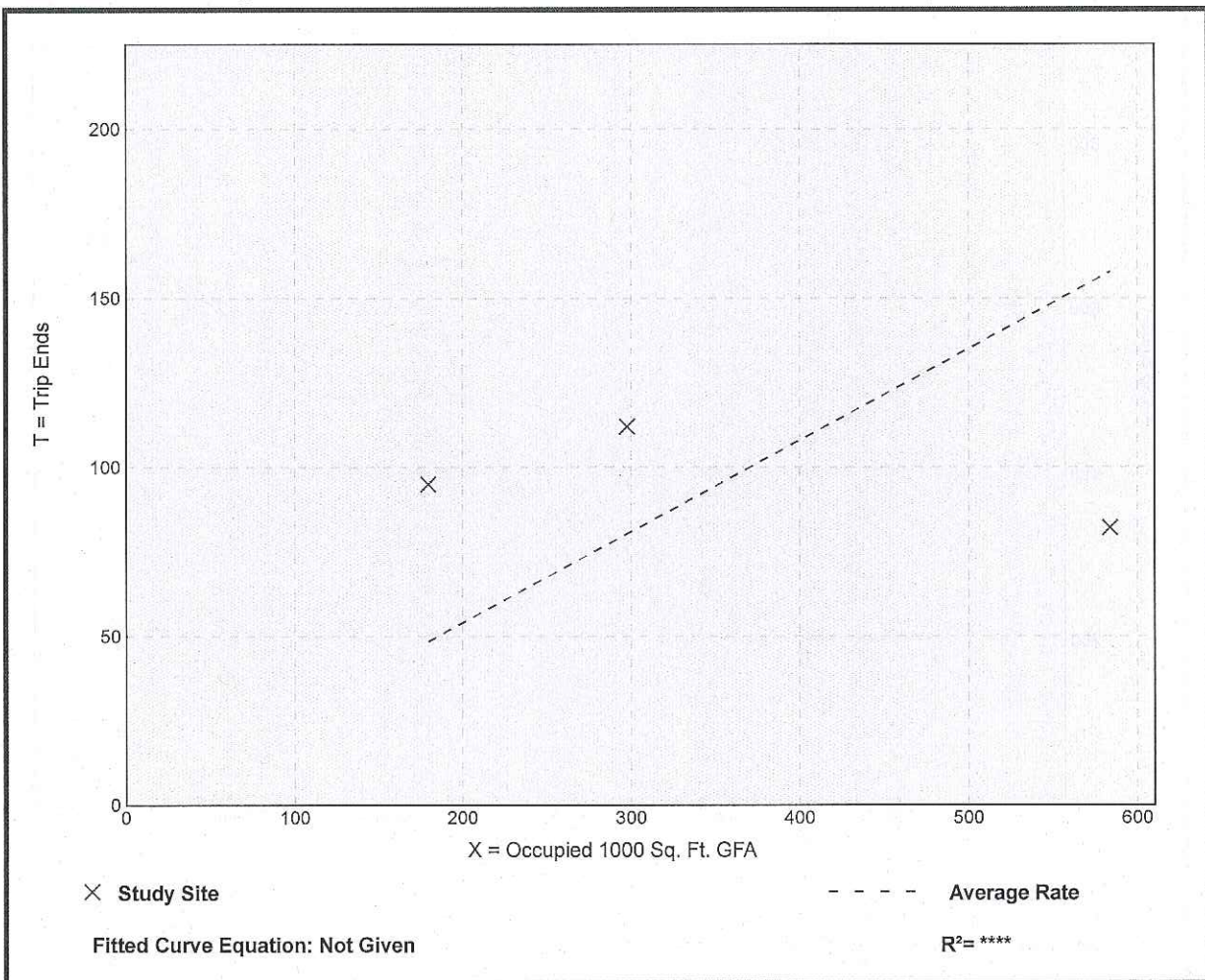
Setting/Location: Dense Multi-Use Urban  
Number of Studies: 3  
Occupied 1000 Sq. Ft. GFA: 354  
Directional Distribution: 48% entering, 52% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.27	0.14 - 0.53	0.47

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
On a: Sunday

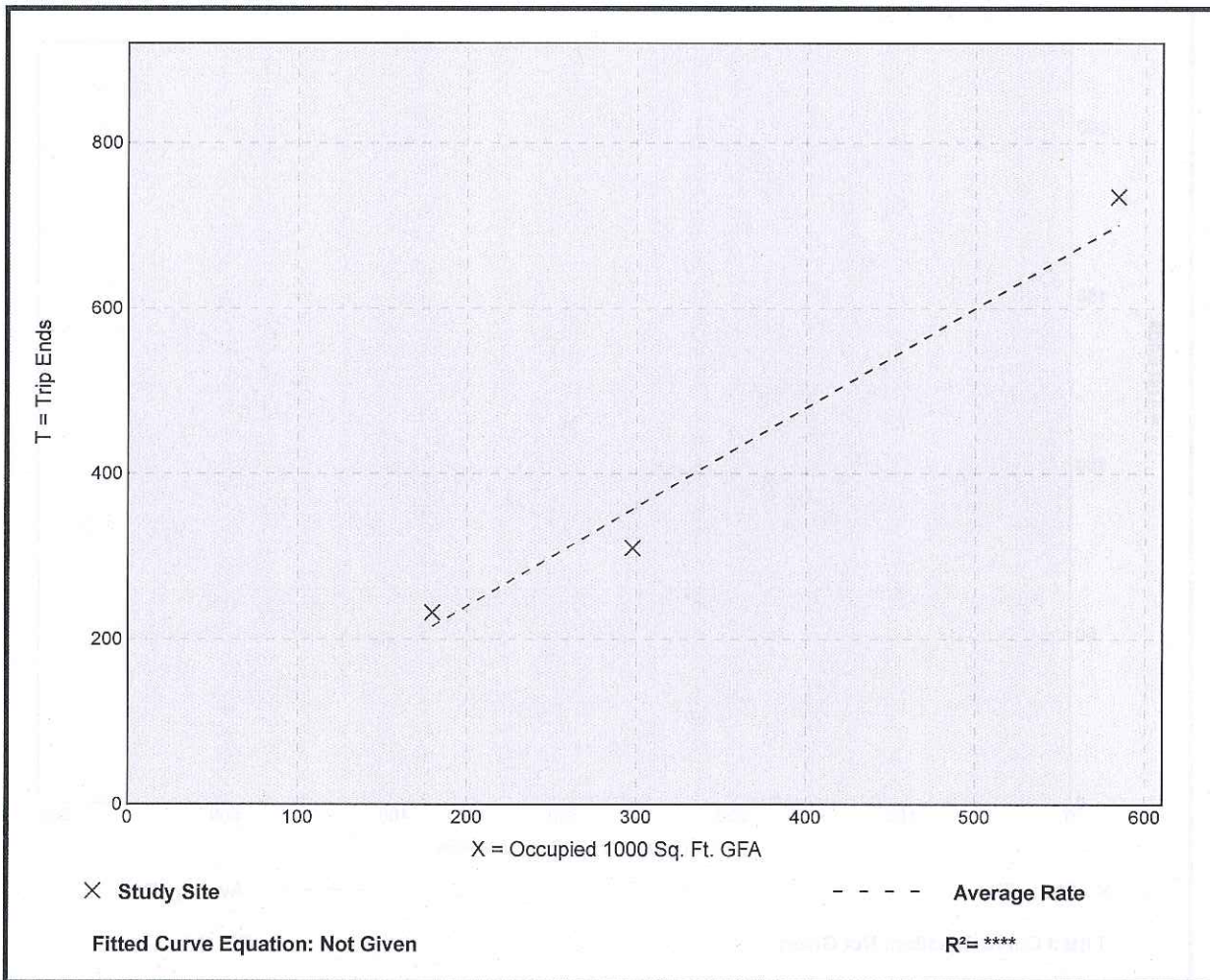
Setting/Location: Dense Multi-Use Urban  
Number of Studies: 3  
Occupied 1000 Sq. Ft. GFA: 354  
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.20	1.04 - 1.29	1.47

### Data Plot and Equation

*Caution – Small Sample Size*





# General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
On a: Sunday, Peak Hour of Generator

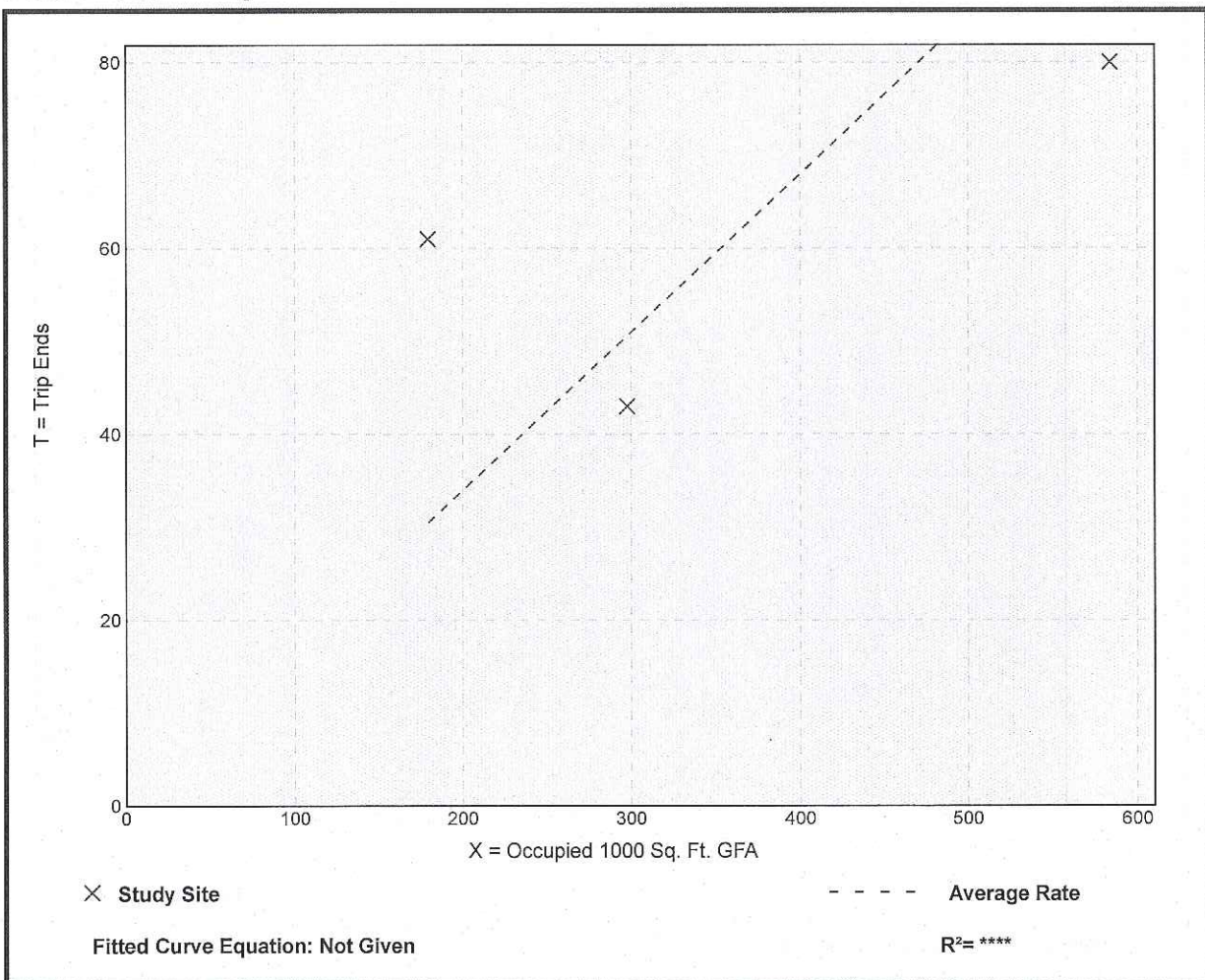
Setting/Location: Dense Multi-Use Urban  
Number of Studies: 3  
Occupied 1000 Sq. Ft. GFA: 354  
Directional Distribution: 36% entering, 64% exiting

## Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.17	0.14 - 0.34	0.28

## Data Plot and Equation

Caution – Small Sample Size





## General Office Building (710)

Person Trip Ends vs: Employees

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

Avg. Num. of Employees: 32

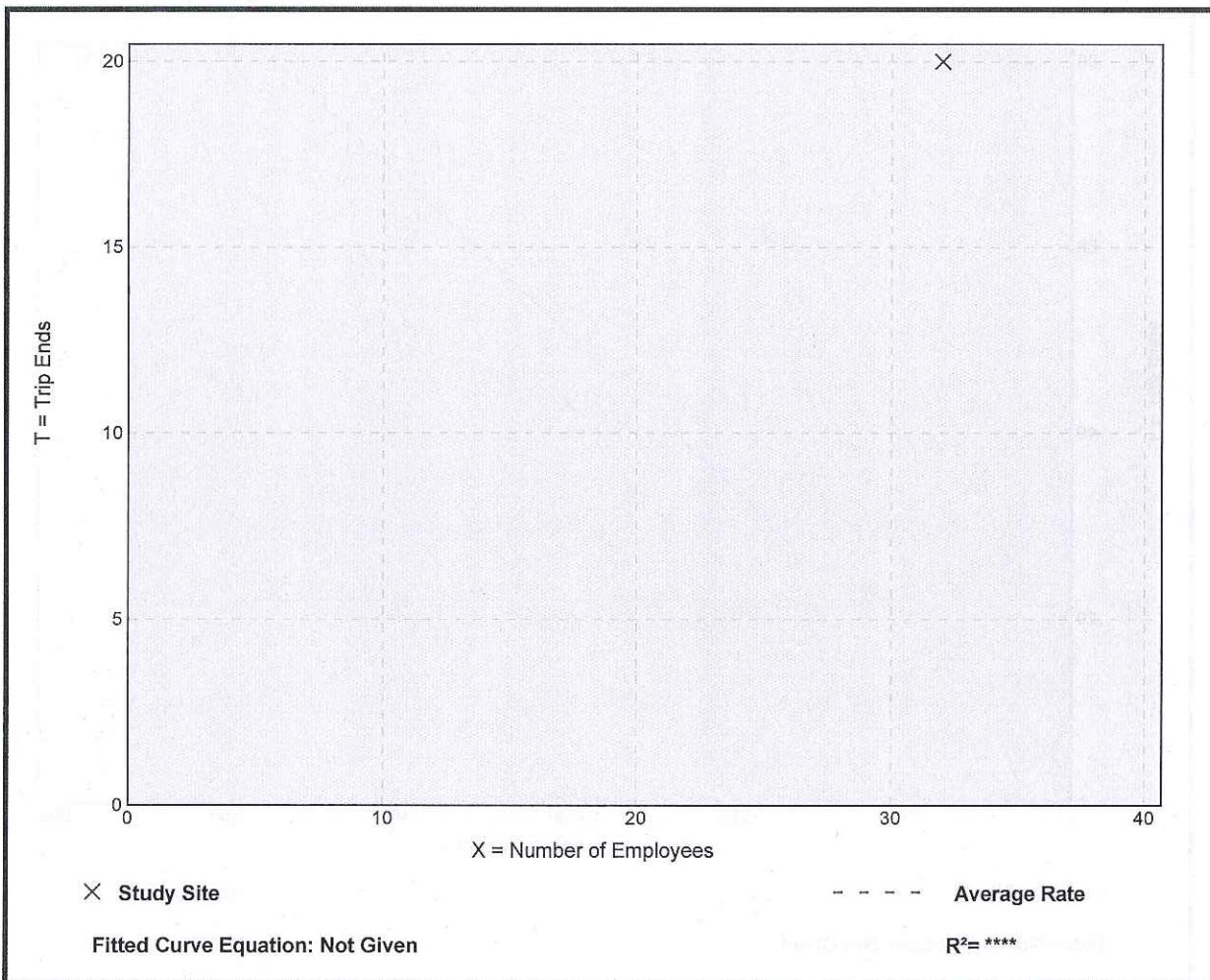
Directional Distribution: 25% entering, 75% exiting

### Person Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.63	0.63 - 0.63	*

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: Employees  
On a: Weekday,  
AM Peak Hour of Generator

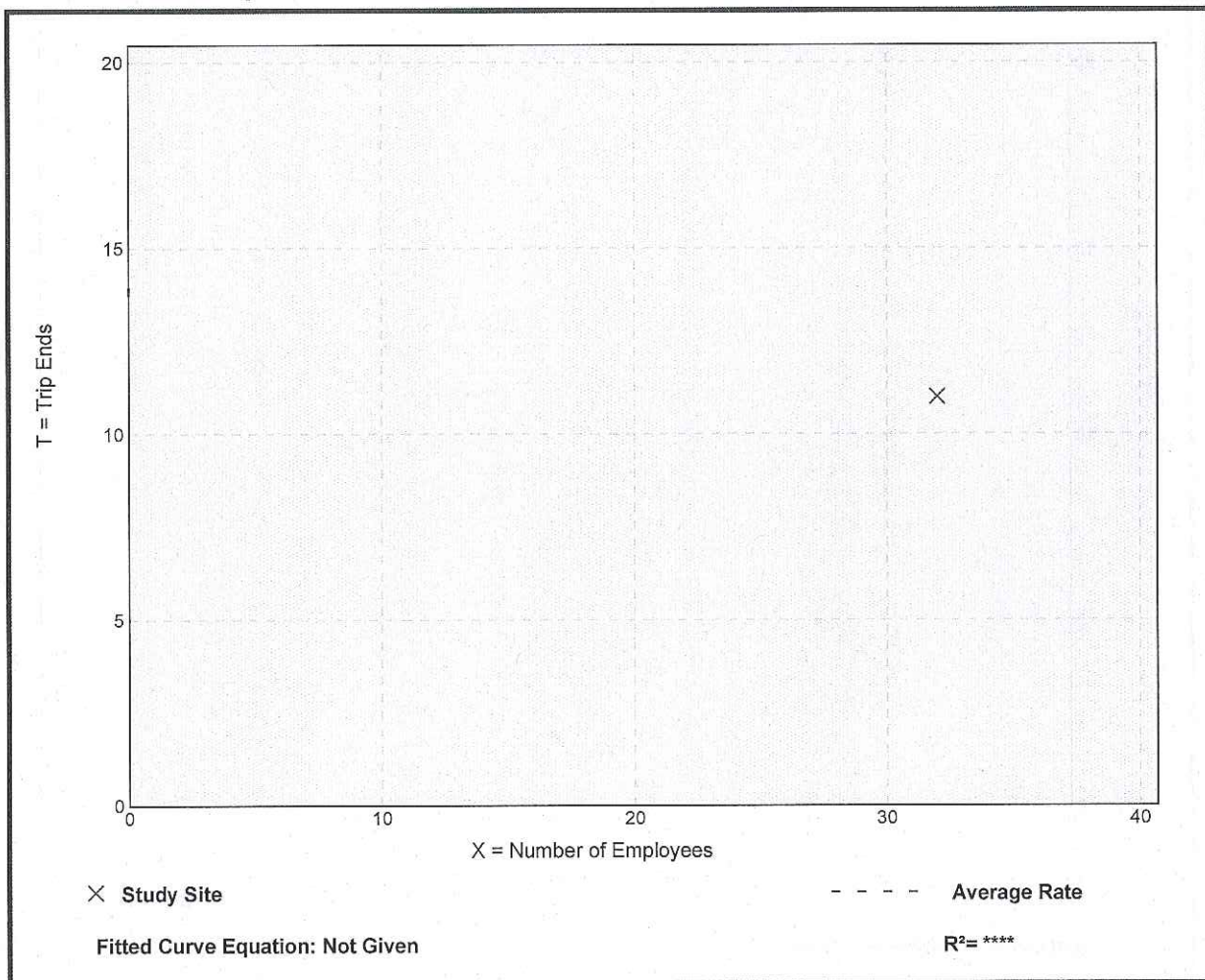
Setting/Location: Dense Multi-Use Urban  
Number of Studies: 1  
Avg. Num. of Employees: 32  
Directional Distribution: 91% entering, 9% exiting

### Person Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.34	0.34 - 0.34	*

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Vehicle Trip Ends vs: Employees  
On a: Weekday,  
PM Peak Hour of Generator

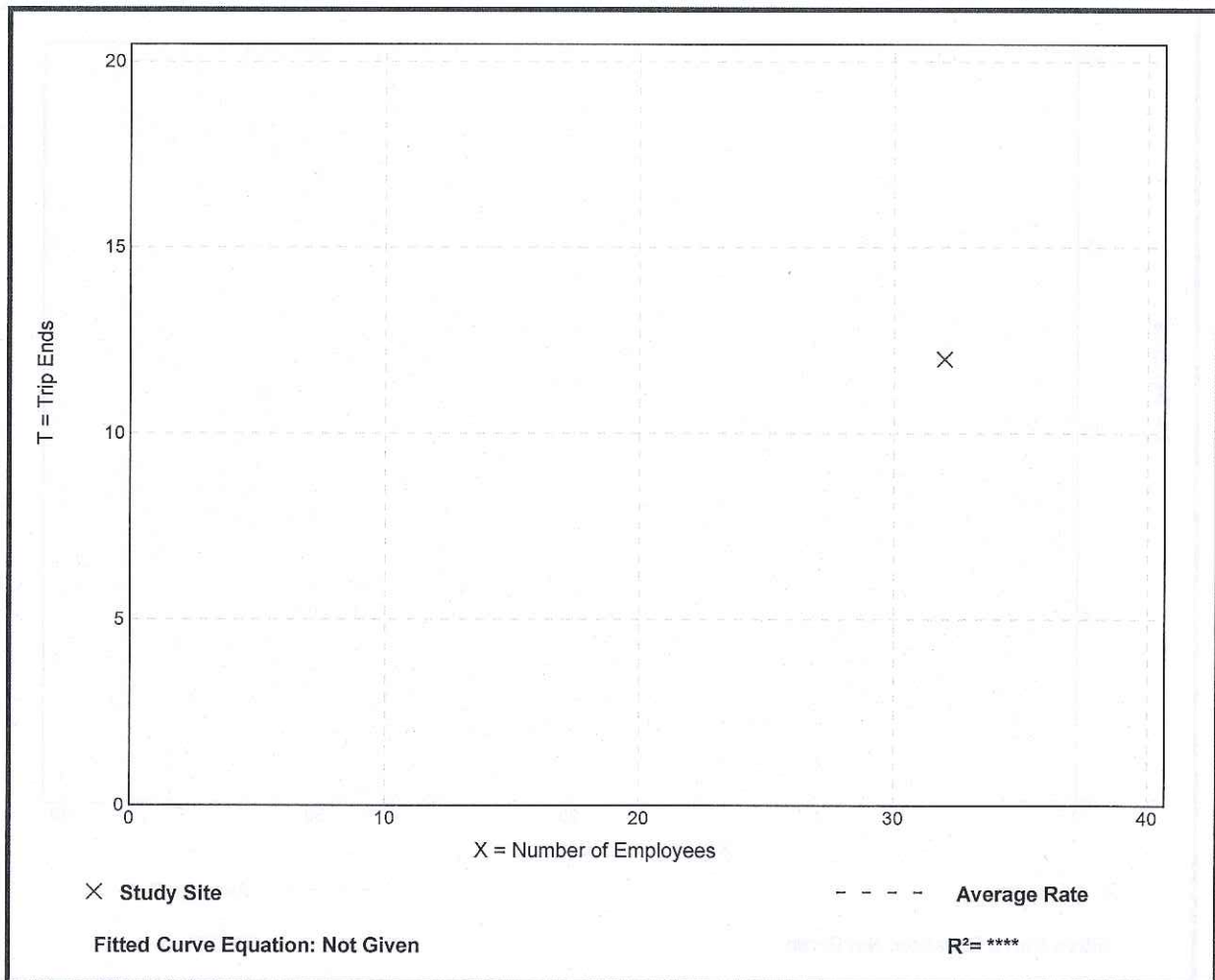
Setting/Location: Dense Multi-Use Urban  
Number of Studies: 1  
Avg. Num. of Employees: 32  
Directional Distribution: 25% entering, 75% exiting

### Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.38	0.38 - 0.38	*

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday

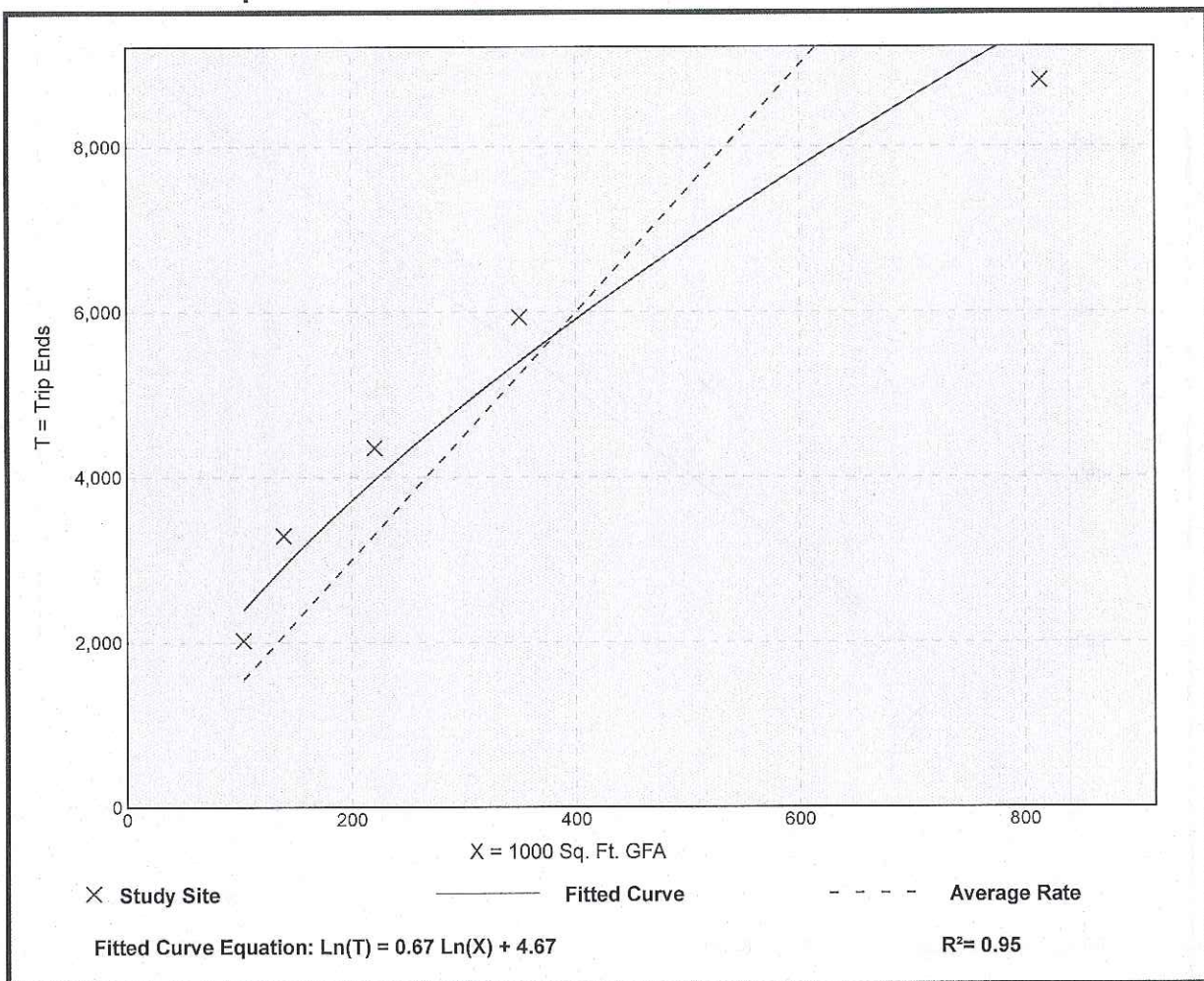
Setting/Location: Center City Core  
Number of Studies: 5  
1000 Sq. Ft. GFA: 325  
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
14.99	10.81 - 23.61	5.04

### Data Plot and Equation

*Caution – Small Sample Size*





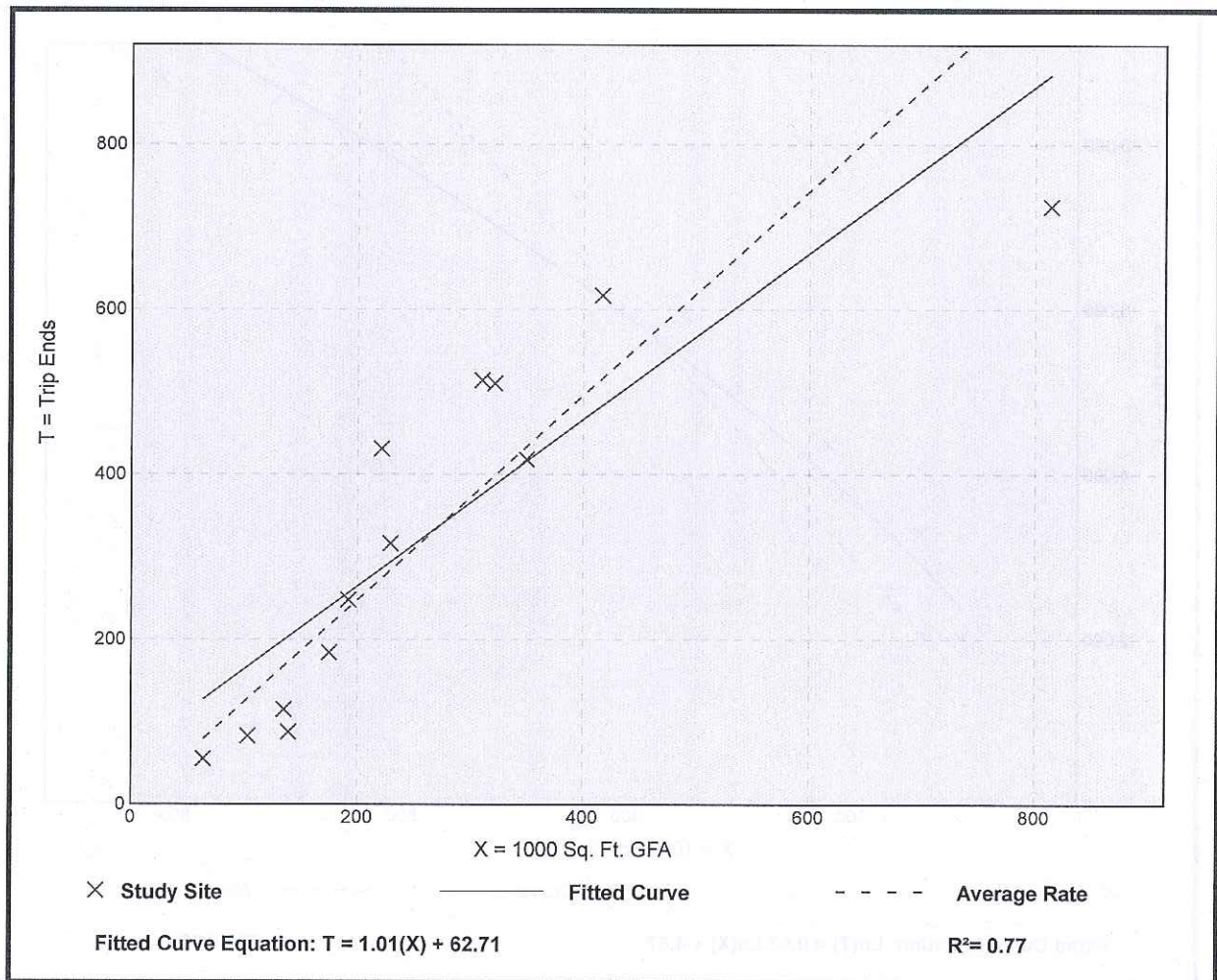
## General Office Building (710)

Person 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: Center City Core  
 Number of Studies: 13  
 1000 Sq. Ft. GFA: 267  
 Directional Distribution: 87% entering, 13% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.24	0.63 - 1.95	0.37

### Data Plot and Equation





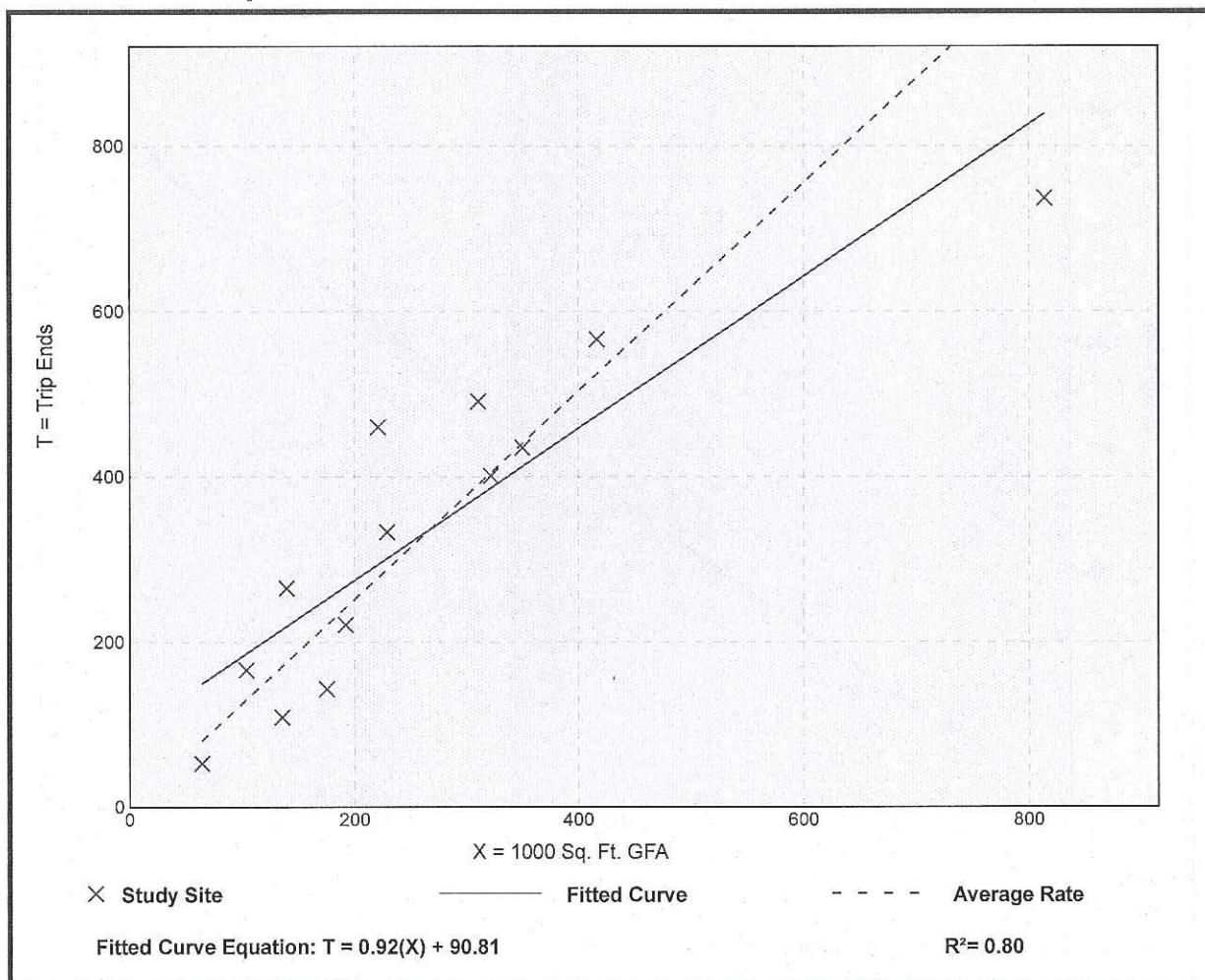
## General Office Building (710)

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: Center City Core  
 Number of Studies: 13  
 1000 Sq. Ft. GFA: 267  
 Directional Distribution: 16% entering, 84% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.26	0.81 - 2.08	0.37

### Data Plot and Equation





## General Office Building (710)

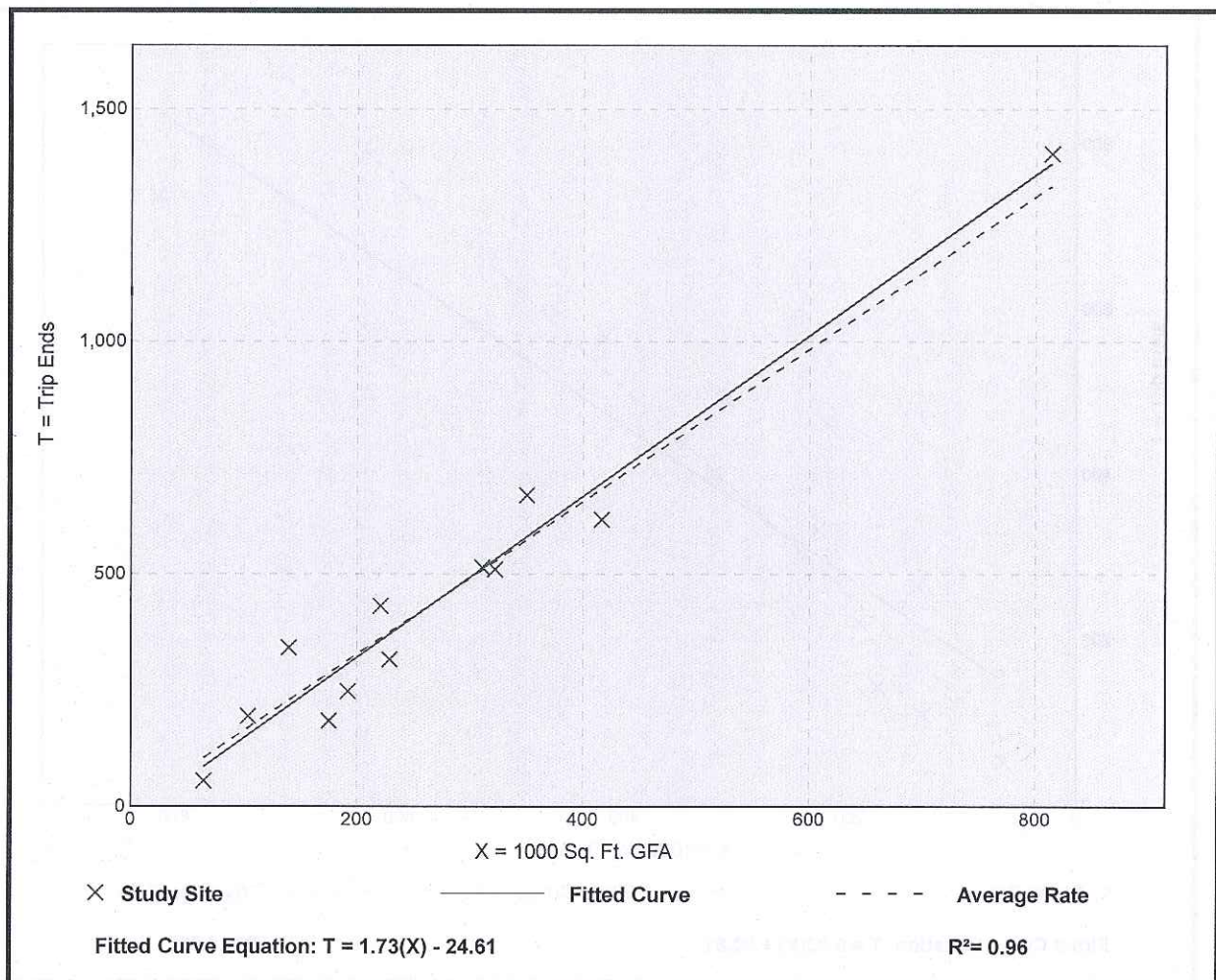
Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday,  
AM Peak Hour of Generator

