Maine Department of Inland Fisheries & Wildlife Report

July 2003

Request for Information - East End School - Portland

Maine Department of Inland Fisheries & Wildlife

Region A
Phone: (207) 657-2345
Fax: (207) 657-2980
RR1, 358 Shaker Road
Gray, ME 04039

Biologist Notes

No identified wildife habitats associated with this site

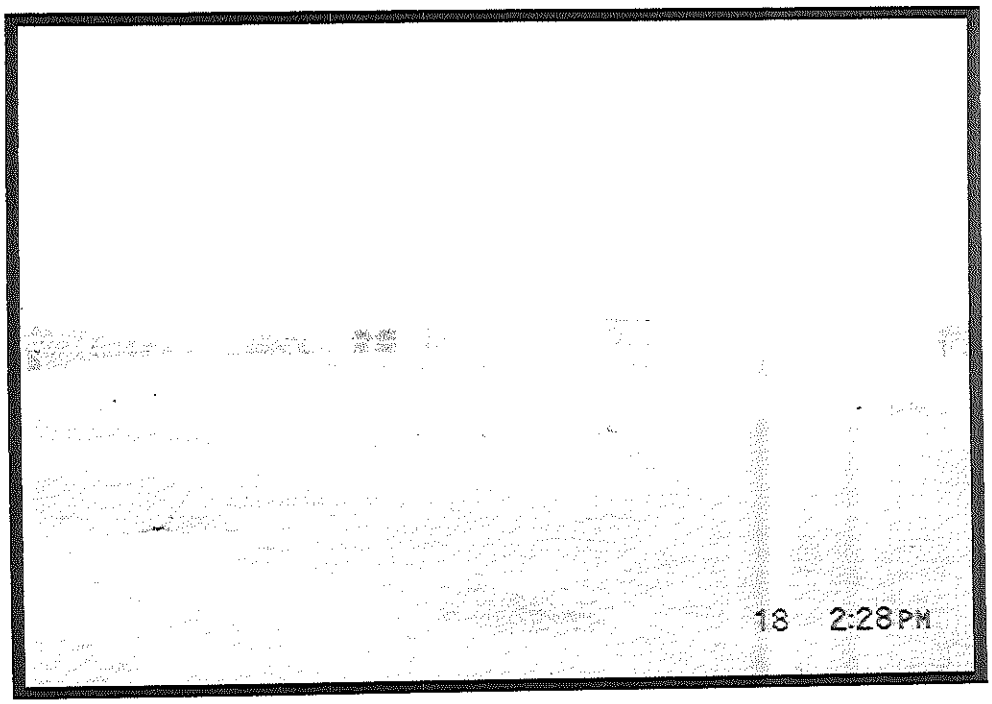

Photo 1
Existing ball field looking northerly.

