amended 2002-179

THE CITY OF PROVIDENCE

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

RESOLUTION OF THE CITY COUNCIL

No. 702

Approved December 14, 2001

RESOLVED, DECREED, AND ORDERED:

That the following-named street shown on a cross-hatched area on the accompanying map entitled "Prov., RI, DPW-Engineering Office, Street line Section Plan No. 064669 dated July 26, 2001."

VIZ: Ellis Street as described in Attachment "A" and shown as a cross-hatched area on the accompanying plan and designated by the letters A-B-C-D-A, having ceased to be useful to the public and is proposed to be abandoned as a public highway. Said abandonment is specifically conditioned precedent upon the following:

1. The Petitioner agrees to tender the amount of Fifty Thousand Five Hundred ($50,500.00) Dollars in legal tender U.S. currency to the City of Providence.

2. The petitioner shall convey an easement acceptable to the Narragansett Electric Co. which will permit retention of its facilities in their existing location, together with the right to inspect, maintain, operate and replace the same and with twenty-four hour access to said facilities, or in the alternative should it be determined by the petitioner that any such facilities need be relocated in order to comply with an intended use, the Petitioner shall assume all costs of relocation.

3. The Petitioner shall convey an easement acceptable to Providence Gas Company which will permit retention of its facilities in their existing location, together with the right to inspect, maintain, operate and replace the same and with twenty-four hour access to said facilities, or in the alternative should it be determined by the Petitioner that any such facilities need be relocated in order to comply with an intended use, the Petitioner shall assume all costs of relocation;

4. The Petitioner shall convey an easement acceptable to Verizon which will permit retention of its facilities in their existing location, together with the right to inspect, maintain, operate and replace the same and with twenty-four hour access to said facilities, or in the alternative should it be determined by the Petitioner that any such

THE COMMITTEE ON
PUBLIC WORKS
Approves Passage of
The Within Resolution
Claire L Buttorf Clerk
Nov. 8, 2001

IN CITY COUNCIL
FEB 1 2001
FIRST READING
REFERRED TO COMMITTEE ON
PUBLIC WORKS
Michael L Clement CLERK
CB

THE COMMITTEE ON
Public Works
Recommends Set up Public Hearing
Claire L Buttorf CLERK
June 12, 2001

THE COMMITTEE ON
Public Works
Recommends Public Hearing held
Claire L Buttorf CLERK
July 11, 2001

THE COMMITTEE ON
Public Works
Recommends Be Continued
Claire L Buttorf CLERK
Oct. 1, 2001

From the Clerk's Desk

facilities need be relocated in order to comply with an intended use, the Petitioner shall assume all costs of relocation;

5. Petitioner shall assume all costs of severing existing water and hydrant services at the abandoned location and shall assume all costs incurred for reconnection of necessary water services for residential, commercial, industrial and public safety uses. Petitioner shall comply with all conditions posited in a letter dated 15 June, 2001 from the Providence Water Supply Board to the Council Committee on Public Works which is attached hereto as Exhibit "B."

6. The City of Providence shall retain for itself, its heirs, successors and assigns full sewer and fire hydrant easements on Ellis Street which will permit retention of its facilities in their existing location, together with the right to inspect, maintain, operate and replace the same and with twenty-four hour access to said facilities, or in the alternative should it be determined by the City that any such facilities need be relocated in order to comply with an intended use, the Petitioner shall assume all costs of relocation;

7. Petitioner shall comply with all conditions contained herein not later than sixty (60) days from its approval. Upon failure to so comply for any reason, the within resolution shall automatically and without further action by the City become a nullity.

8. Petitioner shall submit to the City Clerk copies of a traffic study to which it has made reference at the working study of the Council Committee on Public Works of 8 November, 2001 and shall as soon as practicable at its sole costs erect the traffic control devices referenced therein and at the meeting of that date.

9. Petitioner shall indemnify and hold harmless the City of Providence, its officers, agents, employees and servants from any demand(s), claim(s) of cause(s) of action of any kind arising from any level of environmental contamination at the abandoned situs.

ORDERED, That the Traffic Engineer be and he is hereby directed to cause a sign to be place on the above-named highway abandoned as aforesaid, having thereon the words, "Not a Public Highway", and it is further

ORDERED, That after the entry of this order or decree the City Clerk shall cause a notice thereof to be published in a newspaper, published in the County of Providence at

least once a week for three successive weeks and a further and personal notice shall be served by the City Sergeant upon every owner of land abutting the above-named highway which has been abandoned, who is known to reside within the State.

IN CITY COUNCIL
DEC 6 2001
READ AND PASSED

PRES.

CLERK

APPROVED
DEC 14 2001

MAYOR

FERDINAND C. IHENACHO, P.E., PTOE.
Director

VINCENT A. CIANCI, JR.
Mayor

Department of Public Works

"Building Pride In Providence"

August 3, 2001

Hon. Robert M. Clarkin
Chairman of the Public Works Committee
Providence City Council
City Hall - Prov., R.I. 02903

RE: Petition of Paul Pinault, Executive Director Narragansett Bay Commission:

Abandonment of Ellis Street between Terminal Rd. and Ernest Street

For construction of their Combined Sewer Outfall Abatement Project

Dear Councilman Clarkin:

This Department has no objection to the proposed abandonment of Ellis Street between Terminal Road and Ernest St., as shown on the accompanying plan, entitled,"Providence, R.I., P.W. Dept-Engineering Office, Street Line Section, Plan No. 064669, Date: July 26, 2001".

Area to be abandoned is shown as cross-hatched area, noted as A-B-C-D-A on the accompanying plan. Said proposed abandonment of Ellis Street will accommodate Narragansett Bay Commission's Combined Sewer Outfall Project. Total Square footage of the proposed abandonment of Ellis Street is 20,200'+. A full sewer easement is required for the 24 In. Storm Sewer located in Ellis St. at Terminal Road. Lot numbers for this proposed abandonment were taken from City of Providence Assessor's Plats 101 and 56.

If we can further assist in this regard, please do not hesitate to contact us.

Sincerely,

Ferdinand C. Ihenacho, P.E.
Director

CC: M. Clement
J. D'Amico
G.Florio
JLC
SZ

Ferdinand C. Ihenacho, P.E.
Director

VINCENT A. CIANCI, JR.
Mayor

Department of Public Works

"Building Pride In Providence"

March 14, 2001

Hon Robert M. Clarkin
Chairman of the Public Works Committee-Prov. City Council
City Hall - Providence, Rhode Island 02903

RE: Petition to Abandon Ellis Street
(Between Terminal Rd. and Ernest St.)

Dear Councilman Clarkin:

The above-referenced Petition, submitted by Paul Pinault of the Narragansett Bay Commission, has been reviewed by this Department.

As you may be aware, the signalized intersection of Allens Ave. & Ernest St. is one of the most dangerous intersections in the State of Rhode Island, and ranks highly among the high-hazard intersections. Currently, Ellis St. is used as a short-circuit to this intersection by cars and trucks in order to avoid delays at the intersection of Allens Ave. and Ernest St. The abandonment/closure of Ellis St. may exacerbate the level of service at this intersection, and therefore, it is recommended that a traffic study be performed by the Petitioner. Such a study should include Vehicle & Truck Counts, Gap Study at the signalized intersection, Computer Simulation of the After-Abandonment Traffic, Etc.

Secondly, the Petitioner may include a plan to resurface Terminal Rd., which will carry the traffic diverted from Ellis St.

Should you have any questions,please do not hesitate to contact me.

Sincerely,

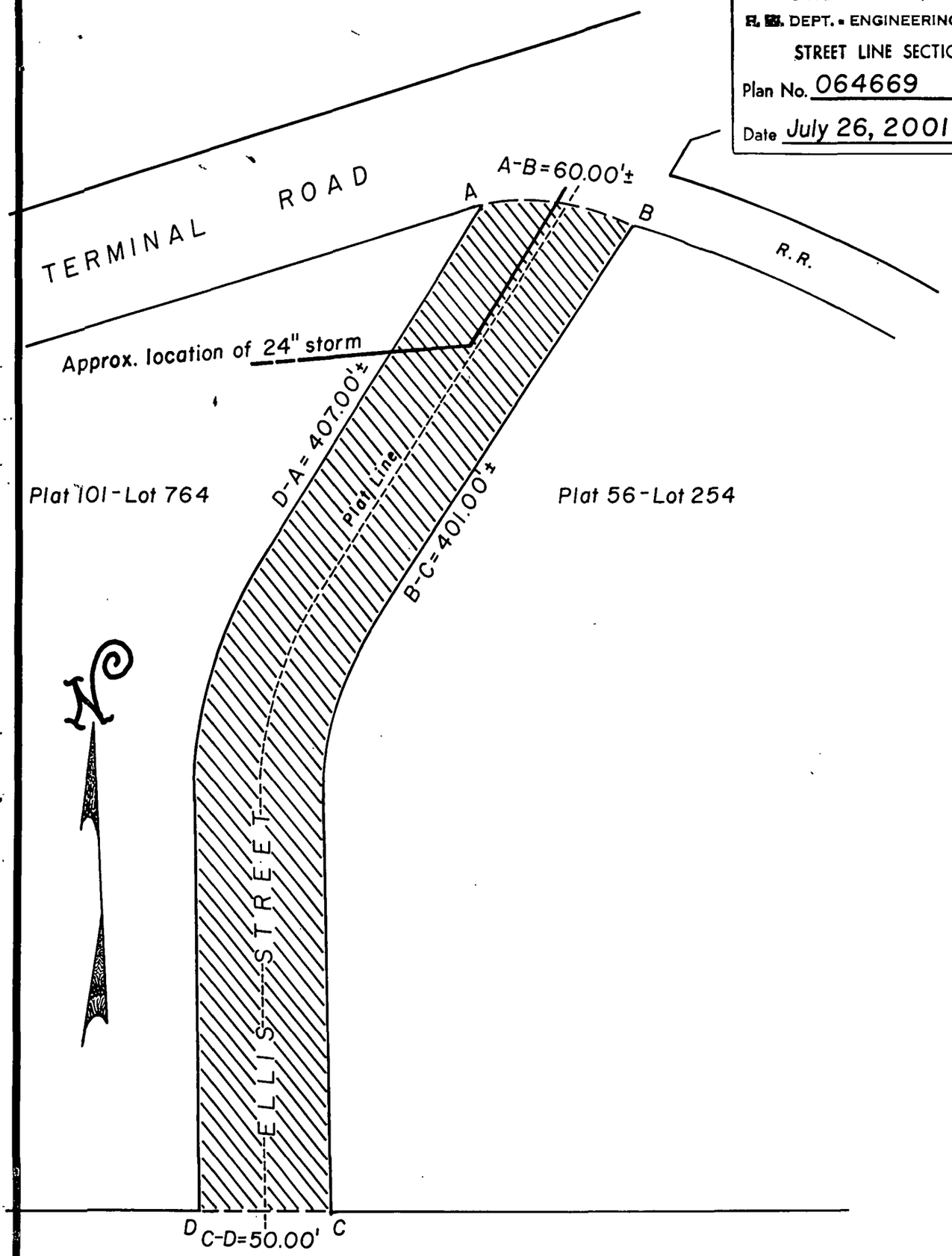
Ferdinand C. Ihenacho, P.E.
Director

CC: Patricia McLaughlin
Sam Shamoon
Paul Pinault, NBC Exec.Director
Gerry Florio
John D'Amico

700 Allens Avenue ● Providence, Rhode Island 02905

(401) 467-7950 (Voice) ● 751-0203 (TDD) ● 941-2567 (Facsimile)

PROVIDENCE, R. I.
P. W. DEPT. • ENGINEERING OFFICE
STREET LINE SECTION
Plan No. 064669
Date July 26, 2001



NOTES: Cross-hatched area (A-B-C-D-A) indicates proposed abandonment.

Narragansett Bay Commission's Combined Sewer Outfall Abatement Project

Total square footage= 20,200'±

Full sewer easement required.

Lot numbers taken from A.P. 101 & 56.

CITY OF PROVIDENCE, R. I.
Public Works Dept. - Engineering Office
Showing proposed abandonment of Ellis Street.
Drawn by A. Zisiades Checked by JLC
Scale 1" = 50' Date 7-26-2001
Correct James P. Bruno Associate Engr.
Approved 8/6/2001
CHIEF ENGINEER

768
N-98

Providence Water

June 15, 2001

Councilman Robert M. Clarkin, Chairman
Committee on Public Works
25 Dorrance Street
Providence, Rhode Island 02903

SUBJECT: Petition for Street Abandonment
Portion of Ellis Street
Providence, Rhode Island

Dear Councilman Clarkin:

The referenced Petition, which was initiated by Narragansett Bay Commission (NBC) and a copy of which was received from the Department of City Clerk, has been reviewed for any impact on the Providence Water (PW) water distribution system. Our records indicate that PW owns and maintains separate 8 and 12-inch cast iron water mains and a fire hydrant in the portion of street being proposed for abandonment—between Ernest Street and Terminal Road. No active water services are present.

Considering NBC's intended use of the abandoned street right-of-way, which is to construct a part of its "Combined Sewer Outfall Abatement Program," PW approves of the severance and abandonment of existing water mains and fire hydrant, as described above, provided that the Petitioner accepts full responsibility of all costs and coordination associated with the severance and abandonment of several hundred feet of mains and for connecting the remaining water main in Terminal Road to the existing water system, preferably along Terminal Road to Allens Avenue. The removed fire hydrant will have to be reinstalled on Terminal Road, with the Petitioner being responsible for costs associated with that work, too. Work on the water system must be coordinated with PW.

PW respectfully requests that these conditions be included in the Resolution of the City Council approving the proposed street abandonment. If you have any questions, please feel free to contact me at (401) 521-6300 EXT 7241.

Respectfully,

PROVIDENCE WATER SUPPLY BOARD

By: Syl Pauley, Jr., P.E.
Principal Engineer

SP/s
cc: P. Gadoury, P.E.
M. Clement, City Clerk
File

ABNLTR35.SAM

PROVIDENCE POLICE DEPARTMENT
TRAFFIC BUREAU

TO: Colonel Richard S. Sullivan, Chief-of-Police

FROM: Sergeant William M. Thompson, Traffic Bureau

SUBJECT: Proposed Street Closing, Ellis St

Recently Ernest Street was posted with signs which indicated that the truck traffic on Ernest Street had been rerouted. This detour was believed necessary due to the fact that Metal Recycles facilities vehicles were depositing debris on the roadway causing numerous automobiles to have flats. Upon visiting the above street it was observed that Ellis Street is bounded on the East by the back entrance to the Fields Point Water Treatment Facility and the Terminal Tank Farm on the West. Numerous vehicles were using the above street both as an access way to Ernest Street and Terminal Road.

Having taken up an observation point at this location, it is believed that the closing of this street will have an impact on the vehicle flow in this area: (1) Since Ernest Street and Terminal Road have been signed it has caused the rerouting of many commercial vehicles which use Ellis Street to reach their work (2) While at this location, numerous city vehicles used this street (3) Students from local Universities utilize this street to and from their campus (4) A spur train track line passes through the intersection of Ellis Street and Terminal Road (5) Utility vehicles from N.E. Electric, Providence Gas and A.T and T were observed using this access street

Based on the above information the closing of Ellis Street would impact the immediate area and cause possible problems with local residents, businesses and college personal

Respectfully,

William M. Thompson
Sergeant
Traffic Bureau

JAMES F. RATTIGAN
CHIEF OF DEPARTMENT

DAVID N. BOCK
ASS'T. CHIEF OF DEPARTMENT

VINCENT A. CIANCI, JR.
MAYOR

JOHN J. PARTINGTON
COMMISSIONER

Department of Public Safety, Fire Department

"Building Pride In Providence"

February 13, 2001

Department of City Clerk
City Hall
Providence, RI 02903

To Whom It May Concern:

The Providence Fire Department is in receipt of a petition requesting permission to abandon Ellis Street between Ernest Street and Terminal Road for the construction of the Narragansett Bay Commission's combined sewer outfall abatement project.

Please be advised that the Providence Fire Department has no objection to this request. If you have any further questions, please do not hesitate to contact us.

Yours truly,

Gary E. Mulcahy
Acting Assistant Chief of Department

GEM:lrl

Telephone (401) 421-1293 • 209 Fountain Street • Fax (401) 274-8508 • TDD # (401) 751-0203
Providence, Rhode Island 02903

NANCY L. DERRIG
Superintendent of Parks

VINCENT A. CIANCI, JR.
Mayor

Department of Public Parks

"Building Pride In Providence"

February 6, 2001

Mr. Michael Clement
City Clerk
City Hall
Providence, RI 02903

RE: Proposed Abandonment of Portion of South Water St. and Ellis St.

Dear Mr. Clement:

The Department of Public Parks has reviewed the proposed abandonment of a portion of South Water St. and Ellis St., and has no objection to the abandonment's.

Sincerely yours,

John A. Izzo
Supervisor of Engineering & Planning

IRENE J. TESTA
Traffic Engineer

JOSEPH W. CAPRIO
Deputy Director

VINCENT A. CIANCI, JR.
Mayor

Department of Traffic Engineering
"Building Pride In Providence"

MEMORANDUM

TO: **Councilman Robert Clarkin,**
Chairman – Committee on Public Works

FROM: **Irene J. Testa** Irene J. Testa

DATE: **2/9/01**

RE: **PENDING MATTERS**

REQUEST: **Request to abandon Ellis Street between Ernest Street and Terminal Road for the construction of the Narragansett Bay Commission's combined sewer outfall abatement project.**

DISPOSITION: **While I can understand the importance of the proposed project, I feel that Ellis Street is an essential artery relating to traffic flow in the Allens Avenue, Terminal Road and Ernest Street area. I am, therefore, recommending that this street remain open as a City street.**

PROVIDENCE REDEVELOPMENT AGENCY

"Building Pride in Providence"

MEMORANDUM

DATE: **August 14, 2001**

TO : **Michael Clement, City Clerk**

FROM: **William G. Floriani, Assistant Director**
Project Management and Construction

RE : **STREET ABANDONMENT**
ELLIS STREET

Pursuant to your request I have visited the site. The purpose of the visit was to determine Fair Market Value. The site contains 20,200 sq.ft. and is presently zoned W-3. There will be a full sewer easement required. Because there can be no building erected on the site it reduces the value by 50%.

The value of the property is as follows:
20,200 s.f. @ $2.50 per ft = $50,500.00

400 WESTMINSTER STREET - PROVIDENCE, RHODE ISLAND 02903-3215 - (401)351-4300 - FAX (401)351-9533 - TDD (401)751-0203
e-mail: planning@ids.net or visit us on the web at: http://www.providenceri.com/planning

PROVIDENCE CITY PLAN COMMISSION

"Planning The Future of Providence"

March 27, 2001

Councilman Robert M. Clarkin, Chairman
Committee on Public Works
City Hall
Providence, RI 02903

Attn: Michael R. Clement, City Clerk

Re: CPC Referral No. 3176, Petition for the abandonment of Ellis Street

Dear Councilman Clarkin:

The City Plan Commission at its regular meeting on Tuesday, March 20, 2001 reviewed and evaluated the communication of the Committee on Public Works dated February 2, 2001 requesting the Commission's recommendation on the proposed abandonment of Ellis Street.

The petitioner is Paul Pinault, Executive Director of the Narragansett Bay Commission (NBC). The NBC wishes to abandon the street to construct structures for its combined sewer overflow (CSO) project. Other structures will be built on a parcel adjacent to Ellis Street to the east that is owned by NBC. The parcel adjacent to Ellis Street to the west is also owned by NBC.

The Commission expressed a concern about the traffic impacts from the abandonment of this street. It voted to recommend that the Committee on Public Works approve this proposed abandonment subject to the NBC having a traffic study performed to determine the impact of this abandonment. The Commission further recommends that should the study demonstrate negative impacts on traffic, the NBC should be required to mitigate these impacts.

Sincerely,

Samuel J. Shamoon
Associate Director of Planning

cc: Paul Pinault, Narragansett Bay Commission

400 WESTMINSTER STREET - PROVIDENCE, RHODE ISLAND 02903-3215 - (401)351-4300 - FAX (401)351-9533 - TDD (401)751-0203
e-mail: planning@ids.net or visit us on the web at: http://www.providenceri.com/planning

Narragansett Electric
A National Grid Company

July 20, 2001

Ms. Claire Bestwick
City Clerk's Office
Providence City Hall
Providence, RI 02903

Re: Abandonment — Ellis Street, Providence, RI

Dear Ms. Murray:

Please be advised that Narragansett Electric has underground facilities located at the proposed abandonment site.