Setting/Location: Center City Core  
Number of Studies: 12  
1000 Sq. Ft. GFA: 278  
Directional Distribution: 85% entering, 15% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.64	0.86 - 2.45	0.31

### Data Plot and Equation





## General Office Building (710)

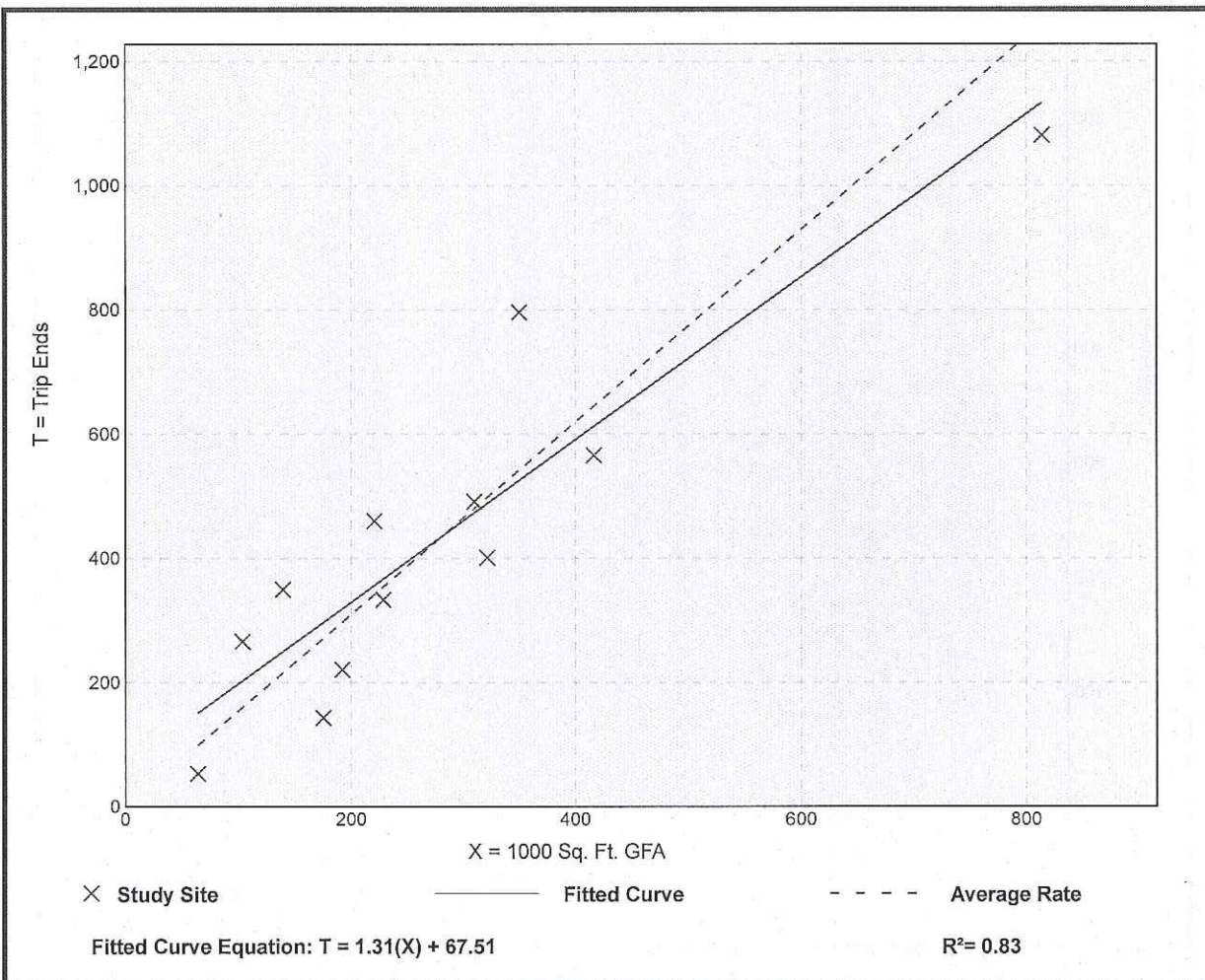
Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday,  
PM Peak Hour of Generator

Setting/Location: Center City Core  
Number of Studies: 12  
1000 Sq. Ft. GFA: 278  
Directional Distribution: 32% entering, 68% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.55	0.82 - 2.57	0.49

### Data Plot and Equation





## General Office Building (710)

Person Trip Ends vs: 1000 Sq. Ft. GFA

On a: Saturday

Setting/Location: Center City Core

Number of Studies: 4

1000 Sq. Ft. GFA: 352

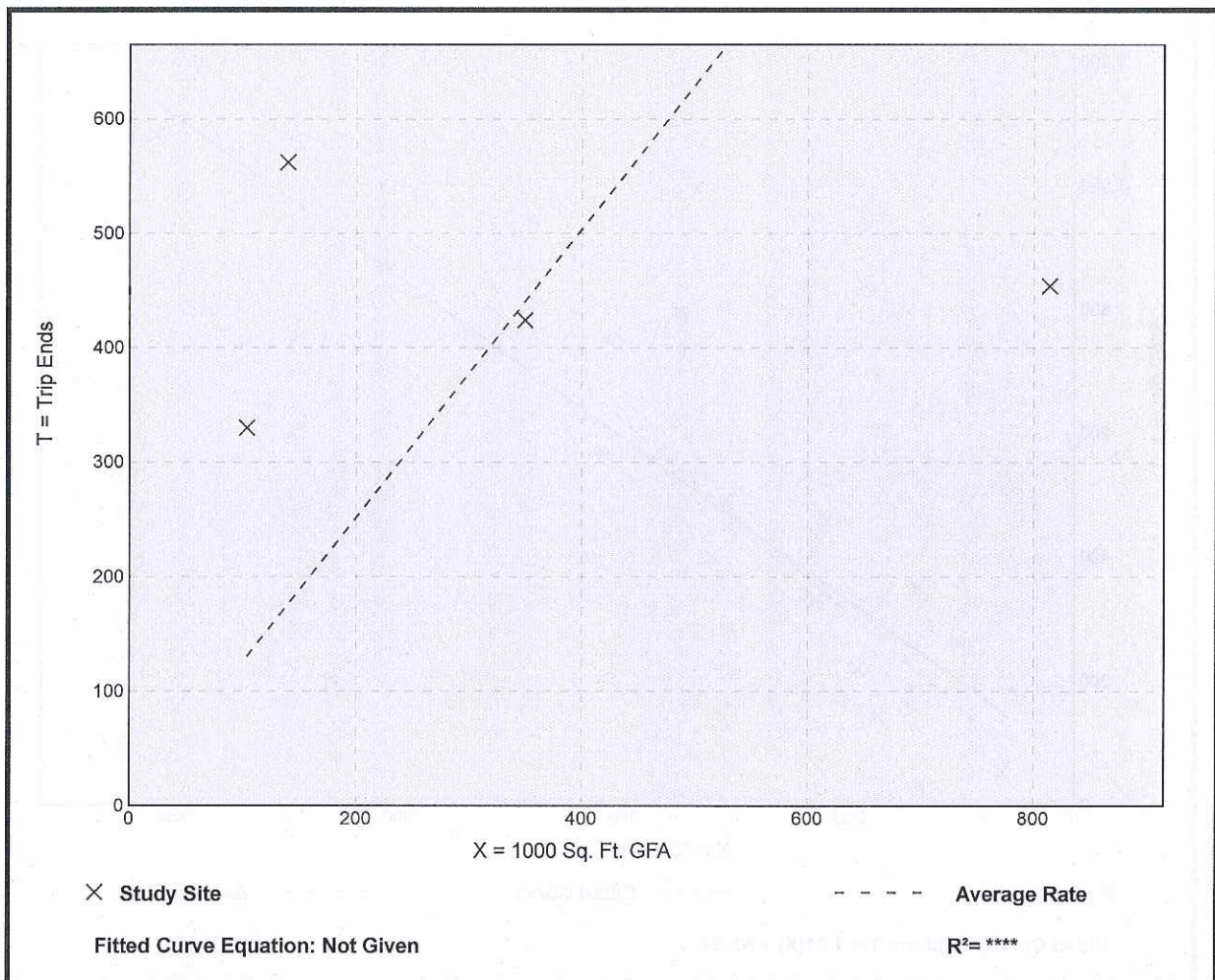
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.26	0.56 - 4.03	1.33

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Saturday, Peak Hour of Generator

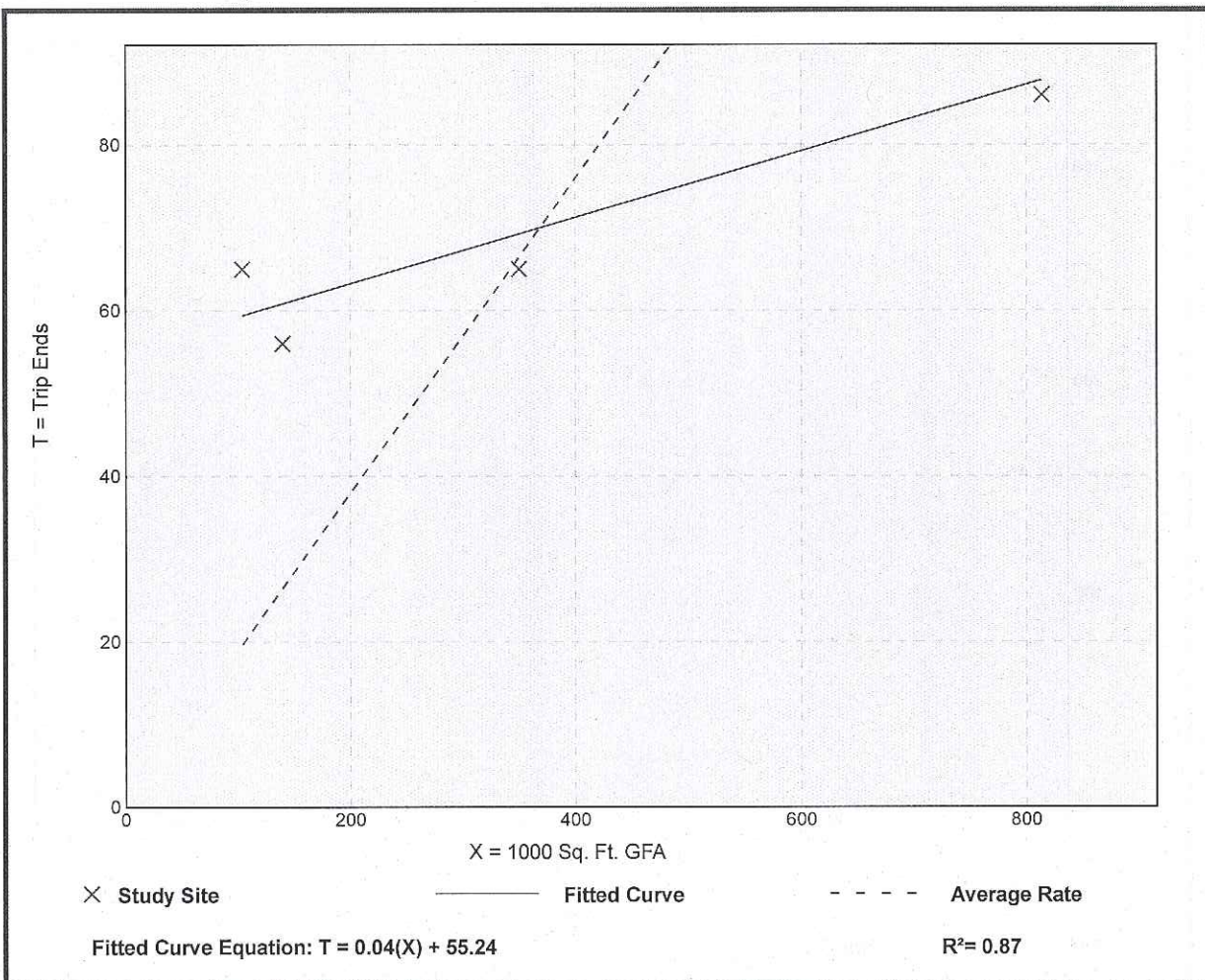
Setting/Location: Center City Core  
Number of Studies: 4  
1000 Sq. Ft. GFA: 352  
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.19	0.11 - 0.63	0.17

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: 1000 Sq. Ft. GFA

On a: Sunday

Setting/Location: Center City Core

Number of Studies: 4

1000 Sq. Ft. GFA: 352

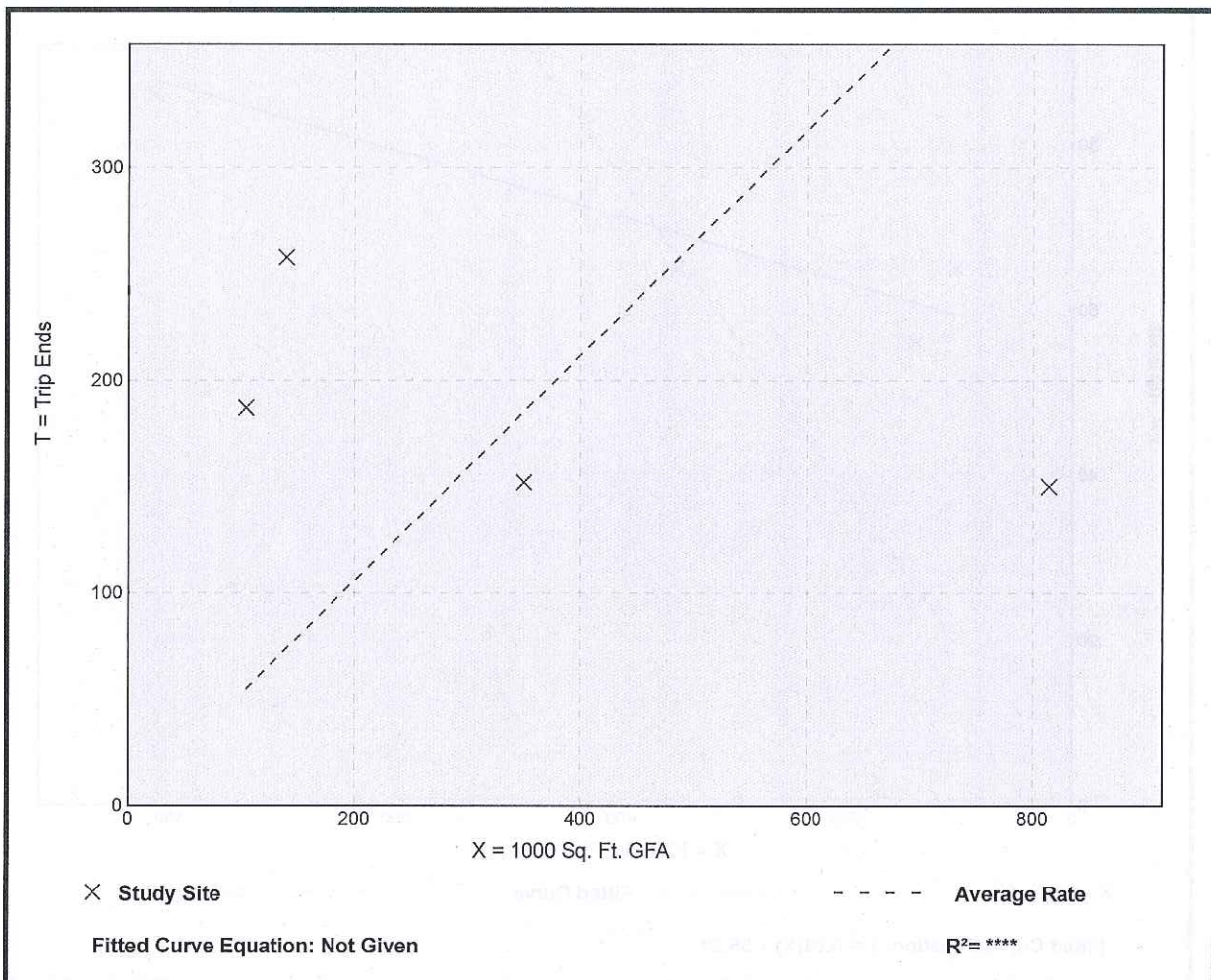
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.53	0.18 - 1.85	0.70

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Sunday, Peak Hour of Generator

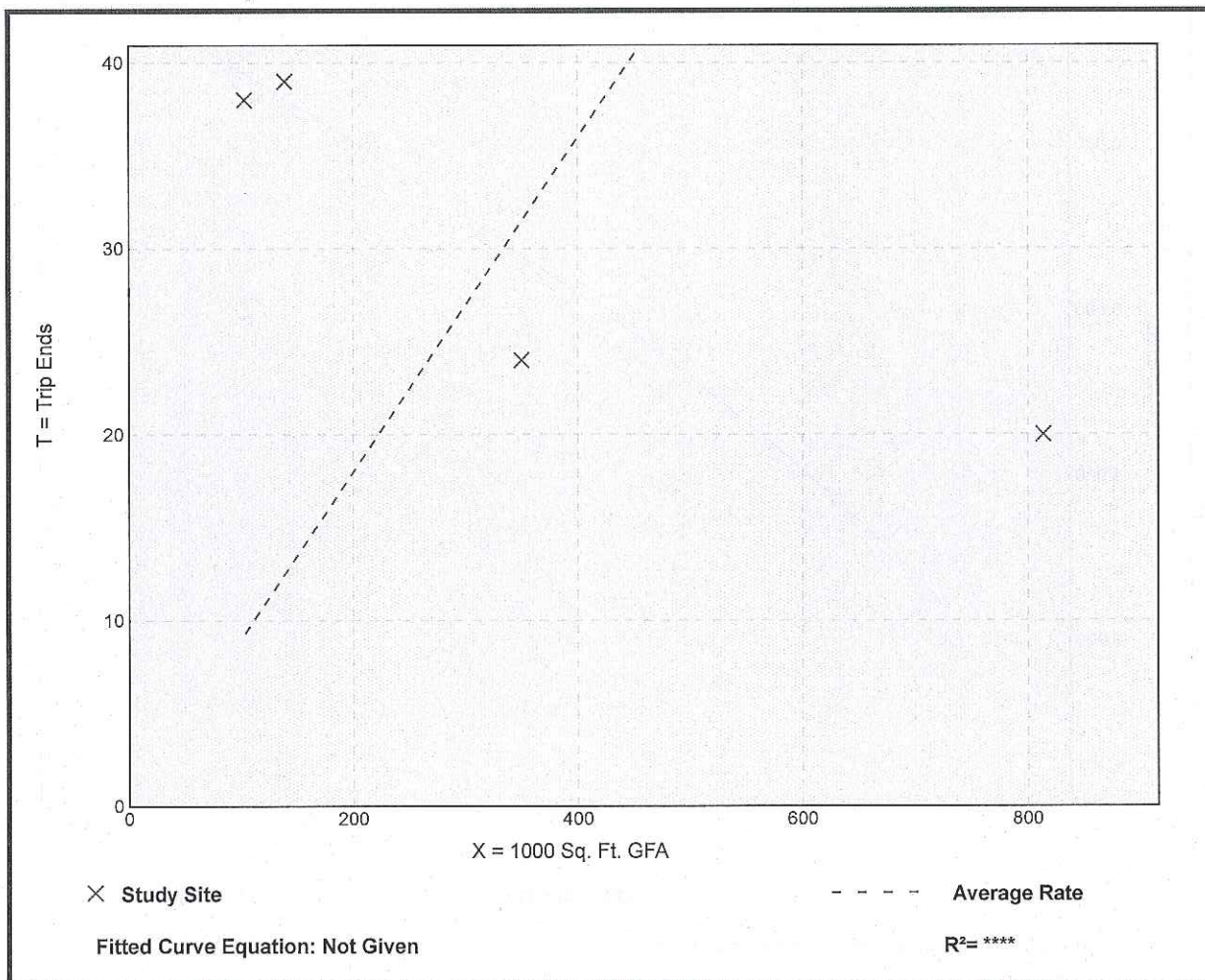
Setting/Location: Center City Core  
Number of Studies: 4  
1000 Sq. Ft. GFA: 352  
Directional Distribution: 64% entering, 36% exiting

### Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.09	0.02 - 0.37	0.13

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
On a: Weekday

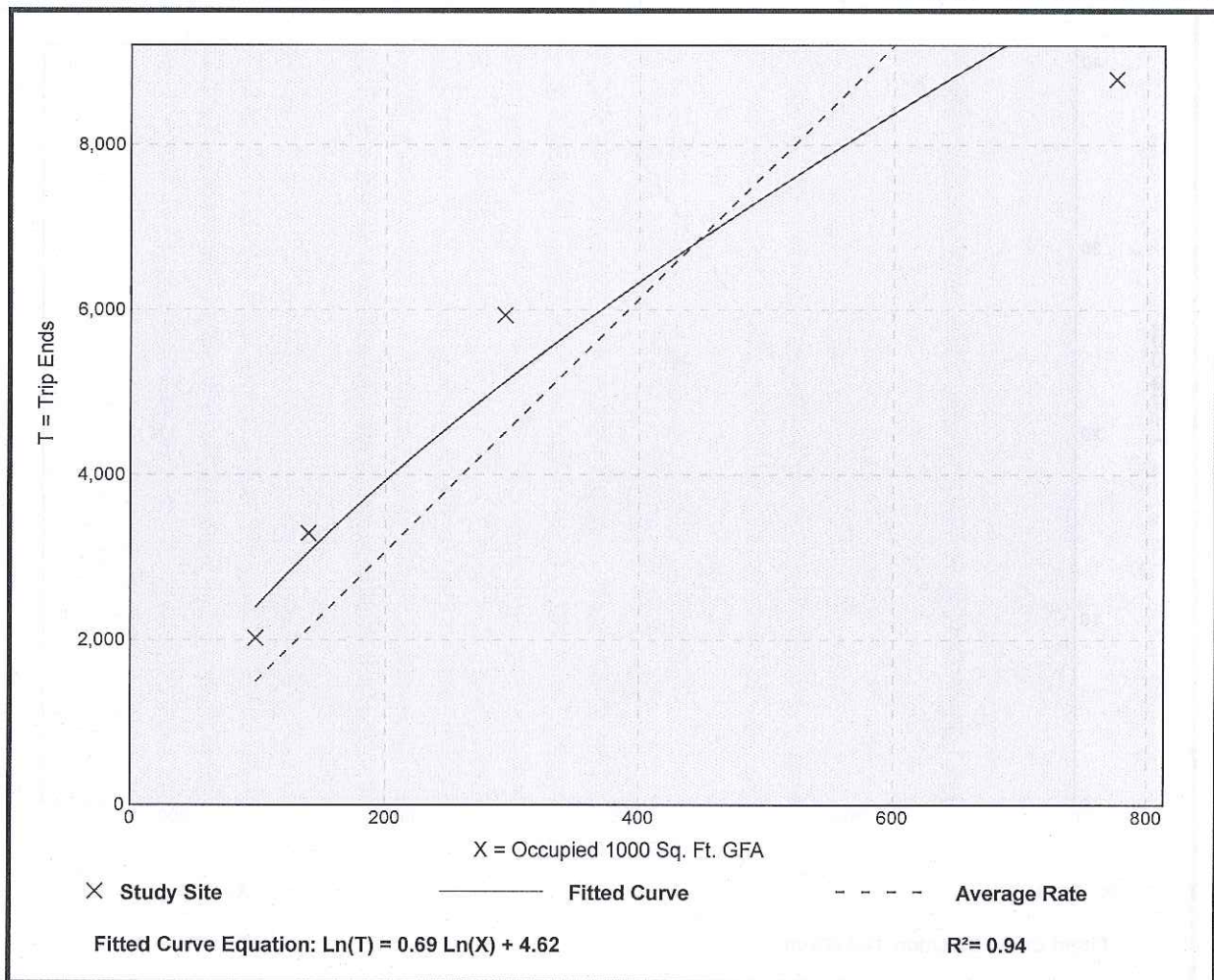
Setting/Location: Center City Core  
Number of Studies: 4  
Occupied 1000 Sq. Ft. GFA: 327  
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
15.34	11.34 - 23.61	5.68

### Data Plot and Equation

*Caution – Small Sample Size*



## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
 On a: Weekday,  
 Peak Hour of Adjacent Street Traffic,  
 One Hour Between 7 and 9 a.m.

Setting/Location: Center City Core

Number of Studies: 4

Occupied 1000 Sq. Ft. GFA: 327

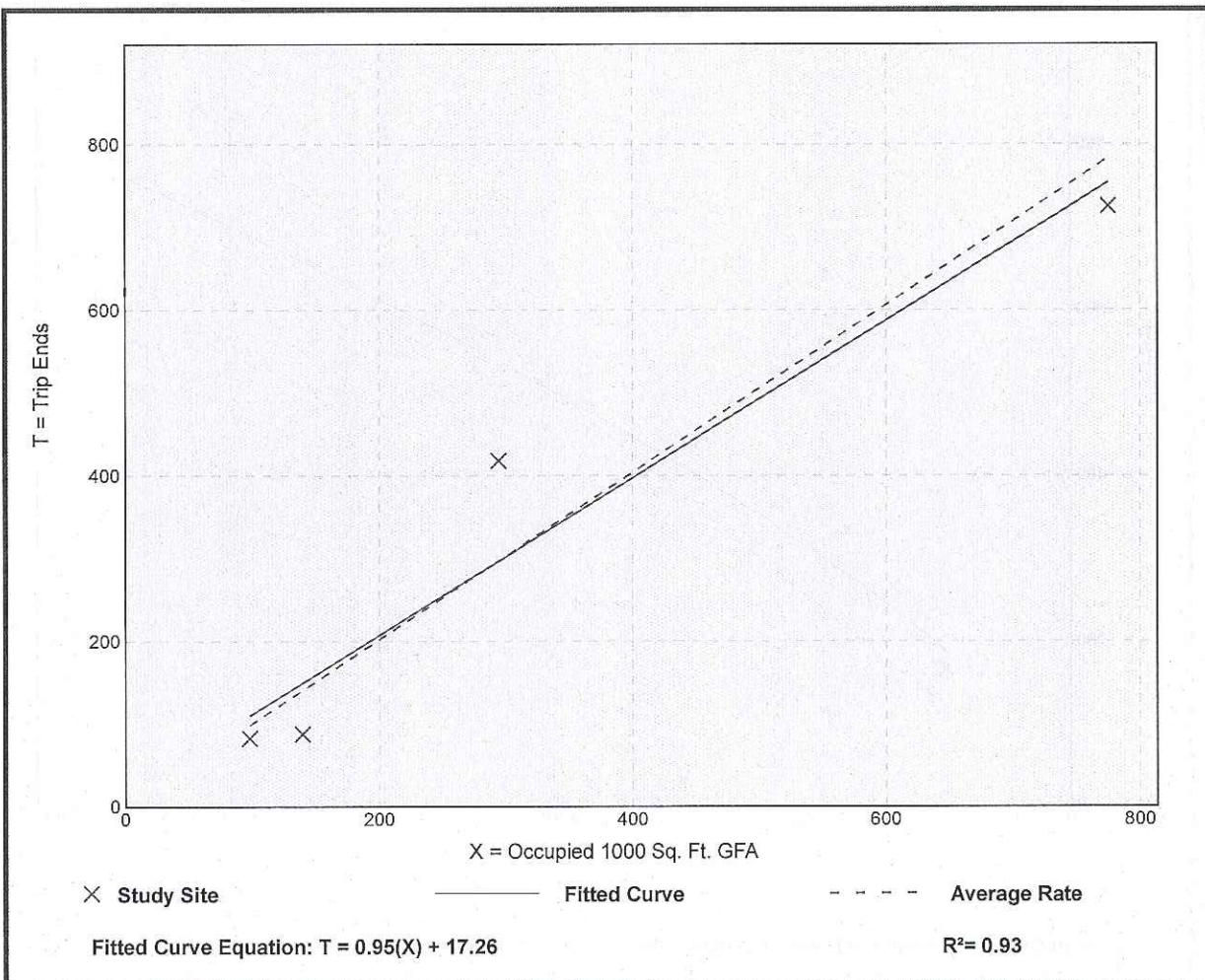
Directional Distribution: 92% entering, 8% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.01	0.63 - 1.42	0.28

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

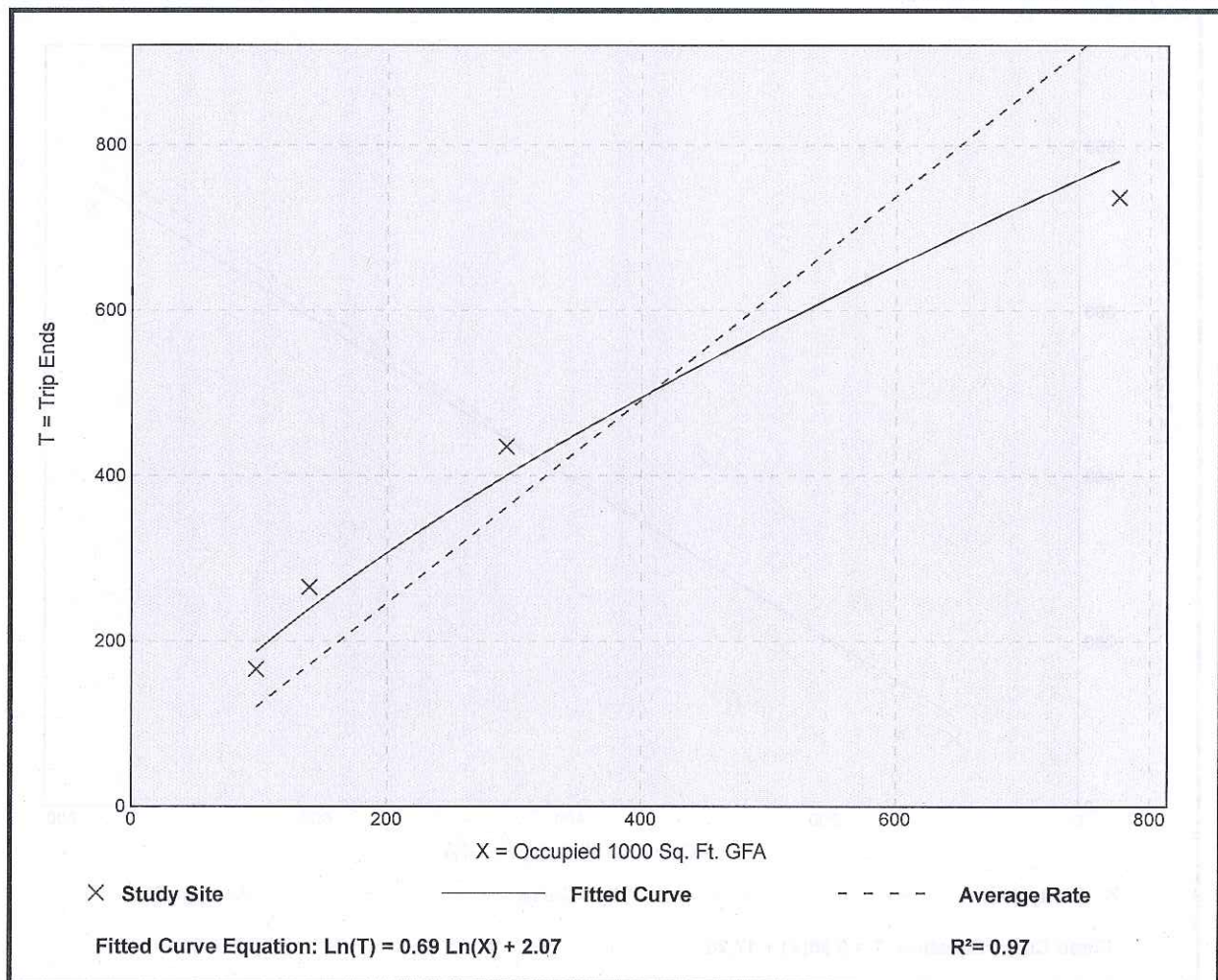
Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
 On a: Weekday,  
 Peak Hour of Adjacent Street Traffic,  
 One Hour Between 4 and 6 p.m.  
 Setting/Location: Center City Core  
 Number of Studies: 4  
 Occupied 1000 Sq. Ft. GFA: 327  
 Directional Distribution: 18% entering, 82% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.23	0.95 - 1.90	0.41

### Data Plot and Equation

Caution – Small Sample Size



## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
On a: Weekday,  
AM Peak Hour of Generator

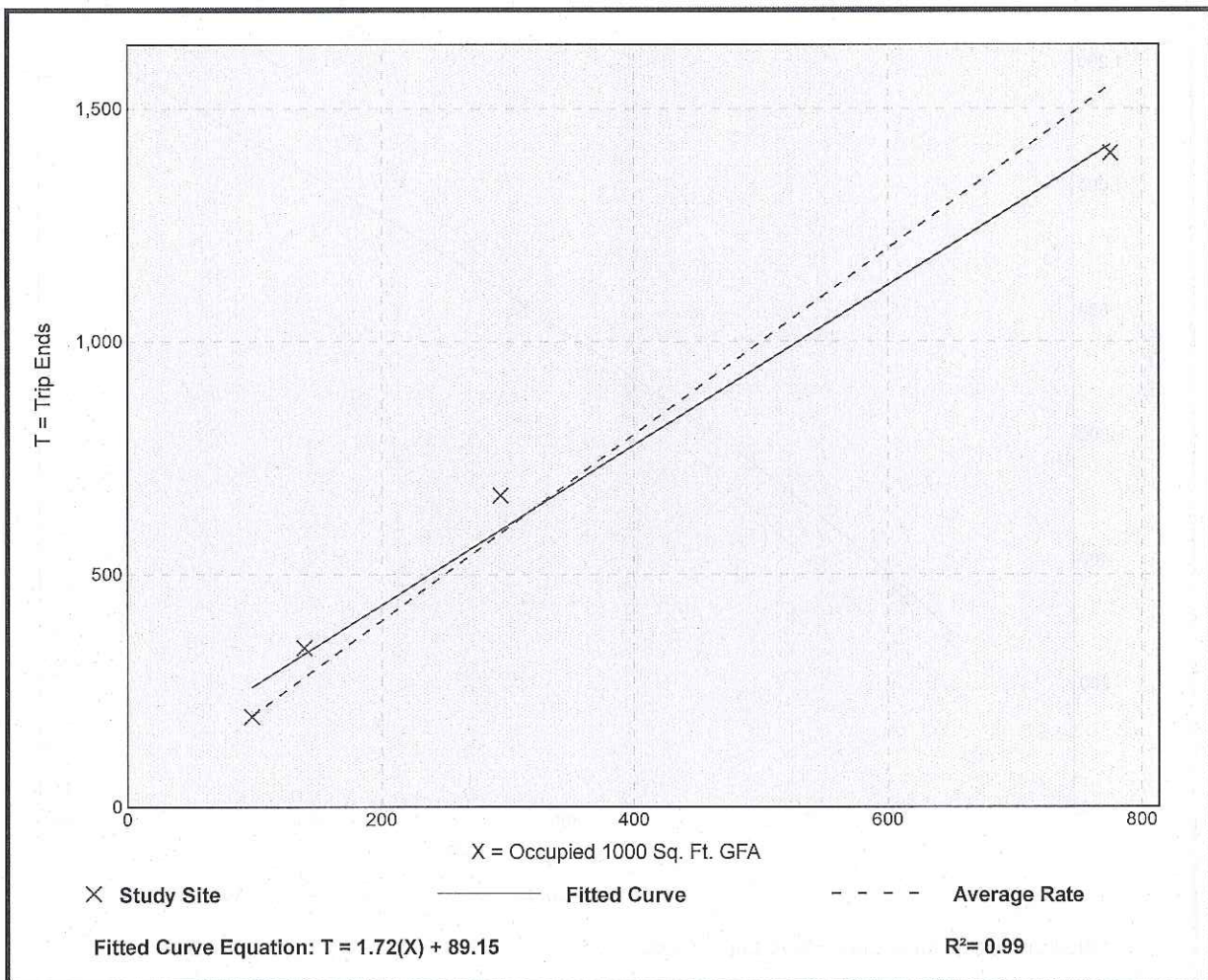
Setting/Location: Center City Core  
Number of Studies: 4  
Occupied 1000 Sq. Ft. GFA: 327  
Directional Distribution: 86% entering, 14% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.00	1.81 - 2.45	0.28

### Data Plot and Equation

*Caution – Small Sample Size*





# General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA

On a: Weekday,

PM Peak Hour of Generator

Setting/Location: Center City Core

Number of Studies: 4

Occupied 1000 Sq. Ft. GFA: 327

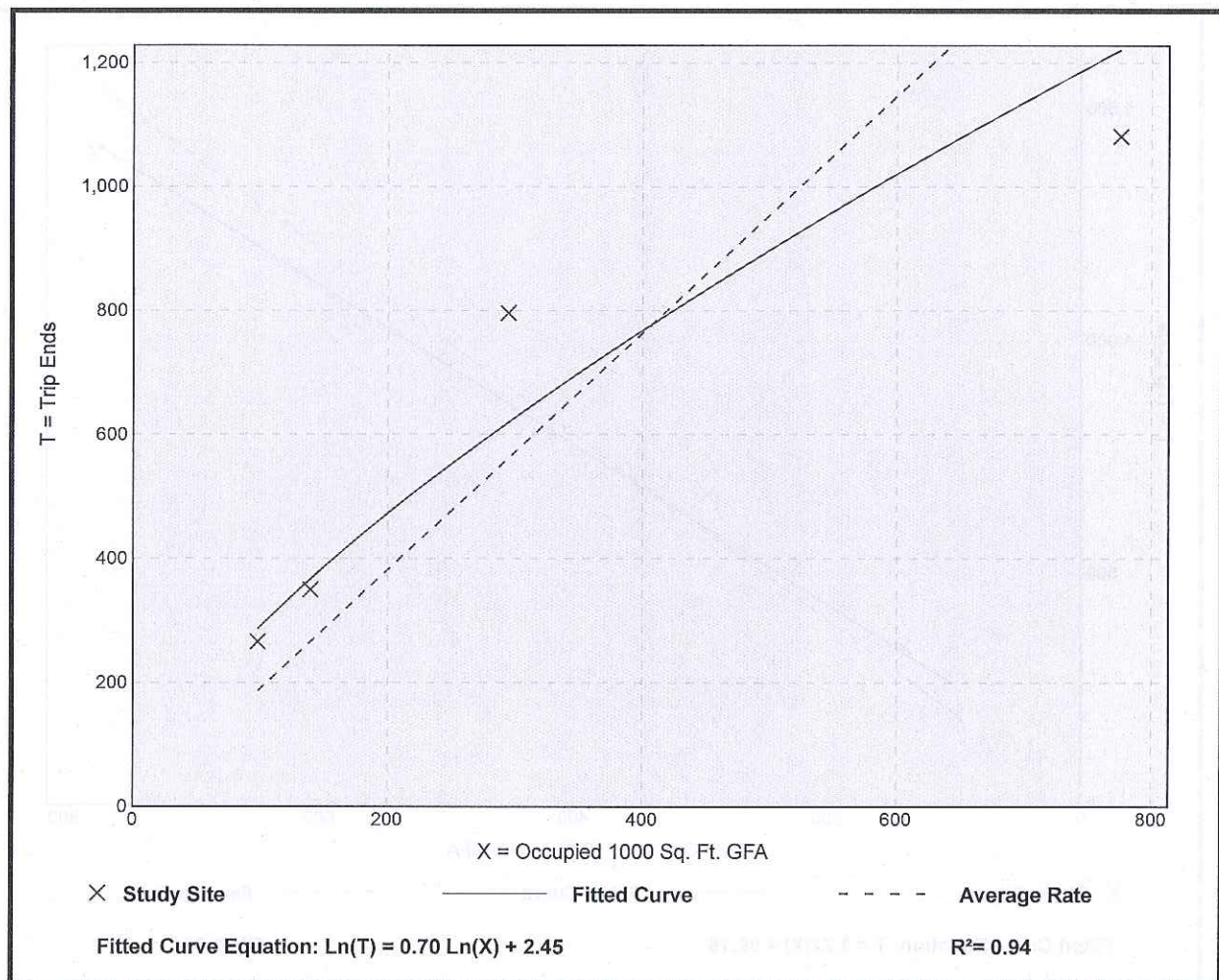
Directional Distribution: 50% entering, 50% exiting

## Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.91	1.39 - 2.72	0.72

## Data Plot and Equation

Caution – Small Sample Size



## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
On a: Saturday

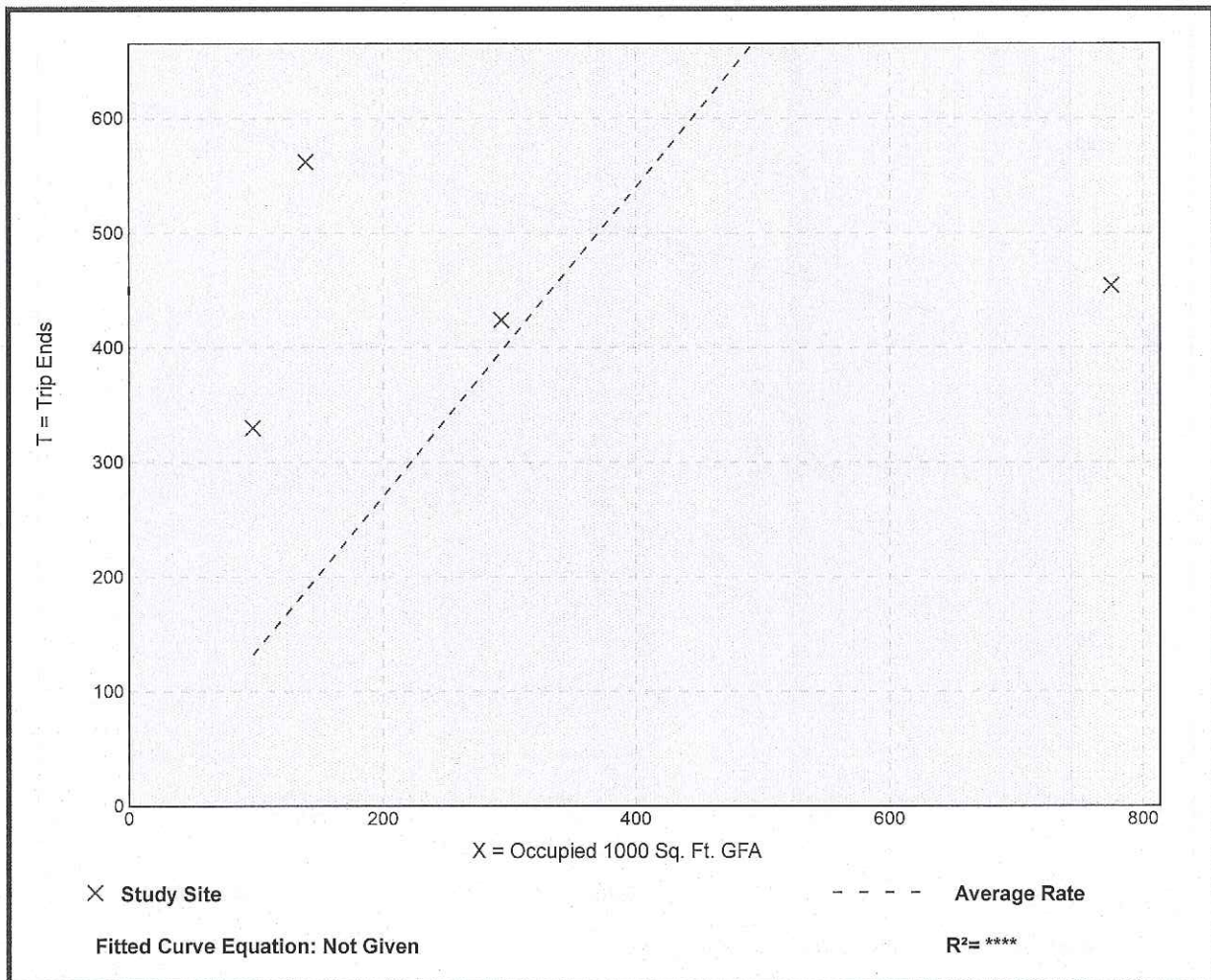
Setting/Location: Center City Core  
Number of Studies: 4  
Occupied 1000 Sq. Ft. GFA: 327  
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.35	0.59 - 4.03	1.38

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
On a: Saturday, Peak Hour of Generator

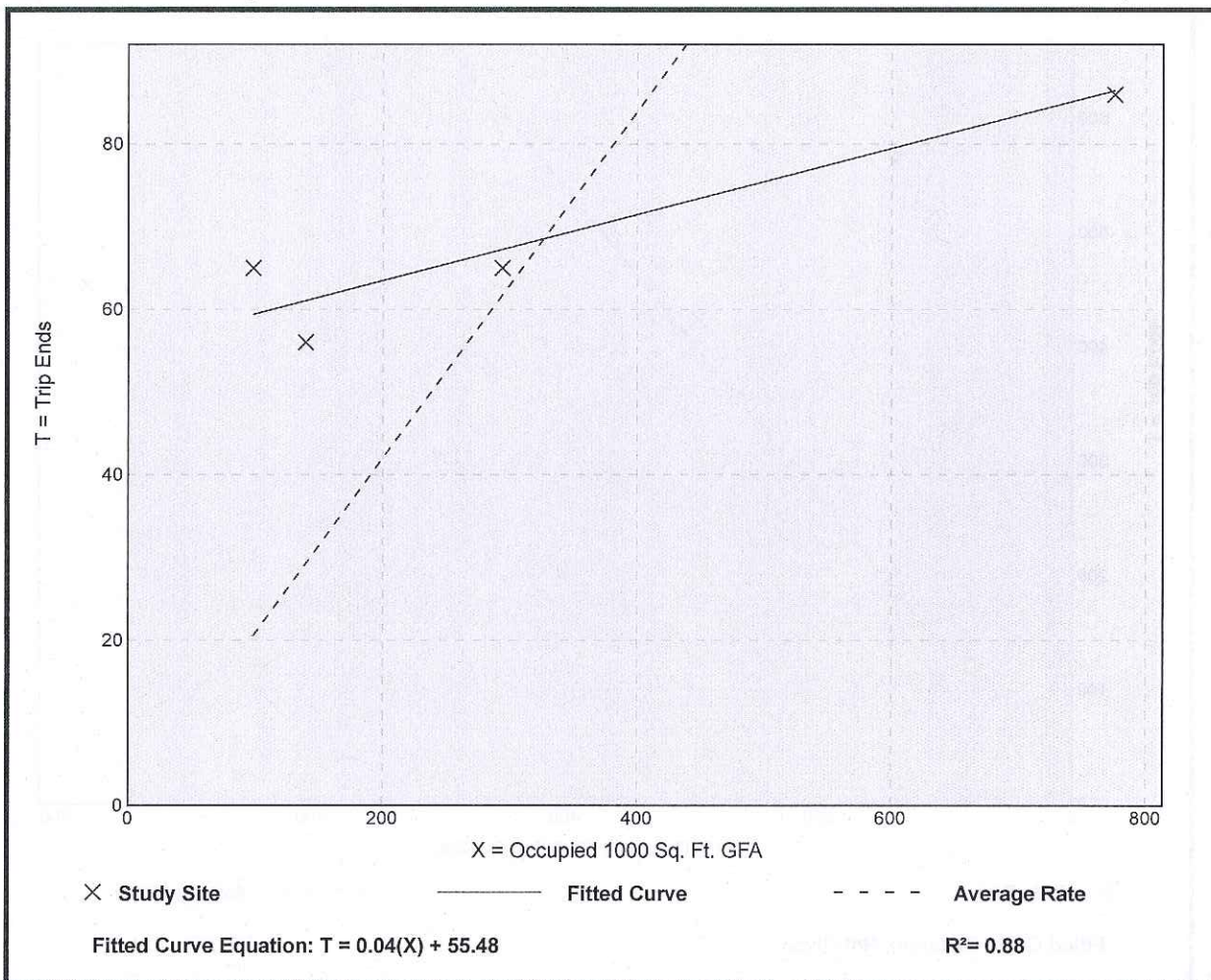
Setting/Location: Center City Core  
Number of Studies: 4  
Occupied 1000 Sq. Ft. GFA: 327  
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.21	0.11 - 0.67	0.18

### Data Plot and Equation

*Caution – Small Sample Size*



## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA

On a: Sunday

Setting/Location: Center City Core

Number of Studies: 4

Occupied 1000 Sq. Ft. GFA: 327

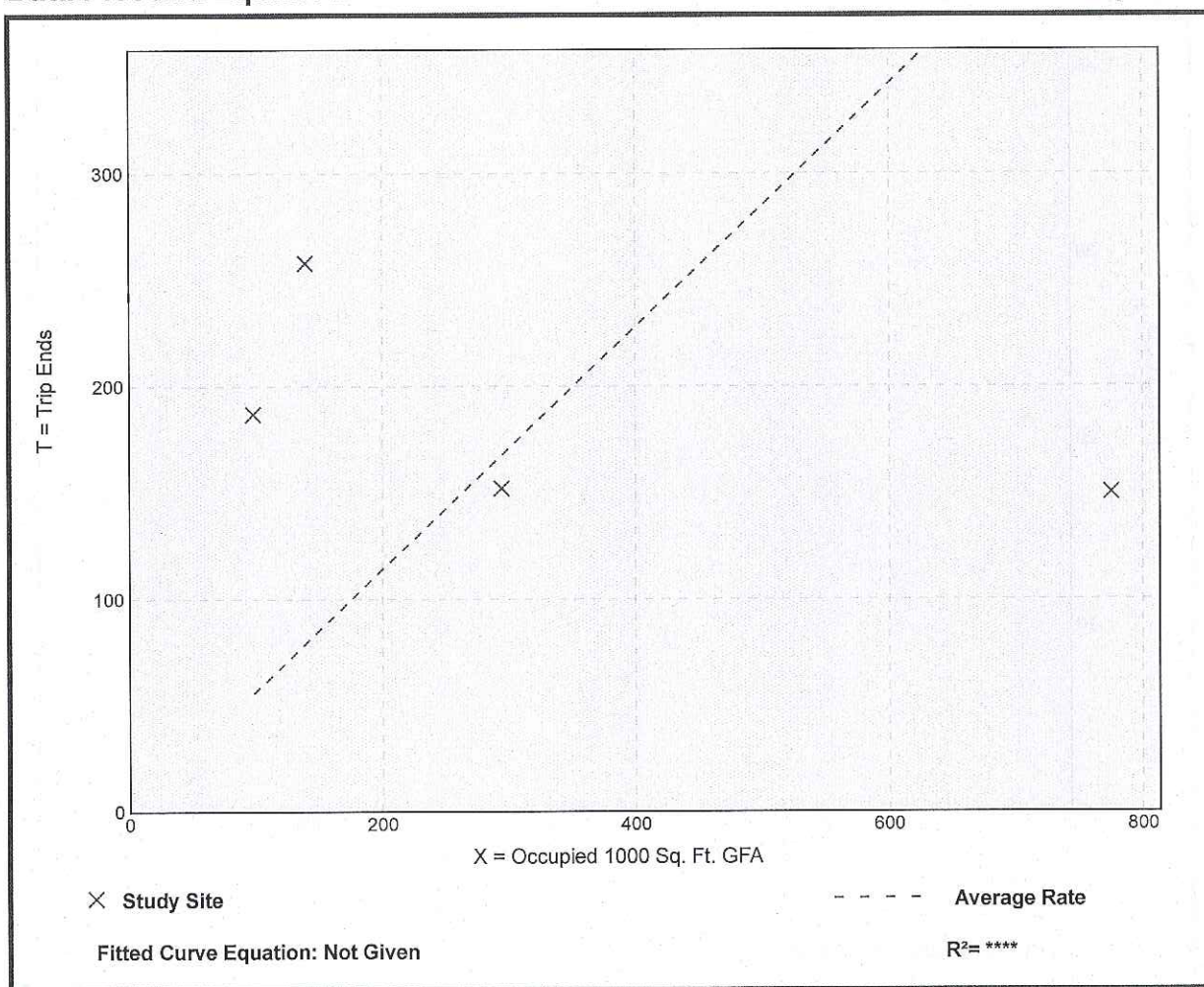
Directional Distribution: 50% entering, 50% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.57	0.19 - 1.91	0.73

### Data Plot and Equation

*Caution – Small Sample Size*





## General Office Building (710)

Person Trip Ends vs: Occupied 1000 Sq. Ft. GFA  
On a: Sunday, Peak Hour of Generator

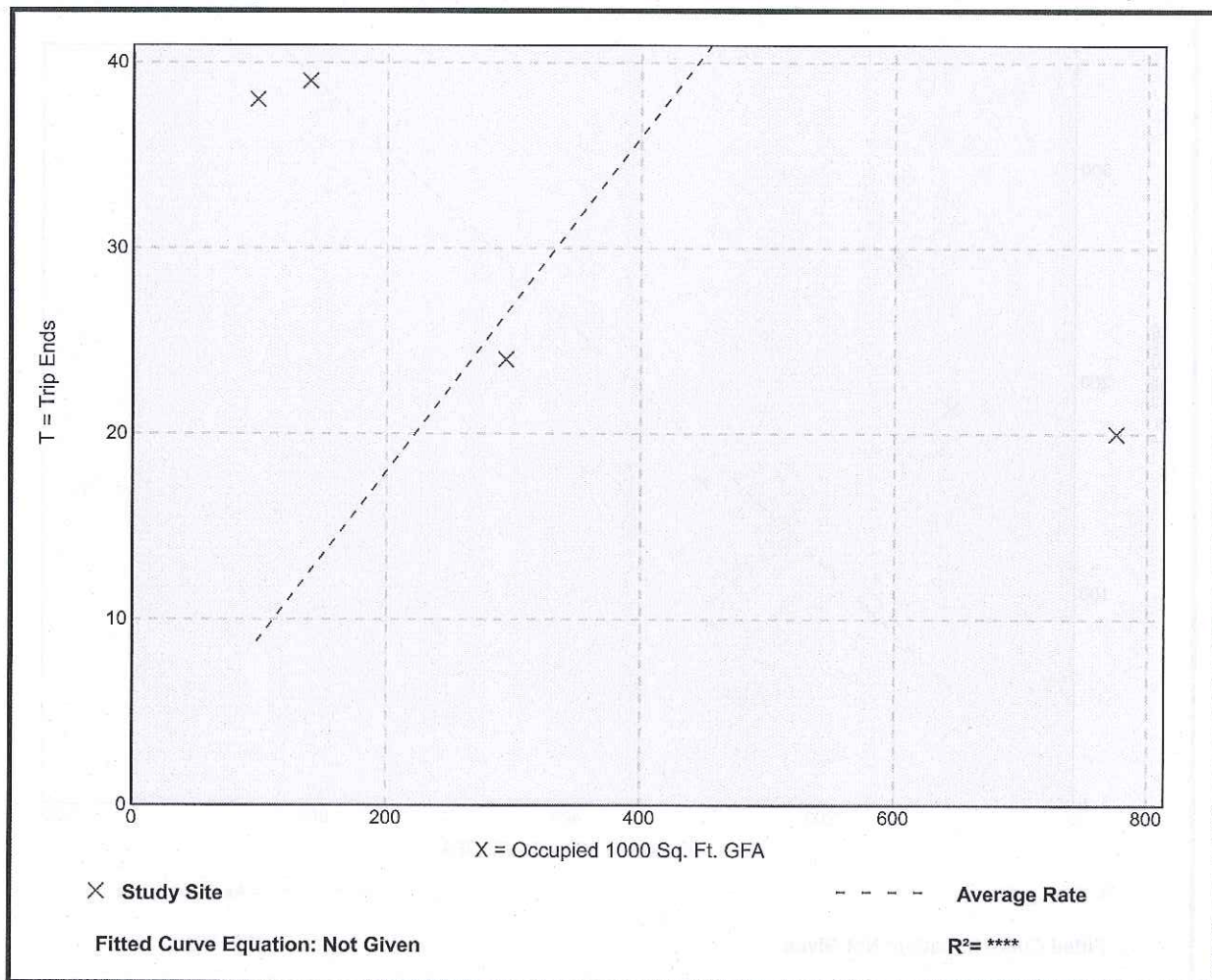
Setting/Location: Center City Core  
Number of Studies: 4  
Occupied 1000 Sq. Ft. GFA: 327  
Directional Distribution: 64% entering, 36% exiting

### Person Trip Generation per Occupied 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.09	0.03 - 0.39	0.13

### Data Plot and Equation

*Caution – Small Sample Size*



# **Land Use: 760**

## **Research and Development Center**

### **Description**

A research and development center is a facility or group of facilities devoted almost exclusively to research and development activities. The range of specific types of businesses contained in this land use category varies significantly. Research and development centers may contain offices and light fabrication areas. General office building (Land Use 710), corporate headquarters building (Land Use 714), single tenant office building (Land Use 715), office park (Land Use 750), and business park (Land Use 770) are related uses.

### **Additional Data**

The average numbers of person trips per vehicle trip at the 11 general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.36 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.36 during Weekday, AM Peak Hour of Generator
- 1.45 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.43 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Iowa, Maryland, Minnesota, Montana, and Pennsylvania.

### **Source Numbers**

105, 157, 213, 218, 253, 332, 384, 423, 630, 723, 911, 973



# Research and Development Center (760)

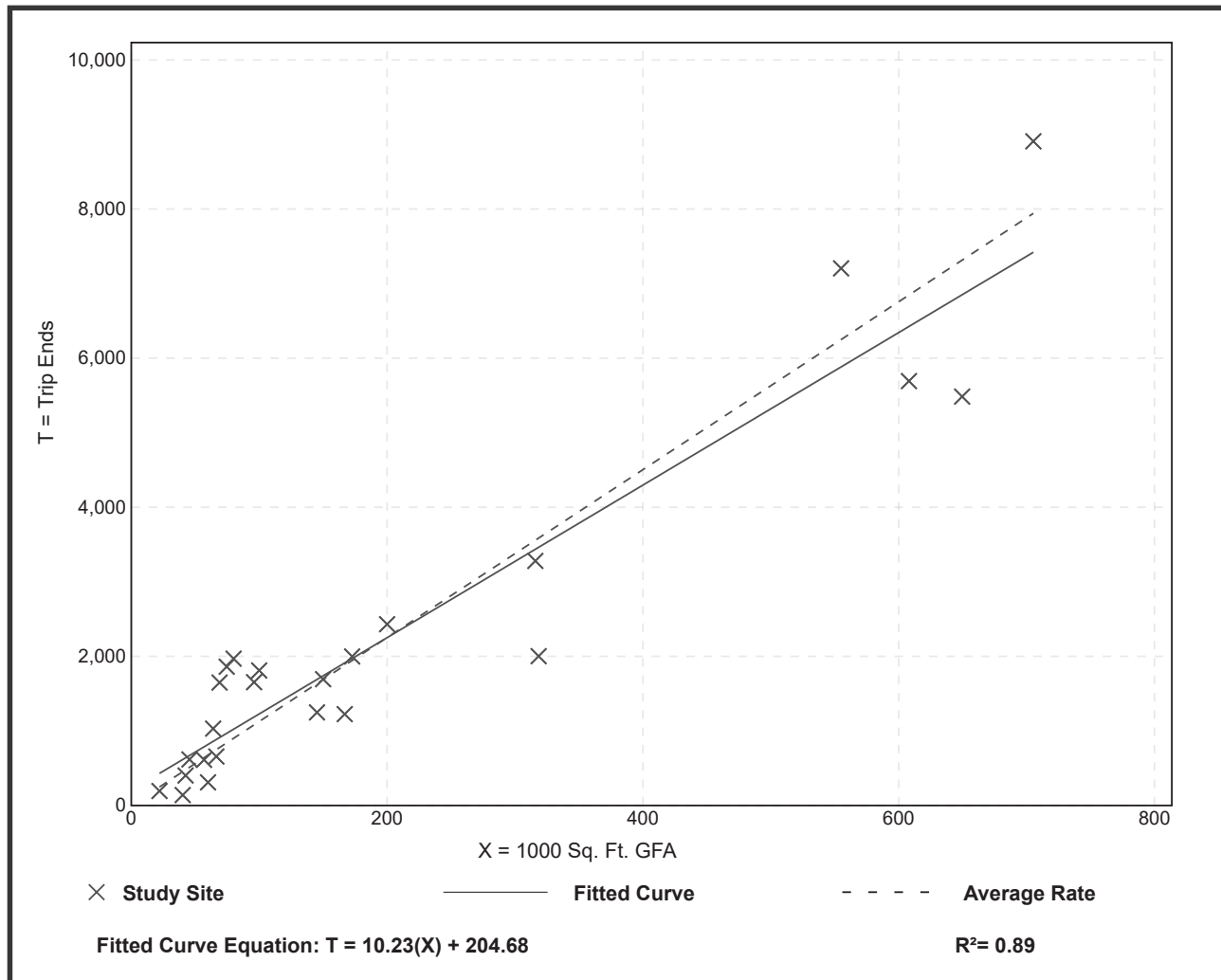
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday

Setting/Location: General Urban/Suburban  
Number of Studies: 24  
1000 Sq. Ft. GFA: 200  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
11.26	3.48 - 24.95	4.07

## Data Plot and Equation



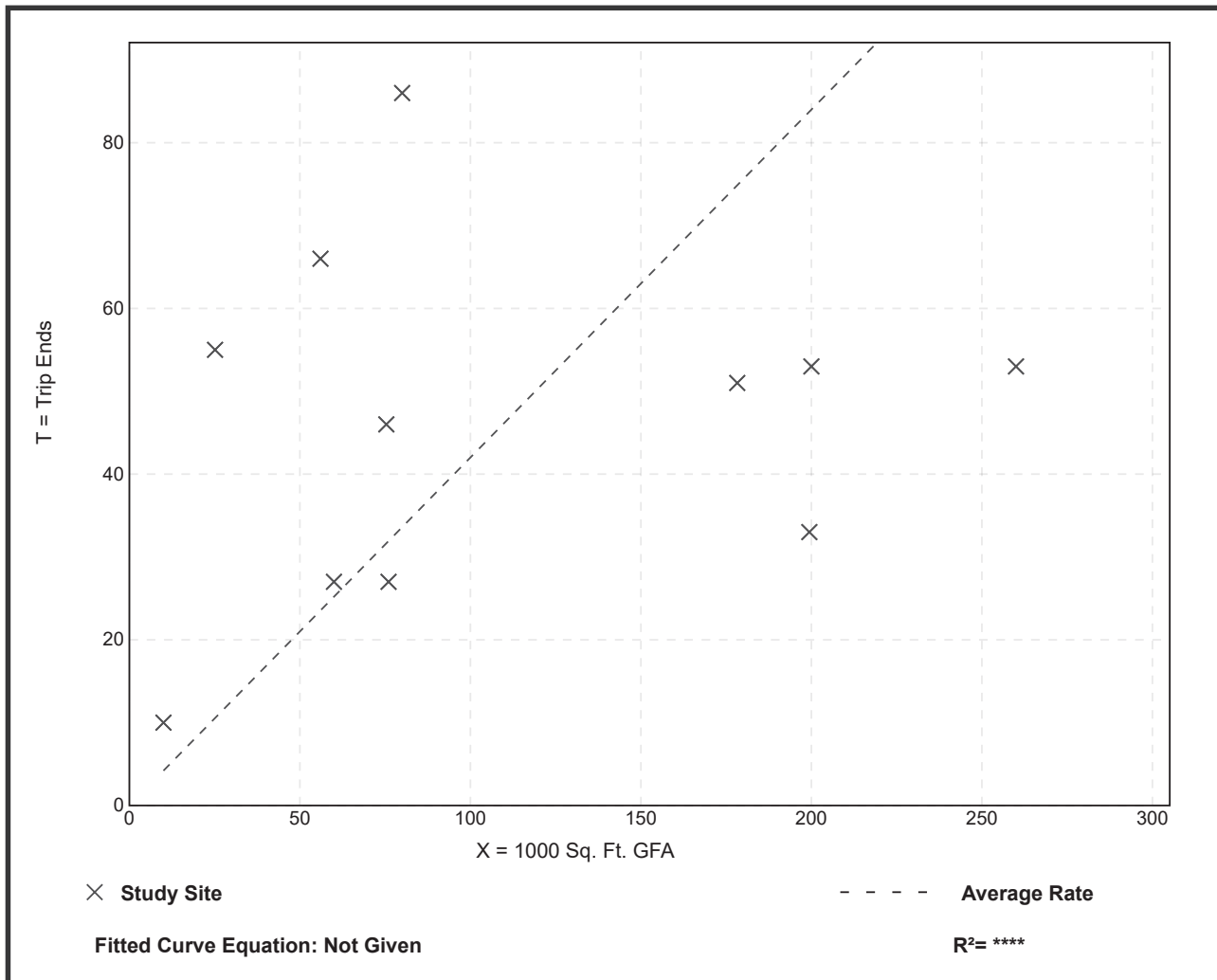
# Research and Development Center (760)

**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: 11  
 1000 Sq. Ft. GFA: 111  
 Directional Distribution: 75% entering, 25% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.42	0.17 - 2.19	0.41

## Data Plot and Equation





# Research and Development Center (760)

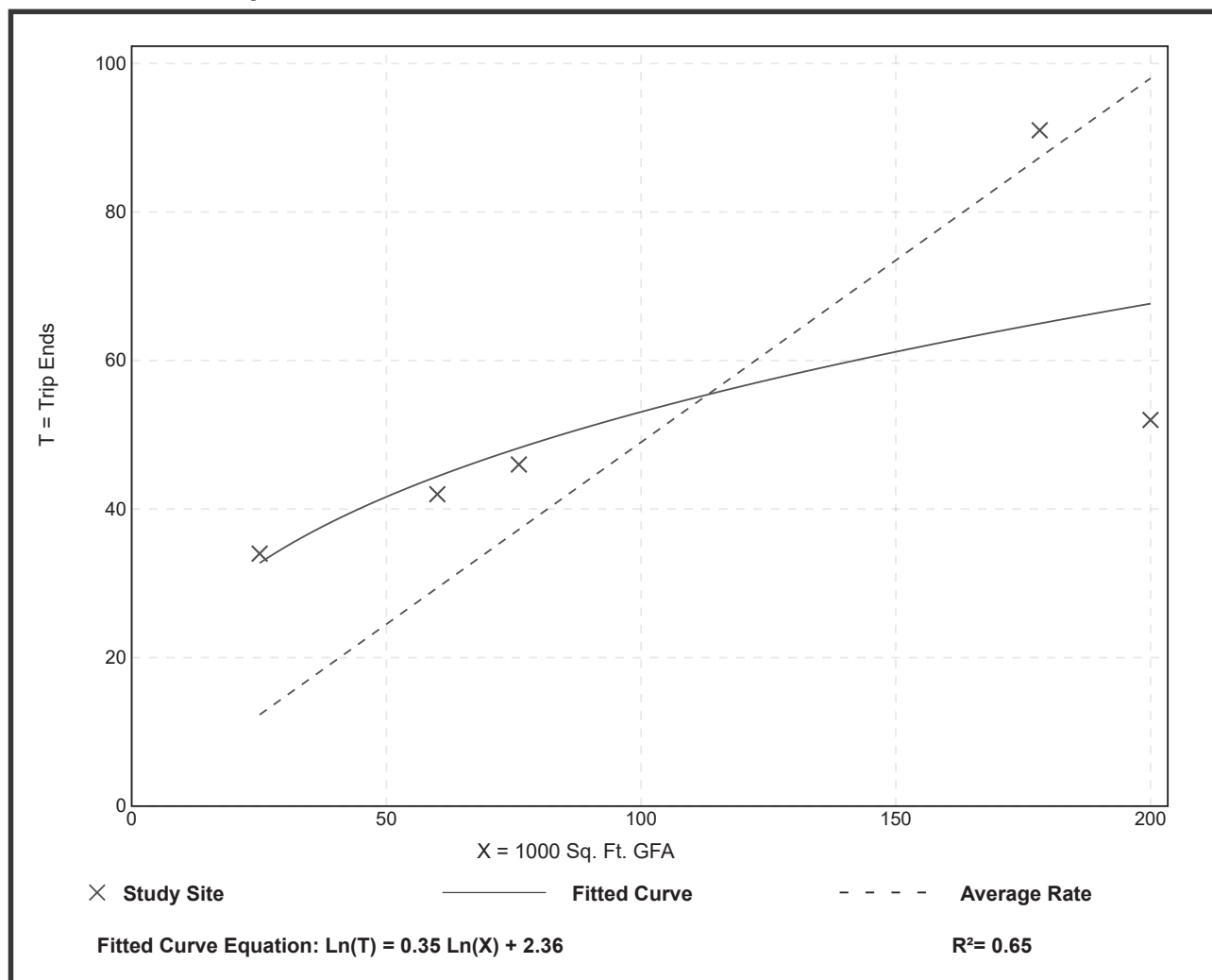
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
 On a: Weekday,  
 Peak Hour of Adjacent Street Traffic,  
 One Hour Between 4 and 6 p.m.  
 Setting/Location: General Urban/Suburban  
 Number of Studies: 5  
 1000 Sq. Ft. GFA: 108  
 Directional Distribution: 15% entering, 85% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.49	0.26 - 1.35	0.28

## Data Plot and Equation

*Caution – Small Sample Size*



# Research and Development Center (760)

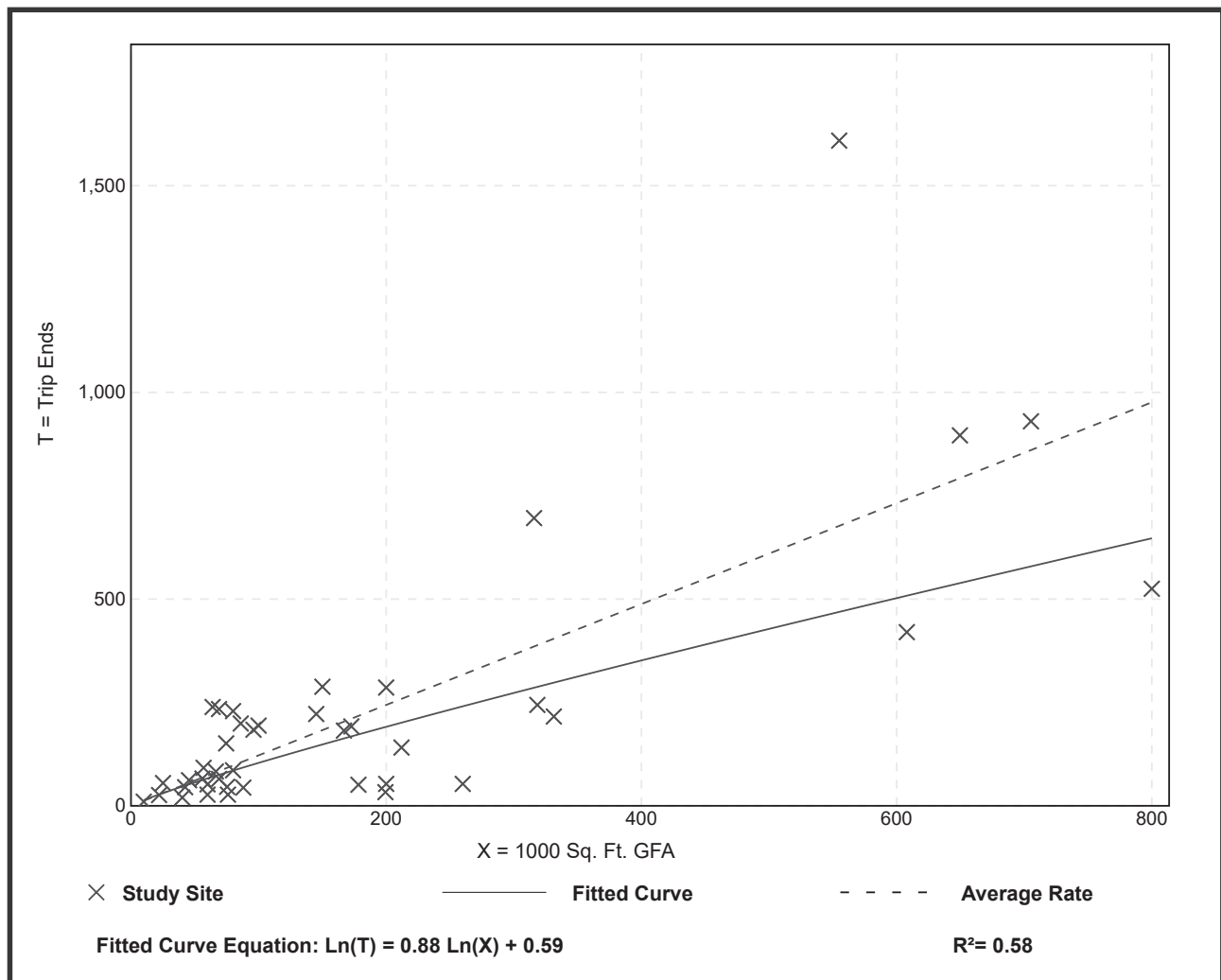
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday,  
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban  
Number of Studies: 41  
1000 Sq. Ft. GFA: 186  
Directional Distribution: 83% entering, 17% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.22	0.17 - 3.73	0.81

## Data Plot and Equation





# Research and Development Center (760)

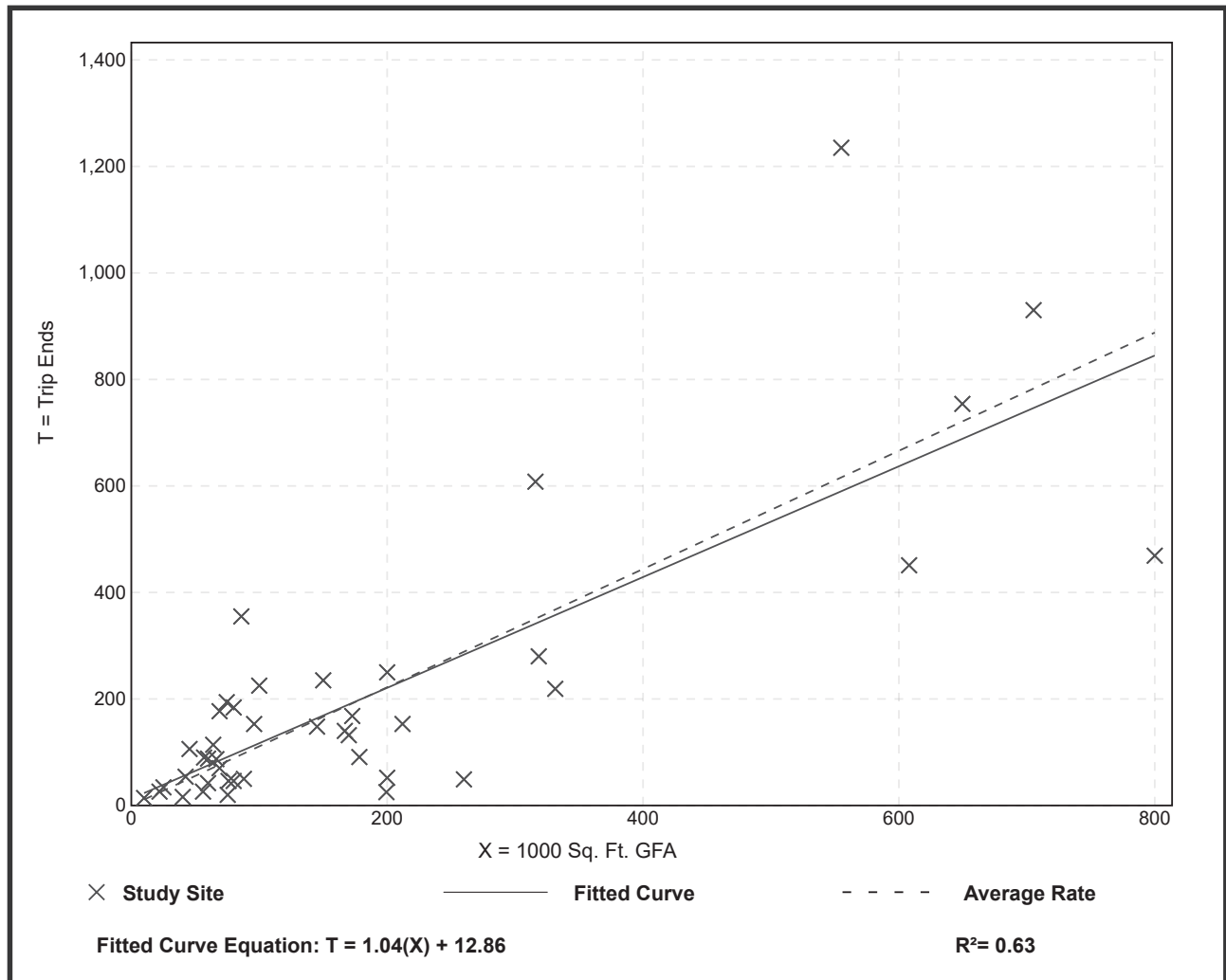
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday,  
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban  
Number of Studies: 42  
1000 Sq. Ft. GFA: 185  
Directional Distribution: 16% entering, 84% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.11	0.13 - 4.13	0.70

