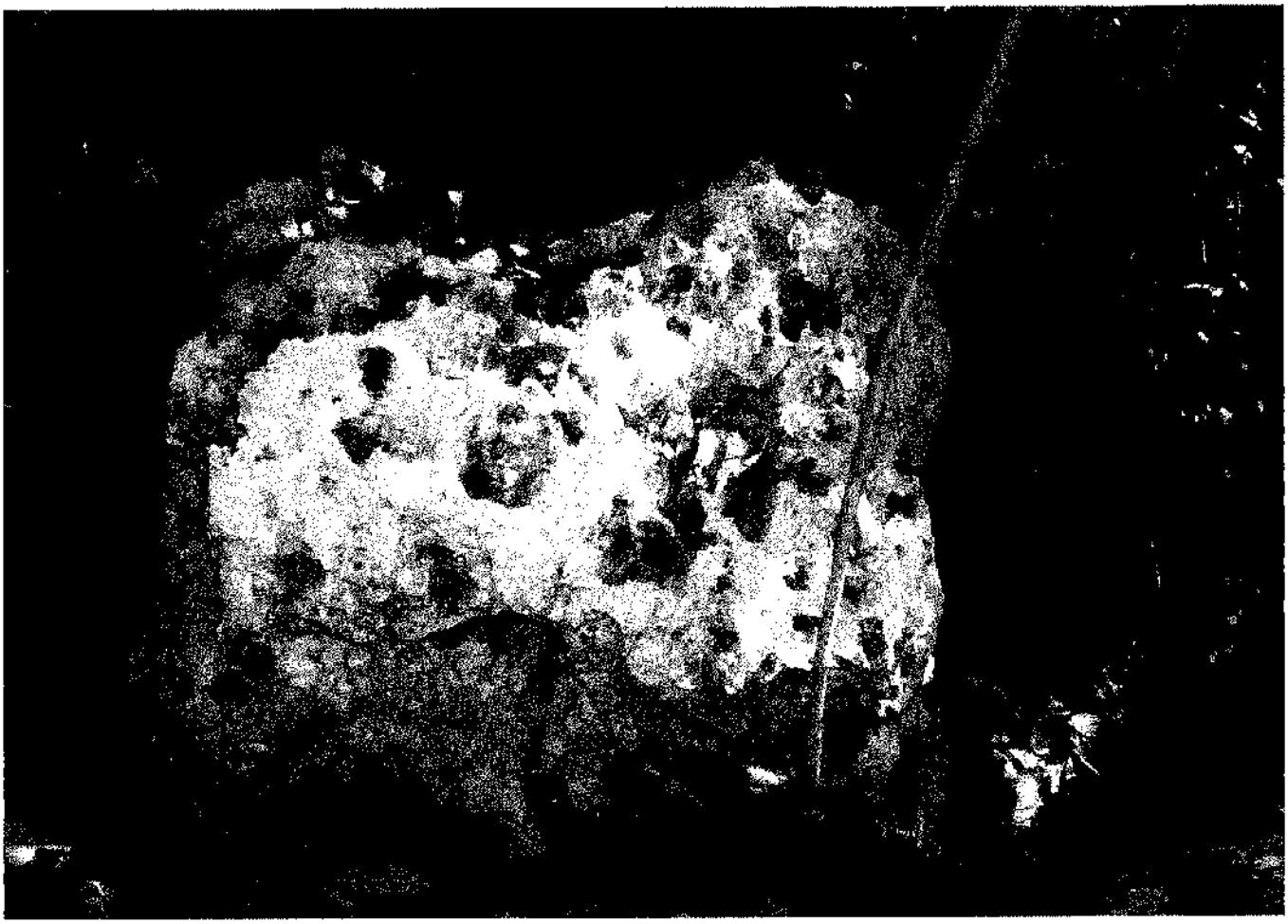
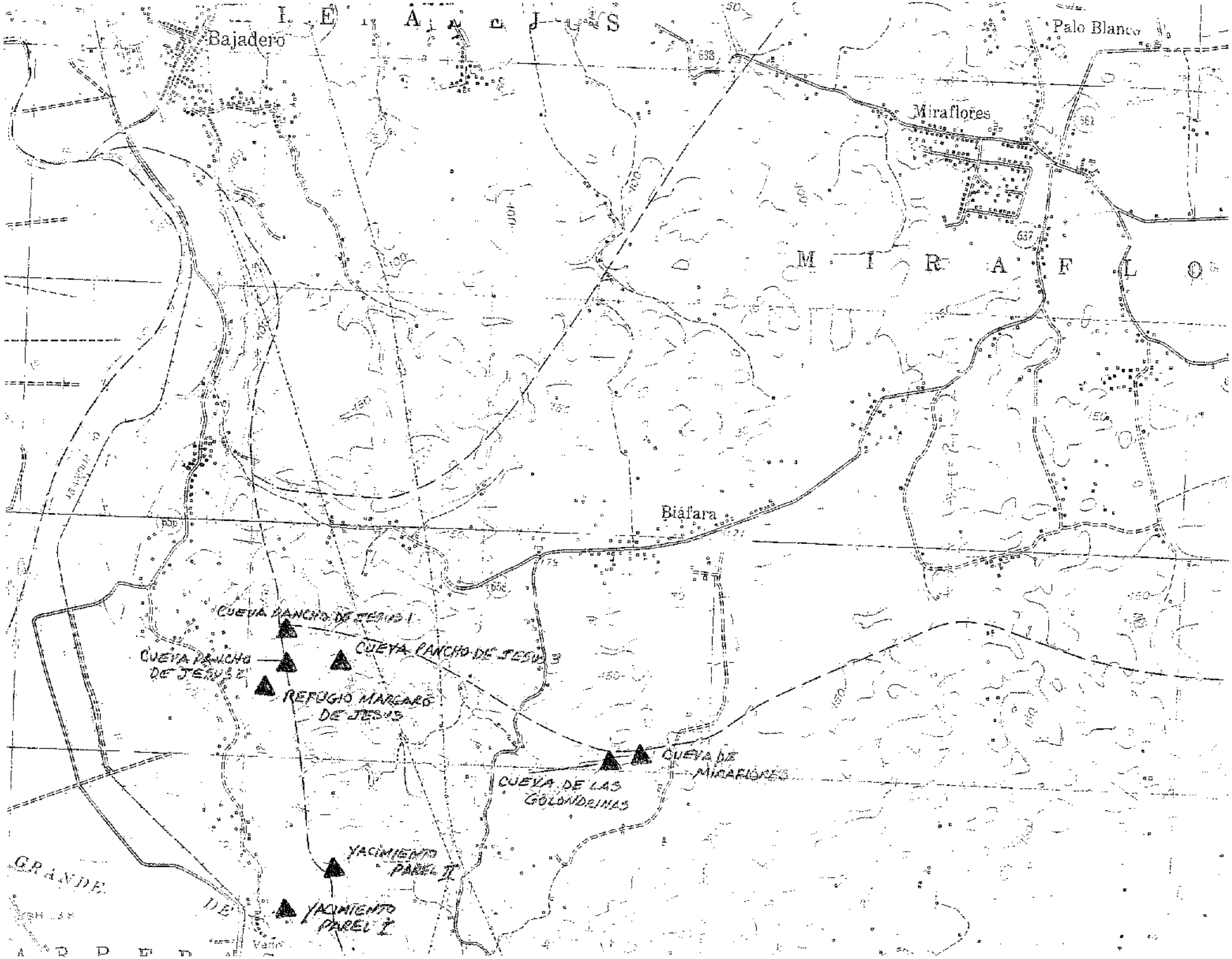


APENDICE D


Bajadero
Palo Blanco
Miraflores
Biáfara
CUEVA RANCHO DE JESUS 1
CUEVA RANCHO DE JESUS 2
CUEVA RANCHO DE JESUS 3
REFUGIO MARGARO DE JESUS
CUEVA DE MIRAFLORES
CUEVA DE LAS GOLONDRINAS
YACIMIENTO PAREL II
YACIMIENTO PAREL I

APENDICE E

Certifico que en el dia
de hoy 18 de octubre de
2004, se expidio Primera
Copia Certificada a
favor de Fernan Marques
y Segunda Copia
Certificada a favor de
Ricardo Jimenez, en
representacion de
Oropesa Development, Inc.
DOY FE.

Notario Publico

ANIBAL LUGO MIRANDA
PUERTO RICO
ABOGADO - NOTARIO

---COMIENZA MI PROTOCOLO DE INSTRUMENTOS PUBLICOS CORRESPONDIENTE AL AÑO DOS MIL CUATRO (2004).----------

----------ESCRITURA NUMERO UNO (1)----------

---------- COMPRAVENTA ----------

---En la ciudad de San Juan, Puerto Rico, a los Catorce (14) días del mes de octubre de Dos Mil Cuatro (2004.)----------

----------ANTE MI----------

---ANIBAL LUGO MIRANDA, Abogado y Notario Público de Puerto Rico, con residencia en Guaynabo y estudio abierto en la ciudad de San Juan, Puerto Rico.----------

----------COMPARECEN----------

---DE LA PRIMERA PARTE: AMY ANDREA DENTON ZENGOTITA (seguro social número 218-66-3254) viuda de JORGE FELICES PIETRANTONI mayor de edad, ama de casa de profesión, vecina de Maryland, U.S.A., a quién por no conocer personalmente, identifiqué mediante licencia de conducir, ahora en adelante como la parte "VENDEDORA". ----------

---DE LA SEGUNDA PARTE: OROPESA DEVELOPMENT, INC., Corporación con fines de lucro debidamente Incorporada en Puerto Rico el Veinte y Tres (23) de septiembre de Dos Mil Cuatro (2004) y autorizada bajo las Leyes de Puerto Rico con número de Incorporación UNO CUATRO SEIS NUEVE SIETE CERO (146970), representada por su presidente RICARDO JIMENEZ ORTIZ y por su secretario JOSE ALVAREZ REYES mediante Resolución Corporativa debidamente sellada, fechada del Treinta (30) de septiembre de Dos Mil Cuatro (2004) y del Trece (13) de Octubre de Dos Mil Cuatro (2004) respectivamente adjuntas a la presente escritura. El primero, mayor de edad, casado, (seguro social número 583-10-5853),

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arquitecto de profesión y vecino de Dorado, Puerto Rico, y el segundo mayor de edad, casado, (seguro social número 583-97-0785), arquitecto de profesión y vecino de Dorado, Puerto Rico a quienes identifico por su licencia de conducir en Puerto Rico, denominados de ahora en adelante como la parte **COMPRADORA**.----------

---Se hace constar que los comparecientes de la Segunda Parte adquieren el inmueble objeto de la presente transacción.----------

DOY FE de haber identificado a los comparecientes de la **PRIMERA** y **SEGUNDA** parte por los medios establecidos en el Artículo Diecisiete C (17C) de la Ley Notarial Vigente, y por sus dichos y mi creencia, la doy de la edad, estado civil, ocupación, número de seguro social y vecindad de todos ellos.----------

---Me aseguran tener, como a mi juicio tienen, la capacidad legal necesaria para llevar a cabo el presente otorgamiento, y en tal virtud libre y voluntariamente:----------

----------**EXPONEN Y ACUERDAN**----------

---**PRIMERO:** Que la parte **VENDEDORA** es dueña en pleno dominio del inmueble que se describe a continuación:----------

---**RUSTICA: Sita en el Barrio Miraflores, lugar de Bláfara, del término municipal de Arecibo, Puerto Rico, compuesta de Ciento Veintiséis (126.00) cuerdas, equivalentes a Cuarenta y Nueve (49) hectáreas, Cincuenta y Dos (52) hectáreas, Cincuenta y Dos (52) áreas y Veintinueve (29) centiáreas, compuesta de pastos, malezas y montes, colindando por el Norte, con la carretera municipal de Arecibo a Miraflores; por el SUR, con tierras de William J. Denton Zengotita; por el Este con la Sucesión de Ramón Valencia Sagastibelza, Ignacio González, Manuel Rodríguez Cuba, Carlos Zero, Palo Blanco Fruti Com y Dionisio Cruz y por el Oeste, con Whadzen Denton Zengotita**----------

---**TRACTO: Se segrega de la Finca Número Trescientos Noventa y Seis (396), inscrita al Folio Ciento Cuarenta y Cinco (145) del Tomo Doscientos Cincuenta y Nueve (259) de Arecibo en Arecibo, Puerto Rico.** ----------

---**Finca número Doce Mil Ochocientos dieciocho (12,818) inscrita al Folio Ciento Treinta y Uno (131) del Tomo Doscientos Ochenta y Nueve (289) de Arecibo, Sección Primera (I) del Registro de la Propiedad de Arecibo, Puerto Rico.** ----------

---NÚMERO DE CATASTRO: CERO SETENTA Y SIETE – CERO

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CERO CERO – CERO CERO TRES – DIEZ Y SIETE– CERO CERO CERO (077-000-003-17-000).----------

---SEGUNDO-(DOMINIO): La finca consta inscrita a favor de AMY ANDREA DENTON ZENGOTITA, quien la adquirió por adjudicación en Liquidación de Bienes Hereditarios de. la Sucesión Denton Zengotita compuesta por William Joseph, Amy Andrea, Evelyn y Whadzen, por el precio de TRES MIL DOSCIENTOS OCHENTA DÓLARES CON TREINTA Y TRES CENTAVOS ($3,280.33) según la escritura número Cuarenta y Cuatro (44), otorgada en Arecibo, el veintidós (22) de mayo de Mil Novecientos Cincuenta y Siete (1957) ante el Notario Público Joaquín Lago Padín, inscrita al Folio Ciento Treinta y Uno (131) del Tomo Doscientos Ochenta y Nueve (289) de Arecibo, Sección Primera (I) del Registro de la Propiedad de Arecibo, Puerto Rico, inscripción primera (1era).----------

----------CARGAS Y GRAVAMENES----------

---TERCERO: Que según surge del Estudio de Título preparado por *The Title Security Group, Inc.*, el día Veinte y Siete (27) de septiembre de Dos Mil Cuatro (2004), el inmueble se encuentra afecto: ----------

---(A) POR SU PROCEDENCIA :----------

---Se encuentra Libre de Cargas----------

---(B) POR SI A: ----------

---(1) Arrendamiento sobre una porción de Treinta y Dos (32.00) cuerdas a favor de José Rodríguez García casado con Iluminada Rodríguez García por el término de Cinco (5) años adicionales, siendo el canon de este contrato de VEINTIÚN DÓLARES PUNTO CERO CERO ($21.00) por cuerda anual. El arrendatario no podrá subarrendar o ceder el contrato en todo o en parte sin el consentimiento por escrito de los dueños, constituida mediante la escritura número Cuarenta y Seis (46), otorgada en Arecibo, Puerto Rico, el día Treinta (30) de mayo de Mil Novecientos Cincuenta y Siete

Q07

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(1957), ante el notario Joaquín Lago Padín, e inscrita al folio Ciento Treinta y Dos (132) del Tomo Doscientos Ochenta y Nueve (289) de Arecibo, finca número Doce Mil Ochocientos Dieciocho (12,818), inscripción segunda (2da.)----------

---(2) Arrendamiento sobre la porción de Treinta y Dos Punto Cero Cero (32.00) cuerdas mencionada anteriormente a favor de José Enrique Landrón Nacer casado con Olga Irma Navas, por un término de Siete (7) años y se podrá prorrogar por un término de Dos (2) años adicionales siendo el canon de este contrato CINCUENTA Y CINCO DÓLARES PUNTO CERO CERO ($55.00) por cuerda anual. El arrendatario no podrá subarrendar o ceder el contrato en todo o parte sin el consentimiento por escrito de los dueños, constituida en Mil Novecientos Sesenta y Cuatro (1964), ante el notario Joaquín Lago Padín, e inscrita al Folio Ciento Treinta y Cuatro (134) vuelto del Tomo Doscientos Ochenta y Nueve (289) de Arecibo, Finca Número Doce Mil Ochocientos Dieciocho (12,818), inscripción Tercera (3ra.)----------

---(3) Al Asiento Sesenta y Cuatro del Diario Setecientos Cuarenta y Seis, se presentó el día Veinte y Nueve de febrero de 2000, Resolución del día Trece (13) de enero del Dos Mil 2000, sobre expropiación forzosa de Uno Punto Nueve Nueve Uno Cero cuerdas, equivalentes a Siete Mil Ochocientos Veinticinco punto Dos Mil ochocientos Metros Veinte Nueve metros cuadrados a favor del Estado Libre Asociado de Puerto Rico, en el caso civil KEF Noventa y Nueve Seiscientos Cuarenta y Ocho (99-648) del Tribunal Sala Superior de San Juan. Dicha expropiación es para servidumbre de uso público.----------

---**CUARTO:** Que la parte **VENDEDORA** interesa vender, ceder y enajenar en favor de la parte **COMPRADORA** todos sus derechos y acciones sobre los inmuebles descritos en el párrafo **PRIMERO** anterior y la **COMPRADORA** desea adquirirlos, y lo llevan a

efecto bajo las siguientes:----------

----------CLAÚSULAS Y CONDICIONES----------

---**QUINTO**: Que la parte **VENDEDORA VENDE, CEDE, ENAJENA y TRASPASA** a la parte **COMPRADORA** el título en pleno y absoluto dominio libre de toda carga y gravámenes de los inmuebles descritos en el párrafo **PRIMERO** de la presente Escritura, con todas sus edificaciones y mejoras, si algunas, sujeto única y exclusivamente a las condiciones restrictivas y las servidumbres que surjan del Registro de la Propiedad. La parte **VENDEDORA** ha representado que el inmueble aquí transferido está libre de ocupantes, invasores y/o agregados y la **COMPRADORA** acepta que la **VENDEDORA** no será responsable en cuanto a éstos del saneamiento por evicción.----------

---**SEXTO**: Se efectúa esta Compraventa por el ajustado y convenido precio de **OCHOCIENTOS SETENTA Y CINCO MIL DÓLARES ($875,000.00)**.----------

---**SÉPTIMO**: El pago del precio ajustado y convenido se hace por medio de la entrega de **CUATROCIENTOS TREINTA Y SIETE MIL QUINIENTOS DOLARES ($437,500.00)** en cheque de gerente emitido por el Banco Popular de Puerto Rico a favor de Amy Denton Felices, en ocasión de la firma de este Acuerdo de Compraventa.----------

---El balance impago de **CUATROCIENTOS TREINTA Y SIETE MIL QUINIENTOS DOLARES ($437,500.00)** será saldado dentro de Un (1) año a partir de la fecha de otorgación de este Acuerdo y devengará intereses a razón del promedio anual del "Prime Rate" según establecido por Citibank, N.A. New York.----------

---**OCTAVO**: Todo el tema del balance impago según descrito en el párrafo **SIETE** , anterior, será recogido en un pagaré hipotecario a otorgarse el día del cierre de la transacción de Compraventa. Este pagaré será presentado por medio de escritura pública en el Registro de la Propiedad por el Notario otorgante de este Acuerdo.----------

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---NOVENO: La parte VENDEDORA reconoce que es condición *sine qua non*, el traspasar a la COMPRADORA un título completamente libre de cargas y gravámenes. A tales efectos ha expresado que los arrendamientos sobre la propiedad han cesado de existir y se obliga ante la parte COMPRADORA a producir evidencia sobre este particular dentro de Sesenta (60) días de que se firme el presente Contrato de Compraventa y a tomar cualquier responsabilidad contractual necesaria que surja de dichos arrendamientos. Por tanto, libera al COMPRADOR de responsabilidad alguna sobre los arrendamientos existentes si algunos que existieran en la propiedad objeto de éste Contrato de Compraventa. Yo, el Notario, advierto a las partes que el arrendamiento existente es un gravamen válido y que la propiedad continuará sujeta al mismo hasta que dicho gravamen sea cancelado, sobre lo cual manifiesta la parte COMPRADORA que ha sido debidamente informada de que el antedicho arrendamiento será concluido con posterioridad al presente otorgamiento ante otro Notario.----------

---DECIMO: Que cualesquiera contribuciones que pudiera adeudar el inmueble, si alguna, serán por cuenta y cargo de la parte VENDEDORA hasta la fecha de otorgamiento de la presente escritura, y de esta fecha en adelante serán de la responsabilidad de la parte COMPRADORA quien a su vez reconoce que, tal reconocimiento por la parte VENDEDORA no la releva necesariamente de responsabilidad primaria ante el Departamento de Hacienda para el pago de tales contribuciones, en su carácter de dueño del inmueble.---

---La parte COMPRADORA reconoce no haber examinado copia de certificaciones sobre contribuciones territoriales, las cuales corresponden a la propiedad objeto del presente otorgamiento, sino ha aceptado como cierta la información que le ha sido suministrada por la parte VENDEDORA respecto a la inexistencia de dichas

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deudas. La parte VENDEDORA se compromete a proveer dicha Certificación por el Centro de Recaudación de Ingresos Municipales (CRIM) en un termino de Sesenta (60) días de la firma del presente contrato de compraventa, de las que se desprende el estado contributivo de la propiedad y sus deudas, comprometiéndose al pago de dichas deudas si alguna. El contenido y alcance y limitaciones de dicha Certificación y los riesgos de que el Centro de Recaudación de Ingresos Municipales (CRIM) expida recibos de cobro adicionales, ha sido explicado detalladamente a las partes. Reconocen y Aceptan las partes que el Notario les ha advertido que el Departamento de Hacienda podrá imponer contribuciones retroactivas durante el tiempo en que la propiedad hubiera disfrutado de exoneración contributiva indebida, en cuyo caso dichas contribuciones constituirán un gravamen sobre la propiedad objeto del presente contrato, siendo responsabilidad de la parte **VENDEDORA** el pago de las mismas.------

---**UNDECIMO**: Que la parte **COMPRADORA** reconoce que ha inspeccionado minuciosamente la propiedad, incluyendo la cabida, y la acepta tal y como la misma se encuentra en la actualidad, a su entera satisfacción, consignando todas las partes que esta Escritura contiene todos los pactos de las partes, por lo que toda manifestación oral o escrita con referencia a dicha propiedad, efectuada con anterioridad a este otorgamiento, queda sin valor o efecto alguno.------

---**DUODÉCIMO**: Que las partes comparecientes se comprometen a otorgar cualquier escritura, instrumento o documento público o privado adicional o entregar cualquier documento adicional, que resultara necesario para poder inscribir esta transacción en el Registro de la Propiedad.----------

---**DECIMO TERCERO**: Que la parte **COMPRADORA** entra en la inmediata posesión del inmueble que le ha sido vendido, a título de dueño, sin más actos ni requisitos que el presente otorgamiento.------

ADZ

ILTRE COLEGIO DE ABOGADOS DE PUERTO RICO

---**DECIMO CUARTO:** Que cualesquiera sumas de dinero que adeude la propiedad, si alguna, en adición de las sumas mencionadas en el **DECIMO** párrafo de este documento, serán por cuenta y cargo de la parte **VENDEDORA** hasta la fecha de otorgamiento de la presente escritura, y de esta fecha en adelante serán de la responsabilidad de la parte **COMPRADORA.**----------

---**DECIMO QUINTO:** Que en la presente transacción no intervino ningún Corredor de Bienes Raíces y las partes se relevan mutuamente de reclamaciones que a tales efectos pudieran surgir. ----

----------**ACEPTACIÓN**----------

---Los comparecientes aceptan la presente escritura en todas sus partes, tal y como ha sido redactada por estarlo conforme a sus deseos e instrucciones.----------

----------**ADVERTENCIAS**----------

---Yo, el Notario, hice a los comparecientes las advertencias legales pertinentes a este acto, en particular las siguientes: a) sobre la necesidad y conveniencia de realizar un Estudio de Título, el cual en este caso fue preparado por un tercero independiente y no por el Notario otorgante. El referido Estudio fue preparado por *The Title Insurance Group, Inc.*, el día Veinte y Siete (27) de septiembre de Dos Mil Cuatro (2004); b) que existe la posibilidad de que otros documentos que afecten los derechos aquí creados, hayan sido presentados para su inscripción con anterioridad al otorgamiento de esta Escritura entre la fecha del Estudio de Título realizado y la fecha de otorgamiento de esta Escritura y/o la fecha de presentación de la copia certificada de esta Escritura en el Registro de la Propiedad y dichos documentos cobren la preferencia o prioridad que dicho título, gravamen interventor y/o derecho pueda tener sobre la inscripción de esta Escritura debido al otorgamiento previo o a su previa presentación en el Registro de la Propiedad; c) del derecho de

ANIBAL LUGO MIRANDA
PUERTO RICO
ABOGADO - NOTARIO

Certifico que en el día de hoy 18 de octubre de 2004, se expidio------- Primera Copia Certifi-- cada a favor de Fernando Maruqes y Segunda Copia Certificada a Ricardo-- Jimenez en representa-- cion de Oropesa Develop- ment, Inc. DOY FE-------

NOTARIO PUBLICO

obtener un seguro de título como dueños que les garantice su título y les indemnice en caso de que sufran una pérdida o menoscabo en su derecho de propiedad; d) de la conveniencia de presentar copia certificada de la Escritura a la mayor brevedad en el Registro de la Propiedad y sobre el pago de los derechos correspondientes de inscripción; e) sobre el deber de tramitar rápidamente el correspondiente traspaso en el registro sobre tributación de propiedades del Departamento de Hacienda; f) el traspaso de titularidad en el Centro de Recaudación de Impuestos Municipales (CRIM); g) las consecuencias del envío de la Planilla Informativa sobre traspaso de bienes inmuebles al Departamento de Hacienda, que los transmitentes han de firmar y la veracidad de la información contenida en la misma la cual han de certificar bajo su firma y responsabilidad; h) que de encontrarse en una zona inundable el inmueble objeto de esta transacción, cualquier titular y/o ocupante, presente y futuro del mismo queda obligado por ley a observar y cumplir con los requerimientos y disposiciones del Reglamento de Zonas susceptibles de Inundación, bajo apercibimiento de que de incumplir con los mismos resultarían en un acto ilegal (23 L.P.R.A., Sección 225); i) se le advierte a la **PARTE COMPRADORA** que la propiedad que adquiere en el día de hoy y que es objeto de esta transacción, está sujeta a observar las disposiciones de otros reglamentos que, hayan sido aprobados por ley y que afecten dicha propiedad. ----------

---Entendido el alcance y significado de las anteriores advertencias, a satisfacción de los comparecientes, estos manifiestan su determinación de proceder en este momento con el otorgamiento de la Escritura.----------

----------**LECTURA Y OTORGAMIENTO**----------

---Así lo dicen y otorgan ante mí, los comparecientes, luego de renunciar al derecho que les hice saber tenían para requerir la

ANIBAL LUGO SEGUNDA PUERTO RICO ABOGADO - NOTARIO

presencia de testigos instrumentales al acto.----------

---Leída esta escritura por los comparecientes personalmente, se ratifican en su contenido y la firman estampando, además, las iniciales de sus nombres al margen izquierdo de todos y cada uno de los folios que componen la misma.----------

---**DOY FE** de todo cuanto más afirmo o refiero en este Instrumento Público, el cual **FIRMO, SIGNO, SELLO** y **RUBRICO.**----------

Aníbal Lugo Miranda

ANIBAL LUGO MIRANDA
PUERTO RICO
ABOGADO - NOTARIO

$100 $100 $50 $50 $5 $5 $20 $20 $1 $1

A01994365

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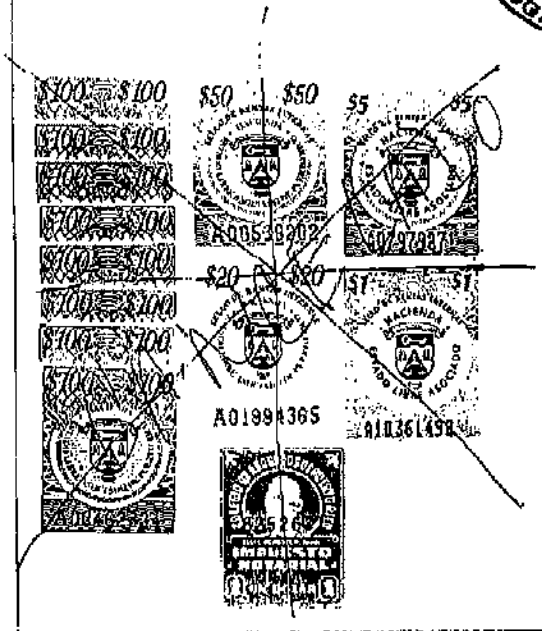


ANIBAL LUGO MIRANDA
PUERTO RICO
ABOGADO - NOTARIO

OROPESA DEVELOPMENT, INC.

CERTIFICATE OF RESOLUTION

The undersigned Corporate Secretary of **OROPESA DEVELOPMENT, INC.**, does hereby certify that I am the Corporate Secretary of said corporation; that said corporation was duly organized and is operating under the laws of the Commonwealth of Puerto Rico; and as such Corporate Secretary I have access to all original records of said corporation. I do further certify that at a meeting of the Board of Directors of said corporation, duly called, held and convened on 30SEPT04 according to the Bylaws of said corporation, a quorum being present and voting hereon, the following resolution was unanimously adopted:

ANIBAL LUGO MIRANDA
PUERTO RICO
ABOGADO - NOTARIO

"RESOLVED, that Ricardo Jimenez is named president of said corporation and is hereby authorized and empowered to present, process, and formalize the acquisition and sale of Real Estate Property on behalf of said Corporation.

In relation therewith, Ricardo Jimenez, as president of said corporation has the company's authorization to complete and process any collateral documentation that he may deem necessary and/or convenient; regarding the sale and acquisition of Real Estate Property on behalf of said corporation; and may take any other such pertinent action as to conclude and close the Sale and Acquisition of said property."

IN WITNESS WHEREOF, I have hereunto set my hand and the seal of this Corporation, on this 30th day of September in the year 2004.

OROPESA DEVELOPMENT INC
CORPORATE SEAL
(Corporate seal)
2004
PUERTO RICO

José Alvarez Reyes
Corporate Secretary

Affidavit Number: 236
Sworn and signed before me by José Alvarez Reyes, of legal age, in his capacity as Corporate Secretary, and resident of Dorado, whom I identified by drivers license number:

In San Juan, Puerto Rico on September 30th, 2004.

Lcda. Janice L. Richardson
Abogada - Notaria

NOTARY PUBLIC

OROPESA DEVELOPMENT, INC.

CERTIFICATE OF RESOLUTION

The undersigned Corporate Secretary of **OROPESA DEVELOPMENT, INC.**, does hereby certify that I am the Corporate Secretary of said corporation; that said corporation was duly organized and is operating under the laws of the Commonwealth of Puerto Rico; and as such Corporate Secretary I have access to all original records of said corporation. I do further certify that at a meeting of the Board of Directors of said corporation, duly called, held and convened on 13OCT04 according to the Bylaws of said corporation, a quorum being present and voting hereon, the following resolution was unanimously adopted:

ANIBAL LUGO MIRANDA PUERTO RICO ABOGADO - NOTARIO

"RESOLVED, that José Alvarez Reyes as secretary of said corporation, is hereby authorized to represent Oropesa Development Inc., along with Ricardo Jimenez and empowered to formalize the acquisition and sale of Real Estate Property on behalf of said Corporation.

In relation therewith, José Alvarez Reyes, as secretary, and Ricardo Jimenez, as president of said corporation have the company's authorization to complete and process any collateral documentation that they may deem necessary and/or convenient; regarding the sale and acquisition of Real Estate Property on behalf of said corporation; and may take any other such pertinent action as to conclude and close the Sale and Acquisition of said property."

IN WITNESS WHEREOF, I have hereunto set my hand and the seal of this Corporation, on this 13th day of October in the year 2004.

OROPESA DEVELOPMENT INC. CORPORATE SEAL 2004 PUERTO RICO

Corporate seal

José Alvarez Reyes
Corporate Secretary

Affidavit number: 238
Sworn and signed before me by José Alvarez Reyes, of legal age, in his capacity as Corporate Secretary, and resident of Dorado, whom I personally know.

In San Juan, Puerto Rico on October 13th, 2004.

Lcda. Janice L. Richardson Abogada - Notaria

NOTARY PUBLIC

APENDICE F

Senderos de Miraflores
PR-637
Bo. Miraflores
Arecibo, PR

Leyenda:

Límite de
la propiedad

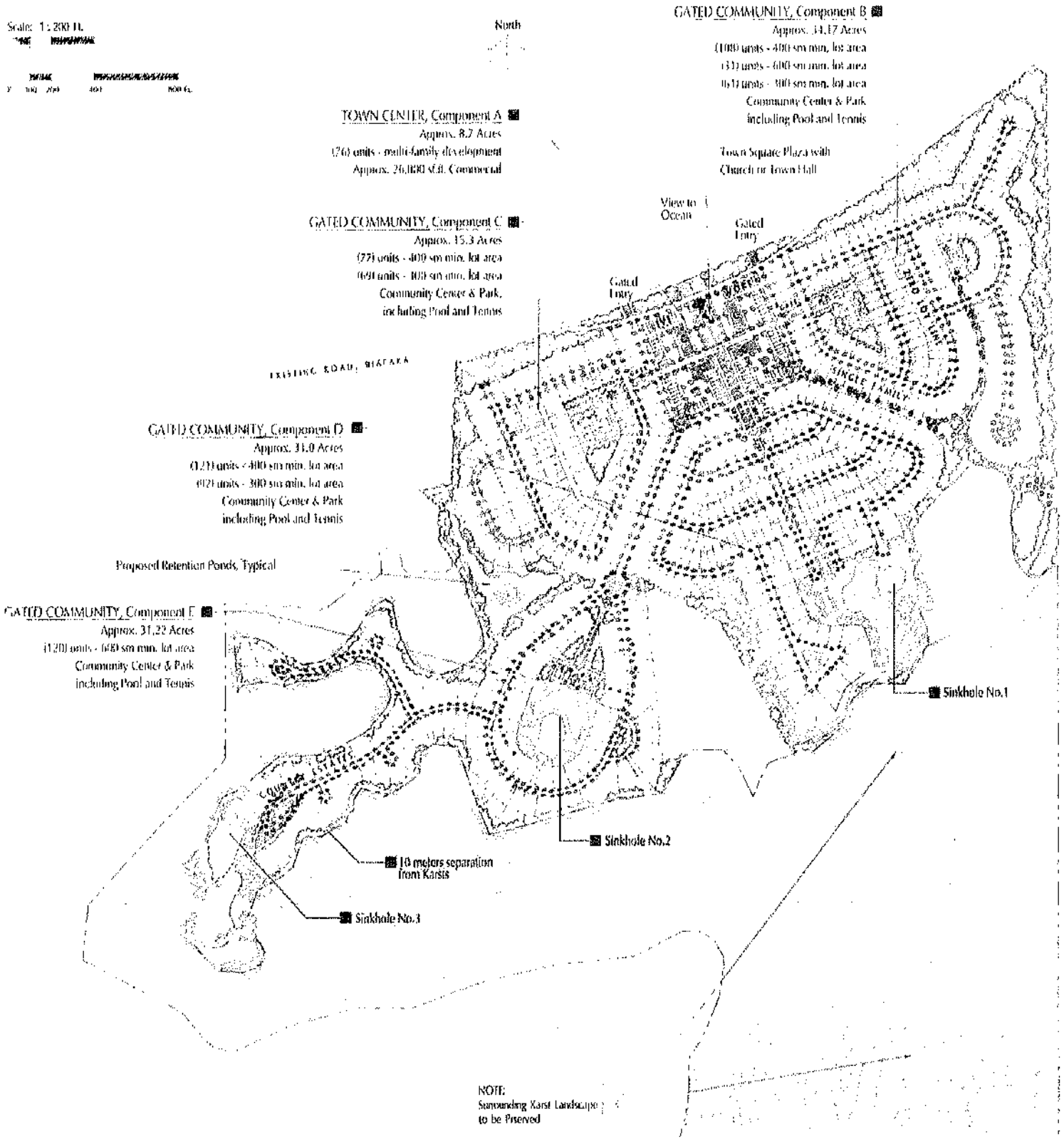
GOLDEN
ENVIRONMENTAL
CORPORATION

Foto aérea

National Map Viewer
Foto aérea 2004
Escala 1:8,000

200 0 200 Meters

Senderos de Miraflores Master Plan



Apéndice 9:

Estudios de Sumideros y Escorrentia Pluvial

GEOLOGIC RECONNAISSANCE & AERIAL PHOTO-INTERPRETATION STUDY FOR A FARM AT SECTOR BIAFRA, ARECIBO, PUERTO RICO

July 4, 2005

Calle Chile 258, San Juan, P.R. 00917-2103 Tel. (787) 753-0147 Fax (787) 753-8387

SUELOS INC.

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ATTACHMENTS

Calle Chile 258, San Juan, P.R. 00917-2103 Tel. (787) 753-0147 Fax (787) 753-8387

SUELOS INC.

SUELOS INC.

Soil & Construction Materials Laboratories and Environmental Drilling Services

GEOLOGIC RECONNAISSANCE & AERIAL PHOTO-INTERPRETATION STUDY FOR A FARM AT SECTOR BIAFRA, ARECIBO, PUERTO RICO

July 4, 2005

I. INTRODUCTION

This report presents the findings for an on site geologic reconnaissance and aerial photo-interpretation for a farm at Sector Biafra, Arecibo, Puerto Rico. The work performed consisted of a stereoscopic analysis of the aerial photographs of the site and surroundings to identify collapse sinkholes and/or related depressions and possible paths of runoff water. The work also includes a visit to the area in order to confirm previous interpretation based on aerial photos, a study of standard topographic and geologic maps, and an on-site geomorphologic analysis.

The work was commissioned by Arch. Ricardo Jiménez.

II. SITE LOCATION

The site is bounded to the north and west by road #637 on Sector Biáfra which is sitting east of road PR#10 as well as Rio Grande de Arecibo and it is south of road PR#22 of the municipality of Arecibo.

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III. GENERAL GEOLOGY

This site is dominated by blanket sands sitting on valleys between typical "mogotes" of northern Puerto Rico's karst topography. U.S. Geological Survey personnel have mapped the geology of the region. Exposed limestone on "mogotes" is of the Aymamón and Aguada limestone members. Some of the foothills are filled with colluvium deposits composed of fragments of limestone from the "mogotes" and superficial sediments (sands and top soil). Some of this material has been transported down into the valleys do to water flow.

Blanket sands and alluvium overlie most north coast limestone formations on places like this. The blanket sands occur chiefly in the outcrop belt of the Aguada and Aymamón formations. Where they fill and form relatively flat plains between residual limestone hills. These deposits are believed to former beach sands similar in composition to present day beach deposits, which were left stranded above sea level following late Tertiary-early Quaternary (?) marine regression and possibly uplift of the Puerto Rico landmass. Subject to intense chemical weathering under tropical climatic conditions many original sand grains have been altered to clay, mainly kaolinite. Only highly stable quartz grains have remained unchanged so that the blanket deposits consist predominately of clay minerals and quartz. Normally quartz-clay ratios vary greatly.

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IV. PROJECT GEOLOGY

The site is located within the outcrop belt of the Aguada and Aymamón Formations, which in turns are partially buried by blanket sands (Reginald P. Briggs; 1968; Geologic Map of the Arecibo Quadrangle, Puerto Rico; U.S. Geological Survey; Miscellaneous Geologic Investigation; Map I-551).

Attachment #1 is a portion of the above-mentioned map showing the appropriate location of the site, as well as the different geologic deposits underlying the site.

The geologic deposits are:

1. Blanket Sands (Qtb/Qts)

Reddish-blown, yellowish-brown, tan brown, pinkish gray, and blue gray clayey quartz sand, sandy clay, silty clay, and/or clay (depending on the degree of leaching). Sometimes only quartz sand, medium to fine, light-gray to white.

2. Aymamón Limestone (Tay)

The Aymamón consists of very fine white to pale gray with moderate shades of orange, pure limestone and calcarenite. It is usually found to be thick bedded and chalky.

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3. Aguada Limestone (Ta)

The Aguada consists of medium to fine grained, locally very fine grained, pale gray, yellowish orange, and yellowish brown, limestone interbedded with chalk and marl.

The Aymamón and the Aguada can be observed outcropping from the foothills of most of the "mogotes" sporadically all the way to the top of them. These are the result of landslides of severely weathered surface material. They outcrop in the form of residual limestone hills, which rise abruptly from relatively flat plains surrounding them. Outcrops of the Aymamón and the Aguada formations are only found confined between the dense vegetation of the "mogotes" at this site. The Aymamón was observed to be solution riddled with several small cavernous openings (as far as we could see).

V. DEPRESSIONS & POSSIBLE SINKHOLES

Differential solution of the northern Puerto Rico limestone formations has led to the development of the tropical karst topography characterized by underground drainage, conical limestone hills, caves, and other solution features throughout much of the area. Collapse sinkholes are of common occurrence where blanket sand deposits overlie Aguada and/or Aymamón formations, which is the case for this site. Collapse sinkholes are sudden

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ground subsidence failure, which occurs when surficial soils are carried away through solution passages in the underlying bedrock. They vary greatly in size from small openings tens of centimeters in diameter to large craters of meters wide.

Most collapse sinkholes result from the collapse of the surficial blanket sands into cavities in the underlying limestone. Collapse usually occurs during or shortly following periods of intense or extended rainfall. The collapse itself, however, is but the culmination of processes that have been active for tens of hundreds of years whereby the blanket sands are eroded into unseen solution channels in the underlying limestone. In cohesion less material this subsurface erosion is accompanied by a gradual sagging of the ground surface. In cohesive soils, however, the bedrock cavities grow into the overburden soil, which forms a bridge above the growing cavity. Collapse occurs suddenly and without warning when a soil bridge becomes too thin to support its own weight. External factors may act as trigger mechanism. These include static and dynamic loading, either natural or man-induced. Weathering or creep may reduce soil strength to the extent that collapse ensues. Seepage forces and strength reduction during rapid wetting are frequent trigger mechanisms, often aided by the weight of water which ponds in shallow depressions above the growing cavity.

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One of the most noticeable features at this site other than the "mogotes" are depressions. These are rounded in shape and are much lower in elevation towards the center by few meters compared to the surrounding level soil. Even thought it is depressed the soil maintains certain continuity. Meaning that it is very likely that these are early stages of future sinkholes that have been filled with blanket sands from surrounding plains.

Another feature that can be seen at this site are depressions at the foothills surrounding some of the "mogotes" mainly on southwest side on the interior plains.

After further field checks and a detailed reviewed of most recent topographic maps and aerial photos as well as the proposed construction drawings, it was determined that there are only three apparent sinkholes of the previously identified on site that would potentially affect the proposed project. Attachment #7 shows four inferred sinkholes out of which the furthest south one does not fall within this proposed community. There is enough evidence to support the idea that the remaining three identified depressions are sinkholes. But it is not certain how wide these may be. Mainly do to the superficial blanket sands that cover most of the low lands on the site, leaving behind depressions as footprints of these sinkholes.

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Further investigation of the inferred and the three (3) sinkholes depicted on Attachment 16 will be needed for a final determination on the activity, non-activity, and/or mechanics of the sinks and the proposed development.

These further investigation shall be performed on the fence geotechnical and geological rebuttal of the site.