Therefore, we do not object to the abandonment of that portion of Ellis Street provided Narragansett Electric is granted an easement for said facilities.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

Mindy C. Montecalvo
Paralegal/Real Estate Consultant
Property Assets
(401) 784-7512

280 Melrose Street
PO Box 1438
Providence, RI 02901-1438
401.784.7000

Right of Way

Verizon Communications
85 High Street
Pawtucket, RI 02860

Phone 401.727.9555
Fax 401.725.7680

February 8, 2001

Providence City Council
Providence City Hall
25 Dorrance Street
Providence, Rhode Island 02903

Attn: Mr. Robert Clarkin

RE: PETITION TO ABANDON A PORTION OF ELLIS STREET.

Verizon presently has aerial facilities in said street.

These facilities include a pole line, wires and anchors that provide service to the surrounding area.

Verizon will not object to the granting of said petition, provided that in the event the petition is granted, the petitioner will convey an easement to Verizon, which will permit retention of its facilities in existing locations with the right to inspect, maintain, operate and replace the same and with twenty-four hour access to said facilities.

If it is decided by the petitioner that telephone facilities are to be relocated, the petitioner will assume all costs of the relocation.

Very truly yours,

Mary C. Hanley

Mary C. Hanley
Manager - Right of Way

ProvGas
A ProvEnergy Company

02/12/00

Ms. Claire E. Bestwick
Second Deputy City Clerk
Department of City Clerk
City of Providence
Providence, RI 02903

Re: Petition to Abandon Ellis Street between Ernest St. and Terminal Rd., Providence

Dear Ms. Bestwick:

Providence Gas owns and maintains a gas main within the proposed abandonment. This gas line provides the only feed to the Field's Point area and must be maintained at all times. The proposed work appears to be in conflict with our facilities. We would need to relocate this line at the petitioner's cost prior to removing this line from service. We object to this petition unless an agreeable alternative can be reached between the petioner and ProvGas.

If you have any further questions please feel free to call me at 401 272-5040 ext. 573.

Sincerely,

Michael McGuire
Manager of Engineering Design & Facility Locating

The Narragansett Bay Commission
The Foundry Corporate Office Center
235 Promenade Street — Suite 500
Providence, RI 02908-5739
401 • 222 • 6680
401 • 222 • 2584 FAX
401 • 222 • 6680 TDD
http://www.narrabay.com

Vincent J. Mesolella
Chairman

Paul Pinault, P.E.
Executive Director

February 20, 2001

Ms. Barbara Poirier
Second Deputy Clerk
City Hall
25 Dorrance Street
Providence, RI 02903

SUBJECT: Abandonment of City-Owned Property

Dear Ms. Poirier:

We have reviewed the memoranda and documentation concerning our request to abandon a portion of Ellis Street and South Water Street, Providence, R. I.

As the petitioner, we do not have any objection to the abandonment of the portion of Ellis Street and South Water Street.

We appreciate your notification of this abandonment and the opportunity to comment.

Sincerely,

John Zuba
Project Coordinator

cc: Joe Filippone

THE CITY OF PROVIDENCE

CITY SERGEANT'S OFFICE

THIS IS TO CERTIFY, That I have caused the notice, of which a true copy is hereto annexed, to be served upon the following named persons, by handing to each of said persons, or by leaving at their last and usual place of abode in this State a true copy of said notice, to wit:

PETITION TO ABANDON A PORTION OF ELLIS STREET

PLAT	LOT	NAME AND ADDRESS
101	764	Narragansett Bay Water 235 Promenade Street Providence, RI 02908
56	340	Narragansett Bay Water 235 Promenade Street Providence, RI 02908

1 Service Road
Prov. 02905
461-8848

PETITIONER

Paul Pinault, P.E.
Executive Director
Narragansett Bay Commission
235 Promenade Street
Suite 500
Providence, RI 02908-5739

Ralph Guglielmino
City Sergeant

Councilman Luis A. Aponte
Ward 10

THE CITY OF PROVIDENCE BK5009PG0052
STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

RESOLUTION OF THE CITY COUNCIL

No. 702

Approved December 14, 2001

RESOLVED, DECREED, AND ORDERED:

That the following-named street shown on a cross-hatched area on the accompanying map entitled "Prov., RI, DPW-Engineering Office, Street line Section Plan No. 064669 dated July 26, 2001."

VIZ: Ellis Street as described in Attachment "A" and shown as a cross-hatched area on the accompanying plan and designated by the letters A-B-C-D-A, having ceased to be useful to the public and is proposed to be abandoned as a public highway. Said abandonment is specifically conditioned precedent upon the following:

1. The Petitioner agrees to tender the amount of Fifty Thousand Five Hundred ($50,500.00) Dollars in legal tender U.S. currency to the City of Providence.

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facilities need be relocated in order to comply with an intended use, the Petitioner shall assume all costs of relocation;

5. Petitioner shall assume all costs of severing existing water and hydrant services at the abandoned location and shall assume all costs incurred for reconnection of necessary water services for residential, commercial, industrial and public safety uses. Petitioner shall comply with all conditions posited in a letter dated 15 June, 2001 from the Providence Water Supply Board to the Council Committee on Public Works which is attached hereto as Exhibit "B."

6. The City of Providence shall retain for itself, its heirs, successors and assigns full sewer and fire hydrant easements on Ellis Street which will permit retention of its facilities in their existing location, together with the right to inspect, maintain, operate and replace the same and with twenty-four hour access to said facilities, or in the alternative should it be determined by the City that any such facilities need be relocated in order to comply with an intended use, the Petitioner shall assume all costs of relocation;

7. Petitioner shall comply with all conditions contained herein not later than sixty (60) days from its approval. Upon failure to so comply for any reason, the within resolution shall automatically and without further action by the City become a nullity.

8. Petitioner shall submit to the City Clerk copies of a traffic study to which it has made reference at the working study of the Council Committee on Public Works of 8 November, 2001 and shall as soon as practicable at its sole costs erect the traffic control devices referenced therein and at the meeting of that date.

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ORDERED, That the Traffic Engineer be and he is hereby directed to cause a sign to be place on the above-named highway abandoned as aforesaid, having thereon the words, "Not a Public Highway", and it is further

ORDERED, That after the entry of this order or decree the City Clerk shall cause a notice thereof to be published in a newspaper, published in the County of Providence at

least once a week for three successive weeks and a further and personal notice shall be served by the City Sergeant upon every owner of land abutting the above-named highway which has been abandoned, who is known to reside within the State.

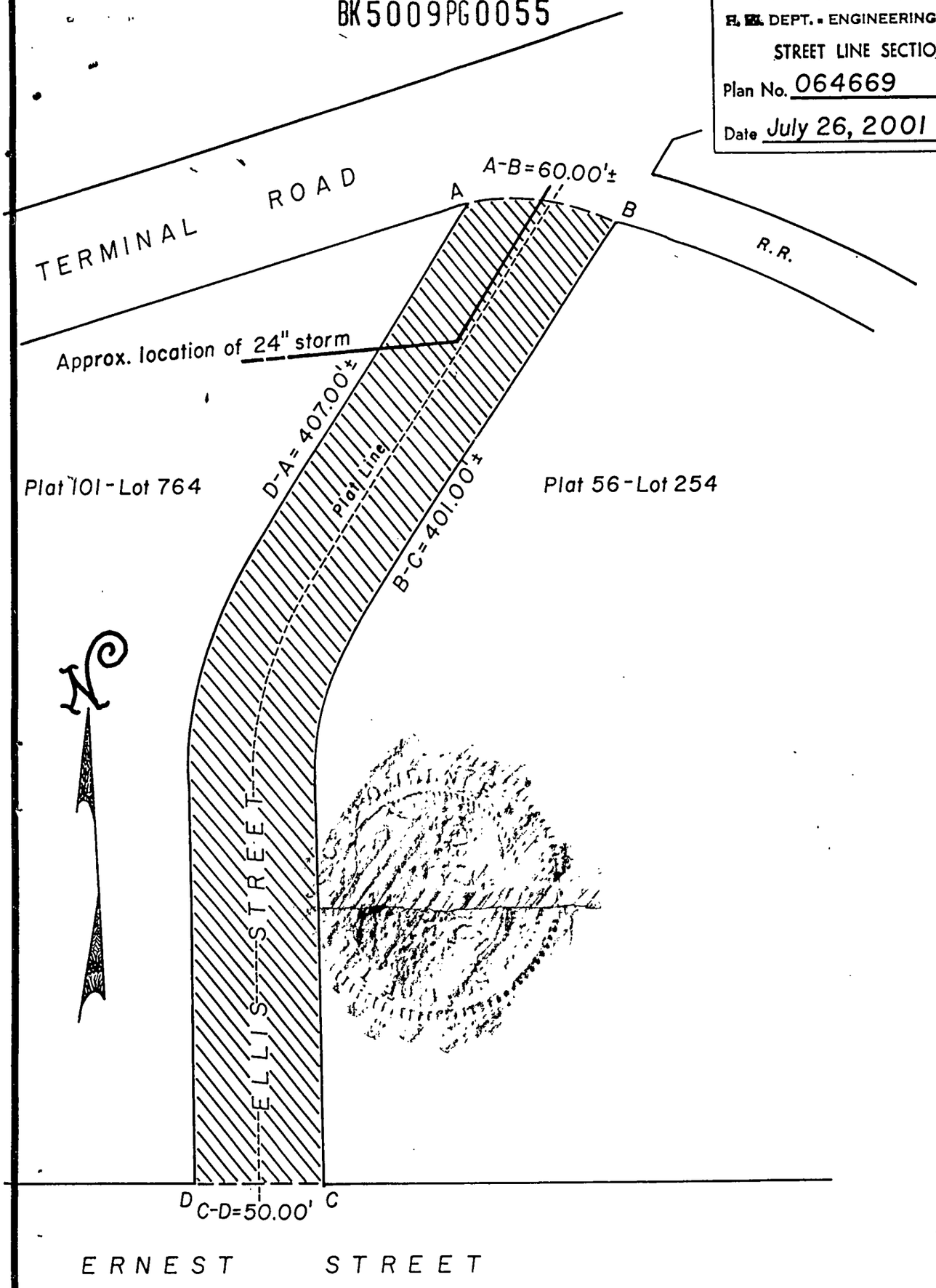
IN CITY COUNCIL
DEC 6 1001
READ AND PASSED
PRES.
CLERK

APPROVED
DEC 14 2001
MAYOR

A true copy.
Attest:
Michael R. Clement
City Clerk

BK5009PG0055

PROVIDENCE, R. I.
P. W. DEPT. - ENGINEERING OFFICE
STREET LINE SECTION
Plan No. 064669
Date July 26, 2001



NOTES: Cross-hatched area (A-B-C-D-A) indicates proposed abandonment.
Narragansett Bay Commission's Combined Sewer Outfall Abatement Project
Total square footage= 20,200'±
Full sewer easement required.
Lot numbers taken from A.P. 101 & 56.

CITY OF PROVIDENCE, R. I.
Public Works Dept. - Engineering Office
Showing proposed abandonment of Ellis Street.
Drawn by A. Zisiades Checked by JLC
Scale 1" = 50' Date 7-26-2001
Correct James P. Murphy Associate Engr.
Approved 8/6/2001 CHIEF ENGINEER

768
N-98

Received for Record at 9 o'clock 24 min AM in
JAN 31 2002 Recorder of Deeds Barbara A. Ironmonger

5009 / 52-55

© b(4)

RECEIVED FOR RECORD
AT 9 O'CLOCK 29 MIN.
PROVIDENCE, RI

JAN 3 1 2002

Witness:

Fee

Ferdinand C. Ihenacho, P.E.
Director

VINCENT A. CIANCI, JR.
Mayor

Department of Public Works

"Building Pride In Providence"

March 14, 2001

Hon Robert M. Clarkin
Chairman of the Public Works Committee-Prov. City Council
City Hall - Providence, Rhode Island 02903

RE: Petition to Abandon Ellis Street
(Between Terminal Rd. and Ernest St.)

Dear Councilman Clarkin:

The above-referenced Petition, submitted by Paul Pinault of the Narragansett Bay Commission, has been reviewed by this Department.

As you may be aware, the signalized intersection of Allens Ave. & Ernest St. is one of the most dangerous intersections in the State of Rhode Island, and ranks highly among the high-hazard intersections. Currently, Ellis St. is used as a short-circuit to this intersection by cars and trucks in order to avoid delays at the intersection of Allens Ave. and Ernest St. The abandonment/closure of Ellis St. may exacerbate the level of service at this intersection, and therefore, it is recommended that a traffic study be performed by the Petitioner. Such a study should include Vehicle & Truck Counts, Gap Study at the signalized intersection, Computer Simulation of the After-Abandonment Traffic, Etc.

Secondly, the Petitioner may include a plan to resurface Terminal Rd., which will carry the traffic diverted from Ellis St.

Should you have any questions,please do not hesitate to contact me.

Sincerely,

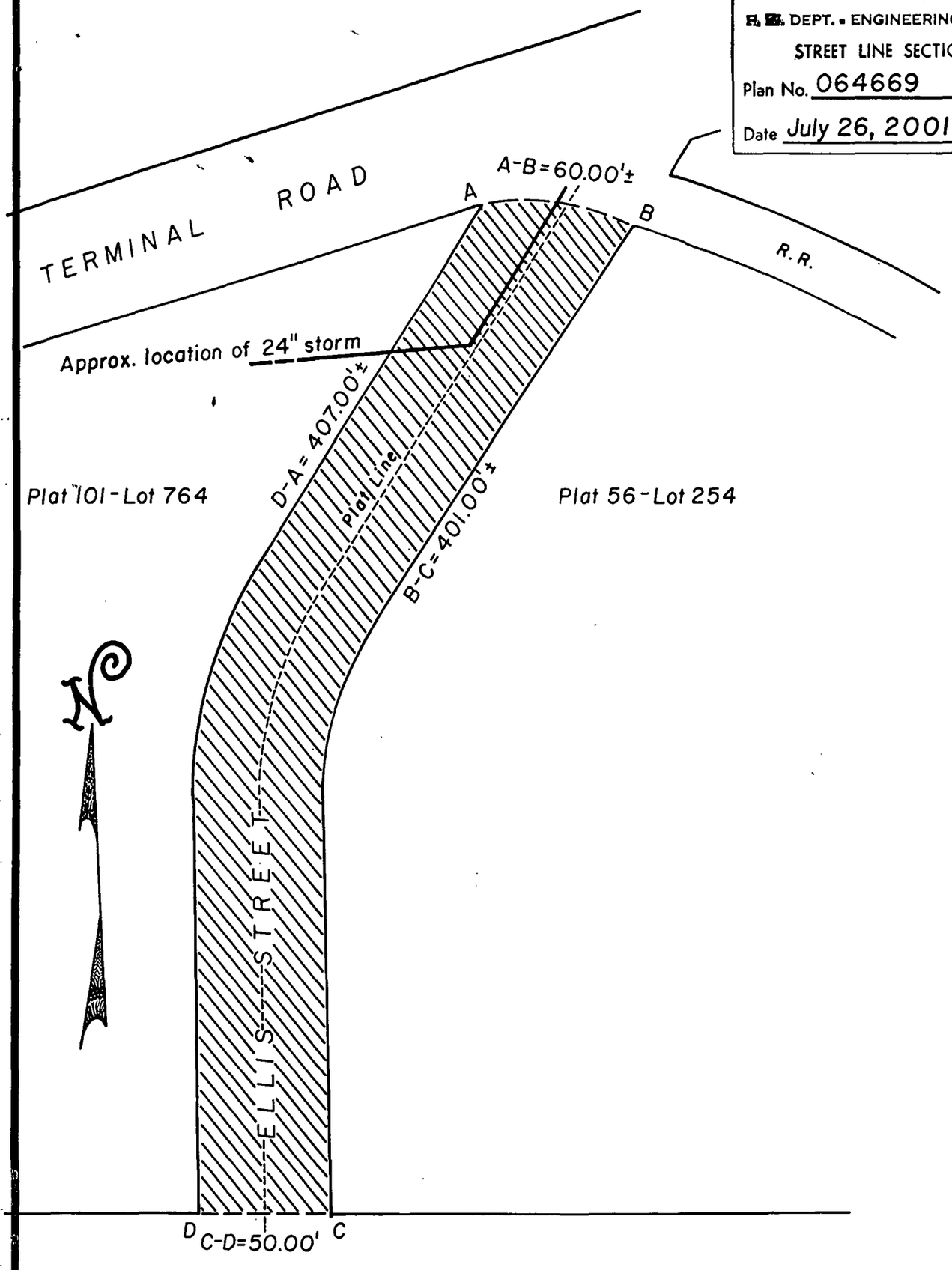
Ferdinand C. Ihenacho, P.E.
Director

CC: Patricia McLaughlin
Sam Shamoon
Paul Pinault, NBC Exec.Director
Gerry Florio
John D'Amico

700 Allens Avenue ● Providence, Rhode Island 02905

(401) 467-7950 (Voice) ● 751-0203 (TDD) ● 941-2567 (Facsimile)

PROVIDENCE, R. I.
P. W. DEPT. • ENGINEERING OFFICE
STREET LINE SECTION
Plan No. 064669
Date July 26, 2001



NOTES: Cross-hatched area (A-B-C-D-A) indicates proposed abandonment.
Narragansett Bay Commission's Combined Sewer Outfall Abatement Project
Total square footage= 20,200'±
Full sewer easement required.
Lot numbers taken from A.P. 101 & 56.

CITY OF PROVIDENCE, R. I.
Public Works Dept. - Engineering Office
Showing proposed abandonment of Ellis Street.
Drawn by A. Zisiades Checked by JLC
Scale 1" = 50' Date 7-26-2001
Correct James P. Murphy Associate Engr.
Approved 8/6/2001 CHIEF ENGINEER

768
N-98

THE Louis Berger Group, INC.
The Foundry Corporate Office Center, 295 Promenade Street, Providence, Rhode Island 02908 USA
Tel 401 521 5980 Fax 401 331 8956 www.louisberger.com

January 11, 2002

Mr. Michael R. Clement
City Clerk
25 Dorrance Street
Providence, RI 02903-3215

Subject: Providence City Council Resolution No 702
Abandonment of Ellis Street

Dear Mr. Clement;

1. In accordance with paragraph 8 of City Council Resolution No. 702, a copy of the Ellis Street Traffic Impact Study is enclosed. In addition, I am also providing a copy of correspondence with the Rhode Island Department of Transportation concerning the study.

2. If I can be of further assistance please contact me at 401-521-5980. Thank you

Sincerely,
THE LOUIS BERGER GROUP, INC.

Joseph Pratt,
Vice President

cc: R. Bernier - NBC w/o enclosures
T. Brueckner - NBC w/o enclosures

THE Louis Berger Group, INC.
The Foundry Corporate Office Center, 295 Promenade Street, Providence, Rhode Island 02908 USA
Tel 401 521 5980 Fax 401 331 8956 www.louisberger.com

November 27, 2001

Mr. Frank Corrao III, P.E.
Chief Civil Engineer
Traffic & Safety Management
Engineering Division
Rhode Island Department of Transportation
Two Capitol Hill, Room 226
Providence, RI 02903-1124

SUBJECT: Narragansett Bay Commission
CSO Program Phase I
Ellis Street Closure

Dear Mr. Carrao;

Thank you for your comments dated November 6, 2001 on the Traffic Impact Study accomplished on the subject project. We asked Gordon R. Archibald Inc., our sub consultant, the preparers of the original study to provide a response to your comments. That response is enclosed with this letter.

The Louis Berger Group, acting as Program Manager for the NBC CSO Program will make the necessary arrangement for the proposed improvements, which we acknowledge should be funded as part of that program.

If you have any questions please feel free to contact me at 401.521.5980.

Sincerely,
THE LOUIS BERGER GROUP, INC.

Joseph Pratt,
Vice President

Cc: Mr. E. Parker - RIDOT
Mr. F. Ihenacho - Providence DPW
Ms. I Testa - Providence DTE
Mr. T. Brueckner - NBC
Mr. R. Bernier - NBC
Mr. G. Hughes - LBG

Traffic Impact Study for the Closing of Ellis Street
as part of the Combined Sewer Overflow Control Facilities Program
Responses to Comments

November 19, 2001

Gordon R. Archibald, Inc. (GRA) has reviewed the comments on the above-referenced project from the Rhode Island Department of Transportation (RIDOT), cited in a letter dated November 6, 2001 to The Louis Berger Group. GRA offers the following responses to the comments:

EXISTING CONDITIONS

Comment 1: The Report does not indicate the distance between Ernest Street and Terminal Road intersections with Allens Avenue. Field observations show the distance to be approximately 200 feet.

Response 1: Comment noted.

TRAFFIC SAFETY ANALYSIS

Comment 1: Accident rates for individual intersections are calculated based on the number of accidents per million entering vehicles (MEV) not per hundred million entering vehicles.

Response 1: The accident rate for the intersection of Allens Avenue/Ernest Street based upon the accident data from 1998-2000 is 1.46 accidents per million entering vehicles (MEV) or 146 accidents per hundred million entering vehicles (HMEV).