## Data Plot and Equation



# Research and Development Center (760)

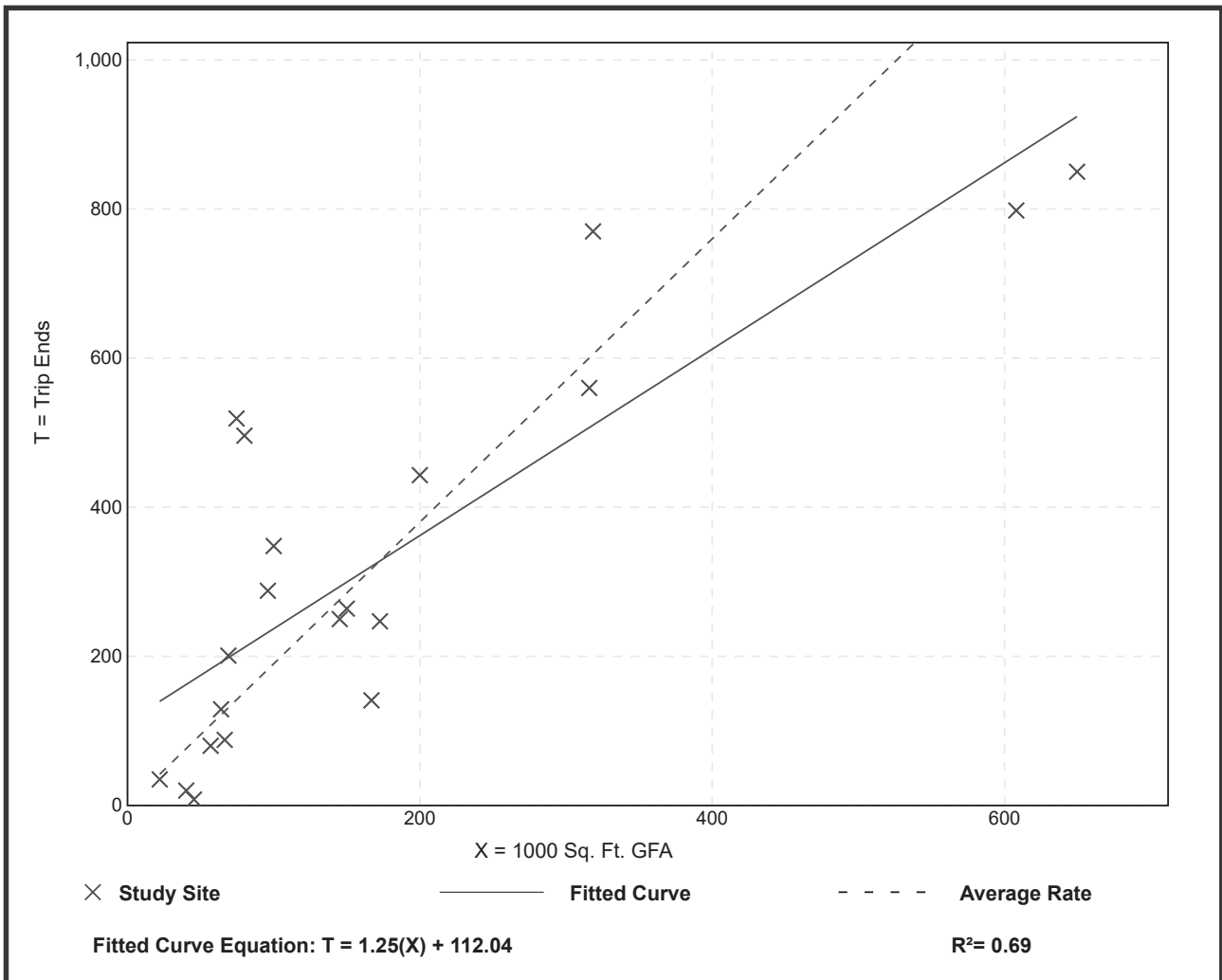
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Saturday

Setting/Location: General Urban/Suburban  
Number of Studies: 20  
1000 Sq. Ft. GFA: 172  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.90	0.18 - 6.96	1.22

## Data Plot and Equation





# Research and Development Center (760)

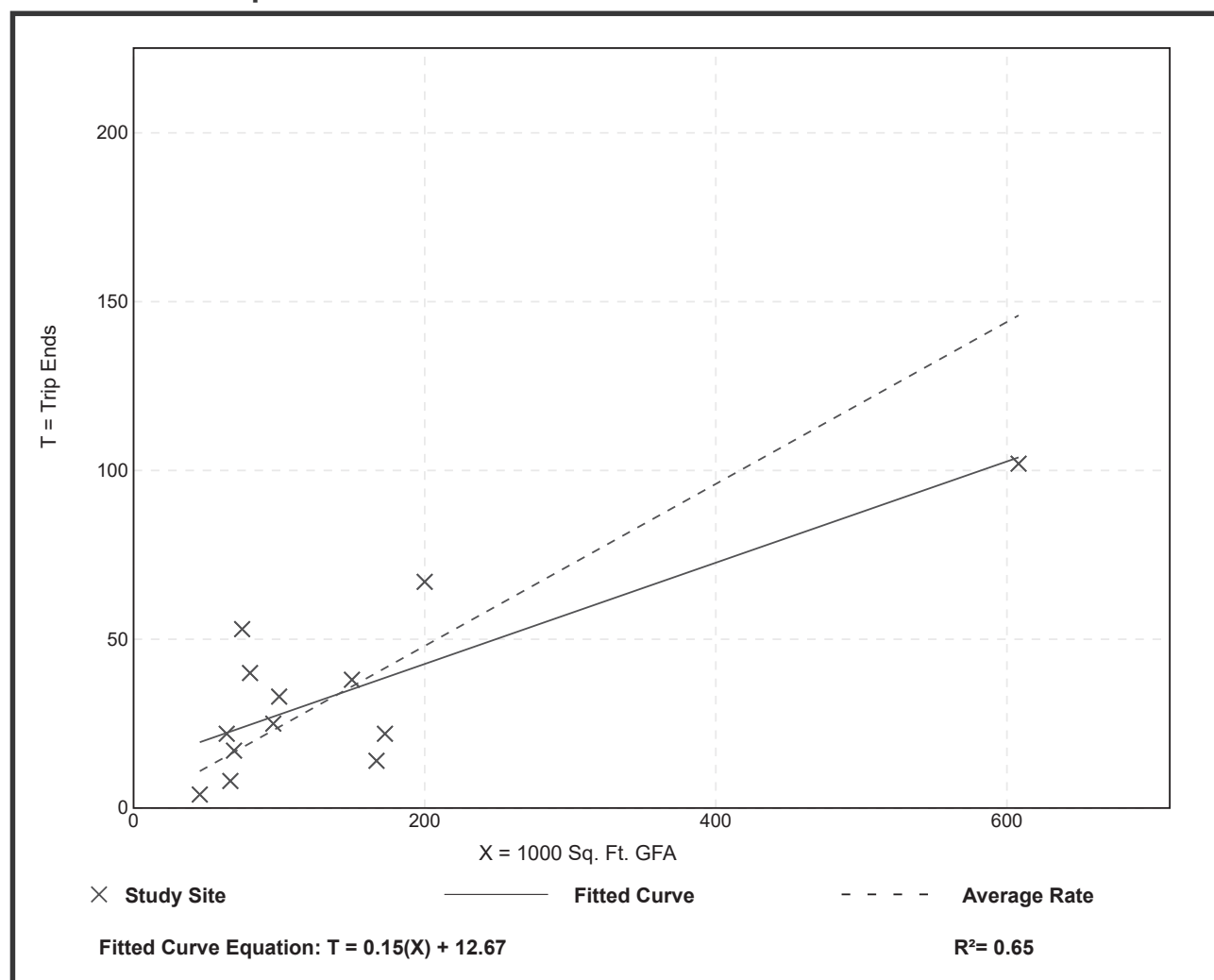
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban  
Number of Studies: 13  
1000 Sq. Ft. GFA: 146  
Directional Distribution: Not Available

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.24	0.08 - 0.71	0.14

## Data Plot and Equation



# Research and Development Center (760)

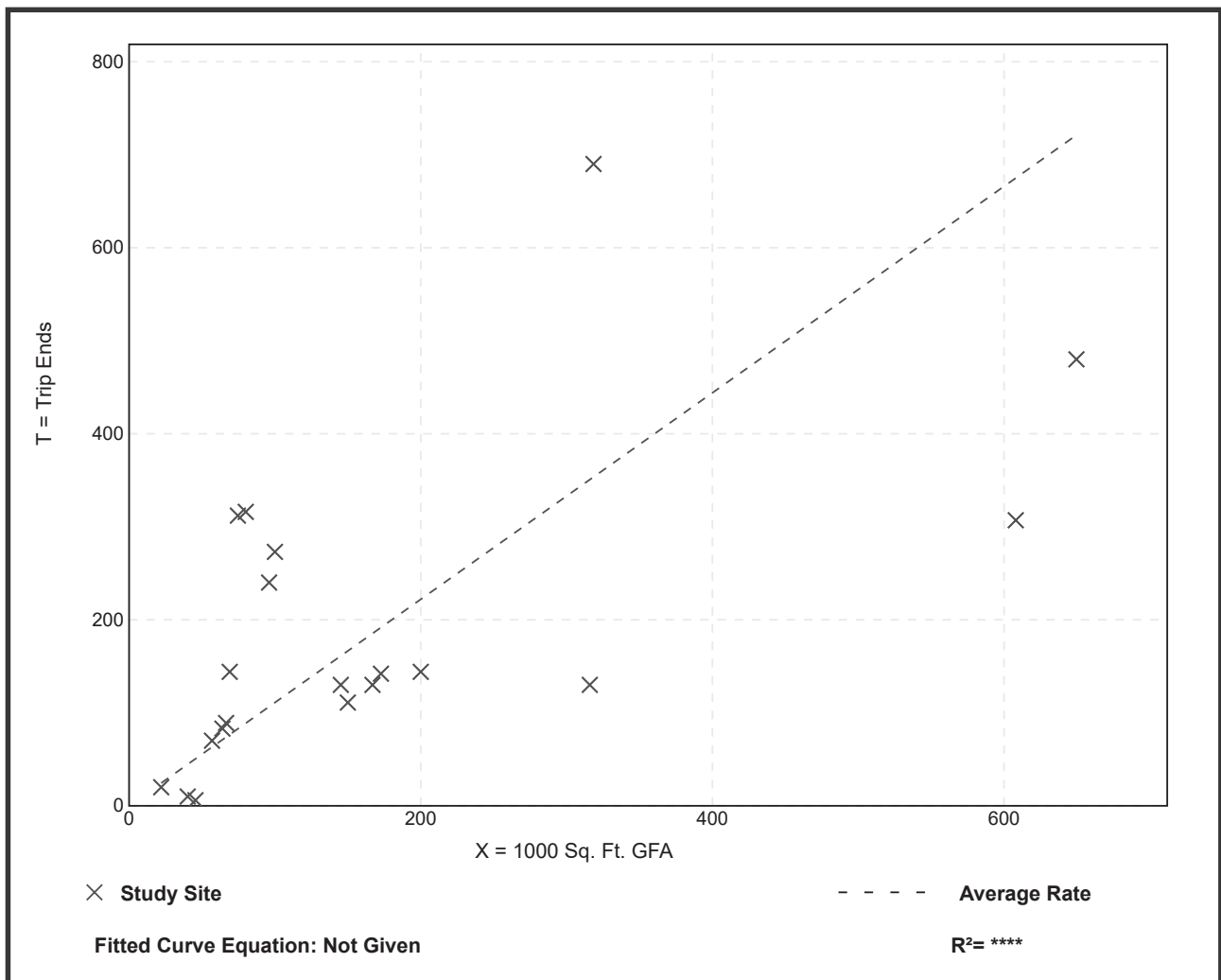
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Sunday

Setting/Location: General Urban/Suburban  
Number of Studies: 20  
1000 Sq. Ft. GFA: 172  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.11	0.13 - 4.18	0.93

## Data Plot and Equation





# Research and Development Center (760)

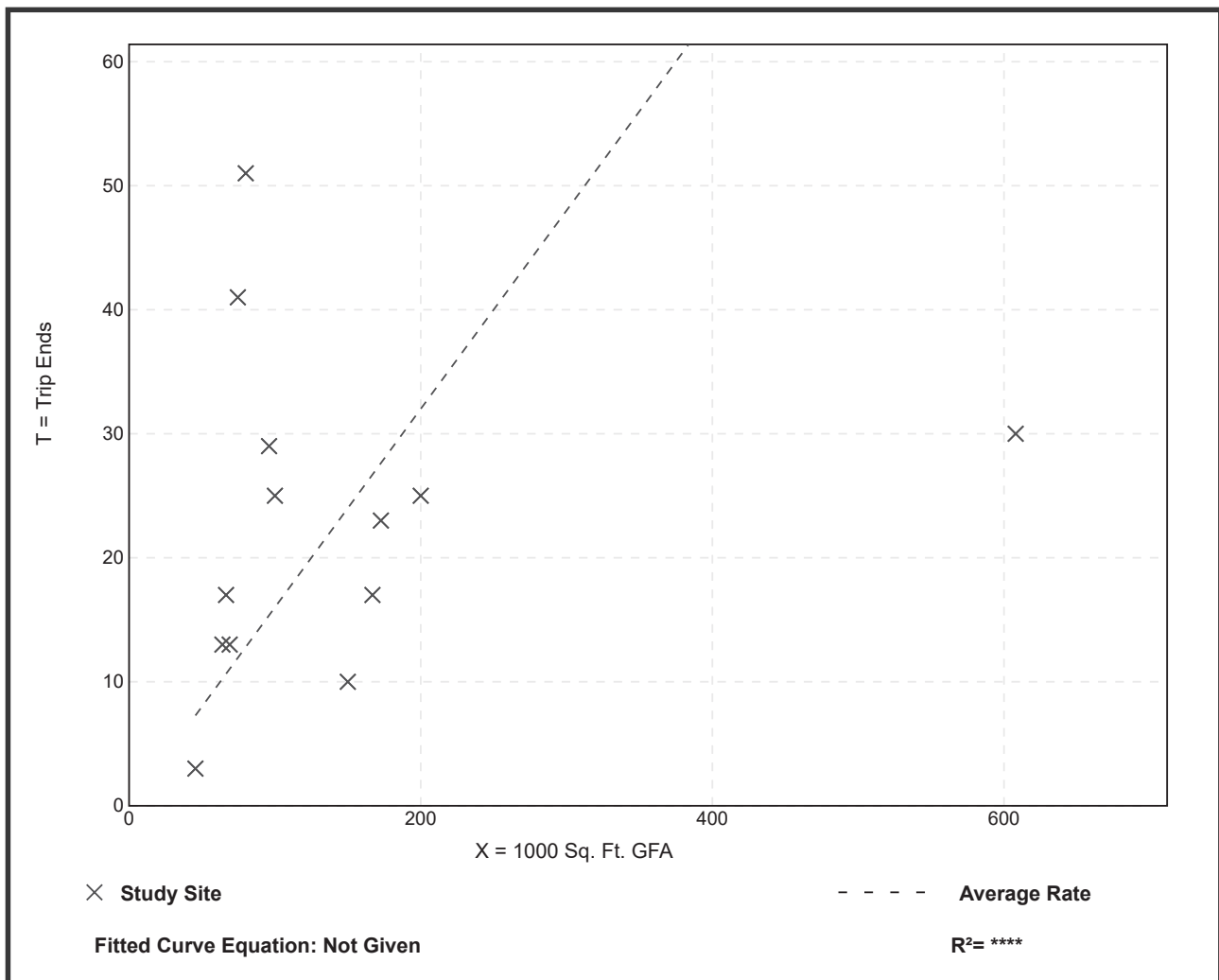
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban  
Number of Studies: 13  
1000 Sq. Ft. GFA: 146  
Directional Distribution: Not Available

## Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.16	0.05 - 0.64	0.16

## Data Plot and Equation



# Research and Development Center (760)

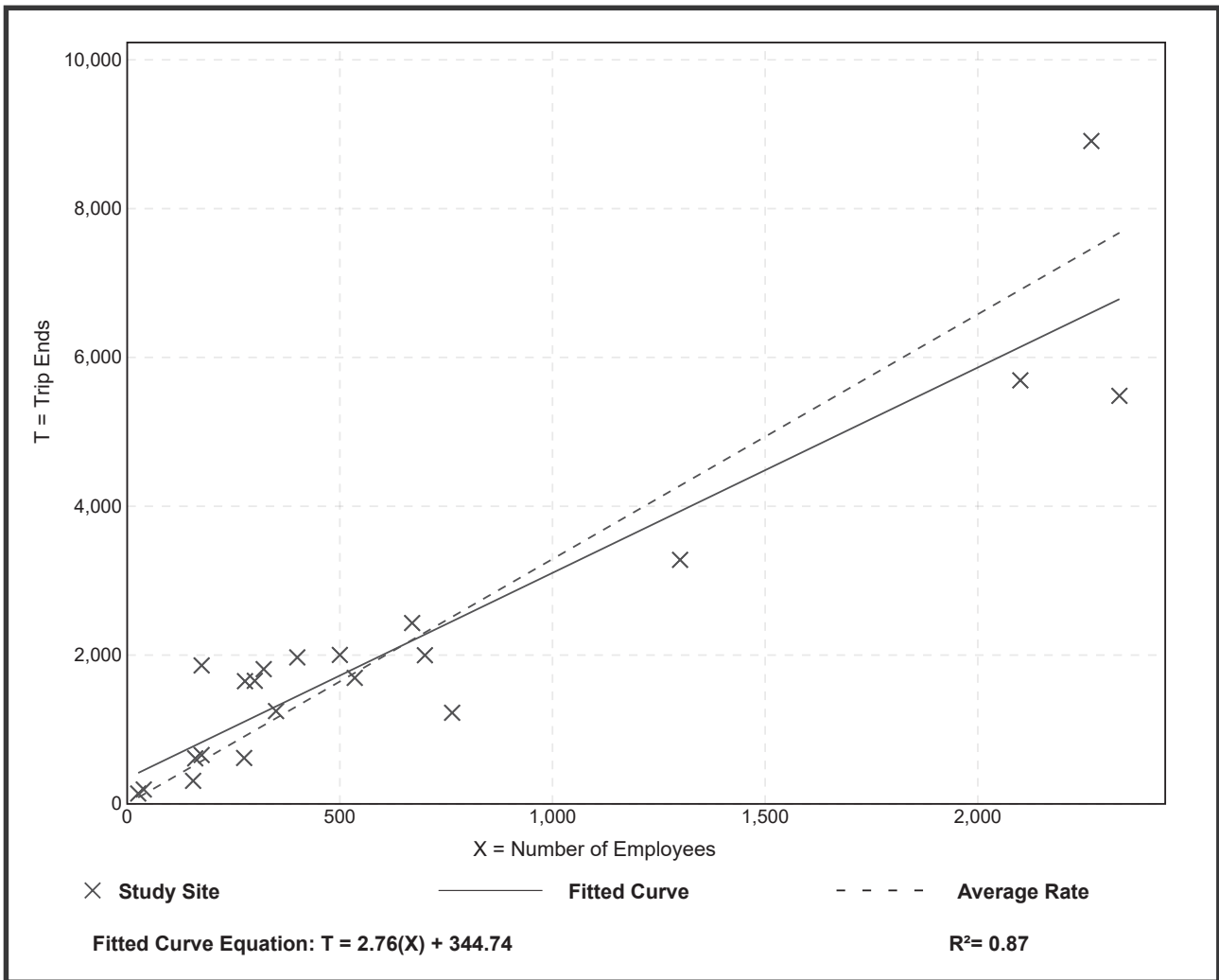
Vehicle Trip Ends vs: Employees  
On a: Weekday

Setting/Location: General Urban/Suburban  
Number of Studies: 21  
Avg. Num. of Employees: 658  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
3.29	1.60 - 10.63	1.34

## Data Plot and Equation





# Research and Development Center (760)

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: 9

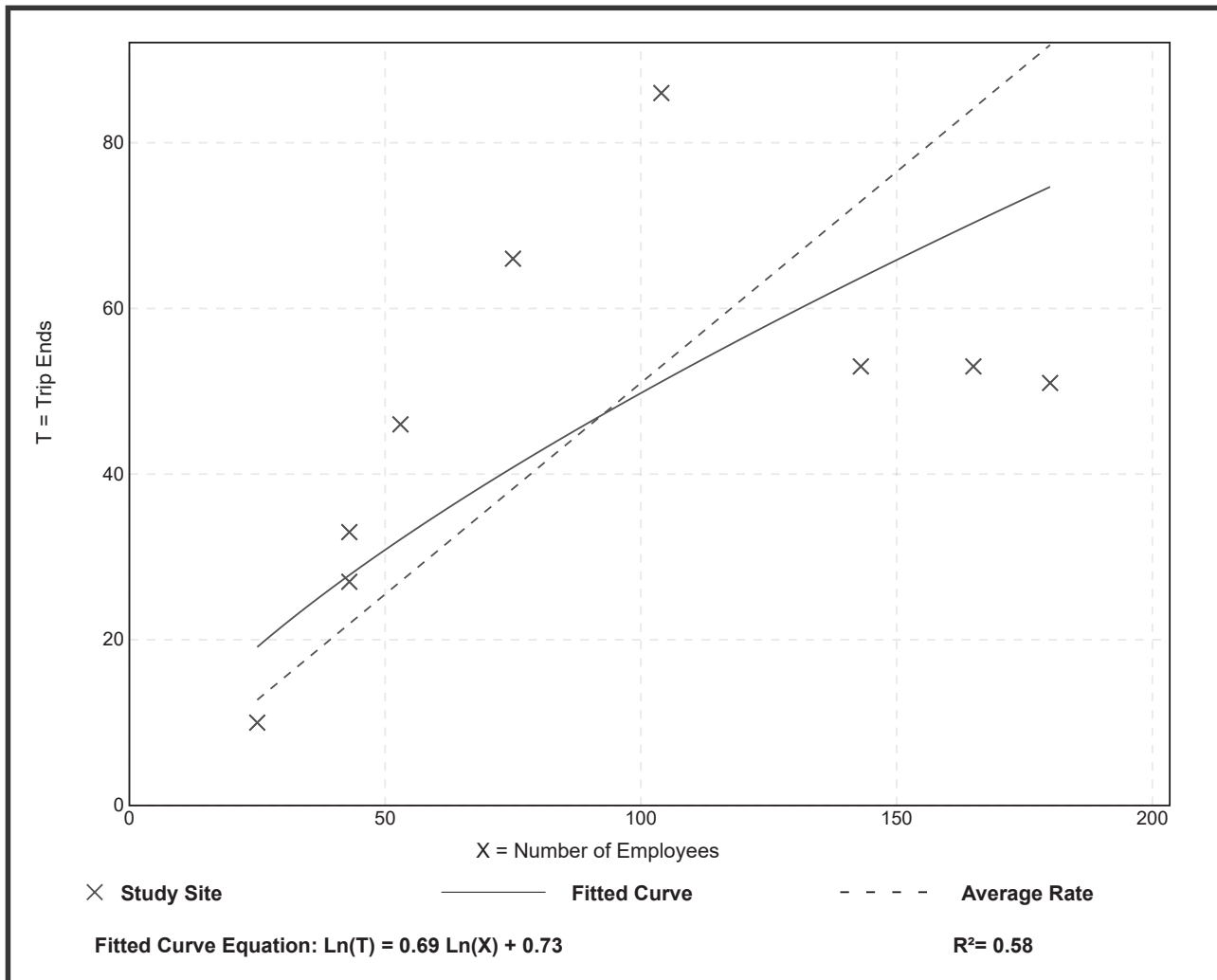
Avg. Num. of Employees: 92

Directional Distribution: 72% entering, 28% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.51	0.28 - 0.88	0.26

## Data Plot and Equation



# Research and Development Center (760)

**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: 3

Avg. Num. of Employees: 122

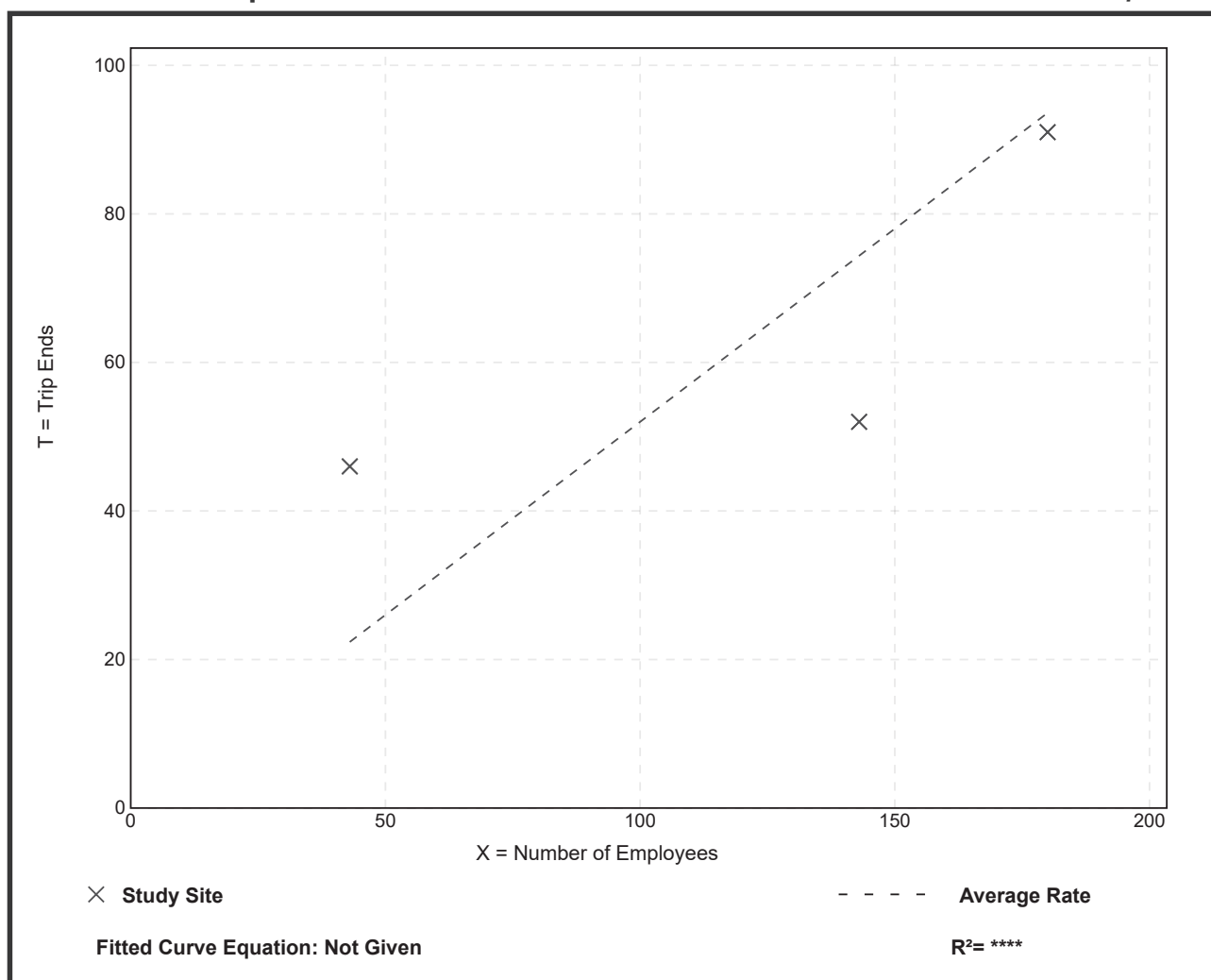
Directional Distribution: 14% entering, 86% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.52	0.36 - 1.07	0.88

## Data Plot and Equation

*Caution – Small Sample Size*





# Research and Development Center (760)

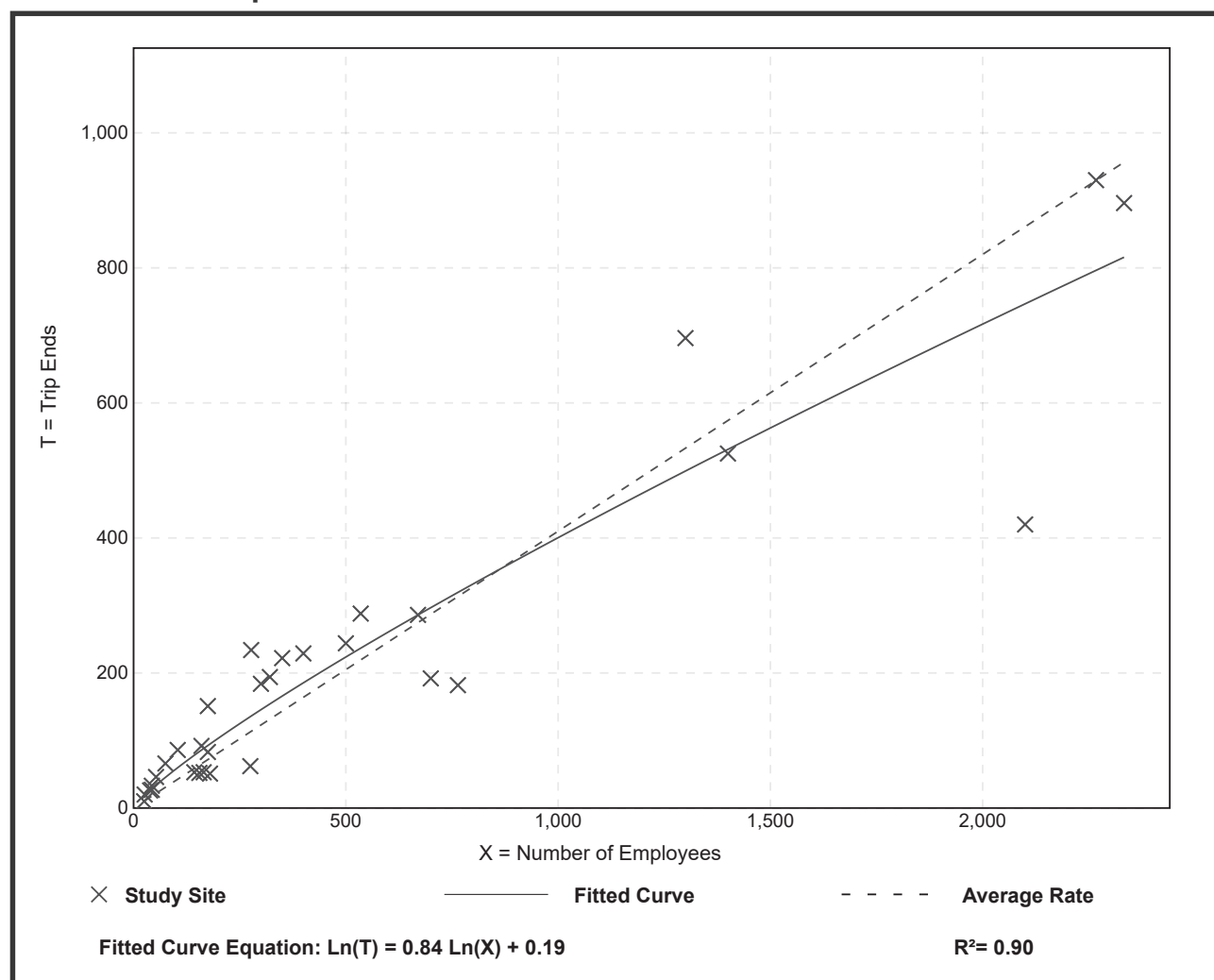
**Vehicle Trip Ends vs: Employees**  
**On a: Weekday,**  
**AM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**  
 Number of Studies: 31  
 Avg. Num. of Employees: 518  
 Directional Distribution: 85% entering, 15% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.41	0.20 - 0.88	0.16

## Data Plot and Equation



# Research and Development Center (760)

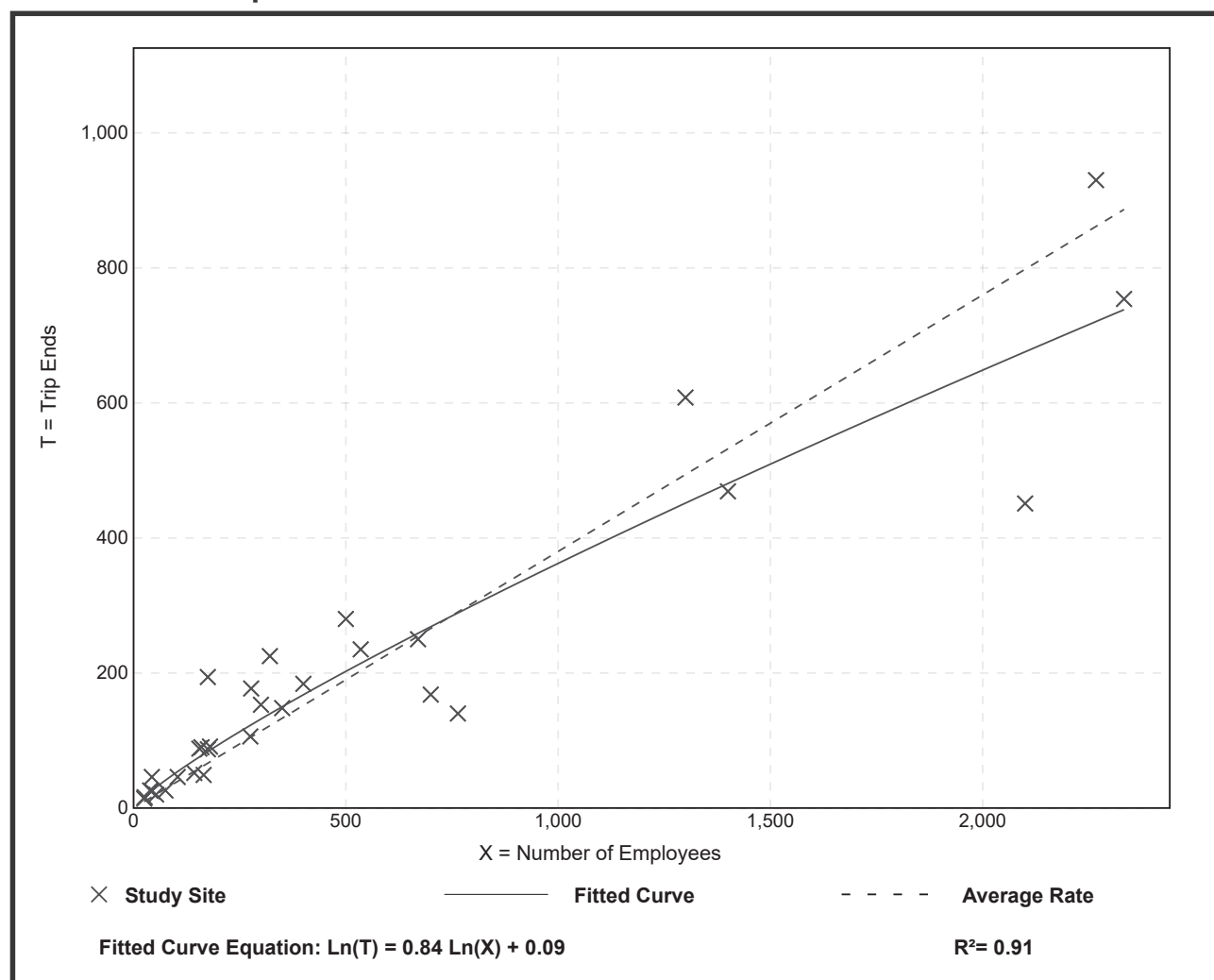
**Vehicle Trip Ends vs: Employees**  
**On a: Weekday,**  
**PM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**  
 Number of Studies: 31  
 Avg. Num. of Employees: 518  
 Directional Distribution: 11% entering, 89% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.38	0.18 - 1.11	0.15

## Data Plot and Equation





# Research and Development Center (760)

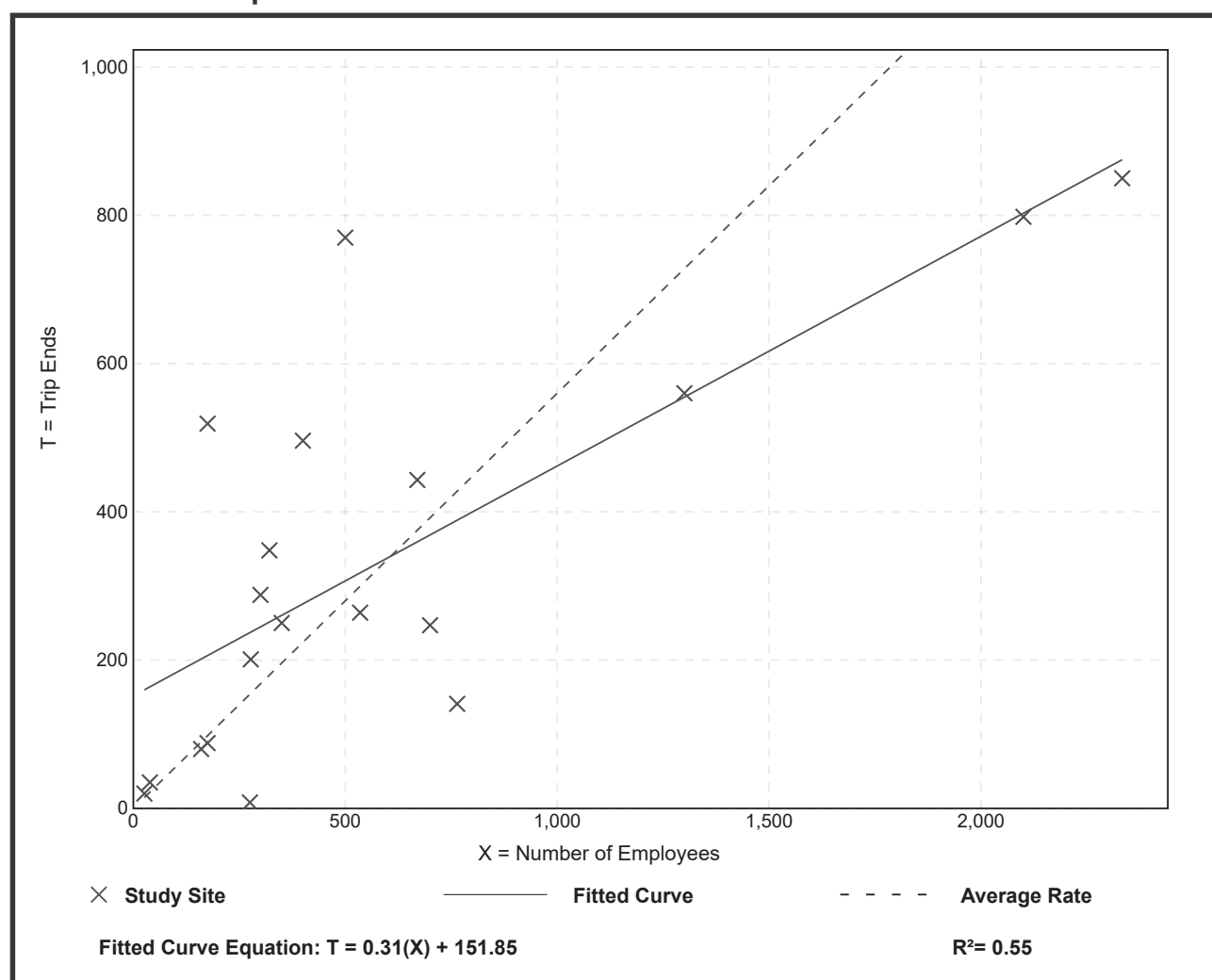
Vehicle Trip Ends vs: Employees  
On a: Saturday

Setting/Location: General Urban/Suburban  
Number of Studies: 19  
Avg. Num. of Employees: 600  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.56	0.03 - 2.97	0.46