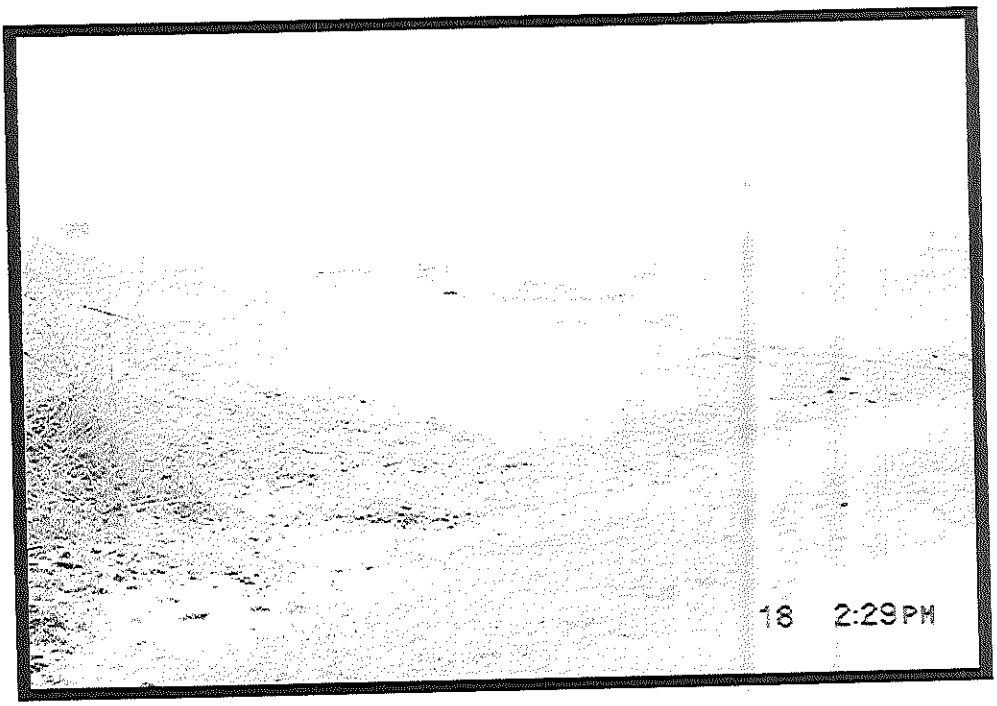

Photo 2
Former "skating pond" on the south side of North Street near the East End School site.

DeLUCA-HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, MAINE 04106
TEL. 207-775-1121
FAX: 207-879-0896
E-MAIL: dhai@delucahoffman.com

East End School
Portland, Maine

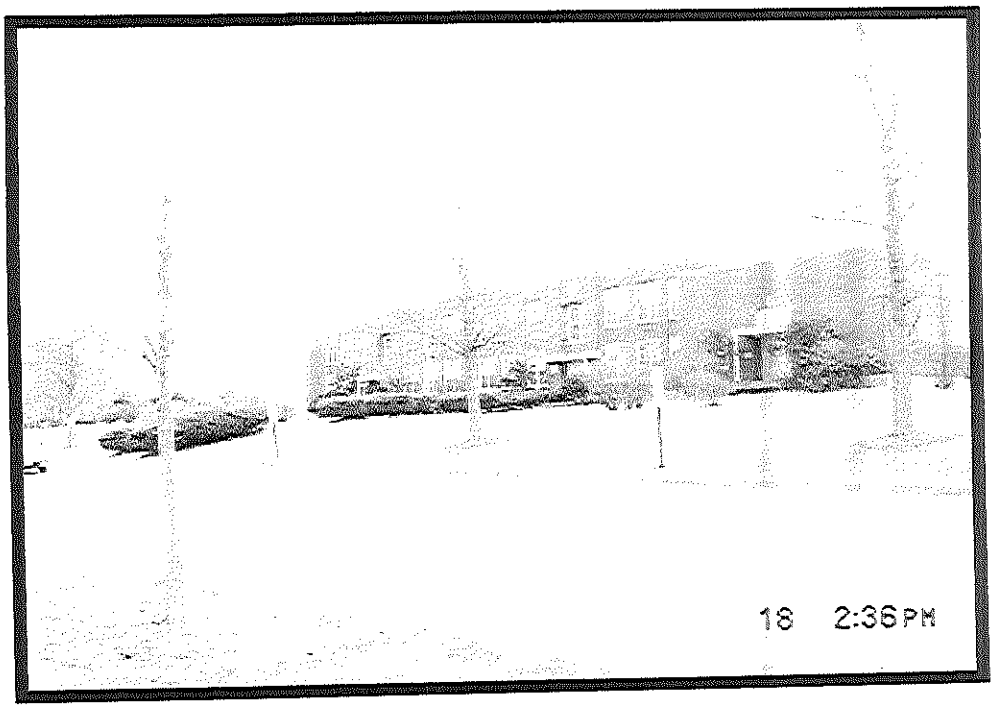

Photo 3
Exiting Jack School entrance from the Eastern Promenade looking south easterly.

Photo 4
Main Entrance of the existing Jack School looking south westerly.

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East End School
Portland, Maine

Photo 5
Existing Jack School playground looking easterly. Note abutting condominium complex on eastern border.
(Playground equipment and benches will be salvaged.)

Photo 6
Gravel playground area looking southerly.
(Existing swings will be salvaged.)

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Photo 7
Existing ball field looking southerly.