Comment 2: The number of accidents at an intersection will vary from year to year. We would prefer accident rates be calculated for each year, instead of an average, to provide some idea of the variability.

Response 2: Table 2 provided a break down of the number of accidents that occurred during each of the three years at each intersection. The accident rate for the Allens Avenue/Terminal Road intersection by year is as follows:

1998 - 1.36 accidents/MEV
1999 - 2.43 accidents/MEV
2000 - 0.68 accidents/MEV

Comment 3: The number of left turn accidents at an intersection is an element of the process for establishing the need for a left turn treatments. No plotting of accident types or analysis of contributing factors is included in the report. If the accident types have been plotted, the accident diagrams should be forwarded to the Department to support the request for a SB left turn phase.

Response 3: The collision diagrams have been plotted in response to this comment and are attached. Review of the collision diagrams reveals only two accidents specifically

involving a southbound left-turn maneuver. We note that 22 of the 46 accidents at this intersection involved southbound traffic.

TRAFFIC CAPACITY ANALYSIS

Comment 1: The phase timings utilized in the analysis do not reflect the timings our records indicate are in operations at the intersection.

Response 1: During the field review, the controller was opened and the timings were noted. The analysis for the existing conditions were based upon the timings shown on the controller at that time.

Comment 2: The signalized intersection analysis for Ernest Street indicates the southbound approach operates at LOS F during the PM peak. These results are not supported by field observations of the intersection.

Response 2: As is often the case, the capacity analysis results are fairly conservative and do not always match what is observed in the field.

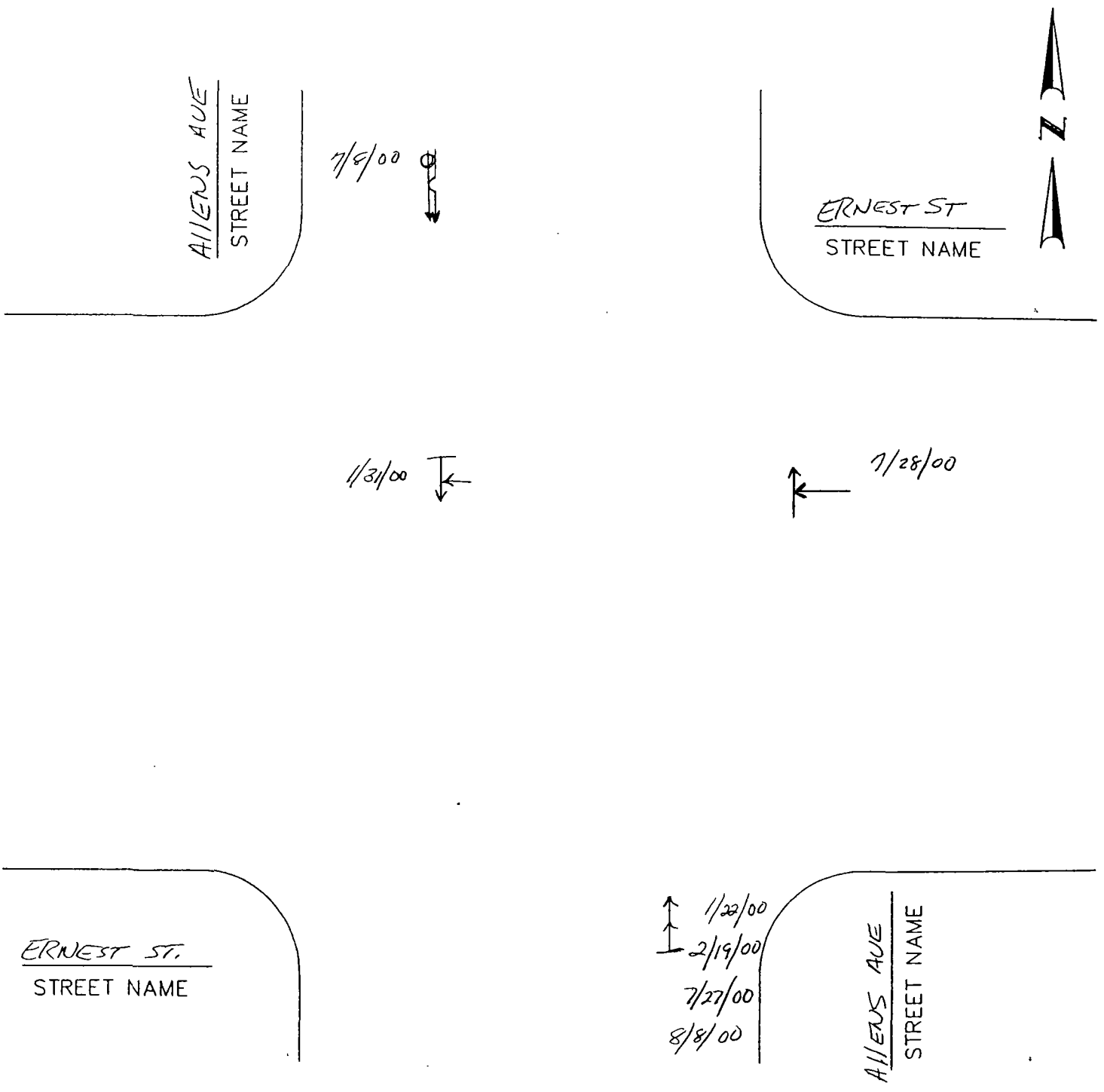
Comment 3: The addition of signal phases generally increases cycle lengths, reduces the available green time to some traffic and increases overall intersection delay. The results of the analysis for the proposed conditions during the PM peak show an improved intersection LOS, with the NB approach projected to improve from LOS E to B. We feel these results were achieved by imposing an artificially low cycle length on the operations, and view the results of the analysis with some skepticism.

Response 3: The capacity analysis for the existing conditions is based upon the existing timings at the Allens Avenue/Ernest Street intersection and these timings are not optimized. A two-phase signal with better timings would improve over the existing conditions and likely result in a lower overall intersection delay than the proposed three-phase signal. However, particularly in the AM peak hour, the southbound left turn volume is high enough to consider advance phasing to accommodate the left turn volume. The proposed three-phase signal was intended to safely and efficiently serve the southbound left turn volume while still allowing the intersection to operate at acceptable LOS, as opposed to finding the lowest overall intersection delay.

Comment 4: The ten-second green utilized in the analysis for the proposed side-street timings does not represent a realistic intersection split and would not be appropriate for implementation. We note significant improvements to side-street LOS were shown by shifting one second of green time from the main street to the side street. It is unlikely this reflects a real-world operation.

COLLISION DIAGRAM

INTERSECTION Allens Avenue AND Ernest St.
PERIOD 2000 FROM _____ TO _____
CITY Providence, RI PREPARED BY: _____



Gordon R. Archibald, Inc.
Engineers and Architects

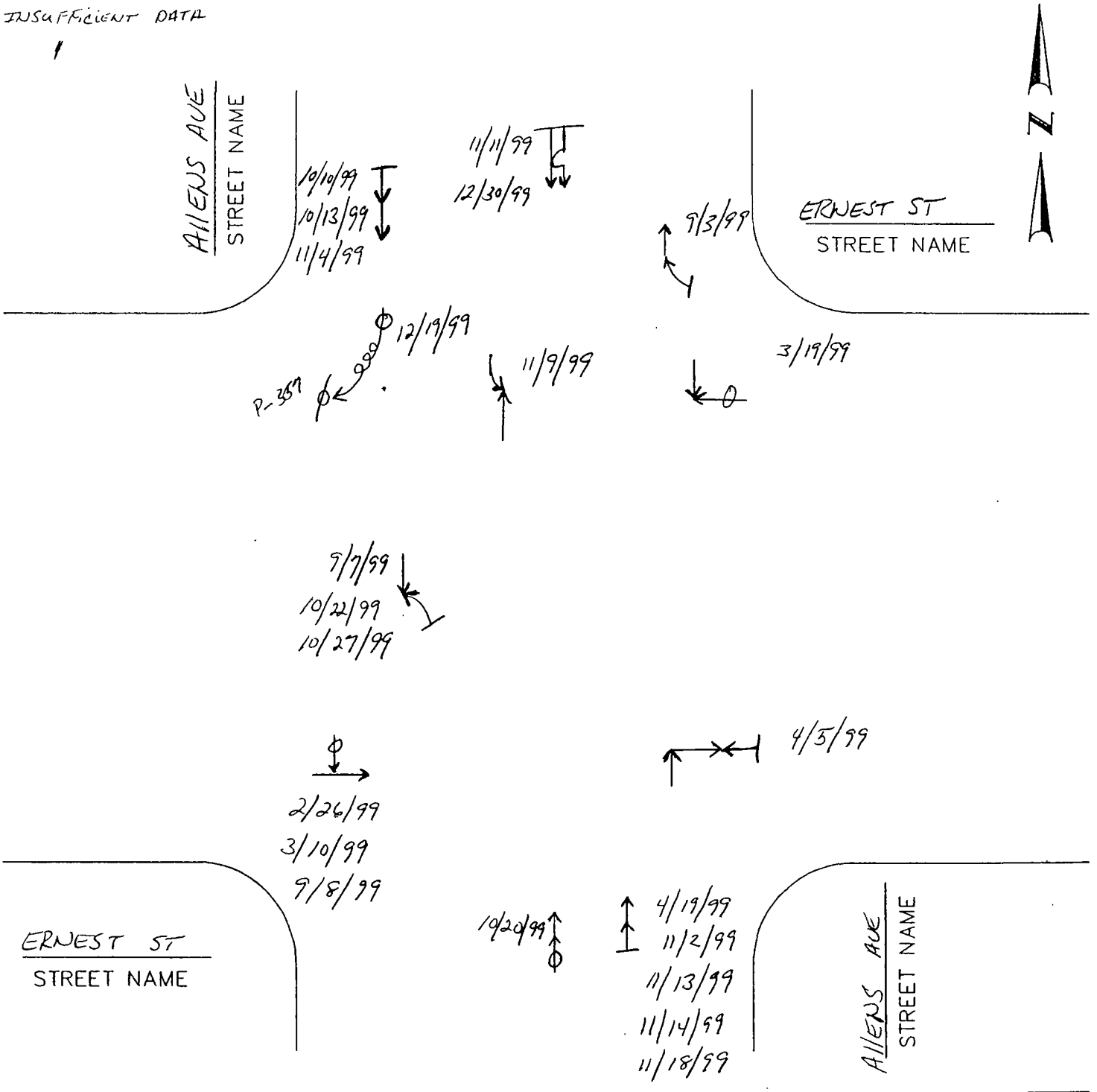
SYMBOLS	TYPES OF COLLISIONS	NUMBER OF ACCIDENTS
MOVING VEHICLE	REAR END	6 PROPERTY DAMAGE ONLY
BACKING VEHICLE	HEAD ON	1 INJURY OR FATAL
NON-INVOLVED VEHICLE	SIDE SWIPE	7 TOTAL ACCIDENTS
PEDESTRIAN	OUT OF CONTROL	
PARKED VEHICLE	LEFT TURN	
PARKING OR UNPARKING VEHICLE	RIGHT ANGLE	
FIXED OBJECT	BROADSIDE	
FATAL ACCIDENT		
INJURY ACCIDENT		
PROPERTY DAMAGE ONLY		

COLLISION DIAGRAM

INTERSECTION ALLENS AVENUE AND ERNEST ST.
PERIOD 1999 FROM _____ TO _____
CITY PROVIDENCE, RI PREPARED BY: _____

INSUFFICIENT DATA

1



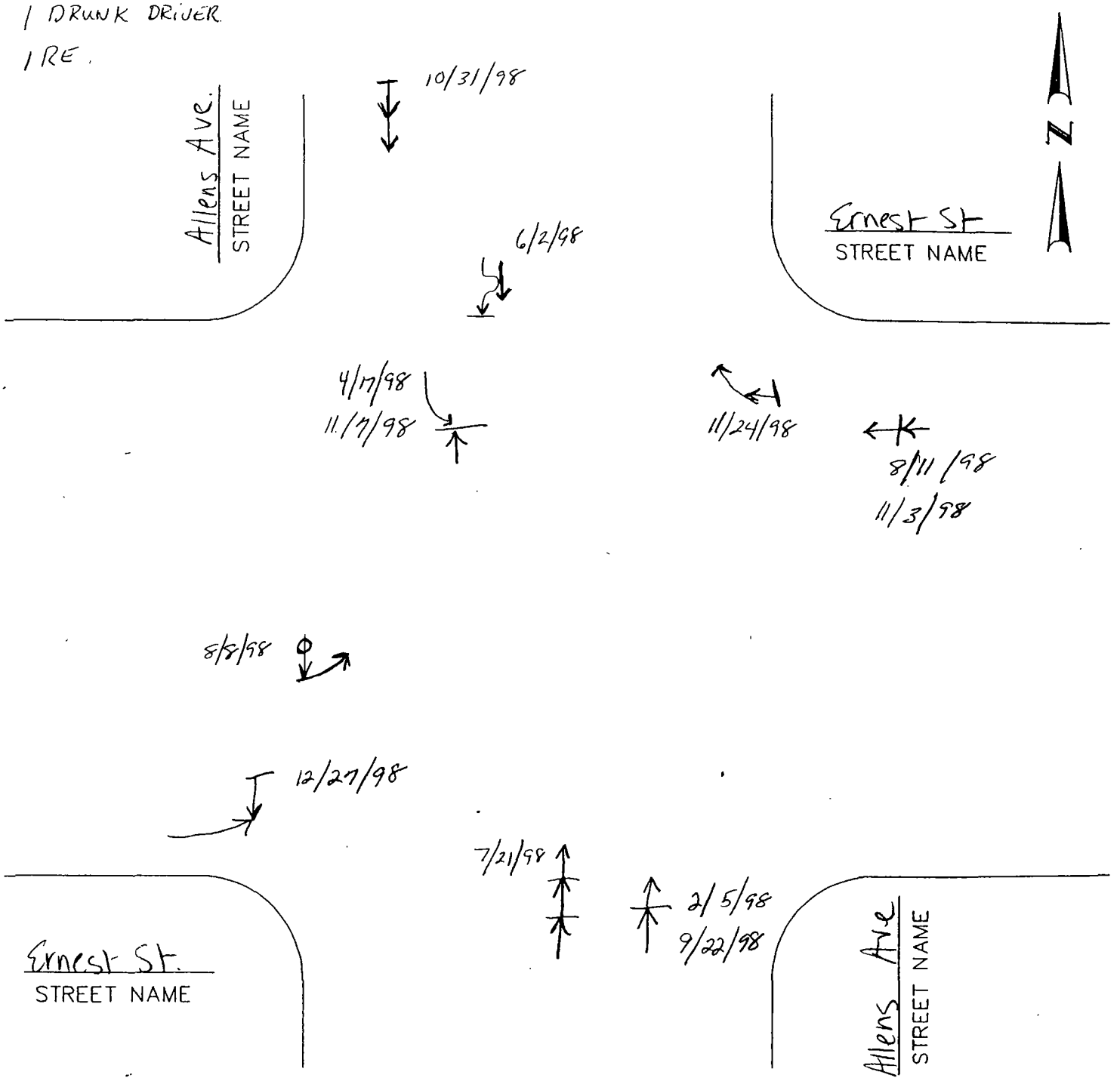
Gordon R. Archibald, Inc.
Engineers and Architects

SYMBOLS		TYPES OF COLLISIONS		NUMBER OF ACCIDENTS	
	MOVING VEHICLE		REAR END	16	PROPERTY DAMAGE ONLY
	BACKING VEHICLE		HEAD ON	6	INJURY OR FATAL
	NON-INVOLVED VEHICLE		SIDE SWIPE	25	TOTAL ACCIDENTS
	PEDESTRIAN		OUT OF CONTROL		
	PARKED VEHICLE		LEFT TURN		
	PARKING OR UNPARKING VEHICLE		RIGHT ANGLE		
	FIXED OBJECT		BROADSIDE		
	FATAL ACCIDENT				
	INJURY ACCIDENT				
	PROPERTY DAMAGE ONLY				

COLLISION DIAGRAM

INTERSECTION Allens Avenue AND Ernest St
PERIOD 3years 1998 FROM TO
CITY Providence, RI PREPARED BY:

1 DRUNK DRIVER
1 RE.



Gordon R. Archibald, Inc.
Engineers and Architects

SYMBOLS	TYPES OF COLLISIONS	NUMBER OF ACCIDENTS
MOVING VEHICLE	REAR END	11 PROPERTY DAMAGE ONLY
BACKING VEHICLE	HEAD ON	1 INJURY OR FATAL
NON-INVOLVED VEHICLE	SIDE SWIPE	12 TOTAL ACCIDENTS
PEDESTRIAN	OUT OF CONTROL	+ 2 NOT PLOTTED
PARKED VEHICLE	LEFT TURN	14
PARKING OR UNPARKING VEHICLE	RIGHT ANGLE	
FIXED OBJECT	BROADSIDE	
FATAL ACCIDENT		
INJURY ACCIDENT		
PROPERTY DAMAGE ONLY		

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Rhode Island Department of Transportation
ENGINEERING DIVISION
Two Capitol Hill, Rm. 226
Providence, RI 02903-1124
PHONE 401-222-2023
FAX 401-222-3435; TDD 401-222-4971

November 6, 2001

Joseph Pratt
Vice President
The Louis Berger Group
The Foundry Office Center
295 Promenade Street
Providence, RI 02908

Subject: Narragansett Bay Commission
Phase 1 CSO Program
Ellis Street Closure

Dear Mr. Pratt:

We have reviewed the Traffic Impact Study submitted for the above subject project. The proposed closure of Ellis Street may result in the diversion of some traffic to the Allens Avenue/ Ernest Street intersection. We have the following comments on the report:

Existing Conditions
1. The Report does not indicate the distance between the Ernest Street and Terminal Road intersections with Allens Avenue. Field observations show the distance to be approximately 200 feet.

Traffic Safety Analysis
1. Accident rates for individual intersections are calculated based on the number of accidents per million entering vehicles (MEV) not per hundred million entering vehicles.
2. The number of accidents at an intersection will vary from year to year. We would prefer accident rates be calculated for each year, instead of an average, to provide some idea of the variability.
3. The number of left turn accidents at an intersection is an element of the process for establishing the need for a left turn treatments. No plotting of accident types or analysis of contributing factors is included in the report. If the accident types have been plotted, the accident diagrams should be forwarded to the Department to support the request for a SB left turn phase.

Traffic Capacity Analysis
1. The phase timings utilized in the analysis do not reflect the timings our records indicate are in operation at the intersection.
2. The signalized intersection analysis for Ernest Street indicates the southbound approach operates at LOS F during the PM peak. These results are not supported by field observations of the intersection.
3. The addition of signal phases generally increases cycle lengths, reduces the available green time to some traffic and increases overall intersection delay. The results of the analysis for the proposed conditions during the PM peak show an improved intersection LOS, with the NB approach projected to improve from LOS E to B. We feel these results were achieved by imposing an artificially low cycle length on the operation, and view the results of the analysis with some skepticism.
4. The ten-second green utilized in the analysis for the proposed side-street timings does not represent a realistic intersection split and would not be appropriate for implementation. We note significant improvements to side-street LOS were shown by shifting one second of green time from the main street to the side-street. It is unlikely this reflects a real-world operation.

5. The HCM un-signalized intersection analysis is sensitive to the value of the allowable gap and often overestimates actual intersection delay. In addition, the presence of the signal at Ernest Street makes it easier for traffic to enter and exit the adjacent Terminal Road intersection. We suggest the HCM analysis of this location shows higher delays than would be observed in the field.

Projected Traffic Conditions/Proposed Modifications
1. We note no justification was provided for the introduction of a SB left turn phase.
2. Terminal Road is not a state highway. The City of Providence is free to mark it any way they please, at any time. Have the operational problems that would be addressed by the re-striping been observed in the field?

Conclusions and Recommendations
1. The recommendation to install a southbound left turn phase is not supported by any clear methodology. A case could be made to justify a left turn phase based on the conflict between the SB left and NB thru during the existing and projected AM peak hours. The need is less clear for the PM peak. The accident data as presented in the Report does not support the proposed recommendations.
2. The second sentence should refer to adding a fourth "section " to the existing signal head, instead of a fourth "head".
3. The striping of the Terminal Road approach is a matter for the City of Providence as is the work zone signing. The installation of any signs on Allens Avenue would require State Traffic Commission approval.

Based on the data presented in the Report, the Department does not concur with the recommendation to install a left turn phase. The Department will reconsider this decision at a later date, if additional supporting data is provided.

The costs of any improvements are to be borne by the Narragansett Bay Commission as part of the project. Any work within the State ROW will require the approval of plans by the Department through the Physical Alteration Permit Process. Should you have any questions, please contact this office at 222-2694 ext4202.