## Data Plot and Equation



# Research and Development Center (760)

Vehicle Trip Ends vs: Employees

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 12

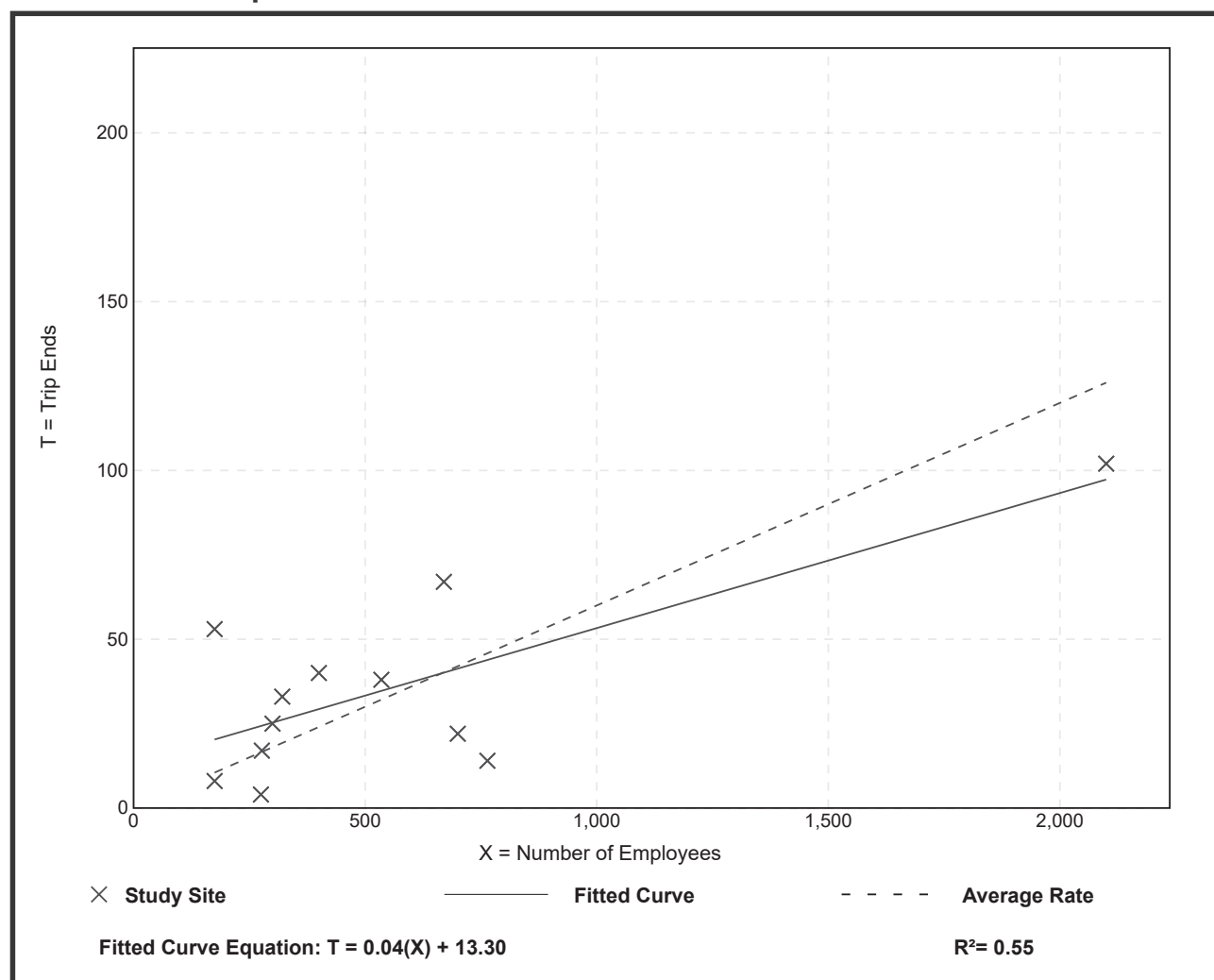
Avg. Num. of Employees: 558

Directional Distribution: Not Available

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.06	0.01 - 0.30	0.05

## Data Plot and Equation





# Research and Development Center (760)

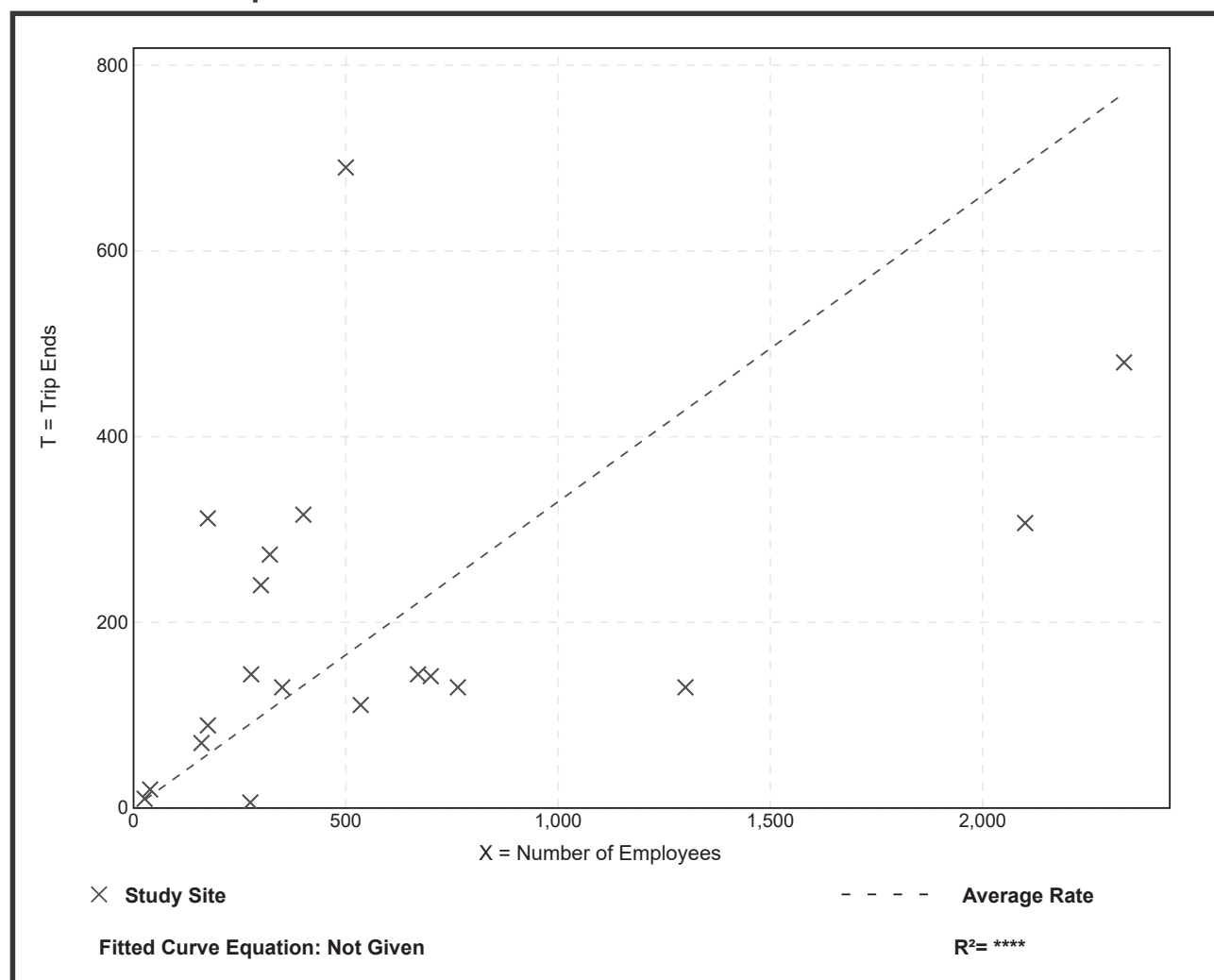
Vehicle Trip Ends vs: Employees  
On a: Sunday

Setting/Location: General Urban/Suburban  
Number of Studies: 19  
Avg. Num. of Employees: 600  
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.33	0.02 - 1.78	0.36

## Data Plot and Equation



# Research and Development Center (760)

Vehicle Trip Ends vs: Employees

On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 12

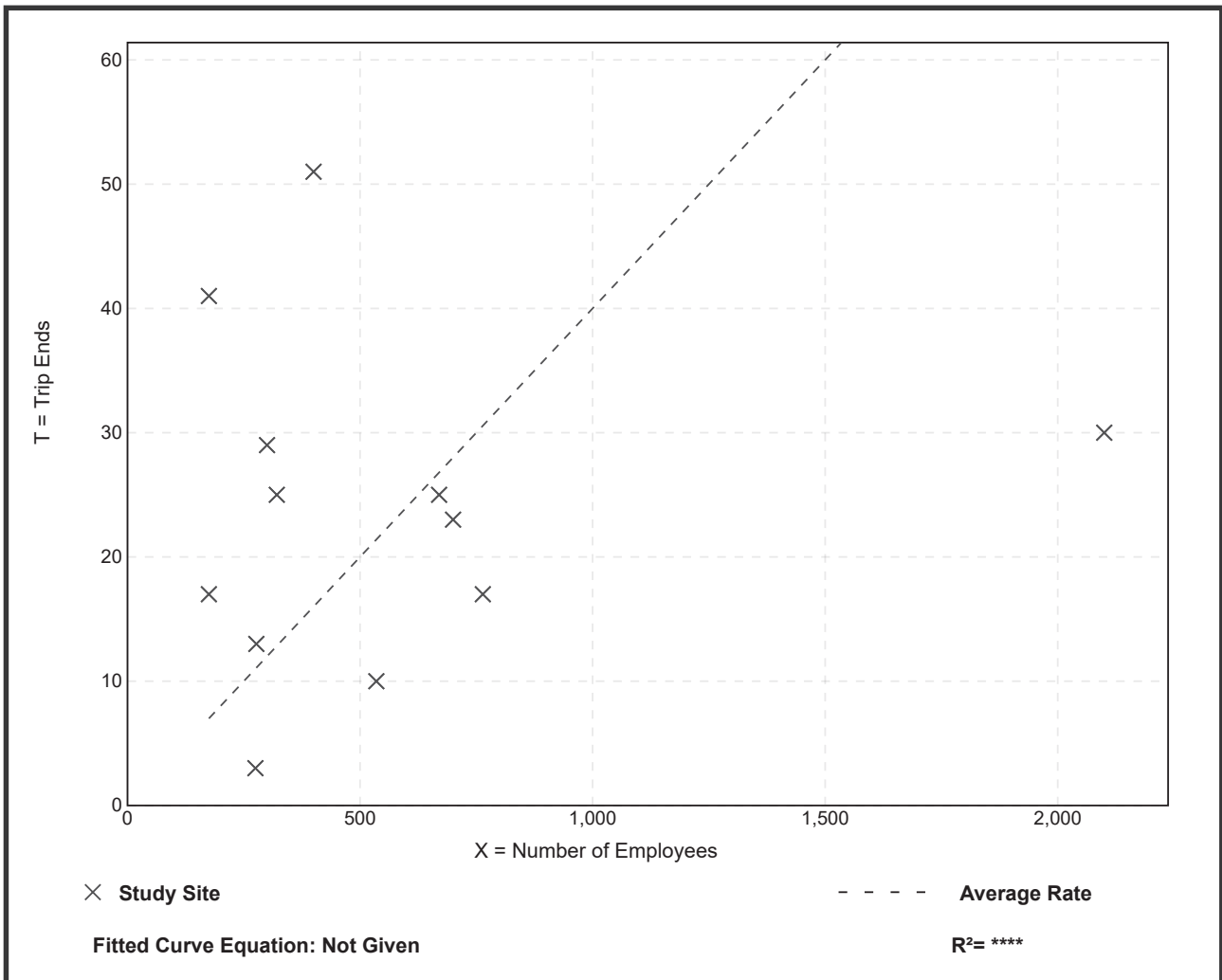
Avg. Num. of Employees: 558

Directional Distribution: Not Available

## Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.04	0.01 - 0.23	0.05

## Data Plot and Equation





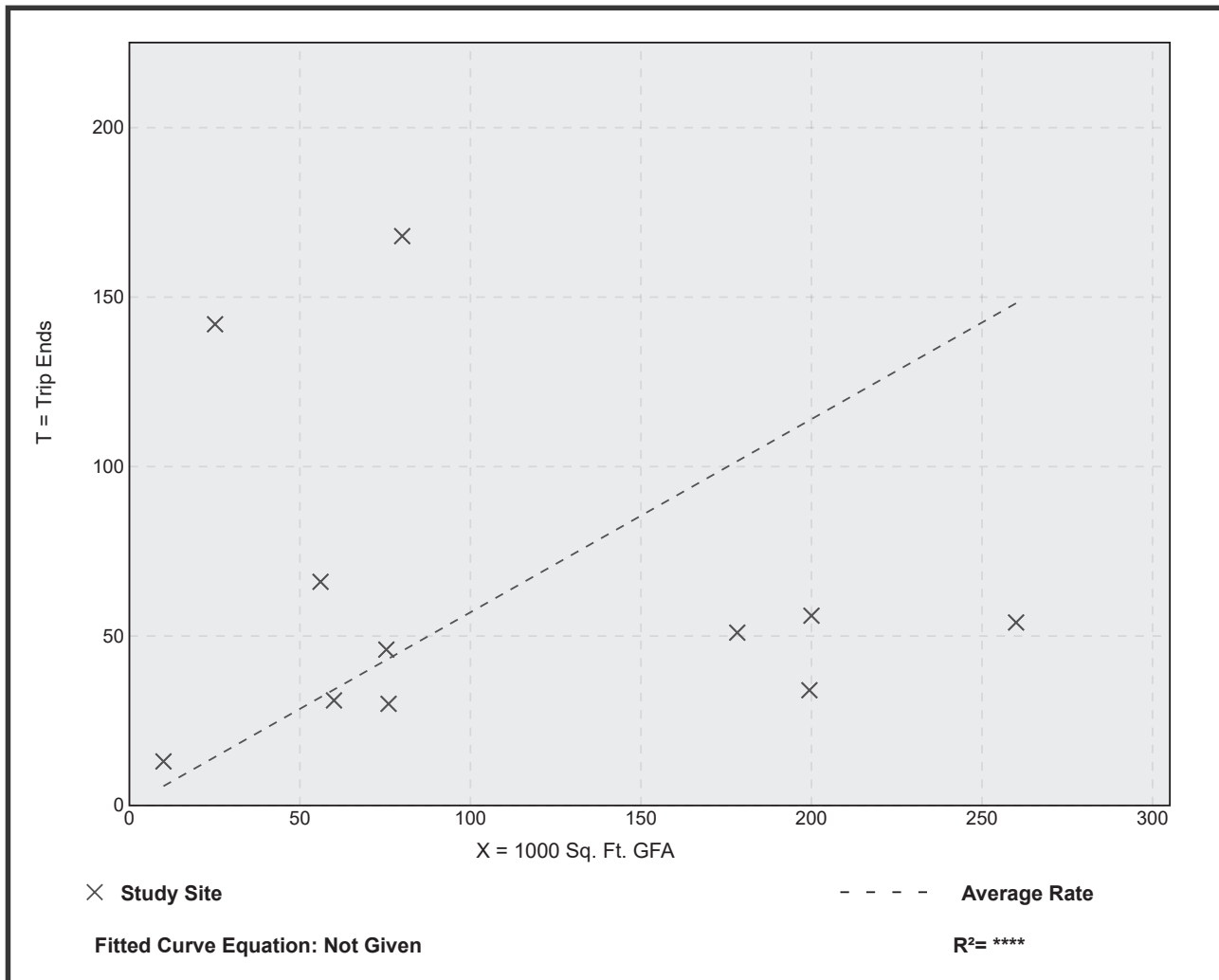
# Research and Development Center (760)

Person 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: 11  
 1000 Sq. Ft. GFA: 111  
 Directional Distribution: 74% entering, 26% exiting

## Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.57	0.17 - 5.65	0.93

## Data Plot and Equation



# Research and Development Center (760)

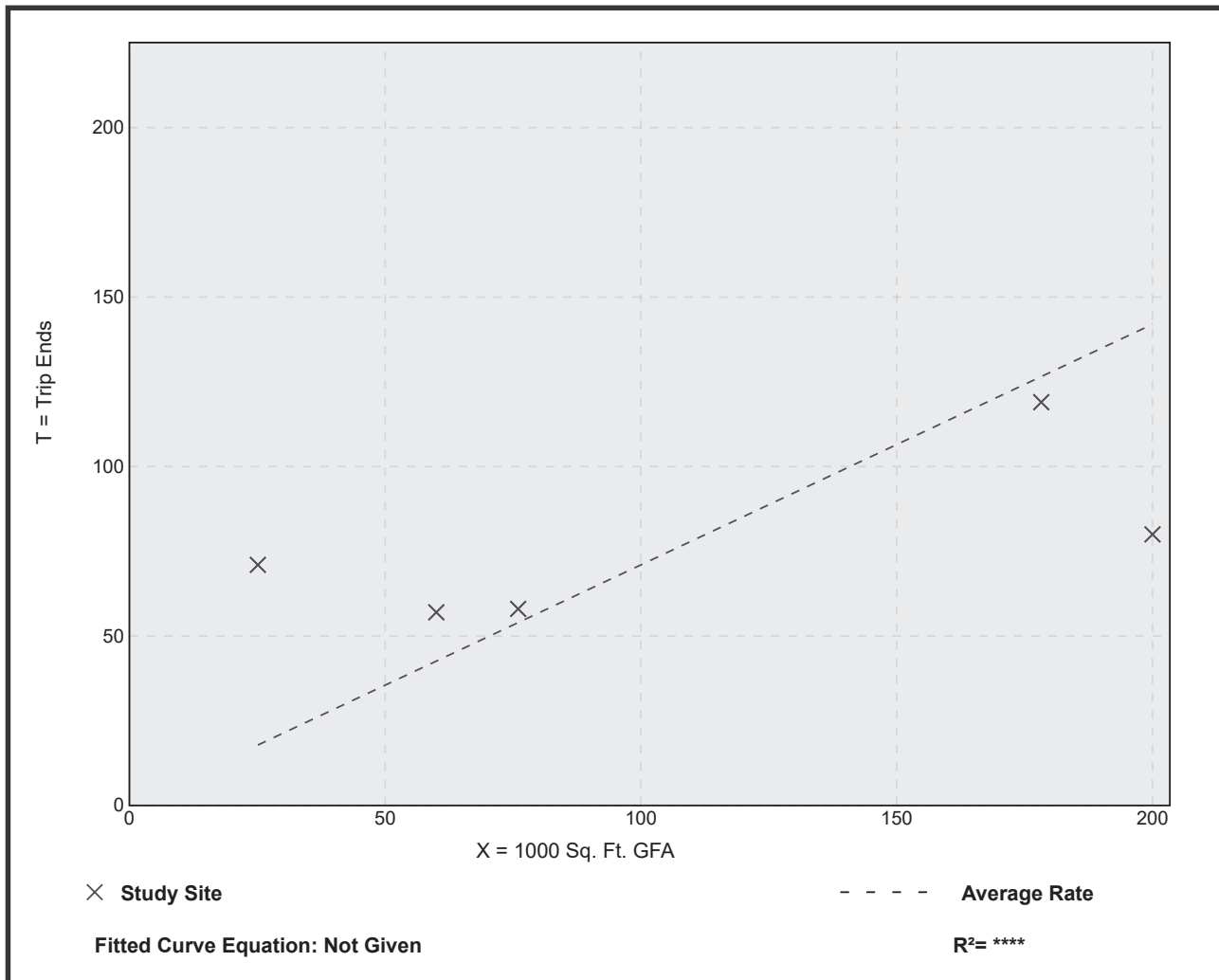
**Person Trip Ends vs: 1000 Sq. Ft. GFA**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 5  
 1000 Sq. Ft. GFA: 108  
 Directional Distribution: 15% entering, 85% exiting

## Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.71	0.40 - 2.83	0.56

## Data Plot and Equation

*Caution – Small Sample Size*





# Research and Development Center (760)

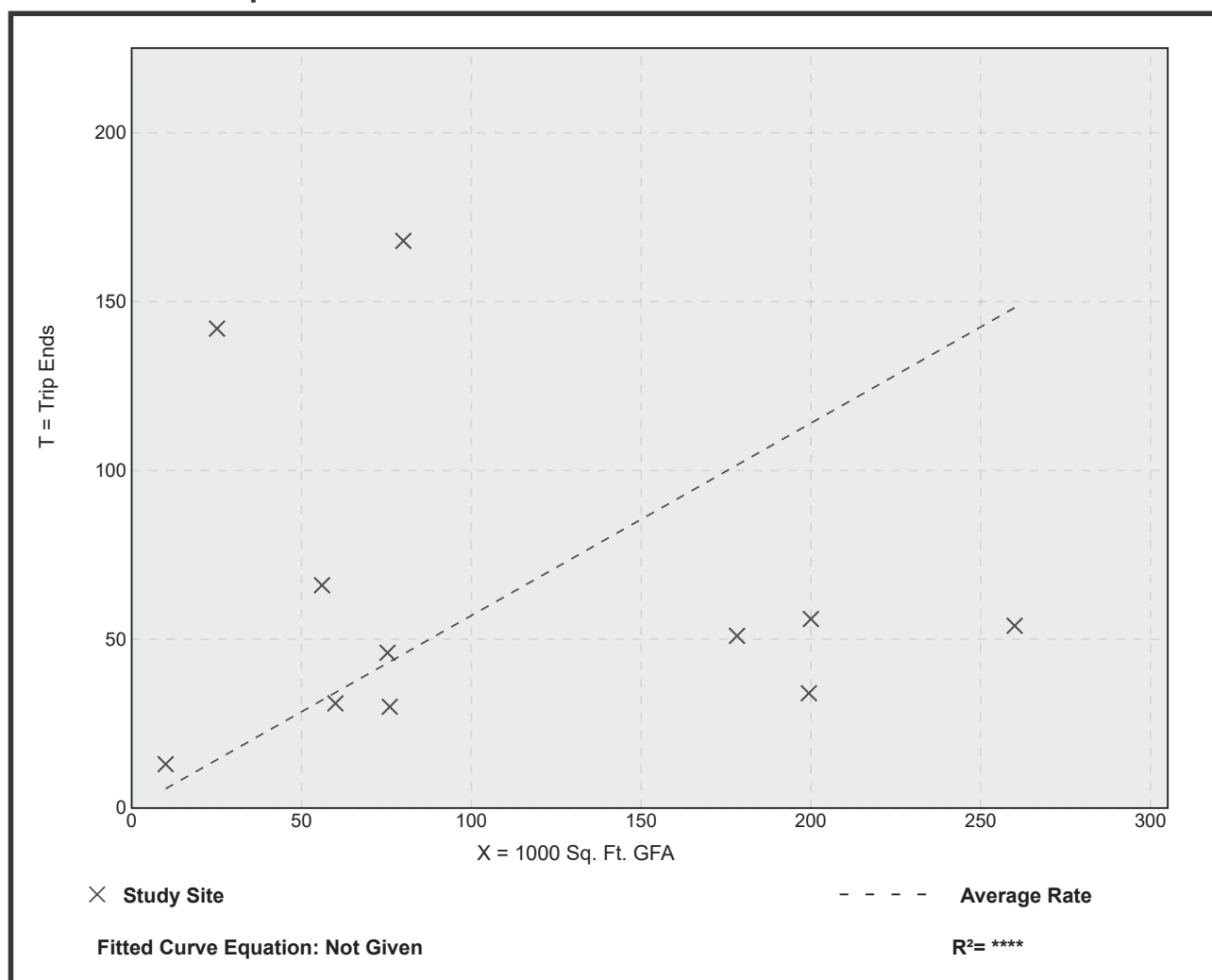
Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday,  
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban  
Number of Studies: 11  
1000 Sq. Ft. GFA: 111  
Directional Distribution: 74% entering, 26% exiting

## Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.57	0.17 - 5.65	0.93

## Data Plot and Equation



# Research and Development Center (760)

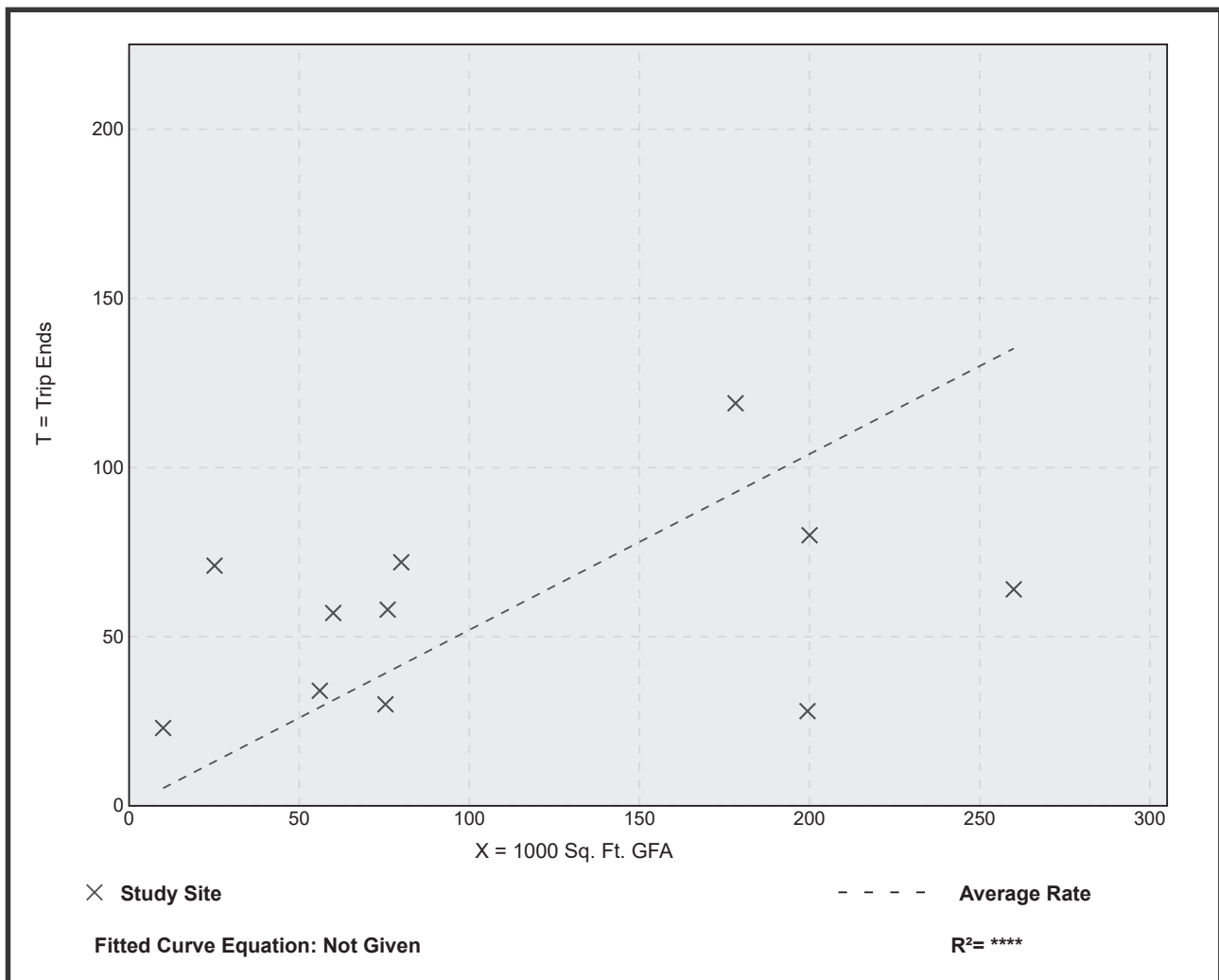
Person Trip Ends vs: 1000 Sq. Ft. GFA  
On a: Weekday,  
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban  
Number of Studies: 11  
1000 Sq. Ft. GFA: 111  
Directional Distribution: 30% entering, 70% exiting

## Person Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.52	0.14 - 2.83	0.47

## Data Plot and Equation





# Research and Development Center (760)

**Person 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: 9

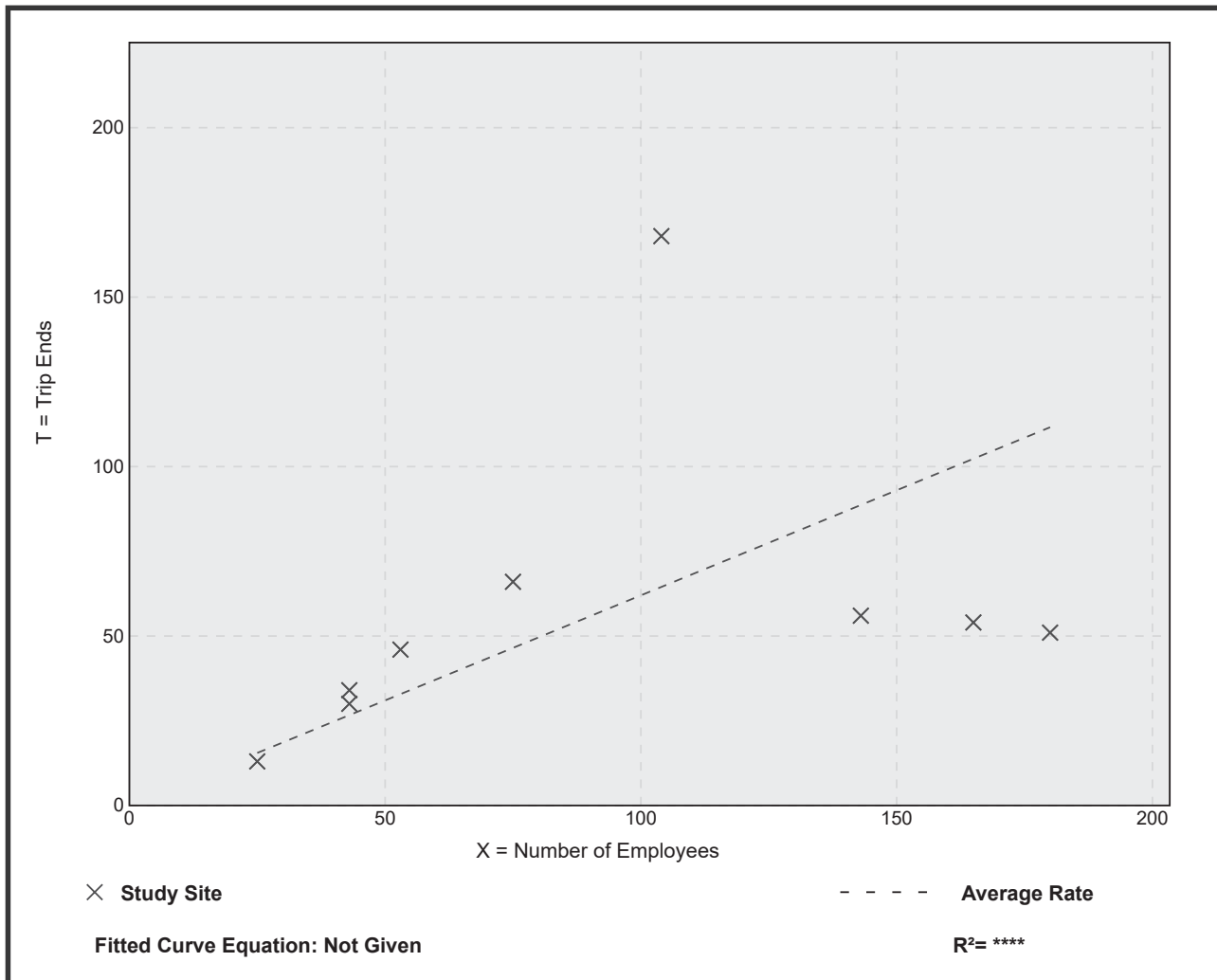
Avg. Num. of Employees: 92

Directional Distribution: 69% entering, 31% exiting

## Person Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.62	0.28 - 1.62	0.46

## Data Plot and Equation



# Research and Development Center (760)

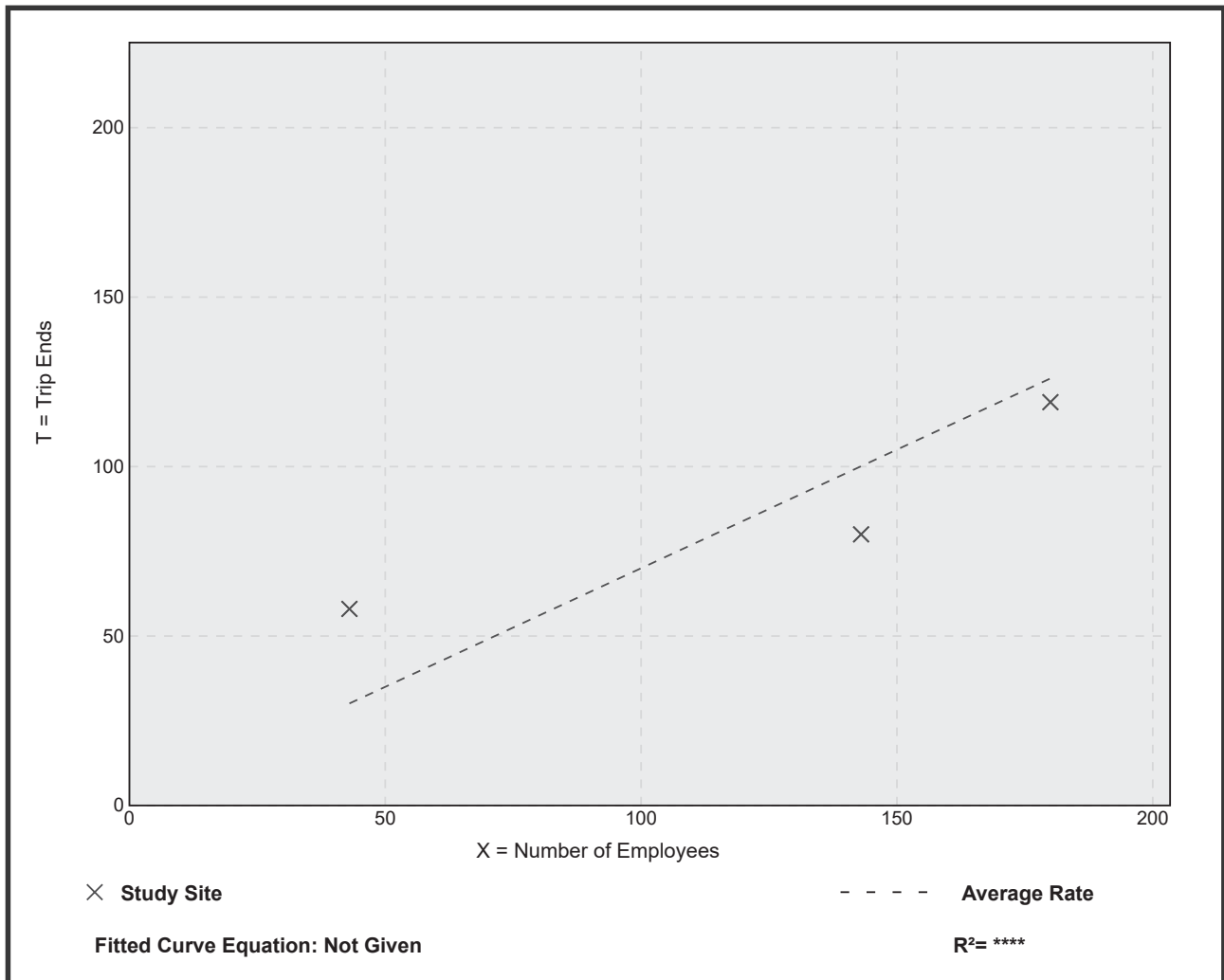
**Person Trip Ends vs: Employees**  
**On a: Weekday,**  
**Peak Hour of Adjacent Street Traffic,**  
**One Hour Between 4 and 6 p.m.**  
**Setting/Location: General Urban/Suburban**  
 Number of Studies: 3  
 Avg. Num. of Employees: 122  
 Directional Distribution: 14% entering, 86% exiting

## Person Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.70	0.56 - 1.35	1.13

## Data Plot and Equation

*Caution – Small Sample Size*





# Research and Development Center (760)

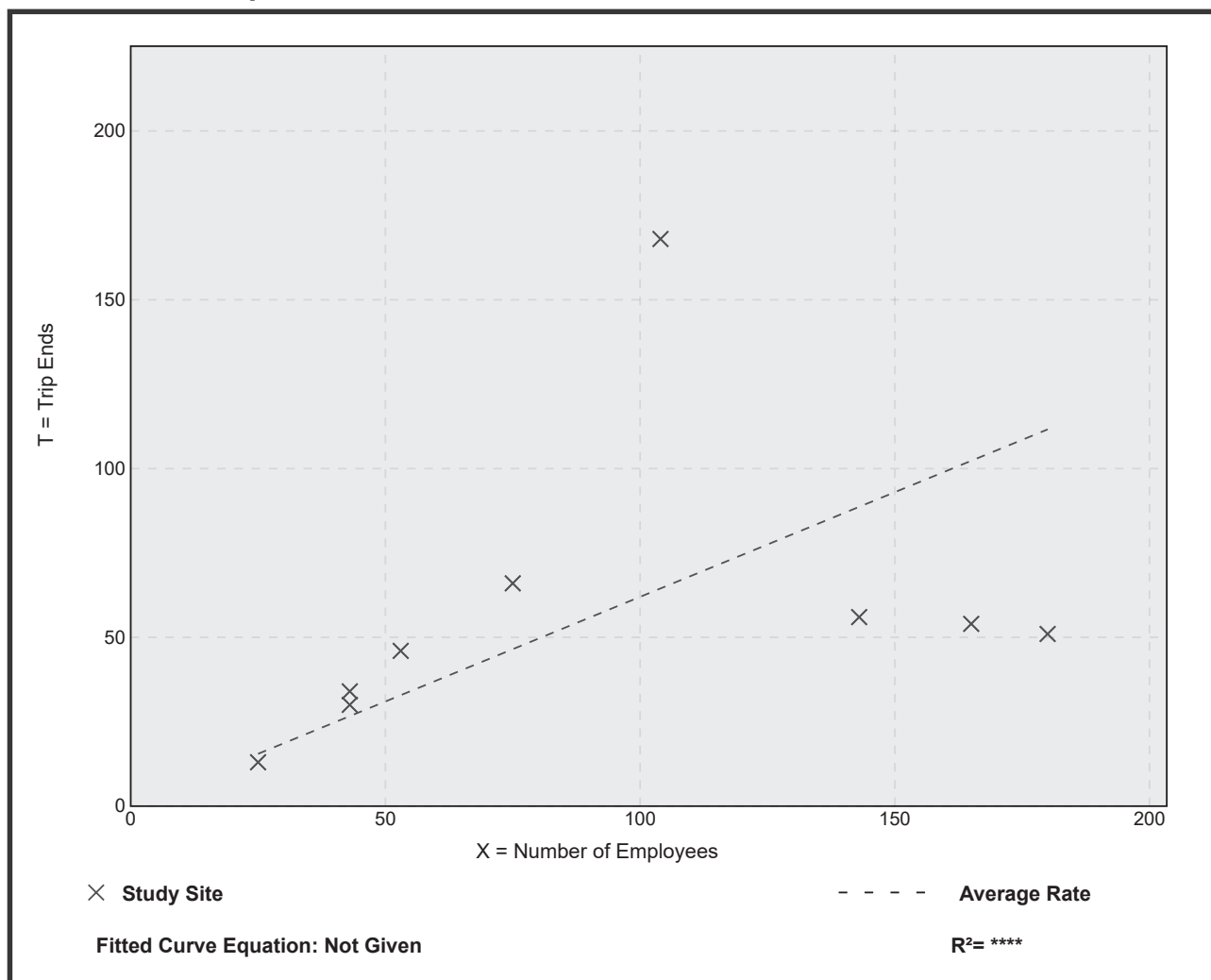
**Person Trip Ends vs: Employees**  
**On a: Weekday,**  
**AM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**  
 Number of Studies: 9  
 Avg. Num. of Employees: 92  
 Directional Distribution: 69% entering, 31% exiting