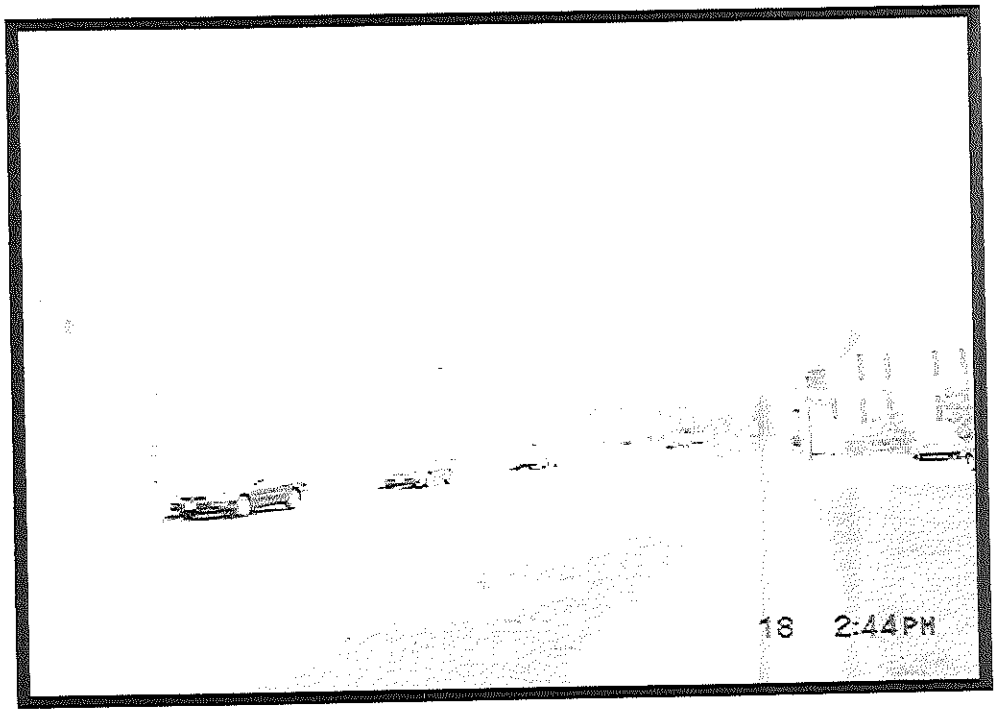

Photo 8
Condominiums along North Street looking south easterly from the southeasterly side of the site.

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Portland, Maine

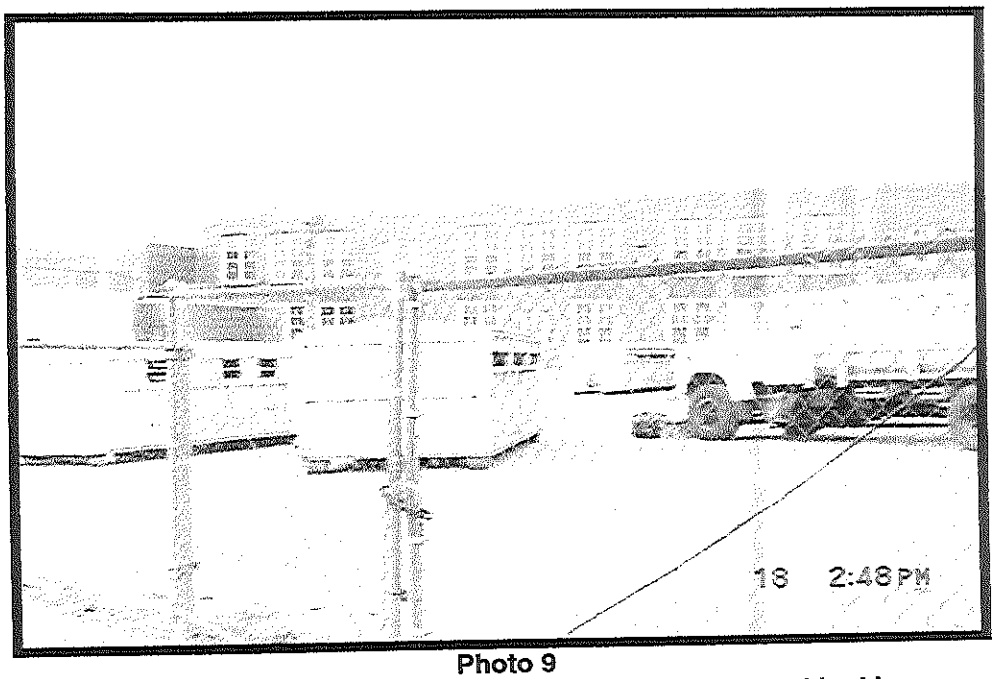

Photo 9
Loading dock (former hard play surface) at Jack School looking northerly.