Very truly yours,

Frank Corrao III

Frank Corrao III, P.E.
Chief Civil Engineer
Traffic & Safety Management

TEC

Cc: Parker, Ihenacho, Testa, file

TRAFFIC IMPACT STUDY

for the

Closing of Ellis Street
as part of the
Combined Sewer Overflow Control Facilities Program

Providence, Rhode Island

Prepared for:

JE Sverdrup
Two Center Plaza
Boston, Massachusetts

Prepared by:

GORDON R. ARCHIBALD, INC.
Professional Engineers
200 Main Street
Pawtucket, Rhode Island

May, 2001

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I. Introduction

This study has been prepared by Gordon R. Archibald, Inc. for JE Sverdrup of Boston, Massachusetts in connection with the Narragansett Bay Commission's Combined Sewer Overflow (CSO) Control Facilities Program. The purpose of this study is to examine the traffic impact of the proposed closing of Ellis Street in Providence, Rhode Island.

The components of this study are as follows:

1. **Data Collection**. A field review of existing physical conditions on Ellis Street and the surrounding street network was conducted and included road width, geometric alignment, lighting, signing, pavement markings, lane arrangements, traffic counts and operational characteristics.

2. **Traffic Reassignment and Projections**. Existing traffic volumes on Ellis Street were reassigned to the surrounding street network to reflect the closing of Ellis Street. In addition, traffic projections were made to reflect the anticipated traffic volumes during the construction of the CSO tunnel.

3. **Analysis**. Capacity analyses for existing, reassigned and projected traffic volumes were conducted for the intersections of Allens Avenue/Terminal Road, Allens Avenue/Ernest Street, Terminal Road/Ellis Street and Ernest Street/Ellis Street. Also, accident history was researched through the local police department.

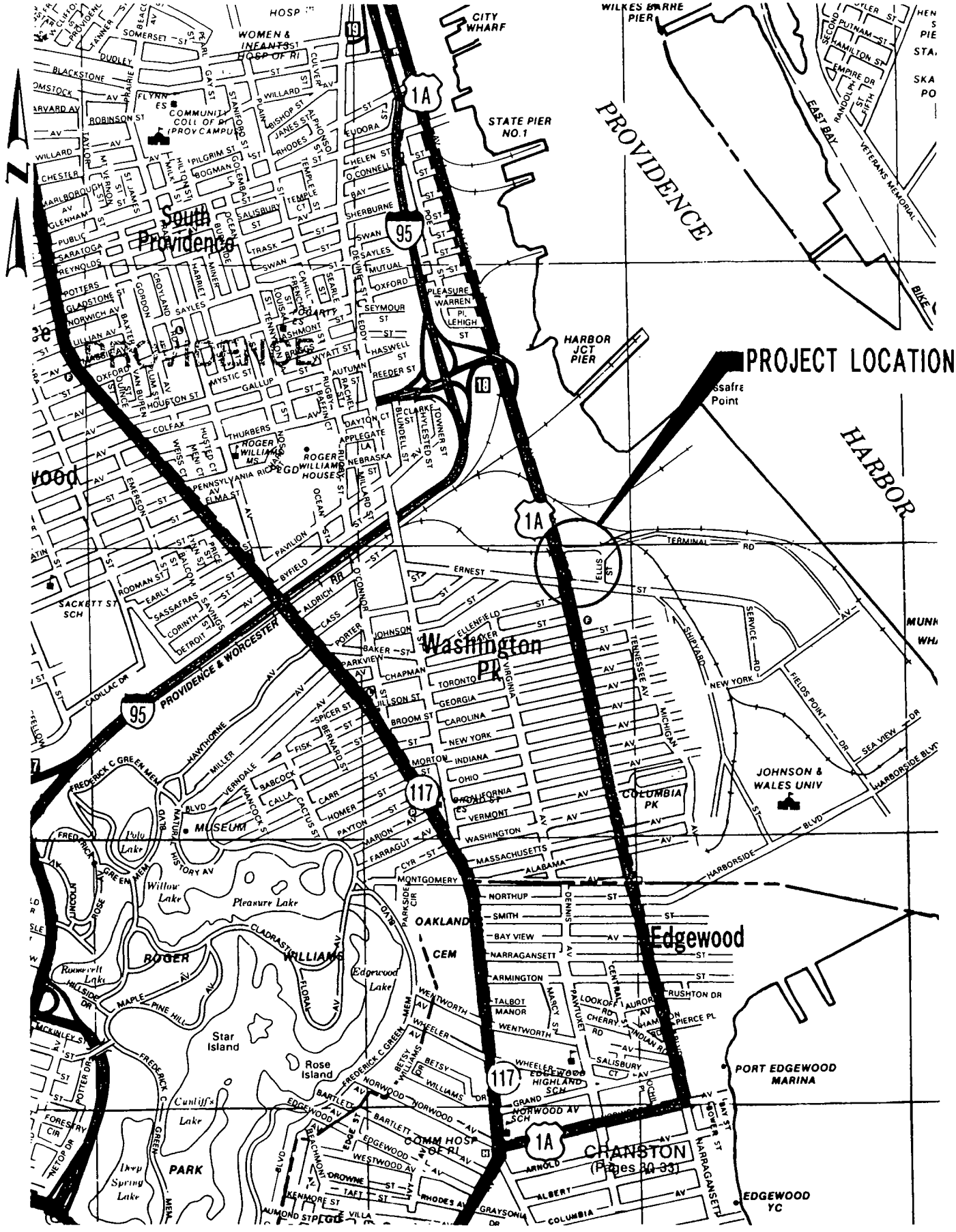
II. Existing Conditions

A. Site and Roadway Conditions

Ellis Street runs in a north-south direction one block east of and parallel to Allens Avenue in the Washington Park section of Providence, Rhode Island. Refer to Figure 1 for a Location Map. Ellis Street serves traffic traveling between Terminal Road and Ernest Street.

Ellis Street is thirty-five (35) feet wide. It serves two-way traffic. Catch basins, street lighting and curbing are provided along Ellis Street. There are no pavement markings. The roadway forms the minor street approach of a three-legged intersection at each end; the south end with Ernest Street and the north end with Terminal Road.

Ernest Street is forty feet wide and runs in an east-west direction from Eddy Street to New York Avenue. The roadway is curbed and carries two-way traffic.



TRAFFIC IMPACT STUDY
PROPOSED CLOSING OF ELLIS STREET
THE NARRAGANSETT BAY COMMISSION
COMBINED SEWER OVERFLOW
CONTROL FACILITIES PROGRAM

PROVIDENCE RHODE ISLAND

Gordon R. Archibald, Inc.
Professional Engineers

LOCATION MAP

APRIL, 2001 NOT TO SCALE

FIGURE 1

Street lighting is provided. The pavement is in fair condition. There are no pavement markings. Ernest Street is signalized at its intersection with Allens Avenue. Ernest Street and Terminal Road provide access to the municipal wharf and the Fields Point area.

Terminal Road is approximately forty feet wide. It runs in an east-west direction parallel to and north of Ernest Street. Terminal Road runs from Allens Avenue to New York Avenue. There is no curbing, sidewalk or pavement markings on this roadway. The pavement is in fair condition. Adequate sight distance exists at the intersection of Allens Avenue and Terminal Road.

Allens Avenue is a major arterial roadway which runs in the north-south direction. It is also referred to as Route 1A. It carries four lanes of traffic with two lanes in each direction.

B. Traffic Volumes

Manual turning movement counts were collected by Gordon R. Archibald, Inc. at the following intersections:

- Allens Avenue/Ernest Street
- Allens Avenue/Terminal Road
- Terminal Road/Ellis Street
- Ernest Street/Ellis Street

The counts were collected from 7:00-9:00 A.M. and 3:00-6:00 P.M. on Wednesday, April 4, 2001. Turning movements were recorded in 15-minute intervals. Summaries of the turning movement counts are provided in the Appendix.

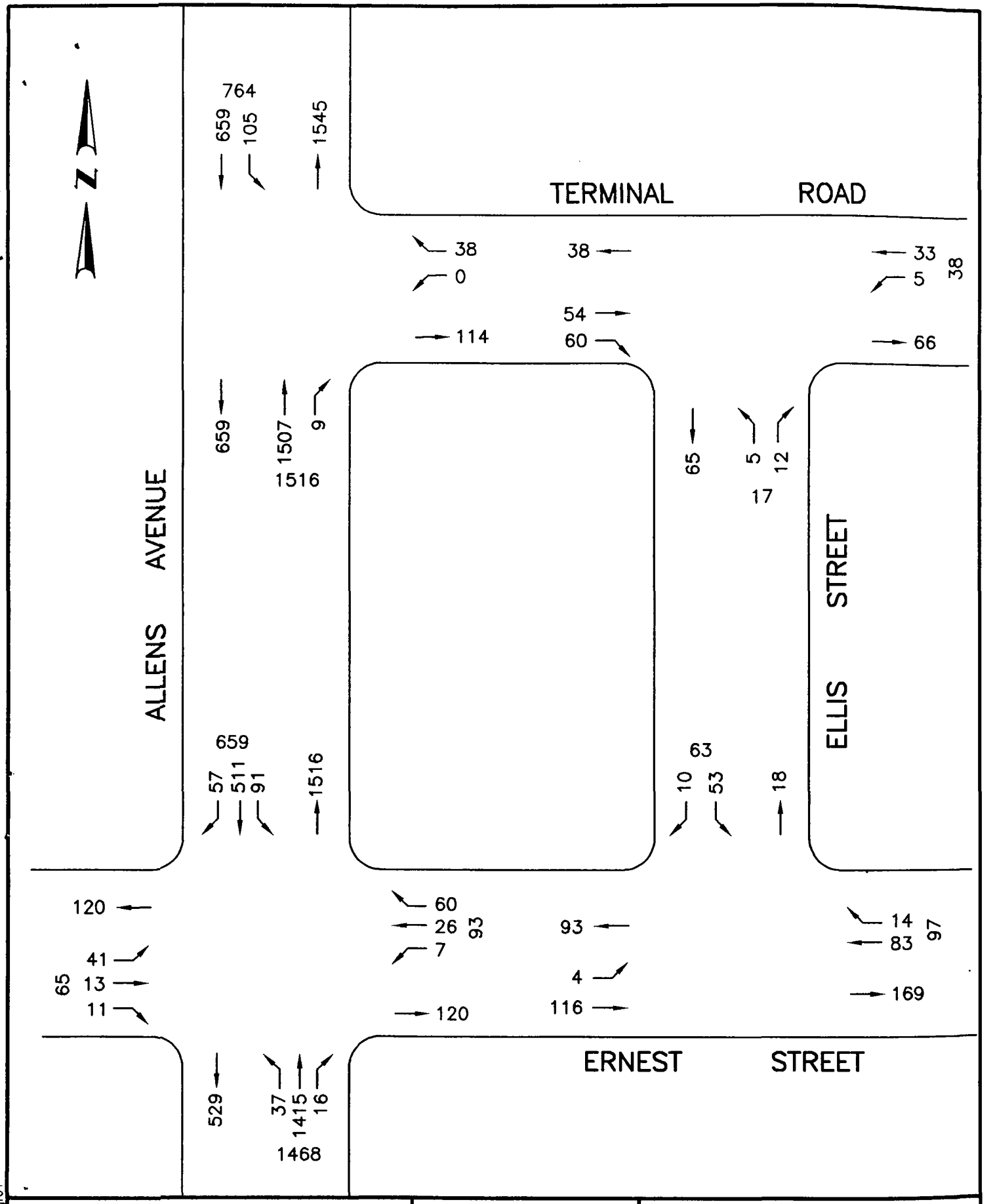
Figures 2 and 3 show the existing traffic volumes during the AM and PM peak hours, respectively.

C. Existing Traffic Operation and Level of Service

Four intersections were analyzed in terms of a capacity analysis based on the weekday AM and PM peak hour traffic volumes. The methodology used for the capacity analysis was based on the 1998 Highway Capacity Manual. The intersections analyzed included:

- Allens Avenue/Ernest Street
- Allens Avenue/Terminal Road
- Terminal Road/Ellis Street
- Ernest Street/Ellis Street

Results of the capacity analysis are stated in terms of "Level of Service" (LOS). LOS is a measure of driver comfort under a given set of roadway and traffic



TRAFFIC IMPACT STUDY
PROPOSED CLOSING OF ELLIS STREET
THE NARRAGANSETT BAY COMMISSION
COMBINED SEWER OVERFLOW
CONTROL FACILITIES PROGRAM
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Gordon R. Archibald, Inc.
Professional Engineers

EXISTING AM PEAK HOUR TRAFFIC VOLUMES
APRIL, 2001 NOT TO SCALE

FIGURE 2

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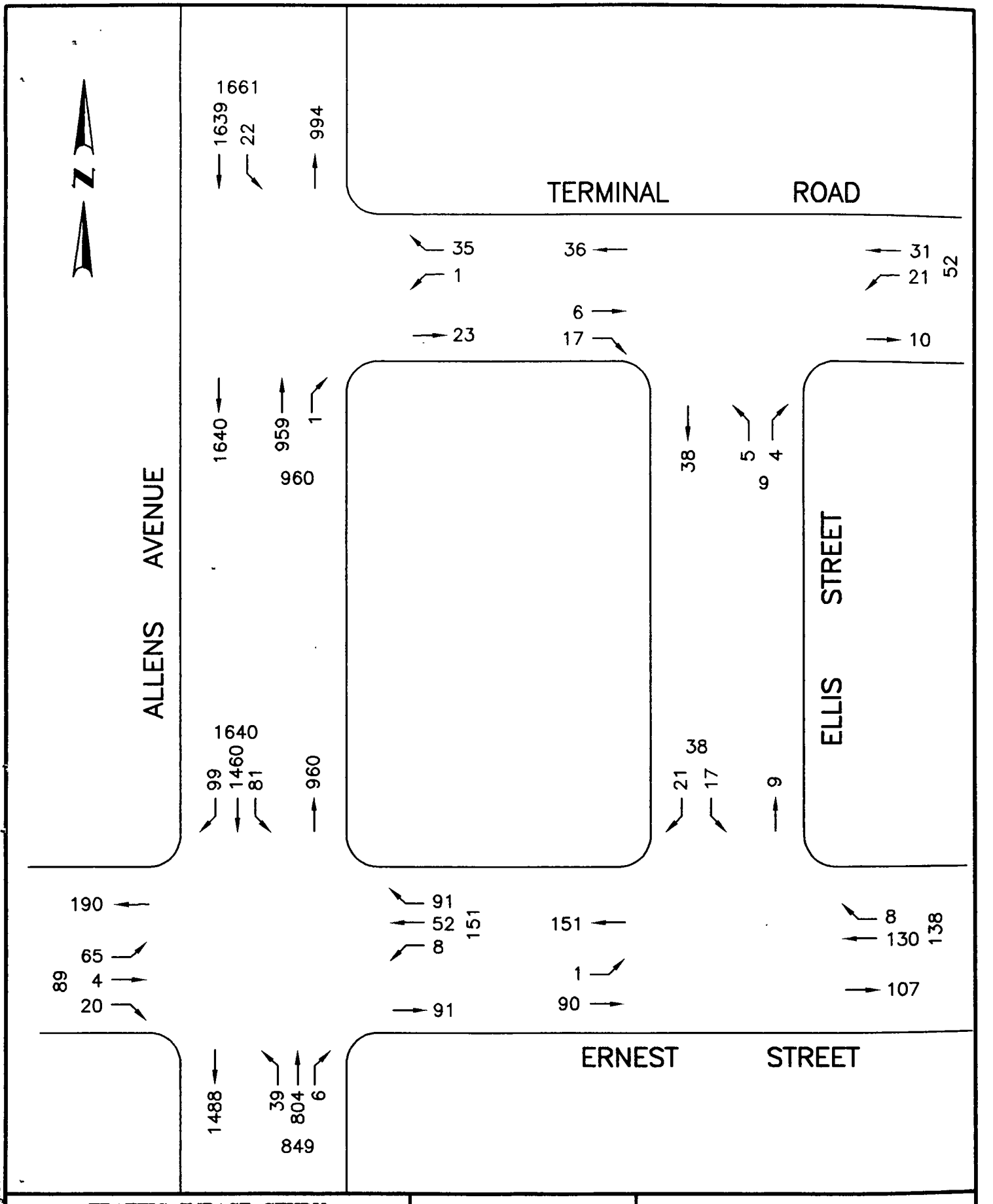

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PROPOSED CLOSING OF ELLIS STREET
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EXISTING PM PEAK HOUR TRAFFIC VOLUMES
APRIL, 2001 NOT TO SCALE

FIGURE 3

cad\844\traffic\844tgr01

conditions. LOS is ranked from LOS "A" through "F," with LOS "A" representing free flow conditions, LOS "C" representing average delay, and LOS "F" representing a congested condition causing significant delay to motorists.

For signalized intersections, the LOS is based upon control delay, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The range of control delay for each LOS are as follows:

LOS	Control Delay
A	less than 10 seconds
B	between 10 and 20 seconds
C	between 20 and 35 seconds
D	between 35 and 55 seconds
E	between 55 and 80 seconds
F	greater than 80 seconds

For an unsignalized intersection, LOS is also based upon the control delay. However, the LOS criteria are different for an unsignalized intersection than for a signalized intersection, due primarily to the fact that motorists have different expectations at signalized and unsignalized intersections. The delay time at a signalized intersection is less stressful to the driver than at an unsignalized intersection, because it allows the driver a chance to rest. Also, the variability in the amount of delay experienced by each driver is greater at an unsignalized intersection. As such, the LOS criteria for unsignalized intersections is as follows:

LOS	Delay Range
A	less than 10 seconds
B	between 10 and 15 seconds
C	between 15 and 25 seconds
D	between 25 and 35 seconds
E	between 35 and 50 seconds
F	greater than 50 seconds

The results of the capacity analysis for the existing traffic conditions are shown in Table 1. Summaries of the capacity analyses are provided in the Appendix of this report.

As the results indicate, the signalized intersection of Allens Avenue/Ernest Street currently operates at failure LOS in the PM peak hour. The unsignalized intersection of Allens Avenue/Terminal Road operates at acceptable LOS. Ellis Street

TABLE 1
Summary of Capacity Analysis Results
Based upon the Existing Signal Phases & Timing

Level of Service/Delay (seconds)

Intersection	Existing Condition		Build Condition	
	AM Peak	PM Peak	AM Peak	PM Peak
Signalized Intersection				
1. Allens Avenue/Ernest Street				
Eastbound Approach	B/14.8	B/15.6	B/14.8	B/15.6
Westbound Approach	B/15.3	B/16.0	B/15.2	B/15.6
Northbound Approach	C/28.9	E/62.4	C/26.1	F/83.4
Southbound Approach	C/30.4	F/859.8	F/*	F/*
Overall Intersection	C/28.2	F/503.0	F/*	F/*
Unsignalized Intersections				
1. Allens Avenue/Terminal Road				
Southbound Left	C/18.7	B/11.8	C/15.9	B/11.4
Westbound Approach	C/19.7	C/22.4	D/32.4	F/*
2. Terminal Road/Ellis Street				
Westbound Left	A/7.9	A/7.4	N.A.	N.A.
Northbound Approach	A/9.8	A/9.3	N.A.	N.A.
3. Ernest Street/Ellis Street				
Eastbound Left	A/7.7	A/7.6	N.A.	N.A.
Southbound Approach	B/10.7	B/10.2	N.A.	N.A.

Note: * indicates that the volume to capacity ratio exceeds 1 and delay calculation is infeasible

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currently carries low volumes of traffic and the intersections at each terminus operate at good LOS.

D. Traffic Safety Analysis

The accident history for the study area was researched through the Providence Police Department. The accident data is summarized in Table 2. The data covered a three year period from 1998 - 2000. In the three-year period, there were 54 accidents reported, forty-six (46) of which occurred at the intersection of Allens Avenue/Ernest Street. Twenty-two (22) of the 54 accidents involved personal injury and there were no fatalities reported in the study area.

Locations are usually selected for further study based on the occurrence of five or more accidents in a twelve-month period as stated in the Transportation and Traffic Engineering Handbook published by the Institute of Transportation Engineers. Based on these criteria, there were two intersections in the study area, Allens Avenue/Ernest Street and Allens Avenue/Terminal Road, that had five or more accidents in a twelve-month period.

The intersection of Allens Avenue/Terminal Road experienced six accidents in 1998. However, the occurrence of accidents dropped in the next two years. On average, this intersection experienced two accidents per year.

The intersection of Allens Avenue/Ernest Street had an average of fifteen accidents per year over the three year period. The accident rate was calculated for this intersection. An accident rate represents the likelihood of an accident occurring at a given location in relation to the number of vehicles utilizing the roadway or intersection. Intersection accident rates are expressed as the number of accidents per hundred million entering vehicles (HMEV) at the intersection. The calculations are shown below:

$$\text{Intersection Accident Rate} = \frac{\text{Number of Accidents in (3) year period}}{\text{(24 hr. vol. of HMEV x 365 days/yr. x three yrs.)}}$$

The accident rate for the intersection of Allens Avenue/Ernest Street is 1.46 accidents/ HMEV. As stated in the Manual of Traffic Engineering Studies, some communities typically consider intersection accident rates greater than 1.50 accidents/HMEV to be excessive. Given the volume of vehicles utilizing this intersection, the occurrence of accidents warrants concern although it is not excessive.