VI. RUNOFF

Runoff is probably the most important feature responsible for the topography of this site. Depressions at "mogotes" foothills as well as within flat plains and erosion are the most common features as a result of runoff.

1. Depressions

Water directly affects this system by running off along the surface into small cavities on the limestone below the permeable surface sands. This is the beginning of a process called dissolution where the calcium carbonate on the limestone gets dissolved by water. As a result of this, the cavities increase in size until big enough for sediments to be carried in by water. In most cases the cavity is not filled completely with sediment allowing for possible collapses. This is the initial step of a future sinkhole and as a result of it we get a depression. Although there are no visible cavities along the surface at the depression it is

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noted that water erodes down some of the surface material lining up towards the lower center part of the depressions.

2. Erosion

This is the naturally occurring process that is define as the detachment and removal of soil and/or rock by the action of running water, wind, waves, flowing ice, and mass movements. At this site water is the most important trigger of erosion. Surface erosion is very common on the flat plains at this site. Water carrying capability is directly dependent of how strong the water flow is. Sands and silts as on the flat plain surface do not take to much energy to be transported. One of the most common features at this site is carved out trenches on the plains sediment that lead into the depressions. They are up to a few hundred meters on length, about a meter deep at the furthest end from the depressions and leveling with surface at the nearest, width is mostly constant between one and two meters. Erosion is also visible along the foothills where by the surface water that run down mainly during high pluvial precipitations material is removed of the surface of the hills and carried down into the valleys. There are many areas where fragments of limestone are visible right at the foothills and on the flat plains. Also right at the foothills it is common at this site to notice depressions of up to two meters in depth again filled with surface sands, but even thought this is the case one can stick a foot or a "machete" into the lowest point of these depressions since soils are very loose at this place and they will sink.

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VII. PHOTO INTERPRETATION

Erosion, sinkholes and/or related subsidence phenomena on this site with "mogotes" and sand filled flat plain leave a distinctive imprint on surface topography. Open pits or craters, often filled with water or sediment; mark the site of recent failures. Shallow un-drained depressions occur in presently inactive subsidence areas. Total relief in these depressions is usually less than five meters so that the depressions do not appear on standard U.S. Geological Survey Topographic maps.

The vertical exaggeration of aerial stereo pairs facilitates detection of surface features related to sinkholes and/or depressions. For this analysis stereo pairs from 1936, 1963, 1973, 1989, 1997, and 2000 were used. Multiple depressions and possible paths of runoff water were identified and delineated on the photos. These are shown in attachments 2 - 7. A key to the symbols used is included. These are: small and large inferred depressions, elongated depressions, trace of fracture systems, and "mogotes".

"Mogotes" and flat plains are identified on all six pictures. Absence of a particular feature in a given photo or changes in their size or shape in different photos is in most cases the result of surface alteration by man or variations in the type and distribution of vegetation. High crop plants and trees tend to mask subsidence features, particularly where vegetation type or height changes abruptly. This is important at this site because vegetation on this

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area is directly dependent on the amount of humidity that the different areas within the site can retain as well as the soil type between the plains up to the "mogotes". The approximate limits of the project are shown on all photos by color. Prominent trends in subsidence feature orientation and distribution are shown by dashed red line.

VIII. DISCUSSION OF SITE

The first three aerial photographs of 1936, 1963 and 1973 revealed as well as the obvious "mogotes" and flat plains a few differences on elevation on the plains. There are signs of little man intervention such as trails and some housing. From the south section of the project on, there are multiple sinkholes with possible collapses that cannot be confirmed due to the density of the vegetation. There is a significant size sinkhole on the southwest side of the project that has been identified with red color on all photos. It is the biggest one shown among the dense vegetation of the "mogotes" within the project. On 1936 aerial photo this sinkhole seems more like a depression, rounded in shape. Then in 1963 it started to look a sharper around the edges and its shape was not as circular any more. Between 1992 until 2000 as shown on aerial photograph this sinkhole suffer little changes. It got deeper, sharper around the edges and shape change (not as circular any more).

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On 1989 aerial photograph the flat plains show extensive farming. It is noticeable that some of the elevation changes within these flat plains were alter, but very little. For the most part they maintain certain continuity regarding the topography and soil materials. Although farming certainly almost erased water flow marks (eroded trenches) on the surface of the flat plains, on the next two photos from 1997 and 2000 these trenches are back. This site has been left almost untouched until now allowing for these trenches to increase in size. Unfortunately some are really hard to see under the dense vegetation. These have been identified on the aerial photos as well. During this last period of no farming since 1997 photos it is visible that the plains have developed a change in relief. Depressions have come clearer. "Mogotes" have sharpened up. It is visible where some of the "mogotes" have had collapses and have eroded. Also, one can see some of the depressions cased by runoff at the foothills of the "mogotes".

IX. OVERVIEW OF SITE GEOLOGY

Attachments 8 - 13 show a various vertical profile done along the site in order to better envision the area. These were points selected at approximately the same distance (not to scale) and elevation was measured on feet by utilizing a hand held Magellan SportTrak GPS. These are not pre-sized elevations but it does give us a good idea of the differences in elevation along the site. Following these there are two diagrams (attachments 14 – 15) to further clarify and better express our theory behind what is likely happening at this site.

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The first is a simple diagram showing two possible scenarios for these depressions and the second is a drawing showing all the geologic components and mechanism at this site. It is important to understand the magnitude of these possible sinkholes. Generally this site has not drastically change within the last 68 years (comparing 1936 images with today's data). Surface changes do not necessarily express exactly what is going beneath. It is likely that this is a very stable environment at least at the flat plains however; this has to be verified with geotechnical and geophysical probing methods.

X. CONCLUSIONS

At this stage of the exploration we can conclude that there are several depressions within the farm that have been traced over a period stemming since 1936. It is a natural process that these depressions be encountered within the site. Furthermore, its also natural that some of these depressions are located directly adjacent to the existing residual limestone hills (MOGOTES).

As it was mentioned on our October 18, 2004-technical letter, this site is adequate for the development of the farm with the engineering and geologic ore-conditions that additional studies (Geotechnical and geophysical) be performed for a better determination of the mechanics of the depressions and/or sinkholes. That is, some of the depressions may in fact be in-active sinkholes (sinkhole that have been in-active for tens, hundreds, or more

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years. Still, other depressions may be active sinkholes. Typically the depressions adjacent to the limestone mogotes are active, while the depressions with large flat plains tend to be plugged (naturally) and thus, in-active.

The additional studies required are geared towards determining;

1) Whether the depressions are active sinkholes or not, and which are active or not.

2) Determining build able areas, areas requiring treatment to mitigate sinkhole related phenomena, and non-build able. Areas.

3) Design site specific geotechnical and geotechnical studies in specific sinkhole areas to submit foundation treatment recommendations.

4) The hydro-logic regime of the farm and the determination of the sinkholes drainage capacities (per sinkhole) to determine the impact the proposed development may have on the farm. For this, existing hydro logic conditions are compared to proposed, after construction, hydrologic regimes. This is by far the most important part of the development of any farm within the north coast limestone belt of Puerto Rico.

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5) Finally master development plans can be planed and selected, all based on a thorough understanding of the processes of the formation of sinkholes and sinkhole related phenomena.

This report presents the results of an aerial photo interpretation and site geologic recognizance of the Biafra Farm. The findings presented here are not to be used for the final design of the residential development. It can only be used to assess the reader with the geology and several physiographic features discovered by traversing the site and by the aerial photo interpretation of the site.

The report will be a complement of the additional required studies and explorations Geotechnical and geophysical explorations are required for a proper interpretation of the prevailing subsurface conditions within the farm.

Respectfully submitted,

Carlos Rodríguez Molina, P.E., P.G., M.S.

Ángel L. Alicea León,
Project Geologist

mgn
Ref. No. 3600-2 Photointer.

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ATTACHMENTS

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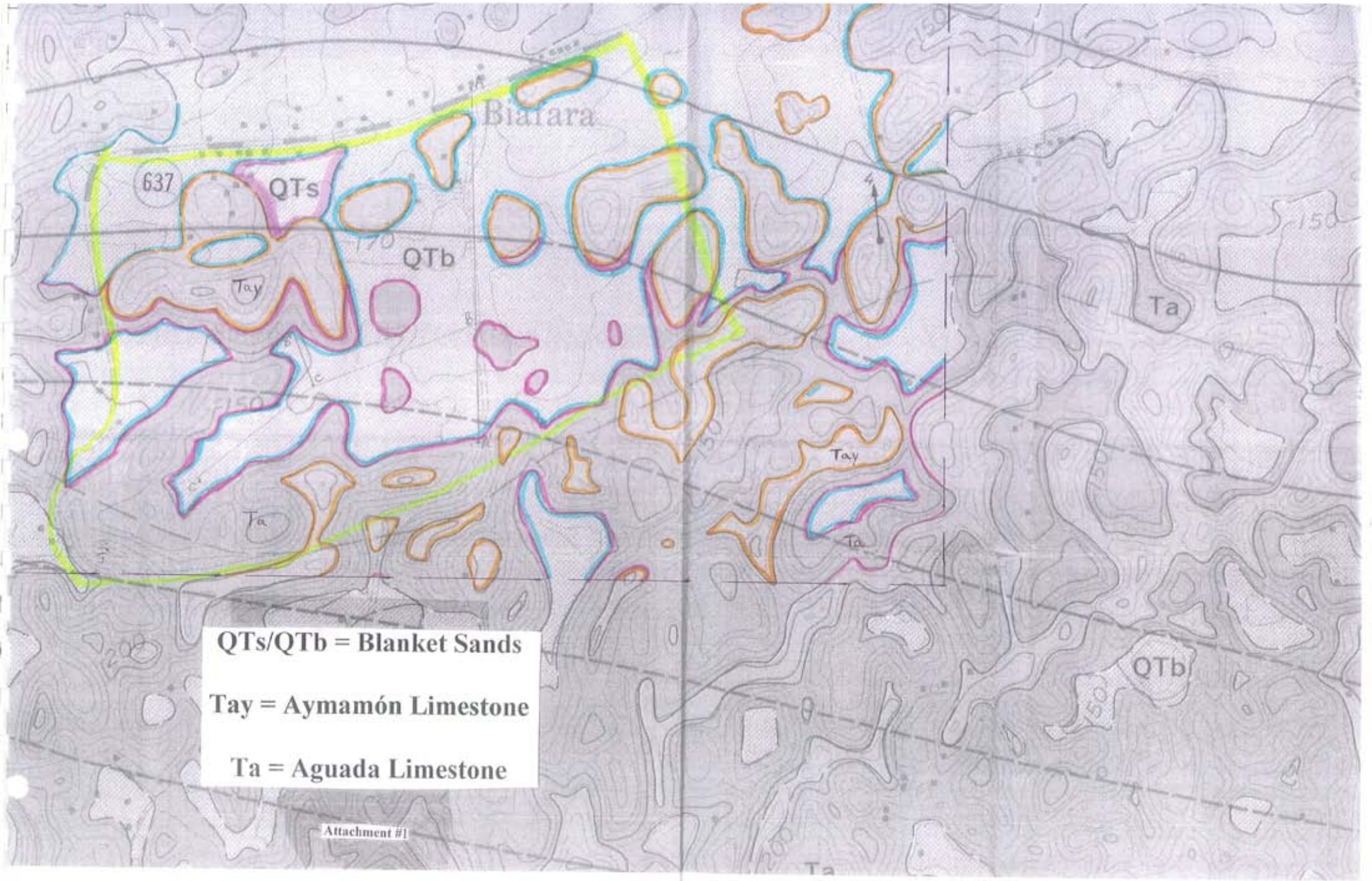
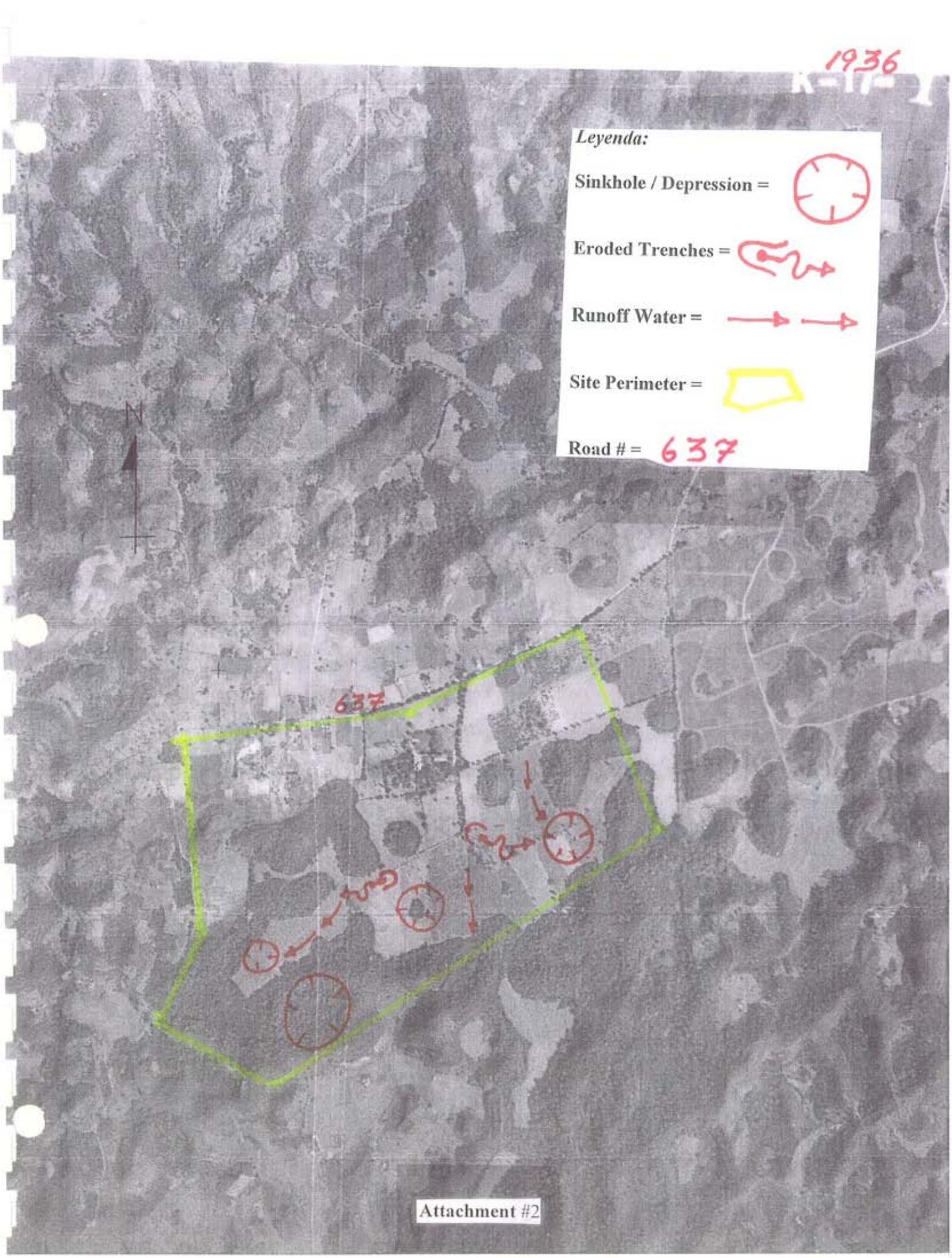
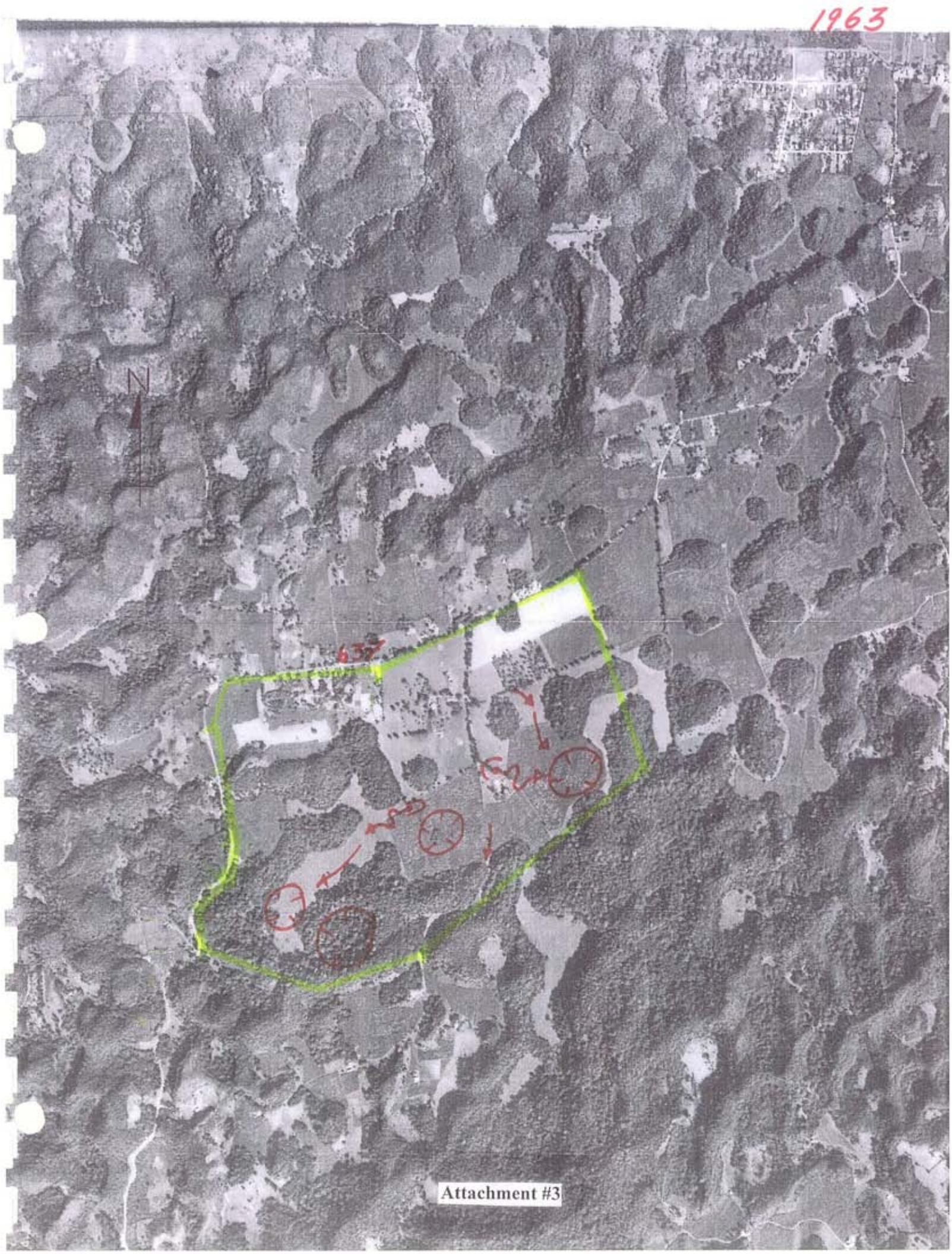

Biafara
637
QTs
QTb
Tay
Ta
Tay
Ta
Ta
QTb
Ta
QTs/QTb = Blanket Sands
Tay = Aymamón Limestone
Ta = Aguada Limestone
Attachment #1

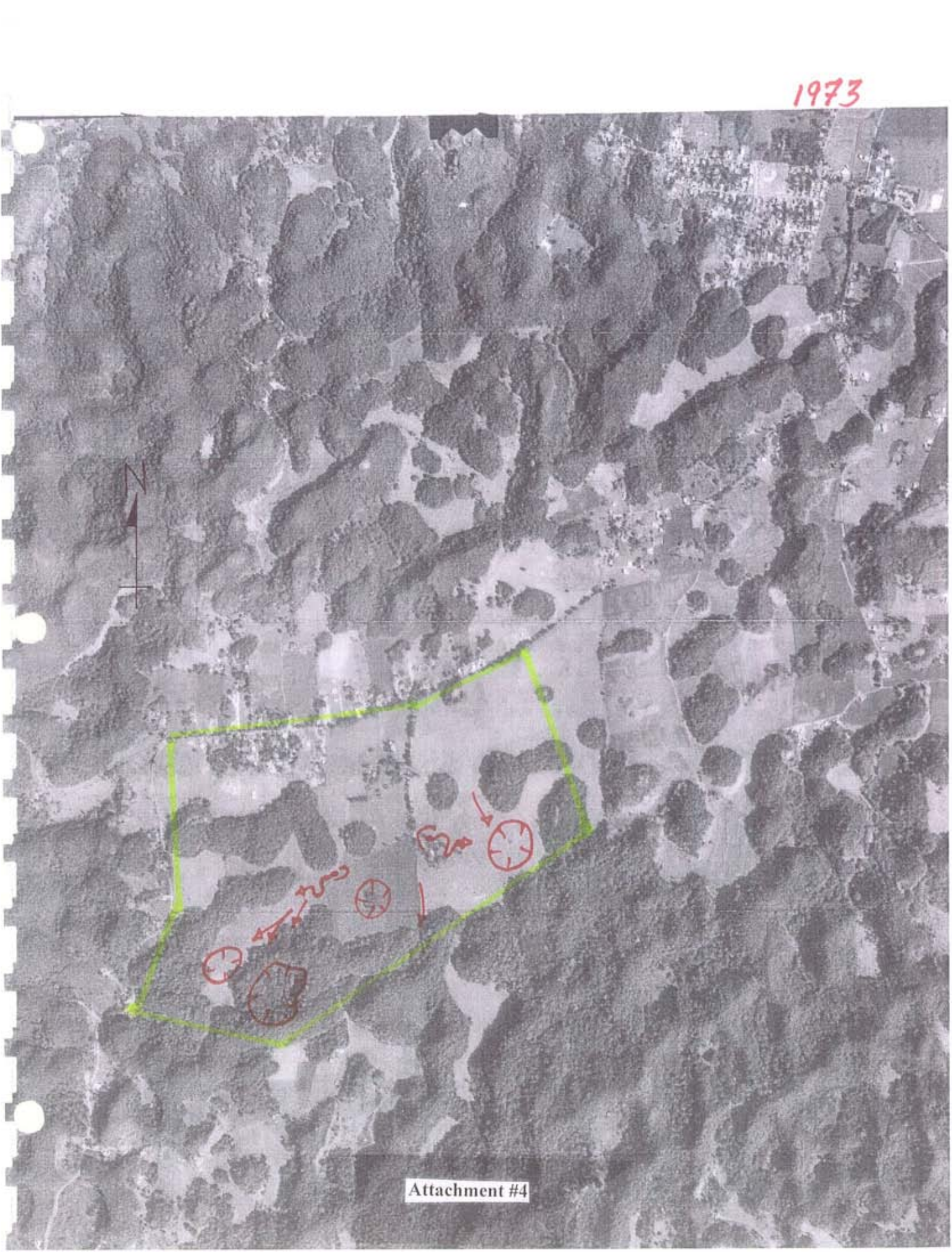
1936



Attachment #2


1963
N
Attachment #3

1973



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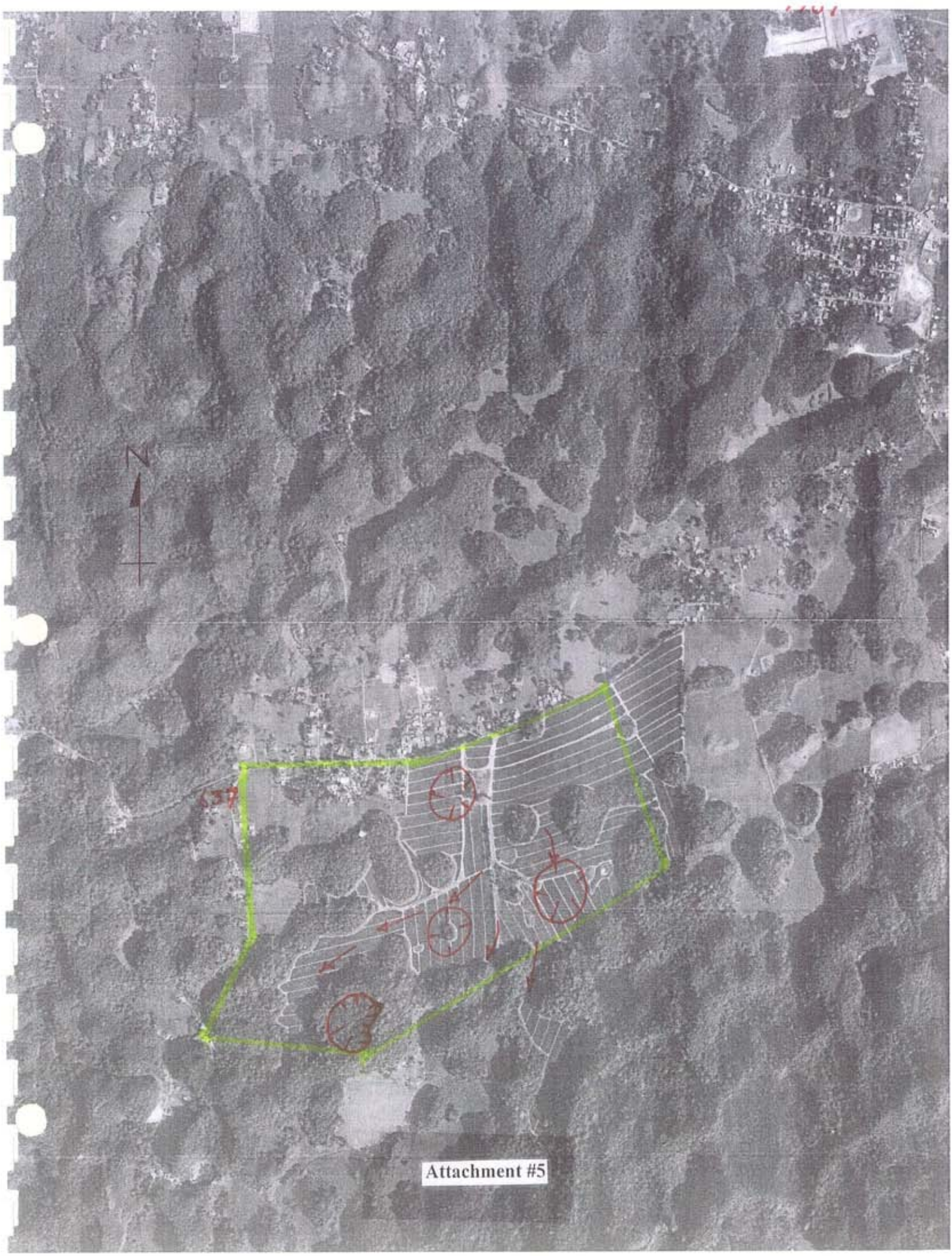
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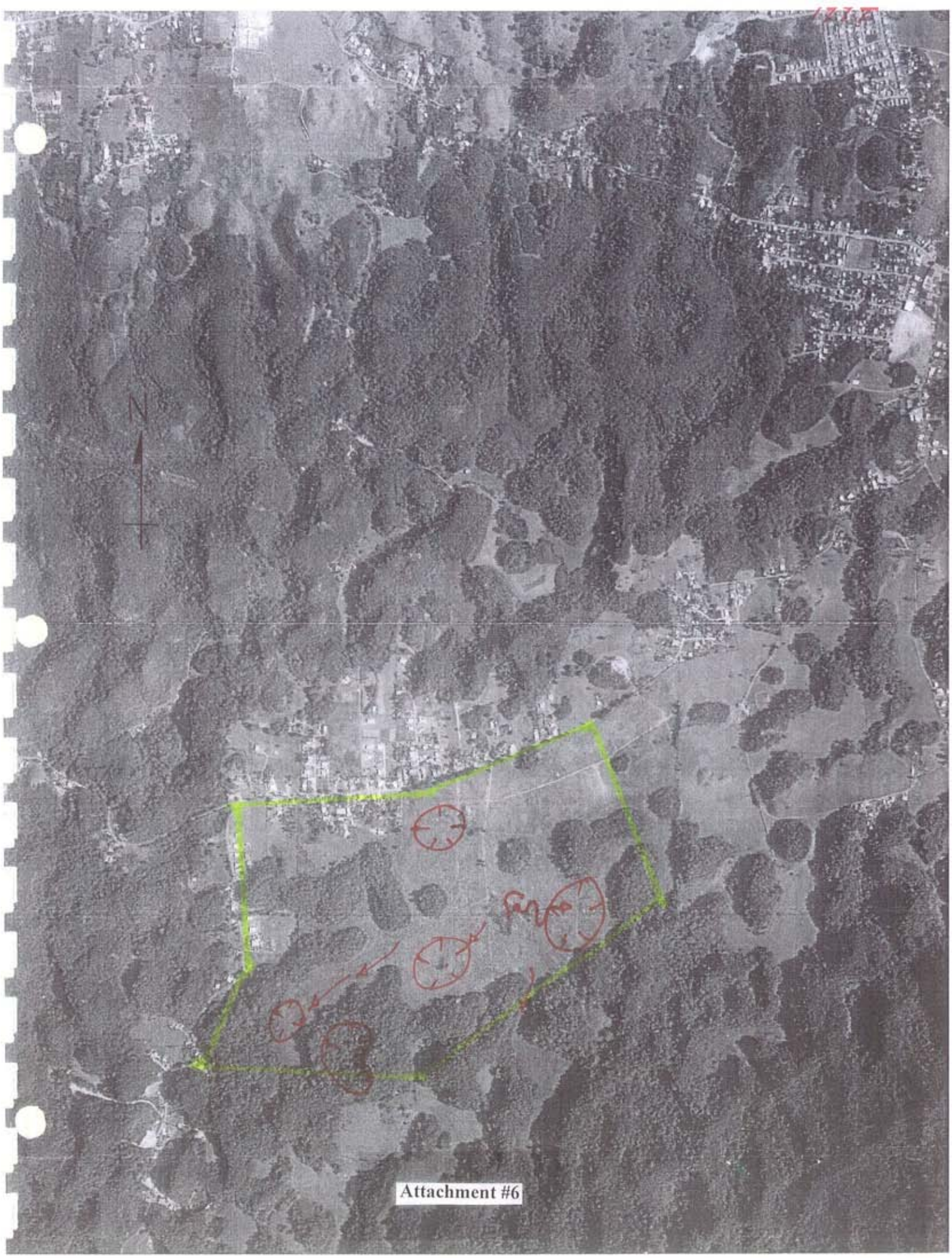
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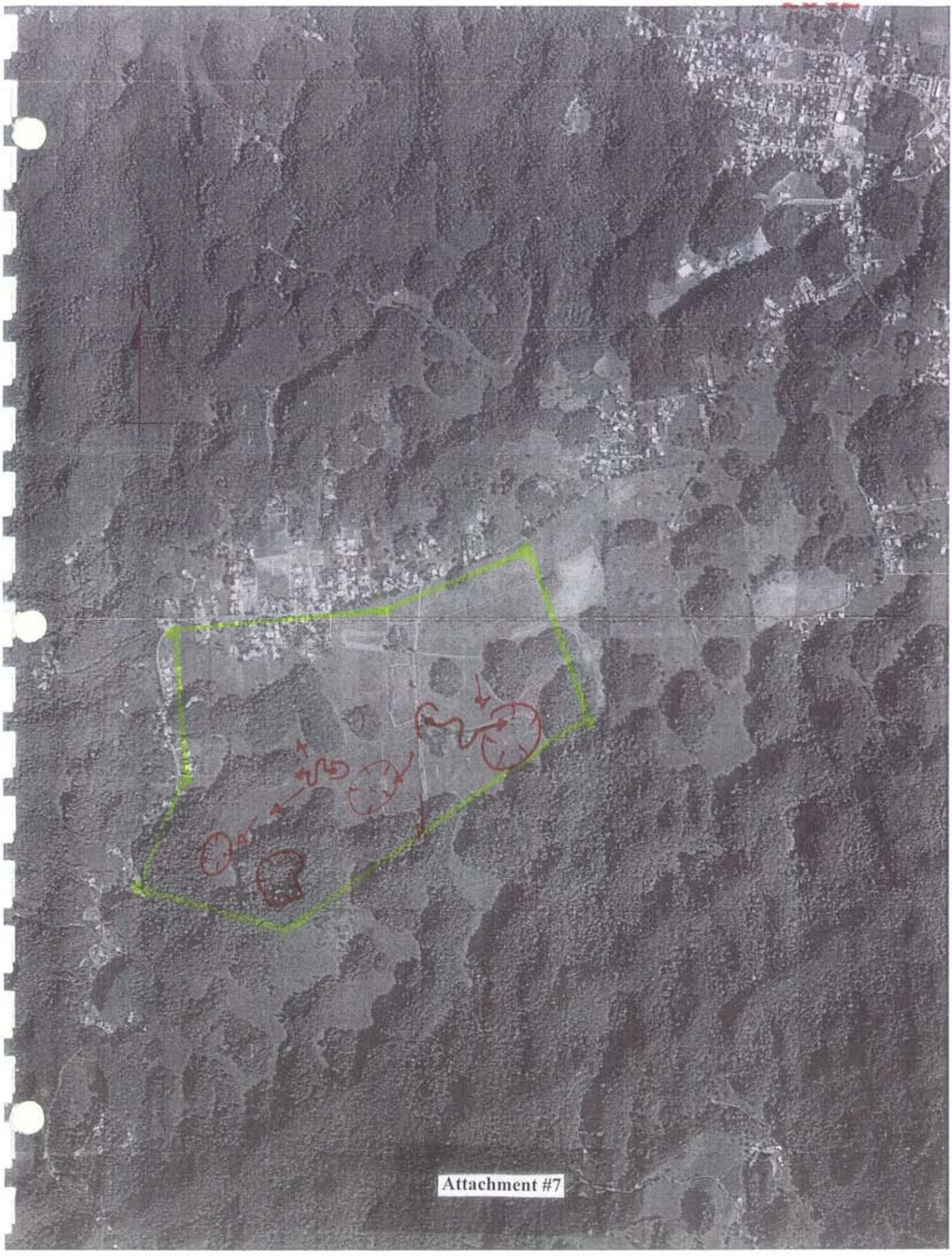
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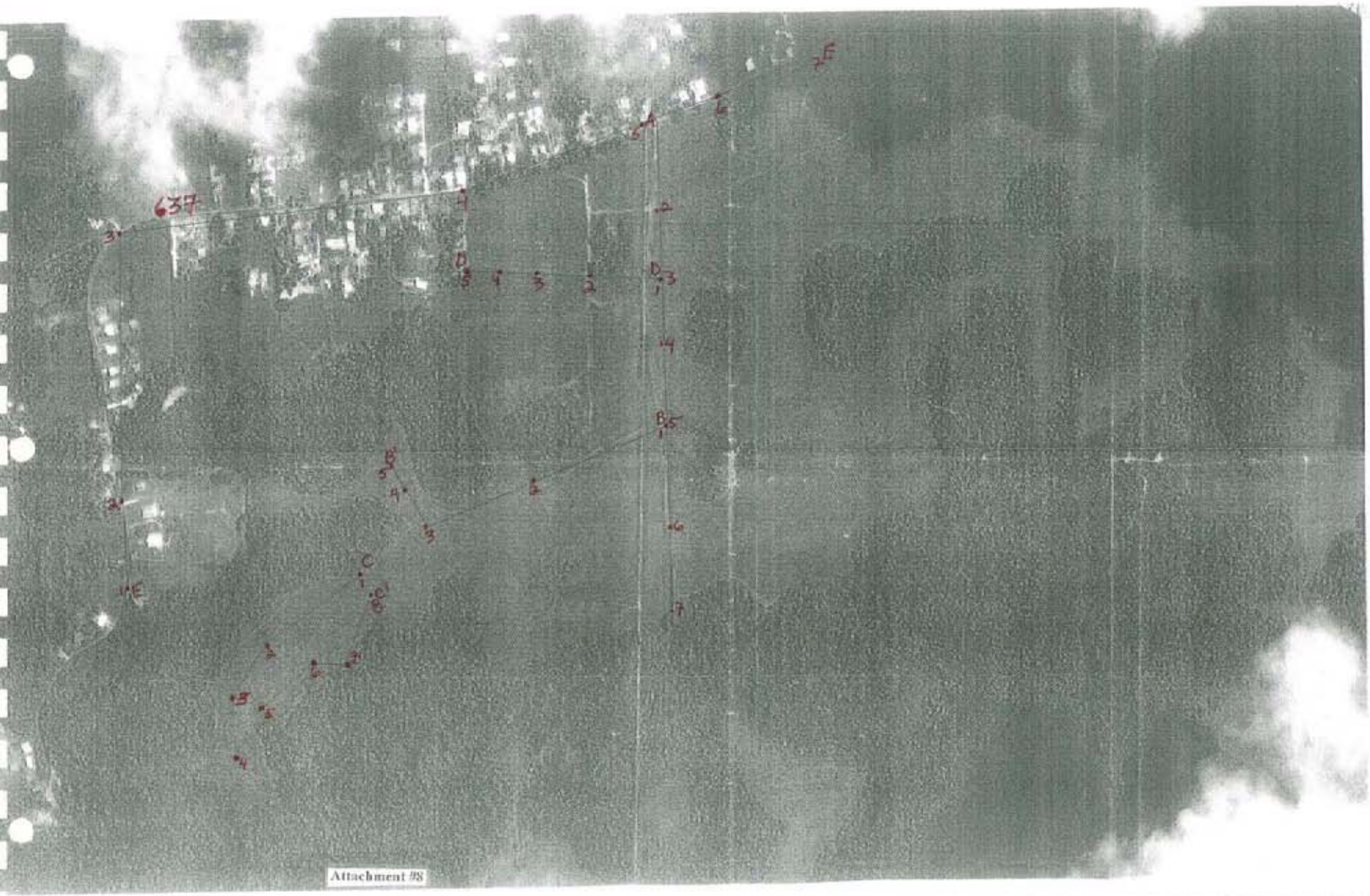
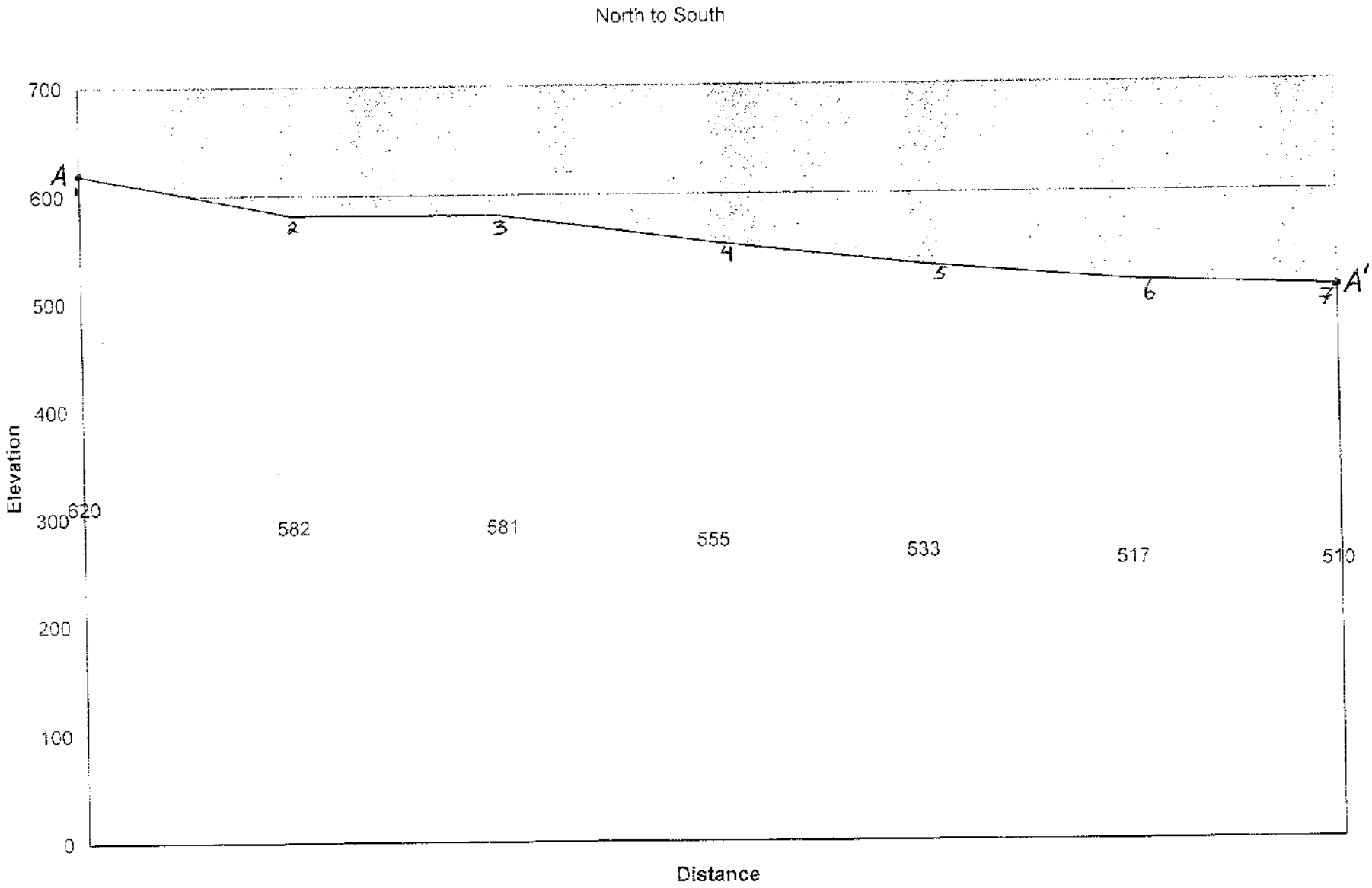
Attachment #7


637
Attachment #8
500 Meters



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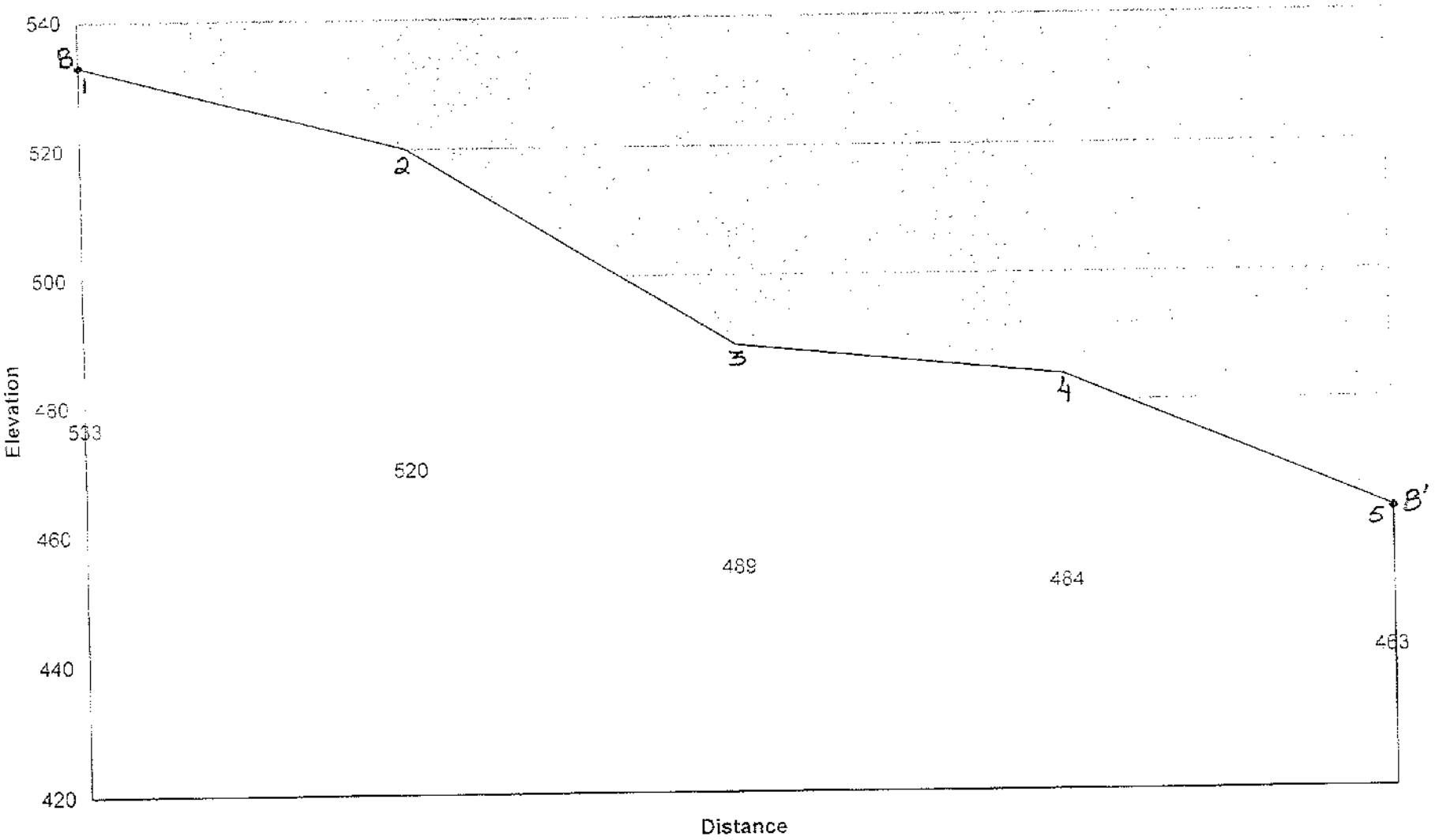
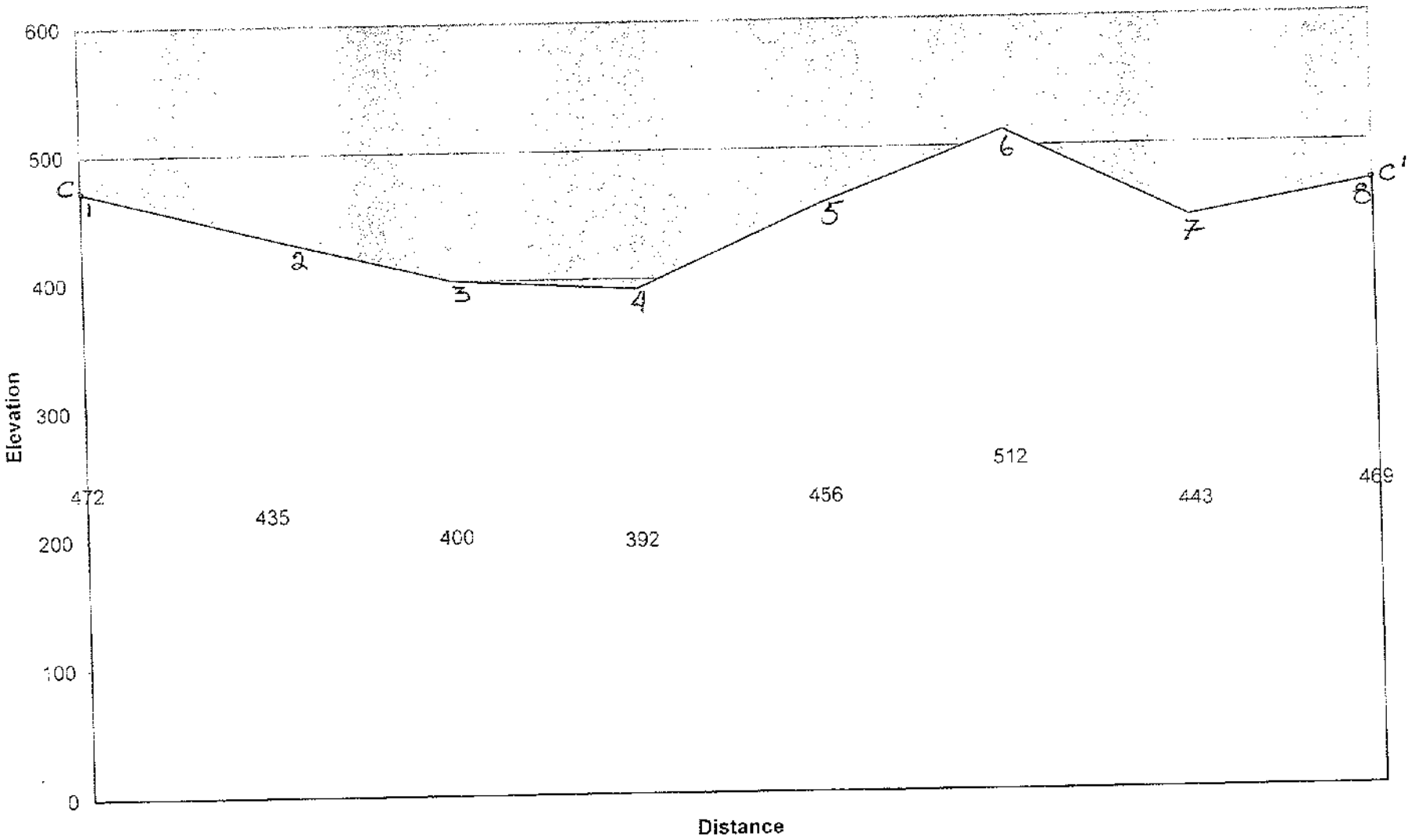
Diagonal Road S.W.