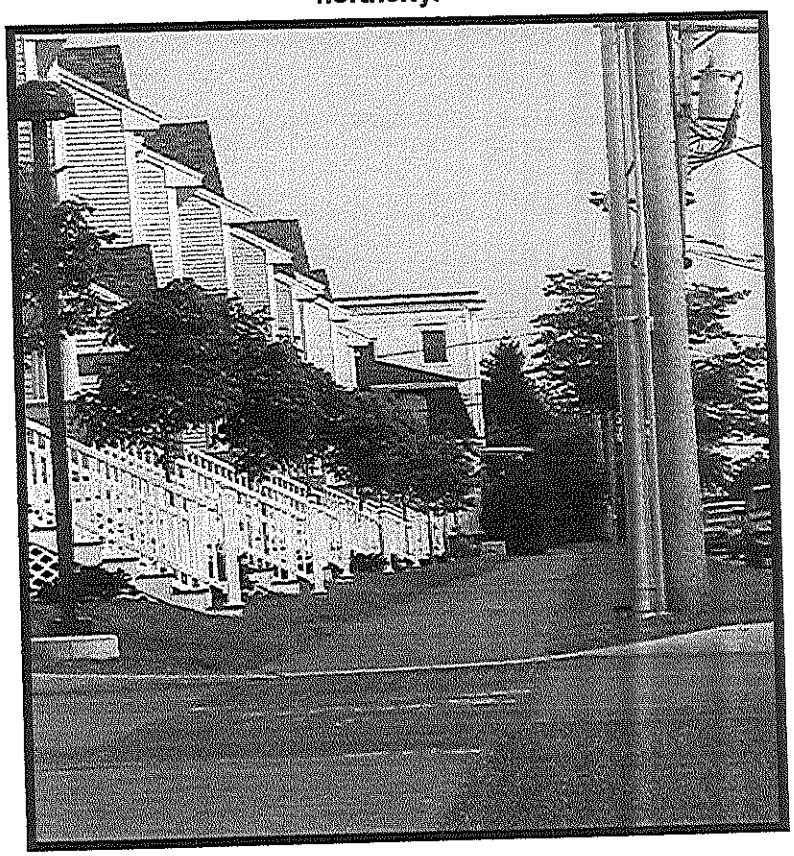

Photo 10
South bound walkway along North Street, east of the school. (Note the brick sidewalks)

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PHOTO 11
Scene overlooking the City of Portland as seen from North Street looking south easterly.

Photo 12
Eastern Prom esplanade in front of the site looking westerly.

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Photo 13
East bound sidewalk along the Easter Promenade looking westerly.
(Note the sidewalk condition in need of repair.)