TABLE 2
SUMMARY OF ACCIDENT DATA

Number of Accidents
(PI= Personal Injury Accidents & PDO=Property Damage Only Accidents)

	1998			1999			2000			3 Yr.	Average
Location/Intersection	PI	PDO	TOTAL	PI	PDO	TOTAL	PI	PDO	TOTAL	TOTAL	Per Year
Allens Avenue/Terminal Road	4	2	6	0	1	1	0	0	0	7	2
Allens Avenue/Ernest Street	3	11	14	9	16	25	1	6	7	46	15
Ernest Street/Ellis Street	0	0	0	0	1	1	0	0	0	1	0
Terminal Road/Ellis Street	0	0	0	0	0	0	0	0	0	0	0
TOTAL	7	13	20	9	18	27	1	6	7	54	14

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III. Projected Traffic Conditions

A. Traffic Volumes

Traffic volumes in the study area were reassigned based upon the closing of Ellis Street. The reassigned traffic volumes for the peak hour conditions are shown in Figures 4 and 5. The traffic volumes at the intersection of Allens Avenue/Terminal Road are expected to increase by approximately 1% due to the closing of Ellis Street. Likewise, the traffic volumes at the Allens Avenue/Ernest Street intersection increase by approximately 1-3%. A number of vehicles traveling southbound on Allens Avenue turned onto Terminal Road and then used Ellis Street to access Ernest Street to the east. These vehicles are expected to become southbound left turns at the Allens Avenue/Ernest Street intersection once Ellis Street is closed.

B. Proposed Modifications

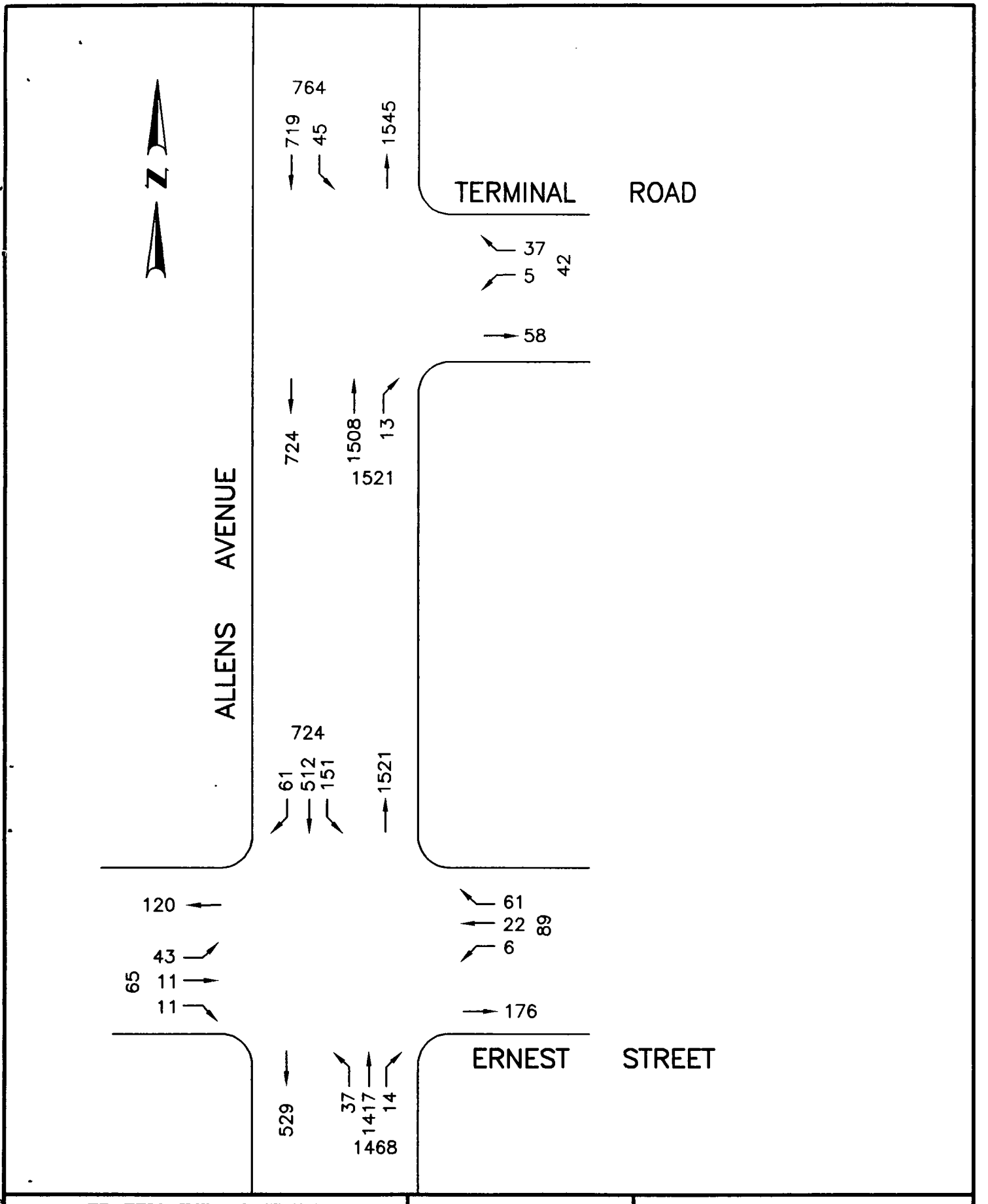
The intersection of Allens Avenue/Ernest Street presently operates at failure LOS during the PM peak hour. The intersection LOS can be increased by adjusting the signal timing and phasing. Various alterations to the signal timing and phasing were analyzed. The recommended modification is to provide a lead green phase for the Allens Avenue southbound traffic. This lead green time will allow southbound left-turning traffic an opportunity to turn left without opposition.

At the intersection of Allens Avenue/Terminal Road, the Terminal Road approach presently operates at poor LOS. Terminal Road is forty feet wide. At its intersection with Allens Avenue, Terminal Road should be striped to provide two lanes eastbound and one lane westbound. The eastbound lanes are to be marked as a left-turn- only lane and a right- turn- only lane. This will allow the right-turning motorists on Terminal Road to experience less delay at the Allens Avenue intersection.

C. Traffic Capacity Analysis

Projected traffic conditions were analyzed in terms of a capacity analysis. Refer to the previous discussion in Chapter II for information on the methodology of the capacity analysis. The results are summarized in Tables 1 and 3.

LOS at the unsignalized intersection of Allens Avenue/Terminal Road is expected to decline as a result of the closing of Ellis Street. In particular, the Terminal Road approach is expected to operate at LOS "D" in the AM and LOS "F" in the PM peak hour. In an urbanized area, LOS "D" is acceptable. LOS "F" indicates that motorists will be forced to endure long delays. Because Allens Avenue is a major arterial that carries a substantial volume of traffic, many of the minor street approaches along Allens Avenue experience long delays.



TRAFFIC IMPACT STUDY
PROPOSED CLOSING OF ELLIS STREET
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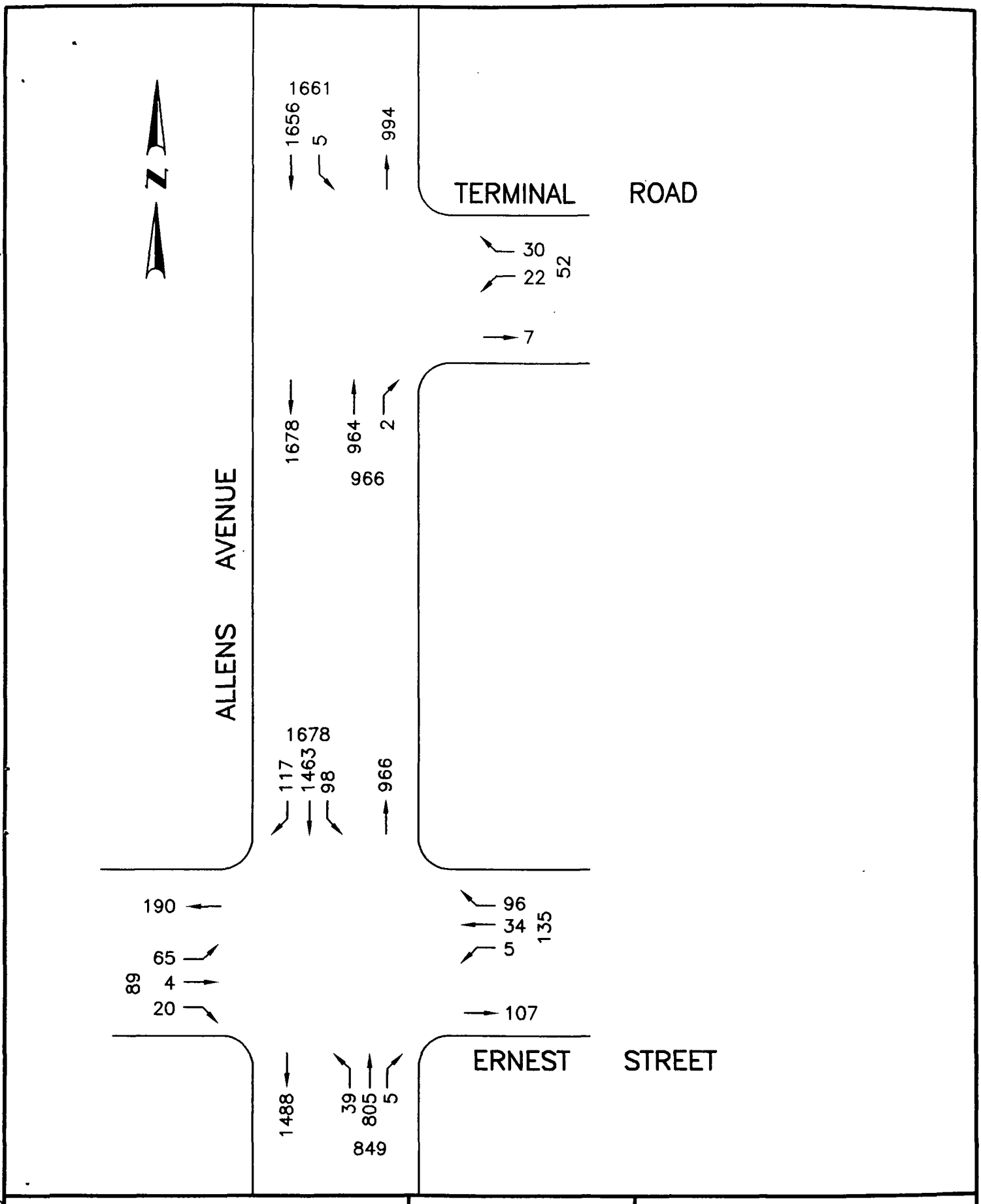
PROJECTED AM PEAK HOUR TRAFFIC VOLUMES

APRIL, 2001 NOT TO SCALE

FIGURE 4



TRAFFIC IMPACT STUDY
PROPOSED CLOSING OF ELLIS STREET
THE NARRAGANSETT BAY COMMISSION
COMBINED SEWER OVERFLOW
CONTROL FACILITIES PROGRAM
PROVIDENCE RHODE ISLAND

Gordon R. Archibald, Inc.
Professional Engineers

PROJECTED PM PEAK HOUR TRAFFIC VOLUMES

APRIL, 2001 NOT TO SCALE

FIGURE 5

cad\847traffic\847fig01

TABLE 3
Summary of Capacity Analysis Results
Based upon Proposed Improvements

Level of Service/Delay (seconds)

Intersection	Existing Traffic Volumes		Build Cond. Traffic Volumes	
	AM Peak	PM Peak	AM Peak	PM Peak
Signalized Intersection				
1. Allens Avenue/Ernest Street				
Eastbound Approach	C/24.4	D/39.4	C/24.6	D/45.0
Westbound Approach	C/30.3	C/34.0	C/28.5	D/35.3
Northbound Approach	C/22.4	B/16.6	C/23.3	B/15.0
Southbound Approach	A/6.7	B/14.0	B/14.7	B/15.5
Overall Intersection	B/17.9	B/17.3	C/20.7	B/17.7
Unsignalized Intersections				
1. Allens Avenue/Terminal Road				
Southbound Left	C/18.7	B/11.8	C/15.9	B/11.4
Westbound Left	F/129.1	F/107.8	F/104.9	F/*
Westbound Right	C/19.7	B/14.3	C/19.7	B/14.1
Westbound Approach	C/19.7	C/20.1	D/28.0	F/*

Intersection	Construction Condition			
	Scenario 1		Scenario 2	
	AM Peak	PM Peak	AM Peak	PM Peak
Signalized Intersection				
1. Allens Avenue/Ernest Street				
Eastbound Approach	C/24.6	D/45.0	C/24.8	D/42.1
Westbound Approach	C/28.5	D/35.3	D/37.9	D/35.1
Northbound Approach	C/23.3	B/15.0	C/23.3	B/17.5
Southbound Approach	B/14.7	B/15.5	B/14.7	B/19.3
Overall Intersection	C/20.7	B/17.7	C/21.2	C/20.7
Unsignalized Intersections				
1. Allens Avenue/Terminal Road				
Southbound Left	C/22.9	C/17.8	C/22.9	C/20.4
Westbound Left	F/133.3	F/*	F/133.3	F/*
Westbound Right	D/25.9	C/18.0	C/19.7	B/14.1
Westbound Approach	D/32.9	F/*	D/30.8	F/*

Note: * indicates that the volume to capacity ratio exceeds 1 and delay calculation is infeasible.

File=F:\Files\Engcomp\844\844cap.wb3

Proposed improvements at the Allens Ave/Terminal Road intersection involve re-striping the Terminal Road approach to provide two lanes westbound and one lane eastbound. The anticipated LOS with this modification are shown in Table 3. The LOS for the westbound left-turn remains poor. However, the right-turn volume on Terminal Road will experience shorter delays since they will have an exclusive lane and not be forced to wait for left-turning motorists.

The analysis for the signalized intersection of Allens Avenue/Ernest Street was conducted for two conditions. First, the existing signal phasing and timings were used in the analysis. The results of this analysis are displayed in Table 1. The analysis was then conducted based upon the proposed signal phasing and timing. The results are shown in Table 3. As the table indicates, these modifications to the signal timing increase the AM peak hour LOS from "C" to "B" under the existing volumes and from "F" to "C" once Ellis Street is closed. In the PM peak hour, the LOS at this intersection is increased from "F" to "B" for both the existing traffic volumes and the traffic volumes with Ellis Street closed.

IV. Traffic Conditions During Construction

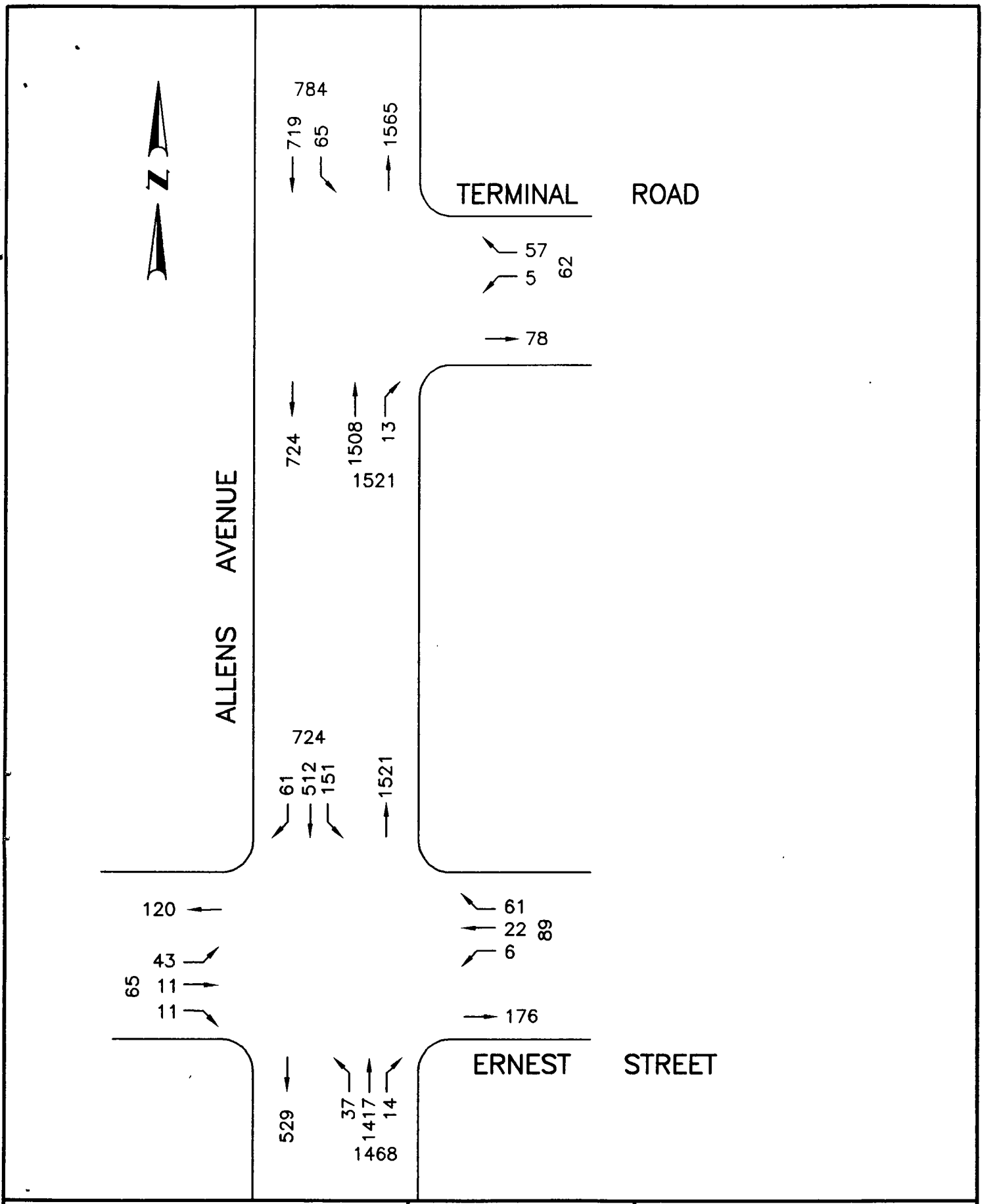
During construction of the tunnel, additional traffic will be utilizing the intersections under study. Specifically, the construction activities are expected to generate truck traffic. Based upon information available in the Preliminary Design Report for the Narragansett Bay Commission Combined Sewer Overflow Abatement Program Tunnel Preliminary Design, construction-related traffic was conservatively estimated. As a worse-case scenario, approximately 40 trips per hour are anticipated. These forty trips have been superimposed upon the build condition traffic as twenty (20) trucks entering and twenty trucks exiting the project site.

The majority of the construction-related truck traffic will be hauling materials from the tunnel site. At this time, it is not known where the materials will be taken. It is likely that the material will be carted to one particular spot. Whether that spot is north or south of the tunnel site is not known. To conservatively estimate the traffic impacts of the construction-related traffic, two construction scenarios were analyzed.

Under construction stage scenario 1, the construction-related truck traffic is expected to be based to the north. As such, it is anticipated that the traffic will be coming from and going to Allens Avenue north of the project site.

Under construction stage scenario 2, the construction-related truck traffic is expected to be based to the south. The traffic will be coming from Allens Avenue north of the project site and leaving via Ernest Street to access Interstate Route 95 southbound.