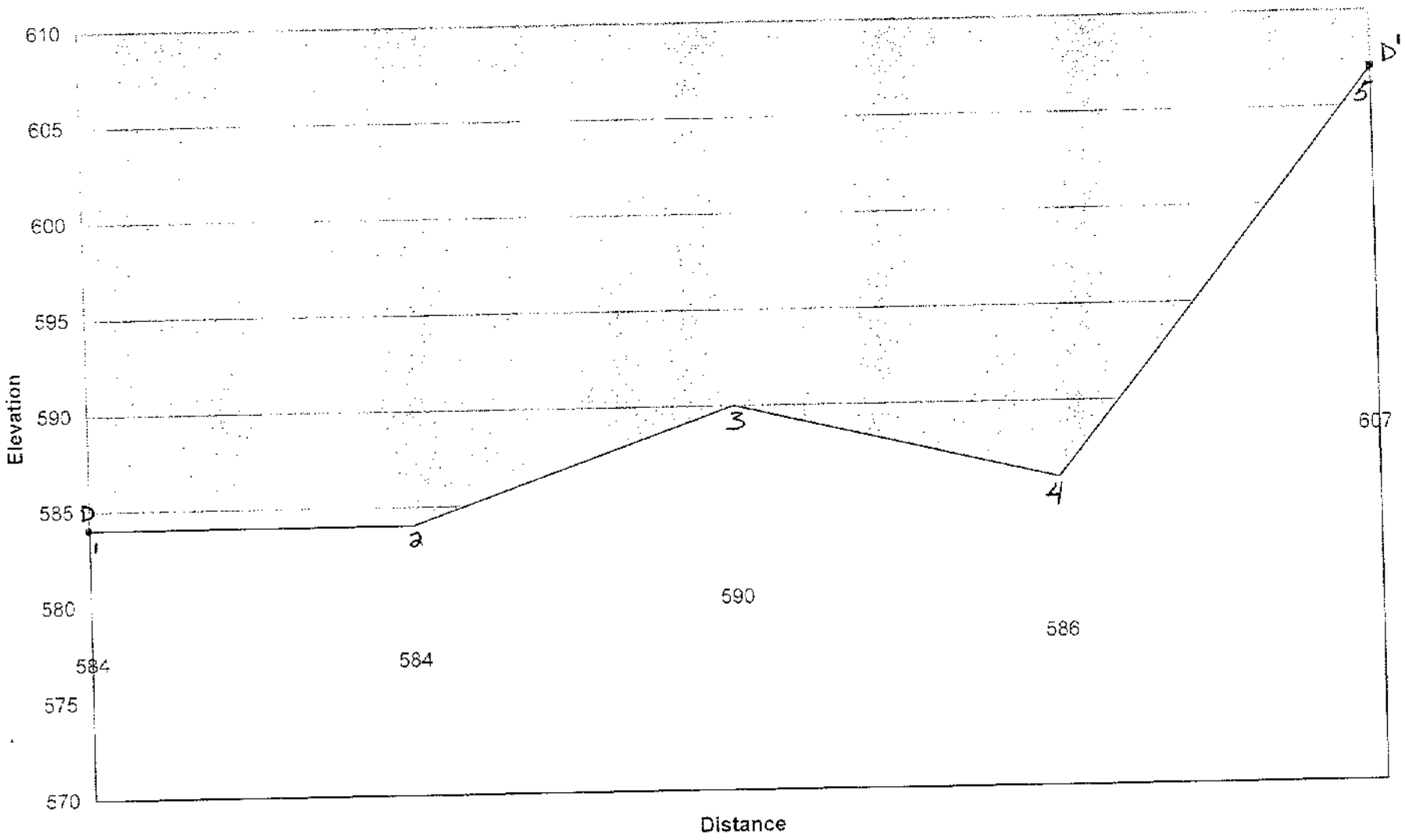
Attachment #10

N.E. to S.W.



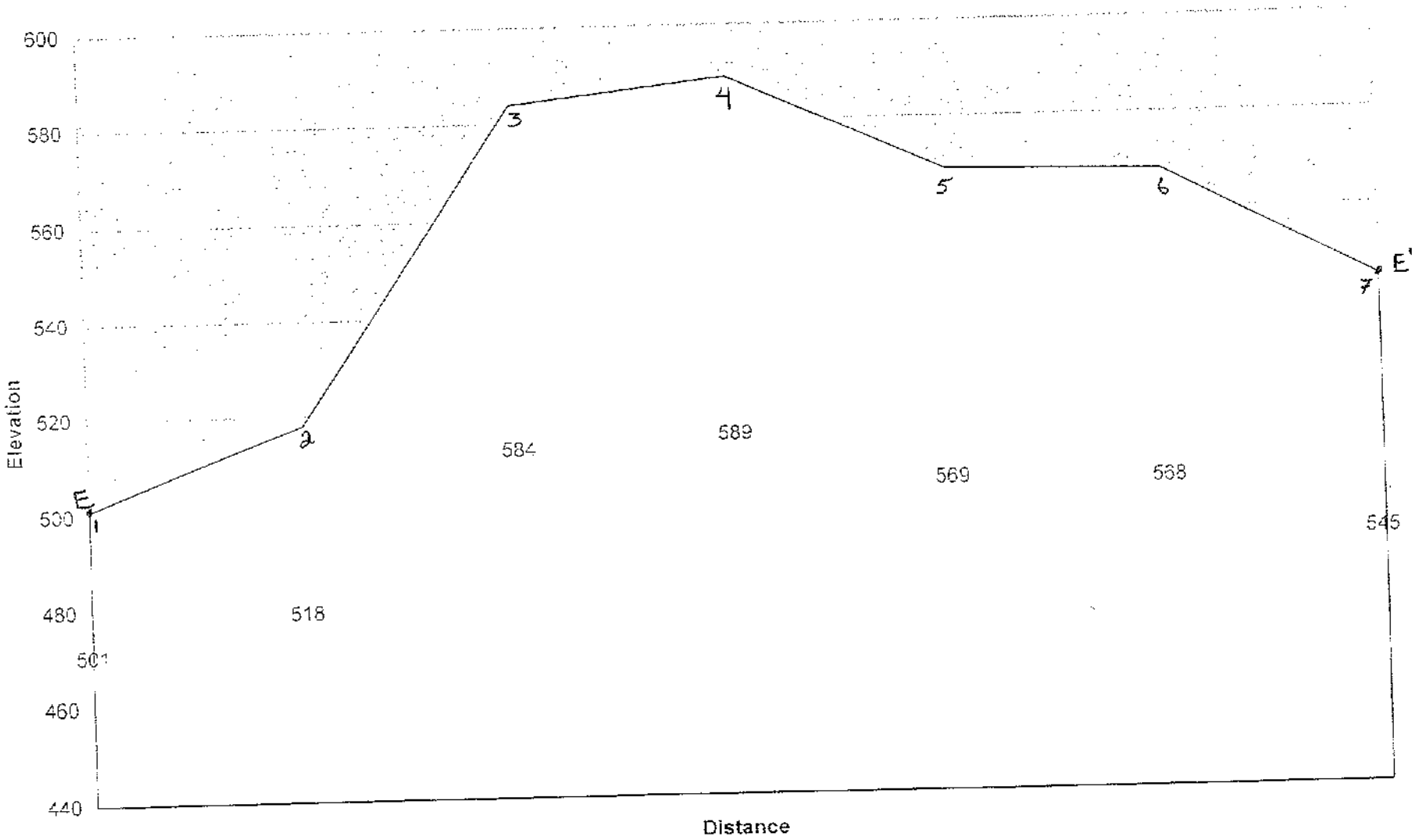
Attachment #11

Camino East to Weast



Attachment #12

Road #637



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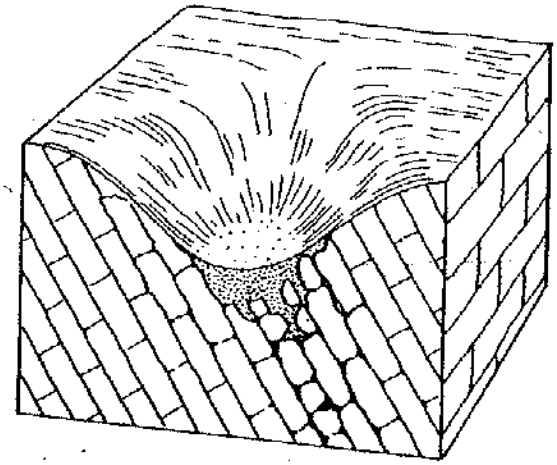
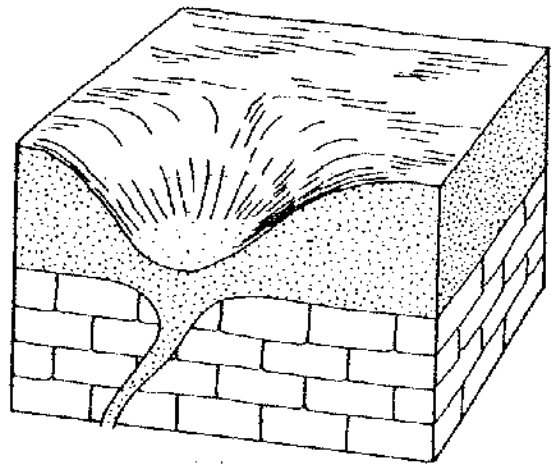
Karst





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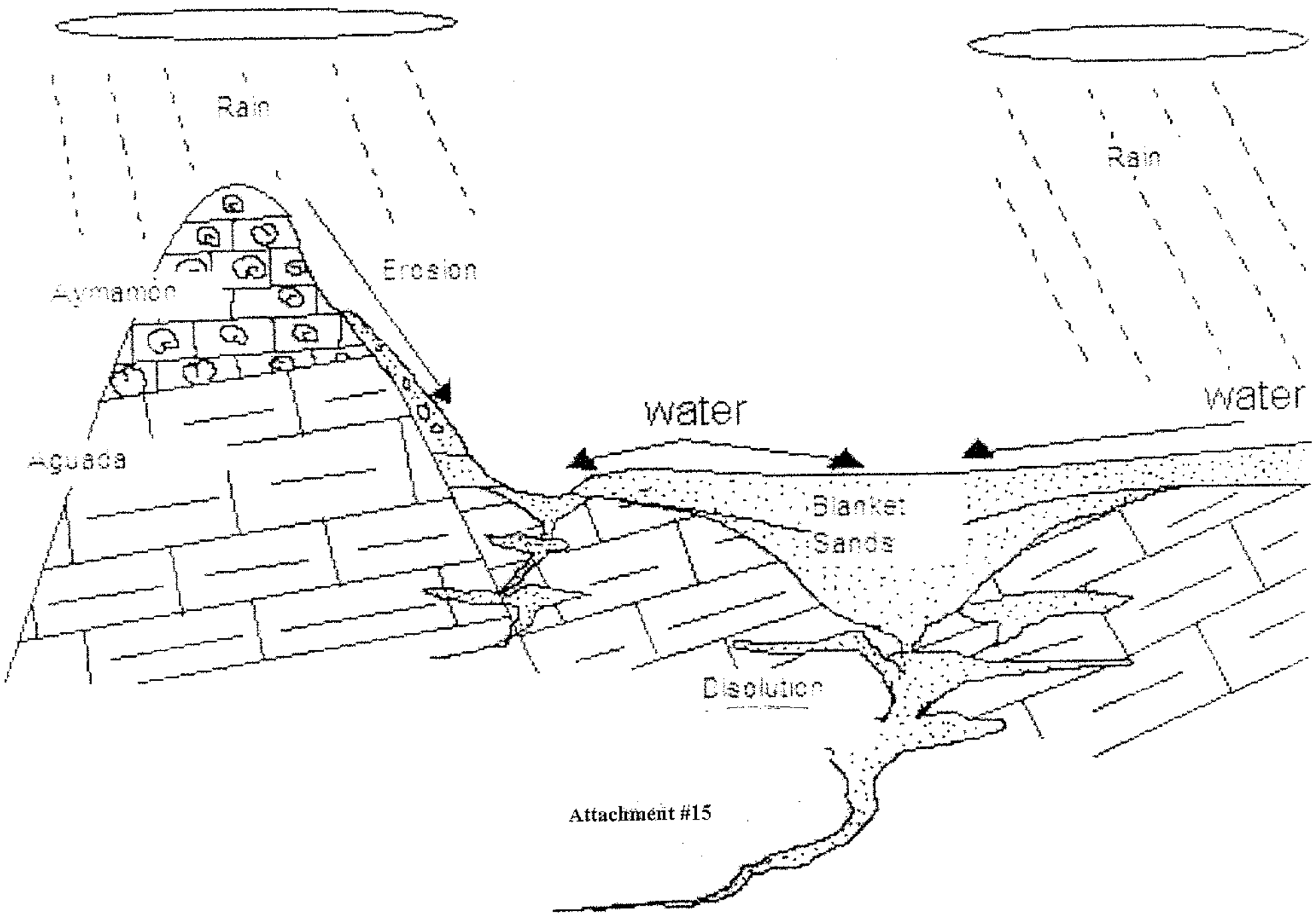
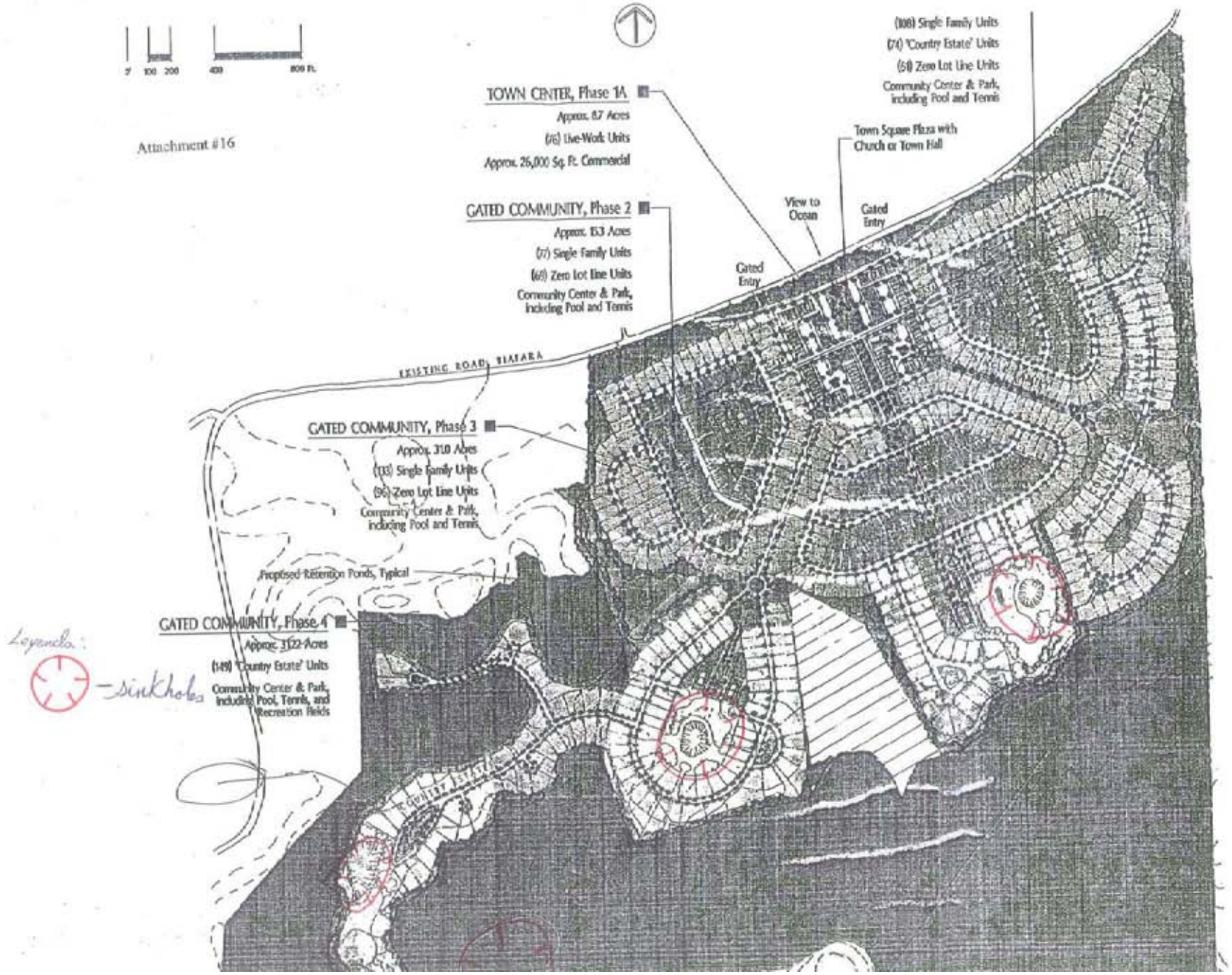


Attachment #15

Attachment #16



Apéndice 10:

Plano de Zonificación Junta Planificación

031-000

052-000

054-000

R-1

R-0

R-1

R-1

R-0

BO. DOMINGO RUIZ — 13

BO. BAJADERO

BO. ARENALEJOS — 14

BO. CARRERAS-22

BO. HATO GRANDE DE ARECIBO — 24

BO. MIRAFLORES — 20

BO. ARROZAL — 21

BO. FACTOR -17

BO. SABANA HOYOS

BOSQUES INSULARES

COMUNIDAD CARRIONES

COMUNIDAD BAJADERO

COMUNIDAD BITHORN

QUEBRADA LA RIQUEZA

RIO GRANDE DE ARECIBO

LIMITE AREA ZONIFICADA

LIMITE AREA ZONIFICADA

LIMITE AREA

LIMITE AREA

PALO BLANCO

MIRAFLORES

FINCA "SANTANA MIRAFLORES PRECIO A"

PRECIO A-1

PRECIO A-2

PRECIO A-3

PRECIO A-4

PRECIO A-5

PRECIO A-6

PRECIO A-7

PRECIO A-8

PRECIO A-9

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MAPA DE ZONIFICACION DE ARECIBO

HOJA NUM. 053-000

CERTIFICACION
ADOPTADA POR LA JUNTA DE PLANIFICACION DE P.R.
RESOLUCION Z-24A-5 17 DE SERTIEMBRE DE 1980

ALMA LUZ CORTES
SECRETARIA INTERINA

SEGUN ENMENDADA EN 17 DE SEPTIEMBRE DE 1980 VIGENCIA 17 DE OCTUBRE DE 1980

030-000	031-000	032-000
052-000	053-000	054-000

INDICE DE HOJAS ADYACENTES

ESCALA 1:10,000

HOJA NUMERO 053-000

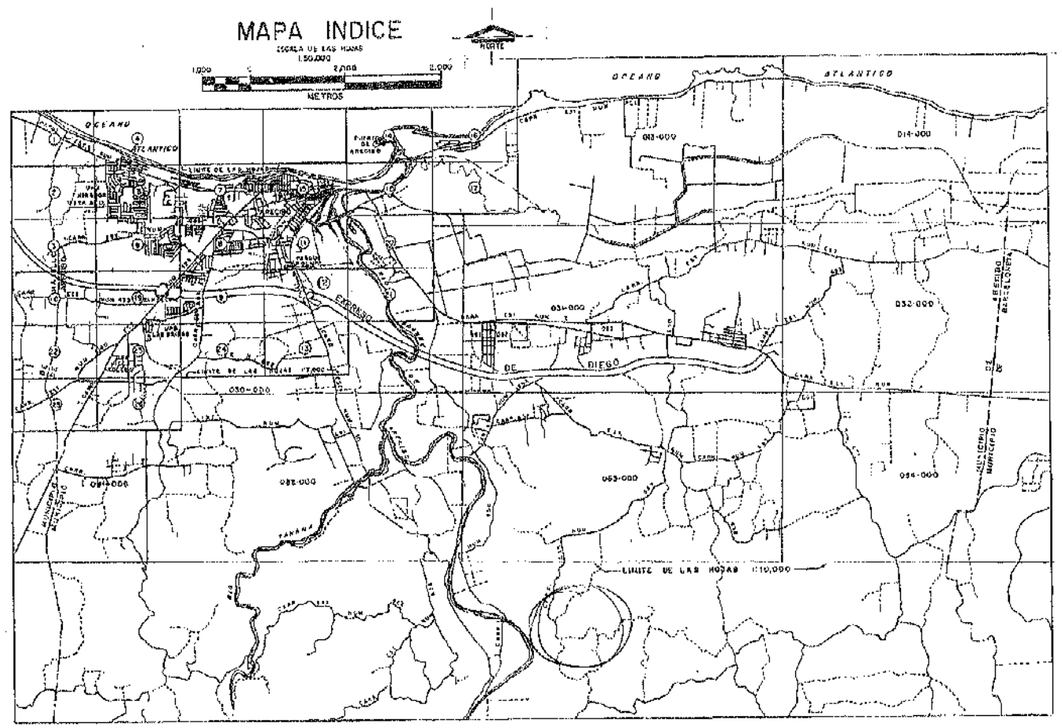
Z-24-A-22

ESTADO LIBRE ASOCIADO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE PLANIFICACION DE PUERTO RICO
SANTURCE, PUERTO RICO

MAPA DE ZONIFICACION DE ARECIBO

ESTE MAPA CONSTA DE CUARENTA Y UNA HOJAS INCLUYENDO ESTA HOJA CLAVE

MAPA INDICE



APROBACION Y ADOPCION

HOJA CLAVE DEL MAPA DE ZONIFICACION DE ARECIBO ADOPTADO POR LA JUNTA DE PLANIFICACION DE PUERTO RICO EL 6 DE MARZO DE 1987, SEGUN ENMENDADO Y EN VIGOR

A TENOR CON LAS DISPOSICIONES DE LA LEY NUM. 75 DE 24 DE JUNIO DE 1975 SEGUN ENMENDADA, ESTA JUNTA DE PLANIFICACION HA APROBADO Y ADOPTADO EL 20 DE DICIEMBRE DE 2002 ENMIENDAS A LAS HOJAS QUE CORRESPONDEN A LOS ACUERDOS POR LA JUNTA MEDIANTE LA RESOLUCION Z-24-A-22 LA HOJA ASI ENMENDADA QUEDA INCLUIDA COMO PARTE DE ESTA NUEVA HOJA CLAVE Y SUSTITUIRA PARA TODOS SUS EFECTOS LAS CORRESPONDIENTES PREVIAMENTE ADOPTADAS.

LAS HOJAS ENMENDADAS Y ASI ENTRADAS EN VIGENCIA CORRESPONDE A LA HOJA NUMERO 25.

ANGEL D. RODRIGUEZ QUIÑONES
PRESIDENTE

CERTIFICADO POR:

CARMEN ROSITA MELENDEZ
SECRETARIA

17 DE ENERO DE 2003
VIGENCIA

SIMBOLOS Y DISTRITOS DE ZONIFICACION

- R-0 RESIDENCIAL DE BAJA DENSIDAD POBLACIONAL CON SOLAR MINIMO DE OCHO MIL (8000) METROS CUADRADOS
- R-1 RESIDENCIAL DE BAJA DENSIDAD POBLACIONAL CON SOLAR MINIMO DE NOVECIENTOS (900) METROS CUADRADOS
- R-2 RESIDENCIAL DE BAJA DENSIDAD POBLACIONAL CON SOLAR MINIMO DE CUATROCIENTOS CINCUENTA (450) METROS CUADRADOS
- R-3 RESIDENCIAL GENERAL CON SOLAR MINIMO DE TRESCIENTOS (300) METROS CUADRADOS
- R-4 RESIDENCIAL GENERAL CON SOLAR MINIMO DE DOSCIENTOS CINCUENTA (250) METROS CUADRADOS
- R-5 RESIDENCIAL DE APARTAMENTOS CON ALTA DENSIDAD POBLACIONAL Y SOLAR MINIMO DE QUINIENTOS (500) METROS CUADRADOS
- R-6 RESIDENCIAL DE APARTAMENTOS CON ALTA DENSIDAD POBLACIONAL (ZONAS ANTIGUAS O HISTORICAS)
- RC-1 RESIDENCIAL COMERCIAL (DISTRITO SOBREPUESTO)
- CO-1 COMERCIAL PARA OFICINA I
- CO-2 COMERCIAL PARA OFICINA II
- C-L COMERCIAL LIVIANO
- C-1 COMERCIAL LOCAL
- C-2 COMERCIAL CENTRAL INTERMEDIO
- C-3 COMERCIAL CENTRAL
- C-4 CENTROS DE MERCADEO
- C-5 CENTROS DE RECREACION COMERCIAL EXTENSA
- C-6 COMERCIAL DE SERVICIOS VECINALES
- I-1 INDUSTRIAL, INDUSTRIAS LIVIANAS
- I-1L INDUSTRIAL, INDUSTRIAS LIVIANAS LIMITADAS
- I-2 INDUSTRIAL, INDUSTRIAS PESADAS
- I-2L INDUSTRIAL, INDUSTRIAS PESADAS LIMITADAS
- M A MEJORARSE
- P USO PUBLICO
- LIMITE DE DISTRITO
- LIMITE DE MUNICIPIO

Apéndice 11:

Estudio de Tránsito

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Estudio de Tránsito
Senderos de Miraflores
Arecibo, PR

Preparado para:
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Mayo 2005

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1 INTRODUCCIÓN

El siguiente informe presenta el estudio de tránsito para el área de influencia asociada a la construcción del proyecto Senderos de Miraflores en el sector Biáfara del barrio Miraflores perteneciente al municipio de Arecibo. El mismo evalúa las condiciones del tránsito presentes en el área al igual que el impacto que tendrá la acción propuesta. Se modelará el funcionamiento de las intersecciones afectadas por el nuevo desarrollo mediante el uso del programa de computadoras para el análisis de intersecciones "**S**ignalised & unsignalised Intersection **D**esign & **R**esearch **A**id", con el fin de determinar el efecto final del mismo en las intersecciones de interés. También se evaluará el efecto de las mejoras geométricas que sean necesarias para mitigar el efecto del proyecto.

2 LOCALIZACIÓN Y DESCRIPCIÓN DE LA ACCIÓN PROPUESTA

El proyecto propuesto estará localizado en un predio de terreno de unas 469 cuerdas adyacente a la PR-637 en el sector Biafara del barrio Miraflores perteneciente al municipio de Arecibo. El uso propuesto para la parcela en cuestión es uno de mayormente residencial con una pequeña área comercial y de hotel. El mismo constará de un total de 834 unidades de vivienda unifamiliar, 76 apartamentos, un hotel de 25 habitaciones y unos 26,000 pies cuadrados de área comercial.

El desarrollo planifica proveer dos accesos unidireccionales a la parcela. Los mismos estarían localizados en la mencionada carretera estatal al sur de la intersección de esta con la PR-638. La referenciada carretera (PR-637) provee acceso al barrio Biáfara desde la PR-638 que junto a la PR-663 conducen a la PR-2; ambas carreteras son de carácter rural.

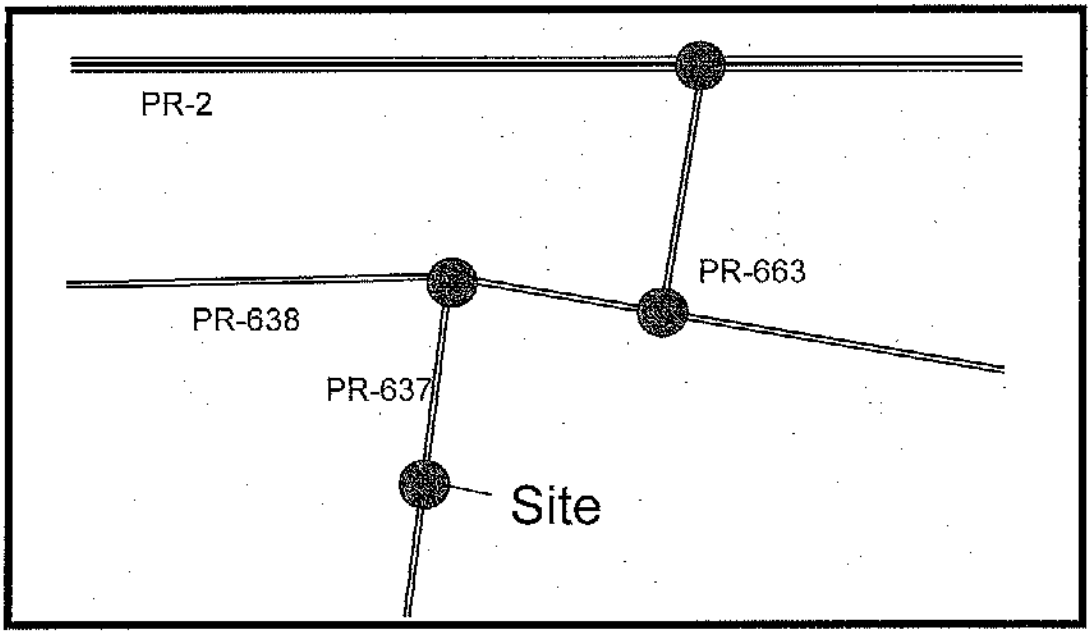


Figura 1 Diagrama esquemático de localización del proyecto

3 METODOLOGÍA PARA LA EVALUACIÓN DEL IMPACTO EN EL TRÁNSITO DEBIDO A LA ACCIÓN PROPUESTA

1) El jueves 27 de enero de 2005 se realizaron conteos de vehículos en el área de estudio durante las 12 horas de mayor afluencia vehicular. Los horarios de conteos realizados fueron de 6:00 AM a 6:00 PM. Estos conteos se realizaron para determinar el número de vehículos que utilizan las vías de tránsito cercanas al área del proyecto. Las intersecciones medidas fueron:

   a) La carretera PR-2 con la PR-663

   b) La carretera PR-663 con la PR-638

   c) La carretera PR-638 con la PR-637

2) Dado que el proyecto no estará completado hasta aproximadamente el año 2015, los flujos del año 2005 fueron expandidos a ese año usando un factor de crecimiento anual de 1.5%.

3) Utilizando como referencia el Manual de Generación de Viajes del ITE se estimó el número de viajes que se generarían desde y hacia el proyecto propuesto.

4) Con todos los datos recopilados se procedieron a analizar las intersecciones en cuestión. Para realizar este análisis se utilizó el programa de computadoras aaSIDRA 2.1. Las situaciones estudiadas fueron los períodos pico de la mañana y de la tarde con los flujos existentes, y las mismas situaciones al añadirse el crecimiento anual esperado y los flujos generados por el proyecto. Las intersecciones estudiadas son las mencionadas anteriormente.

4 TEORÍA

4.1 Evaluación sobre el Nivel de Servicio (LOS) para una intersección:

El nivel de servicio es la metodología más conocida utilizada para la evaluación de una facilidad. El nivel de servicio representa las condiciones de operación de las intersecciones: el nivel de servicio "A" representa las condiciones excelentes de tránsito y el nivel "F", las peores condiciones. Tanto las intersecciones semaforizadas como las no semaforizadas pueden ser categorizadas utilizando esta metodología. Estos niveles de servicio a su vez se encuentran basados en las demoras promedio que tienen los vehículos en las intersecciones. A continuación se definen las categorías para cada nivel de servicio.

LOS A: Excelente

Esta es una condición de flujo libre, acompañada por bajos volúmenes de tránsi2to y altas velocidades. Hay poca o ninguna restricción en maniobrabilidad del conductor y los conductores pueden mantener sus deseadas velocidades con poco o ningún retraso.

LOS B: Muy Buena

En esta condición, las velocidades de operación comienzan a estar restringidas un tanto por las condiciones del tránsito. Los conductores aún tienen una libertad considerable para seleccionar su velocidad y carril de operación.

LOS C: Buena

Las velocidades y maniobrabilidad se vuelven más controladas por volúmenes de tránsito más altos. La mayoría de los conductores están restringidos en su libertad para seleccionar su propia velocidad, cambiar de carril o pasar.

LOS D: Aceptable

Este nivel de servicio se acerca a un flujo inestable, con velocidades operacionales tolerables siendo mantenidas, aunque considerablemente afectadas por los cambios en las condiciones operacionales. Los conductores tienen poca libertad para maniobrar y la comodidad y conveniencia son bajas.

LOS E: Capacidad

El flujo de tránsito se vuelve inestable y podría haber paradas momentáneas.

LOS F: Mala

En esta condición, la velocidad operacional podría bajar a cero y resultar en colas de tránsito.

4.2 Relación entre demoras y Nivel de Servicio

La tabla #1, muestra las diferentes relaciones entre el nivel de servicio y las demoras promedio por cada vehículo en las intersecciones controladas ya sea por semáforo, señales de PARE o CEDA, o en rotondas. (Manual de aaSIDRA 2.1). Estas demoras tienen como componentes la demora de viajar a través de la intersección mas la demora de la detención como consecuencia de la intersección.

Tabla 1 Criterio del Nivel de Servicio para intersecciones

NIVEL DE SERVICIO	DEMORA DE VEHÍCULOS (SEG.)	
	Semáforo y Rotonda	PARE y CEDA
A	d ≤ 10	d ≤ 10
B	10 < d ≤ 20	10 < d ≤ 15
C	20 < d ≤ 35	15 < d ≤ 25
D	35 < d ≤ 55	25 < d ≤ 35
E	55 < d ≤ 80	35 < d ≤ 50
F	80 < d	50 < d

4.3 Glosario

A continuación se presenta una lista de términos comunes en la práctica de la ingeniería de tránsito, según definidos por la Autoridad de Carreteras y Transportación.

1) **Acceso (intersección)** – está caracterizado por un grupo de carriles en una dirección de la intersección, incluyendo los movimientos a la izquierda, recto y a la derecha.

2) **ADT** – "Average Daily Traffic", tránsito promedio diario en una facilidad de una carretera.

3) **Área de estudio** – área geográfica que contiene las intersecciones y segmentos más críticos de una carretera, los cuales se esperan sean afectados por el tránsito a ser generado por el desarrollo.

4) **Ciclo** – el período de tiempo requerido para una secuencia completa de indicaciones del semáforo.

5) **Desarrollo** – proyectos residenciales, comerciales, de oficinas, de hospederías e industriales, entre otros, que serán construidos en un predio de terreno sin desarrollar o que forman parte de una reconstrucción o expansión de una edificación existente.

6) **Día típico** – un martes, miércoles o jueves durante los días de clase entre los meses de enero a mayo y de agosto a diciembre. Para los usos comerciales, el sábado podrá incluirse entre los días típicos.

7) **Estudio operacional** – el análisis del impacto potencial al tránsito causado por un desarrollo propuesto. Este tipo de estudio dependerá del tipo y tamaño del proyecto. Para propósitos de este documento, un estudio operacional consistirá de un estudio de accesos o un estudio de tránsito.

8) **Factor de hora pico** – una medida de la fluctuación en la demanda vehicular dentro de la hora pico.

9) **Fase** – una parte del ciclo asignado a un movimiento de tránsito que tenga el derecho de paso o a una combinación de movimientos de tránsito que tengan simultáneamente el derecho de paso durante uno o más intervalos.

10) **Hora pico –** un período de una hora durante la mañana (AM) o durante la tarde (PM) que representa el volumen de tránsito más alto en el sistema, resultado de la suma de los volúmenes de cuatro (4) períodos de quince (15) minutos consecutivos.

11) **Modelos de micro simulación** – modelos que simulan el movimiento individual de vehículos, basados en teorías de cambio de carril, dirección de los vehículos y forma de conducir.

12) **Nivel de servicio ("Level of Service" - LOS)** – una medida cualitativa que describe las condiciones operacionales de un componente del sistema de transportación. Generalmente descrito por los siguientes factores: velocidad, tiempo de viaje, demora, interrupciones en el tránsito y seguridad.

13) **Semáforo actuado** – un tipo de sistema de semáforos mediante el cual se varían los intervalos de tiempo de acuerdo con las demandas del tránsito registradas por la actuación de los detectores localizados en el pavimento de rodaje.

14) **Semáforo semiactuado** – un tipo de sistema de semáforos donde los detectores son colocados en los accesos de menor flujo vehicular para permitirle prioridad de verde a los accesos principales.

15) **Semáforo de tiempo fijo** – un tipo de sistema de semáforos que opera con programas predeterminados de ciclos en intervalos.

16) **Volumen** – el número de personas o vehículos pasando por un punto de un carril o un segmento de carretera durante cierto intervalo de tiempo.

5 ANÁLISIS DE TRÁNSITO

5.1 Afluencia vehicular

A modo de determinar el patrón de viajes actuales del sector se realizaron conteos manuales en tres (3) intersecciones. Dichos conteos se realizaron en periodos de quince (15) minutos de 6:00 AM a 6:00 PM el día 27 de enero de 2005. Como se menciona en la sección 3, las siguientes intersecciones fueron seleccionadas de los alrededores del proyecto:

a) La carretera PR-2 con la PR-663

b) La carretera PR-663 con la PR-638

c) La carretera PR-638 con la PR-637

Las tablas en el apéndice 1 ilustran el flujo vehicular obtenido mediante dichos conteos manuales. Para determinar la hora pico se buscaron los cuatro periodos consecutivos de 15 minutos con más flujo. Una vez se encontraba esta hora en los períodos AM y PM, se buscaba el período de 15 minutos con mayor flujo, y este valor multiplicado por cuatro era el que se utilizaba para la modelación. Dado que ya se está usando el valor del período de 15 minutos más alto, el factor de hora pico a utilizarse es 1.0.