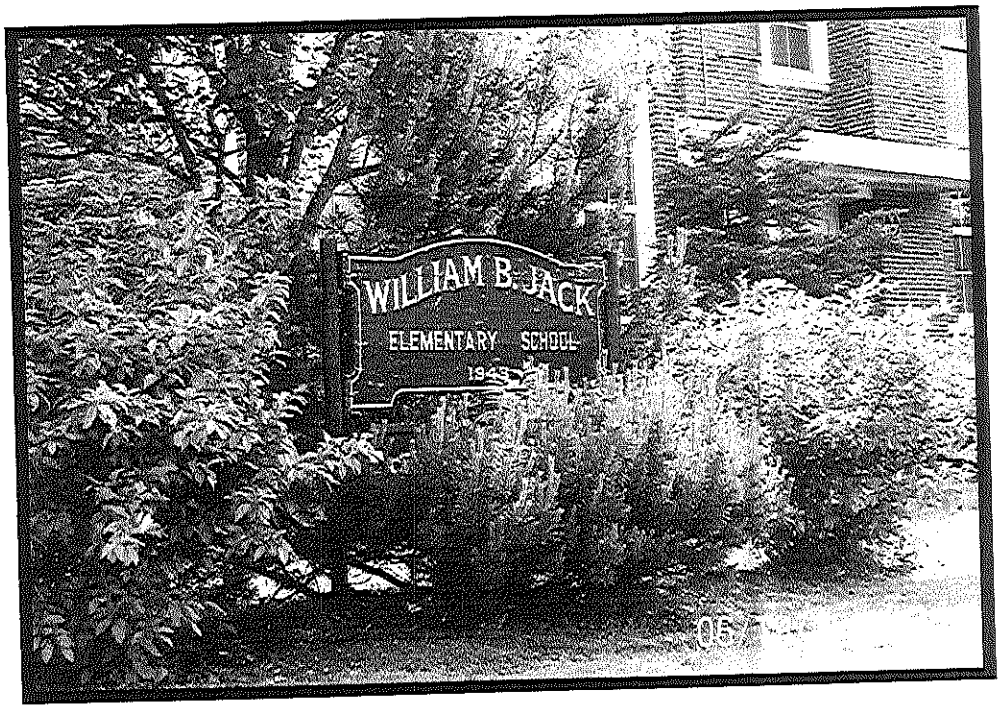

Photo 14
Main entrance sign to the former School.
(Note the date of 60 years ago.)

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Photo 15
Eastbound sidewalk and esplanade associated with the Eastern Prom looking easterly.

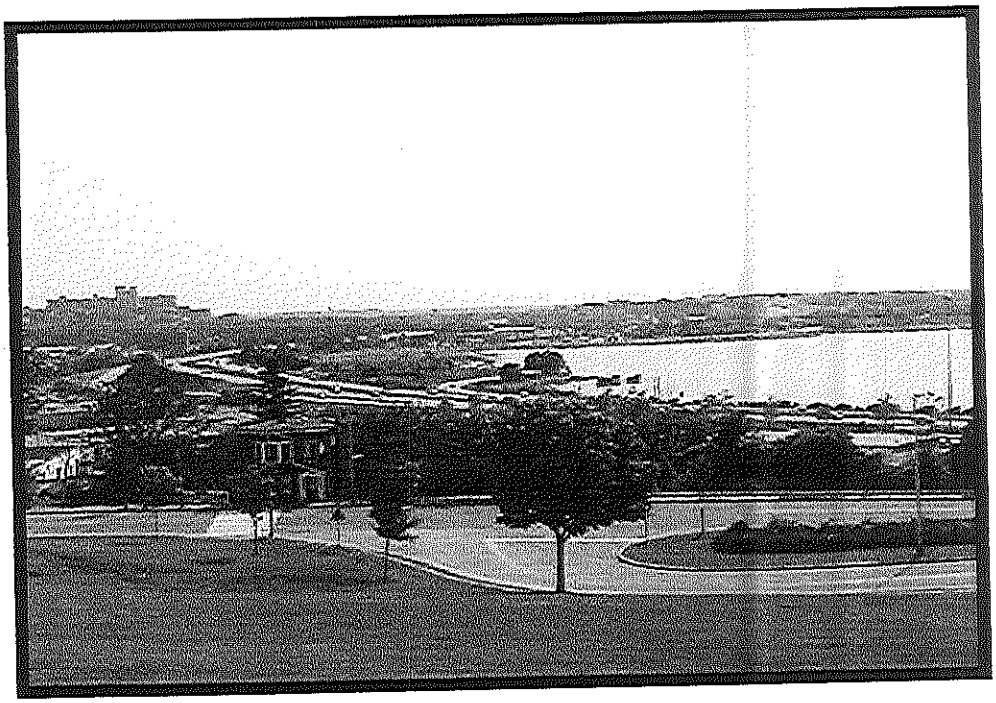

Photo 16
I-295 and Back Bay Cove as seen from North Street looking southerly.