Traffic volumes were estimated for each of these scenarios and are shown in Figures 6 through 9. In terms of the total intersection volumes, the construction-

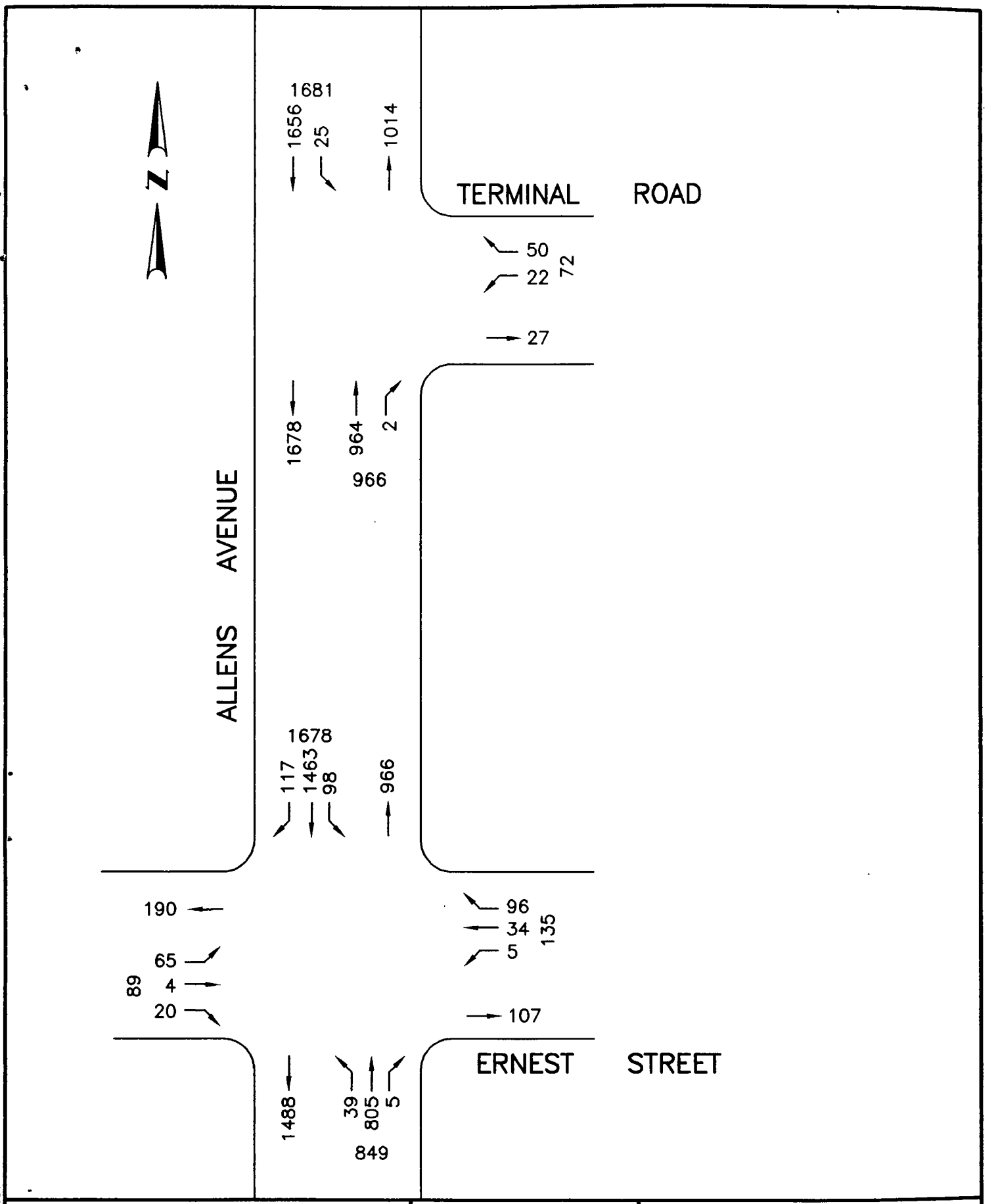


TRAFFIC IMPACT STUDY
PROPOSED CLOSING OF ELLIS STREET
THE NARRAGANSETT BAY COMMISSION
COMBINED SEWER OVERFLOW
CONTROL FACILITIES PROGRAM
PROVIDENCE RHODE ISLAND

Gordon R. Archibald, Inc.
Professional Engineers

CONSTRUCTION STAGE
SCENARIO 1
AM PEAK HOUR TRAFFIC
APRIL, 2001 NOT TO SCALE

FIGURE 6



TRAFFIC IMPACT STUDY
PROPOSED CLOSING OF ELLIS STREET
THE NARRAGANSETT BAY COMMISSION
COMBINED SEWER OVERFLOW
CONTROL FACILITIES PROGRAM
PROVIDENCE RHODE ISLAND

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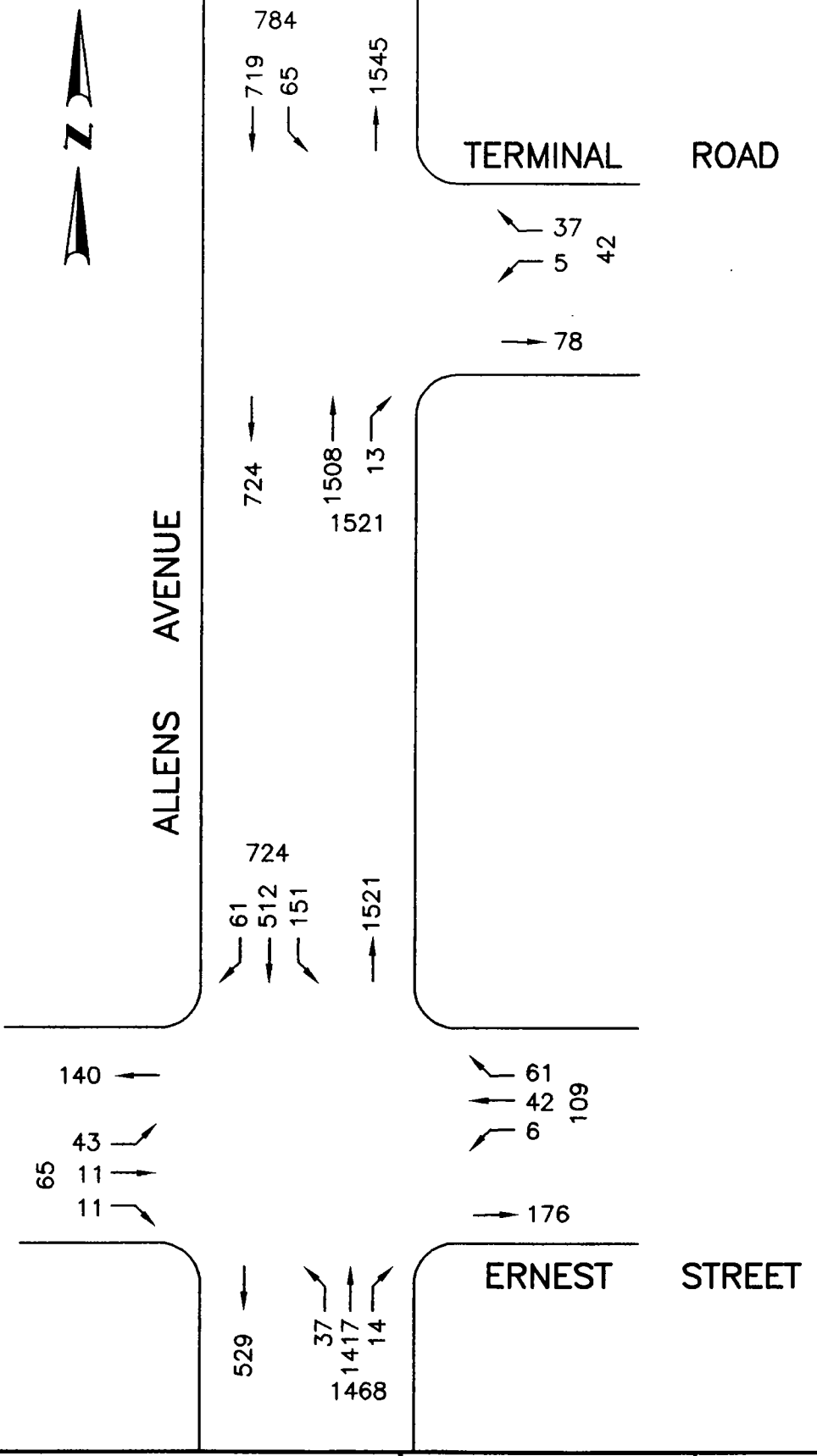
Professional Engineers

CONSTRUCTION STAGE
SCENARIO 1
PM PEAK HOUR TRAFFIC
APRIL, 2001 NOT TO SCALE

FIGURE 7

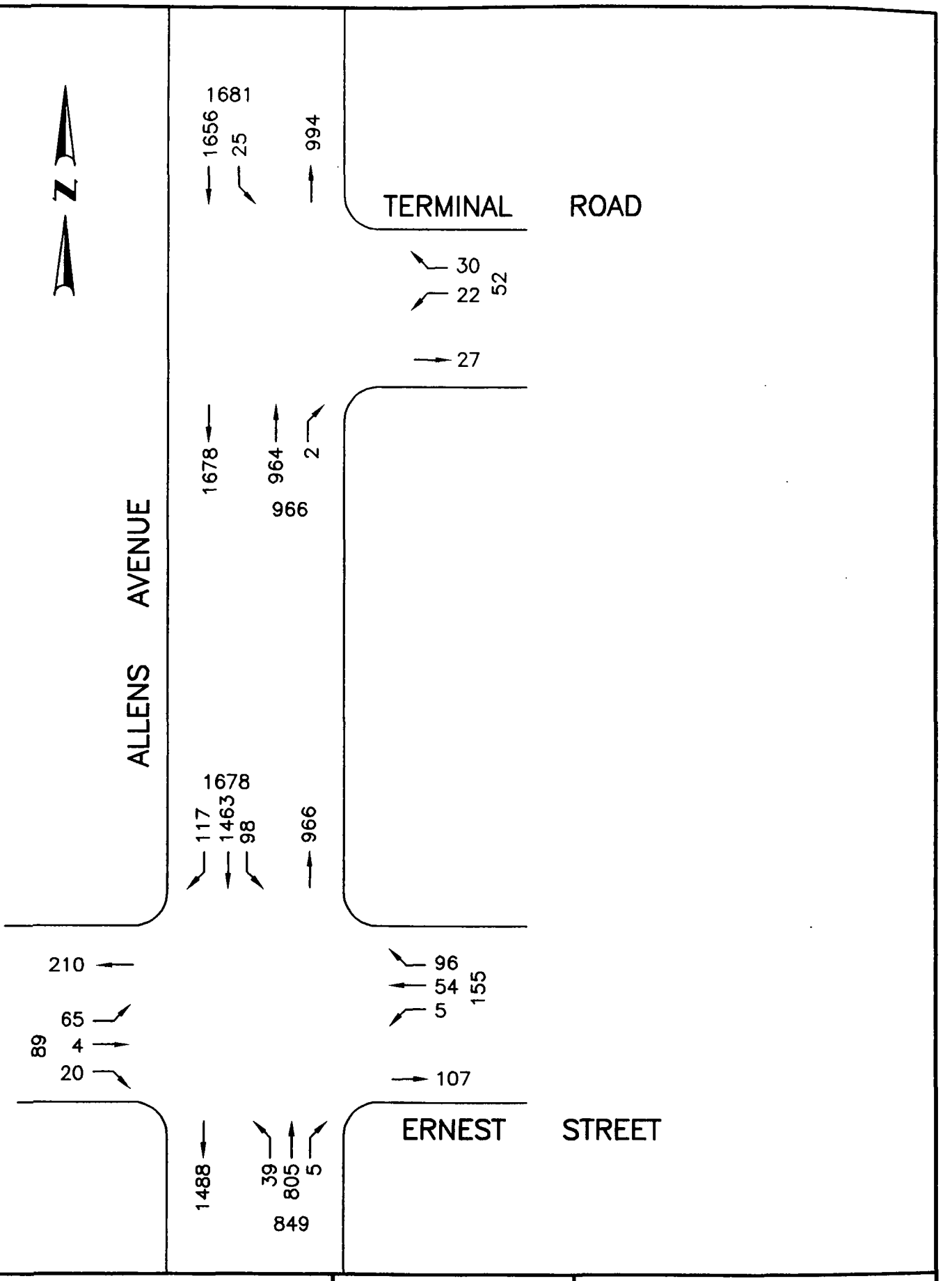


TRAFFIC IMPACT STUDY
PROPOSED CLOSING OF ELLIS STREET
THE NARRAGANSETT BAY COMMISSION
COMBINED SEWER OVERFLOW
CONTROL FACILITIES PROGRAM
PROVIDENCE RHODE ISLAND

Gordon R. Archibald, Inc.
Professional Engineers

CONSTRUCTION STAGE
SCENARIO 2
AM PEAK HOUR TRAFFIC
APRIL, 2001 NOT TO SCALE

FIGURE 8



TRAFFIC IMPACT STUDY
PROPOSED CLOSING OF ELLIS STREET
THE NARRAGANSETT BAY COMMISSION
COMBINED SEWER OVERFLOW
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PROVIDENCE RHODE ISLAND

Gordon R. Archibald, Inc.
Professional Engineers

CONSTRUCTION STAGE
SCENARIO 2
PM PEAK HOUR TRAFFIC
APRIL, 2001 NOT TO SCALE

FIGURE 9

cad\844\traffic\844tgr01

related traffic does not increase traffic volumes substantially. However, because the construction-related traffic is primarily truck traffic, the increase has a greater effect on the intersection LOS than if twenty passenger vehicles were added to the street system.

The estimated traffic volumes for the construction scenarios were analyzed in terms of a capacity analysis. The results are shown in Table 3. Note that the results of the capacity analysis for the Allens Avenue/Ernest Street intersection are based upon the proposed modifications to the traffic signal phasing and timing. Similarly, the capacity analyses for the Allens Avenue/Terminal Road intersection are based upon the proposed striping modifications.

As the results indicate, traffic at the Allens Avenue/Ernest Street intersection is expected to operate at good LOS under the construction scenarios. The intersection of Allens Avenue/Terminal Road will decrease in terms of LOS due to the additional construction-related traffic.

Even with the construction-related traffic, the side street traffic volumes at the Allens Avenue/Terminal Road intersection are not high enough to warrant signalization. Often the minor street approaches along a major arterial such as Allens Avenue experience poor LOS. Should the accident data reveal a history of accidents at this intersection, signalization may be justified.

V. Conclusions and Recommendations

Recommendations to better manage traffic in the study area include:

- Modify the existing traffic signal at the intersection of Allens Avenue/Ernest Street to include an advanced phase for the southbound Allens Avenue traffic and adjust the signal timings to better service the intersection volumes. Provide a fourth head to the existing signal head that faces the Allens Avenue southbound approach. The fourth head will provide an arrow indication to show that the left turn can proceed unopposed. A sign (R10-12) is to be mounted on the mast arm to indicate that the left turn is to yield on the green ball indication.

- Re-stripe the Terminal Road approach at its intersection with Allens Avenue to provide two lanes in the westbound direction; an exclusive left-turn lane and an exclusive right-turn lane, and one lane in the eastbound direction.

- Provide proper signing to warn motorists of the work zone and the closure of Ellis Street. The maintenance of the traffic plan should conform to Part VI of the Manual on Uniform Traffic Control Devised (MUTCD) published by the Federal Highway Administration.

(844tis.wpd)

APPENDIX

TURNING MOVEMENT COUNTS

Gordon R. Archibald, Inc.
200 Main Street, Pawtucket, RI 02860

Counted By: Bryan Harpin
Allens Avenue/Ernest Street
Providence, RI
Wednesday, April 4, 2001

File Name : 84401
Site Code : 00008841
Start Date : 04/04/2001
Page No : 1

Groups Printed- Autos - Heavy Vehicles

	Allens Avenue From North					Ernest Street From East					Allens Avenue From South					Ernest Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00	15	104	41	1	161	13	15	1	3	32	6	203	7	0	216	2	4	10	0	16	425
07:15	9	128	42	0	179	7	3	0	3	13	1	285	7	0	293	0	0	8	0	8	493
07:30	11	122	33	0	166	16	8	1	2	27	4	373	9	0	386	2	2	8	2	14	593
07:45	19	142	12	0	173	15	6	4	4	29	2	361	9	0	372	3	3	14	2	22	596
Total	54	496	128	1	679	51	32	6	12	101	13	1222	32	0	1267	7	9	40	4	60	2107
08:00	8	127	21	0	156	17	6	1	4	28	4	346	12	0	362	5	4	8	3	20	566
08:15	19	120	25	0	164	12	6	1	0	19	6	335	7	0	348	1	4	11	0	16	547
08:30	16	147	34	0	197	17	2	2	5	26	3	266	9	0	278	2	3	4	0	9	510
08:45	15	135	38	0	188	17	4	1	8	30	1	256	11	0	268	2	4	12	1	19	505
Total	58	529	118	0	705	63	18	5	17	103	14	1203	39	0	1256	10	15	35	4	64	2128
*** BREAK ***																					
15:00	20	219	16	0	255	68	25	9	17	119	6	171	11	0	188	7	6	11	0	24	586
15:15	30	244	24	0	298	52	15	5	12	84	0	194	12	0	206	7	0	19	1	27	615
15:30	23	267	19	0	309	38	8	6	18	70	2	178	9	0	189	6	1	24	2	33	601
15:45	21	261	18	0	300	11	7	3	7	28	1	152	13	0	166	4	3	10	0	17	511
Total	94	991	77	0	1162	169	55	23	54	301	9	695	45	0	749	24	10	64	3	101	2313
16:00	19	293	25	0	337	36	12	8	20	76	4	141	8	0	153	3	6	11	0	20	586
16:15	23	286	13	0	322	44	7	5	25	81	1	150	7	0	158	4	2	19	0	25	586
16:30	26	327	10	0	363	29	9	2	13	53	2	239	8	0	249	2	1	19	0	22	687
16:45	22	335	18	0	375	17	13	2	7	39	4	193	15	0	212	8	1	11	3	23	649
Total	90	1241	66	0	1397	126	41	17	65	249	11	723	38	0	772	17	10	60	3	90	2508
17:00	30	359	20	0	409	22	12	3	18	55	0	177	7	0	184	8	0	20	0	28	676
17:15	16	364	29	0	409	21	18	1	11	51	0	178	9	0	187	2	2	14	2	20	667
17:30	15	359	42	0	416	14	1	4	9	28	2	163	5	0	170	0	0	6	0	6	620
17:45	14	337	47	0	398	10	5	4	5	24	1	168	5	0	174	4	0	4	0	8	604
Total	75	1419	138	0	1632	67	36	12	43	158	3	686	26	0	715	14	2	44	2	62	2567
Grand Total	371	4676	527	1	5575	476	182	63	191	912	50	4529	180	0	4759	72	46	243	16	377	11623
Apprch %	6.7	83.9	9.5	0.0		52.2	20.0	6.9	20.9		1.1	95.2	3.8	0.0		19.1	12.2	64.5	4.2		
Total %	3.2	40.2	4.5	0.0	48.0	4.1	1.6	0.5	1.6	7.8	0.4	39.0	1.5	0.0	40.9	0.6	0.4	2.1	0.1	3.2	

Gordon R. Archibald, Inc.
200 Main Street
Pawtucket, Rhode Island

Counted By: John Izzo
Allens Ave./Terminal Rd.
Providence, RI
Wednesday, April 4, 2001

File Name : 84402
Site Code : 00008842
Start Date : 04/04/2001

Groups Printed- Autos - Heavy Vehicles

	Allens Avenue From North				Terminal Road From East				Allens Avenue From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
*** BREAK ***													
07:00 AM	140	13	0	153	7	2	0	9	1	229	0	230	392
07:15 AM	158	23	0	181	8	0	0	8	2	289	0	291	480
07:30 AM	155	23	0	178	12	0	0	12	2	352	0	354	544
07:45 AM	172	31	0	203	10	0	0	10	5	366	0	371	584
Total	625	90	0	715	37	2	0	39	10	1236	0	1246	2000
08:00 AM	144	24	0	168	10	0	0	10	0	342	0	342	520
08:15 AM	177	27	0	204	6	0	0	6	2	371	0	373	583
08:30 AM	181	20	0	201	8	1	0	9	0	289	0	289	499
08:45 AM	165	15	0	180	23	1	0	24	3	260	0	263	467
Total	667	86	0	753	47	2	0	49	5	1262	0	1267	2069
*** BREAK ***													
03:00 PM	242	16	0	258	17	1	0	18	1	250	0	251	527
03:15 PM	300	9	0	309	19	2	0	21	0	266	0	266	596
03:30 PM	300	12	0	312	14	3	0	17	0	250	0	250	579
03:45 PM	289	10	0	299	7	1	0	8	0	180	0	180	487
Total	1131	47	0	1178	57	7	0	64	1	946	0	947	2189
04:00 PM	350	13	0	363	5	2	0	7	0	190	0	190	560
04:15 PM	342	2	0	344	10	0	0	10	1	238	0	239	593
04:30 PM	397	13	0	410	7	0	0	7	0	289	0	289	706
04:45 PM	373	0	0	373	6	0	0	6	0	227	0	227	606
Total	1462	28	0	1490	28	2	0	30	1	944	0	945	2465
05:00 PM	438	3	0	441	15	0	0	15	0	227	0	227	683
05:15 PM	431	6	0	437	7	1	0	8	1	216	0	217	662
05:30 PM	408	7	0	415	9	0	0	9	0	163	0	163	587
05:45 PM	405	7	0	412	1	0	0	1	0	177	0	177	590
Total	1682	23	0	1705	32	1	0	33	1	783	0	784	2522
Grand Total	5567	274	0	5841	201	14	0	215	18	5171	0	5189	11245
Apprch %	95.3	4.7	0.0		93.5	6.5	0.0		0.3	99.7	0.0		
Total %	49.5	2.4	0.0	51.9	1.8	0.1	0.0	1.9	0.2	46.0	0.0	46.1	

Gordon R. Archibald, Inc.
200 Main Street
Pawtucket, Rhode Island

Counted By: Leo Fontaine
Terminal Road/Ellis Street
Providence, RI
Wednesday, April 4, 2001

File Name : 84403
Site Code : 00008841
Start Date : 04/04/2001
Page No : 1

Groups Printed- Autos - Heavy Vehicles

	Terminal Road From East				Ellis Street From South				Terminal Road From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	0	4	0	4	1	2	0	3	5	0	0	5	12
07:15 AM	0	0	0	0	0	2	0	2	11	0	0	11	13
07:30 AM	0	1	0	1	2	0	0	2	15	0	0	15	18
07:45 AM	0	0	0	0	5	2	0	7	18	0	0	18	25
Total	0	5	0	5	8	6	0	14	49	0	0	49	68
08:00 AM	0	3	0	3	3	2	0	5	11	0	0	11	19
08:15 AM	0	1	0	1	2	1	0	3	16	0	0	16	20
08:30 AM	0	3	0	3	0	1	0	1	13	0	0	13	17
08:45 AM	0	3	0	3	1	3	0	4	9	0	0	9	16
Total	0	10	0	10	6	7	0	13	49	0	0	49	72
*** BREAK ***													
03:00 PM	0	4	0	4	2	9	0	11	7	0	0	7	22
03:15 PM	0	1	0	1	0	7	0	7	4	0	0	4	12
03:30 PM	0	1	0	1	0	3	0	3	4	0	0	4	8
03:45 PM	0	1	0	1	0	0	0	0	3	0	0	3	4
Total	0	7	0	7	2	19	0	21	18	0	0	18	46
04:00 PM	0	4	0	4	1	1	0	2	4	0	0	4	10
04:15 PM	0	3	0	3	2	4	0	6	2	0	0	2	11
04:30 PM	0	5	0	5	0	3	0	3	6	0	0	6	14
04:45 PM	0	3	0	3	0	0	0	0	2	0	0	2	5
Total	0	15	0	15	3	8	0	11	14	0	0	14	40
05:00 PM	0	8	0	8	2	1	0	3	4	0	0	4	15
05:15 PM	0	5	0	5	2	1	0	3	5	0	0	5	13
05:30 PM	0	1	0	1	0	1	0	1	4	0	0	4	6
05:45 PM	0	2	0	2	0	0	0	0	5	0	0	5	7
Total	0	16	0	16	4	3	0	7	18	0	0	18	41
Grand Total	0	53	0	53	23	43	0	66	148	0	0	148	267
Apprch %	0.0	100.0	0.0		34.8	65.2	0.0		100.0	0.0	0.0		
Total %	0.0	19.9	0.0	19.9	8.6	16.1	0.0	24.7	55.4	0.0	0.0	55.4	

NOTE : THRU MOVEMENTS ON TERMINAL ROAD NOT SHOWN. COUNTS WERE TAKEN AT ALLENS AVE./TERMINAL RD. AND THE THRU VOLUME WAS DETERMINED FROM THAT COUNT.