Los flujos mostrados están identificados por dos letras separadas por un guión. La primera representa el acceso de procedencia del movimiento en inglés: North, South, East & West. La segunda letra representa el tipo de movimiento: Left, Thru & Right.

Las siguientes tablas muestran los flujos vehiculares por acceso de las intersecciones estudiadas.

Tabla 2 Flujos PR-2 con la PR-663 (Condición Presente)

2005	S-L	S-R	E-L	E-T	W-T	W-R	Total
Pico AM	260	124	68	736	816	72	2076
Pico PM	68	108	196	1392	724	136	2624

Tabla 3 Flujos PR-663 con la PR-638 (Condición Presente)

2005	E-T	E-R	N-L	N-R	W-L	W-T	Total
Pico AM	140	20	8	140	304	224	836
Pico PM	136	20	28	156	220	72	632

Tabla 4 Flujos PR-638 con la PR-637 (Condición Presente)

2005	S-L	S-R	E-L	E-T	W-T	W-R	Total
Pico AM	128	56	28	328	496	12	1048
Pico PM	28	44	32	288	276	112	780

5.2 Crecimiento Anual

Los flujos obtenidos en el año 2005 fueron expandidos a los años 2015 y 2020, año en que de entiende el proyecto estará operando y 5 años después de esta fecha; según se requerido por las GUÍAS PARA LA PREPARACIÓN DE ESTUDIOS OPERACIONALES DE ACCESOS Y DE TRANSITO PARA PUERTO RICO. Los flujos de la zona fueron expandidos utilizando un factor de 1.5% de crecimiento anual.

5.3 Generación de Viajes del proyecto Senderos de Miraflores

Para el cómputo de la generación de viajes utilizamos las categorías 210, 232, 260, 310, 814 del Manual de Generación de Viajes de ITE como clasificación del uso del terreno. Las variables independientes utilizadas fueron el número de pies cuadrados de área rentable, el numero de unidades residenciales y la cantidad de habitaciones de hotel. La siguiente tabla muestra los resultados obtenidos.

Tabla 5 Generación de Viajes del proyecto Senderos de Miraflores

USO	CATEGORIA	UNIDADES	ADT			AM PEAK			PM PEAK		
			Total	In	Out	Total	In	Out	Total	In	Out
Residencias Unif.	210	812.000	7,141	3,570	3,570	578	144	439	706	445	261
"Walk Up"	232	76.000	510	255	255	51	10	41	41	26	16
Hogares Recreac.	260	22.000	70	35	35	4	2	1	6	2	3
Hotel	310	25.000				7	4	3	15	8	7
"Specialty Retail"	814	26.000	1,150	575	575	NA	NA	NA	84	37	47
Pass-By					0.5	0	0	0	42	18	23
Totales						640	161	484	810	499	311

La tabla anterior muestra los flujos que estarian accediendo a la PR-637 desde y hacia del desarrollo Senderos de Miraflores.

5.4 Distribución de Viajes

Para realizar la distribución de los viajes que generara el proyecto bajo estudio, presumimos que un 75% de los viajes generados se dirigirían desde y hacia el Norte del proyecto a través de las carreteras PR-637,638 y 663; en dirección hacia la PR-2. El restante 25% del total de viajes generados se presume se distribuirá a través de las antes mencionadas carreteras realizando viajes locales o hacia otros barrios del Municipio. Esta distribución pretende acentuar la ruta más cómoda y rápida a la PR-2 Siendo esta la facilidad de vial de mayor versatilidad y capacidad en el área.

Los flujos fueron luego distribuidos en la intersección entre la PR-2 y la PR-663 siguiendo la distribución de viajes existentes en ella.

5.5 Tránsito Futuro

Para la modelación de las situaciones futuras (2015 y 2020) se tomaron los flujos de la situación base, se multiplicaron por el factor de crecimiento anual y se le añadieron los flujos que se obtuvieron en la etapa de generación de viajes,

repartidos de acuerdo a la distribución que se explicó anteriormente. En adición estos escenarios incluyen análisis de dos nuevas intersecciones; la cuales sirven de acceso y egreso al desarrollo desde la PR-637.

Las siguientes tablas muestran los flujos modelados en los mencionados escenarios.

Tabla 6 Flujos PR-2 con la PR-663 (Condición Futura 2015)

2015	S-L	S-R	E-L	E-T	W-T	W-R	Total
Pico AM	544	238	139	854	947	145	2867
Pico PM	200	265	452	1615	840	308	3680

Tabla 7 Flujos PR-663 con la PR-638 (Condición Futura 2015)

2015	E-T	E-R	N-L	N-R	W-L	W-T	Total
Pico AM	170	23	9	283	716	284	1485
Pico PM	183	23	32	556	489	99	1382

Tabla 8 Flujos PR-638 con la PR-637 (Condición Futura 2015)

2015	S-L	S-R	E-L	E-T	W-T	W-R	Total
Pico AM	222	452	161	381	576	38	1830
Pico PM	79	300	437	334	320	204	1674

Tabla 9 Flujos PR-637 con la salida del proyecto (Condición Futura 2015)

2015	S-T	W-L	W-R	N-T	Total
Pico AM	214	24	460	199	897
Pico PM	83	15	296	641	1035

Tabla 10 Flujos PR-637 con la entrada al proyecto (Condición Futura 2015)

2015	S-T	S-R	N-L	N-T	Total
Pico AM	214	8	153	46	421
Pico PM	83	25	474	167	749

Tabla 11 Flujos PR-2 con la PR-663 (Condición Futura 2020)

2020	S-L	S-R	E-L	E-T	W-T	W-R	Total
Pico AM	567	249	145	920	1020	151	3052
Pico PM	206	215	470	1740	905	320	3856

Tabla 12 Flujos PR-663 con la PR-638 (Condición Futura 2020)

2020	E-T	E-R	N-L	N-R	W-L	W-T	Total
Pico AM	183	25	10	296	743	304	1561
Pico PM	195	25	35	570	459	105	1389

Tabla 13 Flujos PR-638 con la PR-637 (Condición Futura 2020)

2020	S-L	S-R	E-L	E-T	W-T	W-R	Total
Pico AM	233	457	164	410	620	39	1923
Pico PM	82	304	440	360	345	214	1745

Tabla 14 Flujos PR-637 con la salida del proyecto (Condición Futura 2020)

2020	S-T	W-L	W-R	N-T	Total
Pico AM	231	24	460	215	930
Pico PM	90	15	296	691	1092

Tabla 15 Flujos PR-637 con la entrada al proyecto (Condición Futura 2020)

2020	S-T	S-R	N-L	N-T	Total
Pico AM	249	8	153	54	464
Pico PM	122	25	474	243	864

5.6 Modelación de Tránsito

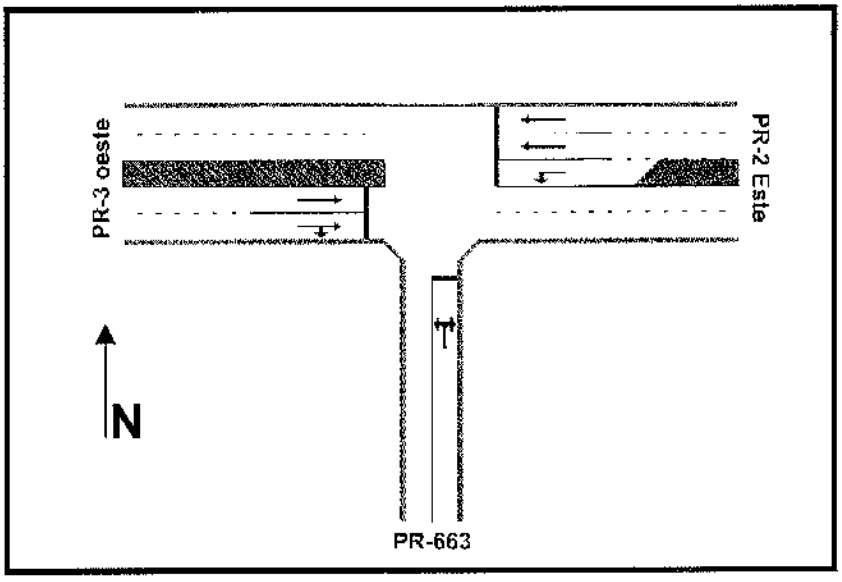
Para la evaluación de las intersecciones afectadas se utilizó el programa aaSIDRA 2.1. Este modelo permite la evaluación de intersecciones semaforizadas y de prioridad, además de la optimización de las de semáforo, y es preferido debido a su capacidad de predicción, aún en situaciones de sobresaturación. Se realizaron

modelaciones para los periodos pico de la mañana y de la tarde para la situación actual y las situaciones futuras (2015 y 2020).

5.6.1 Intersección PR-2 y la PR-663

Esta intersección tiene una configuración en "T" y esta controlada por un sistema de semáforo. La misma consiste al presente de accesos en ambas direcciones. La PR-2 , considerada como la vía principal consiste de dos carriles por dirección mientras la de menor jerarquía (PR-663) opera con uno en cada sentido. Excepto por el carril corto que de viraje a la izquierda que se presenta en el acceso Este los demás poseen un ancho aproximado de 12 pies mientras este ultimo solo es de 10. La figura a continuación muestra de forma grafica lo antes descrito

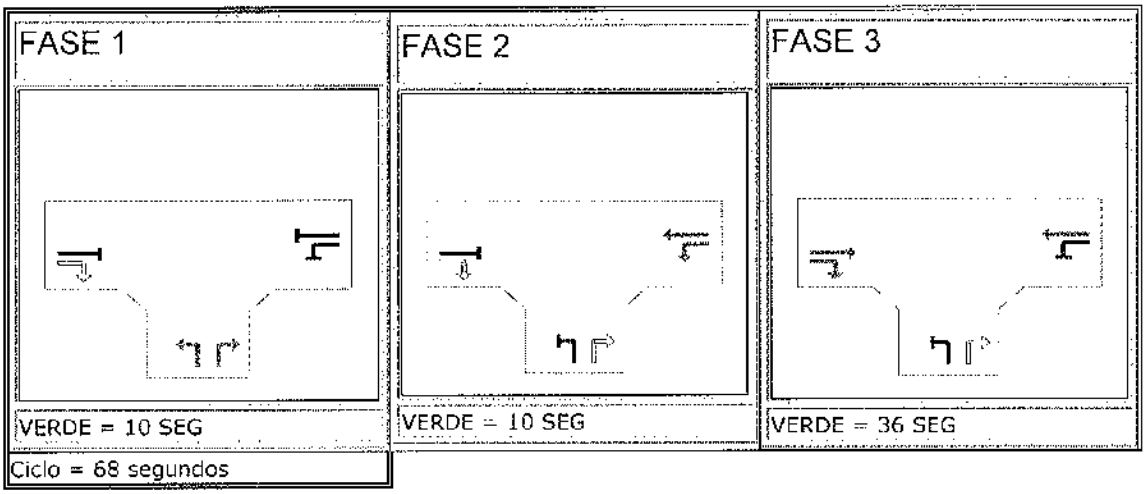
Figura 3 Esquema geométrico de la intersección entre la PR-2 y la PR-663



Esta facilidad se localiza al norte del proyecto. La carretera PR-2 discurre en el eje Este-Oeste y provee conexión a la zona urbanizada del municipio y a municipios

adyacentes. La PR-663 corre en el eje Norte-Sur y sirve de colectora a la mencionada carretera estatal y de conexión a la PR-638.

Figura 4 Tiempos del semaforo existentes PR-2 y PR-663



La siguiente tabla muestra los resultados obtenidos para las distintas situaciones modeladas.

Tabla 16 Resultados modelación aaSIDRA PR-2 y PR-663

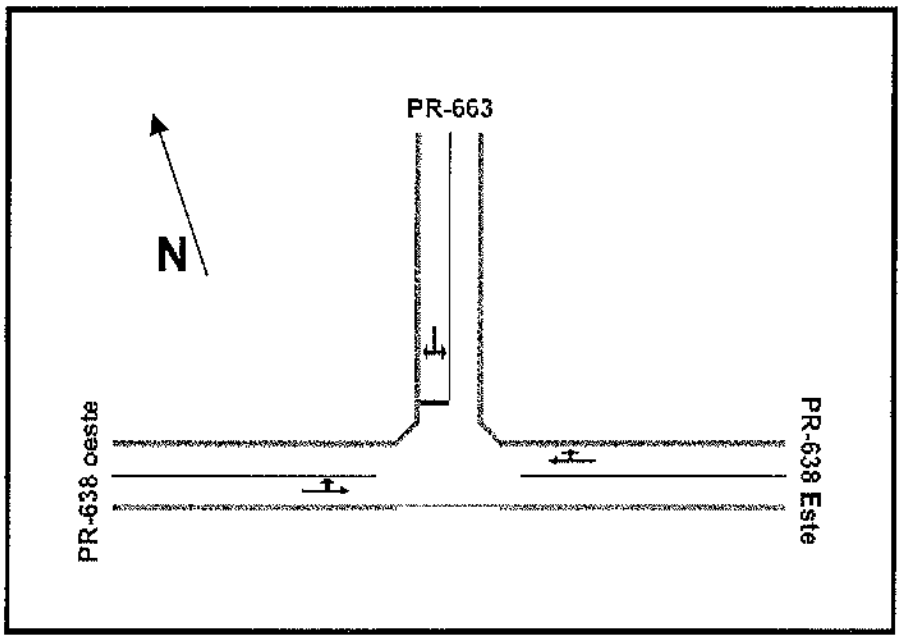
	DEMORA PROMEDIO POR VEHÍCULO (D) [SEG.], NIVEL DE SERVICIO (NS) Y COLA PROMEDIO (CP) [METROS]									
	Acceso Sur PR-663		Acceso Este PR-2		Acceso Norte N/A		Acceso Oeste PR-2		Total Int.	
	D, NS	CP	D, NS	CP	D, NS	CP	D, NS	CP	D, NS	CP
Base 2005										
AM	66.6, E	45	6.2, A	4	**N/A**	**N/A**	11.1, B	9	19.4, C	45
PM	10.9, B	1	8.8, A	13	**N/A**	**N/A**	11.4, B	9	9.8, A	13
Futuro 2015										
AM	27, C	28	15.4, B	10	**N/A**	**N/A**	25.5, C	28	22.4, C	28
PM	28.5, C	16	9.3, A	18	**N/A**	**N/A**	42.3, D	46	22, C	46
Futuro 2020										
AM	33, C	38	14, B	9	**N/A**	**N/A**	29.4, C	34	25, C	38
PM	32.5, C	18	9, A	17	**N/A**	**N/A**	44.9, D	52	23, C	52

Para obtener los resultados presentados en la tabla fue necesario realizar cambios en la geometría de la intersección; así como la optimización de los tiempos en el programados en el semáforo. El cambio geométrico consiste en la inclusión de un carril corto de viraje a la derecha en el acceso sur (PR-663).

5.6.2 Intersección PR-663 con PR-638

Esta intersección tiene una configuración de tipo "T" y está controlada por Pare. La misma consiste de accesos en ambas direcciones con un carril por dirección. El Pare se localiza en el acceso Norte dándole prioridad a los flujos en la PR-638.

Figura 5 Esquema geométrico de la intersección entre la PR-663 y la PR-638



La siguiente tabla muestra los resultados obtenidos para los escenarios modelados.

Tabla 17 Resultados modelación aaSIDRA PR-663 y PR-638

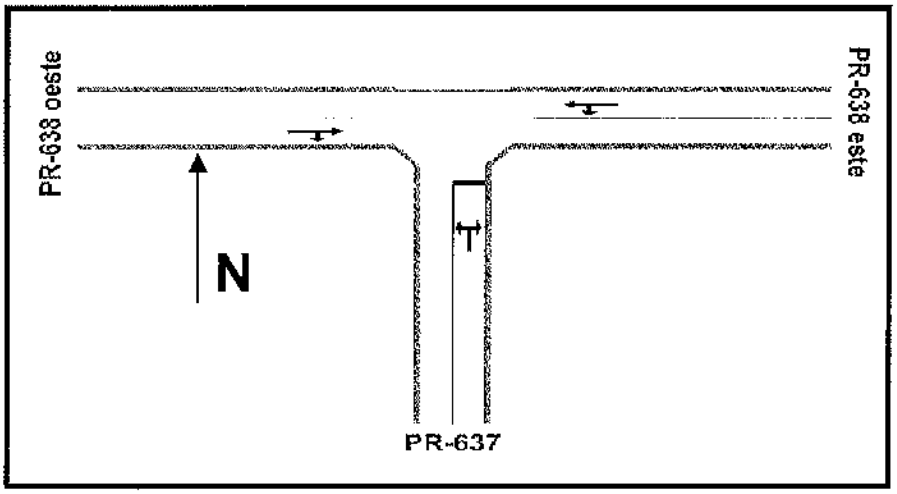
	DEMORA PROMEDIO POR VEHÍCULO (D) [SEG.], NIVEL DE SERVICIO (NS) Y COLA PROMEDIO (CP) [METROS]									
	Acceso Sur N/A		Acceso Este PR-638		Acceso Norte PR-663		Acceso Oeste PR-638		Total Int.	
	D, NS	CP	D, NS	CP	D, NS	CP	D, NS	CP	D, NS	CP
Base 2005										
AM	**N/A**	**N/A**	1, A	0	12.1, B	0	5.9, A	1	6	1
PM	**N/A**	**N/A**	1, A	0	12.3, B	1	7.1, A	0	7.1	1
Futuro 2015										
AM	**N/A**	**N/A**	1, A	0	13.6, B	2	10.9, B	9	10.1	9
PM	**N/A**	**N/A**	0.9, A	0	17.9, C	8	8.7, A	2	11.5	8
Futuro 2020										
AM	**N/A**	**N/A**	1, A	0	14.6, B	2	12.2, B	13	11.2	13
PM	**N/A**	**N/A**	0.9, A	0	18.7, C	10	8.7, A	2	11.9	10

Esta intersección, a diferencia de la anterior, cuenta con capacidad suficiente para manejar el aumento en tránsito esperado.

5.6.3 Intersección PR-638 y PR-637

Esta intersección tiene una configuración en "T" y esta controlada por Pare. Todos sus accesos consisten de un carril por dirección y la vía prioritaria lo es la PR-638 (Este – Oeste)

Figura 6 Esquema geométrico de la intersección entre la PR-638 y la PR-637



La siguiente tabla muestra los resultados obtenidos para las distintas situaciones modeladas.

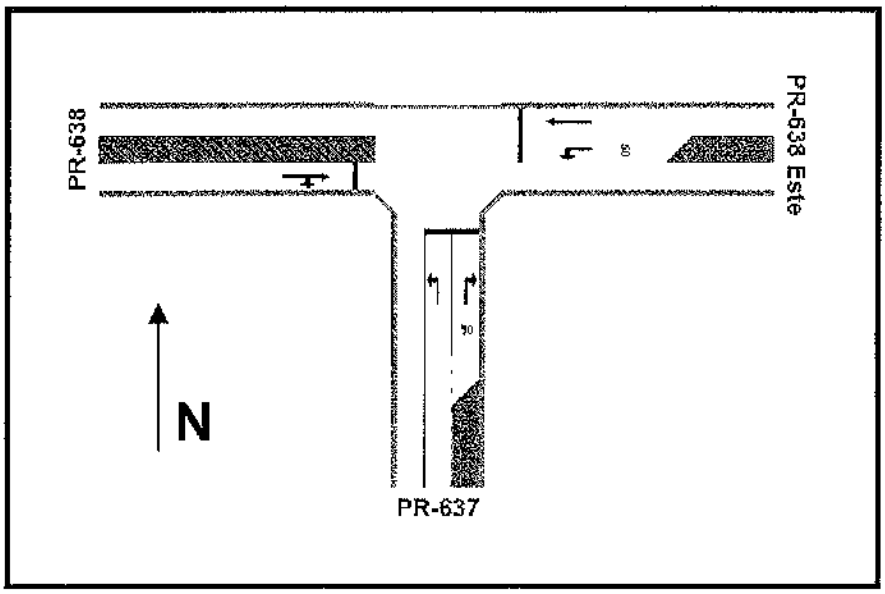
Tabla 18 Resultados modelación aaSIDRA PR-638 y PR-637

	DEMORA PROMEDIO POR VEHÍCULO (D) [SEG.], NIVEL DE SERVICIO (NS) Y COLA PROMEDIO (CP) [METROS]									
	Acceso Sur PR-637		Acceso Este PR-638		Acceso Norte N/A		Acceso Oeste PR-638		Total Int.	
	D, NS	CP	D, NS	CP	D, NS	CP	D, NS	CP	D, NS	CP
Base 2005										
AM	41.8, E	11	4, A	0	**N/A**	**N/A**	0.2, A	0	8.8	11
PM	16, C	1	3.1, A	1	**N/A**	**N/A**	2.4, A	0	3.9	1
Futuro 2015										
AM	18.5, B	12	6.7, A	3	**N/A**	**N/A**	13.3, B	16	13.3	B
PM	12.9, B	4	8, A	6	**N/A**	**N/A**	15.8, B	14	11.6, B	14
Futuro 2020										
AM	19.5, B	13	6.8, A	3	**N/A**	**N/A**	14.1, B	18	13.9, B	18
PM	13.0, B	5	8.4, A	7	**N/A**	**N/A**	15.5, B	15	11.7, B	15

Los resultados obtenidos en el análisis de la situación existente (Base 2005) mostraron una muy buena operación caracterizada por el desbalance en los niveles de servicio entre la principal y la vía menor. Sin embargo el estudio de la situación al momento de la apertura del desarrollo (2015) los volúmenes factorizados junto a los generados por el mismo llevan a esta intersección fallar operacionalmente. Por tal razón, para obtener los resultados presentados en la tabla, bajo este escenario, fue necesario analizar la misma con cambios en su geometría; así como la instalación de un sistema de semáforo. Este cambio en el sistema de control representó una distribución más equitativa del tiempo para manejar el flujo que se presentará en el futuro. Los cambios geométricos consisten en la inclusión de un carril corto de viraje a la derecha en el acceso sur (PR-637) y carril corto de viraje a izquierda en el

acceso Este (PR-638). La siguiente figura muestra de forma gráfica las mencionadas modificaciones.

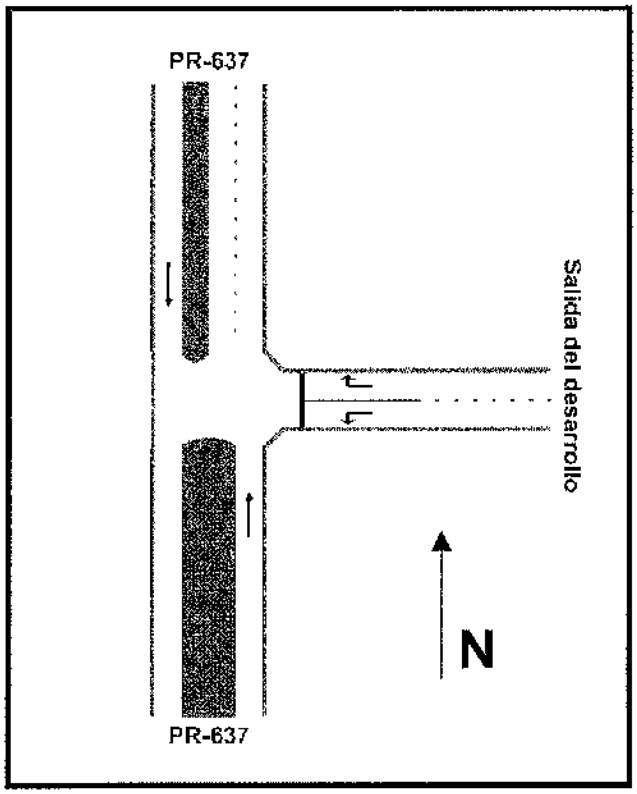
Figura 7 Esquema geométrico recomendado para la intersección entre la PR-638 y la PR-637



5.6.4 Intersección PR-637 y Acceso de salida del desarrollo

El desarrollo en cuestión presenta dos puntos de acceso a la PR-637 configurados como un par direccional; es decir una de las intersecciones proveerá la salida mientras la otra lo hará con la entrada. La primera y más al norte de ellas será la de salida del proyecto. Esta intersección tendrá una configuración de tipo "T" controlada por "Pare", como se muestra en la figura 8. En la misma la PR-637 será la vía prioritaria, discurrirá en ambas direcciones y consiste de un carril por dirección (Norte - Sur).

Figura 8 Esquema geométrico propuesto por el proyecto para la intersección entre la PR-637 y el acceso de salida del desarrollo



La siguiente tabla muestra los resultados obtenidos para las distintas situaciones modeladas.

Tabla 19 Resultados modelación aaSIDRA PR-637 y Acceso de salida del desarrollo

	DEMORA PROMEDIO POR VEHÍCULO (D) [SEG.], NIVEL DE SERVICIO (NS) Y COLA PROMEDIO (CP) [METROS]									
	Acceso Sur PR-637		Acceso Este Salida		Acceso Norte PR-637		Acceso Oeste N/A		Total Int.	
	D, NS	CP	D, NS	CP	D, NS	CP	D, NS	CP	D, NS	CP
Base 2015										
AM	0, A	0	13.1, B	2	0, A	0	**N/A**	**N/A**	7.1	2
PM	0, A	0	11.7, B	0	0, A	0	**N/A**	**N/A**	3.5	0
Futuro 2020										
AM	0, A	0	13.4, B	2	0, A	0	**N/A**	**N/A**	7.0	2
PM	0, A	0	11.9, B	0	0, A	0	**N/A**	**N/A**	3.4	0

Según se observa en los resultados obtenidos esta intersección cuenta con capacidad suficiente para manejar el tránsito esperado en ambos escenarios futuros 2015 y 2020 cuando existirá el desarrollo.

5.6.5 Intersección PR-637 y Acceso de entrada del desarrollo

Esta intersección es la segunda de la pareja que forma el acceso y egreso del desarrollo propuesto. En la misma se proveerán los movimientos de entrada al proyecto. Esta intersección tendrá una configuración de tipo "T" controlada por "Pare". La figura 9 muestra gráficamente lo antes mencionado. En la misma la PR-637 será la vía prioritaria, discurrirá en ambas direcciones y consiste de un carril por dirección (Norte - Sur) con carriles cortos de viraje tanto a la izquierda como derecha.

Figura 9 Esquema geométrico propuesto por el proyecto para la intersección entre la PR-637 y el acceso de salida del desarrollo

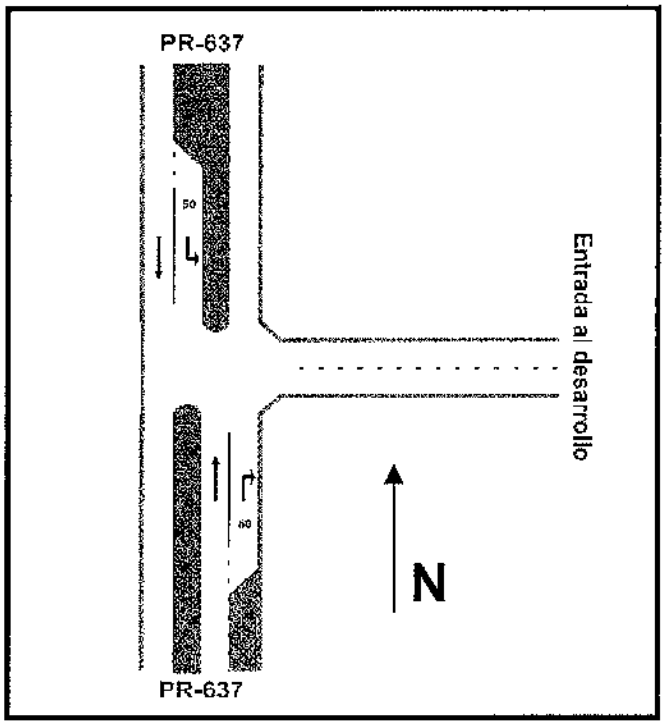


Tabla 20 Resultados modelación aaSIDRA PR-637 y Acceso de entrada al desarrollo

	DEMORA PROMEDIO POR VEHÍCULO (D) [SEG.], NIVEL DE SERVICIO (NS) Y COLA PROMEDIO (CP) [METROS]									
	Acceso Sur PR-637		Acceso Este Entrada		Acceso Norte PR-637		Acceso Oeste N/A		Total Int.	
	D, NS	CP	D, NS	CP	D, NS	CP	D, NS	CP	D, NS	CP
Base 2015										
AM	0.3, A	0	**N/A**	**N/A**	6.9, A	0	**N/A**	**N/A**	3.4	0
PM	1.9, A	0	**N/A**	**N/A**	6.4, A	1	**N/A**	**N/A**	5.7	1
Futuro 2020										
AM	0.3, A	0	**N/A**	**N/A**	6.8, A	0	**N/A**	**N/A**	3.2	0
PM	1.4, A	0	**N/A**	**N/A**	5.9, A	1	**N/A**	**N/A**	5.1	1

De igual que en la intersección anterior podemos observar en los resultados obtenidos que esta cuenta con capacidad suficiente para manejar el tránsito esperado en ambos escenarios futuros 2015 y 2020 .

En el apéndice 2 se muestran los resultados se muestran los resultados de las modelaciones de aaSIDRA.

6 Conclusiones y Recomendaciones

Luego de analizar las intersecciones de interés al proyecto que nos ocupa podemos llegar a la conclusión que desde el punto de vista de la Ingeniería de Tránsito no existe impedimento para su desarrollo. Las modelaciones de estas intersecciones nos demuestran que las mismas poseen o puede poseer con modificaciones geométricas y cambios al sistema de control, la capacidad para manejar adecuadamente el incremento en tránsito que el proyecto bajo estudio y el incremento típico (1.5%), pudiera representar. Las siguientes recomendaciones son imperativas para el buen funcionamiento de las intersecciones analizadas bajo las condiciones esperadas en el futuro descrito.

1. PR-2 con PR-663
    a. Requiere se lleve a estándar el acceso sur para incluir un carril corto de viraje a la derecha.
2. PR-638 con PR-637
    a. Ensanche de para añadir carriles cortos de viraje
        i. En el acceso sur un carril corto de viraje a la derecha
        ii. En el acceso este un carril corto de viraje a la izquierda
    b. Instalación de sistema de semáforo y la optimización de los tiempos programados
3. Los accesos de entrada y salida deben contar con al menos dos carriles
4. La intersección que proveerá la entrada al desarrollo, deberá contar con carriles cortos de viraje a izquierda y derecha en sus accesos norte y sur respectivamente (PR-637); según se presenta en la sección 5.6.5 de este informe.

7 CERTIFICACIÓN

Certifico que la información presentada en este estudio es cierta, correcta y completa, y que fue obtenida utilizando los criterios de la practica usual y aceptada de la ingeniería de tránsito

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8 REFERENCIAS

1. Trip Generation Manual, Institute of Transportation Engineers, 7th edition, 2003
2. Trip Generation Handbook: An ITE Recommended Practice, Institute of Transportation Engineers, March 2001
3. "Signalised & unsignalised Intersection Design & Research Aid". aaSIDRA
4. Guías para la Preparación de Estudios Operacionales de Accesos y de Tránsito para Puerto Rico, Versión 1.0, 22 de diciembre de 2004, Autoridad de Carreteras y Transportación

9 APÉNDICES

APÉNDICE 1:

Flujos Obtenidos Mediante Conteos

Tabla 21 Conteos PR-2 con PR-663

Beginning of Period	Movement												Total	Total
	S-L	S-T	S-R	E-L	E-T	E-R	N-L	N-T	N-R	W-L	W-T	W-R	15 min	Hora
06:00													0	1366
06:15	13		39	17	167						182	7	425	1815
06:30	33		35	15	219						200	11	513	1870
06:45	26		26	21	162						177	16	428	1876
07:00	29		19	18	192						170	21	449	1934
07:15	56		20	16	203						175	10	480	1939
07:30	65		31	17	184						204	18	519	1853
07:45	50		29	15	195						179	18	486	1692
08:00	40		31	14	154						184	31	454	1548
08:15	44		19	12	155						149	15	394	1421
08:30	22		17	19	167						120	13	358	1328
08:45	21		20	20	132						139	10	342	1273
09:00	20		19	21	126						128	13	327	1251
09:15	19		18	18	119						115	12	301	1261
09:30	16		22	15	120						118	12	303	1273
09:45	19		23	17	130						120	11	320	1288
10:00	20		29	19	119						130	20	337	1273
10:15	15		14	22	120						124	18	313	1344
10:30	14		19	21	129						120	15	318	1348
10:45	19		22	19	116						115	14	305	1368
11:00	15		26	28	170						148	21	408	1398
11:15	22		16	21	134						111	13	317	1297
11:30	15		18	18	164						102	21	338	1357
11:45	27		16	18	139						120	15	335	1422
12:00	27		16	11	136						98	19	307	1511
12:15	19		18	20	164						133	23	377	1652
12:30	32		35	18	166						128	24	403	1734
12:45	17		21	21	181						156	28	424	1841
13:00	20		20	30	205						140	33	448	1919
13:15	21		25	25	200						165	23	459	2012
13:30	30		26	26	220						178	30	510	2084
13:45	22		20	30	198						190	42	502	2085
14:00	19		36	33	236						185	32	541	2144
14:15	18		19	25	240						199	30	531	2180
14:30	20		15	29	230						178	39	511	2220
14:45	33		14	21	254						199	40	561	2365
15:00	24		21	33	269						187	43	577	2366
15:15	15		22	38	311						155	30	571	2385
15:30	17		27	49	348						181	34	656	2380
15:45	17		28	31	261						190	35	562	2291
16:00	27		24	30	314						159	42	596	2342
16:15	20		27	43	270						168	38	566	2315
16:30	26		18	46	306						145	26	567	2303
16:45	24		17	43	296						200	33	613	2214
17:00	23		11	25	258						215	37	569	1992
17:15	23		29	37	270						163	32	554	0
17:30	19		25	31	206						159	38	478	0
17:45	13		20	24	191						114	29	391	0
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Tabla 22 Conteo PR-663 con PR-638

Beginning	Movement													
of Period	S-L	S-T	S-R	E-L	E-T	E-R	N-L	N-T	N-R	W-L	W-T	W-R	15 min	Hora
06:00					14	2	4		7	34	12		73	391
06:15					19	4	3		12	34	15		87	444
06:30					24	9	5		17	33	18		106	527
06:45					29	5	9		22	39	21		125	623
07:00					26	4	3		27	41	25		126	707
07:15					41	2	3		24	49	51		170	768
07:30					36	1	3		34	63	65		202	716
07:45					35	5	2		35	76	56		209	609
08:00					29	2	1		24	72	59		187	496
08:15					31	2	2		18	33	32		118	403
08:30					29	2	0		19	21	24		95	373
08:45					24	2	1		23	29	17		96	378
09:00					23	2	2		17	36	14		94	382
09:15					19	5	2		20	31	11		88	376
09:30					33	4	1		19	29	14		100	376
09:45					26	2	2		21	30	19		100	369
10:00					24	3	1		20	25	15		88	355
10:15					20	2	2		22	30	12		88	368
10:30					19	3	1		20	40	10		93	371
10:45					22	1	2		21	29	11		86	368
11:00					29	4	2		20	37	9		101	363
11:15					20	2	2		23	29	15		91	351
11:30					23	2	2		20	37	6		90	355
11:45					28	3	2		12	30	6		81	353
12:00					15	1	3		20	34	16		89	373
12:15					17	0	1		19	31	27		95	375
12:30					16	1	1		17	33	20		88	380
12:45					23	6	5		15	34	18		101	396
13:00					21	5	4		12	30	19		91	408
13:15					20	4	2		29	26	19		100	422
13:30					30	2	6		20	24	22		104	438
13:45					35	3	9		14	31	21		113	457
14:00					33	6	8		19	19	20		105	492
14:15					32	9	7		13	26	29		116	545
14:30					40	8	6		25	23	21		123	584
14:45					41	10	8		29	30	30		148	619
15:00					43	4	11		38	29	33		158	629
15:15					38	5	6		41	41	24		155	619
15:30					34	5	7		39	55	18		158	590
15:45					36	5	9		39	49	20		158	561
16:00					36	8	5		29	51	19		148	549
16:15					29	8	11		29	39	10		126	543
16:30					48	7	10		15	33	16		129	571
16:45					36	8	9		29	34	30		146	574
17:00					31	5	8		24	50	24		142	552
17:15					33	3	4		45	29	40		154	0
17:30					28	6	6		33	30	29		132	0
17:45					21	5	10		27	34	27		124	0
18:00													0	0
18:15													0	0
18:30													0	0
18:45													0	0

Tabla 23 Conteo PR-638 con PR-637

Beginning	Movement												Total	Total
of Period	S-L	S-T	S-R	E-L	E-T	E-R	N-L	N-T	N-R	W-L	W-T	W-R	15 min	Hora
06:00	5		5	2	27						40	2	81	392
06:15	7		5	2	33						42	1	90	441
06:30	7		8	4	34						45	1	99	566
06:45	8		15	5	41						51	2	122	729
07:00	15		12	6	46						48	3	130	850
07:15	21		24	6	83						77	4	215	971
07:30	32		14	7	82						124	3	262	864
07:45	21		25	7	67						115	8	243	705
08:00	18		19	20	81						106	7	251	563
08:15	15		12	11	29						33	8	108	403
08:30	10		19	4	29						32	9	103	376
08:45	10		14	7	26						37	7	101	349
09:00	8		11	5	24						41	2	91	334
09:15	9		10	9	21						30	2	81	337
09:30	5		9	8	19						33	2	76	353
09:45	7		2	10	26						39	2	86	365
10:00	11		9	11	22						38	3	94	366
10:15	10		11	9	23						40	4	97	375
10:30	9		10	7	26						31	5	88	388
10:45	5		8	10	30						29	5	87	415
11:00	8		12	13	27						31	12	103	437
11:15	7		13	10	34						32	14	110	450
11:30	12		13	3	24						45	18	115	475
11:45	14		6	11	34						28	16	109	512
12:00	7		5	16	39						43	6	116	524
12:15	12		4	14	44						49	12	135	526
12:30	14		7	10	55						50	16	152	513
12:45	12		10	10	28						47	14	121	478
13:00	12		14	8	32						42	10	118	473
13:15	10		11	9	42						39	11	122	466
13:30	8		10	8	41						40	10	117	461
13:45	7		5	11	39						45	9	116	468
14:00	9		9	10	35						40	8	111	476
14:15	11		5	8	39						42	12	117	523
14:30	12		8	9	40						41	14	124	582
14:45	8		11	11	43						40	11	124	653
15:00	5		10	14	64						46	19	158	718
15:15	9		8	21	54						63	21	176	742
15:30	7		11	8	72						69	28	195	709
15:45	12		13	14	69						54	27	189	691
16:00	6		5	18	77						58	18	182	692
16:15	12		9	18	50						37	17	143	646
16:30	8		8	11	78						50	22	177	664
16:45	16		4	19	69						67	15	190	648
17:00	12		7	8	39						57	13	136	620
17:15	9		6	11	50						70	15	161	0
17:30	11		4	9	53						60	24	161	0
17:45	8		10	7	67						59	11	162	0
18:00													0	0
18:15													0	0
18:30													0	0
18:45													0	0

APÉNDICE 2:
RESULTADOS MODELACIONES DE aaSIDRA

Tabla 24 Matriz del estudio

NOMBRE DE ARCHIVO	INTERSECCIÓN	ESCENARIO	PERIODO
01-PR2 con PR663-b-a.OUT	PR-2 con PR663	Base	AM
01-PR2 con PR663-b-p.OUT	PR-2 con PR663	Base	PM
01-PR2 con PR663-f2015-a.OUT	PR-2 con PR663	2015	AM
01-PR2 con PR663-f2015-p.OUT	PR-2 con PR663	2015	PM
01-PR2 con PR663-f2020-a.OUT	PR-2 con PR663	2020	AM
01-PR2 con PR663-f2020-p.OUT	PR-2 con PR663	2020	PM
02-PR663 con PR638-b-a.OUT	PR-663 con PR-638	Base	AM
02-PR663 con PR638-b-p.OUT	PR-663 con PR-638	Base	PM
02-PR663 con PR638-f2015-a.OUT	PR-663 con PR-638	2015	AM
02-PR663 con PR638-f2015-p.OUT	PR-663 con PR-638	2015	PM
02-PR663 con PR638-f2020-a.OUT	PR-663 con PR-638	2020	AM
02-PR663 con PR638-f2020-p.OUT	PR-663 con PR-638	2020	PM
03-PR638 con PR637-b-a.OUT	PR-638 con PR-637	Base	AM
03-PR638 con PR637-b-p.OUT	PR-638 con PR-637	Base	PM
03-pr638 con pr637-f2015s-a.OUT	PR-638 con PR-637	2015	AM
03-pr638 con pr637-f2015s-p.OUT	PR-638 con PR-637	2015	PM
03-pr638 con pr637-f2020s-a.OUT	PR-638 con PR-637	2020	AM
03-pr638 con pr637-f2020s-p.OUT	PR-638 con PR-637	2020	PM
04-pr637 con entrada a desarrollo-2015-a.OUT	PR-637 con entrada al desarollo	2015	AM
04-pr637 con entrada a desarrollo-2015-p.OUT	PR-637 con entrada al desarollo	2015	PM
04-pr637 con entrada a desarrollo-2020-a.OUT	PR-637 con entrada al desarollo	2020	AM
04-pr637 con entrada a desarrollo-2020-p.OUT	PR-637 con entrada al desarollo	2020	PM
04-pr637 con salida a desarrollo-2015-a.OUT	PR-637 con salida al desarollo	2015	AM
04-pr637 con salida a desarrollo-2015-p.OUT	PR-637 con salida al desarollo	2015	PM
04-pr637 con salida a desarrollo-2020-a.OUT	PR-637 con salida al desarollo	2020	AM
04-pr637 con salida a desarrollo-2020-p.OUT	PR-637 con salida al desarollo	2020	PM

```
Akcelik & Associates Pty Ltd - aaSIDRA 2.1.1.354
-------------------------------------------------------
Traffic Consulting Group
Carlos M. Contreras                    User ID: m0276
Licence Type: Multi Computer

Time and Date of Analysis    9:11 AM, 24 Apr 2005

Filename: C:\My Projects\Arecibo-febrero-2005- biafara\01-PR2 con PR663-b-a.OUT

PR-2 con PR663
Base, AM
Intersection ID:    01


RUN INFORMATION
---------------
* Basic Parameters:
  Intersection Type: Signalised - Fixed Time
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
                    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (HCM method)
  Queue definition: Cycle average queue, Average

* No. of Main (Timing-Capacity) Iterations =  1
  Comparison of last two iterations:
    Difference in intersection degree of satn =  0.0 %
    Largest difference in eff. green times =  0 secs
    (max. value for stopping = 0 secs)

* Green time for movement   11 exceeds maximum green time because it is
  non-critical, or because all critical movements are at maximum
```

```
PR-2 con PR663
Base, AM
Intersection ID:    01
          Fixed-Time Signals, Cycle Time =  68


DEFAULT PARAMETERS
------------------

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

  1. Basic saturation flow: 1950 tcu/h

     This value applies mainly to signalised intersections. For roundabouts
     and sign-controlled intersections, it is used for determining capacity
     of priority and continuous movements.

  2. Through car equivalents for signalised intersections
                    L E F T        THROUGH       R I G H T
                   LV     HV      LV     HV      LV     HV
       Normal     1.050  1.800   1.000  1.650   1.050  1.800
       Restricted 1.250  2.250                  1.250  2.250

  3. Opposed turn parameters (Signalised intersection)
                    Crit.   Fol.up   Deps   % Exit Flow
                     Gap    Hdway   at End   Opposing
       Left turns :   4.5     2.6      2.2        0
       Right turns:   4.0     2.4      2.5        0

  4. Cruise speed= 60 km/h,  Approach Distance=  500 m

  5. Queue space per vehicle in metres
       Light vehicles:  7.0     Heavy vehicles: 13.0

  A full list of input data defaults and ranges is given in the
  Input Guide part of aaSIDRA User Guide.
```

```
PR-2 con PR663
Base, AM
Intersection ID:    01
          Fixed-Time Signals, Cycle Time =  68


Table 5.0 - TRAFFIC FLOW DATA
-------------------------------------------------------------------------
      Mov            Left        Through       Right      Flow   Peak
      No.          ---------    ---------    ---------   Scale  Flow
                    LV     HV    LV     HV    LV     HV          Factor
-------------------------------------------------------------------------
VEHICLES       Demand flows in veh/hour as used by the program
South: PR-663
        1          260     0     0     0     0     0   1.00   1.00
        3            0     0     0     0   124     0   1.00   1.00
-------------------------------------------------------------------------
East: PR-2 Este
        4           68     0     0     0     0     0   1.00   1.00
        5            0     0   736     0     0     0   1.00   1.00
-------------------------------------------------------------------------
West: PR-2 oeste
       11            0     0   816     0     0     0   1.00   1.00
       12            0     0     0     0    72     0   1.00   1.00
-------------------------------------------------------------------------
Based on unit time =  60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.
```

```
PR-2 con PR663
Base, AM
Intersection ID:    01
          Fixed-Time Signals, Cycle Time =  68
```

Table 5.1 - MOVEMENT PHASE AND TIMING PARAMETERS

Mov No.	Mov Typ	PHASE MATRIX First Green Fr	To	Op	Pr	Second Green Fr	To	Op	Pr	Lost Tim 1st Grn	2nd Grn	Req.Mov.Time 1st Grn	2nd Grn	Eff. Grn 1st Grn	2nd Grn
South: PR-663															
1	L		A	C						4		14.0Max		10	
3	R	(Un2)	*A	C		C	A	R		4	18	14.0Max	53.0Min	10	41
East: PR-2 Este															
4	L		*C	B						4		14.0Max		10	
5	T		C	A						4		53.0Min		53	
West: PR-2 Oeste															
11	T		B	A						4		39.0Max		36	
12	R	(Un1)	A	B	R	*B	A			6	4	29.0Min	39.0Min	22	36

Current Phase Sequence No.: 6
Input phase sequence: A C B
Output phase sequence: A C B

* Critical Movement/Green Period

Movement Types:
- Ped Pedestrian
- Dum Dummy
- Und Undetected in both green periods
- Un1 Undetected in 1st green period
- Un2 Undetected in 2nd green period

Under heading 'Op':
- L "Left" turns are opposed
- R "Right" turns are opposed
- LR "Left and Right" opposed
- C "Constant" saturation flow

Green time for movement 11 exceeds maximum green time because it is non-critical, or because all critical movements are at maximum.