## Person Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.62	0.28 - 1.62	0.46

## Data Plot and Equation



# Research and Development Center (760)

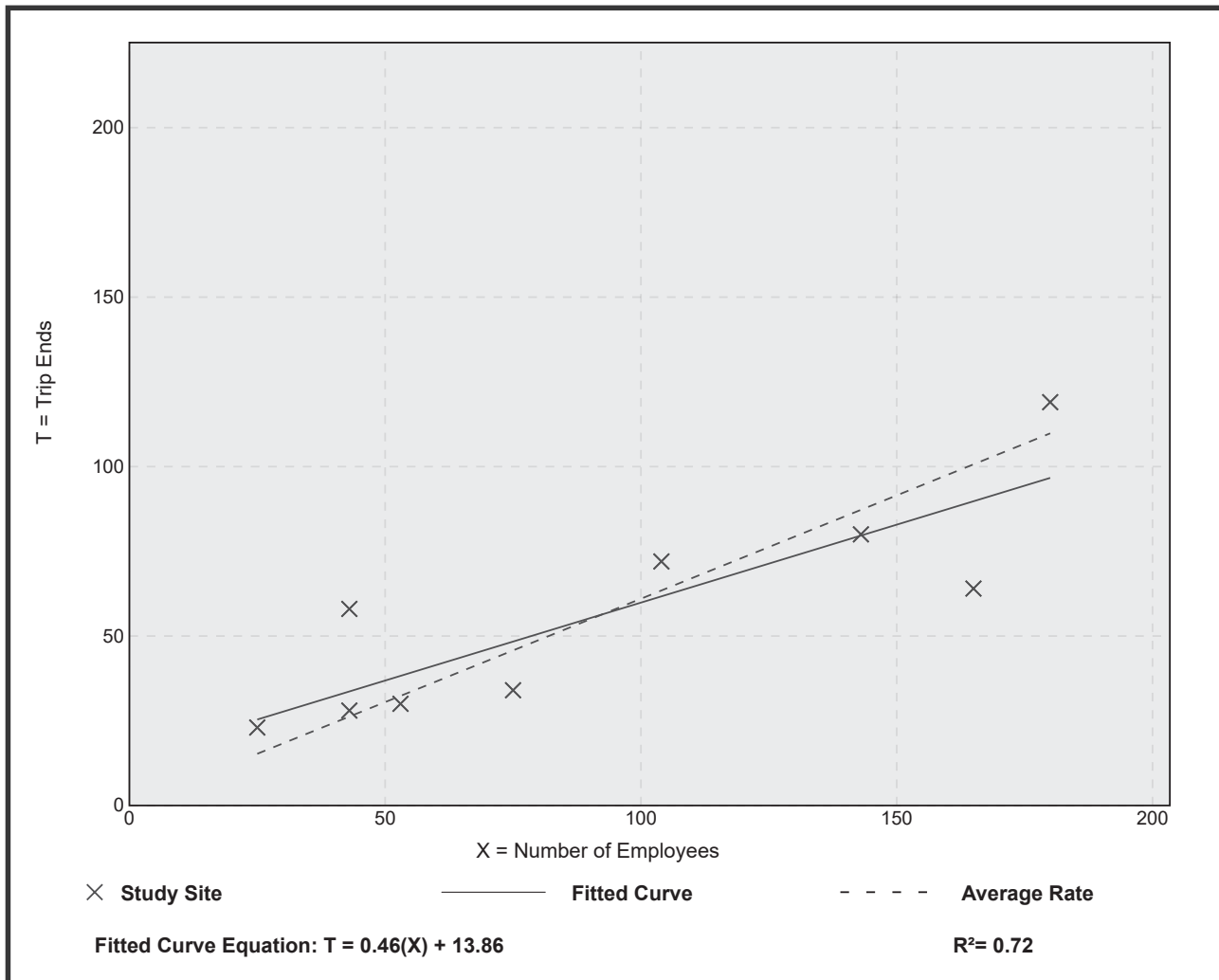
**Person Trip Ends vs: Employees**  
**On a: Weekday,**  
**PM Peak Hour of Generator**

**Setting/Location: General Urban/Suburban**  
 Number of Studies: 9  
 Avg. Num. of Employees: 92  
 Directional Distribution: 34% entering, 66% exiting

## Person Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.61	0.39 - 1.35	0.23

## Data Plot and Equation





## MAPLE LEAF CROSSING TRIP ASSIGNMENT





## EXISTING (2020) CAPACITY REPORTS

Weekday Morning Peak Hour

Weekday Evening Peak Hour

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	295	1	15	160	20	1	1	5	110	1	5
Future Vol, veh/h	5	295	1	15	160	20	1	1	5	110	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	321	1	16	174	22	1	1	5	120	1	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	196	0	0	322	0	0	552	560	322	552	549	185
Stage 1	-	-	-	-	-	-	332	332	-	217	217	-
Stage 2	-	-	-	-	-	-	220	228	-	335	332	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1377	-	-	1238	-	-	444	437	719	444	443	857
Stage 1	-	-	-	-	-	-	681	644	-	785	723	-
Stage 2	-	-	-	-	-	-	782	715	-	679	644	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1377	-	-	1238	-	-	434	429	719	433	435	857
Mov Cap-2 Maneuver	-	-	-	-	-	-	434	429	-	433	435	-
Stage 1	-	-	-	-	-	-	678	641	-	782	712	-
Stage 2	-	-	-	-	-	-	764	704	-	670	641	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.6			11			16.4		
HCM LOS							B			C		






















Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	604	1377	-	-	1238	-	-	442
HCM Lane V/C Ratio	0.013	0.004	-	-	0.013	-	-	0.285
HCM Control Delay (s)	11	7.6	0	-	7.9	0	-	16.4
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	1.2



# HCM 6th Signalized Intersection Summary

## 200: Calumet Avenue & Fisher Street






















09/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	175	130	70	40	130	125	1050	275	290	785	30
Future Volume (veh/h)	105	175	130	70	40	130	125	1050	275	290	785	30
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	114	190	141	76	43	141	136	1141	299	315	853	33
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	309	212	157	197	78	255	399	1323	343	266	1720	67
Arrive On Green	0.06	0.21	0.21	0.05	0.20	0.20	0.06	0.47	0.47	0.08	0.49	0.49
Sat Flow, veh/h	1781	997	740	1781	384	1260	1781	2793	724	1781	3488	135
Grp Volume(v), veh/h	114	0	331	76	0	184	136	722	718	315	435	451
Grp Sat Flow(s),veh/h/ln	1781	0	1737	1781	0	1644	1781	1777	1740	1781	1777	1846
Q Serve(g_s), s	4.4	0.0	16.0	2.9	0.0	8.7	3.3	31.1	32.0	7.0	14.2	14.2
Cycle Q Clear(g_c), s	4.4	0.0	16.0	2.9	0.0	8.7	3.3	31.1	32.0	7.0	14.2	14.2
Prop In Lane	1.00		0.43	1.00		0.77	1.00		0.42	1.00		0.07
Lane Grp Cap(c), veh/h	309	0	370	197	0	333	399	842	824	266	876	910
V/C Ratio(X)	0.37	0.00	0.90	0.39	0.00	0.55	0.34	0.86	0.87	1.18	0.50	0.50
Avail Cap(c_a), veh/h	309	0	402	236	0	399	598	842	824	266	876	910
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	25.8	0.0	33.1	26.8	0.0	31.0	11.3	20.2	20.4	19.9	14.7	14.7
Incr Delay (d2), s/veh	0.7	0.0	20.9	1.2	0.0	1.4	0.5	11.0	12.2	114.7	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	3.3	0.0	13.4	2.2	0.0	6.2	2.2	20.3	20.7	17.2	9.6	9.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.5	0.0	54.0	28.1	0.0	32.4	11.8	31.1	32.6	134.6	16.7	16.6
LnGrp LOS	C	A	D	C	A	C	B	C	C	F	B	B
Approach Vol, veh/h	445			260			1576			1201		
Approach Delay, s/veh	47.0			31.1			30.1			47.6		
Approach LOS	D			C			C			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	45.0	8.1	22.4	9.3	46.7	9.0	21.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	7.0	41.0	6.0	20.0	15.0	33.0	5.0	21.0				
Max Q Clear Time (g_c+I1), s	9.0	34.0	4.9	18.0	5.3	16.2	6.4	10.7				
Green Ext Time (p_c), s	0.0	4.8	0.0	0.4	0.2	5.1	0.0	0.7				
Intersection Summary												
HCM 6th Ctrl Delay	38.4											
HCM 6th LOS	D											

# HCM 6th Signalized Intersection Capacity Analysis

## 200: Calumet Avenue & Fisher Street

09/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	175	130	70	40	130	125	1050	275	290	785	30
Future Volume (veh/h)	105	175	130	70	40	130	125	1050	275	290	785	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
Work Zone On Approach	No			No			No			No		
Lanes Open During Work Zone												
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	114	190	141	76	43	141	136	1141	299	315	853	33
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
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	309	212	157	197	78	255	399	1323	343	266	1720	67
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	0.21	0.21	0.05	0.20	0.20	0.06	0.47	0.47	0.08	0.49	0.49
Unsig. Movement Delay												
Ln Grp Delay, s/veh	26.5	0.0	54.0	28.1	0.0	32.4	11.8	31.1	32.6	134.6	16.7	16.6
Ln Grp LOS	C	A	D	C	A	C	B	C	C	F	B	B
Approach Vol, veh/h	445			260			1576			1201		
Approach Delay, s/veh	47.0			31.1			30.1			47.6		
Approach LOS	D			C			C			D		
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	4.0				
Phs Duration (G+Y+Rc), s	11.0	45.0	8.1	22.4	9.3	46.7	9.0	21.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green (Gmax), s	7.0	41.0	6.0	20.0	15.0	33.0	5.0	21.0				
Max Allow Headway (MAH), s	3.8	5.2	3.8	5.3	3.8	5.1	3.8	5.4				
Max Q Clear (g_c+I1), s	9.0	34.0	4.9	18.0	5.3	16.2	6.4	10.7				
Green Ext Time (g_e), s	0.0	4.8	0.0	0.4	0.2	5.1	0.0	0.7				
Prob of Phs Call (p_c)	1.00	1.00	0.84	1.00	0.96	1.00	0.94	1.00				
Prob of Max Out (p_x)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.08				
Left-Turn Movement Data												
Assigned Mvmt	1	3	5	7								
Mvmt Sat Flow, veh/h	1781	1781	1781	1781								
Through Movement Data												
Assigned Mvmt	2	4	6	8								
Mvmt Sat Flow, veh/h	2793	997	3488	384								
Right-Turn Movement Data												
Assigned Mvmt	12	14	16	18								
Mvmt Sat Flow, veh/h	724	740	135	1260								
Left Lane Group Data												
Assigned Mvmt	1	0	3	0	5	0	7	0				
Lane Assignment	L (Pr/Pm)	L (Pr/Pm)	L (Pr/Pm)	L (Pr/Pm)								



# HCM 6th Signalized Intersection Capacity Analysis

## 200: Calumet Avenue & Fisher Street

09/21/2020

Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	315	0	76	0	136	0	114	0
Grp Sat Flow (s), veh/h/ln	1781	0	1781	0	1781	0	1781	0
Q Serve Time (g_s), s	7.0	0.0	2.9	0.0	3.3	0.0	4.4	0.0
Cycle Q Clear Time (g_c), s	7.0	0.0	2.9	0.0	3.3	0.0	4.4	0.0
Perm LT Sat Flow (s_l), veh/h/ln	371	0	1049	0	627	0	1200	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	17.5	0.0	41.0	0.0	17.5	0.0
Perm LT Serve Time (g_u), s	9.0	0.0	2.4	0.0	28.5	0.0	8.8	0.0
Perm LT Q Serve Time (g_ps), s	9.0	0.0	1.2	0.0	3.5	0.0	0.9	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	266	0	197	0	399	0	309	0
V/C Ratio (X)	1.18	0.00	0.39	0.00	0.34	0.00	0.37	0.00
Avail Cap (c_a), veh/h	266	0	236	0	598	0	309	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	19.9	0.0	26.8	0.0	11.3	0.0	25.8	0.0
Incr Delay (d2), s/veh	114.7	0.0	1.2	0.0	0.5	0.0	0.7	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	134.6	0.0	28.1	0.0	11.8	0.0	26.5	0.0
1st-Term Q (Q1), veh/ln	2.4	0.0	1.2	0.0	1.2	0.0	1.8	0.0
2nd-Term Q (Q2), veh/ln	8.5	0.0	0.1	0.0	0.1	0.0	0.1	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%)	1.59	0.00	1.80	0.00	1.80	0.00	1.80	0.00
%ile Back of Q (95%), veh/ln	17.2	0.0	2.2	0.0	2.2	0.0	3.3	0.0
%ile Storage Ratio (RQ%)	2.91	0.00	0.41	0.00	0.13	0.00	0.35	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	12.3	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	0.3	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	1	0	0
Grp Vol (v), veh/h	0	722	0	0	0	435	0	0
Grp Sat Flow (s), veh/h/ln	0	1777	0	0	0	1777	0	0
Q Serve Time (g_s), s	0.0	31.1	0.0	0.0	0.0	14.2	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	31.1	0.0	0.0	0.0	14.2	0.0	0.0
Lane Grp Cap (c), veh/h	0	842	0	0	0	876	0	0
V/C Ratio (X)	0.00	0.86	0.00	0.00	0.00	0.50	0.00	0.00
Avail Cap (c_a), veh/h	0	842	0	0	0	876	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	20.2	0.0	0.0	0.0	14.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	11.0	0.0	0.0	0.0	2.0	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	31.1	0.0	0.0	0.0	16.7	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	11.6	0.0	0.0	0.0	5.2	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	2.6	0.0	0.0	0.0	0.5	0.0	0.0

# HCM 6th Signalized Intersection Capacity Analysis

## 200: Calumet Avenue & Fisher Street

09/21/2020

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	1.44	0.00	1.00	0.00	1.69	0.00	1.00
%ile Back of Q (95%), veh/ln	0.0	20.3	0.0	0.0	0.0	9.6	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.52	0.00	0.00	0.00	0.07	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	718	0	331	0	451	0	184
Grp Sat Flow (s), veh/h/ln	0	1740	0	1737	0	1846	0	1644
Q Serve Time (g_s), s	0.0	32.0	0.0	16.0	0.0	14.2	0.0	8.7
Cycle Q Clear Time (g_c), s	0.0	32.0	0.0	16.0	0.0	14.2	0.0	8.7
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	0.42	0.00	0.43	0.00	0.07	0.00	0.77
Lane Grp Cap (c), veh/h	0	824	0	370	0	910	0	333
V/C Ratio (X)	0.00	0.87	0.00	0.90	0.00	0.50	0.00	0.55
Avail Cap (c_a), veh/h	0	824	0	402	0	910	0	399
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	20.4	0.0	33.1	0.0	14.7	0.0	31.0
Incr Delay (d2), s/veh	0.0	12.2	0.0	20.9	0.0	1.9	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	32.6	0.0	54.0	0.0	16.6	0.0	32.4
1st-Term Q (Q1), veh/ln	0.0	11.7	0.0	6.5	0.0	5.4	0.0	3.3
2nd-Term Q (Q2), veh/ln	0.0	2.8	0.0	2.1	0.0	0.5	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	1.43	0.00	1.56	0.00	1.67	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	20.7	0.0	13.4	0.0	9.9	0.0	6.2
%ile Storage Ratio (RQ%)	0.00	0.53	0.00	0.12	0.00	0.07	0.00	0.04
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 6th Ctrl Delay	38.4
HCM 6th LOS	D



# HCM 6th Signalized Intersection Summary

400: Calumet Avenue & Commercial Driveway B/Fran Lin Parkway

09/21/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕		↖	↕↗		↖	↕↗	
Traffic Volume (veh/h)	25	10	15	150	35	180	30	1315	335	60	800	20
Future Volume (veh/h)	25	10	15	150	35	180	30	1315	335	60	800	20
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	11	16	163	38	196	33	1429	364	65	870	22
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	133	40	107	275	50	258	59	1687	417	89	2174	55
Arrive On Green	0.07	0.07	0.07	0.07	0.19	0.19	0.03	0.60	0.60	0.05	0.61	0.61
Sat Flow, veh/h	727	588	1585	1781	264	1361	1781	2824	698	1781	3542	90
Grp Volume(v), veh/h	38	0	16	163	0	234	33	883	910	65	436	456
Grp Sat Flow(s),veh/h/ln	1314	0	1585	1781	0	1625	1781	1777	1745	1781	1777	1854
Q Serve(g_s), s	1.0	0.0	0.7	5.0	0.0	10.0	1.3	29.3	32.4	2.7	9.3	9.3
Cycle Q Clear(g_c), s	2.0	0.0	0.7	5.0	0.0	10.0	1.3	29.3	32.4	2.7	9.3	9.3
Prop In Lane	0.71		1.00	1.00		0.84	1.00		0.40	1.00		0.05
Lane Grp Cap(c), veh/h	173	0	107	275	0	309	59	1061	1042	89	1091	1138
V/C Ratio(X)	0.22	0.00	0.15	0.59	0.00	0.76	0.56	0.83	0.87	0.73	0.40	0.40
Avail Cap(c_a), veh/h	418	0	409	275	0	618	145	1061	1042	145	1091	1138
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	32.9	0.0	32.3	29.3	0.0	28.2	35.1	11.9	12.5	34.5	7.3	7.3
Incr Delay (d2), s/veh	0.6	0.0	0.6	3.4	0.0	3.8	7.9	7.6	10.1	10.9	1.1	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	1.2	0.0	0.5	5.4	0.0	7.3	1.2	16.7	18.5	2.5	5.6	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.5	0.0	33.0	32.7	0.0	32.1	43.0	19.5	22.6	45.4	8.4	8.3
LnGrp LOS	C	A	C	C	A	C	D	B	C	D	A	A
Approach Vol, veh/h	54		397				1826			957		
Approach Delay, s/veh	33.3		32.3				21.5			10.9		
Approach LOS	C		C				C			B		
Timer - Assigned Phs	1	2	3	4	5	6	8					
Phs Duration (G+Y+Rc), s	7.7	48.0	9.0	9.0	6.5	49.2	18.0					
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0					
Max Green Setting (Gmax), s	44.0	44.0	5.0	19.0	6.0	44.0	28.0					
Max Q Clear Time (g_c+I1), s	34.4	34.4	7.0	4.0	3.3	11.3	12.0					
Green Ext Time (p_c), s	0.0	7.6	0.0	0.2	0.0	6.3	1.3					

## Intersection Summary






















HCM 6th Ctrl Delay 19.9

HCM 6th LOS B

# HCM 6th Signalized Intersection Capacity Analysis

## 400: Calumet Avenue & Commercial Driveway B/Fran Lin Parkway

09/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	10	15	150	35	180	30	1315	335	60	800	20
Future Volume (veh/h)	25	10	15	150	35	180	30	1315	335	60	800	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
Work Zone On Approach	No			No			No			No		
Lanes Open During Work Zone												
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	11	16	163	38	196	33	1429	364	65	870	22
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
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	133	40	107	275	50	258	59	1687	417	89	2174	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	0.07	0.07	0.07	0.07	0.19	0.19	0.03	0.60	0.60	0.05	0.61	0.61
Unsig. Movement Delay												
Ln Grp Delay, s/veh	33.5	0.0	33.0	32.7	0.0	32.1	43.0	19.5	22.6	45.4	8.4	8.3
Ln Grp LOS	C	A	C	C	A	C	D	B	C	D	A	A
Approach Vol, veh/h	54			397			1826			957		
Approach Delay, s/veh	33.3			32.3			21.5			10.9		
Approach LOS	C			C			C			B		
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	8					
Case No	2.0	4.0	1.2	7.3	2.0	4.0	4.0					
Phs Duration (G+Y+Rc), s	7.7	48.0	9.0	9.0	6.5	49.2	18.0					
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0					
Max Green (Gmax), s	6.0	44.0	5.0	19.0	6.0	44.0	28.0					
Max Allow Headway (MAH), s	3.8	5.2	3.8	5.3	3.8	5.1	5.5					
Max Q Clear (g_c+I1), s	4.7	34.4	7.0	4.0	3.3	11.3	12.0					
Green Ext Time (g_e), s	0.0	7.6	0.0	0.2	0.0	6.3	1.3					
Prob of Phs Call (p_c)	0.74	1.00	0.96	1.00	0.49	1.00	1.00					
Prob of Max Out (p_x)	1.00	0.00	1.00	0.00	1.00	0.00	0.01					
Left-Turn Movement Data												
Assigned Mvmt	1	3		7	5							
Mvmt Sat Flow, veh/h	1781	1781		727	1781							
Through Movement Data												
Assigned Mvmt	2		4		6		8					
Mvmt Sat Flow, veh/h	2824		588		3542		264					
Right-Turn Movement Data												
Assigned Mvmt	12		14		16		18					
Mvmt Sat Flow, veh/h	698		1585		90		1361					
Left Lane Group Data												
Assigned Mvmt	1	0	3	7	5	0	0	0				
Lane Assignment	L (Prot)	L (Pr/Pm)		L+T	L (Prot)							



# HCM 6th Signalized Intersection Capacity Analysis

## 400: Calumet Avenue & Commercial Driveway B/Fran Lin Parkway

09/21/2020

Lanes in Grp	1	0	1	1	1	0	0	0
Grp Vol (v), veh/h	65	0	163	38	33	0	0	0
Grp Sat Flow (s), veh/h/ln	1781	0	1781	1314	1781	0	0	0
Q Serve Time (g_s), s	2.7	0.0	5.0	1.0	1.3	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	2.7	0.0	5.0	2.0	1.3	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	1383	1165	0	0	0	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	0.0	0.0	7.0	5.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	3.0	3.9	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	2.1	1.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.71	1.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	89	0	275	173	59	0	0	0
V/C Ratio (X)	0.73	0.00	0.59	0.22	0.56	0.00	0.00	0.00
Avail Cap (c_a), veh/h	145	0	275	418	145	0	0	0
Upstream Filter (I)	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	34.5	0.0	29.3	32.9	35.1	0.0	0.0	0.0
Incr Delay (d2), s/veh	10.9	0.0	3.4	0.6	7.9	0.0	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	45.4	0.0	32.7	33.5	43.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	1.1	0.0	2.8	0.6	0.6	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.3	0.0	0.3	0.0	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	1.80	1.80	1.80	0.00	0.00	0.00
%ile Back of Q (95%), veh/ln	2.5	0.0	5.4	1.2	1.2	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.31	0.00	2.76	0.16	0.22	0.00	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
<b>Middle Lane Group Data</b>								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T			T				
Lanes in Grp	0	1	0	0	0	1	0	0
Grp Vol (v), veh/h	0	883	0	0	0	436	0	0
Grp Sat Flow (s), veh/h/ln	0	1777	0	0	0	1777	0	0
Q Serve Time (g_s), s	0.0	29.3	0.0	0.0	0.0	9.3	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	29.3	0.0	0.0	0.0	9.3	0.0	0.0
Lane Grp Cap (c), veh/h	0	1061	0	0	0	1091	0	0
V/C Ratio (X)	0.00	0.83	0.00	0.00	0.00	0.40	0.00	0.00
Avail Cap (c_a), veh/h	0	1061	0	0	0	1091	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	11.9	0.0	0.0	0.0	7.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	7.6	0.0	0.0	0.0	1.1	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	19.5	0.0	0.0	0.0	8.4	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	9.0	0.0	0.0	0.0	2.8	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	2.2	0.0	0.0	0.0	0.3	0.0	0.0

# HCM 6th Signalized Intersection Capacity Analysis

## 400: Calumet Avenue & Commercial Driveway B/Fran Lin Parkway

09/21/2020

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	1.80	0.00	1.00
%ile Back of Q (95%), veh/ln	0.0	16.7	0.0	0.0	0.0	5.6	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.08	0.00	0.00	0.00	0.19	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		R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	910	0	16	0	456	0	234
Grp Sat Flow (s), veh/h/ln	0	1745	0	1585	0	1854	0	1625
Q Serve Time (g_s), s	0.0	32.4	0.0	0.7	0.0	9.3	0.0	10.0
Cycle Q Clear Time (g_c), s	0.0	32.4	0.0	0.7	0.0	9.3	0.0	10.0
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	0.40	0.00	1.00	0.00	0.05	0.00	0.84
Lane Grp Cap (c), veh/h	0	1042	0	107	0	1138	0	309
V/C Ratio (X)	0.00	0.87	0.00	0.15	0.00	0.40	0.00	0.76
Avail Cap (c_a), veh/h	0	1042	0	409	0	1138	0	618
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	32.3	0.0	7.3	0.0	28.2
Incr Delay (d2), s/veh	0.0	10.1	0.0	0.6	0.0	1.1	0.0	3.8
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	22.6	0.0	33.0	0.0	8.3	0.0	32.1
1st-Term Q (Q1), veh/ln	0.0	9.8	0.0	0.3	0.0	2.9	0.0	3.7
2nd-Term Q (Q2), veh/ln	0.0	2.9	0.0	0.0	0.0	0.3	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	1.46	0.00	1.80	0.00	1.80	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	18.5	0.0	0.5	0.0	5.8	0.0	7.3
%ile Storage Ratio (RQ%)	0.00	0.09	0.00	0.07	0.00	0.20	0.00	0.25
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 6th Ctrl Delay	19.9
HCM 6th LOS	B



Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	275	1	5	320	155	1	1	1	35	1	5
Future Vol, veh/h	20	275	1	5	320	155	1	1	1	35	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	299	1	5	348	168	1	1	1	38	1	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	516	0	0	300	0	0	789	870	300	787	786	432
Stage 1	-	-	-	-	-	-	344	344	-	442	442	-
Stage 2	-	-	-	-	-	-	445	526	-	345	344	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1050	-	-	1261	-	-	308	290	740	309	324	624
Stage 1	-	-	-	-	-	-	671	637	-	594	576	-
Stage 2	-	-	-	-	-	-	592	529	-	671	637	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1050	-	-	1261	-	-	297	281	740	300	314	624
Mov Cap-2 Maneuver	-	-	-	-	-	-	297	281	-	300	314	-
Stage 1	-	-	-	-	-	-	654	621	-	579	573	-
Stage 2	-	-	-	-	-	-	582	526	-	652	621	-






















Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.1	15	18
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	362	1050	-	-	1261	-	-	321
HCM Lane V/C Ratio	0.009	0.021	-	-	0.004	-	-	0.139
HCM Control Delay (s)	15	8.5	0	-	7.9	0	-	18
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.5

# HCM 6th Signalized Intersection Summary

## 200: Calumet Avenue & Fisher Street

09/21/2020






















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	80	155	205	225	230	175	920	60	170	1075	80
Future Volume (veh/h)	75	80	155	205	225	230	175	920	60	170	1075	80
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	82	87	168	223	245	250	190	1000	65	185	1168	87
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	173	128	248	263	188	191	304	1577	102	349	1550	115
Arrive On Green	0.05	0.22	0.22	0.05	0.22	0.22	0.08	0.47	0.47	0.08	0.46	0.46
Sat Flow, veh/h	1781	570	1102	1781	849	866	1781	3387	220	1781	3353	249
Grp Volume(v), veh/h	82	0	255	223	0	495	190	524	541	185	618	637
Grp Sat Flow(s),veh/h/ln	1781	0	1672	1781	0	1714	1781	1777	1831	1781	1777	1825
Q Serve(g_s), s	3.0	0.0	12.0	4.0	0.0	19.0	4.7	19.2	19.2	4.6	24.7	24.7
Cycle Q Clear(g_c), s	3.0	0.0	12.0	4.0	0.0	19.0	4.7	19.2	19.2	4.6	24.7	24.7
Prop In Lane	1.00		0.66	1.00		0.51	1.00		0.12	1.00		0.14
Lane Grp Cap(c), veh/h	173	0	376	263	0	379	304	827	852	349	822	844
V/C Ratio(X)	0.47	0.00	0.68	0.85	0.00	1.31	0.63	0.63	0.63	0.53	0.75	0.75
Avail Cap(c_a), veh/h	208	0	409	263	0	379	430	827	852	398	822	844
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	26.0	0.0	30.5	33.6	0.0	33.5	16.2	17.4	17.4	13.4	19.0	19.1
Incr Delay (d2), s/veh	2.0	0.0	4.0	22.2	0.0	155.6	2.1	3.7	3.6	1.3	6.3	6.2
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	2.4	0.0	8.7	7.7	0.0	36.4	3.3	12.7	13.0	3.1	16.0	16.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	0.0	34.5	55.8	0.0	189.1	18.3	21.1	21.0	14.6	25.4	25.3
LnGrp LOS	C	A	C	E	A	F	B	C	C	B	C	C
Approach Vol, veh/h	337		718				1255			1440		
Approach Delay, s/veh	32.9		147.7				20.6			23.9		
Approach LOS	C		F				C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.6	44.0	8.0	23.3	10.9	43.7	8.3	23.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	9.0	40.0	4.0	21.0	13.0	36.0	6.0	19.0				
Max Q Clear Time (g_c+I1), s	6.6	21.2	6.0	14.0	6.7	26.7	5.0	21.0				
Green Ext Time (p_c), s	0.1	6.7	0.0	0.8	0.3	5.3	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	47.3											
HCM 6th LOS	D											



# HCM 6th Signalized Intersection Capacity Analysis

## 200: Calumet Avenue & Fisher Street

09/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	80	155	205	225	230	175	920	60	170	1075	80
Future Volume (veh/h)	75	80	155	205	225	230	175	920	60	170	1075	80
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 <sub>p</sub> bT)	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
Work Zone On Approach	No			No			No			No		
Lanes Open During Work Zone												
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	82	87	168	223	245	250	190	1000	65	185	1168	87
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
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	173	128	248	263	188	191	304	1577	102	349	1550	115
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	0.22	0.22	0.05	0.22	0.22	0.08	0.47	0.47	0.08	0.46	0.46
Unsig. Movement Delay												
Ln Grp Delay, s/veh	28.0	0.0	34.5	55.8	0.0	189.1	18.3	21.1	21.0	14.6	25.4	25.3
Ln Grp LOS	C	A	C	E	A	F	B	C	C	B	C	C
Approach Vol, veh/h	337			718			1255			1440		
Approach Delay, s/veh	32.9			147.7			20.6			23.9		
Approach LOS	C			F			C			C		
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	4.0				
Phs Duration (G+Y+Rc), s	10.6	44.0	8.0	23.3	10.9	43.7	8.3	23.0				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green (Gmax), s	9.0	40.0	4.0	21.0	13.0	36.0	6.0	19.0				
Max Allow Headway (MAH), s	3.8	5.1	3.8	5.3	3.8	5.1	3.8	5.3				
Max Q Clear (g <sub>c</sub> +I1), s	6.6	21.2	6.0	14.0	6.7	26.7	5.0	21.0				
Green Ext Time (g <sub>e</sub> ), s	0.1	6.7	0.0	0.8	0.3	5.3	0.0	0.0				
Prob of Phs Call (p <sub>c</sub> )	0.99	1.00	1.00	1.00	0.99	1.00	0.86	1.00				
Prob of Max Out (p <sub>x</sub> )	1.00	0.00	1.00	0.50	0.13	0.00	1.00	1.00				
Left-Turn Movement Data												
Assigned Mvmt	1		3		5		7					
Mvmt Sat Flow, veh/h	1781		1781		1781		1781					
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		3387		570		3353		849				
Right-Turn Movement Data												
Assigned Mvmt			12		14		16			18		
Mvmt Sat Flow, veh/h			220		1102		249			866		
Left Lane Group Data												
Assigned Mvmt	1	0	3	0	5	0	7	0				
Lane Assignment	L (Pr/Pm)		L (Pr/Pm)		L (Pr/Pm)		L (Pr/Pm)					

# HCM 6th Signalized Intersection Capacity Analysis

## 200: Calumet Avenue & Fisher Street

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Lanes in Grp	1	0	1	0	1	0	1	0
Grp Vol (v), veh/h	185	0	223	0	190	0	82	0
Grp Sat Flow (s), veh/h/ln	1781	0	1781	0	1781	0	1781	0
Q Serve Time (g_s), s	4.6	0.0	4.0	0.0	4.7	0.0	3.0	0.0
Cycle Q Clear Time (g_c), s	4.6	0.0	4.0	0.0	4.7	0.0	3.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	530	0	1125	0	442	0	902	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	39.7	0.0	19.0	0.0	39.7	0.0	19.0	0.0
Perm LT Serve Time (g_u), s	20.8	0.0	7.3	0.0	15.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	10.2	0.0	7.3	0.0	15.0	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	349	0	263	0	304	0	173	0
V/C Ratio (X)	0.53	0.00	0.85	0.00	0.63	0.00	0.47	0.00
Avail Cap (c_a), veh/h	398	0	263	0	430	0	208	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	13.4	0.0	33.6	0.0	16.2	0.0	26.0	0.0
Incr Delay (d2), s/veh	1.3	0.0	22.2	0.0	2.1	0.0	2.0	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	14.6	0.0	55.8	0.0	18.3	0.0	28.0	0.0
1st-Term Q (Q1), veh/ln	1.6	0.0	2.7	0.0	1.7	0.0	1.2	0.0
2nd-Term Q (Q2), veh/ln	0.1	0.0	1.6	0.0	0.2	0.0	0.1	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	1.79	0.00	1.80	0.00	1.80	0.00
%ile Back of Q (95%), veh/ln	3.1	0.0	7.7	0.0	3.3	0.0	2.4	0.0
%ile Storage Ratio (RQ%)	0.53	0.00	1.39	0.00	0.20	0.00	0.25	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
<b>Middle Lane Group Data</b>								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T			
Lanes in Grp	0	1	0	0	0	1	0	0
Grp Vol (v), veh/h	0	524	0	0	0	618	0	0
Grp Sat Flow (s), veh/h/ln	0	1777	0	0	0	1777	0	0
Q Serve Time (g_s), s	0.0	19.2	0.0	0.0	0.0	24.7	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	19.2	0.0	0.0	0.0	24.7	0.0	0.0
Lane Grp Cap (c), veh/h	0	827	0	0	0	822	0	0
V/C Ratio (X)	0.00	0.63	0.00	0.00	0.00	0.75	0.00	0.00
Avail Cap (c_a), veh/h	0	827	0	0	0	822	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	17.4	0.0	0.0	0.0	19.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	3.7	0.0	0.0	0.0	6.3	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	21.1	0.0	0.0	0.0	25.4	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	7.2	0.0	0.0	0.0	9.2	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.8	0.0	0.0	0.0	1.4	0.0	0.0



# HCM 6th Signalized Intersection Capacity Analysis

## 200: Calumet Avenue & Fisher Street

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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	1.50	0.00	1.00
%ile Back of Q (95%), veh/ln	0.0	12.7	0.0	0.0	0.0	16.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.32	0.00	0.00	0.00	0.12	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	541	0	255	0	637	0	495
Grp Sat Flow (s), veh/h/ln	0	1831	0	1672	0	1825	0	1714
Q Serve Time (g_s), s	0.0	19.2	0.0	12.0	0.0	24.7	0.0	19.0
Cycle Q Clear Time (g_c), s	0.0	19.2	0.0	12.0	0.0	24.7	0.0	19.0
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	0.12	0.00	0.66	0.00	0.14	0.00	0.51
Lane Grp Cap (c), veh/h	0	852	0	376	0	844	0	379
V/C Ratio (X)	0.00	0.63	0.00	0.68	0.00	0.75	0.00	1.31
Avail Cap (c_a), veh/h	0	852	0	409	0	844	0	379
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	17.4	0.0	30.5	0.0	19.1	0.0	33.5
Incr Delay (d2), s/veh	0.0	3.6	0.0	4.0	0.0	6.2	0.0	155.6
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	21.0	0.0	34.5	0.0	25.3	0.0	189.1
1st-Term Q (Q1), veh/ln	0.0	7.4	0.0	4.6	0.0	9.5	0.0	7.5
2nd-Term Q (Q2), veh/ln	0.0	0.8	0.0	0.4	0.0	1.5	0.0	16.4
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	1.57	0.00	1.73	0.00	1.50	0.00	1.52
%ile Back of Q (95%), veh/ln	0.0	13.0	0.0	8.7	0.0	16.4	0.0	36.4
%ile Storage Ratio (RQ%)	0.00	0.33	0.00	0.08	0.00	0.12	0.00	0.25
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	29.0
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 6th Ctrl Delay	47.3
HCM 6th LOS	D

# HCM 6th Signalized Intersection Summary

400: Calumet Avenue & Commercial Driveway B/Fran Lin Parkway

09/21/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕		↖	↕↗		↖	↕↗	
Traffic Volume (veh/h)	25	35	55	330	35	135	40	980	120	240	1185	40
Future Volume (veh/h)	25	35	55	330	35	135	40	980	120	240	1185	40
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	38	60	359	38	147	43	1065	130	261	1288	43
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	104	75	112	375	86	334	70	1317	161	303	1908	64
Arrive On Green	0.07	0.07	0.07	0.13	0.26	0.26	0.04	0.41	0.41	0.17	0.54	0.54
Sat Flow, veh/h	517	1063	1585	1781	336	1300	1781	3188	389	1781	3509	117
Grp Volume(v), veh/h	65	0	60	359	0	185	43	593	602	261	652	679
Grp Sat Flow(s),veh/h/ln	1580	0	1585	1781	0	1636	1781	1777	1800	1781	1777	1849
Q Serve(g_s), s	1.9	0.0	2.7	10.0	0.0	7.1	1.8	22.1	22.1	10.7	19.8	19.9
Cycle Q Clear(g_c), s	2.9	0.0	2.7	10.0	0.0	7.1	1.8	22.1	22.1	10.7	19.8	19.9
Prop In Lane	0.42		1.00	1.00		0.79	1.00		0.22	1.00		0.06
Lane Grp Cap(c), veh/h	179	0	112	375	0	421	70	734	744	303	966	1005
V/C Ratio(X)	0.36	0.00	0.54	0.96	0.00	0.44	0.61	0.81	0.81	0.86	0.67	0.68
Avail Cap(c_a), veh/h	457	0	401	375	0	720	119	734	744	332	966	1005
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	33.7	0.0	33.7	29.3	0.0	23.3	35.5	19.4	19.4	30.3	12.3	12.4
Incr Delay (d2), s/veh	1.2	0.0	4.0	35.5	0.0	0.7	8.3	9.3	9.3	19.0	3.8	3.6
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	2.1	0.0	2.1	8.9	0.0	4.9	1.6	15.2	15.4	9.9	12.1	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.9	0.0	37.7	64.8	0.0	24.1	43.8	28.7	28.7	49.2	16.1	16.0
LnGrp LOS	C	A	D	E	A	C	D	C	C	D	B	B
Approach Vol, veh/h	125		544				1238			1592		
Approach Delay, s/veh	36.2		50.9				29.2			21.5		
Approach LOS	D		D				C			C		
Timer - Assigned Phs	1	2	3	4	5	6	8					
Phs Duration (G+Y+Rc), s	16.7	35.0	14.0	9.3	7.0	44.8	23.3					
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0					
Max Green Setting (Gmax), s	14.0	31.0	10.0	19.0	5.0	40.0	33.0					
Max Q Clear Time (g_c+1/2), s	12.7	24.1	12.0	4.9	3.8	21.9	9.1					
Green Ext Time (p_c), s	0.1	4.0	0.0	0.4	0.0	8.7	1.1					