Gordon R. Archibald, Inc.
200 Main Street
Pawtucket, Rhode Island

Counted By: Leo Fontaine
Ernest Street/Ellis Street
Providence, RI
Wednesday, April 4, 2001

File Name : 84404
Site Code : 00008841
Start Date : 04/04/2001
Page No : 1

Groups Printed- Autos - Heavy Vehicles

	Ernest Street From East				Ellis Street From ~~South~~ North				Ernest Street From West				
Start Time	Right	Thru	Peds	App. Total	Right	Left	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	2	0	0	2	3	6	0	9	0	1	0	1	12
07:15 AM	2	0	0	2	4	7	0	11	0	0	0	0	13
07:30 AM	1	0	0	1	2	13	0	15	0	1	0	1	17
07:45 AM	5	0	0	5	1	16	0	17	0	2	0	2	24
Total	10	0	0	10	10	42	0	52	0	4	0	4	66
08:00 AM	5	0	0	5	4	9	0	13	0	1	0	1	19
08:15 AM	3	0	0	3	3	15	0	18	0	0	0	0	21
08:30 AM	0	0	0	0	5	11	0	16	0	1	0	1	17
08:45 AM	4	0	0	4	2	10	0	12	0	0	0	0	16
Total	12	0	0	12	14	45	0	59	0	2	0	2	73
*** BREAK ***													
03:00 PM	8	0	0	8	3	5	0	8	0	3	0	3	19
03:15 PM	3	0	0	3	1	4	0	5	0	4	0	4	12
03:30 PM	1	0	0	1	2	3	0	5	0	2	0	2	8
03:45 PM	0	0	0	0	1	3	0	4	0	0	0	0	4
Total	12	0	0	12	7	15	0	22	0	9	0	9	43
04:00 PM	1	0	0	1	4	3	0	7	0	1	0	1	9
04:15 PM	3	0	0	3	4	1	0	5	0	3	0	3	11
04:30 PM	2	0	0	2	5	6	0	11	0	1	0	1	14
04:45 PM	0	0	0	0	3	2	0	5	0	0	0	0	5
Total	6	0	0	6	16	12	0	28	0	5	0	5	39
05:00 PM	3	0	0	3	8	4	0	12	0	0	0	0	15
05:15 PM	3	0	0	3	5	5	0	10	0	0	0	0	13
05:30 PM	0	0	0	0	1	4	0	5	0	1	0	1	6
05:45 PM	0	0	0	0	1	6	0	7	0	0	0	0	7
Total	6	0	0	6	15	19	0	34	0	1	0	1	41
Grand Total	46	0	0	46	62	133	0	195	0	21	0	21	262
Apprch %	100.0	0.0	0.0		31.8	68.2	0.0		0.0	100.0	0.0		
Total %	17.6	0.0	0.0	17.6	23.7	50.8	0.0	74.4	0.0	8.0	0.0	8.0	

NOTE: THRU MOVEMENT ON ERNEST ST NOT SHOWN. THRU VOLUME WAS DETERMINED FROM COUNT TAKEN AT ALLENS AVE/ERNEST ST

CAPACITY ANALYSIS

HCS: Signalized Intersections Release 3.2

Inter: Allens Ave./Ernest Street
Analyst: MC (844AME)
Date: 4/9/01
E/W St: Ernest Street

City/St: Providence, RI
Proj #: JN 844 TIS to Close Ellis St.
Period: 2001 AM Peak Hour
N/S St: Allens Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	2	0	0	2	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	41	13	11	7	26	60	37	1415	16	91	511	57
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left A			
Thru	A				Thru A			
Right	A				Right A			
Peds					Peds			
WB Left	A				SB Left A			
Thru	A				Thru A			
Right	A				Right A			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	20.0				30.0			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	391	1174	0.24	0.333	14.8	B	14.8	B
Westbound								
LTR	375	1126	0.31	0.333	15.3	B	15.3	B
Northbound								
LTR	1608	3216	0.94	0.500	28.9	C	28.9	C
Southbound								
LTR	859	1718	0.91	0.500	30.4	C	30.4	C

Intersection Delay = 28.2 (sec/veh) Intersection LOS = C

HCS: Signalized Intersections Release 3.2

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OPERATIONAL ANALYSIS

Intersection: Allens Ave./Ernest Street
City/State: Providence, RI
Analyst: MC (844AME)
Project No: JN 844 TIS to Close Ellis St.
Time Period Analyzed: 2001 AM Peak Hour
Date: 4/9/01
East/West Street Name: Ernest Street
North/South Street Name: Allens Avenue

HCS: Signalized Intersections Release 3.2

Inter: Allens Ave./Ernest Street
Analyst: MC (844PME)
Date: 4/9/01
E/W St: Ernest Street

City/St: Providence, RI
Proj #: JN 844 TIS to Close Ellis St.
Period: 2001 PM Peak Hour
N/S St: Allens Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	2	0	0	2	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	65	4	20	8	52	91	39	804	6	81	1460	99
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
WB Left	A				SB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	20.0					30.0			
Yellow	3.0					3.0			
All Red	2.0					2.0			

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	393	1180	0.34	0.333	15.6	B	15.6	B
Westbound								
LTR	499	1498	0.40	0.333	16.0	B	16.0	B
Northbound								
LTR	1065	2130	0.99	0.500	62.4	E	62.4	E
Southbound								
LTR	1202	2403	1.47	0.500	859.8	F	859.8	F

Intersection Delay = 503.0 (sec/veh) Intersection LOS = F

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OPERATIONAL ANALYSIS

Intersection:	Allens Ave./Ernest Street
City/State:	Providence, RI
Analyst:	MC (844PME)
Project No:	JN 844 TIS to Close Ellis St.
Time Period Analyzed:	2001 PM Peak Hour
Date:	4/9/01
East/West Street Name:	Ernest Street
North/South Street Name:	Allens Avenue

HCS: Signalized Intersections Release 3.2

Inter: Allens Ave./Ernest Street
Analyst: MC (844AMB)
Date: 4/9/01
E/W St: Ernest Street

City/St: Providence, RI
Proj #: JN 844 TIS to Close Ellis St.
Period: 2001 AM Peak Hour - Build
N/S St: Allens Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	2	0	0	2	0
LGConfig		LTR			LTR			LTR			DefL	TR
Volume	43	11	11	6	22	61	37	1417	14	151	512	61
Lane Width		12.0			12.0			12.0		12.0	12.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A			
Thru	A					Thru	A			
Right	A					Right	A			
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru	A			
Right	A					Right	A			
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	20.0						30.0			
Yellow	3.0						3.0			
All Red	2.0						2.0			

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	389	1167	0.24	0.333	14.8	B	14.8	B
Westbound								
LTR	375	1124	0.29	0.333	15.2	B	15.2	B
Northbound								
LTR	1628	3256	0.93	0.500	26.1	C	26.1	C
Southbound								
DefL	120	230	1.83	0.500				
TR	875	1749	0.75	0.500	15.7	B		

Intersection Delay = (sec/veh) Intersection LOS =

HCS: Signalized Intersections Release 3.2

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OPERATIONAL ANALYSIS

Intersection:	Allens Ave./Ernest Street
City/State:	Providence, RI
Analyst:	MC (844AMB)
Project No:	JN 844 TIS to Close Ellis St.
Time Period Analyzed:	2001 AM Peak Hour - Build
Date:	4/9/01
East/West Street Name:	Ernest Street
North/South Street Name:	Allens Avenue

HCS: Signalized Intersections Release 3.2

Inter: Allens Ave./Ernest Street
Analyst: MC (844PMB)
Date: 4/9/01
E/W St: Ernest Street

City/St: Providence, RI
Proj #: JN 844 TIS to Close Ellis St.
Period: 2001 PM Peak Hour - Build
N/S St: Allens Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	2	0	0	2	0
LGConfig		LTR			LTR			LTR			LTR.	
Volume	65	4	20	5	34	96	39	805	5	98	1463	117
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A			
Thru	A					Thru	A			
Right	A					Right	A			
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru	A			
Right	A					Right	A			
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	20.0						30.0			
Yellow	3.0						3.0			
All Red	2.0						2.0			

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	393	1180	0.34	0.333	15.6	B	15.6	B
Westbound								
LTR	491	1474	0.36	0.333	15.6	B	15.6	B
Northbound								
LTR	1042	2083	1.01	0.500	83.4	F	83.4	F
Southbound								
LTR	1122	2244	1.62	0.500				

Intersection Delay = (sec/veh) Intersection LOS =

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OPERATIONAL ANALYSIS

Intersection:	Allens Ave./Ernest Street
City/State:	Providence, RI
Analyst:	MC (844PMB)
Project No:	JN 844 TIS to Close Ellis St.
Time Period Analyzed:	2001 PM Peak Hour - Build
Date:	4/9/01
East/West Street Name:	Ernest Street
North/South Street Name:	Allens Avenue

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Allens Ave./Terminal Road
Analyst: MC (844ATAME)
Project No.: JN 844 TIS Closing of Ellis St
Date: 4/9/01
East/West Street: Terminal Road
North/South Street: Allens Avenue
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		1507	9		105	659
Hourly Flow Rate, HFR		1569	20		123	716
Percent Heavy Vehicles		--	--		7	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		2	0		0	2
Configuration			T	TR		LT T
Upstream Signal?			No			No

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	0	38			
Hourly Flow Rate, HFR	0	0	48			
Percent Heavy Vehicles	0	0	21			
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LTR				
v (vph)		123		48				
C(m) (vph)		386		293				
v/c		0.32		0.16				
95% queue length		1.56		0.63				
Control Delay		18.7		19.7				
LOS		C		C				
Approach Delay				19.7				
Approach LOS				C				

HCS: Unsignalized Intersections Release 3.2

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Allens Ave./Terminal Road
City/State: Providence, RI
Analyst: MC (844ATAME)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 AM Peak Hour

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Allens Ave./Terminal Road
Analyst: MC (844ATPME)
Project No.: JN 844 TIS Closing of Ellis St
Date: 4/9/01
East/West Street: Terminal Road
North/South Street: Allens Avenue
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		959	1	22	1639	
Hourly Flow Rate, HFR		1155	4	52	1743	
Percent Heavy Vehicles		--	--	5	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		2	0	0	2	
Configuration		T	TR	LT	T	
Upstream Signal?		No		No		

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	35			
Hourly Flow Rate, HFR	4	0	60			
Percent Heavy Vehicles	0	0	6			
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LTR				
v (vph)		52		64				
C(m) (vph)		582		271				
v/c		0.09		0.24				
95% queue length		0.24		1.03				
Control Delay		11.8		22.4				
LOS		B		C				
Approach Delay				22.4				
Approach LOS				C				

HCS: Unsignalized Intersections Release 3.2

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Allens Ave./Terminal Road
City/State: Providence, RI
Analyst: MC (844ATPME)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 PM Peak Hour

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Allens Ave./Terminal Road
Analyst: MC (844ATAMB)
Project No.: JN 844 TIS Closing of Ellis St
Date: 4/9/01
East/West Street: Terminal Road
North/South Street: Allens Avenue
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		1508	13	45	719	
Hourly Flow Rate, HFR		1570	28	52	781	
Percent Heavy Vehicles		--	--	7	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		2	0	0	2	
Configuration		T	TR	LT	T	
Upstream Signal?		No		No		

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5	0	37			
Hourly Flow Rate, HFR	5	0	46			
Percent Heavy Vehicles	0	0	21			
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LTR				
v (vph)		52		51				
C(m) (vph)		383		182				
v/c		0.14		0.28				
95% queue length		0.49		1.26				
Control Delay		15.9		32.4				
LOS		C		D				
Approach Delay				32.4				
Approach LOS				D				

HCS: Unsignalized Intersections Release 3.2

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Allens Ave./Terminal Road
City/State: Providence, RI
Analyst: MC (844ATAMB)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 AM Peak Hour - Build

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Allens Ave./Terminal Road
Analyst: MC (844ATPMB)
Project No.: JN 844 TIS Closing of Ellis St
Date: 4/9/01
East/West Street: Terminal Road
North/South Street: Allens Avenue
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		964	2	5	1656	
Hourly Flow Rate, HFR		1161	8	11	1761	
Percent Heavy Vehicles		--	--	5	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		2	0	0	2	
Configuration		T	TR	LT	T	
Upstream Signal?		No		No		

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	22	0	30			
Hourly Flow Rate, HFR	88	0	51			
Percent Heavy Vehicles	0	0	6			
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LTR				
v (vph)		11		139				
C(m) (vph)		577		70				
v/c		0.02		1.99				
95% queue length		0.00		37.14				
Control Delay		11.4						
LOS		B						
Approach Delay								
Approach LOS								

HCS: Unsignalized Intersections Release 3.2

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Allens Ave./Terminal Road
City/State: Providence, RI
Analyst: MC (844ATPMB)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 PM Peak Hour - Build

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Terminal Road/Ellis Street
Analyst: MC (File=844TEE)
Project No.: JN 844 TIS Closing of Ellis St
Date: 4/10/01
East/West Street: Terminal Road
North/South Street: Ellis Street
Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		54	60	5	33	
Hourly Flow Rate, HFR		68	72	11	41	
Percent Heavy Vehicles		--	--	40	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?			No		No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5	0	12			
Hourly Flow Rate, HFR	7	0	19			
Percent Heavy Vehicles	100	0	50			
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LTR				
v (vph)		11		26				
C(m) (vph)		1240		771				
v/c		0.01		0.03				
95% queue length		0.00		0.00				
Control Delay		7.9		9.8				
LOS		A		A				
Approach Delay				9.8				
Approach LOS				A				

HCS: Unsignalized Intersections Release 3.2

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Terminal Road/Ellis Street
City/State: Providence, RI
Analyst: MC (File=844TEE)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 AM Peak Hour

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Terminal Road/Ellis Street
Analyst: MC (File=844TEPE)
Project No.: JN 844 TIS Closing of Ellis St
Date: 4/10/01
East/West Street: Terminal Road
North/South Street: Ellis Street
Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		6	17	21	31	
Hourly Flow Rate, HFR		8	29	36	46	
Percent Heavy Vehicles		--	--	5	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?			No		No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5	0	4			
Hourly Flow Rate, HFR	11	0	8			
Percent Heavy Vehicles	40	0	0			
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LTR				
v (vph)		36		19				
C(m) (vph)		1554		861				
v/c		0.02		0.02				
95% queue length		0.00		0.00				
Control Delay		7.4		9.3				
LOS		A		A				
Approach Delay				9.3				
Approach LOS				A				

HCS: Unsignalized Intersections Release 3.2

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Terminal Road/Ellis Street
City/State: Providence, RI
Analyst: MC (File=844TEPE)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 PM Peak Hour

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Ernest Street/Ellis Street
Analyst: MC (844EEAE)
Project No.: JN 844 TIS Closing of Ellis St
Date: 4/10/01
East/West Street: Ernest Street
North/South Street: Ellis Street
Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	116			83	14
Hourly Flow Rate, HFR	8	143			102	20
Percent Heavy Vehicles	25	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1		1	0	
Configuration		LT			TR	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				53	0	10
Hourly Flow Rate, HFR				63	0	15
Percent Heavy Vehicles				23	0	20
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				0	1	0
Configuration					LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT					LTR		
v (vph)	8					78		
C(m) (vph)	1334					707		
v/c	0.01					0.11		
95% queue length	0.00					0.35		
Control Delay	7.7					10.7		
LOS	A					B		
Approach Delay						10.7		
Approach LOS						B		

HCS: Unsignalized Intersections Release 3.2

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Ernest Street/Ellis Street
City/State: Providence, RI
Analyst: MC (844EEAE)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 AM Peak Hour

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Ernest Street/Ellis Street
Analyst: MC (844EEPE)
Project No.: JN 844 TIS Closing of Ellis St
Date: 4/10/01
East/West Street: Ernest Street
North/South Street: Ellis Street
Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	1	90			130	8
Hourly Flow Rate, HFR	4	124			180	11
Percent Heavy Vehicles	0	--	--		--	--
Median Type	Undivided					
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No				No

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				17	0	21
Hourly Flow Rate, HFR				23	0	31
Percent Heavy Vehicles				24	0	0
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?					No	
Storage						
RT Channelized?						
Lanes				0	1	0
Configuration					LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT					LTR		
v (vph)	4					54		
C(m) (vph)	1395					745		
v/c	0.00					0.07		
95% queue length	0.00					0.14		
Control Delay	7.6					10.2		
LOS	A					B		
Approach Delay						10.2		
Approach LOS						B		

HCS: Unsignalized Intersections Release 3.2

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Ernest Street/Ellis Street
City/State: Providence, RI
Analyst: MC (844EEPE)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 PM Peak Hour

HCS: Signalized Intersections Release 3.2

Inter: Allens Ave./Ernest Street
Analyst: MC (844AMEI)
Date: 4/11/01
E/W St: Ernest Street

City/St: Providence, RI
Proj #: JN 844 TIS to Close Ellis St.
Period: 2001 AM w/ timing improvements
N/S St: Allens Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	2	0	0	2	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	41	13	11	7	26	60	37	1415	16	91	511	57
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left		A		
Thru	A				Thru		A		
Right	A				Right		A		
Peds					Peds				
WB Left	A				SB Left	A	A		
Thru	A				Thru	A	A		
Right	A				Right	A	A		
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	10.0					9.0	31.0		
Yellow	3.0					0.0	3.0		
All Red	2.0					0.0	2.0		

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	195	1168	0.47	0.167	24.4	C	24.4	C
Westbound								
LTR	184	1106	0.63	0.167	30.3	C	30.3	C
Northbound								
LTR	1662	3217	0.91	0.517	22.4	C	22.4	C
Southbound								
LTR	1255	1883	0.62	0.667	6.7	A	6.7	A