PR-2 con PR663
Base, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 69

Table 5.3 - INTERSECTION PARAMETERS

Critical Movements: 3(1st), 4, 12(2nd)

Y= 67 Y= 0.000 U= 0.000 T= 67.0

Cycle Time:

Minimum	Maximum	Practical	Chosen
67	150	67	69

(Cycle time specified by the user)

Intersection Level of Service	=	B
Worst movement Level of Service	=	E
Average intersection delay (s)	=	19.4
Largest average movement delay (s)	=	66.6
Largest cycle-average queue, mean (m	=	45
Performance Index	=	48.69
Degree of saturation (highest)	=	1.026
Practical Spare Capacity (lowest)	=	-12 %
Effective intersection capacity, (veh/h)	=	2024
Total vehicle flow (veh/h)	=	2076
Total person flow (pers/h)	=	3114
Total vehicle delay (veh-h/h)	=	11.21
Total person delay (pers-h/h)	=	16.82
Total effective vehicle stops (veh/h)	=	1297
Total effective person stops (pers/h)	=	1946
Total vehicle travel (veh-km/h)	=	1413.5
Total cost ($/h)	=	990.86
Total fuel (L/h)	=	175.4
Total CO2 (kg/h)	=	438.56

PR-2 con PR663
Base, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 68

Table 5.4 - PHASE INFORMATION

Phase Change Times: 0, 14, 28
Phase Green Times: 10, 10, 36

Current Phase Sequence No.: 6
Input phase sequence: A C B
Output phase sequence: A C B

PR-2 con PR663
Base, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 68

Table 5.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
888	0.429	2.73	4.10	11.1	0.68	0.59	9	15.76	58.6
ALL VEHICLES:									
2076	1.026	11.21	16.82	19.4	0.62	0.62	45	48.69	45.6
INTERSECTION (persons):									
3114	1.026		16.82	19.4	0.62	0.62		48.69	45.6

Queue values in this table are mean cycle-average queue (metres).

PR-2 con PR663
Base, AM
Intersection ID: C1
Fixed-Time Signals, Cycle Time = 68

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: PR-663											
1 LR	260		124	384	0	1953	10	10	1.025	66.6	45	
	260	0	124	384	0				1.025	66.6	45	
East: PR-2 Este											
4 L	68			68	0	1953	10		0.249	39.4	4	50
5 T		735		735	0	1953	50		0.256	3.1	2	
6 T		368		368	0	1953	50		0.256	3.1	2	
	68	735	0	804	0				0.256	6.2	4	
West: PR-2 oeste											
1 T		444		444	0	1953	38		0.429	10.5	9	
2 TR		372	72	444	0	1953	1	36	0.429	11.6	9	
	0	816	72	888	0				0.429	11.1	9	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	2075	0	68	1.026	19.4	45

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

PR-2 con PR663
Base, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 68

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Green Time Ratio (g/C) 1st grn	2nd grn	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (veh)	Aver. (m)
South: PR-663										
1 L		0.147		260	256	1.026*	66.6	E	6.4	45
3 R	(Un2)	0.147*	0.603	124	121	1.026	66.6	E	6.4	45
				384		1.026	66.6	E	6.4	45
East: PR-2 Este										
4 L		0.147*		68	274	0.249	39.4	D	0.5	4
5 T		0.735		735	2872	0.256	3.1	A	0.3	2
				804		0.256	6.2	A	0.5	4
West: PR-2 oeste										
11 T		0.529		816	1902	0.429	10.2	B	1.5	9
12 R	(Un1)	0.324	0.529*	72	168	0.429	20.3	C	1.2	9
				888		0.429	11.1	B	1.5	9
ALL VEHICLES:				2075		1.026	19.4	B	6.4	45
INTERSECTION (persons):				3114			19.4		6.4	45

Level of Service calculations are based on
average control delay (including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

C:\My Projects\Arecibo-febrero-2005- biafara\01-PR2 con PR663-b-a.OUT
Produced by aaSIDRA 2.1.1.354
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Traffic Consulting Group
Carlos M. Contreras User ID: mC276
Licence Type: Multi Computer

Time and Date of Analysis 9:15 AM, 24 Apr 2005

Filename: C:\My Projects\Arecibo-febrero-2005- biafara\01-PR2 con PR663-b-p.OUT

PR-2 con PR663
Base, PM
Intersection ID: 01

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Signalised - Fixed Time
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
  Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (HCM method)
  Queue definition: Cycle average queue, Average

* No. of Main (Timing-Capacity) Iterations = 2
  Comparison of last two iterations:
  Difference in intersection degree of satn = 0.0 %
  Largest difference in eff. green times = 0 secs
  (max. value for stopping = 0 secs)

* Green time for movement 11 exceeds maximum green time because it is non-critical, or because all critical movements are at maximum.

PR-2 con PR663
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 68

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1950 tcu/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Signalised intersection)

	Crit. Gap	Fol.up Hdway	Deps at End	% Exit Flow Opposing
Left turns :	4.5	2.6	2.2	0
Right turns:	4.0	2.4	2.5	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-2 con PR663
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 68

Table 5.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
VEHICLES Demand flows in veh/hour as used by the program								
South: PR-663								
1	68	0	0	0	0	0	1.00	1.00
3	0	0	0	0	108	0	1.00	1.00
East: PR-2 Este								
4	196	0	0	0	0	0	1.00	1.00
5	0	0	1392	0	0	0	1.00	1.00
West: PR-2 oeste								
11	0	0	724	0	0	0	1.00	1.00
12	0	0	0	0	136	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-2 con PR663
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 68

Table S.1 - MOVEMENT PHASE AND TIMING PARAMETERS

Mov No.	Mov Typ	Phase First Green	Phase Second Green	Lost Tim 1st Grn	Lost Tim 2nd Grn	Req.Mov.Time 1st Grn	Req.Mov.Time 2nd Grn	Eff. Grn 1st Grn	Eff. Grn 2nd Grn
		Fr To Op Pr	Fr To Op Pr						
South: PR-665									
1	L	A C		4		14.0Max		10	
3	R (Un2)	*A C	C A B	4	12	14.0Max	33.0Min	10	42
East: PR-2 Este									
4	L	*C B		4		14.0Max		10	
5	T	C A		4		33.0Min		50	
West: PR-2 oeste									
11	T	B A		4		39.0Max		36	
12	R (Un1)	A B R	*B A	10	4	28.0Min	39.0Min	18	36

Current Phase Sequence No.: 8
Input phase sequence: A C B
Output phase sequence: A C B

* Critical Movement/Green Period

Movement Types:
- Ped Pedestrian
- Dum Dummy
- Und Undetected in both green periods
- Un1 Undetected in 1st green period
- Un2 Undetected in 2nd green period

Under heading 'Op':
- L "Left" turns are opposed
- R "Right" turns are opposed
- LR "Left and Right" opposed
- C "Constant" saturation flow

Green time for movement 11 exceeds maximum green time because it is non-critical, or because all critical movements are at maximum

---

PR-2 con PR663
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 68

Table S.3 - INTERSECTION PARAMETERS

Critical Movements: 3(1st), 4, 12(2nd)

Lm= 67 Y= 0.000 D= 0.000 T= 67.0

Cycle Time:

Minimum	Maximum	Practical	Chosen
67	150	67	68

(Cycle time specified by the user)

Intersection Level of Service	=	A
Worst movement Level of Service	=	D
Average intersection delay (s)	=	9.8
Largest average movement delay (s)	=	43.5
Largest cycle-average queue, mean (m)	=	13
Performance Index	=	43.97
Degree of saturation (highest)	=	0.717
Practical Spare Capacity (lowest)	=	25 %
Effective intersection capacity, (veh/h)	=	3662
Total vehicle flow (veh/h)	=	2624
Total person flow (pers/h)	=	3936
Total vehicle delay (veh-h/h)	=	7.16
Total person delay (pers-h/h)	=	10.73
Total effective vehicle stops (veh/h)	=	1379
Total effective person stops (pers/h)	=	2068
Total vehicle travel (veh-km/h)	=	1771.4
Total cost ($/h)	=	1307.99
Total fuel (l/h)	=	200.1
Total CO2 (kg/h)	=	500.32

PR-2 con PR663
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 68

Table S.4 - PHASE INFORMATION

Phase Change Times: 0, 14, 28
Phase Green Times: 10, 10, 36

Current Phase Sequence No.: 8
Input phase sequence: A C B
Output phase sequence: A C B

PR-2 con PR663
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 68

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
360	0.415	2.73	4.09	11.4	0.64	0.61	9	15.13	58.2
ALL VEHICLES:									
2624	0.717	7.16	10.73	9.8	0.55	0.53	13	43.97	58.4
INTERSECTION (persons):									
3936	0.717		10.73	9.8	0.55	0.53		43.97	58.4

Queue values in this table are mean cycle-average queue (metres).

PR-2 con PR663
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 68

Table 5.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: PR-663												
1 LR	68		108	176	0	1953	10	30	0.302	10.9	1	
	68	0	108	176	0				0.302	10.9	1	
East: PR-2 Este												
1 L	196			196	0	1953	10		0.717	43.5	13	50
2 T		696		696	0	1953	50		0.485	4.0	5	
3 T		696		696	0	1953	50		0.485	4.0	5	
	196	1392	0	1588	0				0.717	8.8	13	
West: PR-2 oeste												
11 T		428		428	0	1953	36		0.414	10.4	9	
12 TR		296	136	432	0	1953	2	35	0.414	12.4	9	
	0	724	136	860	0				0.414	11.4	9	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	2624	0	68	0.717	9.8	13

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

PR-2 con PR663
Base, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 68

Table 5.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Green Time Ratio (g/C) 1st grn	2nd grn	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)
South: PR-663										
1 L		0.147		68	225	0.302	10.9	B	0.2	1
3 R	(On2)	0.147*	0.618	108	358	0.302	10.9	B	0.2	1
				176		0.302	10.9	B	0.2	1
East: PR-2 Este										
4 L		0.147*		196	274	0.717*	43.5	D	1.8	13
5 T		0.735		1392	2872	0.485	4.0	A	0.8	5
				1588		0.717	8.8	A	1.8	13
West: PR-2 oeste										
11 T		0.529		724	1748	0.414	9.9	A	1.2	9
12 R	(On1)	0.265	0.529*	136	328	0.415	10.5	B	1.1	8
				860		0.415	11.4	B	1.2	9
ALL VEHICLES:				2624		0.717	9.8	A	1.8	13
INTERSECTION (persons):				3935			9.8		1.8	13

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

C:\My Projects\Arecibo-febrero-2005- biafara\01-PR2 con PR663-b-p.OUT
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```
                 Akcelik & Associates Pty Ltd - aaSIDRA 2.1.11.354
                 -------------------------------------------------
                 Traffic Consulting Group
                 Carlos M. Contreras                  User ID: m0276
                 Licence Type: Multi Computer

                 Time and Date of Analysis    9:16 AM, 24 Apr 2005

Filename: C:\My Projects\Arecibo-febrero-2005- biafara\01-PR2 con PR663-f2015-a.OUT

PR-2 con PR663
2015, AM
Intersection ID:    01


RUN INFORMATION
---------------
Variable cycle time run: "Optimum" cycle time =  65 s

* Basic Parameters:
  Intersection Type: Signalised - Fixed Time
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Specified performance measure for "best" cycle time in variable run -
     Delay
  Delay definition: Control delay
                    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (HCM method)
  Queue definition: Cycle average queue, Average

* No. of Main (Timing-Capacity) Iterations =  3
  Comparison of last two iterations:
    Difference in intersection degree of satn =  0.0 %
    Largest difference in eff. green times =  0 secs
    (max. value for stopping = 0 secs)

* If an "optimum" cycle time solution is adopted for actuated signal purposes
  ensure that vehicle-actuated settings reflect this solution in real life.
  Consider using the "sensitivity analysis" facility to optimise maximum
  green settings for actuated signals.
```

```
PR-2 con PR663
2015, AM
Intersection ID:    01
           Fixed-Time Signals, Cycle Time =  65


DEFAULT PARAMETERS
------------------
```

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1950 tou/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Signalised intersection)

	Crit. Gap	Follup Hdway	Deps at End	% Exit Flow Opposing
Left turns :	4.5	2.6	2.2	0
Right turns:	4.0	2.4	2.5	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

```
PR-2 con PR663
2015, AM
Intersection ID:    01
           Fixed-Time Signals, Cycle Time =  65
```

Table 8.0 - TRAFFIC FLOW DATA

Mov No.	Left		Through		Right		Flow Scale	Peak Flow Factor
	LV	HV	LV	HV	LV	HV		
VEHICLES	Demand flows in veh/hour as used by the program							
South: PR-663								
1	544	0	0	0	0	0	1.00	1.00
3	0	0	0	0	238	0	1.00	1.00
East: PR-2 Este								
4	139	0	0	0	0	0	1.00	1.00
5	0	0	834	0	0	0	1.00	1.00
West: PR-2 Oeste								
11	0	0	947	0	0	0	1.00	1.00
12	0	0	0	0	145	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Flow Factor effects included in flow values.

PR-2 con PR663
2015, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 65

Table S.1 - MOVEMENT PHASE AND TIMING PARAMETERS

Mov No.	Mov Typ	PHASE MATRIX First Green				Second Green				Lost Tim 1st Grn	Lost Tim 2nd Grn	Req.Mov.Time 1st Grn	Req.Mov.Time 2nd Grn	Eff. Grn 1st Grn	Eff. Grn 2nd Grn
		Fr	To	Op	Pr	Fr	To	Op	Pr						
South: PR-663															
1	L	*A	B							4		25.1		23	
3	R (Un2)	A	B			B	A	R		4	21	17.1	20.0Min	23	17
East: PR-2 Este															
4	L	*C	A							4		10.0Min		6	
5	T		B	A						4		20.0Min		34	
West: PR-2 oeste															
11	T		B	C						4		25.6		24	
12	R (Un2)	*B	C			C	B	R		4	9	25.6	34.1	24	29

Current Phase Sequence No.: 1
Input phase sequence: A B C
Output phase sequence: A B C

* Critical Movement/Green Period

Movement Types:
Ped Pedestrian
Dum Dummy
Unc Undetected in both green periods
Un1 Undetected in 1st green period
Un2 Undetected in 2nd green period

Under heading 'Op':
L "Left" turns are opposed
R "Right" turns are opposed
LR "Left and Right" opposed
C "Constant" saturation flow

PR-2 con PR663
2015, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 65

Table S.3 - INTERSECTION PARAMETERS

Critical Movements: 1, 12(1st), 4

L= 18 Y= 0.592 D= 0.658 T= 60.7

Cycle Time:

Minimum	Maximum	Practical	Chosen
30	150	53	65

(Variable cycle times: Program-determined)

Intersection level of Service	=	C
Worst movement level of Service	=	C
Average intersection delay (s)	=	22.4
Largest average movement delay (s)	=	47.5
Largest cycle-average queue, mean (m)	=	28
Performance Index	=	75.91
Degree of saturation (highest)	=	0.827
Fractional Spare Capacity (lowest)	=	9 %
Effective intersection capacity, (veh/h)	=	3469
Total vehicle flow (veh/h)	=	2857
Total person flow (pers/h)	=	4301
Total vehicle delay (veh-h/h)	=	17.85
Total person delay (pers-h/h)	=	26.78
Total effective vehicle stops (veh/h)	=	2370
Total effective person stops (pers/h)	=	3553
Total vehicle travel (veh-km/h)	=	1936.6
Total cost ($/h)	=	1491.92
Total fuel (L/h)	=	271.5
Total CO2 (kg/h)	=	678.66

PR-2 con PR663
2015, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 65

Table S.4 - PHASE INFORMATION

Phase Change Times: 0, 27, 55
Phase Green Times: 23, 24, 6

Current Phase Sequence No.: 1
Input phase sequence: A B C
Output phase sequence: A B C

PR-2 con PR663
2015, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 65

Table S.5 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
1092	0.811	7.73	11.59	25.5	0.96	0.94	28	29.94	43.6
ALL VEHICLES:									
2857	0.827	17.85	26.78	22.4	0.84	0.83	28	75.91	41.9
INTERSECTION (persons):									

4301	0.827		26.76	22.4	C	84	0.83	75.91	41.9

Queue values in this table are mean cycle-average queue (metres).

PR-2 con PR663
2015, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 65

Table 5.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	LOS	Longest Queue (m)	Shrt Lane (m)
South: PR-663													
1 L	544			544	C	1953	23		0.827	33.2	C	29	
3 R			238	238	C	1953	23	17	0.352	12.7	B	3	50
	544	0	238	782	C				0.827	27.0	C	28	
East: PR-2 Este													
1 L	139			139	C	1953	6		0.810	47.5	D	10	50
2 T		427		427	C	1953	34		0.418	10.2	B	8	
3 T		427		427	C	1953	34		0.418	10.2	B	8	
	139	854	0	993	C				0.810	15.4	B	10	
West: PR-2 oeste													
1 T		585		585	C	1953	24		0.811	24.2	C	28	
2 TR		362	145	507	C	1953	2	24	0.811	26.8	C	23	
	0	947	145	1092	C				0.811	25.5	C	28	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	2867	0	65	0.827	22.4	28

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

PR-2 con PR663
2015, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 65

Table 5.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Green Time Ratio (g/C) 1st grn	2nd grn	Total Flow (veh /h)	Cap. (veh /h)	Deg of Satn (v/c)	LOS	Delay (sec)	Longest Queue Cycle (vehs)	Aver. (m)
South: PR-663										
1 L		0.354*		544	553	0.827*	C	33.2	4.0	29
3 R	(Un2)	0.354	0.262	238	677<	0.352	B	12.7	0.4	3
				782		0.827	C	27.0	4.0	28
East: PR-2 Este										
4 L		0.092*		139	172	0.810	D	47.5	1.4	10
5 2		0.523		854	2043	0.418	B	10.2	1.2	8
				993		0.810	B	15.4	1.4	10
West: PR-2 oeste										
11 T		0.369		947	1168	0.811	C	24.1	4.0	28
12 R	(Un2)	0.369*	0.446	145	179	0.809	C	34.2	3.4	23
				1092		0.811	C	25.5	4.0	28
ALL VEHICLES:				2867		0.827	C	22.4	4.0	28
INTERSECTION (persons):				4301				22.4	4.0	28

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

< Reduced capacity due to a short lane effect

* Maximum v/c ratio, or critical green periods

PR-2 con PR663
2015, AM
Intersection ID: 01

Table 5.21 - VARIABLE CYCLE TIME RESULTS

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	0.719	125
Average Delay	22.4	65
Stop Rate	0.78	115
Max. Queue for Any Movement	4.0	65
Perf. Index	78.9	65
Cost	1491.9	65

Performance	Largest	Cycle

Measure	Value	Time
Eff. Inters. Cap.	3990	125
Prac. Spare Cap.	25	125

If an "optimum" cycle time solution is adopted for actuated signal purposes ensure that vehicle-actuated settings reflect this solution in real life. Consider using the "sensitivity analysis" facility to optimise maximum green settings for actuated signals.

PR-2 con PR663
2015, AM
Intersection ID: 01

Table V.21 - INTERSECTION SUMMARY FOR VARIABLE CYCLE TIME

Cycle Time (sec)	Eff. Int. Cap.	Intersn Deg. of Satn	Prac. Spare Cap.	Aver. Delay (sec)	Stop Rate	Longest Queue (veh)	Perf. Index	Cost Total $/h	Unsett
60	3366	0.852	5	22.9	0.85	4.3	77.0	1503.2	*
65	3469	0.827	9	22.4	0.83	4.0	75.9	1491.9	
70	3501	0.819	10	23.1	0.82	4.1	76.8	1504.7	
75	3573	0.802	12	23.8	0.81	4.2	77.8	1519.7	*
80	3553	0.807	12	24.1	0.79	4.4	77.9	1521.7	
85	3611	0.794	13	24.8	0.78	4.3	78.9	1535.9	
90	3703	0.774	16	25.6	0.78	4.5	80.2	1553.0	*
95	3818	0.751	20	25.7	0.76	4.2	80.1	1553.2	
100	3725	0.770	17	26.7	0.76	4.7	81.7	1573.7	
105	3914	0.732	23	27.5	0.75	4.5	82.9	1590.6	
110	3836	0.747	20	28.6	0.76	4.7	84.7	1613.9	
115	3921	0.731	23	29.2	0.75	4.8	85.5	1624.8	
120	3836	0.747	20	30.3	0.75	5.0	87.3	1648.0	
125	3990	0.719	25	31.3	0.75	5.2	88.8	1667.8	
130	3788	0.757	19	33.1	0.76	5.7	92.9	1706.9	
135	3756	0.765	18	34.0	0.75	5.9	93.2	1723.8	
140	3718	0.774	17	35.2	0.75	6.2	95.1	1749.0	
145	3646	0.790	14	36.6	0.76	6.6	97.4	1778.4	
150	3609	0.794	13	37.9	0.76	6.9	99.4	1804.9	

* UNSETTLED RESULTS - Solution for this case has some uncertainty.
Refer to the HELP system or the User Guide for further information.

--- End of aaSIDRA Output ---

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Traffic Consulting Group
Carlos M. Contreras User ID: m0276
Licence Type: Multi Computer

Time and Date of Analysis 9:18 AM, 24 Apr 2005

Filename: C:\My Projects\Arecibo-febrero-2005- biafara\01-PR2 con PR663-f2015-p.OUT

PR-2 con PR663
2015, PM
Intersection ID: 01

RUN INFORMATION

Variable cycle time run: "Optimum" cycle time = 60 s

* Basic Parameters:
Intersection Type: Signalised - Fixed Time
Driving on the right-hand side of the road
Input data specified in Metric units
Default Values File No. 30
Peak flow period (for performance): 15 minutes
Unit time (for volumes): 60 minutes (Total Flow Period)
Specified performance measure for "best" cycle time in variable run - Delay
Delay definition: Control delay
Geometric delay included
aaSIDRA Standard Delay and Queue models used
Level of Service based on: Delay (HCM method)
Queue definition: Cycle average queue, Average

* No. of Main (Timing-Capacity) Iterations = 3
Comparison of last two iterations:
Difference in intersection degree of satn = 0.0 %
Largest difference in eff. green times = 0 secs
(max. value for stopping = 0 secs)

* If an "optimum" cycle time solution is adopted for actuated signal purposes ensure that vehicle-actuated settings reflect this solution in real life. Consider using the "sensitivity analysis" facility to optimise maximum green settings for actuated signals.

PR-2 con PR663
2015, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1950 tcu/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Signalised intersection)

	Crit. Gap	Fol.up Hdway	Deps at End	% Exit Flow Opposing
Left turns :	4.5	2.6	2.2	0
Right turns:	4.0	2.4	2.5	0

4. Cruise speed= 60 km/h. Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-2 con PR663
2015, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

Table S.0 - TRAFFIC FLOW DATA

Mov No.	Left		Through		Right		Flow Scale	Peak Flow Factor
	LV	HV	LV	HV	LV	HV		
VEHICLES	Demand flows in veh/hour as used by the program							
South: PR-663								
1	200	0	0	0	0	0	1.00	1.00
3	0	0	0	0	265	0	1.00	1.00
East: PR-2 Este								
4	452	0	0	0	0	0	1.00	1.00
5	0	0	1615	0	0	0	1.00	1.00
West: PR-2 oeste								
11	0	0	840	0	0	0	1.00	1.00
12	0	0	0	0	308	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-2 con PR663
2015, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

Table S.1 - MOVEMENT PHASE AND TIMING PARAMETERS

Mov No.	Mov Typ	PHASE MATRIX First Green Fr	To	Op	Second Green Fr	To	Op	Lost Tim 1st Grn	2nd Grn	Req.Mov.Time 1st Grn	2nd Grn	Eff. Grn 1st Grn	2nd Grn
South: PR-663													
1	L	A	B					4		11.2		7	
3	R (Un2)*	A	B		B	A	R	4	21	11.2	27.1	7	29
East: PR-2 Este													
4	L	*C	A					4		28.5		23	
5	T	B	A					4		31.6		45	
West: PR-2 oeste													
11	T	B	C					4		22.8		18	
12	R (Un2)*	B	C		C	B	R	4	15	22.8	39.1	18	33

Current Phase Sequence No.: 1
Input phase sequence: A B C
Output phase sequence: A B C

* Critical Movement/Green Period

Movement Types:
- Ped Pedestrian
- Dum Dummy
- Und Undetected in both green periods
- Un1 Undetected in 1st green period
- Un2 Undetected in 2nd green period

Order heading 'Op':
- L "Left" turns are opposed
- R "Right" turns are opposed
- LR "Left and Right" opposed
- C "Constant" saturation flow

PR-2 con PR663
2015, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

Table S.3 - INTERSECTION PARAMETERS

Critical Movements: 3(1st), 12(1st), 4

L= 12 Y= 0.757 J= 0.842 T= 62.5

Cycle Time:

Minimum	Maximum	Practical	Chosen
30	150	76	60

(Variable cycle times: Program-determined)

Intersection Level of Service	=	C
Worst movement Level of Service	=	D
Average intersection delay (s)	=	22.0
Largest average movement delay (s)	=	49.6
Largest cycle-average queue, mean (m)	=	46
Performance Index	=	90.51
Degree of saturation (highest)	=	0.959
Practical Spare Capacity (lowest)	=	-6 %
Effective intersection capacity, (veh/h)	=	3839
Total vehicle flow (veh/h)	=	3680
Total person flow (pers/h)	=	5520
Total vehicle delay (veh-h/h)	=	22.51
Total person delay (pers-h/h)	=	33.77
Total effective vehicle stops (veh/h)	=	2694
Total effective person stops (pers/h)	=	4041
Total vehicle travel (veh-km/h)	=	2443.2
Total cost ($/h)	=	1786.51
Total fuel (l/h)	=	312.1
Total CO2 (kg/h)	=	780.17

PR-2 con PR662
2015, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

Table S.4 - PHASE INFORMATION

Phase Change Times: 0, 11, 38
Phase Green Times: 7, 18, 23

Current Phase Sequence No.: 1
Input phase sequence: A B C
Output phase sequence: A B C

PR-2 con PR663
2015, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
1148	0.942	13.48	20.22	42.2	1.00	1.13	46	42.73	33.0
ALL VEHICLES:									
3680	0.959	22.51	33.77	22.0	0.73	0.73	46	90.51	43.7
INTERSECTION (persons):									
5520	0.959		33.77	22.0	0.73	0.73		90.51	43.7

Queue values in this table are mean cycle-average queue (metres).

PR-2 con PR663
2015, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satd.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: PR-663												
1 L	200			200	0	1932	7		0.922	47.8	16	
2 R			265	265	0	1932	7	28	0.485	13.9	4	50
	200	0	265	465	0				0.922	28.5	16	
East: PR-2 Este												
1 L	452			452	0	1953	23		0.959	90.3r	18	50
2 T		808		808	0	1953	43		0.551	3.4	5	
3 T		808		808	0	1953	43		0.551	3.4	5	
	452	1616	0	2067	0				0.959	9.3	18	
West: PR-2 oeste												
1 T		552		552	0	1953	18		0.941	39.8	43	
2 TR		288	308	596	0	1953	18	5	0.941	44.6	46	
	0	840	308	1148	0				0.941	42.3	46	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	3680	0	60	0.959	22.0	46

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

r Delay, stops and queue length for this lane have been cut down to fit in the queuing space. The amount cut may not be accounted for fully in the adjacent lane performance statistics. You may wish to change the short lane to a full lane to investigate the extent of this effect.

PR-2 con PR663
2015, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Green Time Ratio (g/C) 1st grn	2nd grn	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle Aver. (vehs)	(m)
South: PR-663										
1	L	0.117		203	217	0.922	47.8	D	2.3	16
3	R (Un2)	0.117*	0.467	265	546	0.495	13.9	B	0.5	4
				465		0.922	28.5	C	2.3	16
East: PR-2 Este										
4	L	0.393*		452	472<	0.959*	30.3	C	2.5	18
5	T	0.750		1615	2930	0.551	3.4	A	0.9	5
				2067		0.959	9.3	A	2.5	18
West: PR-2 oeste										
11	T	0.300		840	892	0.941	39.6	D	6.5	46
12	R (Un2)	0.300*	0.383	308	327	0.942	49.6	D	6.5	46
				1148		0.942	42.3	D	6.5	46
ALL VEHICLES:				3680		0.959	22.0	C	6.5	46
INTERSECTION (persons):				5520			22.0		6.5	46

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.
< Reduced capacity due to a short lane effect
* Maximum v/c ratio, or critical green periods

PR-2 con PR663
2015, PM
Intersection ID: 01

Table S.21 - VARIABLE CYCLE TIME RESULTS

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	0.959	60
Average Delay	22.0	60
Stop Rate	0.67	150
Max. Queue for Any Movement	6.5	60
Perf. Index	90.5	60
Cost	1786.5	60

Performance Measure	Largest Value	Cycle Time
Eff. Interx. Cap.	3939	60
Prac. Spare Cap.	-6	60

If an "optimum" cycle time solution is adopted for actuated signal purposes ensure that vehicle-actuated settings reflect this solution in real life. Consider using the "sensitivity analysis" facility to optimise maximum green settings for actuated signals.

PR-2 con PR663
2015, PM
Intersection ID: 01

Table V.21 - INTERSECTION SUMMARY FOR VARIABLE CYCLE TIME

Cycle Time (sec)	Eff. Int. Cap.	Intersn Deg. of Satn	Prac. Spare Cap.	Aver. Delay (sec)	Stop Rate	Longest Queue (veh)	Perf. Index	Cost Total $/h	Unsett
60	3839	0.959	-6	22.0	0.73	6.5	90.5	1786.5	
65	3686	0.998	-13	25.4	0.74	7.9	97.5	1874.9	
70	3679	1.000	-13	24.0	0.72	7.9	94.5	1835.0	
75	3651	1.009	-11	27.3	0.72	8.5	101.2	1920.7	
80	3682	1.000	-10	29.4	0.73	9.8	105.7	1976.3	
85	3624	1.016	-11	28.1	0.72	9.1	104.9	1967.4	
90	3679	1.000	-10	31.1	0.73	10.4	109.1	2019.5	
95	3681	1.000	-10	29.9	0.72	9.8	106.7	1987.7	
100	3679	1.000	-10	29.9	0.70	9.4	106.3	1984.3	
105	3680	1.000	-10	31.7	0.71	10.4	110.9	2034.0	
110	3679	1.000	-10	31.8	0.69	10.1	110.1	2033.2	
115	3680	1.000	-10	33.6	0.70	11.1	113.9	2083.0	
120	3680	1.000	-10	33.7	0.69	10.8	114.0	2084.4	
125	3683	0.999	-10	35.4	0.69	11.8	117.6	2131.8	
130	3681	1.000	-10	35.6	0.68	11.5	117.8	2135.2	*
135	3677	1.001	-10	37.2	0.68	12.4	121.3	2181.3	*
140	3667	1.004	-10	37.5	0.67	12.2	121.6	2186.6	*
145	3677	1.001	-10	39.1	0.68	13.1	125.0	2231.7	*
150	3651	1.009	-11	39.4	0.67	12.9	125.5	2238.9	*

* UNSETTLED RESULTS - Solution for this case has some uncertainty.
Refer to the HELP system or the User Guide for further information.

--- End of aaSIDRA Output ---

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Traffic Consulting Group
Carlos M. Contreras User ID: n0276
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Filename: C:\My Projects\Arecibo-febrero-2005- biafara\01-PR2 con PR663-f2020-a.OUT

PR-2 con PR663
2020, AM
Intersection ID: 01

RUN INFORMATION

Variable cycle time run: "Optimum" cycle time = 60 s

* Basic Parameters:
  Intersection Type: Signalised - Fixed Time
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Specified performance measure for "best" cycle time in variable run -
    Delay
  Delay definition: Control delay
    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (HCM method)
  Queue definition: Cycle average queue, Average

* No. of Main (Timing-Capacity) Iterations = 3
  Comparison of last two iterations:
    Difference in intersection degree of satr = 0.0 %
    Largest difference in eff. green times = 0 secs
    (max. value for stopping = 0 secs)

* If an "optimum" cycle time solution is adopted for actuated signal purposes
  ensure that vehicle-actuated settings reflect this solution in real life.
  Consider using the "sensitivity analysis" facility to optimise maximum
  green settings for actuated signals.

PR-2 con PR663
2020, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

DEFAULT PARAMETERS

Default values for some of the important general parameters:
[Default Values File: DEF30.SDF]

1. Basic saturation flow: 1930 tcu/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Signalised intersection)

	Crit. Gap	Follow Hdway	Deps at End	% Exit Flow Opposing
Left turns :	4.5	2.6	2.2	0
Right turns:	4.0	2.4	2.5	0

4. Cruise speed= 60 km/h. Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-2 con PR663
2020, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

Table S.2 - TRAFFIC FLOW DATA

Mov No.	Left		Through		Right		Flow Scale	Peak Flow Factor
	LV	HV	LV	HV	LV	HV		
VEHICLES Demand flows in veh/hour as used by the program								
South: PR-663								
1	567	0	0	0	0	0	1.00	1.00
3	0	0	0	0	249	0	1.00	1.00
East: PR-2 Este								
4	145	0	0	0	0	0	1.00	1.00
5	0	0	920	0	0	0	1.00	1.00
West: PR-2 oeste								
11	0	0	1020	0	0	0	1.00	1.00
12	0	0	0	0	151	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-2 con PR663
2020, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

Table S.1 - MOVEMENT PHASE AND TIMING PARAMETERS

Mov No.	Mov Typ	PHASE MATRIX First Green Fr	To	Op	Fr	Second Green Fr	To	Op	Fr	Lost Tim 1st Grn	2nd Grn	Req.Mov.Time 1st Grn	2nd Grn	Eff. Grn 1st Grn	2nd Grn
South: PR-663															
1 L		*A	B							4		24.3		20	
3 R	(Un2)	A	B		E	A	R			4	21	15.7	20.0Min	20	15
East: PR-2 Este															
4 L		*C	A							4		10.0Min		6	
5 T		B	A							4		23.0Min		32	
West: PR-2 oeste															
11 T		B	C							4		25.3		22	
12 R	(Un2)	*B	C		C	E	R			4	8	25.3	32.2	22	26

Current Phase Sequence No.: 1
Input phase sequence: A B C
Output phase sequence: A B C

* Critical Movement/Green Period

Movement Types:
Ped Pedestrian
Dum Dummy
Und Undetected in both green periods
Un1 Undetected in 1st green period
Un2 Undetected in 2nd green period

Under heading 'Op':
L "Left" turns are opposed
R "Right" turns are opposed
LR "Left and Right" opposed
C "Constant" saturation flow

PR-2 con PR663
2020, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

Table S.3 - INTERSECTION PARAMETERS

Critical Movements: 1, 12(1st), 4

L= 18 Y= 0.625 U= 0.694 T= 59.7

Cycle Time:

Minimum	Maximum	Practical	Chosen
30	150	59	60

[Variable cycle times: Program-determined]

Intersection Level of Service	=	C
Worst movement Level of Service	=	D
Average intersection delay (s)	=	25.0
Largest average movement delay (s)	=	43.8
Largest cycle-average queue, mean (m)	=	38
Performance Index	=	86.24
Degree of saturation (highest)	=	0.915
Practical Spare Capacity (lowest)	=	-2 %
Effective intersection capacity, (veh/h)	=	3337
Total vehicle flow (veh/h)	=	3052
Total person flow (pers/h)	=	4579
Total vehicle delay (veh-h/h)	=	21.17
Total person delay (pers-h/h)	=	31.76
Total effective vehicle stops (veh/h)	=	2730
Total effective person stops (pers/h)	=	4095
Total vehicle travel (veh-km/h)	=	2062.6
Total cost ($/h)	=	1549.72
Total fuel (l/h)	=	295.1
Total CO2 (kg/h)	=	727.86

PR-2 con PR663
2020, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

Table S.4 - PHASE INFORMATION

Phase Change Times: 0, 24, 50
Phase Green Times: 20, 22, 6

Current Phase Sequence No.: 1
Input phase sequence: A B C
Output phase sequence: A B C

PR-2 con PR663
2020, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

Table S.5 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
1171	0.873	9.57	14.36	29.4	1.00	1.00	34	35.30	40.7
ADJ VEHICLES:									
3052	0.915	21.17	31.76	25.0	0.86	0.89	38	86.24	40.2
INTERSECTION (persons):									
4579	0.915		31.76	25.0	0.86	0.89		86.24	40.2

Queue values in this table are mean cycle-average queue (metres).

PR-2 con PR663
2020, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (secs)	Longest Queue (m)	Shrt Lane (m)
South: PR-663												
1 L	567			567	0	1953	20		0.914	41.7	38	
2 R			249	249	0	1953	20	15	0.351	12.2	2	50
	567	0	249	816	0				0.914	38.0	38	
East: PR-2 Este												
1 L	145			145	0	1953	6		0.780	43.8	9	50
2 T		460		460	0	1953	32		0.442	9.3	6	
3 T		460		460	0	1953	32		0.442	9.3	6	
	145	920	0	1065	0				0.780	14.0	9	
West: PR-2 oeste												
1 T		625		625	0	1953	22		0.873	27.9	34	
2 TR		395	151	546	0	1953	2	22	0.873	31.1	30	
	0	1020	151	1171	0				0.873	29.4	34	

ADJ VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	3052	0	60	0.915	25.0	38

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

PR-2 con PR663
2020, AM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov	Mov	Green Time	Total	Total	Deg.	Aver.	LOS	Longest Queue

No.	Typ	Ratio (g/C) 1st grn	2nd grn	Flow (veh /h)	Cap. (veh /h)	of Satn (v/c)	Delay (sec)		Cycle (veh)	Aver. (m)
South: PR-663										
1	L	0.333*		567	620	0.915*	41.7	D	5.5	38
3	R (Un2)	0.333	0.250	249	690<	0.361	13.2	B	0.4	3
				816		0.915	33.0	C	5.5	38
East: PR-2 Este										
4	L	0.100*		145	186	0.780	43.8	D	1.3	9
5	T	0.533		920	2083	0.442	9.2	A	1.2	8
				1065		0.780	14.0	B	1.3	9
West: PR-2 oeste										
11	T	0.367		1020	1159	0.873	29.1	C	4.8	34
12	R (Un2)	0.367*	0.433	151	173	0.871	38.7	D	4.3	30
				1171		0.873	29.4	C	4.8	34
ALL VEHICLES:				3052		0.915	25.0	C	5.5	38
INTERSECTION (persons):				4578			25.0		5.5	38

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.
< Reduced capacity due to a short lane effect
* Maximum v/c ratio, or critical green periods

PR-2 con PR663
2020, AM
Intersection ID: 01

Table S.21 - VARIABLE CYCLE TIME RESULTS

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	0.762	125
Average Delay	25.0	60
Stop Rate	0.76	125
Max. Queue for Any Movement	6.8	75
Perf. Index	85.8	75
Cost	1649.7	60

Performance Measure	Largest Value	Cycle Time
Eff. Inters. Cap.	4005	125
Prac. Spare Cap.	18	125

If an "optimum" cycle time solution is adopted for actuated signal purposes ensure that vehicle-actuated settings reflect this solution in real life. Consider using the "sensitivity analysis" facility to optimise maximum green settings for actuated signals.

PR-2 con PR663
2020, AM
Intersection ID: 01

Table V.21 - INTERSECTION SUMMARY FOR VARIABLE CYCLE TIME

Cycle Time (sec)	Eff. Int. Cap.	Intersn Deg. of Satn	Prac. Spare Cap.	Aver. Delay (sec)	Stop Rate	Longest Queue (veh)	Perf. Index	Cost Total $/h	Unsett
60	3337	0.918	-2	25.3	0.38	5.5	86.2	1649.7	
65	3605	0.871	3	25.1	0.37	5.1	86.0	1650.5	
70	3356	0.909	-1	25.5	0.36	5.2	86.6	1659.9	*
75	3604	0.847	6	25.3	0.34	4.8	85.8	1661.6	
80	3629	0.841	7	26.0	0.33	5.0	86.9	1667.1	*
85	3685	0.828	9	26.8	0.32	5.2	88.1	1683.4	*
90	3671	0.831	8	27.0	0.31	5.3	88.2	1685.3	
95	3709	0.823	9	27.7	0.30	5.2	89.3	1700.5	*
100	2587	1.180	-24	45.7	0.82	21.8	116.7	2043.7	*
105	3909	0.781	15	28.4	0.77	5.0	90.0	1711.9	
110	3823	0.798	13	29.7	0.76	5.5	92.3	1741.5	
115	3981	0.767	17	30.0	0.77	5.3	92.7	1748.5	
120	2586	1.180	-24	47.2	0.80	23.7	122.3	2118.3	*
125	4005	0.762	18	31.8	0.76	5.6	95.5	1785.0	
130	3915	0.780	15	33.0	0.77	5.8	97.7	1812.9	
135	3771	0.809	11	36.4	0.79	6.9	103.8	1892.3	*
140	3757	0.812	11	36.6	0.77	6.8	103.9	1893.1	
145	3721	0.823	10	38.3	0.78	7.2	106.8	1930.9	
150	3648	0.837	8	39.4	0.79	7.4	108.7	1954.6	

* UNSETTLED RESULTS - Solution for this case has some uncertainty. Refer to the HELP system or the User Guide for further information.

--- End of aaSIDRA Output ---

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Carlos M. Contreras User ID: m0275
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Time and Date of Analysis 3:26 PM, 24 Apr 2005

Filename: C:\My Projects\Arecibo-febrero-2005- biafara\01-PR2 con PR663-f2020-p.OUT

PR-2 con PR663
2020, PM
Intersection ID: 01

RUN INFORMATION

Variable cycle time run: "Optimum" cycle time = 60 s

* Basic Parameters:
  Intersection Type: Signalised - Fixed Time
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Specified performance measure for "best" cycle time in variable run - Delay
  Delay definition: Control delay
  Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (HCM method)
  Queue definition: Cycle average queue, Average

* No. of Main (Timing-Capacity) Iterations = 3
  Comparison of last two iterations:
  Difference in intersection degree of satn = 0.0 %
  Largest difference in eff. green times = 1 secs
  (max. value for stopping = 1 secs)
  Information on Previous Iteration:
  Cycle Time = 60
  Phase Times: 0, 12, 35
  Critical Movements: 3(1st), 12(1st), 4

* If an "optimum" cycle time solution is adopted for actuated signal purposes ensure that vehicle-actuated settings reflect this solution in real life. Consider using the "sensitivity analysis" facility to optimise maximum green settings for actuated signals.

* Movement 4 has large x because of short lanes.
  The degree of saturation of adjacent movement 5 is less than xp, hence this solution may be satisfactory.
  See Table 8.7 for queue length, delay etc.

PR-2 con PR663
2020, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1950 tcu/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Signalised intersection)

	Crit. Gap	Fol.up Hdway	Deps at End	% Exit Flow Opposing
Left turns :	4.5	2.6	2.2	0
Right turns:	4.0	2.4	2.5	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-2 con PR663
2020, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

Table 8.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
VEHICLES Demand flows in veh/hour as used by the program								
South: PR-663								
1	206	0	0	0	0	0	1.00	1.00
3	0	0	0	0	215	0	1.00	1.00

East: PR-2 Este