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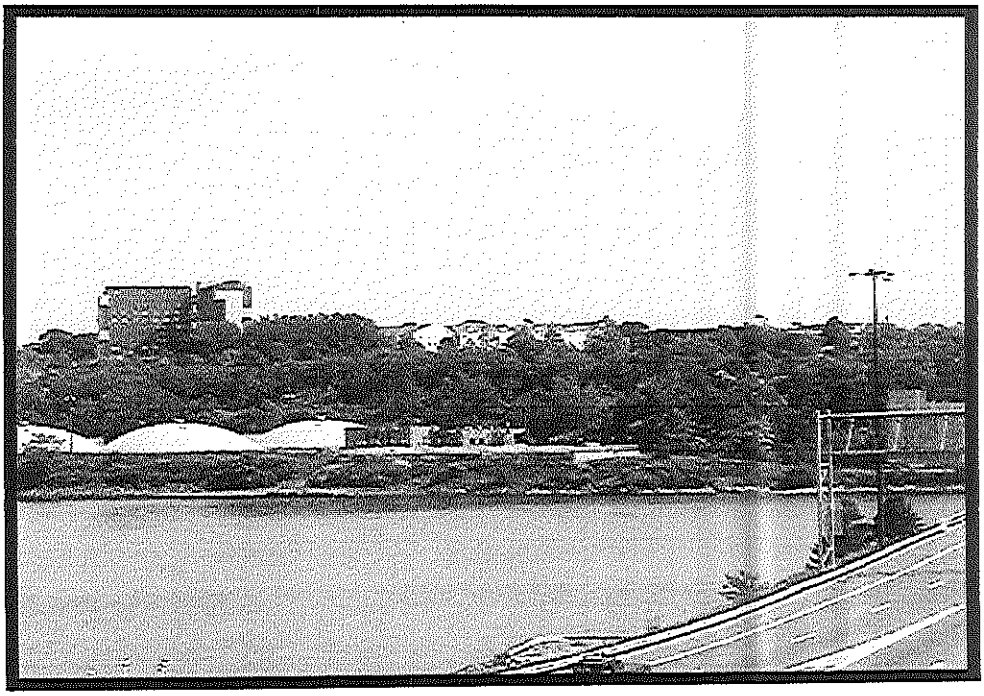

Photo 17
Munjoy Hill as seen from I-295 looking south easterly.
The treatment plant is in the foreground.

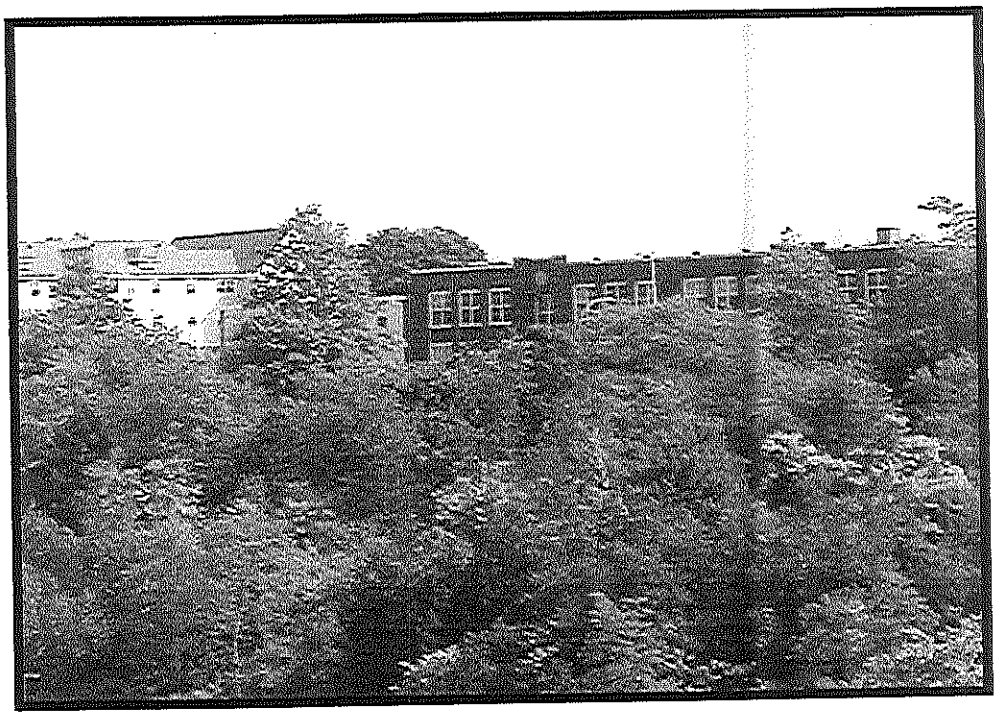

Photo 18
Former School as seen from I-295 looking south easterly.
(Note: the Eastern Prom Master Plan called for removal of vegetation to enhance views in accordance with the Olmstead Master Plan.