Intersection Delay = 17.9 (sec/veh) Intersection LOS = B

HCS: Signalized Intersections Release 3.2

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OPERATIONAL ANALYSIS

Intersection:	Allens Ave./Ernest Street
City/State:	Providence, RI
Analyst:	MC (844AMEI)
Project No:	JN 844 TIS to Close Ellis St.
Time Period Analyzed:	2001 AM w/ timing improvements
Date:	4/11/01
East/West Street Name:	Ernest Street
North/South Street Name:	Allens Avenue

HCS: Signalized Intersections Release 3.2

Inter: Allens Ave./Ernest Street
Analyst: MC (844PMEI)
Date: 4/11/01
E/W St: Ernest Street

City/St: Providence, RI
Proj #: JN 844 TIS to Close Ellis St.
Period: 2001 PM w/ timing improvements
N/S St: Allens Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	2	0	0	2	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	65	4	20	8	52	91	39	804	6	81	1460	99
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left		A		
Thru	A				Thru		A		
Right	A				Right		A		
Peds					Peds				
WB Left	A				SB Left	A	A		
Thru	A				Thru	A	A		
Right	A				Right	A	A		
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	10.0					9.0	31.0		
Yellow	3.0					0.0	3.0		
All Red	2.0					0.0	2.0		

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	160	958	0.84	0.167	62.5	E	62.5	E
Westbound								
LTR	248	1486	0.81	0.167	45.4	D	45.4	D
Northbound								
LTR	1366	2643	0.77	0.517	14.5	B	14.5	B
Southbound								
LTR	2048	3072	0.86	0.667	12.0	B	12.0	B

Intersection Delay = 17.1 (sec/veh) Intersection LOS = B

HCS: Signalized Intersections Release 3.2

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OPERATIONAL ANALYSIS

Intersection:	Allens Ave./Ernest Street
City/State:	Providence, RI
Analyst:	MC (844PMEI)
Project No:	JN 844 TIS to Close Ellis St.
Time Period Analyzed:	2001 PM w/ timing improvements
Date:	4/11/01
East/West Street Name:	Ernest Street
North/South Street Name:	Allens Avenue

HCS: Signalized Intersections Release 3.2

Inter: Allens Ave./Ernest Street
Analyst: MC (844AMBI)
Date: 4/11/01
E/W St: Ernest Street

City/St: Providence, RI
Proj #: JN 844 TIS to Close Ellis St.
Period: 2001 AM - Build w/ New Phase
N/S St: Allens Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	2	0	0	2	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	43	11	11	6	22	61	37	1417	14	151	512	61
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
WB Left	A				SB Left	A	A	
Thru	A				Thru	A	A	
Right	A				Right	A	A	
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	10.0					9.0	31.0	
Yellow	3.0					0.0	3.0	
All Red	2.0						2.0	

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	193	1156	0.48	0.167	24.6	C	24.6	C
Westbound								
LTR	184	1106	0.60	0.167	28.5	C	28.5	C
Northbound								
LTR	1650	3193	0.92	0.517	23.3	C	23.3	C
Southbound								
LTR	1035	1553	0.85	0.667	14.7	B	14.7	B

Intersection Delay = 20.7 (sec/veh) Intersection LOS = C

HCS: Signalized Intersections Release 3.2

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OPERATIONAL ANALYSIS

Intersection:	Allens Ave./Ernest Street
City/State:	Providence, RI
Analyst:	MC (844AMBI)
Project No:	JN 844 TIS to Close Ellis St.
Time Period Analyzed:	2001 AM - Build w/ New Phase
Date:	4/11/01
East/West Street Name:	Ernest Street
North/South Street Name:	Allens Avenue

HCS: Signalized Intersections Release 3.2

Inter: Allens Ave./Ernest Street
Analyst: MC (844PMEI)
Date: 4/11/01
E/W St: Ernest Street

City/St: Providence, RI
Proj #: JN 844 TIS to Close Ellis St.
Period: 2001 PM w/ timing improvements
N/S St: Allens Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	2	0	0	2	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	65	4	20	8	52	91	39	804	6	81	1460	99
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left		A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru	A	A		
Right	A					Right	A	A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	11.0						9.0	30.0		
Yellow	3.0						0.0	3.0		
All Red	2.0						0.0	2.0		

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	181	989	0.74	0.183	39.4	D	39.4	D
Westbound								
LTR	273	1487	0.74	0.183	34.0	C	34.0	C
Northbound								
LTR	1306	2612	0.81	0.500	16.6	B	16.6	B
Southbound								
LTR	1997	3072	0.88	0.650	14.0	B	14.0	B

Intersection Delay = 17.3 (sec/veh) Intersection LOS = B

HCS: Signalized Intersections Release 3.2

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OPERATIONAL ANALYSIS

Intersection:	Allens Ave./Ernest Street
City/State:	Providence, RI
Analyst:	MC (844PMEI)
Project No:	JN 844 TIS to Close Ellis St.
Time Period Analyzed:	2001 PM w/ timing improvements
Date:	4/11/01
East/West Street Name:	Ernest Street
North/South Street Name:	Allens Avenue

HCS: Signalized Intersections Release 3.2

Inter: Allens Ave./Ernest Street
Analyst: MC (844AM2)
Date: 4/11/01
E/W St: Ernest Street

City/St: Providence, RI
Proj #: JN 844 TIS to Close Ellis St.
Period: 2001 AM - Const. Scenario 2
N/S St: Allens Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	2	0	0	2	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	43	11	11	6	42	61	37	1417	14	151	512	61
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left		A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru	A	A		
Right	A					Right	A	A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	10.0						9.0	31.0		
Yellow	3.0						0.0	3.0		
All Red	2.0							2.0		

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	188	1128	0.49	0.167	24.8	C	24.8	C
Westbound								
LTR	186	1118	0.73	0.167	37.9	D	37.9	D
Northbound								
LTR	1650	3193	0.92	0.517	23.3	C	23.3	C
Southbound								
LTR	1035	1553	0.85	0.667	14.7	B	14.7	B

Intersection Delay = 21.2 (sec/veh) Intersection LOS = C

HCS: Signalized Intersections Release 3.2

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OPERATIONAL ANALYSIS

Intersection:	Allens Ave./Ernest Street
City/State:	Providence, RI
Analyst:	MC (844AM2)
Project No:	JN 844 TIS to Close Ellis St.
Time Period Analyzed:	2001 AM - Const. Scenario 2
Date:	4/11/01
East/West Street Name:	Ernest Street
North/South Street Name:	Allens Avenue

HCS: Signalized Intersections Release 3.2

Inter: Allens Ave./Ernest Street
Analyst: MC (844PM2)
Date: 4/11/01
E/W St: Ernest Street

City/St: Providence, RI
Proj #: JN 844 TIS to Close Ellis St.
Period: 2001 PM - Const. Scenario 2
N/S St: Allens Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	2	0	0	2	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	65	4	20	5	54	96	39	805	5	98	1463	117
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left		A		
Thru	A					Thru		A		
Right	A					Right		A		
Peds						Peds				
WB Left	A				SB	Left	A	A		
Thru	A					Thru	A	A		
Right	A					Right	A	A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	11.0						9.0	30.0		
Yellow	3.0						0.0	3.0		
All Red	2.0						0.0	2.0		

Cycle Length: 60.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	177	965	0.76	0.183	42.1	D	42.1	D
Westbound								
LTR	275	1499	0.75	0.183	35.1	D	35.1	D
Northbound								
LTR	1279	2558	0.82	0.500	17.5	B	17.5	B
Southbound								
LTR	1951	3001	0.93	0.650	19.3	B	19.3	B

Intersection Delay = 20.7 (sec/veh) Intersection LOS = C

HCS: Signalized Intersections Release 3.2

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OPERATIONAL ANALYSIS

Intersection:	Allens Ave./Ernest Street
City/State:	Providence, RI
Analyst:	MC (844PM2)
Project No:	JN 844 TIS to Close Ellis St.
Time Period Analyzed:	2001 PM - Const. Scenario 2
Date:	4/11/01
East/West Street Name:	Ernest Street
North/South Street Name:	Allens Avenue

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Allens Ave./Terminal Road
Analyst: MC (844ATAM1)
Project No.: JN 844 TIS Closing of Ellis St
Date: 4/9/01
East/West Street: Terminal Road
North/South Street: Allens Avenue
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		1508	13		65	719
Hourly Flow Rate, HFR		1570	28		76	781
Percent Heavy Vehicles		--	--		36	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		2	0		0	2
Configuration		T	TR		LT	T
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5	0	57			
Hourly Flow Rate, HFR	5	0	72			
Percent Heavy Vehicles	0	0	49			
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes		0	1	0		
Configuration			LTR			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LTR				
v (vph)		76		77				
C(m) (vph)		277		172				
v/c		0.27		0.45				
95% queue length		1.26		2.45				
Control Delay		22.9		42.6				
LOS		C		E				
Approach Delay				42.6				
Approach LOS				E				

HCS: Unsignalized Intersections Release 3.2

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Allens Ave./Terminal Road
City/State: Providence, RI
Analyst: MC (844ATAM1)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 AM Peak Hour - Scenario 1

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Allens Ave./Terminal Road
Analyst: MC (844ATPM1)
Project No.: JN 844 TIS Closing of Ellis St
Date: 4/16/01
East/West Street: Terminal Road
North/South Street: Allens Avenue
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		964	2	5	1656	
Hourly Flow Rate, HFR		1161	8	11	1761	
Percent Heavy Vehicles		--	--	81	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		2	0	0	2	
Configuration		T	TR	LT	T	
Upstream Signal?		No		No		

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	22	0	50			
Hourly Flow Rate, HFR	88	0	86			
Percent Heavy Vehicles	0	0	44			
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LTR				
v (vph)		11		174				
C(m) (vph)		293		81				
v/c		0.04		2.15				
95% queue length		0.00		48.86				
Control Delay		17.8						
LOS		C						
Approach Delay								
Approach LOS								

HCS: Unsignalized Intersections Release 3.2

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Allens Ave./Terminal Road
City/State: Providence, RI
Analyst: MC (844ATPM1)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 PM Peak Hour - Scenario 1

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Allens Ave./Terminal Road
Analyst: MC (844ATAM2)
Project No.: JN 844 TIS Closing of Ellis St
Date: 4/16/01
East/West Street: Terminal Road
North/South Street: Allens Avenue
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		1508	13	65	719	
Hourly Flow Rate, HFR		1570	28	76	781	
Percent Heavy Vehicles		--	--	36	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		2	0	0	2	
Configuration		T	TR	LT	T	
Upstream Signal?		No		No		

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5	0	37			
Hourly Flow Rate, HFR	5	0	46			
Percent Heavy Vehicles	0	0	21			
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LTR				
v (vph)		76		51				
C(m) (vph)		277		165				
v/c		0.27		0.31				
95% queue length		1.26		1.43				
Control Delay		22.9		36.5				
LOS		C		E				
Approach Delay				36.5				
Approach LOS				E				

HCS: Unsignalized Intersections Release 3.2

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Allens Ave./Terminal Road
City/State: Providence, RI
Analyst: MC (844ATAM2)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 AM Peak Hour - Scenario 2

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Allens Ave./Terminal Road
Analyst: MC (844ATPM2)
Project No.: JN 844 TIS Closing of Ellis St
Date: 4/9/01
East/West Street: Terminal Road
North/South Street: Allens Avenue
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		964	2	25	1656	
Hourly Flow Rate, HFR		1161	8	59	1761	
Percent Heavy Vehicles		--	--	81	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		2	0	0	2	
Configuration		T	TR	LT	T	
Upstream Signal?		No		No		

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	22	0	30			
Hourly Flow Rate, HFR	88	0	51			
Percent Heavy Vehicles	0	0	6			
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?		No				
Storage						
RT Channelized?						
Lanes	0	1	0			
Configuration		LTR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LTR				
v (vph)		59		139				
C(m) (vph)		293		49				
v/c		0.20		2.84				
95% queue length		0.84		46.50				
Control Delay		20.4						
LOS		C						
Approach Delay								
Approach LOS								

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Allens Ave./Terminal Road
City/State: Providence, RI
Analyst: MC (844ATPM2)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 PM Peak Hour - Build

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Allens Ave./Terminal Road
Analyst: MC (844ATAEI)
Project No.: JN 844 TIS Closing of Ellis St
Date: 5/8/01
East/West Street: Terminal Road
North/South Street: Allens Avenue
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		1507	9		105	659
Hourly Flow Rate, HFR		1569	20		123	716
Percent Heavy Vehicles		--	--		7	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		2	0		0	2
Configuration			T	TR		LT	T
Upstream Signal?			No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0		38			
Hourly Flow Rate, HFR	0		48			
Percent Heavy Vehicles	0		21			
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?						
Storage						
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT	L		R			
v (vph)		123	0		48			
C(m) (vph)		386	29		293			
v/c		0.32	0.00		0.16			
95% queue length		1.56	0.00		0.63			
Control Delay		18.7	129.1		19.7			
LOS		C	F		C			
Approach Delay				19.7				
Approach LOS				C				

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Allens Ave./Terminal Road
City/State: Providence, RI
Analyst: MC (844ATAEI)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 AM Peak Hour

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Allens Ave./Terminal Road
Analyst: MC (844ATPEI)
Project No.: JN 844 TIS Closing of Ellis St
Date: 5/8/01
East/West Street: Terminal Road
North/South Street: Allens Avenue
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		959	1		22	1639
Hourly Flow Rate, HFR		1155	4		52	1743
Percent Heavy Vehicles		--	--		5	-- --
Median Type	Undivided					
RT Channelized?						
Lanes		2	0		0	2
Configuration		T	TR		LT	T
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1		35			
Hourly Flow Rate, HFR	4		60			
Percent Heavy Vehicles	0		6			
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?						
Storage						
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT		L		R			
v (vph)	52	4			60			
C(m) (vph)	582	39			448			
v/c	0.09	0.10			0.13			
95% queue length	0.24	0.24			0.48			
Control Delay	11.8	107.8			14.3			
LOS	B	F			B			
Approach Delay					20.1			
Approach LOS					C			

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Allens Ave./Terminal Road
City/State: Providence, RI
Analyst: MC (844ATPEI)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 PM Peak Hour

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Allens Ave./Terminal Road
Analyst: MC (844ATABI)
Project No.: JN 844 TIS Closing of Ellis St
Date: 5/8/01
East/West Street: Terminal Road
North/South Street: Allens Avenue
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		1508	13	45	719	
Hourly Flow Rate, HFR		1570	28	52	781	
Percent Heavy Vehicles		--	--	7	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		2	0	0	2	
Configuration		T	TR	LT	T	
Upstream Signal?		No		No		

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5		37			
Hourly Flow Rate, HFR	5		46			
Percent Heavy Vehicles	0		21			
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?						
Storage						
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT	L		R			
v (vph)		52	5		46			
C(m) (vph)		383	41		291			
v/c		0.14	0.12		0.16			
95% queue length		0.49	0.33		0.60			
Control Delay		15.9	104.9		19.7			
LOS		C	F		C			
Approach Delay				28.0				
Approach LOS				D				

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Allens Ave./Terminal Road
City/State: Providence, RI
Analyst: MC (844ATABI)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 AM Peak Hour - Build

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Allens Ave./Terminal Road
Analyst: MC (844ATPBI)
Project No.: JN 844 TIS Closing of Ellis St
Date: 4/9/01
East/West Street: Terminal Road
North/South Street: Allens Avenue
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		964	2	5	1656	
Hourly Flow Rate, HFR		1161	8	11	1761	
Percent Heavy Vehicles		--	--	5	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		2	0	0	2	
Configuration		T	TR	LT	T	
Upstream Signal?		No		No		

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	22		30			
Hourly Flow Rate, HFR	88		51			
Percent Heavy Vehicles	0		6			
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?						
Storage						
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT	L		R			
v (vph)		11	88		51			
C(m) (vph)		577	47		445			
v/c		0.02	1.87		0.11			
95% queue length		0.00	23.23		0.37			
Control Delay		11.4			14.1			
LOS		B			B			
Approach Delay								
Approach LOS								

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Allens Ave./Terminal Road
City/State: Providence, RI
Analyst: MC (844ATPBI)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 PM Peak Hour - Build

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Allens Ave./Terminal Road
Analyst: MC (844ATAM1)
Project No.: JN 844 TIS Closing of Ellis St
Date: 5/8/01
East/West Street: Terminal Road
North/South Street: Allens Avenue
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		1508	13	65	719	
Hourly Flow Rate, HFR		1570	28	76	781	
Percent Heavy Vehicles		--	--	36	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		2	0	0	2	
Configuration		T	TR	LT	T	
Upstream Signal?		No		No		

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5		57			
Hourly Flow Rate, HFR	5		72			
Percent Heavy Vehicles	0		49			
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?						
Storage						
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT	L		R			
v (vph)		76	5		72			
C(m) (vph)		277	33		244			
v/c		0.27	0.15		0.30			
95% queue length		1.26	0.44		1.38			
Control Delay		22.9	133.3		25.9			
LOS		C	F		D			
Approach Delay				32.9				
Approach LOS				D				

HCS: Unsignalized Intersections Release 3.2

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Allens Ave./Terminal Road
City/State: Providence, RI
Analyst: MC (844ATAM1)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 AM Peak Hour - Scenario 1

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Allens Ave./Terminal Road
Analyst: MC (844ATP1I)
Project No.: JN 844 TIS Closing of Ellis St
Date: 5/8/01
East/West Street: Terminal Road
North/South Street: Allens Avenue
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		964	2	5	1656	
Hourly Flow Rate, HFR		1161	8	11	1761	
Percent Heavy Vehicles		--	--	81	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		2	0	0	2	
Configuration		T	TR	LT	T	
Upstream Signal?		No		No		

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume		22			50	
Hourly Flow Rate, HFR		88			86	
Percent Heavy Vehicles		0			44	
Percent Grade (%)			0			0
Median Storage	1					
Flared Approach: Exists?						
Storage						
RT Channelized?					No	
Lanes		1			1	
Configuration		L			R	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT	L		R			
v (vph)		11	88		86			
C(m) (vph)		293	46		363			
v/c		0.04	1.91		0.24			
95% queue length		0.00	23.63		1.05			
Control Delay		17.8			18.0			
LOS		C			C			
Approach Delay								
Approach LOS								

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Allens Ave./Terminal Road
City/State: Providence, RI
Analyst: MC (844ATP1I)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 PM Peak Hour - Scenario 1

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Allens Ave./Terminal Road
Analyst: MC (844ATAM2)
Project No.: JN 844 TIS Closing of Ellis St
Date: 5/8/01
East/West Street: Terminal Road
North/South Street: Allens Avenue
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		1508	13		65	719
Hourly Flow Rate, HFR		1570	28		76	781
Percent Heavy Vehicles		--	--		36	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		2	0		0	2
Configuration			T	TR		LT	T
Upstream Signal?			No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5		37			
Hourly Flow Rate, HFR	5		46			
Percent Heavy Vehicles	0		21			
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?						
Storage						
RT Channelized?			No			
Lanes	1		1			
Configuration		L	R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT	L		R			
v (vph)		76	5		46			
C(m) (vph)		277	33		291			
v/c		0.27	0.15		0.16			
95% queue length		1.26	0.44		0.60			
Control Delay		22.9	133.3		19.7			
LOS		C	F		C			
Approach Delay				30.8				
Approach LOS				D				

HCS: Unsignalized Intersections Release 3.2

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Allens Ave./Terminal Road
City/State: Providence, RI
Analyst: MC (844ATAM2)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 AM Peak Hour - Scenario 2

HCS: Unsignalized Intersections Release 3.2

TWO-WAY STOP CONTROL SUMMARY

Intersection: Allens Ave./Terminal Road
Analyst: MC (844ATP2I)
Project No.: JN 844 TIS Closing of Ellis St
Date: 5/8/01
East/West Street: Terminal Road
North/South Street: Allens Avenue
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		964	2	25	1656	
Hourly Flow Rate, HFR		1161	8	59	1761	
Percent Heavy Vehicles		--	--	81	--	--
Median Type	Undivided					
RT Channelized?						
Lanes		2	0	0	2	
Configuration		T	TR	LT	T	
Upstream Signal?		No		No		

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	22		30			
Hourly Flow Rate, HFR	88		51			
Percent Heavy Vehicles	0		6			
Percent Grade (%)		0			0	
Median Storage	1					
Flared Approach: Exists?						
Storage						
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT	L		R			
v (vph)		59	88		51			
C(m) (vph)		293	32		445			
v/c		0.20	2.75		0.11			
95% queue length		0.84	29.50		0.37			
Control Delay		20.4			14.1			
LOS		C			B			
Approach Delay								
Approach LOS								

HCS: Unsignalized Intersections Release 3.2

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TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Intersection: Allens Ave./Terminal Road
City/State: Providence, RI
Analyst: MC (844ATP2I)
Project No.: JN 844 TIS Closing of Ellis St
Time period Analyzed: 2001 PM Peak Hour - Build