## Intersection Summary























HCM 6th Ctrl Delay	29.3
HCM 6th LOS	C



# HCM 6th Signalized Intersection Capacity Analysis

## 400: Calumet Avenue & Commercial Driveway B/Fran Lin Parkway

09/21/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	35	55	330	35	135	40	980	120	240	1185	40
Future Volume (veh/h)	25	35	55	330	35	135	40	980	120	240	1185	40
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
Work Zone On Approach	No			No			No			No		
Lanes Open During Work Zone												
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	38	60	359	38	147	43	1065	130	261	1288	43
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
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	104	75	112	375	86	334	70	1317	161	303	1908	64
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	0.07	0.07	0.07	0.13	0.26	0.26	0.04	0.41	0.41	0.17	0.54	0.54
Unsig. Movement Delay												
Ln Grp Delay, s/veh	34.9	0.0	37.7	64.8	0.0	24.1	43.8	28.7	28.7	49.2	16.1	16.0
Ln Grp LOS	C	A	D	E	A	C	D	C	C	D	B	B
Approach Vol, veh/h	125			544			1238			1592		
Approach Delay, s/veh	36.2			50.9			29.2			21.5		
Approach LOS	D			D			C			C		
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	8					
Case No	2.0	4.0	1.2	7.3	2.0	4.0	4.0					
Phs Duration (G+Y+Rc), s	16.7	35.0	14.0	9.3	7.0	44.8	23.3					
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0					
Max Green (Gmax), s	14.0	31.0	10.0	19.0	5.0	40.0	33.0					
Max Allow Headway (MAH), s	3.8	5.2	3.8	4.9	3.8	5.1	5.5					
Max Q Clear (g_c+I1), s	12.7	24.1	12.0	4.9	3.8	21.9	9.1					
Green Ext Time (g_e), s	0.1	4.0	0.0	0.4	0.0	8.7	1.1					
Prob of Phs Call (p_c)	1.00	1.00	1.00	1.00	0.59	1.00	1.00					
Prob of Max Out (p_x)	1.00	0.00	1.00	0.00	1.00	0.00	0.00					
Left-Turn Movement Data												
Assigned Mvmt	1	3		7	5							
Mvmt Sat Flow, veh/h	1781	1781		517	1781							
Through Movement Data												
Assigned Mvmt	2		4		6		8					
Mvmt Sat Flow, veh/h	3188		1063		3509		336					
Right-Turn Movement Data												
Assigned Mvmt	12		14		16		18					
Mvmt Sat Flow, veh/h	389		1585		117		1300					
Left Lane Group Data												
Assigned Mvmt	1	0	3	7	5	0	0	0				
Lane Assignment	L (Prot)	L (Pr/Pm)		L+T	L (Prot)							

# HCM 6th Signalized Intersection Capacity Analysis

## 400: Calumet Avenue & Commercial Driveway B/Fran Lin Parkway

09/21/2020

Lanes in Grp	1	0	1	1	1	0	0	0
Grp Vol (v), veh/h	261	0	359	65	43	0	0	0
Grp Sat Flow (s), veh/h/ln	1781	0	1781	1580	1781	0	0	0
Q Serve Time (g_s), s	10.7	0.0	10.0	1.9	1.8	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	10.7	0.0	10.0	2.9	1.8	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	1297	1218	0	0	0	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	0.0	0.0	7.3	5.3	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	2.4	5.3	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	2.4	1.9	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.42	1.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	303	0	375	179	70	0	0	0
V/C Ratio (X)	0.86	0.00	0.96	0.36	0.61	0.00	0.00	0.00
Avail Cap (c_a), veh/h	332	0	375	457	119	0	0	0
Upstream Filter (I)	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	30.3	0.0	29.3	33.7	35.5	0.0	0.0	0.0
Incr Delay (d2), s/veh	19.0	0.0	35.5	1.2	8.3	0.0	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	49.2	0.0	64.8	34.9	43.8	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	4.3	0.0	1.5	1.1	0.7	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	1.6	0.0	3.7	0.1	0.2	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%)	1.67	0.00	1.72	1.80	1.80	0.00	0.00	0.00
%ile Back of Q (95%), veh/ln	9.9	0.0	8.9	2.1	1.6	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	1.23	0.00	4.54	0.28	0.29	0.00	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
<b>Middle Lane Group Data</b>								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T			
Lanes in Grp	0	1	0	0	0	1	0	0
Grp Vol (v), veh/h	0	593	0	0	0	652	0	0
Grp Sat Flow (s), veh/h/ln	0	1777	0	0	0	1777	0	0
Q Serve Time (g_s), s	0.0	22.1	0.0	0.0	0.0	19.8	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	22.1	0.0	0.0	0.0	19.8	0.0	0.0
Lane Grp Cap (c), veh/h	0	734	0	0	0	966	0	0
V/C Ratio (X)	0.00	0.81	0.00	0.00	0.00	0.67	0.00	0.00
Avail Cap (c_a), veh/h	0	734	0	0	0	966	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	19.4	0.0	0.0	0.0	12.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	9.3	0.0	0.0	0.0	3.8	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	28.7	0.0	0.0	0.0	16.1	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	8.1	0.0	0.0	0.0	6.6	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	1.9	0.0	0.0	0.0	1.0	0.0	0.0



# HCM 6th Signalized Intersection Capacity Analysis

## 400: Calumet Avenue & Commercial Driveway B/Fran Lin Parkway

09/21/2020

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	1.59	0.00	1.00
%ile Back of Q (95%), veh/ln	0.0	15.2	0.0	0.0	0.0	12.1	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.07	0.00	0.00	0.00	0.41	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		R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	602	0	60	0	679	0	185
Grp Sat Flow (s), veh/h/ln	0	1800	0	1585	0	1849	0	1636
Q Serve Time (g_s), s	0.0	22.1	0.0	2.7	0.0	19.9	0.0	7.1
Cycle Q Clear Time (g_c), s	0.0	22.1	0.0	2.7	0.0	19.9	0.0	7.1
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	0.22	0.00	1.00	0.00	0.06	0.00	0.79
Lane Grp Cap (c), veh/h	0	744	0	112	0	1005	0	421
V/C Ratio (X)	0.00	0.81	0.00	0.54	0.00	0.68	0.00	0.44
Avail Cap (c_a), veh/h	0	744	0	401	0	1005	0	720
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	19.4	0.0	33.7	0.0	12.4	0.0	23.3
Incr Delay (d2), s/veh	0.0	9.3	0.0	4.0	0.0	3.6	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	28.7	0.0	37.7	0.0	16.0	0.0	24.1
1st-Term Q (Q1), veh/ln	0.0	8.3	0.0	1.0	0.0	6.9	0.0	2.6
2nd-Term Q (Q2), veh/ln	0.0	1.9	0.0	0.1	0.0	1.0	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	1.58	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	15.4	0.0	2.1	0.0	12.5	0.0	4.9
%ile Storage Ratio (RQ%)	0.00	0.07	0.00	0.27	0.00	0.42	0.00	0.17
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 6th Ctrl Delay	29.3
HCM 6th LOS	C

## **FUTURE (2023) BUILD CAPACITY REPORTS**

Weekday Morning Peak Hour

Weekday Evening Peak Hour



# HCM 6th Roundabout

100: North Access & Commercial Driveway A/Manor Avenue & Timrick Drive/Fisher Street

Intersection				
Intersection Delay, s/veh	8.4			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	398	593	8	127
Demand Flow Rate, veh/h	406	605	8	129
Vehicles Circulating, veh/h	525	14	533	590
Vehicles Exiting, veh/h	194	527	4	29
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	11.6	7.1	4.6	6.7
Approach LOS	B	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	406	605	8	129
Cap Entry Lane, veh/h	808	1360	801	756
Entry HV Adj Factor	0.981	0.981	0.995	0.984
Flow Entry, veh/h	398	593	8	127
Cap Entry, veh/h	793	1334	797	744
V/C Ratio	0.503	0.445	0.010	0.171
Control Delay, s/veh	11.6	7.1	4.6	6.7
LOS	B	A	A	A
95th %tile Queue, veh	3	2	0	1

# HCM 6th Roundabout

100: North Access & Commercial Driveway A/Manor Avenue & Timrick Drive/Fisher Street 09/26/2020

Intersection	
Intersection Delay, s/veh	
Intersection LOS	
Approach	NE
Entry Lanes	1
Conflicting Circle Lanes	1
Adj Approach Flow, veh/h	67
Demand Flow Rate, veh/h	68
Vehicles Circulating, veh/h	469
Vehicles Exiting, veh/h	462
Ped Vol Crossing Leg, #/h	0
Ped Cap Adj	1.000
Approach Delay, s/veh	5.0
Approach LOS	A
Lane	Left
Designated Moves	LR
Assumed Moves	LR
RT Channelized	
Lane Util	1.000
Follow-Up Headway, s	2.609
Critical Headway, s	4.976
Entry Flow, veh/h	68
Cap Entry Lane, veh/h	855
Entry HV Adj Factor	0.984
Flow Entry, veh/h	67
Cap Entry, veh/h	841
V/C Ratio	0.080
Control Delay, s/veh	5.0
LOS	A
95th %tile Queue, veh	0













# HCM 6th Signalized Intersection Summary

## 200: Calumet Avenue & Fisher Street

09/26/2020



























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	190	140	70	95	135	160	1095	280	295	880	290
Future Volume (veh/h)	145	190	140	70	95	135	160	1095	280	295	880	290
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	158	207	152	76	103	147	174	1190	304	321	957	315
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	235	278	236	140	227	192	342	1362	344	362	1435	470
Arrive On Green	0.07	0.15	0.15	0.04	0.12	0.12	0.07	0.48	0.48	0.13	0.55	0.55
Sat Flow, veh/h	3456	1870	1585	3456	1870	1585	1781	2810	709	1781	2631	861
Grp Volume(v), veh/h	158	207	152	76	103	147	174	747	747	321	645	627
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1728	1870	1585	1781	1777	1743	1781	1777	1715
Q Serve(g_s), s	3.6	8.5	7.3	1.7	4.1	7.2	3.9	30.1	31.1	8.5	20.8	21.1
Cycle Q Clear(g_c), s	3.6	8.5	7.3	1.7	4.1	7.2	3.9	30.1	31.1	8.5	20.8	21.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.41	1.00		0.50
Lane Grp Cap(c), veh/h	235	278	236	140	227	192	342	861	845	362	969	935
V/C Ratio(X)	0.67	0.74	0.65	0.54	0.45	0.76	0.51	0.87	0.88	0.89	0.67	0.67
Avail Cap(c_a), veh/h	279	372	315	279	372	315	412	861	845	412	969	935
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	1.00	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	36.6	32.8	32.3	37.9	32.9	34.2	11.5	18.4	18.7	20.7	13.1	13.1
Incr Delay (d2), s/veh	4.9	5.5	2.9	3.2	1.4	6.2	1.2	11.5	13.1	18.7	3.6	3.8
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	2.9	7.4	5.2	1.4	3.4	5.4	2.5	19.6	20.2	8.0	12.8	12.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.5	38.3	35.2	41.1	34.3	40.5	12.6	29.9	31.8	39.5	16.7	16.9
LnGrp LOS	D	D	D	D	C	D	B	C	C	D	B	B
Approach Vol, veh/h	517			326			1668			1593		
Approach Delay, s/veh	38.4			38.7			28.9			21.4		
Approach LOS	D			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.8	43.0	6.8	16.0	9.9	47.9	9.0	13.8				
Change Period (Y+Rc), s	4.0	4.0	3.5	4.0	4.0	4.0	3.5	4.0				
Max Green Setting (Gmax), s	13.0	39.0	6.5	16.0	9.0	43.0	6.5	16.0				
Max Q Clear Time (g_c+10), s	10.5	33.1	3.7	10.5	5.9	23.1	5.6	9.2				
Green Ext Time (p_c), s	0.3	4.3	0.0	0.8	0.1	8.8	0.0	0.5				
Intersection Summary												
HCM 6th Ctrl Delay	28.0											
HCM 6th LOS	C											

# HCM 6th Signalized Intersection Capacity Analysis

## 200: Calumet Avenue & Fisher Street

09/26/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	190	140	70	95	135	160	1095	280	295	880	290
Future Volume (veh/h)	145	190	140	70	95	135	160	1095	280	295	880	290
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
Work Zone On Approach	No			No			No			No		
Lanes Open During Work Zone												
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	158	207	152	76	103	147	174	1190	304	321	957	315
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes				Yes				Yes			
Cap, veh/h	235	278	236	140	227	192	342	1362	344	362	1435	470
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	0.07	0.15	0.15	0.04	0.12	0.12	0.07	0.48	0.48	0.13	0.55	0.55
Unsig. Movement Delay												
Ln Grp Delay, s/veh	41.5	38.3	35.2	41.1	34.3	40.5	12.6	29.9	31.8	39.5	16.7	16.9
Ln Grp LOS	D	D	D	D	C	D	B	C	C	D	B	B
Approach Vol, veh/h	517			326			1668			1593		
Approach Delay, s/veh	38.4			38.7			28.9			21.4		
Approach LOS	D			D			C			C		
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	2.0	3.0	1.1	4.0	2.0	3.0				
Phs Duration (G+Y+Rc), s	14.8	43.0	6.8	16.0	9.9	47.9	9.0	13.8				
Change Period (Y+Rc), s	4.0	4.0	3.5	4.0	4.0	4.0	3.5	4.0				
Max Green (Gmax), s	13.0	39.0	6.5	16.0	9.0	43.0	6.5	16.0				
Max Allow Headway (MAH), s	3.8	5.2	3.8	4.7	3.8	5.2	3.8	4.5				
Max Q Clear (g_c+I1), s	10.5	33.1	3.7	10.5	5.9	23.1	5.6	9.2				
Green Ext Time (g_e), s	0.3	4.3	0.0	0.8	0.1	8.8	0.0	0.5				
Prob of Phs Call (p_c)	1.00	1.00	0.82	1.00	0.98	1.00	0.97	1.00				
Prob of Max Out (p_x)	1.00	0.00	1.00	0.71	1.00	0.00	1.00	0.28				
Left-Turn Movement Data												
Assigned Mvmt	1	3	5	7								
Mvmt Sat Flow, veh/h	1781	3456	1781	3456								
Through Movement Data												
Assigned Mvmt	2	4	6	8								
Mvmt Sat Flow, veh/h	2810	1870	2631	1870								
Right-Turn Movement Data												
Assigned Mvmt	12	14	16	18								
Mvmt Sat Flow, veh/h	709	1585	861	1585								
Left Lane Group Data												
Assigned Mvmt	1	0	3	0	5	0	7	0				
Lane Assignment	L (Pr/Pm)	L (Prot)	L (Pr/Pm)	L (Prot)								



# HCM 6th Signalized Intersection Capacity Analysis

## 200: Calumet Avenue & Fisher Street

09/26/2020

Lanes in Grp	1	0	2	0	1	0	2	0
Grp Vol (v), veh/h	321	0	76	0	174	0	158	0
Grp Sat Flow (s), veh/h/ln	1781	0	1728	0	1781	0	1728	0
Q Serve Time (g_s), s	8.5	0.0	1.7	0.0	3.9	0.0	3.6	0.0
Cycle Q Clear Time (g_c), s	8.5	0.0	1.7	0.0	3.9	0.0	3.6	0.0
Perm LT Sat Flow (s_l), veh/h/ln	352	0	0	0	435	0	0	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	0.0	0.0	39.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	7.9	0.0	0.0	0.0	22.8	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	7.9	0.0	0.0	0.0	10.8	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	362	0	140	0	342	0	235	0
V/C Ratio (X)	0.89	0.00	0.54	0.00	0.51	0.00	0.67	0.00
Avail Cap (c_a), veh/h	412	0	279	0	412	0	279	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	20.7	0.0	37.9	0.0	11.5	0.0	36.6	0.0
Incr Delay (d2), s/veh	18.7	0.0	3.2	0.0	1.2	0.0	4.9	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	39.5	0.0	41.1	0.0	12.6	0.0	41.5	0.0
1st-Term Q (Q1), veh/ln	2.7	0.0	0.7	0.0	1.3	0.0	1.5	0.0
2nd-Term Q (Q2), veh/ln	1.9	0.0	0.1	0.0	0.1	0.0	0.2	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%)	1.77	0.00	1.80	0.00	1.80	0.00	1.80	0.00
%ile Back of Q (95%), veh/ln	8.0	0.0	1.4	0.0	2.5	0.0	2.9	0.0
%ile Storage Ratio (RQ%)	1.36	0.00	0.25	0.00	0.15	0.00	0.31	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
<b>Middle Lane Group Data</b>								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T		T		T		T	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	747	0	207	0	645	0	103
Grp Sat Flow (s), veh/h/ln	0	1777	0	1870	0	1777	0	1870
Q Serve Time (g_s), s	0.0	30.1	0.0	8.5	0.0	20.8	0.0	4.1
Cycle Q Clear Time (g_c), s	0.0	30.1	0.0	8.5	0.0	20.8	0.0	4.1
Lane Grp Cap (c), veh/h	0	861	0	278	0	969	0	227
V/C Ratio (X)	0.00	0.87	0.00	0.74	0.00	0.67	0.00	0.45
Avail Cap (c_a), veh/h	0	861	0	372	0	969	0	372
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	18.4	0.0	32.8	0.0	13.1	0.0	32.9
Incr Delay (d2), s/veh	0.0	11.5	0.0	5.5	0.0	3.6	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	29.9	0.0	38.3	0.0	16.7	0.0	34.3
1st-Term Q (Q1), veh/ln	0.0	10.8	0.0	3.7	0.0	7.1	0.0	1.8
2nd-Term Q (Q2), veh/ln	0.0	2.7	0.0	0.4	0.0	1.0	0.0	0.1

# HCM 6th Signalized Intersection Capacity Analysis

## 200: Calumet Avenue & Fisher Street

09/26/2020

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	1.45	0.00	1.80	0.00	1.58	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	19.6	0.0	7.4	0.0	12.8	0.0	3.4
%ile Storage Ratio (RQ%)	0.00	0.51	0.00	0.07	0.00	0.10	0.00	0.02
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		R		T+R		R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	747	0	152	0	627	0	147
Grp Sat Flow (s), veh/h/ln	0	1743	0	1585	0	1715	0	1585
Q Serve Time (g_s), s	0.0	31.1	0.0	7.3	0.0	21.1	0.0	7.2
Cycle Q Clear Time (g_c), s	0.0	31.1	0.0	7.3	0.0	21.1	0.0	7.2
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	0.41	0.00	1.00	0.00	0.50	0.00	1.00
Lane Grp Cap (c), veh/h	0	845	0	236	0	935	0	192
V/C Ratio (X)	0.00	0.88	0.00	0.65	0.00	0.67	0.00	0.76
Avail Cap (c_a), veh/h	0	845	0	315	0	935	0	315
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	18.7	0.0	32.3	0.0	13.1	0.0	34.2
Incr Delay (d2), s/veh	0.0	13.1	0.0	2.9	0.0	3.8	0.0	6.2
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	31.8	0.0	35.2	0.0	16.9	0.0	40.5
1st-Term Q (Q1), veh/ln	0.0	11.0	0.0	2.7	0.0	7.0	0.0	2.7
2nd-Term Q (Q2), veh/ln	0.0	3.1	0.0	0.2	0.0	1.0	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	1.44	0.00	1.80	0.00	1.58	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	20.2	0.0	5.2	0.0	12.6	0.0	5.4
%ile Storage Ratio (RQ%)	0.00	0.52	0.00	0.87	0.00	0.09	0.00	0.92
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 6th Ctrl Delay	28.0
HCM 6th LOS	C



# HCM 6th Signalized Intersection Summary

400: Calumet Avenue & Commercial Driveway B/Fran Lin Parkway

09/26/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕		↖	↕↗		↖	↕↗	
Traffic Volume (veh/h)	25	10	15	155	35	185	30	1395	340	60	900	25
Future Volume (veh/h)	25	10	15	155	35	185	30	1395	340	60	900	25
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	11	16	168	38	201	33	1516	370	65	978	27
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	129	38	107	270	49	259	59	1705	401	89	2168	60
Arrive On Green	0.07	0.07	0.07	0.07	0.19	0.19	0.03	0.60	0.60	0.05	0.61	0.61
Sat Flow, veh/h	677	567	1585	1781	258	1366	1781	2854	672	1781	3532	98
Grp Volume(v), veh/h	38	0	16	168	0	239	33	923	963	65	492	513
Grp Sat Flow(s),veh/h/ln1244		0	1585	1781	0	1624	1781	1777	1749	1781	1777	1853
Q Serve(g_s), s	1.0	0.0	0.7	5.0	0.0	10.3	1.3	32.0	36.4	2.7	10.9	10.9
Cycle Q Clear(g_c), s	2.3	0.0	0.7	5.0	0.0	10.3	1.3	32.0	36.4	2.7	10.9	10.9
Prop In Lane	0.71		1.00	1.00		0.84	1.00		0.38	1.00		0.05
Lane Grp Cap(c), veh/h	168	0	107	270	0	308	59	1061	1045	89	1091	1137
V/C Ratio(X)	0.23	0.00	0.15	0.62	0.00	0.77	0.56	0.87	0.92	0.73	0.45	0.45
Avail Cap(c_a), veh/h	412	0	409	270	0	617	145	1061	1045	145	1091	1137
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(l)	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	33.0	0.0	32.3	29.6	0.0	28.3	35.1	12.4	13.3	34.5	7.6	7.6
Incr Delay (d2), s/veh	0.7	0.0	0.6	4.4	0.0	4.2	7.9	9.7	14.4	10.9	1.3	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/ln1.2		0.0	0.5	1.3	0.0	7.5	1.2	18.5	21.6	2.5	6.6	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.6	0.0	33.0	34.0	0.0	32.5	43.0	22.1	27.7	45.4	8.9	8.9
LnGrp LOS	C	A	C	C	A	C	D	C	C	D	A	A
Approach Vol, veh/h	54		407				1919			1070		
Approach Delay, s/veh	33.4		33.1				25.3			11.1		
Approach LOS	C		C				C			B		
Timer - Assigned Phs	1	2	3	4	5	6	8					
Phs Duration (G+Y+Rc), s7.7	48.0	9.0	9.0	6.5	49.2	18.0						
Change Period (Y+Rc), s 4.0	4.0	4.0	4.0	4.0	4.0	4.0						
Max Green Setting (Gmax), s 44.0	44.0	5.0	19.0	6.0	44.0	28.0						
Max Q Clear Time (g_c+I1), s 38.4	38.4	7.0	4.3	3.3	12.9	12.3						
Green Ext Time (p_c), s 0.0	4.8	0.0	0.1	0.0	7.3	1.3						























## Intersection Summary

HCM 6th Ctrl Delay	21.9
HCM 6th LOS	C

# HCM 6th Signalized Intersection Capacity Analysis

## 400: Calumet Avenue & Commercial Driveway B/Fran Lin Parkway

09/26/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	10	15	155	35	185	30	1395	340	60	900	25
Future Volume (veh/h)	25	10	15	155	35	185	30	1395	340	60	900	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
Work Zone On Approach	No		No				No			No		
Lanes Open During Work Zone												
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	11	16	168	38	201	33	1516	370	65	978	27
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
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	129	38	107	270	49	259	59	1705	401	89	2168	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	0.07	0.07	0.07	0.07	0.19	0.19	0.03	0.60	0.60	0.05	0.61	0.61
Unsig. Movement Delay												
Ln Grp Delay, s/veh	33.6	0.0	33.0	34.0	0.0	32.5	43.0	22.1	27.7	45.4	8.9	8.9
Ln Grp LOS	C	A	C	C	A	C	D	C	C	D	A	A
Approach Vol, veh/h	54		407			1919			1070			
Approach Delay, s/veh	33.4		33.1			25.3			11.1			
Approach LOS	C		C			C			B			
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	8					
Case No	2.0	4.0	1.2	7.3	2.0	4.0	4.0					
Phs Duration (G+Y+Rc), s	7.7	48.0	9.0	9.0	6.5	49.2	18.0					
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0					
Max Green (Gmax), s	6.0	44.0	5.0	19.0	6.0	44.0	28.0					
Max Allow Headway (MAH), s	3.8	5.2	3.8	5.3	3.8	5.1	5.5					
Max Q Clear (g_c+I1), s	4.7	38.4	7.0	4.3	3.3	12.9	12.3					
Green Ext Time (g_e), s	0.0	4.8	0.0	0.1	0.0	7.3	1.3					
Prob of Phs Call (p_c)	0.74	1.00	0.97	1.00	0.49	1.00	1.00					
Prob of Max Out (p_x)	1.00	0.00	1.00	0.00	1.00	0.00	0.02					
Left-Turn Movement Data												
Assigned Mvmt	1	3		7	5							
Mvmt Sat Flow, veh/h	1781	1781		677	1781							
Through Movement Data												
Assigned Mvmt	2			4			6			8		
Mvmt Sat Flow, veh/h	2854			567			3532			258		
Right-Turn Movement Data												
Assigned Mvmt	12			14			16			18		
Mvmt Sat Flow, veh/h	672			1585			98			1366		
Left Lane Group Data												
Assigned Mvmt	1	0	3	7	5	0	0	0				
Lane Assignment	L (Prot)		L (Pr/Pm)		L+T	L (Prot)						



# HCM 6th Signalized Intersection Capacity Analysis

## 400: Calumet Avenue & Commercial Driveway B/Fran Lin Parkway

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Lanes in Grp	1	0	1	1	1	0	0	0
Grp Vol (v), veh/h	65	0	168	38	33	0	0	0
Grp Sat Flow (s), veh/h/ln	1781	0	1781	1244	1781	0	0	0
Q Serve Time (g_s), s	2.7	0.0	5.0	1.0	1.3	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	2.7	0.0	5.0	2.3	1.3	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	1383	1159	0	0	0	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	0.0	0.0	7.0	5.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	2.7	3.7	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	2.5	1.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.71	1.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	89	0	270	168	59	0	0	0
V/C Ratio (X)	0.73	0.00	0.62	0.23	0.56	0.00	0.00	0.00
Avail Cap (c_a), veh/h	145	0	270	412	145	0	0	0
Upstream Filter (I)	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	34.5	0.0	29.6	33.0	35.1	0.0	0.0	0.0
Incr Delay (d2), s/veh	10.9	0.0	4.4	0.7	7.9	0.0	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	45.4	0.0	34.0	33.6	43.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	1.1	0.0	0.4	0.6	0.6	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.3	0.0	0.3	0.0	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	1.80	1.80	1.80	0.00	0.00	0.00
%ile Back of Q (95%), veh/ln	2.5	0.0	1.3	1.2	1.2	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.31	0.00	0.67	0.16	0.22	0.00	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
<b>Middle Lane Group Data</b>								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T			
Lanes in Grp	0	1	0	0	0	1	0	0
Grp Vol (v), veh/h	0	923	0	0	0	492	0	0
Grp Sat Flow (s), veh/h/ln	0	1777	0	0	0	1777	0	0
Q Serve Time (g_s), s	0.0	32.0	0.0	0.0	0.0	10.9	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	32.0	0.0	0.0	0.0	10.9	0.0	0.0
Lane Grp Cap (c), veh/h	0	1061	0	0	0	1091	0	0
V/C Ratio (X)	0.00	0.87	0.00	0.00	0.00	0.45	0.00	0.00
Avail Cap (c_a), veh/h	0	1061	0	0	0	1091	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	12.4	0.0	0.0	0.0	7.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	9.7	0.0	0.0	0.0	1.3	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	22.1	0.0	0.0	0.0	8.9	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	9.8	0.0	0.0	0.0	3.3	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	2.9	0.0	0.0	0.0	0.4	0.0	0.0

# HCM 6th Signalized Intersection Capacity Analysis

## 400: Calumet Avenue & Commercial Driveway B/Fran Lin Parkway

09/26/2020

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	1.46	0.00	1.00	0.00	1.80	0.00	1.00
%ile Back of Q (95%), veh/ln	0.0	18.5	0.0	0.0	0.0	6.6	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.44	0.00	0.00	0.00	0.22	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		R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	963	0	16	0	513	0	239
Grp Sat Flow (s), veh/h/ln	0	1749	0	1585	0	1853	0	1624
Q Serve Time (g_s), s	0.0	36.4	0.0	0.7	0.0	10.9	0.0	10.3
Cycle Q Clear Time (g_c), s	0.0	36.4	0.0	0.7	0.0	10.9	0.0	10.3
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	0.38	0.00	1.00	0.00	0.05	0.00	0.84
Lane Grp Cap (c), veh/h	0	1045	0	107	0	1137	0	308
V/C Ratio (X)	0.00	0.92	0.00	0.15	0.00	0.45	0.00	0.77
Avail Cap (c_a), veh/h	0	1045	0	409	0	1137	0	617
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	13.3	0.0	32.3	0.0	7.6	0.0	28.3
Incr Delay (d2), s/veh	0.0	14.4	0.0	0.6	0.0	1.3	0.0	4.2
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	27.7	0.0	33.0	0.0	8.9	0.0	32.5
1st-Term Q (Q1), veh/ln	0.0	11.0	0.0	0.3	0.0	3.4	0.0	3.8
2nd-Term Q (Q2), veh/ln	0.0	4.2	0.0	0.0	0.0	0.4	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	1.42	0.00	1.80	0.00	1.80	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	21.6	0.0	0.5	0.0	6.9	0.0	7.5
%ile Storage Ratio (RQ%)	0.00	0.52	0.00	0.07	0.00	0.23	0.00	0.26
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 6th Ctrl Delay	21.9
HCM 6th LOS	C



# HCM 6th Signalized Intersection Summary

## 500: Calumet Avenue & Maple Leaf Boulevard

09/26/2020








Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	25	180	1735	1030	15
Future Volume (veh/h)	25	25	180	1735	1030	15
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1969	1870	1870
Adj Flow Rate, veh/h	27	27	196	1886	1120	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	90	80	484	3022	2898	41
Arrive On Green	0.05	0.05	0.81	0.81	0.81	0.81
Sat Flow, veh/h	1781	1585	495	3839	3680	51
Grp Volume(v), veh/h	27	27	196	1886	555	581
Grp Sat Flow(s), veh/h/ln	1781	1585	495	1870	1777	1861
Q Serve(g_s), s	0.8	0.9	10.3	11.0	4.9	4.9
Cycle Q Clear(g_c), s	0.8	0.9	15.3	11.0	4.9	4.9
Prop In Lane	1.00	1.00	1.00			0.03
Lane Grp Cap(c), veh/h	90	80	484	3022	1436	1504
V/C Ratio(X)	0.30	0.34	0.40	0.62	0.39	0.39
Avail Cap(c_a), veh/h	661	589	618	4034	1916	2007
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	25.9	3.6	2.1	1.5	1.5
Incr Delay (d2), s/veh	1.8	2.4	0.5	0.2	0.2	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%), veh/ln	0.7	0.7	0.9	0.2	0.1	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	27.7	28.4	4.2	2.3	1.7	1.7
LnGrp LOS	C	C	A	A	A	A
Approach Vol, veh/h	54			2082	1136	
Approach Delay, s/veh	28.1			2.5	1.7	
Approach LOS	C			A	A	
Timer - Assigned Phs	2			4		6
Phs Duration (G+Y+Rc), s	49.7			6.9		49.7
Change Period (Y+Rc), s	4.0			4.0		4.0
Max Green Setting (Gmax), s	61.0			21.0		61.0
Max Q Clear Time (g_c+I1), s	17.3			2.9		6.9
Green Ext Time (p_c), s	28.4			0.1		9.5
<b>Intersection Summary</b>						
HCM 6th Ctrl Delay			2.6			
HCM 6th LOS			A			

# HCM 6th Signalized Intersection Capacity Analysis

## 500: Calumet Avenue & Maple Leaf Boulevard

09/26/2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR			
Lane Configurations									
Traffic Volume (veh/h)	25	25	180	1735	1030	15			
Future Volume (veh/h)	25	25	180	1735	1030	15			
Number	7	14	5	2	6	16			
Initial Q, veh	0	0	0	0	0	0			
Ped-Bike Adj (A_pbT)	1.00	1.00	1.00			1.00			
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No	No				
Lanes Open During Work Zone									
Adj Sat Flow, veh/h/ln	1870	1870	1870	1969	1870	1870			
Adj Flow Rate, veh/h	27	27	196	1886	1120	16			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	2	2	2	2			
Opposing Right Turn Influence	Yes		Yes						
Cap, veh/h	90	80	484	3022	2898	41			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00			
Prop Arrive On Green	0.05	0.05	0.81	0.81	0.81	0.81			
Unsig. Movement Delay									
Ln Grp Delay, s/veh	27.7	28.4	4.2	2.3	1.7	1.7			
Ln Grp LOS	C	C	A	A	A	A			
Approach Vol, veh/h	54			2082	1136				
Approach Delay, s/veh	28.1			2.5	1.7				
Approach LOS	C			A	A				
Timer:		1	2	3	4	5	6	7	8
Assigned Phs			2		4		6		
Case No			6.0		9.0		8.0		
Phs Duration (G+Y+Rc), s			49.7		6.9		49.7		
Change Period (Y+Rc), s			4.0		4.0		4.0		
Max Green (Gmax), s			61.0		21.0		61.0		
Max Allow Headway (MAH), s			5.4		4.0		5.1		
Max Q Clear (g_c+I1), s			17.3		2.9		6.9		
Green Ext Time (g_e), s			28.4		0.1		9.5		
Prob of Phs Call (p_c)			1.00		0.57		1.00		
Prob of Max Out (p_x)			0.47		0.00		0.01		
Left-Turn Movement Data									
Assigned Mvmt			5		7		1		
Mvmt Sat Flow, veh/h			495		1781		0		
Through Movement Data									
Assigned Mvmt			2		4		6		
Mvmt Sat Flow, veh/h			3839		0		3680		
Right-Turn Movement Data									
Assigned Mvmt			12		14		16		
Mvmt Sat Flow, veh/h			0		1585		51		
Left Lane Group Data									
Assigned Mvmt		0	5	0	7	0	1	0	0
Lane Assignment			L		L				



# HCM 6th Signalized Intersection Capacity Analysis

## 500: Calumet Avenue & Maple Leaf Boulevard

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Lanes in Grp	0	1	0	1	0	0	0	0
Grp Vol (v), veh/h	0	196	0	27	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	495	0	1781	0	0	0	0
Q Serve Time (g_s), s	0.0	10.3	0.0	0.8	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	15.3	0.0	0.8	0.0	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	495	0	1781	0	0	0	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	0.0	45.7	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	40.8	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	10.3	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	45.7	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)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	484	0	90	0	0	0	0
V/C Ratio (X)	0.00	0.40	0.00	0.30	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	618	0	661	0	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	3.6	0.0	25.9	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.5	0.0	1.8	0.0	0.0	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	4.2	0.0	27.7	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.4	0.0	0.3	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.1	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%)	0.00	1.80	0.00	1.80	0.00	1.00	0.00	0.00
%ile Back of Q (95%), veh/ln	0.0	0.9	0.0	0.7	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.22	0.00	0.03	0.00	0.00	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

### Middle Lane Group Data

Assigned Mvmt	0	2	0	4	0	6	0	0
Lane Assignment	T				T			
Lanes in Grp	0	2	0	0	0	1	0	0
Grp Vol (v), veh/h	0	1886	0	0	0	555	0	0
Grp Sat Flow (s), veh/h/ln	0	1870	0	0	0	1777	0	0
Q Serve Time (g_s), s	0.0	11.0	0.0	0.0	0.0	4.9	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	11.0	0.0	0.0	0.0	4.9	0.0	0.0
Lane Grp Cap (c), veh/h	0	3022	0	0	0	1436	0	0
V/C Ratio (X)	0.00	0.62	0.00	0.00	0.00	0.39	0.00	0.00
Avail Cap (c_a), veh/h	0	4034	0	0	0	1916	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	2.1	0.0	0.0	0.0	1.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.0	0.2	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	2.3	0.0	0.0	0.0	1.7	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0

# HCM 6th Signalized Intersection Capacity Analysis

## 500: Calumet Avenue & Maple Leaf Boulevard

09/26/2020

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	1.80	0.00	0.00
%ile Back of Q (95%), veh/ln	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.00	0.00	0.00	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	0
Lane Assignment	R				T+R			
Lanes in Grp	0	0	0	1	0	1	0	0
Grp Vol (v), veh/h	0	0	0	27	0	581	0	0
Grp Sat Flow (s), veh/h/ln	0	0	0	1585	0	1861	0	0
Q Serve Time (g_s), s	0.0	0.0	0.0	0.9	0.0	4.9	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	0.9	0.0	4.9	0.0	0.0
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	0.00	0.00	1.00	0.00	0.03	0.00	0.00
Lane Grp Cap (c), veh/h	0	0	0	80	0	1504	0	0
V/C Ratio (X)	0.00	0.00	0.00	0.34	0.00	0.39	0.00	0.00
Avail Cap (c_a), veh/h	0	0	0	589	0	2007	0	0
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	25.9	0.0	1.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.4	0.0	0.2	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	0.0	0.0	28.4	0.0	1.7	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.1	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	1.00	0.00	1.80	0.00	1.80	0.00	0.00
%ile Back of Q (95%), veh/ln	0.0	0.0	0.0	0.7	0.0	0.1	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.36	0.00	0.00	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

### Intersection Summary

HCM 6th Ctrl Delay	2.6
HCM 6th LOS	A



# HCM 6th Roundabout

100: North Access & Commercial Driveway A/Manor Avenue & Timrick Drive/Fisher Street

Intersection				
Intersection Delay, s/veh	7.6			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	338	599	4	45
Demand Flow Rate, veh/h	344	610	4	46
Vehicles Circulating, veh/h	115	81	787	490
Vehicles Exiting, veh/h	421	710	4	201
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	5.5	7.9	5.9	4.9
Approach LOS	A	A	A	A
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	344	610	4	46
Cap Entry Lane, veh/h	1227	1270	618	837
Entry HV Adj Factor	0.982	0.982	0.990	0.978
Flow Entry, veh/h	338	599	4	45
Cap Entry, veh/h	1205	1247	612	819
V/C Ratio	0.280	0.480	0.006	0.055
Control Delay, s/veh	5.5	7.9	5.9	4.9
LOS	A	A	A	A
95th %tile Queue, veh	1	3	0	0

# HCM 6th Roundabout

100: North Access & Commercial Driveway A/Manor Avenue & Timrick Drive/Fisher Street 09/26/2020