```
        4          470     0      0     3      0     3   1.00   1.00
        5            0     0   1740     3      0     3   1.00   1.00
--------------------------------------------------------------------------------
West: PR-2 oeste
       11            0     0    905     3      0     3   1.00   1.00
       12            0     0      0     3    320     3   1.00   1.00
--------------------------------------------------------------------------------
Base: on unit time =  60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.
```

```
PR-2 con PR663
2020, PM
Intersection ID:    01
           Fixed-Time Signals, Cycle Time =  60

Table 5.1 - MOVEMENT PHASE AND TIMING PARAMETERS
--------------------------------------------------------------------------------
 Mov      Mov     P H A S E  M A J O R I X   Lost Tim  Req.Mov.Time      Eff. Grn
 No.      Typ   First Green   Second Green   --------  ------------      --------
               ------------  ------------   1st  2nd  1st       2nd     1st  2nd
               Pr To Op Pr   Pr To Op Pr    Grn  Grn  Grn       Grn     Grn  Grn
--------------------------------------------------------------------------------
South: PR-663
   2 L          A  B                        4         11.4                 7
   3 R  (Un2)*A  B           B  A  R        4    22   11.4      32.9       7   27
--------------------------------------------------------------------------------
East: PR-2 Este
   4 L          C  A                        4         28.4                22
   5 LT         B  A                        4         33.9                45
--------------------------------------------------------------------------------
West: PR-2 oeste
  11 T          B  C                        4         24.2                19
  12 R  (Un2)*B  C           C  B  R        4    16   24.2      36.4      19   21
--------------------------------------------------------------------------------
  Current Phase Sequence No.: 1
  Input phase sequence: A  B  C
  Output phase sequence: A  B  C
--------------------------------------------------------------------------------
  *  Critical Movement/Green Period

Movement Types:                                Under heading 'Op':
  Ped  Pedestrian                                L   "Left" turns are opposed
  Dum  Dummy                                     R   "Right" turns are opposed
  Und  Undetected in both green periods          LR  "Left and Right" opposed
  Un1  Undetected in 1st green period            C   "Constant" saturation flow
  Un2  Undetected in 2nd green period
```

```
PR-2 con PR663
2020, PM
Intersection ID:    01
           Fixed-Time Signals, Cycle Time =  60

Table 5.3 - INTERSECTION PARAMETERS
```

```
--------------------------------------------------------------------------------
  Critical Movements: 3(1st), 12(1st), 4

  L=   12  Y=  0.780  U=  0.867  T=     64.0

  Cycle Time:
    Minimum   Maximum   Practical   Chosen
       30       150         90         60
    (Variable cycle times: Program-determined)

  Intersection Level of Service                =          C
  Worst movement Level of Service              =          D
  Average intersection delay (s)               =       33.0
  Largest average movement delay (s)           =       52.3
  Largest cycle-average queue, mean (m)        =         52
  Performance Index                            =      96.93
  Degree of saturation (highest)               =      1.000
  Practical Spare Capacity (lowest)            =        -10 %
  Effective intersection capacity, (veh/h)     =       3856
  Total vehicle flow (veh/h)                   =       3856
  Total person flow (pers/h)                   =       5784
  Total vehicle delay (veh-h/h)                =      24.60
  Total person delay (pers-h/h)                =      36.90
  Total effective vehicle stops (veh/h)        =       2875
  Total effective person stops (pers/h)        =       4314
  Total vehicle travel (veh-km/h)              =     2563.0
  Total cost ($/h)                             =    1895.03
  Total fuel (l/h)                             =      330.2
  Total CO2 (kg/h)                             =     825.52
```

```
PR-2 con PR663
2020, PM
Intersection ID:    01
           Fixed-Time Signals, Cycle Time =  60

Table 5.4 - PHASE INFORMATION
--------------------------------------------------
   Phase Change Times: 0,  11,  34
   Phase Green Times:  7,  19,  22
--------------------------------------------------
  Current Phase Sequence No.: 1
  Input phase sequence: A  B  C
  Output phase sequence: A  B  C
```

```
PR-2 con PR663
2020, PM
Intersection ID:    01
           Fixed-Time Signals, Cycle Time =  60