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East End School
Portland, Maine

Photo 19
Eastern Promenade lookout and memorial looking westerly from the westerly point of the site.

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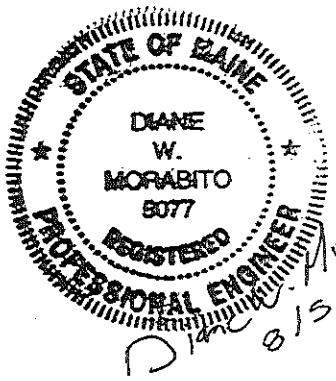
2370

TRAFFIC IMPACT STUDY
NEW JACK ELEMENTARY SCHOOL
PORTLAND, MAINE

August 5, 2003

PREPARED FOR:

DeLuca-Hoffman Associates



Diane W. Morabito 8/5/03

PREPARED BY:

Casey & Godfrey Engineers
263 Water Street
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INTRODUCTION

The purpose of this report is to summarize the impact of the replacement of the Jack Elementary School on-site in Portland, Maine. The proposed new school will provide for 450 elementary students. The previous Jack School's enrollment varied between 310 and 330 students. The existing site is located between Eastern Prom, North Street and Walnut Street. The proposed new school is expected to be ready for occupancy in fall of 2005. As a result, 2005 was used as the study year for traffic analysis purposes.

TRAFFIC VOLUMES

Turning movement counts were conducted to determine existing traffic volumes within the study area. The counts were conducted at the following intersections on the noted dates:

Intersection	Period	Date
North Street and Walnut Street	PM	Thurs. 7/17/03
North Street and Eastern Prom	PM	Thurs. 7/17/03
Washington Avenue, Walnut and Fox Streets	PM	Tues. 7/29/03
North Street and Walnut Street	AM	Tues. 7/29/03
North Street and Eastern Prom	AM	Wed. 7/ 23/03
Washington Avenue, Walnut and Fox Streets	AM	Tues. 7/29/03

The existing peak hours were found to occur between 7:30 and 8:45 AM and 4:00 and 5:00 PM, dependent upon location. The turning movement summaries are included in the appendix of this report. Since school will be released in the afternoon, prior to the general commuter peak, the PM peak hour used for analysis purposes was 3:00 to 4:00 PM.

The counts were factored to represent early June volumes, the highest time of year when school is in full session, using published MDOT urban group mean factors. The resulting volumes for the study area, expected to represent June 2003 conditions, are shown in Figure 2.

Existing average annual daily traffic (AADT) data for the study area was obtained from "Traffic Volume Counts, 1996 and 2001 Annual Reports", published by MDOT. This data is summarized below:

Location	Average Annual Daily Traffic			
	1995	1997	1999	2000
Route 26 (Washington), n/o Cumberland	8800	10930	—	10680
Route 26 (Washington), nw of Eastern Prom	10790	—	11780	10770

Based upon the preceding data, traffic volumes have increased, on average, in the area at an annual rate of approximately 2.1 % over the recent five-year period 1995 to 2000. There was no MDOT count coverage on the local streets, including Walnut and North Streets. Based upon the Washington Avenue growth, a higher 3 % annual traffic growth rate was used to project the current 2003 volumes to base 2005 conditions, to allow for increases due to background traffic growth or other development projects.

TRIP GENERATION AND ASSIGNMENT

Trip generation for the previous and proposed school was based upon Institute of Transportation Engineers (ITE) "Trip Generation, 6th Edition" report. The trips were estimated using land use code 520 - Elementary School on the basis of students, the best indicator for a school. The results are summarized below:

TRIP GENERATION SUMMARY

Time Period	Previous School	New School	New Trips
Daily	336	458	122
AM Peak Hour for School	99	135	36
entering	57	78	21
exiting	42	57	15
AM Peak Hour – Adj. Street	96	131	35
entering	57	77	20
exiting	39	54	15
PM Peak Hour for School	86	117	31
entering	40	54	14
exiting	46	63	17

As can be seen above, the new school will generate a maximum of 36 new one-way trips in any hour. As a result, the project does not require a Traffic Movement Permit from the State of Maine since it will generate far fewer than the 100 trip threshold in any hour. This level of traffic should not have a significant impact off-site on traffic operations. A project generally does not have significant impact unless it generates in excess of 25 to 35 trips in a lane in an hour.