## Intersection

Intersection Delay, s/veh

Intersection LOS

Approach NE

Entry Lanes 1

Conflicting Circle Lanes 1

Adj Approach Flow, veh/h 409

Demand Flow Rate, veh/h 417

Vehicles Circulating, veh/h 374

Vehicles Exiting, veh/h 85

Ped Vol Crossing Leg, #/h 0

Ped Cap Adj 1.000

Approach Delay, s/veh 9.2

Approach LOS A

Lane Left

Designated Moves LR

Assumed Moves LR

RT Channelized

Lane Util 1.000

Follow-Up Headway, s 2.609

Critical Headway, s 4.976

Entry Flow, veh/h 417

Cap Entry Lane, veh/h 942

Entry HV Adj Factor 0.981

Flow Entry, veh/h 409

Cap Entry, veh/h 924

V/C Ratio 0.443

Control Delay, s/veh 9.2

LOS A

95th %tile Queue, veh 2















# HCM 6th Signalized Intersection Summary

## 200: Calumet Avenue & Fisher Street

09/26/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	320	130	190	210	240	235	185	1015	60	175	1145	125
Future Volume (veh/h)	320	130	190	210	240	235	185	1015	60	175	1145	125
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	348	141	207	228	261	255	201	1103	65	190	1245	136
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	416	380	454	306	320	398	270	1537	91	315	1446	157
Arrive On Green	0.12	0.20	0.20	0.09	0.17	0.17	0.08	0.45	0.45	0.08	0.45	0.45
Sat Flow, veh/h	3456	1870	1585	3456	1870	1585	1781	3410	201	1781	3232	352
Grp Volume(v), veh/h	348	141	207	228	261	255	201	574	594	190	683	698
Grp Sat Flow(s),veh/h/ln	1728	1870	1585	1728	1870	1585	1781	1777	1834	1781	1777	1807
Q Serve(g_s), s	8.6	5.7	9.3	5.6	11.7	12.5	5.2	22.9	22.9	4.9	30.0	30.3
Cycle Q Clear(g_c), s	8.6	5.7	9.3	5.6	11.7	12.5	5.2	22.9	22.9	4.9	30.0	30.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		0.19
Lane Grp Cap(c), veh/h	416	380	454	306	320	398	270	801	827	315	795	809
V/C Ratio(X)	0.84	0.37	0.46	0.74	0.82	0.64	0.75	0.72	0.72	0.60	0.86	0.86
Avail Cap(c_a), veh/h	416	380	454	377	343	417	306	801	827	357	795	809
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	1.00	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	37.5	29.9	25.5	38.8	34.8	29.1	18.7	19.4	19.4	15.8	21.6	21.7
Incr Delay (d2), s/veh	13.8	0.6	0.7	6.2	13.4	3.1	8.4	5.5	5.3	2.3	11.6	11.8
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	7.7	4.6	6.2	4.6	10.5	8.5	4.5	15.0	15.4	3.5	20.1	20.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.3	30.5	26.3	45.0	48.2	32.2	27.1	24.9	24.7	18.0	33.2	33.5
LnGrp LOS	D	C	C	D	D	C	C	C	C	B	C	C
Approach Vol, veh/h	696			744			1369			1571		
Approach Delay, s/veh	39.6			41.7			25.2			31.5		
Approach LOS	D			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	41.0	43.3	11.2	21.7	11.2	43.0	14.0	18.9				
Change Period (Y+Rc), s	4.0	4.0	3.5	4.0	4.0	4.0	3.5	4.0				
Max Green Setting (Gmax), s	39.0	39.0	9.5	17.0	9.0	39.0	10.5	16.0				
Max Q Clear Time (g_c+I), s	10.5	24.9	7.6	11.3	7.2	32.3	10.6	14.5				
Green Ext Time (p_c), s	0.1	6.5	0.1	0.7	0.1	4.5	0.0	0.4				

























### Intersection Summary

HCM 6th Ctrl Delay	32.6
HCM 6th LOS	C

# HCM 6th Signalized Intersection Capacity Analysis

## 200: Calumet Avenue & Fisher Street

09/26/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	320	130	190	210	240	235	185	1015	60	175	1145	125
Future Volume (veh/h)	320	130	190	210	240	235	185	1015	60	175	1145	125
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
Work Zone On Approach	No			No			No			No		
Lanes Open During Work Zone												
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	348	141	207	228	261	255	201	1103	65	190	1245	136
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
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	416	380	454	306	320	398	270	1537	91	315	1446	157
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	0.12	0.20	0.20	0.09	0.17	0.17	0.08	0.45	0.45	0.08	0.45	0.45
Unsig. Movement Delay												
Ln Grp Delay, s/veh	51.3	30.5	26.3	45.0	48.2	32.2	27.1	24.9	24.7	18.0	33.2	33.5
Ln Grp LOS	D	C	C	D	D	C	C	C	C	B	C	C
Approach Vol, veh/h	696			744			1369			1571		
Approach Delay, s/veh	39.6			41.7			25.2			31.5		
Approach LOS	D			D			C			C		
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	2.0	3.0	1.1	4.0	2.0	3.0				
Phs Duration (G+Y+Rc), s	11.0	43.3	11.2	21.7	11.2	43.0	14.0	18.9				
Change Period (Y+Rc), s	4.0	4.0	3.5	4.0	4.0	4.0	3.5	4.0				
Max Green (Gmax), s	9.0	39.0	9.5	17.0	9.0	39.0	10.5	16.0				
Max Allow Headway (MAH), s	3.8	5.1	3.8	4.5	3.8	5.1	3.8	4.6				
Max Q Clear (g_c+I1), s	6.9	24.9	7.6	11.3	7.2	32.3	10.6	14.5				
Green Ext Time (g_e), s	0.1	6.5	0.1	0.7	0.1	4.5	0.0	0.4				
Prob of Phs Call (p_c)	0.99	1.00	1.00	1.00	0.99	1.00	1.00	1.00				
Prob of Max Out (p_x)	1.00	0.00	1.00	0.58	1.00	0.00	1.00	1.00				
Left-Turn Movement Data												
Assigned Mvmt	1	3	5	7								
Mvmt Sat Flow, veh/h	1781	3456	1781	3456								
Through Movement Data												
Assigned Mvmt	2	4	6	8								
Mvmt Sat Flow, veh/h	3410	1870	3232	1870								
Right-Turn Movement Data												
Assigned Mvmt	12	14	16	18								
Mvmt Sat Flow, veh/h	201	1585	352	1585								
Left Lane Group Data												
Assigned Mvmt	1	0	3	0	5	0	7	0				
Lane Assignment	L (Pr/Pm)	L (Prot)	L (Pr/Pm)	L (Prot)								



# HCM 6th Signalized Intersection Capacity Analysis

## 200: Calumet Avenue & Fisher Street

09/26/2020

Lanes in Grp	1	0	2	0	1	0	2	0
Grp Vol (v), veh/h	190	0	228	0	201	0	348	0
Grp Sat Flow (s), veh/h/ln	1781	0	1728	0	1781	0	1728	0
Q Serve Time (g_s), s	4.9	0.0	5.6	0.0	5.2	0.0	8.6	0.0
Cycle Q Clear Time (g_c), s	4.9	0.0	5.6	0.0	5.2	0.0	8.6	0.0
Perm LT Sat Flow (s_l), veh/h/ln	481	0	0	0	392	0	0	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	39.0	0.0	0.0	0.0	39.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	16.4	0.0	0.0	0.0	8.7	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	14.8	0.0	0.0	0.0	8.7	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	315	0	306	0	270	0	416	0
V/C Ratio (X)	0.60	0.00	0.74	0.00	0.75	0.00	0.84	0.00
Avail Cap (c_a), veh/h	357	0	377	0	306	0	416	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	15.8	0.0	38.8	0.0	18.7	0.0	37.5	0.0
Incr Delay (d2), s/veh	2.3	0.0	6.2	0.0	8.4	0.0	13.8	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	18.0	0.0	45.0	0.0	27.1	0.0	51.3	0.0
1st-Term Q (Q1), veh/ln	1.8	0.0	2.3	0.0	1.9	0.0	3.5	0.0
2nd-Term Q (Q2), veh/ln	0.2	0.0	0.3	0.0	0.6	0.0	0.8	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	1.79	0.00
%ile Back of Q (95%), veh/ln	3.5	0.0	4.6	0.0	4.5	0.0	7.7	0.0
%ile Storage Ratio (RQ%)	0.60	0.00	0.84	0.00	0.27	0.00	0.82	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
<b>Middle Lane Group Data</b>								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T		T		T		T	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	574	0	141	0	683	0	261
Grp Sat Flow (s), veh/h/ln	0	1777	0	1870	0	1777	0	1870
Q Serve Time (g_s), s	0.0	22.9	0.0	5.7	0.0	30.0	0.0	11.7
Cycle Q Clear Time (g_c), s	0.0	22.9	0.0	5.7	0.0	30.0	0.0	11.7
Lane Grp Cap (c), veh/h	0	801	0	380	0	795	0	320
V/C Ratio (X)	0.00	0.72	0.00	0.37	0.00	0.86	0.00	0.82
Avail Cap (c_a), veh/h	0	801	0	380	0	795	0	343
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	19.4	0.0	29.9	0.0	21.6	0.0	34.8
Incr Delay (d2), s/veh	0.0	5.5	0.0	0.6	0.0	11.6	0.0	13.4
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	24.9	0.0	30.5	0.0	33.2	0.0	48.2
1st-Term Q (Q1), veh/ln	0.0	8.6	0.0	2.5	0.0	11.4	0.0	5.1
2nd-Term Q (Q2), veh/ln	0.0	1.2	0.0	0.1	0.0	2.6	0.0	1.2

# HCM 6th Signalized Intersection Capacity Analysis

## 200: Calumet Avenue & Fisher Street

09/26/2020

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	1.80	0.00	1.44	0.00	1.65
%ile Back of Q (95%), veh/ln	0.0	15.0	0.0	4.6	0.0	20.1	0.0	10.5
%ile Storage Ratio (RQ%)	0.00	0.39	0.00	0.04	0.00	0.15	0.00	0.07
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		R		T+R		R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	594	0	207	0	698	0	255
Grp Sat Flow (s), veh/h/ln	0	1834	0	1585	0	1807	0	1585
Q Serve Time (g_s), s	0.0	22.9	0.0	9.3	0.0	30.3	0.0	12.5
Cycle Q Clear Time (g_c), s	0.0	22.9	0.0	9.3	0.0	30.3	0.0	12.5
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	1585.1	0.0	0.0	0.0	1585.1
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	7.2	0.0	0.0	0.0	7.0
Prop RT Outside Lane (P_R)	0.00	0.11	0.00	1.00	0.00	0.19	0.00	1.00
Lane Grp Cap (c), veh/h	0	827	0	454	0	809	0	398
V/C Ratio (X)	0.00	0.72	0.00	0.46	0.00	0.86	0.00	0.64
Avail Cap (c_a), veh/h	0	827	0	454	0	809	0	417
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	19.4	0.0	25.5	0.0	21.7	0.0	29.1
Incr Delay (d2), s/veh	0.0	5.3	0.0	0.7	0.0	11.8	0.0	3.1
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	24.7	0.0	26.3	0.0	33.5	0.0	32.2
1st-Term Q (Q1), veh/ln	0.0	8.9	0.0	3.4	0.0	11.7	0.0	4.6
2nd-Term Q (Q2), veh/ln	0.0	1.2	0.0	0.1	0.0	2.7	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	1.51	0.00	1.80	0.00	1.43	0.00	1.74
%ile Back of Q (95%), veh/ln	0.0	15.4	0.0	6.2	0.0	20.6	0.0	8.5
%ile Storage Ratio (RQ%)	0.00	0.40	0.00	1.06	0.00	0.15	0.00	1.45
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 6th Ctrl Delay	32.6
HCM 6th LOS	C



# HCM 6th Signalized Intersection Summary

400: Calumet Avenue & Commercial Driveway B/Fran Lin Parkway

09/26/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕		↖	↕↗		↖	↕↗	
Traffic Volume (veh/h)	25	35	55	335	35	140	40	1080	120	245	1290	40
Future Volume (veh/h)	25	35	55	335	35	140	40	1080	120	245	1290	40
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	38	60	364	38	152	43	1174	130	266	1402	43
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	104	75	112	374	84	335	70	1329	147	307	1918	59
Arrive On Green	0.07	0.07	0.07	0.13	0.26	0.26	0.04	0.41	0.41	0.17	0.54	0.54
Sat Flow, veh/h	516	1062	1585	1781	327	1308	1781	3227	357	1781	3520	108
Grp Volume(v), veh/h	65	0	60	364	0	190	43	645	659	266	707	738
Grp Sat Flow(s),veh/h/ln	1578	0	1585	1781	0	1635	1781	1777	1806	1781	1777	1851
Q Serve(g_s), s	2.0	0.0	2.8	10.0	0.0	7.4	1.8	25.3	25.4	10.9	22.6	22.7
Cycle Q Clear(g_c), s	2.9	0.0	2.8	10.0	0.0	7.4	1.8	25.3	25.4	10.9	22.6	22.7
Prop In Lane	0.42		1.00	1.00		0.80	1.00		0.20	1.00		0.06
Lane Grp Cap(c), veh/h	179	0	112	374	0	419	70	732	744	307	968	1008
V/C Ratio(X)	0.36	0.00	0.54	0.97	0.00	0.45	0.61	0.88	0.89	0.87	0.73	0.73
Avail Cap(c_a), veh/h	454	0	400	374	0	717	118	732	744	331	968	1008
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	33.8	0.0	33.8	29.5	0.0	23.6	35.6	20.4	20.5	30.3	12.9	13.0
Incr Delay (d2), s/veh	1.2	0.0	4.0	39.7	0.0	0.8	8.4	14.4	14.6	19.7	4.8	4.7
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	2.2	0.0	2.1	9.7	0.0	5.1	1.6	18.0	18.3	10.2	13.7	14.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.0	0.0	37.8	69.2	0.0	24.3	44.0	34.9	35.1	50.0	17.8	17.7
LnGrp LOS	D	A	D	E	A	C	D	C	D	D	B	B
Approach Vol, veh/h	125		554				1347			1711		
Approach Delay, s/veh	36.4		53.8				35.3			22.7		
Approach LOS	D		D				D			C		
Timer - Assigned Phs	1	2	3	4	5	6	8					
Phs Duration (G+Y+Rc), s	7.0	35.0	14.0	9.3	7.0	45.0	23.3					
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0					
Max Green Setting (Gmax), s	14.0	31.0	10.0	19.0	5.0	40.0	33.0					
Max Q Clear Time (g_c+1/2g), s	12.9	27.4	12.0	4.9	3.8	24.7	9.4					
Green Ext Time (p_c), s	0.1	2.5	0.0	0.4	0.0	8.6	1.1					























## Intersection Summary

HCM 6th Ctrl Delay	32.3
HCM 6th LOS	C

# HCM 6th Signalized Intersection Capacity Analysis

## 400: Calumet Avenue & Commercial Driveway B/Fran Lin Parkway

09/26/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	35	55	335	35	140	40	1080	120	245	1290	40
Future Volume (veh/h)	25	35	55	335	35	140	40	1080	120	245	1290	40
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
Work Zone On Approach	No		No				No			No		
Lanes Open During Work Zone												
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	38	60	364	38	152	43	1174	130	266	1402	43
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
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	104	75	112	374	84	335	70	1329	147	307	1918	59
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	0.07	0.07	0.07	0.13	0.26	0.26	0.04	0.41	0.41	0.17	0.54	0.54
Unsig. Movement Delay												
Ln Grp Delay, s/veh	35.0	0.0	37.8	69.2	0.0	24.3	44.0	34.9	35.1	50.0	17.8	17.7
Ln Grp LOS	D	A	D	E	A	C	D	C	D	D	B	B
Approach Vol, veh/h	125		554				1347			1711		
Approach Delay, s/veh	36.4		53.8				35.3			22.7		
Approach LOS	D		D				D			C		
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	8					
Case No	2.0	4.0	1.2	7.3	2.0	4.0	4.0					
Phs Duration (G+Y+Rc), s	17.0	35.0	14.0	9.3	7.0	45.0	23.3					
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0					
Max Green (Gmax), s	14.0	31.0	10.0	19.0	5.0	40.0	33.0					
Max Allow Headway (MAH), s	3.8	5.1	3.8	4.9	3.8	5.1	5.5					
Max Q Clear (g_c+I1), s	12.9	27.4	12.0	4.9	3.8	24.7	9.4					
Green Ext Time (g_e), s	0.1	2.5	0.0	0.4	0.0	8.6	1.1					
Prob of Phs Call (p_c)	1.00	1.00	1.00	1.00	0.59	1.00	1.00					
Prob of Max Out (p_x)	1.00	0.00	1.00	0.00	1.00	0.00	0.00					
Left-Turn Movement Data												
Assigned Mvmt	1	3		7	5							
Mvmt Sat Flow, veh/h	1781	1781		516	1781							
Through Movement Data												
Assigned Mvmt	2		4		6		8					
Mvmt Sat Flow, veh/h	3227		1062		3520		327					
Right-Turn Movement Data												
Assigned Mvmt	12		14		16		18					
Mvmt Sat Flow, veh/h	357		1585		108		1308					
Left Lane Group Data												
Assigned Mvmt	1	0	3	7	5	0	0	0				
Lane Assignment	L (Prot)		L (Pr/Pm)		L+T	L (Prot)						



# HCM 6th Signalized Intersection Capacity Analysis

## 400: Calumet Avenue & Commercial Driveway B/Fran Lin Parkway

09/26/2020

Lanes in Grp	1	0	1	1	1	0	0	0
Grp Vol (v), veh/h	266	0	364	65	43	0	0	0
Grp Sat Flow (s), veh/h/ln	1781	0	1781	1578	1781	0	0	0
Q Serve Time (g_s), s	10.9	0.0	10.0	2.0	1.8	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	10.9	0.0	10.0	2.9	1.8	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	1297	1212	0	0	0	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	0.0	0.0	7.3	5.3	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	2.4	5.3	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	2.4	2.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	1.00	0.42	1.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	307	0	374	179	70	0	0	0
V/C Ratio (X)	0.87	0.00	0.97	0.36	0.61	0.00	0.00	0.00
Avail Cap (c_a), veh/h	331	0	374	454	118	0	0	0
Upstream Filter (I)	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	30.3	0.0	29.5	33.8	35.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	19.7	0.0	39.7	1.2	8.4	0.0	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	50.0	0.0	69.2	35.0	44.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	4.4	0.0	1.6	1.1	0.7	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	1.7	0.0	4.1	0.1	0.2	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%)	1.66	0.00	1.69	1.80	1.80	0.00	0.00	0.00
%ile Back of Q (95%), veh/ln	10.2	0.0	9.7	2.2	1.6	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	1.26	0.00	4.91	0.28	0.29	0.00	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
<b>Middle Lane Group Data</b>								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T			
Lanes in Grp	0	1	0	0	0	1	0	0
Grp Vol (v), veh/h	0	645	0	0	0	707	0	0
Grp Sat Flow (s), veh/h/ln	0	1777	0	0	0	1777	0	0
Q Serve Time (g_s), s	0.0	25.3	0.0	0.0	0.0	22.6	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	25.3	0.0	0.0	0.0	22.6	0.0	0.0
Lane Grp Cap (c), veh/h	0	732	0	0	0	968	0	0
V/C Ratio (X)	0.00	0.88	0.00	0.00	0.00	0.73	0.00	0.00
Avail Cap (c_a), veh/h	0	732	0	0	0	968	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	20.4	0.0	0.0	0.0	12.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	14.4	0.0	0.0	0.0	4.8	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	34.9	0.0	0.0	0.0	17.8	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	9.3	0.0	0.0	0.0	7.5	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	2.9	0.0	0.0	0.0	1.3	0.0	0.0

# HCM 6th Signalized Intersection Capacity Analysis

## 400: Calumet Avenue & Commercial Driveway B/Fran Lin Parkway

09/26/2020

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	1.47	0.00	1.00	0.00	1.55	0.00	1.00
%ile Back of Q (95%), veh/ln	0.0	18.0	0.0	0.0	0.0	13.7	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.43	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		R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	659	0	60	0	738	0	190
Grp Sat Flow (s), veh/h/ln	0	1806	0	1585	0	1851	0	1635
Q Serve Time (g_s), s	0.0	25.4	0.0	2.8	0.0	22.7	0.0	7.4
Cycle Q Clear Time (g_c), s	0.0	25.4	0.0	2.8	0.0	22.7	0.0	7.4
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	0.20	0.00	1.00	0.00	0.06	0.00	0.80
Lane Grp Cap (c), veh/h	0	744	0	112	0	1008	0	419
V/C Ratio (X)	0.00	0.89	0.00	0.54	0.00	0.73	0.00	0.45
Avail Cap (c_a), veh/h	0	744	0	400	0	1008	0	717
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	20.5	0.0	33.8	0.0	13.0	0.0	23.6
Incr Delay (d2), s/veh	0.0	14.6	0.0	4.0	0.0	4.7	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	35.1	0.0	37.8	0.0	17.7	0.0	24.3
1st-Term Q (Q1), veh/ln	0.0	9.5	0.0	1.0	0.0	7.9	0.0	2.7
2nd-Term Q (Q2), veh/ln	0.0	3.0	0.0	0.1	0.0	1.3	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	1.46	0.00	1.80	0.00	1.54	0.00	1.80
%ile Back of Q (95%), veh/ln	0.0	18.3	0.0	2.1	0.0	14.2	0.0	5.1
%ile Storage Ratio (RQ%)	0.00	0.44	0.00	0.27	0.00	0.48	0.00	0.17
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 6th Ctrl Delay	32.3
HCM 6th LOS	C








# HCM 6th Signalized Intersection Summary

## 500: Calumet Avenue & Maple Leaf Boulevard

09/26/2020








Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	75	130	55	1135	1645	10
Future Volume (veh/h)	75	130	55	1135	1645	10
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	82	141	60	1234	1788	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	209	186	240	2773	2825	17
Arrive On Green	0.12	0.12	0.78	0.78	0.78	0.78
Sat Flow, veh/h	1781	1585	262	3647	3714	22
Grp Volume(v), veh/h	82	141	60	1234	877	922
Grp Sat Flow(s),veh/h/ln	1781	1585	262	1777	1777	1866
Q Serve(g_s), s	3.3	6.7	10.1	9.1	16.7	16.8
Cycle Q Clear(g_c), s	3.3	6.7	26.9	9.1	16.7	16.8
Prop In Lane	1.00	1.00	1.00			0.01
Lane Grp Cap(c), veh/h	209	186	240	2773	1386	1456
V/C Ratio(X)	0.39	0.76	0.25	0.45	0.63	0.63
Avail Cap(c_a), veh/h	478	426	240	2773	1386	1456
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.9	33.4	9.6	2.9	3.7	3.7
Incr Delay (d2), s/veh	1.2	6.2	2.5	0.5	2.2	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.6	5.1	1.2	3.2	6.7	7.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	33.1	39.6	12.0	3.4	5.9	5.8
LnGrp LOS	C	D	B	A	A	A
Approach Vol, veh/h	223			1294	1799	
Approach Delay, s/veh	37.2			3.8	5.9	
Approach LOS	D			A	A	
Timer - Assigned Phs	2		4		6	
Phs Duration (G+Y+Rc), s	65.0		13.2		65.0	
Change Period (Y+Rc), s	4.0		4.0		4.0	
Max Green Setting (Gmax), s	61.0		21.0		61.0	
Max Q Clear Time (g_c+I1), s	28.9		8.7		18.8	
Green Ext Time (p_c), s	13.4		0.5		20.8	
Intersection Summary						
HCM 6th Ctrl Delay			7.2			
HCM 6th LOS			A			

# HCM 6th Signalized Intersection Capacity Analysis

## 500: Calumet Avenue & Maple Leaf Boulevard

09/26/2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR			
Lane Configurations									
Traffic Volume (veh/h)	75	130	55	1135	1645	10			
Future Volume (veh/h)	75	130	55	1135	1645	10			
Number	7	14	5	2	6	16			
Initial Q, veh	0	0	0	0	0	0			
Ped-Bike Adj (A_pbT)	1.00	1.00	1.00			1.00			
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No	No				
Lanes Open During Work Zone									
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	82	141	60	1234	1788	11			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	2	2	2	2			
Opposing Right Turn Influence	Yes		Yes						
Cap, veh/h	209	186	240	2773	2825	17			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00			
Prop Arrive On Green	0.12	0.12	0.78	0.78	0.78	0.78			
Unsig. Movement Delay									
Ln Grp Delay, s/veh	33.1	39.6	12.0	3.4	5.9	5.8			
Ln Grp LOS	C	D	B	A	A	A			
Approach Vol, veh/h	223			1294	1799				
Approach Delay, s/veh	37.2			3.8	5.9				
Approach LOS	D			A	A				
Timer:		1	2	3	4	5	6	7	8
Assigned Phs			2		4		6		
Case No			6.0		9.0		8.0		
Phs Duration (G+Y+Rc), s			65.0		13.2		65.0		
Change Period (Y+Rc), s			4.0		4.0		4.0		
Max Green (Gmax), s			61.0		21.0		61.0		
Max Allow Headway (MAH), s			5.5		4.0		5.1		
Max Q Clear (g_c+I1), s			28.9		8.7		18.8		
Green Ext Time (g_e), s			13.4		0.5		20.8		
Prob of Phs Call (p_c)			1.00		0.99		1.00		
Prob of Max Out (p_x)			0.00		0.00		0.00		
Left-Turn Movement Data									
Assigned Mvmt			5		7		1		
Mvmt Sat Flow, veh/h			262		1781		0		
Through Movement Data									
Assigned Mvmt			2		4		6		
Mvmt Sat Flow, veh/h			3647		0		3714		
Right-Turn Movement Data									
Assigned Mvmt			12		14		16		
Mvmt Sat Flow, veh/h			0		1585		22		
Left Lane Group Data									
Assigned Mvmt		0	5	0	7	0	1	0	0
Lane Assignment			L		L				



# HCM 6th Signalized Intersection Capacity Analysis

## 500: Calumet Avenue & Maple Leaf Boulevard

09/26/2020

Lanes in Grp	0	1	0	1	0	0	0	0
Grp Vol (v), veh/h	0	60	0	82	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	262	0	1781	0	0	0	0
Q Serve Time (g_s), s	0.0	10.1	0.0	3.3	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	26.9	0.0	3.3	0.0	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	262	0	1781	0	0	0	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	0.0	61.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	44.2	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	10.1	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	61.0	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)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	240	0	209	0	0	0	0
V/C Ratio (X)	0.00	0.25	0.00	0.39	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	240	0	478	0	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	9.6	0.0	31.9	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	2.5	0.0	1.2	0.0	0.0	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	12.0	0.0	33.1	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.5	0.0	1.4	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.2	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%)	0.00	1.80	0.00	1.80	0.00	1.00	0.00	0.00
%ile Back of Q (95%), veh/ln	0.0	1.2	0.0	2.6	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.30	0.00	0.10	0.00	0.00	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

### Middle Lane Group Data

Assigned Mvmt	0	2	0	4	0	6	0	0
Lane Assignment	T				T			
Lanes in Grp	0	2	0	0	0	1	0	0
Grp Vol (v), veh/h	0	1234	0	0	0	877	0	0
Grp Sat Flow (s), veh/h/ln	0	1777	0	0	0	1777	0	0
Q Serve Time (g_s), s	0.0	9.1	0.0	0.0	0.0	16.7	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	9.1	0.0	0.0	0.0	16.7	0.0	0.0
Lane Grp Cap (c), veh/h	0	2773	0	0	0	1386	0	0
V/C Ratio (X)	0.00	0.45	0.00	0.00	0.00	0.63	0.00	0.00
Avail Cap (c_a), veh/h	0	2773	0	0	0	1386	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	2.9	0.0	0.0	0.0	3.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.0	2.2	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	3.4	0.0	0.0	0.0	5.9	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	1.6	0.0	0.0	0.0	2.9	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.8	0.0	0.0

# HCM 6th Signalized Intersection Capacity Analysis

## 500: Calumet Avenue & Maple Leaf Boulevard

09/26/2020

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	1.80	0.00	0.00
%ile Back of Q (95%), veh/ln	0.0	3.2	0.0	0.0	0.0	6.7	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.02	0.00	0.00	0.00	0.16	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	0
Lane Assignment	R				T+R			
Lanes in Grp	0	0	0	1	0	1	0	0
Grp Vol (v), veh/h	0	0	0	141	0	922	0	0
Grp Sat Flow (s), veh/h/ln	0	0	0	1585	0	1866	0	0
Q Serve Time (g_s), s	0.0	0.0	0.0	6.7	0.0	16.8	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	6.7	0.0	16.8	0.0	0.0
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	0.00	0.00	1.00	0.00	0.01	0.00	0.00
Lane Grp Cap (c), veh/h	0	0	0	186	0	1456	0	0
V/C Ratio (X)	0.00	0.00	0.00	0.76	0.00	0.63	0.00	0.00
Avail Cap (c_a), veh/h	0	0	0	426	0	1456	0	0
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	33.4	0.0	3.7	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	6.2	0.0	2.1	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	0.0	0.0	39.6	0.0	5.8	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	2.5	0.0	3.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.3	0.0	0.9	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	1.00	0.00	1.80	0.00	1.80	0.00	0.00
%ile Back of Q (95%), veh/ln	0.0	0.0	0.0	5.1	0.0	7.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	2.59	0.00	0.17	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

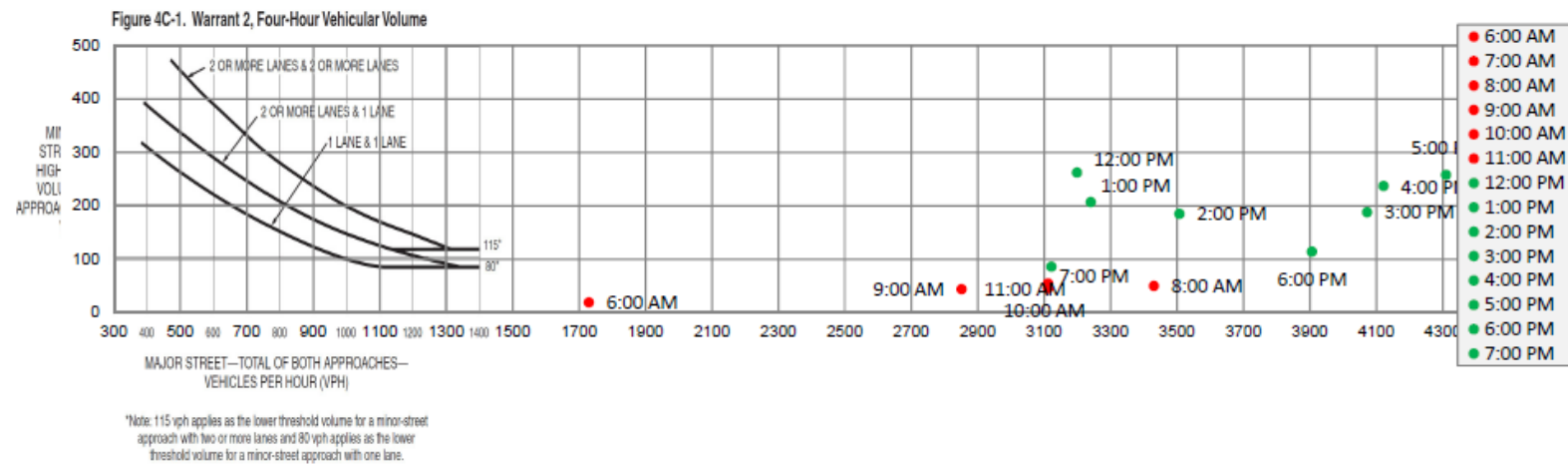
### Intersection Summary

HCM 6th Ctrl Delay	7.2
HCM 6th LOS	A



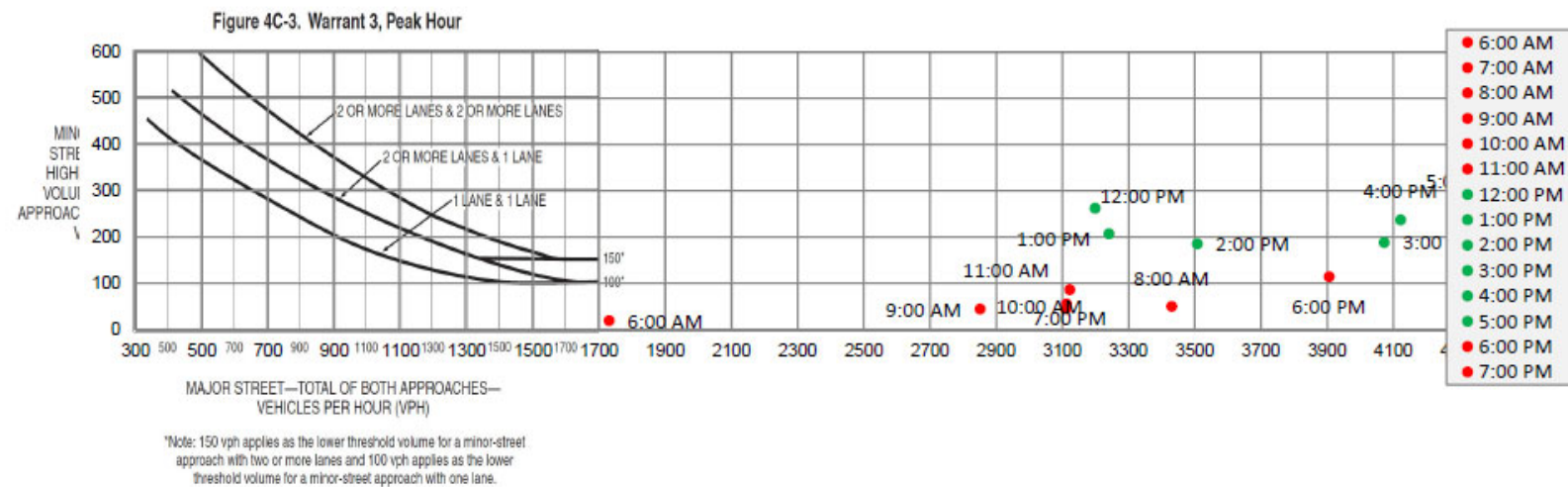
## **SIGNAL WARRANT ANALYSIS**

Signal Warrant Analysis - Warrant 2





# Signal Warrant Analysis - Warrant 3



## STREETLIGHT DATA



Movement Volumes - Typical Weekday (Tues. - Thurs.)															
Node	Intersection	Time	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
1	Fisher at Timrick	600	1	0	5	35	0	0	2	70	0	6	108	2	229
<b>1</b>	<b>Fisher at Timrick</b>	<b>700</b>	<b>2</b>	<b>1</b>	<b>6</b>	<b>127</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>229</b>	<b>0</b>	<b>15</b>	<b>137</b>	<b>16</b>	<b>540</b>
1	Fisher at Timrick	800	1	0	1	41	0	3	4	133	0	6	124	11	324
<b>1</b>	<b>Fisher at Timrick</b>	<b>1500</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>43</b>	<b>0</b>	<b>4</b>	<b>26</b>	<b>213</b>	<b>0</b>	<b>6</b>	<b>351</b>	<b>171</b>	<b>817</b>
1	Fisher at Timrick	1600	2	2	2	51	6	3	8	285	5	9	239	64	676
1	Fisher at Timrick	1700	0	6	9	61	2	4	11	317	3	2	289	96	800
2	Calumet at Fisher	600	77	804	87	73	612	36	34	17	74	34	34	56	1938
<b>2</b>	<b>Calumet at Fisher</b>	<b>700</b>	<b>148</b>	<b>1233</b>	<b>321</b>	<b>339</b>	<b>926</b>	<b>34</b>	<b>122</b>	<b>208</b>	<b>150</b>	<b>80</b>	<b>45</b>	<b>154</b>	<b>3760</b>
2	Calumet at Fisher	800	123	899	64	98	910	44	43	39	146	53	72	56	2547
<b>2</b>	<b>Calumet at Fisher</b>	<b>1500</b>	<b>203</b>	<b>1082</b>	<b>71</b>	<b>201</b>	<b>1263</b>	<b>95</b>	<b>88</b>	<b>93</b>	<b>182</b>	<b>244</b>	<b>264</b>	<b>269</b>	<b>4055</b>
2	Calumet at Fisher	1600	196	1152	89	191	1193	75	86	123	215	120	124	143	3707
2	Calumet at Fisher	1700	215	1107	121	176	1179	69	88	151	233	132	147	132	3750
3	Calumet at Braden	600	55	937	103	92	537	48	13	9	27	11	4	22	1858
<b>3</b>	<b>Calumet at Braden</b>	<b>700</b>	<b>46</b>	<b>1596</b>	<b>83</b>	<b>75</b>	<b>843</b>	<b>90</b>	<b>11</b>	<b>5</b>	<b>31</b>	<b>24</b>	<b>4</b>	<b>35</b>	<b>2843</b>
3	Calumet at Braden	800	38	1022	79	63	925	63	17	7	33	28	4	18	2297
<b>3</b>	<b>Calumet at Braden</b>	<b>1500</b>	<b>66</b>	<b>1083</b>	<b>21</b>	<b>36</b>	<b>1437</b>	<b>83</b>	<b>35</b>	<b>5</b>	<b>78</b>	<b>85</b>	<b>8</b>	<b>70</b>	<b>3007</b>
3	Calumet at Braden	1600	37	1180	22	26	1336	59	39	8	84	60	8	72	2931
3	Calumet at Braden	1700	45	1243	23	25	1352	60	28	6	71	49	6	31	2939
4	Calumet at Fran-lin	600	36	978	143	35	502	32	26	10	12	57	12	108	1951
<b>4</b>	<b>Calumet at Fran-lin</b>	<b>700</b>	<b>37</b>	<b>1538</b>	<b>395</b>	<b>71</b>	<b>802</b>	<b>24</b>	<b>31</b>	<b>13</b>	<b>20</b>	<b>179</b>	<b>43</b>	<b>210</b>	<b>3363</b>
4	Calumet at Fran-lin	800	27	1022	90	115	845	23	25	12	23	137	17	127	2463
<b>4</b>	<b>Calumet at Fran-lin</b>	<b>1500</b>	<b>47</b>	<b>987</b>	<b>143</b>	<b>262</b>	<b>1294</b>	<b>45</b>	<b>29</b>	<b>43</b>	<b>66</b>	<b>391</b>	<b>39</b>	<b>160</b>	<b>3506</b>
4	Calumet at Fran-lin	1600	31	1096	178	208	1226	30	19	32	60	244	20	148	3292
4	Calumet at Fran-lin	1700	40	1144	203	187	1249	34	23	24	52	228	26	168	3378
5	Calumet at Pepsi Access	600	27	1058	0	0	516	36	64	0	22	0	8	0	1731
<b>5</b>	<b>Calumet at Pepsi Access</b>	<b>700</b>	<b>27</b>	<b>1872</b>	<b>4</b>	<b>0</b>	<b>933</b>	<b>47</b>	<b>41</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2941</b>
5	Calumet at Pepsi Access	800	14	1080	6	0	918	49	21	0	19	0	0	3	2110
<b>5</b>	<b>Calumet at Pepsi Access</b>	<b>1500</b>	<b>12</b>	<b>1102</b>	<b>3</b>	<b>2</b>	<b>1604</b>	<b>63</b>	<b>29</b>	<b>0</b>	<b>29</b>	<b>3</b>	<b>0</b>	<b>25</b>	<b>2872</b>
5	Calumet at Pepsi Access	1600	14	1215	0	0	1430	33	40	0	36	0	0	15	2783
5	Calumet at Pepsi Access	1700	10	1290	2	0	1435	43	30	0	15	0	0	18	2843
6	Calumet at 45th	600	204	805	68	57	383	98	128	34	117	83	48	172	2197
<b>6</b>	<b>Calumet at 45th</b>	<b>700</b>	<b>295</b>	<b>1037</b>	<b>134</b>	<b>121</b>	<b>628</b>	<b>222</b>	<b>547</b>	<b>81</b>	<b>212</b>	<b>178</b>	<b>95</b>	<b>339</b>	<b>3889</b>
6	Calumet at 45th	800	222	763	164	125	626	203	165	83	264	170	100	196	3081
<b>6</b>	<b>Calumet at 45th</b>	<b>1500</b>	<b>248</b>	<b>765</b>	<b>214</b>	<b>316</b>	<b>1016</b>	<b>357</b>	<b>155</b>	<b>92</b>	<b>453</b>	<b>216</b>	<b>114</b>	<b>221</b>	<b>4167</b>
6	Calumet at 45th	1600	267	843	292	311	1030	212	164	165	516	247	106	260	4413
6	Calumet at 45th	1700	278	876	312	323	1000	208	205	155	517	214	119	263	4470



**Kimley»»Horn**

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