Table 5.6 - INTERSECTION PERFORMANCE
--------------------------------------------------------------------------------
 Total   Deg.   Total    Total   Aver.  Prop.  Eff. Longest Perf.   Aver.
 Flow    Satn   Delay    Delay   Delay Queued  Stop  Queue  Index   Speed
```

(veh/h)	x	(veh-h/h)	(pers-h/h)	(sec)		Rate	(m)		(km/h)
Pedestrians:									
1225	0.957	15.25	22.69	44.9	1.00	1.16	52	47.58	31.9
ALL VEHICLES:									
3856	1.000	24.60	36.90	23.0	0.75	0.75	52	96.93	46.2
INTERSECTION (persons):									
5784	1.000		36.90	23.0	0.75	0.75		96.93	46.2

Queue values in this table are mean cycle-average queue (metres).

PR-2 con PR663
2020, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

Table 5.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: PR-663												
1 L	206			206	0	1953	7		0.949	51.7	18	
2 R			215	215	0	1953	7	27	0.425	14.1	3	50
	206	0	215	421	0				0.949	32.5	18	
East: PR-2 Este												
1 L	461			461	0	1953	22		1.000	29.4r	17	50
2 LT	9	865		874	0	1953	45		0.597	3.6	6	
3 T		875		875	0	1953	45		0.597	3.6	6	
	470	1740	0	2210	0				1.000	9.0	17	
West: PR-2 oeste												
1 T		591		591	0	1953	19		0.956	42.4	49	
2 TR		314	320	634	0	1953	19	4	0.956	47.2	52	
	0	905	320	1225	0				0.956	44.9	52	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	3856	0	60	1.000	23.0	52

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

r Delay, stops and queue length for this lane have been cut down to fit in the queuing space. The amount cut may not be accounted for fully in the adjacent lane performance statistics. You may wish to change the short lane to a full lane to investigate the extent of this effect.

PR-2 con PR663
2020, PM
Intersection ID: 01
Fixed-Time Signals, Cycle Time = 60

Table 5.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Green Time Ratio (g/C) 1st grn	2nd grn	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (veh)	Aver. (m)
South: PR-663										
1 L		0.117		206	217	0.949	51.7	D	2.6	18
2 R	(Un2)	0.117*	0.450	215	506	0.425	14.1	B	0.4	3
				421		0.949	32.5	C	2.6	18
East: PR-2 Este										
4 L		0.367*		461	461<	1.000*	29.4	C	2.4	17
5 LT		0.750		1749E	2929	0.597	3.6	A	0.9	6
				2210		1.000	9.0	A	2.4	17
West: PR-2 oeste										
11 T		0.317		905	947	0.956	42.2	D	7.4	52
12 R	(Un2)	0.317*	0.350	320	335	0.957	52.3	D	7.4	52
				1225		0.957	44.9	D	7.4	52
ALL VEHICLES:				3856		1.000	23.0	C	7.4	52
INTERSECTION (persons):				5784			23.0		7.4	52

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.
< Reduced capacity due to a short lane effect
* Maximum v/c ratio, or critical green periods
E "Excess" flow from the short lane of an adjacent movement added to normal flow

---

PR-2 con PR663
2020, PM
Intersection ID: 01

Table S.21 - VARIABLE CYCLE TIME RESULTS

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	0.999	120
Average Delay	23.0	60
Stop Rate	0.68	150
Max. Queue for Any Movement	7.2	65
Perf. Index	96.9	60
Cost	1895.0	60

Performance Measure	Largest Value	Cycle Time
Eff. Inters. Cap.	3859	120
Frac. Spare Cap.	-10	120

If an "optimum" cycle time solution is adopted for actuated signal purposes ensure that vehicle-actuated settings reflect this solution in real life. Consider using the "sensitivity analysis" facility to optimise maximum green settings for actuated signals.

PR-2 con PR663
2020, PM
Intersection ID: 01

Table V.21 - INTERSECTION SUMMARY FOR VARIABLE CYCLE TIME

Cycle Time (sec)	Eff. Int. Cap.	Interm. Deg. of Satn	Frac. Spare Cap.	Aver. Delay (sec)	Stop Rate	Longest Queue (veh)	Perf. Index	Cost Total $/h	Unsett
60	3856	1.000	-10	23.0	0.75	7.6	96.9	1895.0	
65	3749	1.028	-12	23.7	0.73	7.2	98.1	1911.5	
70	3856	1.000	-10	25.8	0.74	8.6	103.3	1969.9	
75	3854	1.000	-10	25.1	0.73	8.2	101.4	1948.4	
80	3856	1.000	-10	25.4	0.72	8.5	101.8	1954.7	
85	3686	1.046	-14	28.8	0.72	9.3	109.2	2050.4	
90	3855	1.000	-10	30.9	0.73	10.7	113.9	2107.3	
95	3857	1.000	-10	30.0	0.73	10.3	112.1	2081.4	
100	3830	1.007	-11	30.3	0.71	10.8	112.5	2088.7	
105	3856	1.000	-10	32.4	0.72	11.3	117.0	2145.7	
110	3855	1.000	-10	31.9	0.71	11.0	115.8	2130.6	
115	3855	1.000	-10	32.1	0.70	10.9	116.1	2135.4	
120	3859	0.999	-10	34.1	0.70	12.0	120.5	2194.1	
125	3856	1.000	-10	34.4	0.69	11.9	120.9	2199.6	
130	3855	1.000	-10	36.3	0.70	13.0	125.1	2255.2	*
135	3856	1.000	-10	36.5	0.69	12.8	125.5	2260.5	*
140	3730	1.034	-13	37.0	0.68	12.7	126.2	2271.2	*
145	3842	1.004	-10	38.7	0.68	13.7	129.9	2320.3	
150	3853	1.001	-10	38.3	0.68	13.6	129.1	2309.9	*

* UNSETTLED RESULTS - Solution for this case has some uncertainty. Refer to the HELP system or the User Guide for further information.

--- End of aaSIDRA Output ---

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Traffic Consulting Group
Carlos M. Contreras User ID: m0278
Licence Type: Multi Computer

Time and Date of Analysis 9:38 AM, 24 Apr 2005

Filename: C:\My Projects\Arecibo-febrero-2005- biafara\02-PR663 con PR638-o-a.OUT

PR-663 con PR-638
Base, AM
Intersection ID: 02

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Unsignalised - Two-Way Stop Control
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
                    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (HCM method)
  Queue definition: Cycle average queue, Average

PR-663 con PR-638
Base, AM
Intersection ID: 02
Stop Sign Controlled Intersection

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1900 veh/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Follup Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	7.0	4.0	2.0	50
Through :	6.5	3.5	3.0	50
Right turns:	5.0	3.0	2.0	50
Opposed turns from priority road:	4.5	2.5	2.0	0

4. Cruise speed= 90 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-663 con PR-638
Base, AM
Intersection ID: 02
Stop Sign Controlled Intersection

Table 5.1 - TRAFFIC FLOW DATA

Mov No.	Left		Through		Right		Flow Scale	Peak Flow Factor
	LV	HV	LV	HV	LV	HV		
VEHICLES Demand flows in veh/hour as used by the program								
East: PR-638 Este								
4	0	0	140	0	0	0	1.00	1.00
6	0	0	0	0	20	0	1.00	1.00
North: PR-663								
7	0	0	0	0	0	0	1.00	1.00
9	0	0	0	0	140	0	1.00	1.00
West: PR-638 Oeste								
10	304	0	224	0	0	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-663 con PR-638
Base, AM
Intersection ID: 02
Stop Sign Controlled Intersection

Table 5.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	NA
Worst movement Level of Service	=	B
Average intersection delay (s)	=	5.0

Largest average movement delay (s)	=	12.1
Largest cycle-average queue, mean (m)	=	1
Performance Index	=	11.96
Degree of saturation (highest)	=	0.361
Practical Spare Capacity (lowest)	=	122 %
Effective intersection capacity, (veh/h)	=	2315
Total vehicle flow (veh/h)	=	856
Total person flow (pers/h)	=	1254
Total vehicle delay (veh-h/h)	=	1.40
Total person delay (pers-h/h)	=	2.10
Total effective vehicle stops (veh/h)	=	348
Total effective person stops (pers/h)	=	523
Total vehicle travel (veh-km/h)	=	304.8
Total cost ($/h)	=	310.34
Total fuel (L/h)	=	50.6
Total CO2 (kg/h)	=	136.47

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table S.15 or Movement Displays for individual movement LOS values.

PR-663 con PR-638
Base, AM
Intersection ID: 02
Stop Sign Controlled Intersection

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
528	0.361	0.86	1.29	5.9	0.38	0.38	1	7.44	50.3
ALL VEHICLES:									
856	0.361	1.40	2.10	6.0	0.29	0.42	1	11.96	50.7
INTERSECTION (persons):									
1254	0.361		2.10	6.0	0.29	0.42		11.96	50.7

Queue values in this table are mean cycle-average queue (metres).

PR-663 con PR-638
Base, AM
Intersection ID: 02
Stop Sign Controlled Intersection

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
East: PR-638 Este												
1 TR		140	20	160	0				0.083	1.0	0	
	0	140	20	160	0				0.083	1.0		
North: PR-663												
1 LR	8		140	148	0				0.164	12.1	0	
	8	0	140	148	0				0.164	12.1	0	
West: PR-638 oeste												
1 LT	304	224		528	0				0.361	5.9	1	
	304	224	0	528	0				0.361	5.9	1	

ALL VEHICLES	Total Flow	% HV	Max X	Aver. Delay	Max Queue
	856	0	0.361	6.0	1

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

PR-663 con PR-638
Base, AM
Intersection ID: 02
Stop Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)
East: PR-638 Este								
4 T		140	1696	0.083	0.0	A	0.0	0
6 R		20	242	0.083	8.2	A	0.0	0
		160		0.083	1.0	A	0.0	0
North: PR-663								
7 L		8	49	0.163	11.9	B	0.1	0
9 R		140	851	0.165	12.1	B	0.1	0
		148		0.165	12.1	B	0.1	0
West: PR-638 oeste								
10 LT		528	1462	0.361*	5.9	A	0.1	1
		528		0.361	5.9	A	0.1	1

ALL VEHICLES:	836	0.361	6.0	NA	0.1	1

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

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Licence Type: Multi Computer

Time and Date of Analysis 9:38 AM, 24 Apr 2005

Filename: C:\My Projects\Arecibo-febrero-2005- blafara\02-PR663 con PR638-b-p.OUT

PR-663 con PR-638
Base, PM
Intersection ID: 02

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Unsignalised - Two-Way Stop Control
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
  Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (HCM method)
  Queue definition: Cycle average queue, Average

PR-663 con PR-638
Base, PM
Intersection ID: 02
Stop Sign Controlled Intersection

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1950 tcu/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Follow Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	7.0	4.0	2.0	50
Through :	6.5	3.5	2.0	50
Right turns:	5.0	3.0	2.0	50
Opposed turns from priority road:	4.5	2.5	2.0	0

4. Cruise speed= 50 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-663 con PR-638
Base, PM
Intersection ID: 02
Stop Sign Controlled Intersection

Table S.C - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
VEHICLES Demand flows in veh/hour as used by the program								
East: PR-638 Este								
4	0	C	135	C	0	C	1.00	1.00
6	0	C	0	C	20	C	1.00	1.00
North: PR-663								
7	28	C	0	C	0	C	1.00	1.00
9	0	C	0	C	155	C	1.00	1.00
West: PR-638 Oeste								
10	220	C	72	C	0	C	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-663 con PR-638
Base, PM
Intersection ID: 02
Stop Sign Controlled Intersection

Table S.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	NA
Worst movement Level of Service	=	B
Average intersection delay (s)	=	7.1
Largest average movement delay (s)	=	12.3
Largest cycle-average queue, mean (m)	=	1
Performance Index	=	9.56
Degree of saturation (highest)	=	0.214
Practical Spare Capacity (lowest)	=	273 %
Effective intersection capacity, (veh/h)	=	2948
Total vehicle flow (veh/h)	=	632
Total person flow (pers/h)	=	948
Total vehicle delay (veh-h/h)	=	1.25
Total person delay (pers-h/h)	=	1.88
Total effective vehicle stops (veh/h)	=	324
Total effective person stops (pers/h)	=	485
Total vehicle travel (veh-km/h)	=	381.5
Total cost ($/h)	=	238.06
Total fuel (l/h)	=	36.9
Total CO2 (kg/h)	=	87.32

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table S.15 or Movement Displays for individual movement LOS values.

PR-663 con PR-638
Base, PM
Intersection ID: 02
Stop Sign Controlled Intersection

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians: 292	0.214	0.56	0.87	7.1	0.31	0.50	0	4.38	69.3
ALL VEHICLES: 632	0.214	1.25	1.88	7.1	0.23	0.51	1	9.56	50.0
INTERSECTION (persons): 948	0.214		1.88	7.1	0.23	0.51		9.56	50.0

Queue values in this table are mean cycle-average queue (metres).

PR-663 con PR-638
Base, PM
Intersection ID: 02
Stop Sign Controlled Intersection

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)

East: PR-638 Este								
1 TR	136	20	156	C		0.081	1.0	0
	0	136	20	156	C	0.081	1.0	
North: PR-663								
1 LR	28		156	184	0	0.213	12.3	1
	28	3	156	184	0	0.213	12.3	1
West: PR-638 Oeste								
1 LT	220	72		292	0	0.214	7.1	0
	220	72	0	292	0	0.214	7.1	0
ALL VEHICLES			Total Flow	% HV		Max X	Aver. Delay	Max Queue
			632	0		0.214	7.1	1

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

PR-663 con PR-638
Base, PM
Intersection ID: 02
Stop Sign Controlled Intersection

Table 5.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)
East: PR-638 Este								
4 T		136	1689	0.081	8.0	A	0.0	0
6 R		20	248	0.081	8.2	A	0.0	0
		156		0.081	1.0	A	0.0	0
North: PR-663								
7 L		28	131	0.214*	12.1	B	0.1	1
9 R		156	731	0.213	12.3	B	0.1	1
		184		0.214	12.3	B	0.1	1
West: PR-638 Oeste								
10 LT		292	1362	0.214*	7.1	A	0.1	0
		292		0.214	7.1	A	0.1	0

ALL VEHICLES:	632	0.214	7.1	NA	0.1	1

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

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Traffic Consulting Group
Carlos M. Contreras User ID: mC276
Licence Type: Multi Computer

Time and Date of Analysis 9:38 AM, 24 Apr 2005

Filename: C:\My Projects\Arecibo-febrero-2005- biafara\02-PR663 con PR638-f2015-a.OUT

PR-663 con PR-638
2015, AM
Intersection ID: 02

RUN INFORMATION

- Basic Parameters:
  Intersection Type: Unsignalised - Two-Way Stop Control
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
                    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (HCM method)
  Queue definition: Cycle average queue, Average

PR-663 con PR-638
2015, AM
Intersection ID: 02
Stop Sign Controlled Intersection

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1950 veh/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LV	HV	LV	HV	LV	HV
	LEFT		THROUGH		RIGHT	
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Fol.up Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	7.0	4.0	2.0	50
Through :	6.5	3.5	2.0	50
Right turns:	5.0	3.0	2.0	50
Opposed turns from priority road:	4.5	2.5	2.0	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-663 con PR-638
2015, AM
Intersection ID: 02
Stop Sign Controlled Intersection

Table S.2 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
VEHICLES Demand flows in veh/hour as used by the program								
East: PR-638 Este								
4	0	0	170	0	0	0	1.00	1.00
6	0	0	0	0	23	0	1.00	1.00
North: PR-663								
7	9	0	0	0	0	0	1.00	1.00
9	0	0	0	0	263	0	1.00	1.00
West: PR-638 oeste								
10	716	0	234	0	0	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak hour factor effects included in flow values.

PR-663 con PR-638
2015, AM
Intersection ID: 02
Stop Sign Controlled Intersection

Table S.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	NA
Worst movement Level of Service	=	B

Average intersection delay (s)	=	10.1
Largest average movement delay (s)	=	13.6
Largest cycle-average queue, mean (m)	=	9
Performance Index	=	25.74
Degree of saturation (highest)	=	0.746
Practical Spare Capacity (lowest)	=	7 %
Effective intersection capacity, (veh/h)	=	1991
Total vehicle flow (veh/h)	=	1485
Total person flow (pers/h)	=	2228
Total vehicle delay (veh-h/h)	=	4.18
Total person delay (pers-h/h)	=	6.27
Total effective vehicle stops (veh/h)	=	909
Total effective person stops (pers/h)	=	1364
Total vehicle travel (veh-km/h)	=	895.7
Total cost ($/h)	=	602.28
Total fuel (L/h)	=	99.5
Total CO2 (kg/h)	=	248.70

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table 5.15 or Movement Displays for individual movement LOS values.

PR-663 con PR-638
2015, AM
Intersection ID: 02
Stop Sign Controlled Intersection

Table 5.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
1000	0.746	3.02	4.53	10.9	0.81	0.54	9	17.93	45.5
ALL VEHICLES:									
1485	0.746	4.18	6.27	10.1	0.62	0.61	9	25.74	46.6
INTERSECTION (persons):									
2228	0.746		6.27	10.1	0.62	0.61		25.74	46.6

Queue values in this table are mean cycle-average queue (metres).

PR-663 con PR-638
2015, AM
Intersection ID: 02
Stop Sign Controlled Intersection

Table 5.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h)		%HV	Adj. Basic	Eff Gen (secs)	Deg Sat	Aver. Delay	Longest Queue	Shrt Lane
	L	T	R						
East: PR-638 Este									
1 TR		170	23	193	0		0.100	1.0	0
	0	170	23	193	0		0.100	1.0	
North: PR-663									
1 LR	9		283	292	0		0.360	13.6	2
	9	0	283	292	0		0.360	13.6	2
West: PR-638 oeste									
1 LT	716	284		1000	0		0.746	10.9	9
	716	284	0	1000	0		0.746	10.9	9
ALL VEHICLES				Total Flow	%HV		Max X	Aver. Delay	Max Queue
				1485	0		0.746	10.1	9

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

PR-663 con PR-638
2015, AM
Intersection ID: 02
Stop Sign Controlled Intersection

Table 5.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)
East: PR-638 Este								
4 T		170	1707	0.100	8.9	A	0.0	0
6 R		23	231	0.100	8.2	A	0.0	0
		193		0.100	1.0	A	0.0	0
North: PR-663								
7 L		9	25	0.360	13.6	B	0.2	2
9 R		283	785	0.361	13.6	B	0.2	2
		292		0.361	13.6	B	0.2	2
West: PR-638 oeste								
10 LT		1000	1341	0.746*	10.9	B	1.5	9

	1000	0.746	10.9	B	1.3	9
ALL VEHICLES:	1485	0.746	10.1	NA	1.3	9

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

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Traffic Consulting Group
Carlos M. Contreras User ID: m0276
Licence Type: Multi Computer

Time and Date of Analysis 9:39 AM, 24 Apr 2005

Filename: C:\My Projects\Arecibo-febrero-2005- biafara\C2-PR663 con PR638-f2015-p.CUT

PR-663 con PR-638
2015, PM
Intersection ID: 02

RUN INFORMATION

* Basic Parameters:
Intersection Type: Unsignalised - Two-Way Stop Control
Driving on the right-hand side of the road
Input data specified in Metric units
Default Values File No. 30
Peak flow period (for performance): 15 minutes
Unit time (for volumes): 60 minutes (Total Flow Period)
Delay definition: Control delay
Geometric delay included
aaSIDRA Standard Delay and Queue models used
Level of Service based on: Delay (HCM method)
Queue definition: Cycle average queue, Average

PR-663 con PR-638
2015, PM
Intersection ID: 02
Stop Sign Controlled Intersection

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1950 veh/h

This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Follup Fdway	Min. Deps	% Exit Flow Opposing
Left turns :	7.0	4.0	2.0	50
Through :	6.5	3.5	2.0	50
Right turns:	6.0	3.0	2.0	50
Opposed turns from priority road:				
	4.5	2.5	2.0	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-663 con PR-638
2015, PM
Intersection ID: C2
Stop Sign Controlled Intersection

Table 5.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
VEHICLES Demand flows in veh/hour as used by the program								
East: PR-638 Este								
4	0	0	193	0	0	0	1.00	1.00
6	0	0	0	0	23	0	1.00	1.00
North: PR-663								
7	32	0	0	0	0	0	1.00	1.00
9	0	0	0	0	556	0	1.00	1.00
West: PR-638 oeste								
10	489	0	99	0	0	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-663 con PR-638
2015, PM
Intersection ID: 02
Stop Sign Controlled Intersection

Table 5.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	NA
Worst movement Level of Service	=	C
Average intersection delay (s)	=	11.5
Largest average movement delay (s)	=	17.9
Largest cycle-average queue, mean (m)	=	8
Performance Index	=	25.40
Degree of saturation (highest)	=	0.711
Practical Spare Capacity (lowest)	=	13 %
Effective intersection capacity, (veh/h)	=	1943
Total vehicle flow (veh/h)	=	1382
Total person flow (pers/h)	=	2073
Total vehicle delay (veh-h/h)	=	4.60
Total person delay (pers-h/h)	=	6.90
Total effective vehicle stops (veh/h)	=	1018
Total effective person stops (pers/h)	=	1523
Total vehicle travel (veh-km/h)	=	833.8
Total cost ($/h)	=	567.61
Total fuel (L/h)	=	92.3
Total CO2 (kg/h)	=	230.02

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table 5.15 or Movement Displays for individual movement LOS values.

PR-663 con PR-638
2015, PM
Intersection ID: 02
Stop Sign Controlled Intersection

Table 5.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
588	0.466	1.43	2.14	8.7	0.47	0.60	2	9.59	47.9
ALL VEHICLES:									
1382	0.711	4.60	6.60	11.5	0.45	0.73	8	25.40	45.9
INTERSECTION (persons):									
2073	0.711		6.60	11.5	0.45	0.73		25.40	45.9

Queue values in this table are mean cycle-average queue (metres).

PR-663 con PR-638
2015, PM
Intersection ID: 02
Stop Sign Controlled Intersection

Table 5.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h)	%HV	Adj. Basic	Eff Grn (secs)	Deg Sat	Aver. Delay	Longest Queue	Shrt Lane

	L	T	R	Tot	Satf.	1st	2nd	x	(sec)	(m)	(m)
East: PR-638 Este											
1 TR		183	23	206	C			0.106	0.9	0	
	0	183	23	206	C			0.106	0.9		
North: PR-663											
3 LR	32		556	588	C			0.710	17.9	8	
	32	0	556	588	C			0.710	17.9	8	
West: PR-638 Oeste											
1 LT	483	99		582	D			0.466	8.7	2	
	483	99	0	582	D			0.466	8.7	2	

ALL VEHICLES	Total Flow	% HV	Max X	Aver. Delay	Max Queue
	1382	0	0.711	11.5	8

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

PR-663 con PR-638
2015, PM
Intersection ID: 02
Stop Sign Controlled Intersection

Table 5.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (veh)	Aver. (m)
East: PR-638 Este								
4 T		183	1723	0.106	0.0	A	0.0	0
6 R		23	217	0.106	8.2	A	0.0	0
		206		0.106	0.9	A	0.0	0
North: PR-663								
7 L		32	45	0.711*	17.7	C	1.2	8
9 R		556	784	0.709	17.9	C	1.2	8
		588		0.711	17.9	C	1.2	8
West: PR-638 Oeste								
10 LT		582	1261	0.466	8.7	A	0.3	2
		588		0.466	8.7	A	0.3	2
ALL VEHICLES:		1382		0.711	11.5	NA	1.2	8

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

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Carlos M. Contreras User ID: m0276
License Type: Multi Computer

Time and Date of Analysis 8:35 PM, 26 Apr 2005

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PR-663 con PR-638
2020, AM
Intersection ID: 02

RUN INFORMATION
---

* Basic Parameters:
  Intersection Type: Unsignalised - Two-Way Stop Control
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
  Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (RTA method)
  Queue definition: Cycle average queue, Average

PR-663 con PR-638
2020, AM
Intersection ID: 02
Stop Sign Controlled Intersection

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1950 tou/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	DEFAULT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Follow-up Headway	Min. Deps	% Exit Flow Opposing
Left turns :	7.0	4.0	2.0	50
Through :	6.5	3.5	2.0	50
Right turns:	5.0	3.0	2.0	50
Opposed turns from priority road:	4.5	2.5	2.0	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-663 con PR-638
2020, AM
Intersection ID: 02
Stop Sign Controlled Intersection

Table 3.0 - TRAFFIC FLOW DATA

Mov No.	Left		Through		Right		Flow Scale	Peak Flow Factor
	LV	HV	LV	HV	LV	HV		
VEHICLES Demand flows in veh/hour as used by the program								
East: PR-638 Este								
6	0	0	193	0	0	0	1.00	1.00
5	0	0	0	0	23	0	1.00	1.00
North: PR-663								
7	10	0	0	0	0	0	1.00	1.00
9	0	0	0	0	298	0	1.00	1.00
West: PR-638 oeste								
10	743	0	304	0	0	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-663 con PR-638
2020, AM
Intersection ID: 02
Stop Sign Controlled Intersection

Table 3.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	NA
Worst movement Level of Service	=	B

Average intersection delay (s)	=	11.2
Largest average movement delay (s)	=	14.6
Largest cycle-average queue, mean (m)	=	13
Performance Index	=	28.34
Degree of saturation (highest)	=	0.789
Practical Spare Capacity (lowest)	=	1 %
Effective intersection capacity, (veh/h)	=	1978
Total vehicle flow (veh/h)	=	1561
Total person flow (pers/h)	=	2342
Total vehicle delay (veh-h/h)	=	4.84
Total person delay (pers-h/h)	=	7.26
Total effective vehicle stops (veh/h)	=	1021
Total effective person stops (pers/h)	=	1532
Total vehicle travel (veh-km/h)	=	941.6
Total cost ($/h)	=	647.00
Total fuel (L/h)	=	105.6
Total CO2 (kg/h)	=	266.46

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table 5.15 or Movement Displays for individual movement LOS values.

PR-663 con PR-638
2020, AM
Intersection ID: 02
Stop Sign Controlled Intersection

Table 5.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
1047	0.789	3.54	5.31	12.2	0.95	0.69	13	19.88	44.4
ALL VEHICLES:									
1561	0.789	4.84	7.26	11.2	0.72	0.65	13	28.34	45.6
INTERSECTION (persons):									
2342	0.789		7.26	11.2	0.72	0.65		28.34	45.6

Queue values in this table are mean cycle-average queue (metres).

PR-663 con PR-638
2020, AM
Intersection ID: 02
Stop Sign Controlled Intersection

Table 5.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h)	%HV	Adj. Basic	Eff Grn (secs)	Deg Sat	Aver. Delay	Longest Queue	Shrt Lane
East: PR-638 Este								
1 TR	183 25 208	0			0.107	1.0	0	
North: PR-663								
1 LR	10 296 306	0			0.387	14.6	2	
West: PR-638 oeste								
1 LT	743 304 1047	0			0.789	12.2	13	
ALL VEHICLES	Total Flow 1561	% HV 0			Max X 0.789	Aver. Delay 11.2	Max Queue 13	

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

PR-663 con PR-638
2020, AM
Intersection ID: 02
Stop Sign Controlled Intersection

Table 5.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)
East: PR-638 Este								
4 T		183	1705	0.107	0.0	A	0.0	0
6 R		25	233	0.107	8.2	A	0.0	0
		208		0.107	1.0	A	0.0	0
North: PR-663								
7 L		10	26	0.386	14.4	B	0.3	2
9 R		296	766	0.386	14.6	B	0.3	2
		306		0.386	14.6	B	0.3	2
West: PR-638 oeste								
10 LT		1047	1327	0.789*	12.2	B	1.8	13

	1047	0.789	12.1	B	1.8	13
ALL VEHICLES:	1561	0.789	11.2	NA	1.8	13

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

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Carlos M. Contreras User ID: mC276
Licence Type: Multi Computer

Time and Date of Analysis 8:36 PM, 24 Apr 2005

Filename: C:\My Projects\Arecibo-febrero-2005- biafara\02-PR663 con PR638-f2020-p.OUT

PR-663 con PR-638
2020, PM
Intersection ID: C2

RUN INFORMATION

* Basic Parameters:
Intersection Type: Unsignalised - Two-Way Stop Control
Driving on the right-hand side of the road
Input data specified in Metric units
Default Values File No. 30
Peak flow period (for performance): 15 minutes
Unit time (for volumes): 60 minutes (Total Flow Period)
Delay definition: Control delay
Geometric delay included
aaSIDRA Standard Delay and Queue models used
Level of Service based on: Delay (HCM method)
Queue definition: Cycle average queue, Average

PR-663 con PR-638
2020, PM
Intersection ID: 02
Stop Sign Controlled Intersection

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1950 veh/h

This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.680	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Fol.up Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	7.0	4.0	2.0	50
Through :	6.5	3.5	2.0	50
Right turns:	5.0	5.0	2.0	50
Opposed turns from priority road:	4.5	2.5	2.0	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-663 con PR-638
2020, PM
Intersection ID: 02
Stop Sign Controlled Intersection

Table S.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
VEHICLES Demand flows in veh/hour as used by the program								
East: PR-638 Este								
4	0	0	165	0	0	0	1.00	1.00
6	0	0	0	0	25	0	1.00	1.00
North: PR-663								
7	35	0	0	0	0	0	1.00	1.00
9	0	0	0	0	570	0	1.00	1.00
West: PR-638 Oeste								
10	439	0	105	0	0	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-663 con PR-638
2020, PM
Intersection ID: 02
Stop Sign Controlled Intersection

Table S.2 - INTERSECTION PARAMETERS

Intersection Level of Service	=	NA
Worst movement Level of Service	=	C
Average intersection delay (s)	=	11.9
Largest average movement delay (s)	=	18.9
Largest cycle-average queue, mean (m)	=	10
Performance Index	=	26.05
Degree of saturation (highest)	=	0.745
Practical Spare Capacity (lowest)	=	7 %
Effective intersection capacity, (veh/h)	=	1865
Total vehicle flow (veh/h)	=	1389
Total person flow (pers/h)	=	2084
Total vehicle delay (veh-h/h)	=	4.59
Total person delay (pers-h/h)	=	6.89
Total effective vehicle stops (veh/h)	=	1048
Total effective person stops (pers/h)	=	1572
Total vehicle travel (veh-km/h)	=	838.2
Total cost ($/h)	=	574.82
Total fuel (L/h)	=	92.9
Total CO2 (kg/h)	=	232.37

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table S.15 or Movement Displays for individual movement LOS values.

PR-663 con PR-638
2020, PM
Intersection ID: 02
Stop Sign Controlled Intersection

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
554	0.450	1.96	2.00	8.7	0.47	0.60	2	9.16	47.9
ALL VEHICLES:									
1389	0.745	4.59	6.89	11.9	0.46	0.75	10	26.05	45.5
INTERSECTION (persons):									
2084	0.745		6.89	11.9	0.46	0.75		26.05	45.5

Queue values in this table are mean cycle-average queue (metres).

PR-663 con PR-638
2020, PM
Intersection ID: 02
Stop Sign Controlled Intersection

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h)	%HV	Adj. Basic	Eff Grn (secs)	Deg Sat	Aver. Delay	Longest Queue	Shrt lane

	L	T	R	Tot		Satf.	1st	2nd	x	(sec)	(m)	(m)
East: PR-638 Este												
1 TR		195	25	220	0				0.113	0.9	0	
	0	195	25	220	0				0.113	0.9		
North: PR-663												
1 LR	35		570	605	0				0.742	18.9	10	
	35	0	570	605	0				0.742	18.9	10	
West: PR-638 oeste												
1 LT	459	105		564	0				0.450	8.7	2	
	459	105	0	564	0				0.450	8.7	2	

ALL VEHICLES	Total Flow	% HV	Max X	Aver. Delay	Max Queue
	1389	0	0.745	11.9	10

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows are not adjustec at roundabouts or sign-controlled intersections and apply only to continuous lanes.

PR-663 con PR-638
2020, PM
Intersection ID: 02
Stop Sign Controlled Intersection

Table 8.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Cycle (vehs)	Queue Aver. (m)
East: PR-638 Este								
4 T		195	1719	0.113	0.0	A	0.0	0
6 R		25	220	0.114	9.2	A	0.3	2
		220		0.114	0.9	A	1.0	0
North: PR-663								
7 L		35	47	0.745*	18.7	C	1.4	10
9 R		570	768	0.742	18.9	C	1.4	10
		605		0.745	18.9	C	1.4	10
West: PR-638 oeste								
10 LT		564	1254	0.450	8.7	A	0.3	2
		564		0.450	8.7	A	0.3	2
ALL VEHICLES:		1389		0.745	11.9	NA	1.4	10

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

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Carlos M. Contreras User ID: m0276
Licence Type: Multi Computer

Time and Date of Analysis 9:43 AM, 24 Apr 2005

Filename: C:\My Projects\Arecibo-febrero-2005- bajafara\03-PR638 con PR637-b-a.OUT

PR-638 con PR-637
Base, AM
Intersection ID: 03

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Unsignalised - Two-Way Stop Control
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
                    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (HCM method)
  Queue definition: Cycle average queue, Average

PR-638 con PR-637
Base, AM
Intersection ID: 03
Stop Sign Controlled Intersection

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1950 veh/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.230			1.250	2.250

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Fol.up Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	7.0	4.0	2.0	50
Through :	5.5	3.5	2.0	50
Right turns:	5.0	3.0	2.0	50
Opposed turns from priority road:				
	4.5	2.5	2.0	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-638 con PR-637
Base, AM
Intersection ID: 03
Stop Sign Controlled Intersection

Table 5.0 - TRAFFIC FLOW DATA

Mov No.	Left		Through		Right		Flow Scale	Peak Flow Factor
	LV	HV	LV	HV	LV	HV		
VEHICLES Demand flows in veh/hour as used by the program								
South: PR-637								
1	128	0	0	0	0	0	1.00	1.00
3	0	0	0	0	56	0	1.00	1.00
East: PR-638 este								
4	28	0	328	0	0	0	1.00	1.00
West: PR-638 oeste								
10	0	0	496	0	0	0	1.00	1.00
12	0	0	0	0	12	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-638 con PR-637
Base, AM
Intersection ID: 03
Stop Sign Controlled Intersection

Table 5.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	NA
Worst movement Level of Service	=	E
Average intersection delay (s)	=	8.8

Largest average movement delay (s)	=	42.0
Largest cycle-average queue, mean (m)	=	11
Performance Index	=	16.58
Degree of saturation (highest)	=	0.753
Practical Spare Capacity (lowest)	=	6 %
Effective intersection capacity, (veh/h)	=	1392
Total vehicle flow (veh/h)	=	1048
Total person flow (pers/h)	=	1572
Total vehicle delay (veh-h/h)	=	2.56
Total person delay (pers-h/h)	=	3.85
Total effective vehicle stops (veh/h)	=	271
Total effective person stops (pers/h)	=	407
Total vehicle travel (veh-km/h)	=	634.5
Total cost ($/h)	=	401.85
Total fuel (L/h)	=	59.0
Total CO2 (kg/h)	=	147.60

NA Not Applicable - Intersection Level of Service is not calculated as two-way stop control or give-way/yield controlled intersections. See Table 5.15 or Movement Displays for individual movement LOS values.

PR-638 con PR-637
Base, AM
Intersection ID: 03
Stop Sign Controlled Intersection

Table 5.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
50% 0.261		0.03	0.04	0.2	0.00	0.02	0	5.21	59.7
ALL VEHICLES:									
1048	0.753	2.56	3.85	8.8	0.37	0.26	11	16.58	47.9
INTERSECTION (persons):									
1572	0.753		3.85	8.8	0.37	0.26		16.58	47.9

Queue values in this table are mean cycle-average queue (metres).

PR-638 con PR-637
Base, AM
Intersection ID: 03
Stop Sign Controlled Intersection

Table 5.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: PR-637												
1 LR	128		56	184	0				0.753	41.8	11	
	128	0	56	184	0				0.753	41.8	11	
East: PR-638 este												
4 LT	28	328		356	0				0.203	4.0	2	
	28	328	0	356	0				0.203	4.0	2	
West: PR-638 oeste												
10 TR		496	12	508	0				0.261	0.2	0	
	0	496	12	508	0				0.261	0.2		
ALL VEHICLES				Total Flow	% HV				Max X	Aver. Delay	Max Queue	
				1048	0				0.753	8.8	11	

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

PR-638 con PR-637
Base, AM
Intersection ID: 03
Stop Sign Controlled Intersection

Table 5.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)
South: PR-637								
1 L		128	170	0.753*	41.8	E	1.6	11
3 R		56	75	0.747	42.0	E	1.6	11
		184		0.753	41.8	E	1.6	11
East: PR-638 este								
4 LT		356	1757	0.203	4.0	A	0.3	2
		356		0.203	4.0	A	0.3	2
West: PR-638 oeste								
10 T		496	1902	0.261	0.0	A	0.0	0
12 R		12	46	0.261	8.2	A	0.0	0
		508		0.261	0.2	A	0.0	0

ALL VEHICLES:	1048	C.753	8.8	NA	1.6	11

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

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Carlos M. Contreras User ID: n0276
License Type: Multi Computer

Time and Date of Analysis 9:43 AM, 24 Apr 2005

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PR-638 con PR-637
Base, PM
Intersection ID: 03

RUN INFORMATION

* Basic Parameters:
Intersection Type: Unsignalised - Two-Way Stop Control
Driving on the right-hand side of the road
Input data specified in Metric units
Default Values File No. 30
Peak flow period (for performance): 15 minutes
Unit time (for volumes): 60 minutes (Total Flow Period)
Delay definition: Control delay
Geometric delay included
aaSIDRA Standard Delay and Queue models used
Level of Service based on: Delay (HCM method)
Queue definition: Cycle average queue, Average

PR-638 con PR-637
Base, PM
Intersection ID: 03
Stop Sign Controlled Intersection

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1950 veh/h

This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Fol.up Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	7.0	4.0	2.0	50
Through :	6.5	3.5	2.0	50
Right turns:	5.0	3.0	2.0	50
Opposed turns from priority road:	4.5	2.5	2.0	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
Light vehicles: 7.0 Heavy vehicles: 12.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-638 con PR-637
Base, PM
Intersection ID: 03
Stop Sign Controlled Intersection

Table S.2 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
VEHICLES Demand flows in veh/hour as used by the program								
South: PR-637								
1	28	0	0	0	0	0	1.00	1.00
3	0	0	0	0	44	0	1.00	1.00
East: PR-638 este								
4	32	0	288	0	0	0	1.00	1.00
West: PR-638 oeste								
10	0	0	276	0	0	0	1.00	1.00
12	0	0	0	0	112	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-638 con PR-637
Base, PM
Intersection ID: 03
Stop Sign Controlled Intersection

Table S.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	NA
Worst movement Level of Service	=	C
Average intersection delay (s)	=	3.9
Largest average movement delay (s)	=	16.1
Largest cycle-average queue, mean (m)	=	1
Performance Index	=	9.95
Degree of saturation (highest)	=	0.202
Practical Spare Capacity (lowest)	=	296 %
Effective intersection capacity, (veh/h)	=	3863
Total vehicle flow (veh/h)	=	780
Total person flow (pers/h)	=	1170
Total vehicle delay (veh-h/h)	=	0.85
Total person delay (pers-h/h)	=	1.27
Total effective vehicle stops (veh/h)	=	167
Total effective person stops (pers/h)	=	250
Total vehicle travel (veh-km/h)	=	472.3
Total cost ($/h)	=	274.50
Total fuel (L/h)	=	43.3
Total CO2 (kg/h)	=	138.27

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table S.15 or Movement Displays for individual movement LOS values.

PR-638 con PR-637
Base, PM
Intersection ID: 03
Stop Sign Controlled Intersection

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians: 388	0.202	0.25	0.36	2.4	0.00	0.19	0	4.59	56.3
ALL VEHICLES: 780	0.202	0.85	1.27	3.9	0.27	0.21	1	9.95	53.1
INTERSECTION (persons): 1170	0.202		1.27	3.9	0.27	0.21		9.95	53.1

Queue values in this table are mean cycle-average queue (metres).

PR-638 con PR-637
Base, PM
Intersection ID: 03
Stop Sign Controlled Intersection

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)

South: PR-637									
1 LR	28		44	72	C		0.147	16.0	1
	28	0	44	72	C		0.147	16.0	1
East: PR-638 este									
1 LT	32	288		320	C		0.181	3.1	1
	32	288	0	320	C		0.181	3.1	1
West: PR-638 oeste									
1 TR		276	112	388	C		0.202	2.4	0
	0	276	112	388	C		0.202	2.4	
ALL VEHICLES			Total Flow	% HV			Max X	Aver. Delay	Max Queue
			780	3			0.202	3.9	1

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

PR-638 con PR-637
Base, PM
Intersection ID: 03
Stop Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)
South: PR-637								
1	L	28	191	0.147	15.9	C	0.1	1
3	R	44	303	0.147	16.1	C	0.1	1
		72		0.147	16.0	C	0.1	1
East: PR-638 este								
4	LT	320	1766	0.181	3.1	A	0.2	1
		320		0.181	3.1	A	0.2	1
West: PR-638 oeste								
10	T	276	1367	0.202*	0.0	A	0.0	0
12	R	112	555	0.202*	8.2	A	0.0	0
		388		0.202	2.4	A	0.0	0
ALL VEHICLES:		780		0.202	3.9	NA	0.2	1

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

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Filename: C:\My Projects\Arecibo-febrero-2005- biafara\03-pr638 con pr637-f2015s-a.OUT

PR-638 con PR-637
2015, AM, semaforo
Intersection ID: 03

RUN INFORMATION

Variable cycle time run: "Optimum" cycle time = 60 s

* Basic Parameters:
  Intersection Type: Signalised - Fixed Time
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Specified performance measure for "best" cycle time in variable run =
    Delay
  Delay definition: Control delay
    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (HCM method)
  Queue definition: Cycle average queue, Average

* No. of Main (Timing-Capacity) Iterations = 1
  Comparison of last two iterations:
    Difference in intersection degree of satn = 0.0 %
    Largest difference in eff. green times = 0 secs
    (max. value for stopping = 0 secs)

* If an "optimum" cycle time solution is adopted for actuated signal purposes ensure that vehicle-actuated settings reflect this solution in real life. Consider using the "sensitivity analysis" facility to optimise maximum green settings for actuated signals.

PR-638 con PR-637
2015, AM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1950 tcu/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Signalised intersection)

	Crit. Gap	Fol.up Hdway	Deps at End	% Exit Flow Opposing
Left turns :	4.5	2.6	2.2	0
Right turns:	4.0	2.4	2.5	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-638 con PR-637
2015, AM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table S.6 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
VEHICLES	Demand flows in veh/hour as used by the program							
South: PR-637								
1	218	4	0	0	0	0	1.00	1.00
3	0	0	0	0	443	9	1.00	1.00
East: PR-638 Este								
4	158	5	0	0	0	0	1.00	1.00
5	0	0	373	8	0	0	1.00	1.00
West: PR-638								
10	0	0	564	12	0	0	1.00	1.00
12	0	0	0	0	37	1	1.00	1.00

Based on unit time = 60 minutes.

Flow Scale and Peak Hour Factor effects included in flow values.

PR-638 con PR-637
2015, AM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table 5.1 - MOVEMENT PHASE AND TIMING PARAMETERS

Mov No.	Mov Typ	PHASE MATRIX First Green				PHASE MATRIX Second Green				Lost Tim 1st Grn	Lost Tim 2nd Grn	Req.Mov.Time 1st Grn	Req.Mov.Time 2nd Grn	Eff. Grn 1st Grn	Eff. Grn 2nd Grn
		Fr	To	Op	Pr	Fr	To	Op	Pr						
South: PR-637															
1	L		A	C						4		12.1		11	
3	R (Un2)+	A	C			C	A	R		4	17	12.1	35.0	11	28
East: PR-638 Este															
4	L		C	B		B	A	L		4	18	20.0Min	12.0Min	8	15
5	T		C	A						4		22.0Min		41	
West: PR-638															
10	T		B	A						4		25.2		29	
12	R (Un1)	A	B	R		B	A			5	4	20.6	25.2	22	29

Current Phase Sequence No.: 1
Input phase sequence: A C B
Output phase sequence: A C B

* Critical Movement/Green Period

Movement Types:
- Ped Pedestrian
- Dum Dummy
- Und Undetected in both green periods
- Un1 Undetected in 1st green period
- Un2 Undetected in 2nd green period

Under heading 'Op':
- L "Left" turns are opposed
- R "Right" turns are opposed
- LR "Left and Right" opposed
- C "Constant" saturation flow

PR-638 con PR-637
2015, AM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table 5.3 - INTERSECTION PARAMETERS

Critical Movements: 3(1st), 4(1st), 12(2nd)

L= 18 Y= 0.439 U= 0.468 T= 47.3

Cycle Time:

Minimum	Maximum	Practical	Chosen
32	150	33	60

(Variable cycle times: Program-determined)

Intersection Level of Service	=	B
Worst movement Level of Service	=	C
Average intersection delay (s)	=	13.3
Largest average movement delay (s)	=	32.5
Largest cycle-average queue, mean (m)	=	16
Performance Index	=	42.00
Degree of saturation (highest)	=	0.660
Practical Spare Capacity (lowest)	=	38 %
Effective intersection capacity, (veh/h)	=	2775
Total vehicle flow (veh/h)	=	1830
Total person flow (pers/h)	=	2745
Total vehicle delay (veh-h/h)	=	6.76
Total person delay (pers-h/h)	=	10.14
Total effective vehicle stops (veh/h)	=	1269
Total effective person stops (pers/h)	=	1904
Total vehicle travel (veh-km/h)	=	1025.4
Total cost ($/h)	=	866.62
Total fuel (L/h)	=	408.2
Total CO2 (kg/h)	=	270.84

PR-638 con PR-637
2015, AM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table 5.4 - PHASE INFORMATION

Phase Change Times: 0, 15, 27
Phase Green Times: 11, 8, 27

Current Phase Sequence No.: 1
Input phase sequence: A C B
Output phase sequence: A C B

PR-638 con PR-637
2015, AM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table 5.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
614	0.650	2.28	3.42	13.4	0.81	0.74	16	14.65	34.6
ALL VEHICLES:									
1830	0.650	6.76	10.14	13.3	0.73	0.69	16	42.00	34.7

INTERSECTION (persons):										
2745	0.660		10.14	13.2	0.73	0.69		42.00		34.7

Queue values in this table are mean cycle-average queue (metres).

PR-638 con PR-637
2015, AM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: PR-637												
1 L	222			222	2	1953	21		0.659	32.5	12	
2 R			452	452	2	1953	21	28	0.616	11.6	5	50
	222	0	452	674	2				0.659	16.5	12	
East: PR-638 Este												
4 L	161			161	2	1953	8	15	0.317	13.2	2	50
5 T		381		381	2	1953	41		0.289	4.0	3	
	161	381	0	542	2				0.317	6.7	3	
West: PR-638												
11 TR		576	38	614	2	1953	1	29	0.659	13.4	16	
	0	576	38	614	2				0.659	13.4	16	
ALL VEHICLES				Total Flow 1830	% HV 2		Cycle Time 60		Max X 0.660	Aver. Delay 13.3	Max Queue 16	

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

PR-638 con PR-637
2015, AM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Green Time Ratio (g/C)	Total Flow	Total Cap.	Deg. of	Aver. Delay	LOS	Longest Queue Cycle	Aver.
		1st grn	2nd grn	(veh /h)	(veh /h)	Satn (v/c)	(sec)		(vehs)	(m)
South: PR-637										
1 L		0.183		222	337	0.660*	32.5	C	1.6	12
3 R (Jn2)		0.133*	0.467	452	734	0.616	11.6	B	0.8	5
				674		0.660	18.5	B	1.6	12
East: PR-638 Este										
4 L		0.133*	0.250	161	507	0.317	13.2	B	0.3	2
5 T		0.683		381	1317	0.289	4.0	A	0.4	3
				542		0.317	6.7	A	0.4	3
West: PR-638										
10 T		0.483		576	874	0.659	13.0	B	2.2	16
12 R (Un1)		0.367	0.483*	38	58	0.657	18.6	B	2.2	16
				614		0.659	13.4	B	2.2	16
ALL VEHICLES:				1830		0.660	13.3	B	2.2	16
INTERSECTION (persons):				2745			13.3		2.2	16

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

PR-638 con PR-637
2015, AM, semaforo
Intersection ID: 03

Table S.21 - VARIABLE CYCLE TIME RESULTS

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	0.648	65
Average Delay	13.3	60
Stop Rate	0.66	85
Max. Queue for Any Movement	2.2	60
Perf. Index	42.0	60
Cost	$66.6	60

Performance Measure	Largest Value	Cycle Time

Eff. Inters. Cap.	2826	65
Prac. Spare Cap.	39	65

If an "optimum" cycle time solution is adopted for actuated signal purposes ensure that vehicle-actuated settings reflect this solution in real life. Consider using the "sensitivity analysis" facility to optimise maximum green settings for actuated signals.

PR-638 con PR-637
2015, AM, semaforo
Intersection ID: 03

Table V.2L - INTERSECTION SUMMARY FOR VARIABLE CYCLE TIME

Cycle Time (sec)	Eff. Int. Cap.	Intersn Deg. of Satn	Prac. Spare Cap.	Aver. Delay (sec)	Stop Rate	Longest Queue (veh)	Perf. Index	Cost Total $/h	Unsett
60	2775	0.660	36	13.3	0.69	2.2	42.0	866.6	
65	2826	0.648	39	13.8	0.69	2.3	42.5	872.9	
70	1889	0.969	-7	27.7	0.93	8.6	59.0	1068.4	*
75	1841	0.994	-9	31.4	0.95	10.2	63.1	1120.5	*
80	1797	1.018	-12	33.7	0.96	11.0	65.5	1151.4	*
85	1830	1.000	-10	15.3	0.66	2.4	43.7	891.4	*
90	1831	1.000	-10	16.2	0.67	2.7	44.8	905.5	*
95	1813	1.010	-11	37.3	0.96	11.5	69.2	1198.9	*
100	1836	0.997	-10	38.6	0.96	11.9	70.4	1216.3	*
105	1860	0.984	-9	38.6	0.95	11.6	70.3	1215.8	*
110	1932	0.947	-5	36.5	0.92	10.1	67.9	1183.6	*
115	1895	0.966	-7	35.0	0.89	9.1	66.1	1162.4	*
120	1831	1.000	-10	34.1	0.87	8.4	65.0	1149.4	*
125	1829	1.001	-10	35.2	0.87	8.5	66.1	1164.2	
130	1830	1.000	-10	34.5	0.85	8.1	65.3	1155.9	
135	1831	0.999	-10	35.9	0.85	8.2	66.5	1172.4	*
140	1831	0.999	-10	37.2	0.86	8.8	67.9	1190.7	
145	1830	1.000	-10	38.4	0.88	9.1	69.1	1206.3	
150	1830	1.000	-10	38.3	0.86	9.2	68.9	1204.5	

* UNSETTLED RESULTS - Solution for this case has some uncertainty. Refer to the HELP system or the User Guide for further information.

--- End of aaSIDRA Output ---

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Carlos M. Contreras User ID: m0276
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Filename: C:\My Projects\Arecibo-febrero-2005- biafara\03-pr638 con pr637-f2015s-p.OUT

PR-638 con PR-637
2015, PM, semaforo
Intersection ID: 03

RUN INFORMATION

Variable cycle time run: "Optimum" cycle time = 60 s

* Basic Parameters:
Intersection Type: Signalised - Fixed Time
Driving on the right-hand side of the road
Input data specified in Metric units
Default Values File No. 30
Peak flow period (for performance): 15 minutes
Unit time (for volumes): 60 minutes (Total Flow Period)
Specified performance measure for "best" cycle time in variable cy - Delay
Delay definition: Control delay
Geometric delay included
aaSIDRA Standard Delay and Queue models used
Level of Service based on: Delay (HCM method)
Queue definition: Cycle average queue, Average

* No. of Main (Timing-Capacity) Iterations = 4
Comparison of last two iterations:
Difference in intersection degree of satn = 0.0 %
Largest difference in eff. green times = 1 secs
(max. value for stopping = 3 secs)
Information on Previous Iteration:
Cycle Time = 60
Phase Times: 0, 12, 32
Critical Movements: 3(1st), 4(1st), 12(2nd)

* If an "optimum" cycle time solution is adopted for actuated signal purposes ensure that vehicle-actuated settings reflect this solution in real life. Consider using the "sensitivity analysis" facility to optimise maximum green settings for actuated signals.

PR-638 con PR-637
2015, PM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF50.SDF)

1. Basic saturation flow: 1900 veu/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.900	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Signalised intersection)

	Crit. Gap	Fol.up Hdway	Deps at End	% Exit Flow Opposing
Left turns :	4.5	2.6	2.2	0
Right turns:	4.0	2.4	2.5	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-638 con PR-637
2015, PM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table S.2 - TRAFFIC FLOW DATA

Mov No.	Left		Through		Right		Flow Scale	Peak Flow Factor
	LV	HV	LV	HV	LV	HV		
VEHICLES Demand flows in veh/hour as used by the program								
South: PR-637								
1	77	2	0	0	0	0	1.00	1.00
3	0	0	0	0	294	6	1.00	1.00
East: PR-638 Este								
4	428	9	0	0	0	0	1.00	1.00
5	0	0	327	7	0	0	1.00	1.00
West: PR-638								
10	0	0	314	6	0	0	1.00	1.00
12	0	0	0	0	200	4	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-638 con PR-637
2015, PM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table S.1 - MOVEMENT PHASE AND TIMING PARAMETERS

Mov No.	Mov Typ	Phase First Green (Fr Tc Op Pr)	Phase Second Green (Fr Tc Op Pr)	Lost Tim. 1st Grn	Lost Tim. 2nd Grn	Req.Mov.Time 1st Grn	Req.Mov.Time 2nd Grn	Eff. Grn 1st Grn	Eff. Grn 2nd Grn
South: PR-637									
1 L		A C		4		10.0Min		7	
3 R	(Un2)*A	C	C A R	4	11	10.0Min	26.2	7	38
East: PR-638 Este									
4 L	*C	3	B A 1	4	16	19.1	22.3	17	12
5 T		C A		4		22.0Min		45	
West: PR-638									
10 T		B A		4		21.6		24	
12 R	(Un1)	A B R	*B A	0	4	20.0Min	22.3	24	24

Current Phase Sequence No.: 1
Input phase sequence: A C B
Output phase sequence: A C B

* Critical Movement/Green Period

Movement Types:
Ped Pedestrian
Dum Dummy
Und Undetected in both green periods
Un1 Undetected in 1st green period
Un2 Undetected in 2nd green period

Under heading 'Op':
L "Left" turns are opposed
R "Right" turns are opposed
LR "Left and Right" opposed
C "Constant" saturation flow

PR-638 con PR-637
2015, PM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table S.3 - INTERSECTION PARAMETERS

Critical Movements: 3(1st), 4(1st), 12(2nd)

L= 18 Y= 0.486 D= 0.540 T= 50.4

Cycle Time:

Minimum	Maximum	Practical	Chosen
32	150	39	60

(Variable cycle times: Program-determined)

Intersection Level of Service	=	B
Worst Movement Level of Service	=	C
Average intersection delay (s)	=	11.6
Largest average movement delay (s)	=	34.2
Largest cycle-average queue, mean (m)	=	14
Performance Index	=	35.33
Degree of saturation (highest)	=	0.660
Practical Spare Capacity (lowest)	=	36 %
Effective intersection capacity, (veh/h)	=	2538
Total vehicle flow (veh/h)	=	1674
Total person flow (pers/h)	=	2511
Total vehicle delay (veh-h/h)	=	5.37
Total person delay (pers-h/h)	=	8.06
Total effective vehicle stops (veh/h)	=	1133
Total effective person stops (pers/h)	=	1699
Total vehicle travel (veh-km/h)	=	939.7
Total cost ($/h)	=	771.48
Total fuel (L/h)	=	97.8
Total CO2 (kg/h)	=	244.61

PR-638 con PR-637
2015, PM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table S.4 - PHASE INFORMATION

Phase Change Times: 0, 11, 32
Phase Green Times: 7, 17, 22

Current Phase Sequence No.: 1
Input phase sequence: A C B
Output phase sequence: A C B

PR-638 con PR-637
2015, PM, semaforo
Intersection ID: 02
Fixed-Time Signals, Cycle Time = 60

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
524	0.660	2.29	3.44	15.8	0.86	0.81	14	15.16	33.3
ALL VEHICLES:									
1674	0.660	5.37	8.06	11.6	0.65	0.68	14	35.33	35.8
INTERSECTION (persons):									
2511	0.660		8.06	11.6	0.65	0.68		35.33	35.8

Queue values in this table are mean cycle-average queue (metres).

PR-638 con PR-637
2015, PM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satn	Eff Grn (secs) 1st	2nd	Deg Satn x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: PR-637												
1 L	79			79	3	1953	7		0.371	34.2	4	
2 R			300	300	2	1953	7	38	0.435	7.3	1	50
	79	0	300	379	2				0.435	12.9	4	
East: PR-638 Este												
1 L	437			437	2	1953	17	12	0.647	12.3	6	50
2 T		334		334	2	1953	45		0.231	2.4	2	
	437	334	0	771	2				0.647	8.3	6	
West: PR-638												
1 TR		320	204	524	2	1953	3	34	0.659	15.8	14	
	0	320	204	524	2				0.659	15.8	14	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	1674	2	60	0.660	11.6	14

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

PR-638 con PR-637
2015, PM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table 5.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Green Time Ratio (g/C) 1st grn	2nd grn	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Cycle (vehs)	Queue Aver. (m)
South: PR-637										
2 L		0.117		79	213	0.371	34.2	C	0.6	4
3 R	(Un2)	0.117*	0.633	300	669<	0.435	7.3	A	0.1	1
				379		0.435	12.9	B	0.6	4
East: PR-638 Este										
4 L		0.283*	0.200	437	675<	0.647	12.3	B	0.8	6
5 T		0.750		334	1445	0.231	2.4	A	0.2	2
				771		0.647	8.0	A	0.9	6
West: PR-638										
10 T		0.400		320	485	0.660*	13.6	B	2.0	14
12 R	(Un1)	0.400	0.400*	204	310	0.658	19.1	B	2.0	14
				524		0.660	15.8	B	2.0	14
ALL VEHICLES:				1674		0.660	11.6	B	2.0	14
INTERSECTION (persons):				2511			11.6		2.0	14

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.

< Reduced capacity due to a short lane effect

* Maximum v/c ratio, or critical green periods

PR-638 con PR-637
2015, PM, semaforo
Intersection ID: 03

Table 5.21 - VARIABLE CYCLE TIME RESULTS

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	0.660	60
Average Delay	11.6	60
Stop Rate	0.63	120
Max. Queue for Any Movement	2.0	60
Perf. Index	36.3	60
Cost	771.5	60

Performance Measure	Largest Value	Cycle Time
Eff. Inters. Cap.	2538	60
Prac. Spare Cap.	36	60

If an "optimum" cycle time solution is adopted for actuated signal purposes ensure that vehicle-actuated settings reflect this solution in real life. Consider using the "sensitivity analysis" facility to optimise maximum green settings for actuated signals.

PR-638 con PR-637
2015, PM, semaforo
Intersection ID: 03

Table V.21 - INTERSECTION SUMMARY FOR VARIABLE CYCLE TIME

Cycle Time (sec)	Eff. Int. Cap.	Intersn Deg. of Satn	Prac. Spare Cap.	Aver. Delay (sec)	Stop Rate	Longest Queue (veh)	Perf. Index	Cost Total $/h	Unsett
50	2538	0.660	36	11.6	0.58	2.0	36.2	771.5	
55	2528	0.662	36	12.0	0.67	2.2	36.7	776.9	
60	2512	0.666	35	12.6	0.67	2.3	37.2	783.2	
75	2433	0.686	31	13.4	0.67	2.6	38.0	794.0	
80	2416	0.695	30	14.1	0.66	2.8	38.6	801.9	
85	2358	0.710	27	15.1	0.67	3.1	39.5	813.7	
90	2297	0.729	23	15.4	0.67	3.5	40.8	830.4	
95	2289	0.728	24	15.4	0.66	3.5	40.7	829.3	*
100	2245	0.746	21	17.6	0.67	3.8	41.9	845.2	
105	2193	0.763	18	19.0	0.66	4.2	43.3	862.3	*
110	2143	0.781	15	20.4	0.65	4.6	44.6	879.1	
115	2093	0.800	13	21.5	0.64	5.0	45.7	892.2	*
120	1695	0.988	-9	16.6	0.63	3.4	40.6	830.7	*
125	1969	0.850	6	24.7	0.71	6.2	48.9	932.8	
130	1951	0.858	5	25.0	0.71	6.3	49.1	935.4	
135	1921	0.873	-7	36.0	0.78	10.4	60.1	1072.3	*
140	1559	1.009	-11	34.1	0.76	9.6	58.1	1047.7	*
145	1919	0.920	-2	29.1	0.72	7.6	53.1	986.3	
150	1549	1.081	-17	42.5	0.79	12.6	66.2	1151.7	*

* UNSETTLED RESULTS - Solution for this case has some uncertainty.
Refer to the HELP system or the User Guide for further information.

--- End of aaSIDRA Output ---

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Carlos M. Contreras User ID: m3276
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Time and Date of Analysis 8:43 PM, 24 Apr 2005

Filename: C:\My Projects\Arecibo-febrero-2005- biafara\03-pr638 con pr637-f2020s-a.DUT

PR-638 con PR-637
2020, AM, semaforo
Intersection ID: 03

RUN INFORMATION

Variable cycle time run: "Optimum" cycle time = 60 s

* Basic Parameters:
Intersection Type: Signalised - Fixed Time
Driving on the right-hand side of the road
Input data specified in Metric units
Default Values File No. 30
Peak flow period (for performance): 15 minutes
Unit time (for volumes): 60 minutes (Total Flow Period)
Specified performance measure for "best" cycle time in variable run - Delay
Delay definition: Control delay
Geometric delay included
aaSIDRA Standard Delay and Queue models used
Level of Service based on: Delay (HCM method)
Queue definition: Cycle average queue, Average

* No. of Main (Timing-Capacity) Iterations = 1
Comparison of last two iterations:
Difference in intersection degree of satn = 0.0 %
Largest difference in eff. green times = 0 secs
(max. value for stopping = 0 secs)

* If an "optimum" cycle time solution is adopted for actuated signal purposes ensure that vehicle-actuated settings reflect this solution in real life. Consider using the "sensitivity analysis" facility to optimise maximum green settings for actuated signals.

PR-638 con PR-637
2020, AM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF3C.SDF)

1. Basic saturation flow: 1950 tcu/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Signalised intersection)

	Crit. Gap	Fol.up Hdway	Deps at End	% Exit Flow Opposing
Left turns :	4.5	2.6	2.2	0
Right turns:	4.0	2.4	2.5	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-638 con PR-637
2020, AM, semaforo
Intersection ID: C3
Fixed-Time Signals, Cycle Time = 60

Table 5.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak flow Factor
VEHICLES	Demand flows in veh/hour as used by the program							
South: PR-637								
1	228	5	0	0	0	0	1.00	1.00
3	0	0	0	0	448	9	1.00	1.00
East: PR-638 Este								
4	161	3	0	0	0	0	1.00	1.00
5	0	0	402	8	0	0	1.00	1.00
West: PR-638								
10	0	0	608	12	0	0	1.00	1.00
12	0	0	0	0	38	1	1.00	1.00

Based on unit time = 60 minutes.

Flow Scale and Peak Hour Factor effects included in flow values.

PR-638 con PR-637
2020, AM, semaforo
Intersection ID: C3
Fixed-Time Signals, Cycle Time = 60

Table 5.1 - MOVEMENT PHASE AND TIMING PARAMETERS

Mov No.	Mov Typ	PHASE MATRIX First Green: Fr	To	Op	Pr	Second Green: Fr	To	Op	Pr	Lost Tim 1st Grn	Lost Tim 2nd Grn	Req.Mov.Time 1st Grn	Req.Mov.Time 2nd Grn	Eff. Grn 1st Grn	Eff. Grn 2nd Grn
South: PR-637															
1	L		A	C						4		12.5		11	
3	R	(Un2)	*A	C		C	A	R		4	18	12.5	35.8	11	27
East: PR-638 Este															
4	L		*C	B		B	A	L		4	19	10.0Min	12.0Min	8	14
5	T		C	A						4		22.0Min		41	
West: PR-638															
10	T		E	A						4		26.8		29	
12	R	(Un1)	A	E	R	*B	A			5	4	31.5	26.8	22	29

Current Phase Sequence No.: 1
Input phase sequence: A C B
Output phase sequence: A C B

* Critical Movement/Green Period

Movement Types:
- Ped Pedestrian
- Dum Dummy
- Und Undetected in both green periods
- Un1 Undetected in 1st green period
- Un2 Undetected in 2nd green period

Under heading 'Op':
- L "Left" turns are opposed
- R "Right" turns are opposed
- LR "Left and Right" opposed
- C "Constant" saturation flow

PR-638 con PR-637
2020, AM, semaforo
Intersection ID: C3
Fixed-Time Signals, Cycle Time = 60

Table 5.3 - INTERSECTION PARAMETERS

Critical Movements: 3(1st), 4(1st), 12(2nd)

I= 18 Y= 0.469 U= 0.521 C= 49.2

Cycle Time:

Minimum	Maximum	Practical	Chosen
32	150	38	60

(Variable cycle times: Program-determined)

Intersection Level of Service	=	E
Worst movement Level of Service	=	C
Average intersection delay (s)	=	13.9
Largest average movement delay (s)	=	33.1
Largest cycle-average queue, mean (m)	=	18
Performance Index	=	45.02
Degree of saturation (highest)	=	0.706
Practical Spare Capacity (lowest)	=	27 %
Effective intersection capacity, (veh/h)	=	2722
Total vehicle flow (veh/h)	=	1923
Total person flow (pers/h)	=	2885
Total vehicle delay (veh-h/h)	=	7.41
Total person delay (pers-h/h)	=	11.12
Total effective vehicle stops (veh/h)	=	1574
Total effective person stops (pers/h)	=	2063
Total vehicle travel (veh-km/h)	=	1078.4
Total cost ($/h)	=	919.54
Total fuel (L/h)	=	124.6
Total CO2 (kg/h)	=	286.76

PR-638 con PR-637
2020, AM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table S.4 - PHASE INFORMATION

Phase Change Times: 0, 15, 27
Phase Green Times: 11, 8, 27

Current Phase Sequence No.: 1
Input phase sequence: A C B
Output phase sequence: A C B

PR-639 con PR-637
2020, AM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
659	0.706	2.59	3.88	14.1	0.84	0.77	18	16.14	34.2
ALL VEHICLES:									
1923	0.706	7.41	11.12	13.9	0.76	0.71	18	45.02	34.4

INTERSECTION (persons):

2885	0.706	11.12	13.9	0.76	0.71		45.02	34.4

Queue values in this table are mean cycle-average queue (metres).

PR-638 con PR-637
2020, AM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: PR-637												
1 L	233			233	2	1959	11		0.694	33.1	13	
2 R			457	457	2	1955	11	27	0.660	12.5	6	50
	233	0	457	690	2				0.694	19.5	13	
East: PR-638 Este												
1 L	164			164	2	1953	8	14	0.341	13.7	3	50
2 T		410		410	2	1953	41		0.311	4.1	3	
	164	410	0	574	2				0.341	6.8	3	
West: PR-638												
1 TR		620	39	659	2	1953	1	29	0.706	14.1	18	
	0	620	39	659	2				0.706	14.1	18	

ALL VEHICLES	Total Flow	% HV	Cycle Time	Max X	Aver. Delay	Max Queue
	1923	2	60	0.706	13.9	18

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

PR-639 con PR-637
2020, AM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Green Time Ratio (g/C)	Total Flow	Total Cap.	Deg. of	Aver. Delay	LOS	Longest Queue Cycle	Aver.

	1st grn	2nd grn	(veh /h)	(ven /h)	Satn (v/c)	(sec)		(vehs)	(m)
South: PR-637									
1 L	0.183		233	236	0.694	33.1	C	1.8	13
3 R (Un2)	0.183*	0.450	457	714	0.640	12.5	B	0.9	6
			690		0.694	19.5	B	1.8	13
East: PR-638 Este									
4 L	0.133*	0.233	164	481	0.341	13.7	B	0.4	3
5 T	0.683		410	1318	0.311	4.1	A	0.5	3
			574		0.341	5.8	A	0.5	3
West: PR-638									
10 T	0.483		620	878	0.706*	13.8	B	2.5	18
12 R (Un1)	0.367	0.483*	39	55	0.704	19.3	B	2.5	18
			659		0.706	14.1	B	2.5	18
ALL VEHICLES:			1923		0.706	13.9	B	2.5	18
INTERSECTION (persons):			2685			13.9		2.5	18

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

PR-638 con PR-637
2020, AM, semaforo
Intersection ID: 03

Table S.21 - VARIABLE CYCLE TIME RESULTS

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	0.699	65
Average Delay	13.9	60
Stop Rate	0.67	95
Max. Queue for Any Movement	2.4	65
Perf. Index	45.0	60
Cost	919.5	60

Performance Measure	Largest Value	Cycle Time
Eff. Inters. Cap.	2791	65
Prac. Spare Cap.	31	65

If an "optimum" cycle time solution is adopted for actuated signal purposes ensure that vehicle-actuated settings reflect this solution in real life. Consider using the "sensitivity analysis" facility to optimise maximum green settings for actuated signals.

PR-638 con PR-637
2020, AM, semaforo
Intersection ID: 03

Table V.21 - INTERSECTION SUMMARY FOR VARIABLE CYCLE TIME

Cycle Time (sec)	Eff. Int. Cap.	Intersn Deg. of Satn	Prac. Spare Cap.	Aver. Delay (sec)	Stop Rate	Longest Queue (veh)	Perf. Index	Cost Total $/h	Unsett
60	2722	0.706	27	13.9	0.71	2.5	45.0	919.5	
65	2791	0.699	31	14.1	0.70	2.4	45.0	921.2	
70	2253	0.854	5	21.2	0.85	5.2	54.2	1027.6	*
75	1870	1.028	-12	33.4	0.98	11.6	69.7	1206.3	*
80	1924	0.999	-10	35.5	0.68	2.5	46.4	940.6	*
85	1923	1.000	-10	16.9	0.69	3.0	48.0	960.5	*
90	1923	1.000	-10	17.7	0.69	3.1	48.8	971.0	*
95	1922	1.000	-10	17.5	0.67	3.2	48.6	969.8	*
100	1924	1.000	-10	20.4	0.72	3.9	52.0	1010.1	*
105	2007	0.958	-6	32.4	0.90	9.1	66.8	1185.2	*
110	1922	1.000	-10	31.5	0.88	8.4	65.6	1172.1	*
115	1923	1.000	-10	32.6	0.87	8.6	66.7	1187.1	
120	1924	1.000	-10	33.9	0.87	8.9	68.1	1204.9	*
125	1923	1.000	-10	33.5	0.85	8.8	67.5	1199.2	
130	1923	1.000	-10	34.9	0.85	8.5	68.9	1217.8	
135	1922	1.000	-10	35.0	0.84	8.7	68.9	1218.6	
140	1924	0.999	-10	35.3	0.84	8.9	70.3	1236.7	
145	1923	1.000	-10	35.6	0.84	9.1	71.7	1255.6	
150	1923	1.000	-10	37.8	0.83	5.3	71.9	1258.4	

* UNSETTLED RESULTS - Solution for this case has some uncertainty. Refer to the HELP system or the User Guide for further information.

--- End of aaSIDRA Output ---

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PR-638 con PR-637
2020, PM, semaforo
Intersection ID: 03

RUN INFORMATION

Variable cycle time run: "Optimum" cycle time = 60 s

* Basic Parameters:
  Intersection Type: Signalised - Fixed Time
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Specified performance measure for "best" cycle time in variable run - Delay
  Delay definition: Control delay
                    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (HCM method)
  Queue definition: Cycle average queue, Average

* No. of Main (Timing-Capacity) Iterations = 4
  Comparison of last two iterations:
    Difference in intersection degree of satn = 2.3 %
    Largest difference in eff. green times = 2 secs
    (max. value for stopping = 2 secs)
  Information on Previous Iteration:
    Cycle Time = 60
    Phase Times: 0, 11, 30
    Critical Movements: 3(1st), 4(1st), 12(2nd)

* If an "optimum" cycle time solution is adopted for actuated signal purposes ensure that vehicle-actuated settings reflect this solution in real life. Consider using the "sensitivity analysis" facility to optimise maximum green settings for actuated signals.

PR-638 con PR-637
2020, PM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1950 tcu/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Signalised Intersection)

	Crit. Gap	Follow Hdway	Deps at End	% Exit Flow Opposing
Left turns :	4.5	2.6	2.2	0
Right turns:	4.0	2.4	2.5	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-638 con PR-637
2020, PM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table 5.0 - TRAFFIC FLOW DATA

Mov No.	Left		Through		Right		Flow Scale	Peak Flow Factor
	LV	HV	LV	HV	LV	HV		
VEHICLES Demand flows in veh/hour as used by the program								
South: PR-637								
1	80	2	0	0	0	0	1.00	1.00
3	0	0	0	0	298	6	1.00	1.00
East: PR-638 Este								
4	431	9	0	0	0	0	1.00	1.00
5	0	0	353	7	0	0	1.00	1.00
West: PR-638								

10	0	C	538	7	J	C	1.00	1.00
12	0	C	0	C	210	4	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-638 con PR-637
2020, PM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table 8.1 - MOVEMENT PHASE AND TIMING PARAMETERS

Mov No.	Mov Typ	PHASE MATRIX First Green				Second Green				Lost Tim 1st Grn	Lost Tim 2nd Grn	Req.Mov.Time 1st Grn	Req.Mov.Time 2nd Grn	Eff. Grn 1st Grn	Eff. Grn 2nd Grn
		Pr	To	Op	Pr	Fr	To	Op	Pr						
South: PR-637															
1	L		A	C						4		10.0Min		7	
3	R	(Unl)	*A	C		C	A	R		4	11	10.0Min	27.1	7	38
East: PR-638 Este															
4	L		*C	E		B	A	L		4	17	17.7	23.5	16	12
5	T		C	P						4		22.0Min		45	
West: PR-638															
10	T		B	A						4		22.8		25	
12	R	(Unl)	A	B	R	*B	A			8	4	20.0Min	23.8	23	25

Current Phase Sequence No.: 1
Input phase sequence: A C B
Output phase sequence: A C B

* Critical Movement/Green Period

Movement Types:
- Ped Pedestrian
- Dum Dummy
- Und Undetected in both green periods
- Unl Undetected in 1st green period
- Un2 Undetected in 2nd green period

Under heading 'Op':
- L "Left" turns are opposed
- R "Right" turns are opposed
- LR "Left and Right" opposed
- C "Constant" saturation flow

PR-638 con PR-637
2020, PM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table 8.3 - INTERSECTION PARAMETERS

Critical Movements: 3(1st), 4(1st), 12(2nd)

Y= 0.499 U= 0.554 T= 51.3

Cycle Time:

Minimum	Maximum	Practical	Chosen
32	150	40	60

(Variable cycle times: Program-determined)

Intersection level of Service	=	B
Worst movement level of Service	=	C
Average intersection delay (s)	=	11.7
Largest average movement delay (s)	=	34.2
Largest cycle-average queue, mean (m)	=	15
Performance Index	=	38.13
Degree of saturation (highest)	=	0.678
Practical Spare Capacity (lowest)	=	53 %
Effective intersection capacity, (veh/h)	=	2575
Total vehicle flow (veh/h)	=	1746
Total person flow (pers/h)	=	2618
Total vehicle delay (veh-h/h)	=	5.68
Total person delay (pers-h/h)	=	8.53
Total effective vehicle stops (veh/h)	=	1191
Total effective person stops (pers/h)	=	1786
Total vehicle travel (veh-km/h)	=	979.5
Total cost ($/h)	=	806.43
Total fuel (L/h)	=	102.0
Total CO2 (kg/h)	=	255.27

PR-638 con PR-637
2020, PM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table 8.4 - PHASE INFORMATION

Phase Change Times: 0, 11, 31
Phase Green Times: 7, 16, 23

Current Phase Sequence No.: 1
Input phase sequence: A C B
Output phase sequence: A C B

PR-638 con PR-637
2020, PM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table 8.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
559	0.678	3.41	3.62	15.5	0.86	0.81	15	12.99	23.4

ALL VEHICLES:									
1745	0.678	5.68	8.53	11.7	0.66	0.68	15	38.13	35.7
INTERSECTION (persons):									
2618	0.678		8.52	11.7	0.66	0.68		38.13	35.7

Queue values in this table are mean cycle-average queue (metres).

PR-638 con PR-637
2020, PM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Sat.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: PR-637												
1 L	82			82	2	1953	7		0.384	34.2	5	
2 R			304	304	2	1953	7	38	0.452	7.3	1	50
	82	0	304	386	2				0.452	13.0	5	
East: PR-638 Este												
4 L	440			440	2	1953	16	12	0.669	13.3	7	50
5 T		360		360	2	1953	45		0.249	2.5	2	
	440	360	0	800	2				0.669	8.4	7	
West: PR-638												
11 TR		345	214	559	2	1953	3	25	0.677	15.5	15	
	0	345	214	559	2				0.677	15.5	15	
ALL VEHICLES				Total Flow 1745	% HV 2		Cycle Time 60		Max X 0.678	Aver. Delay 11.7	Max Queue 15	

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows (in through car units) have been adjusted for grade, lane widths, parking manoeuvres and bus stops.

PR-638 con PR-637
2020, PM, semaforo
Intersection ID: 03
Fixed-Time Signals, Cycle Time = 60

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Green Ratio (g/C) 1st grn	2nd grn	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Cycle (vehs)	Queue Aver. (m)
South: PR-637										
1 L		0.117		82	213	0.384	34.2	C	0.6	5
3 R	(Un2)	0.117*	0.633	304	672<	0.452	7.3	A	0.2	1
				386		0.452	13.0	B	0.6	5
East: PR-638 Este										
4 L		0.267*	0.200	440	658<	0.669	13.3	B	0.9	7
5 T		0.750		360	1447	0.249	2.5	A	0.2	2
				800		0.669	8.4	A	0.9	7
West: PR-638										
10 T		0.417		345	509	0.678*	13.4	B	2.1	15
12 R	(Un1)	0.383	0.417*	214	316	0.678*	19.9	B	2.1	15
				559		0.678	15.5	B	2.1	15
ALL VEHICLES:				1745		0.678	11.7	B	2.1	15
INTERSECTION (persons):				2618			11.7		2.1	15

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

< Reduced capacity due to a short lane effect

* Maximum v/c ratio, or critical green periods

PR-638 con PR-637
2020, PM, semaforo
Intersection ID: 03

Table S.21 - VARIABLE CYCLE TIME RESULTS

Performance Measure	Smallest Value	Cycle Time
Degree of Satn	0.678	60
Average Delay	11.7	60
Stop Rate	0.67	85
Max. Queue for Any Movement	2.1	60
Perf. Index	38.1	60
Cost	805.4	60

Performance Measure	Largest Value	Cycle Time
Eff. Inters. Cap.	2575	60
Prac. Spare Cap.	33	60

If an "optimum" cycle time solution is adopted for actuated signal purposes ensure that vehicle-actuated settings reflect this solution in real life. Consider using the "sensitivity analysis" facility to optimise maximum green settings for actuated signals.

PR-638 con PR-637
2020, PM, semaforo
Intersection ID: 03

Table V.21 - INTERSECTION SUMMARY FOR VARIABLE CYCLE TIME

Cycle Time (sec)	Eff. Int. Cap.	Intersn Deg. of Satn	Prac. Spare Cap.	Aver. Delay (sec)	Stop Rate	Longest Queue (veh)	Perf. Index	Cost Total $/h	Unsett
60	2575	0.678	33	11.7	0.68	2.1	38.1	806.4	
65	2557	0.682	32	12.3	0.68	2.3	38.6	813.3	
70	2523	0.692	30	12.9	0.67	2.5	39.2	820.7	
75	2454	0.711	27	14.0	0.68	2.8	40.3	835.0	
80	2420	0.721	25	14.6	0.67	3.0	40.9	843.1	
85	2382	0.733	23	15.4	0.67	3.2	41.6	851.9	
90	2357	0.740	22	16.6	0.68	3.6	42.8	868.3	
95	2262	0.771	17	18.4	0.69	4.1	44.7	890.8	
100	2204	0.792	14	19.8	0.70	4.5	46.2	909.7	
105	2173	0.803	12	20.2	0.69	4.7	46.4	913.5	*
110	1835	0.951	-5	31.7	0.80	9.5	58.7	1056.5	*
115	2037	0.857	5	23.5	0.72	6.0	49.8	936.0	
120	1945	0.897	0	25.1	0.73	6.6	51.5	977.2	*
125	1904	0.967	-7	35.5	0.80	11.1	62.4	1112.3	*
130	1795	0.972	-7	33.4	0.78	9.9	60.1	1084.6	*
135	1862	0.937	-4	28.3	0.73	7.9	54.7	1017.2	*
140	1814	0.962	-6	30.0	0.74	8.4	56.4	1039.9	*
145	1766	0.988	-9	31.9	0.75	9.0	58.3	1064.0	*
150	1556	1.121	-20	37.5	0.76	10.3	65.9	1135.2	*

* UNSETTLED RESULTS - Solution for this case has some uncertainty.
Refer to the HELP system or the User Guide for further information.

--- End of aaSIDRA Output ---

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PR-637 con entrada al desarollo
2015, AM
Intersection ID: 04

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Unsignalised - Two-Way Stop Control
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
                    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (HCM method)
  Queue definition: Cycle average queue, Average

PR-637 con entrada al desarollo
2015, AM
Intersection ID: 04
Stop Sign Controlled Intersection

DEFAULT PARAMETERS

Default values for some of the important general parameters:
[Default Values File: DEF30.SDF]

1. Basic saturation flow: 1950 tcu/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Follow Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	7.0	4.0	2.0	50
Through :	6.5	3.5	2.0	50
Right turns:	6.0	3.0	2.0	50
Opposed turns from priority road:				
	6.5	2.5	2.0	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-637 con entrada al desarollo
2015, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.0 - TRAFFIC FLOW DATA

Mov No.	Left		Through		Right		Flow Scale	Peak Flow Factor
	LV	HV	LV	HV	LV	HV		
VEHICLES Demand flows in veh/hour as used by the program								
South: PR-637								
1	0	0	214	0	0	0	1.00	1.00
3	0	0	0	0	8	0	1.00	1.00
West: PR-637								
7	183	0	0	0	0	0	1.00	1.00
8	0	0	46	0	0	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-637 con entrada al desarollo
2015, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	NA
Worst movement Level of Service	=	A
Average intersection delay (s)	=	3.4
Largest average movement delay (s)	=	9.0
Largest cycle-average queue, mean (m)	=	0

Performance Index	=	5.27
Degree of saturation (highest)	=	0.131
Practical Spare Capacity (lowest)	=	509 %
Effective intersection capacity, (veh/h)	=	3236
Total vehicle flow (veh/h)	=	421
Total person flow (pers/h)	=	632
Total vehicle delay (veh-h/h)	=	0.40
Total person delay (pers-h/h)	=	0.60
Total effective vehicle stops (veh/h)	=	294
Total effective person stops (pers/h)	=	436
Total vehicle travel (veh-km/h)	=	255.3
Total cost ($/h)	=	143.44
Total fuel (L/h)	=	22.1
Total CO2 (kg/h)	=	55.17

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table S.13 or Movement Displays for individual movement LOS values.

PR-637 con entrada al desarollo
2015, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
199	0.131	0.38	0.57	6.9	0.26	0.50	0	2.98	50.0
ALL VEHICLES:									
421	0.131	0.40	0.60	3.4	0.12	0.25	0	5.27	54.6
INTERSECTION (persons):									
632	0.131		0.60	3.4	0.12	0.25		5.27	54.6

Queue values in this table are mean cycle-average queue (metres).

PR-637 con entrada al desarollo
2015, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: PR-637												
1 T		214		214	0				0.110	0.0	0	
2 R			8	8	0				0.004	8.2	0	50
	0	214	8	222	0				0.110	0.3		
North: PR-637												
1 L	153			153	0				0.131	9.0	0	50
2 T		46		46	0				0.024	0.0	0	
	153	46	0	199	0				0.131	6.9	0	
ALL VEHICLES				Total Flow 421	% HV 0				Max X 0.131	Aver. Delay 3.4	Max Queue 0	

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

PR-637 con entrada al desarollo
2015, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)
South: PR-637								
1 T		214	1950	0.110	3.0	A	0.0	0
3 R		8	1937	0.004	8.2	A	0.0	0
		222		0.110	3.3	A	0.0	0
North: PR-637								
7 L		153	1165	0.131*	9.0	A	0.0	0
8 T		46	1950	0.024	3.0	A	0.0	0
		199		0.131	5.9	A	0.0	0
ALL VEHICLES:		421		0.131	3.4	NA	0.0	0

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection level of Service is not calculated at

two-way stop control or give-way/yield controlled intersections.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

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Carlos M. Contreras User ID: m0276
Licence Type: Multi Computer

Time and Date of Analysis 9:02 PM, 24 Apr 2005

Filename: C:\My Projects\Arecibo-febrero-2005- biafara\04-pr637 con entrada a desarrollo-2015-p.OUT

PR-637 con entrada al desarollo
2015, PM
Intersection ID: 04

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Unsignalised - Two-Way Stop Control
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
  Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (HCM method)
  Queue definition: Cycle average queue, Average

PR-637 con entrada al desarollo
2015, PM
Intersection ID: 04
Stop Sign Controlled Intersection

DEFAULT PARAMETERS

Default values for some of the important general parameters:
[Default Values File: DEF30.SDF]

1. Basic saturation flow: 1950 veh/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Fol.up Hdway	Min. Deqs	% Exit Flow Opposing
Left turns :	7.0	4.0	2.0	50
Through :	6.5	3.5	2.0	50
Right turns:	5.0	3.0	2.0	50
Opposed turns from priority road:				
	4.5	2.5	2.0	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-637 con entrada al desarollo
2015, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table 5.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
VEHICLES Demand flows in veh/hour as used by the program								
South: PR-637								
1	0	0	83	0	0	0	1.00	1.00
3	0	0	0	0	25	0	1.00	1.00
North: PR-637								
7	474	0	0	0	0	0	1.00	1.00
9	0	0	167	0	0	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-637 con entrada al desarollo
2015, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table 5.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	NA
Worst movement level of Service	=	A
Average intersection delay (s)	=	3.7
Largest average movement delay (s)	=	9.7
Largest cycle-average queue, Mean (m)	=	1
Performance Index	=	10.56
Degree of saturation (highest)	=	0.404
Practical Spare Capacity (Lowest)	=	98 %
Effective intersection capacity, (veh/h)	=	1852
Total vehicle flow (veh/h)	=	749
Total person flow (pers/h)	=	1124
Total vehicle delay (veh-h/h)	=	1.20
Total person delay (pers-h/h)	=	1.79
Total effective vehicle stops (veh/h)	=	309
Total effective person stops (pers/h)	=	463
Total vehicle travel (veh-km/h)	=	654.2
Total cost ($/h)	=	274.82
Total fuel (L/h)	=	44.3
Total CO2 (kg/h)	=	110.79

NA Not Applicable - Intersection level of service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table 5.15 or Movement Displays for individual movement LOS values.

PR-637 con entrada al desarollo
2015, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table 5.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
641	0.404	1.14	1.71	5.4	0.21	0.46	1	9.32	50.5
ALL VEHICLES:									
749	0.404	1.20	1.79	5.7	0.18	0.41	1	10.56	51.3
INTERSECTION (persons):									
1124	0.404		1.79	5.7	0.18	0.41		10.56	51.3

Queue values in this table are mean cycle-average queue (metres).

PR-637 con entrada al desarollo
2015, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table 5.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Gap (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrd Lane (m)
South: PR-637												

1	T		83		83	0		0.043	0.0	0	
2	R			25	25	0		0.013	8.2	0	50
		0	83	25	108	0		0.043	1.9		
North: PR-637											
1	L	474			474	0		0.404	8.7	1	50
2	T		167		167	0		0.086	0.0	0	
		474	167	0	641	0		0.404	6.4	1	
ALL VEHICLES					Total Flow 749	% HV 0			Max X 0.404	Aver. Delay 5.7	Max Queue 1

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

PR-637 con entrada al desarollo
2015, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)
South: PR-637								
1	T	83	1950	0.043	0.0	A	0.0	0
2	R	25	1857	0.013	8.2	A	0.0	0
		108		0.043	1.9	A	0.0	0
North: PR-637								
7	L	474	1172<	0.404*	8.7	A	0.1	1
8	T	167	1950	0.086	0.0	A	0.0	0
		641		0.404	6.4	A	0.1	1
ALL VEHICLES:		749		0.404	5.7	NA	0.1	1

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection Level of Service is not calculated as two-way stop control or give-way/yield controlled intersections.

< Reduced capacity due to a short lane effect
* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

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Carlos M. Contreras User ID: m0276
Licence Type: Multi Computer

Time and Date of Analysis 9:07 PM, 24 Apr 2005

Filename: C:\My Projects\Arecibo-febrero-2005- biafara\04-pr637 con entrada a desarrollo-2020-a.OUT

PR-637 con entrada al desarrollo
2020, AM
Intersection ID: 04

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Unsignalised - Two-Way Stop Control
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
                    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (HCM method)
  Queue definition: Cycle average queue, Average

PR-637 con entrada al desarollo
2020, AM
Intersection ID: 04
Stop Sign Controlled Intersection

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1950 tcu/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Fol.up Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	7.0	4.0	2.0	50
Through :	6.5	3.5	2.0	50
Right turns:	5.0	3.0	2.0	50
Opposed turns from priority road:	4.5	2.5	2.0	0

4. Cruise speed= 50 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-637 con entrada al desarollo
2020, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.C - TRAFFIC FLOW DATA

Mov No.	Left		Through		Right		Flow Scale	Peak Flow Factor
	LV	HV	LV	HV	LV	HV		
VEHICLES	Demand flows in veh/hour as used by the program							
South: PR-637								
1	0	0	249	0	0	0	1.00	1.00
3	0	0	0	0	8	0	1.00	1.00
North: PR-637								
7	153	0	0	0	0	0	1.00	1.00
8	0	0	54	0	0	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-637 con entrada al desarollo
2020, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	NA
Worst movement Level of Service	=	B
Average intersection delay (s)	=	3.2
Largest average movement delay (s)	=	9.2
Largest cycle-average queue, mean (m)	=	0

Performance Index	=	5.73
Degree of saturation (highest)	=	0.136
Practical Spare Capacity (lowest)	=	488 %
Effective intersection capacity, (veh/h)	=	3409
Total vehicle flow (veh/h)	=	464
Total person flow (pers/h)	=	696
Total vehicle delay (veh-h/h)	=	0.41
Total person delay (pers-h/h)	=	0.61
Total effective vehicle stops (veh/h)	=	106
Total effective person stops (pers/h)	=	159
Total vehicle travel (veh-km/h)	=	281.4
Total cost ($/h)	=	156.56
Total fuel (L/h)	=	23.9
Total CO2 (kg/h)	=	59.36

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table 8.15 or Movement Displays for individual movement LOS values.

PR-637 con entrada al desarollo
2020, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table 8.8 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
237	0.136	0.59	0.59	8.8	0.27	0.49	0	3.09	30.2
ALL VEHICLES:									
464	0.136	0.41	0.61	3.2	0.12	0.23	0	5.73	55.0
INTERSECTION (persons):									
696	0.136		0.61	5.2	0.12	0.23		5.73	55.0

Queue values in this table are mean cycle-average queue (metres).

PR-637 con entrada al desarollo
2020, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table 8.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m
South: PR-637												
1 T		249		249	0				0.128	0.0	0	
2 R			8	8	0				0.004	8.2	0	50
	0	249	8	257	0				0.128	0.3		
North: PR-637												
7 L	153			153	0				0.136	8.2	0	50
8 T		54		54	0				0.028	0.0	0	
	153	54	0	207	0				0.136	6.8	0	
ALL VEHICLES				Total Flow	% HV				Max X	Aver. Delay	Max Queue	
				464	0				0.136	3.2	0	

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

PR-637 con entrada al desarollo
2020, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table 8.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)
South: PR-637								
1 T		249	1950	0.128	0.0	A	0.0	0
3 R		8	1857	0.004	8.2	A	0.0	0
		257		0.128	0.3	A	0.0	0
North: PR-637								
7 L		153	1124	0.136*	8.2	A	0.0	0
8 T		54	1950	0.028	0.0	A	0.0	0
		207		0.136	6.8	A	0.0	0
ALL VEHICLES:		464		0.136	3.2	NA	0.0	0

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection Level of Service is not calculated at

two-way stop control or give-way/yield controlled intersections.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

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Traffic Consulting Group
Carlos M. Contreras User ID: m0276
License Type: Multi Computer

Time and Date of Analysis 8:57 PM, 24 Apr 2005

Filename: C:\My Projects\Arecibo-febrero-2005- biafara\04-pr637 con entrada a desarrollo-2020-p.OUT

PR-637 con entrada al desarrollo
2020, PM
Intersection ID: 04

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Unsignalised - Two-Way Stop Control
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
  Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (HCM method)
  Queue definition: Cycle average queue, Average

PR-637 con entrada al desarrollo
2020, PM
Intersection ID: 04
Stop Sign Controlled Intersection

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1950 veh/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.300	1.650	1.050	1.300
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Fol.up Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	7.0	4.0	2.0	50
Through :	6.5	3.5	2.0	50
Right turns:	5.0	3.0	2.0	50
Opposed turns from priority road:				
	4.5	2.5	2.0	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-637 con entrada al desarollo
2020, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
VEHICLES Demand flows in veh/hour as used by the program								
South: PR-637								
1	0	C	122	0	0	C	1.00	1.00
3	0	C	0	C	25	C	1.00	1.00
North: PR-637								
7	474	C	0	C	0	C	1.00	1.00
8	0	C	243	C	0	C	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-637 con entrada al desarollo
2020, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	NA
Worst movement Level of Service	=	A
Average intersection delay (s)	=	5.1
Largest average movement delay (s)	=	8.9
Largest cycle-average queue, mean (m)	=	1
Performance Index	=	11.83
Degree of saturation (highest)	=	0.407
Practical Spare Capacity (lowest)	=	97 %
Effective intersection capacity, (veh/h)	=	2124
Total vehicle flow (veh/h)	=	864
Total person flow (pers/h)	=	1296
Total vehicle delay (veh-h/h)	=	1.23
Total person delay (pers-h/h)	=	1.84
Total effective vehicle stops (veh/h)	=	317
Total effective person stops (pers/h)	=	475
Total vehicle travel (veh-km/h)	=	523.9
Total cost ($/h)	=	310.68
Total fuel (L/h)	=	69.4
Total CO2 (kg/h)	=	123.46

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table S.15 or Movement Displays for individual movement LOS values.

PR-637 con entrada al desarollo
2020, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians: 727	0.407	1.17	1.76	5.8	0.22	0.42	1	10.19	31.2
ALL VEHICLES: 864	0.407	1.23	1.84	5.1	0.19	0.37	1	11.83	32.2
INTERSECTION (persons): 1296	0.407		1.84	5.1	0.19	0.37		11.83	32.2

Queue values in this table are mean cycle-average queue (metres).

PR-637 con entrada al desarollo
2020, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satn	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: PR-637												

1	T		122		122	0		0.063	C.0	C	
2	R			25	25	0		0.013	8.2	C	50
		0	122	25	147	0		0.063	1.4		
North: PR-637											
1	L	474			474	0		0.407	6.9	1	50
2	T		243		243	0		0.125	0.0	C	
		474	243	0	717	0		0.407	5.9	1	
ALL VEHICLES			Total Flow		% HV			Max X	Aver. Delay	Max Queue	
			864		0			0.407	5.1	1	

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

PR-637 con entrada al desarollo
2020, PM
Intersection ID: C4
Stop Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (veh)	Aver. (m)
South: PR-637								
1	T	122	1950	C.063	0.0	A	0.0	0
3	R	25	1857	C.013	8.2	A	0.0	0
		147		C.063	1.4	A	0.0	0
North: PR-637								
7	L	474	1165<	0.407*	6.9	A	0.1	1
8	T	243	1950	0.125	0.0	A	0.0	0
		717		0.407	5.9	A	0.1	1
ALL VEHICLES:		864		0.407	5.1	NA	0.1	1

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

< Reduced capacity due to a short lane effect
* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

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Time and Date of Analysis 9:12 PM, 24 Apr 2005

Filename: C:\My Projects\Arecibo-febrero-2005- biafara\04-pr637 con salida a desarrollo-2015-a.OUT

PR-637 con salida al desarrollo
2015, AM
Intersection ID: 04

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Unsignalised - Two-Way Stop Control
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control delay
                    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (HCM method)
  Queue definition: Cycle average queue, Average

PR-637 con salida al desarrollo
2015, AM
Intersection ID: 04
Stop Sign Controlled Intersection

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1950 veh/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.630	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Fol.up Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	7.0	4.0	2.0	50
Through :	6.5	3.5	2.0	50
Right turns:	6.0	3.0	2.0	50
Opposed turns from priority road:	4.5	2.5	2.0	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-637 con salida al desarrollo
2015, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table 5.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
VEHICLES Demand flows in veh/hour as used by the program								
South: PR-637								
1	0	0	214	0	0	0	1.00	1.00
East: Salida del desarrollo								
4	24	0	0	0	0	0	1.00	1.00
6	0	0	0	0	460	0	1.00	1.00
North: PR-637								
7	0	0	199	0	0	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-637 con salida al desarrollo
2015, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table 5.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	NA
Worst movement Level of Service	=	C
Average intersection delay (s)	=	7.1

Largest average movement delay (s)	=	15.6
Largest cycle-average queue, mean (m)	=	2
Performance Index	=	13.65
Degree of saturation (highest)	=	0.482
Practical Spare Capacity (lowest)	=	65 %
Effective intersection capacity, (veh/h)	=	1862
Total vehicle flow (veh/h)	=	897
Total person flow (pers/h)	=	1346
Total vehicle delay (veh-h/h)	=	1.76
Total person delay (pers-h/h)	=	2.64
Total effective vehicle stops (veh/h)	=	451
Total effective person stops (pers/h)	=	677
Total vehicle travel (veh-km/h)	=	543.0
Total cost ($/h)	=	330.25
Total fuel (L/h)	=	52.2
Total CO2 (kg/h)	=	130.52

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table 6.15 or Movement Displays for individual movement LOS values.

PR-637 con salida al desarollo
2015, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table 6.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
199	0.102	0.00	0.00	0.0	0.00	0.00	0	2.01	60.0
ALL VEHICLES:									
897	0.482	1.76	2.64	7.1	0.25	0.50	2	13.65	50.8
INTERSECTION (persons):									
1346	0.482		2.64	7.1	0.25	0.50		15.65	50.8

Queue values in this table are mean cycle-average queue (metres).

PR-637 con salida al desarollo
2015, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table 6.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: PR-637												
1 T		214		214	0				0.110	0.0	0	
	0	214	0	214	0				0.110	0.0		
East: Salida del desarrollo												
1 L	24			24	0				0.051	15.6	0	
2 R			460	460	0				0.482	13.0	2	
	24	0	460	484	0				0.482	13.1	2	
North: PR-637												
1 T		199		199	0				0.102	0.0	0	
	0	199	0	199	0				0.102	0.0		
ALL VEHICLES				Total Flow	% HV				Max X	Aver. Delay	Max Queue	
				897	0				0.482	7.1	2	

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

PR-637 con salida al desarollo
2015, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table 6.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)
South: PR-637								
1 T		214	1950	0.110	0.0	A	0.0	0
		214		0.110	0.0	A	0.0	0
East: Salida del desarrollo								
4 L		24	471	0.051	15.6	C	0.0	0
5 R		460	955	0.482*	13.0	B	0.3	2
		484		0.482	13.1	B	0.3	2
North: PR-637								
7 T		199	1950	0.102	0.0	A	0.0	0
		199		0.102	0.0	A	0.0	0

ALL VEHICLES:	997	0.492	7.1	NA	C.3	2

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

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PR-637 con salida al desarrollo
2015, PM
Intersection ID: 04

RUN INFORMATION

* Basic Parameters:
Intersection Type: Unsignalised - Two-Way Stop Control
Driving on the right-hand side of the road
Input data specified in Metric units
Default Values File No. 30
Peak flow period (for performance): 15 minutes
Unit time (for volumes): 60 minutes (Total Flow Period)
Delay definition: Control delay
Geometric delay included
aaSIDRA Standard Delay and Queue models used
Level of Service based on: Delay (HCM method)
Queue definition: Cycle average queue. Average

PR-637 con salida al desarollo
2015, PM
Intersection ID: 04
Stop Sign Controlled Intersection

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: D30.SDF)

1. Basic saturation flow: 1950 tcu/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	DELAY		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.030	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Follup Hiway	Min. Deps	% Exit Flow Opposing
Left turns :	7.0	4.0	3.3	50
Through :	6.5	3.5	3.3	50
Right turns:	5.0	3.0	2.3	50
Opposed turns from priority road:				
	4.5	2.5	2.3	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-637 con salida al desarollo
2015, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table 8.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left HV	Through LV	Through HV	Right LV	Right HV	Flow Scale	Peak Flow Factor
VEHICLES Demand flows in veh/hour as used by the program								
South: PR-637								
1	0	0	83	0	0	0	1.00	1.00
East: Salida del desarrollo								
4	15	0	0	0	0	0	1.00	1.00
5	0	0	0	0	296	0	1.00	1.00
North: PR-637								
7	0	0	661	0	0	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-637 con salida al desarollo
2015, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table 8.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	NA
Worst movement Level of Service	=	E
Average intersection delay (s)	=	3.5
Largest average movement delay (s)	=	22.9
Largest cycle-average queue, mean (m)	=	0
Performance Index	=	13.10
Degree of saturation (highest)	=	0.329
Practical Spare Capacity (Lowest)	=	143 %
Effective intersection capacity, (veh/h)	=	3149
Total vehicle flow (veh/h)	=	1035
Total person flow (pers/h)	=	1553
Total vehicle delay (veh-h/h)	=	1.01
Total person delay (pers-h/h)	=	1.52
Total effective vehicle stops (veh/h)	=	278
Total effective person stops (pers/h)	=	416
Total vehicle travel (veh-km/h)	=	627.0
Total cost ($/h)	=	349.19
Total fuel (L/h)	=	59.1
Total CO2 (kg/h)	=	132.81

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table 8.15 or Movement Displays for individual movement LOS values.

PR-637 con salida al desarollo
2015, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table 8.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
661	0.329	0.00	0.00	0.0	0.00	0.00	0	6.48	60.0
ALL VEHICLES:									
1035	0.329	1.01	1.52	3.5	0.07	0.27	0	13.10	54.9
INTERSECTION (persons):									
1553	0.329		1.52	3.5	0.07	0.27		13.10	54.9

Queue values in this table are mean cycle-average queue (metres).

PR-637 con salida al desarollo
2015, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table 8.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (n)	Shrt Lane (m)

South: PR-637								
1 T		83		83	0	0.043	0.0	0
	C	83	C	83	0	0.043	0.0	
East: Salida del desarrollo								
1 L	15			15	0	0.058	22.9	0
2 R			296	296	0	0.268	11.2	0
	15	C	296	311	0	0.268	11.7	0
North: PR-637								
2 T		641		641	0	0.329	0.0	0
	C	641	C	641	0	0.329	0.0	

ALL VEHICLES	Total Flow	% HV	Max X	Aver. Delay	Max Queue
	1035	0	0.329	3.5	0

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

PR-637 con salida al desarollo
2015, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table 5.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)
South: PR-637								
1 T		83	1950	0.043	0.0	A	0.0	0
		83		0.043	0.0	A	0.0	0
East: Salida del desarrollo								
4 L		15	258	0.058	22.9	C	0.1	0
6 R		296	1104	0.268	11.2	B	0.0	0
		311		0.268	11.7	B	0.1	0
North: PR-637								
2 T		641	1950	0.329*	0.0	A	0.0	0
		641		0.329	0.0	A	0.0	0

ALL VEHICLES:	1035	0.329	3.5	NA	0.1	0

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

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Licence Type: Multi Computer

Time and Date of Analysis 9:17 PM, 24 Apr 2005

Filename: C:\My Projects\Arecibo-febrero-2005- biafara\C4-pr637 con salida a desarrollo-2020-a.OUT

PR-637 con salida al desarollo
2020, AM
Intersection ID: 04

RUN INFORMATION

* Basic Parameters:
  Intersection Type: Unsignalised - Two-Way Stop Control
  Driving on the right-hand side of the road
  Input data specified in Metric units
  Default Values File No. 30
  Peak flow period (for performance): 15 minutes
  Unit time (for volumes): 60 minutes (Total Flow Period)
  Delay definition: Control Delay
                    Geometric delay included
  aaSIDRA Standard Delay and Queue models used
  Level of Service based on: Delay (HCM method)
  Queue definition: Cycle average queue, Average

PR-637 con salida al desarollo
2020, AM
Intersection ID: 04
Stop Sign Controlled Intersection

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1950 tcu/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.650	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Follow Hdway	Min. Deps	% Exit Flow Opposing
Left turns :	7.0	4.0	2.0	50
Through :	6.5	3.5	2.0	50
Right turns:	6.0	3.0	2.0	50
Opposed turns from priority road:				
	4.5	2.5	2.0	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
   Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-637 con salida al desarollo
2020, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.C - TRAFFIC FLOW DATA

Mov No.	Left		Through		Right		Flow Scale	Peak Flow Factor
	LV	HV	LV	HV	LV	HV		
VEHICLES Demand flows in veh/hour as used by the program								
South: PR-637								
1	0	0	231	0	0	0	1.00	1.00
East: Salida del desarrollo								
4	24	0	0	0	0	0	1.00	1.00
6	0	0	0	0	460	0	1.00	1.00
North: PR-637								
7	0	0	215	0	0	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-637 con salida al desarollo
2020, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	NA
Worst movement Level of Service	=	C
Average intersection delay (s)	=	7.0

Largest average movement delay (s)	=	16.2
Largest cycle-average queue, mean (m)	=	2
Performance Index	=	14.11
Degree of saturation (highest)	=	0.491
Practical Spare Capacity (lowest)	=	63 %
Effective intersection capacity, (veh/h)	=	1892
Total vehicle flow (veh/h)	=	930
Total person flow (pers/h)	=	1395
Total vehicle delay (veh-h/h)	=	1.80
Total person delay (pers-h/h)	=	2.71
Total effective vehicle stops (veh/h)	=	459
Total effective person stops (pers/h)	=	669
Total vehicle travel (veh-km/h)	=	563.0
Total cost ($/h)	=	341.27
Total fuel (L/h)	=	53.7
Total CO2 (kg/h)	=	134.27

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table S.15 or Movement Displays for individual movement LOS values.

PR-637 con salida al desarollo
2020, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians:									
215	0.110	0.00	0.00	0.0	0.00	0.00	0	2.17	60.0
ALL VEHICLES:									
930	0.491	1.80	2.71	7.0	0.26	0.49	2	14.11	51.0
INTERSECTION (persons):									
1395	0.491		2.71	7.0	0.26	0.49		14.11	51.0

Queue values in this table are mean cycle-average queue (metres).

PR-637 con salida al desarollo
2020, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satf.	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)
South: PR-637												
1 T		231		231	0				0.118	0.0	0	
	0	231	0	231	0				0.118	0.0		
East: Salida del desarrollo												
1 L	24			24	0				0.054	16.2	0	
2 R			460	460	0				0.491	13.3	2	
	24	0	460	484	0				0.491	13.4	2	
North: PR-637												
1 T		215		215	0				0.110	0.0	0	
	0	215	0	215	0				0.110	0.0		
ALL VEHICLES				Total Flow	% HV				Max X	Aver. Delay	Max Queue	
				930	0				0.491	7.0	2	

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

PR-637 con salida al desarollo
2020, AM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)
South: PR-637								
1 T		231	1950	0.118	0.0	A	0.0	0
		231		0.118	0.0	A	0.0	0
East: Salida del desarrollo								
4 L		24	444	0.054	16.2	C	0.0	0
6 R		460	936	0.491*	13.3	B	0.3	2
		484		0.491	13.4	B	0.3	2
North: PR-637								
7 T		215	1950	0.110	0.0	A	0.0	0
		215		0.110	0.0	A	0.0	0

ALL VEHICLES:	930	0.491	7.0	NA	0.3	2

Level of Service calculations are based on
average control delay including geometric delay (HCM criteria),
independent of the current delay definition used.
For the criteria, refer to the "Level of Service" topic in the
aaSIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

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PR-637 con salida al desarrollo
2020, PM
Intersection ID: 04

RUN INFORMATION

* Basic Parameters:
Intersection Type: Unsignalised - Two-Way Stop Control
Driving on the right-hand side of the road
Input data specified in Metric units
Default Values File No. 30
Peak flow period (for performance): 15 minutes
Unit time (for volumes): 60 minutes (Total Flow Period)
Delay definition: Control delay
Geometric delay included
aaSIDRA Standard Delay and Queue models used
Level of Service based on: Delay (HCM method)
Queue definition: Cycle average queue, Average

PR-637 con salida al desarrollo
2020, PM
Intersection ID: 04
Stop Sign Controlled Intersection

DEFAULT PARAMETERS

Default values for some of the important general parameters:
(Default Values File: DEF30.SDF)

1. Basic saturation flow: 1900 veh/h

   This value applies mainly to signalised intersections. For roundabouts and sign-controlled intersections, it is used for determining capacity of priority and continuous movements.

2. Through car equivalents for signalised intersections

	LEFT		THROUGH		RIGHT	
	LV	HV	LV	HV	LV	HV
Normal	1.050	1.800	1.000	1.850	1.050	1.800
Restricted	1.250	2.250			1.250	2.250

3. Opposed turn parameters (Two-Way Stop Control)

	Crit. Gap	Follow Hdway	Min. Degs	% Exit Flow Opposing
Left turns :	7.0	4.0	2.0	50
Through :	6.5	3.5	2.0	50
Right turns:	5.0	3.0	2.0	50
Opposed turns from priority road:	4.5	2.5	2.0	0

4. Cruise speed= 60 km/h, Approach Distance= 500 m

5. Queue space per vehicle in metres
Light vehicles: 7.0 Heavy vehicles: 13.0

A full list of input data defaults and ranges is given in the Input Guide part of aaSIDRA User Guide.

PR-637 con salida al desarollo
2020, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.0 - TRAFFIC FLOW DATA

Mov No.	Left LV	Left PV	Through LV	Through PV	Right LV	Right PV	Flow Scale	Peak Flow Factor
VEHICLES Demand flows in veh/hour as used by the program								
South: PR-637								
1	0	0	90	0	0	0	1.00	1.00
East: Salida del desarrollo								
4	15	0	0	0	0	0	1.00	1.00
6	0	0	0	0	995	0	1.00	1.00
North: PR-637								
7	0	0	691	0	0	0	1.00	1.00

Based on unit time = 60 minutes.
Flow Scale and Peak Hour Factor effects included in flow values.

PR-637 con salida al desarollo
2020, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.3 - INTERSECTION PARAMETERS

Intersection Level of Service	=	NA
Worst movement level of Service	=	C
Average intersection delay (s)	=	3.4
Largest average movement delay (s)	=	25.0
Largest cycle-average queue, mean (m)	=	0
Performance Index	=	13.70
Degree of saturation (highest)	=	0.354
Practical Space Capacity (lowest)	=	126 %
Effective intersection capacity, (veh/h)	=	3082
Total vehicle flow (veh/h)	=	1092
Total person flow (pers/h)	=	1638
Total vehicle delay (veh-h/h)	=	1.03
Total person delay (pers-h/h)	=	1.54
Total effective vehicle stops (veh/h)	=	277
Total effective person stops (pers/h)	=	416
Total vehicle travel (veh-km/h)	=	661.6
Total cost ($/h)	=	366.76
Total fuel (L/h)	=	35.6
Total CO2 (kg/h)	=	139.99

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections. See Table S.15 or Movement Displays for individual movement LOS values.

PR-637 con salida al desarollo
2020, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.6 - INTERSECTION PERFORMANCE

Total Flow (veh/h)	Deg. Satn x	Total Delay (veh-h/h)	Total Delay (pers-h/h)	Aver. Delay (sec)	Prop. Queued	Eff. Stop Rate	Longest Queue (m)	Perf. Index	Aver. Speed (km/h)
Pedestrians: 691	0.354	0.00	0.00	0.0	0.00	0.00	0	5.98	60.0
ALL VEHICLES: 1092	0.354	1.03	1.54	3.4	0.07	0.25	0	13.70	55.1
INTERSECTION (persons): 1638	0.354		1.54	3.4	0.07	0.25		13.70	55.1

Queue values in this table are mean cycle-average queue (metres).

PR-637 con salida al desarollo
2020, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.14 - SUMMARY OF INPUT AND OUTPUT DATA

Lane No.	Demand Flow (veh/h) L	T	R	Tot	%HV	Adj. Basic Satn	Eff Grn (secs) 1st	2nd	Deg Sat x	Aver. Delay (sec)	Longest Queue (m)	Shrt Lane (m)

South: PR-637							
1 T	90		90	0	0.046	0.0	C
	0	90	0	90	0	0.046	0.0	
East: Salida del desarrollo							
1 L	15			15	0	0.066	25.0	C
2 R			296	296	0	0.270	11.2	C
	15	0	296	311	0	0.270	11.9	C
North: PR-637							
1 T	691			691	0	0.354	0.0	C
	0	691	0	691	0	0.354	0.0	

ALL VEHICLES	Total Flow	% HV	Max X	Aver. Delay	Max Queue
	1092	0	0.354	3.4	0

Total flow period = 60 minutes. Peak flow period = 15 minutes.

Queue values in this table are mean cycle-average queue (metres).

Note: Basic Saturation Flows are not adjusted at roundabouts or sign-controlled intersections and apply only to continuous lanes.

PR-637 con salida al desarrollo
2020, PM
Intersection ID: 04
Stop Sign Controlled Intersection

Table S.15 - CAPACITY AND LEVEL OF SERVICE

Mov No.	Mov Typ	Total Flow (veh /h)	Total Cap. (veh /h)	Deg. of Satn (v/c)	Aver. Delay (sec)	LOS	Longest Queue Cycle (vehs)	Aver. (m)
South: PR-637								
1 T		90	1950	0.046	0.0	A	0.0	0
		90		0.046	0.0	A	0.0	0
East: Salida del desarrollo								
4 L		15	225	0.066	25.0	C	0.1	0
5 R		296	1096	0.270	11.2	B	0.0	0
		311		0.270	11.9	B	0.1	0
North: PR-637								
7 T		691	1950	0.354*	0.0	A	0.0	0
		691		0.354	0.0	A	0.0	0

ALL VEHICLES:	1092	0.354	3.4	NA	0.1	0

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

NA Not Applicable - Intersection Level of Service is not calculated at two-way stop control or give-way/yield controlled intersections.

* Maximum v/c ratio, or critical green periods

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Apéndice 12

Studio de Resestividad Eléctrica Sumideros

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AT FINCA BIÁFRA, BARRIO MIRAFLORES
ARECIBO, PUERTO RICO

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Soil & Construction Materials Laboratory and Environmental Drilling Services

DUE DILIGENCE GEOPHYSICAL EXPLORATION AT FINCA BIÁFRA, BARRIO MIRAFLORES ARECIBO, PUERTO RICO

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Submitted on September 10, 2010
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DUE DILIGENCE GEOPHYSICAL EXPLORATION
AT FINCA BIÁFRA, BARRIO MIRAFLORES
ARECIBO, PUERTO RICO
September 10, 2010

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DUE DILIGENCE GEOPHYSICAL EXPLORATION
AT FINCA BIÁFRA, BARRIO MIRAFLORES
ARECIBO, PUERTO RICO
September 10, 2010

1.0 INTRODUCTION

This report presents the results of the Due Diligence Geophysical Exploration at Finca Biáfra, Arecibo, Puerto Rico. The purpose of the investigation is to evaluate the feasibility of the site where a residential development is being proposed. A significant goal of the exploration was to define sinkholes conditions common to the geology of the area.

The subject property is track of land which will be subdivided into a residential development. The size and location of the lots will vary based on the information gathered during this due diligence assessment. The specific structures to be built in each lot will also vary depending on the project needs and the specific subsoil conditions of the different areas in the property.

With the information gathered during this due diligence assessment, an engineering geologic plan for the development has been prepared.

The object is to identify sinkholes or sinkhole prone areas within the proposed development, with the intention of rearranging the layout, or location of the different components of the development, to avoid sinkholes or sinkhole prone areas, and to protect them.

The report has been divided into the following sections. The first one provides a general description of the work performed, which consists of an Aerial Photointerpretation of the property and an Electrical Resistivity Survey of the subsoil at different depths. The second section describes in further detail the methodology used, followed by a description of the data acquisition and its processing. The next section provides an interpretation of the data gathered. Finally, conclusions on the investigation are presented, together with recommendations for construction foundations in the last sections of this report. **Plate 1**, shows a layout of the study area.

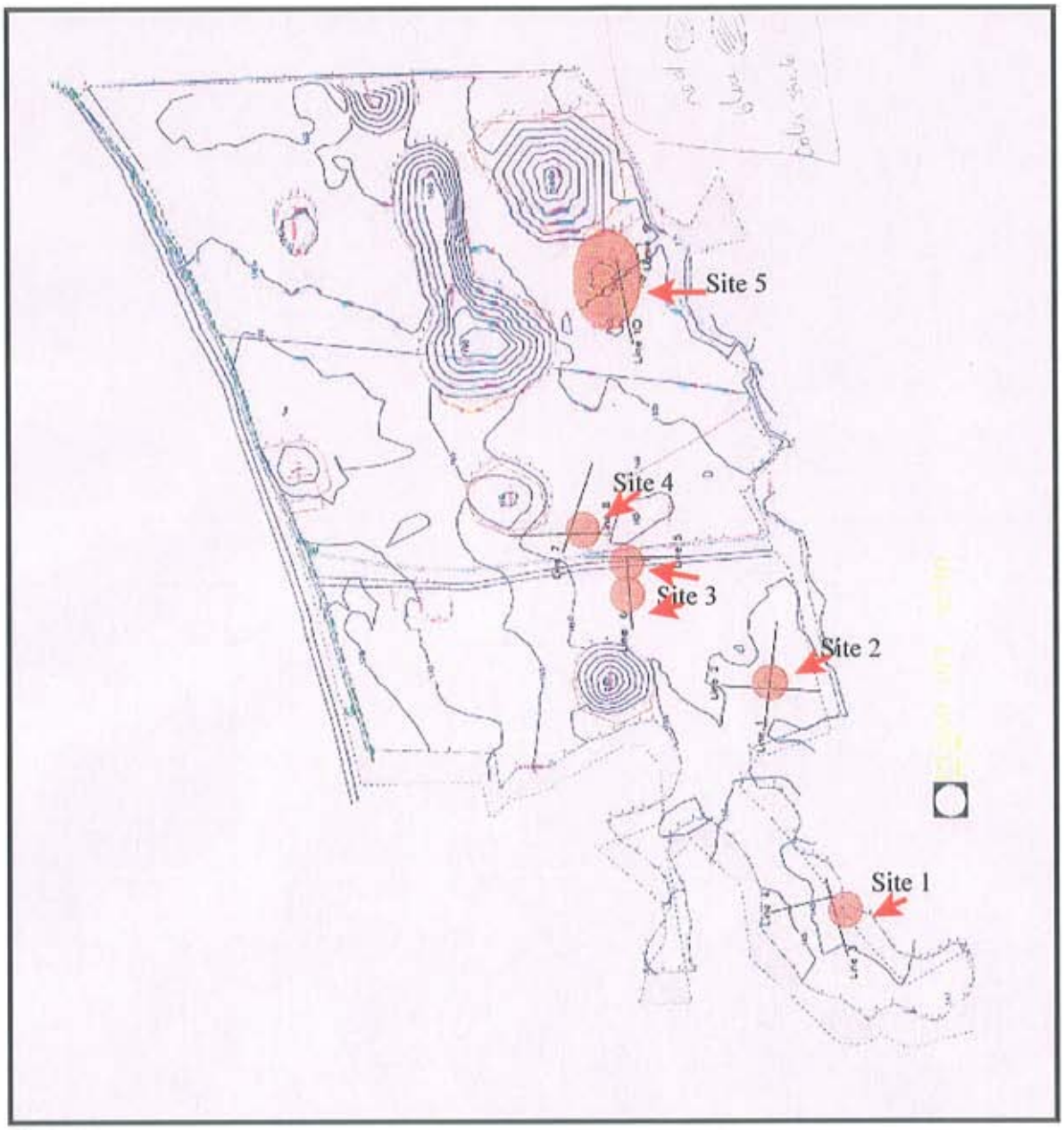

Plate 1