Information was provided regarding student residences for use in trip assignments. The trips were assigned to the study area and North Street based upon the residence data and drop off area locations. The resulting trip assignments are shown in Figure 3 for the AM and PM peak hours of the school. The projected no-build 2005 volumes are shown in Figure 4, allowing for traffic growth. The projected volumes with the new elementary school fully occupied are shown in Figure 5.

TRAFFIC ANALYSIS

Traffic operations are evaluated in terms of level of service (LOS). Level of service is a qualitative measure that describes operations by letter designation. The levels range from A - very little delay to F - extreme delays. Level of service "D" is generally considered acceptable in urban locations while LOS "E" is generally considered the capacity of a facility and the minimum tolerable level. The level of service for unsignalized intersections is based upon the average control per vehicle for each minor, opposed movement. The criteria are defined in the following table excerpted from the 2000 "Highway Capacity Manual":

Unsignalized Intersection Level of Service

LOS	Delay Range
A	<= 10.0 seconds
B	> 10.0 and <= 15.0
C	> 15.0 and <= 25.0
D	> 25.0 and <= 35.0
E	> 35.0 and <= 50.0
F	> 50.0

Unsignalized Intersections

The level of service was calculated for existing and projected conditions for the unsignalized study area intersections. The results are shown below with the LOS followed by delay (in seconds) in parentheses:

AM PEAK HOUR LEVEL OF SERVICE

North Street and Eastern Prom Movement	2003 Existing	2005 No-Build	2005 Build
North Street	B (10.5)	B (10.6)	B (11.2)
Loring Park	A (9.7)	A (9.8)	A (9.8)
Left-Turns onto North Street	A (7.5)	A (7.5)	A (7.5)
North Street and Walnut Street Movement	2003 Existing	2005 No-Build	2005 Build
Westbound Walnut Street Approach	A (7.7)	A (7.8)	A (8.0)
Southbound North Street Approach	A (9.8)	A(9.9)	B (11.0)
Northbound North Street Approach	B (10.4)	B (10.5)	B (12.6)
Washington and Walnut Street Movement	2003 Existing	2005 No-Build	2005 Build
Walnut Street	C (21.5)	C (23.5)	D (25.8)
Left-turns onto Walnut Street	A (7.7)	A (7.7)	A (7.8)

PM PEAK HOUR LEVEL OF SERVICE

North Street and Eastern Prom Movement	2003 Existing	2005 No-Build	2005 Build
North Street	B (10.7)	B (10.8)	B (11.0)
Loring Park	A (9.8)	A (9.9)	A (10.0)
Left-Turns onto North Street	A (7.5)	A (7.5)	A (7.6)

North Street and Walnut Street Movement	2003 Existing	2005 No-Build	2005 Build
Westbound Walnut Street Approach	A (7.4)	A (7.5)	A (7.7)
Southbound North Street Approach	A (9.9)	B (10.0)	B (10.7)
Northbound North Street Approach	B (10.0)	B (10.2)	B (11.4)

Washington and Walnut Street Movement	2003 Existing	2005 No-Build	2005 Build
Walnut Street	C (15.6)	C (16.4)	C (18.0)
Left-turns onto Walnut Street	A (8.2)	A (8.3)	A (8.3)

As can be seen above, no capacity constraints were identified within the study area. All intersections are projected to operate at LOS "D" or better under 2005 build volumes, during both peak hour periods.

SAFETY ANALYSIS

ACCIDENT REVIEW

The Maine Department of Transportation uses two criteria to determine high crash locations (HCLs). The first is the critical rate factor (CRF), which is a measure of the accident rate. A CRF greater than one indicates a location which has a higher than expected accident rate. The expected rate is calculated as a statewide average of similar facilities.

The second criterion, which must also be met, is based upon the number of accidents that occur at a particular location. Eight or more accidents must occur over the three-year study period for the location to be considered a high crash location. Accident data was obtained from MDOT for the period 2000 to 2002 for the vicinity of the proposed project. The number of accidents, their locations and CRF are summarized below:

Location Description	# of Acc.	CRF
Intersection of North and Walnut Streets	3	1.97
North Street between Walnut and Montreal	2	0.70
Intersection of North and Quebec Streets	1	0.72
Intersection of North Street and Cumberland Avenue	6	2.27
North Street between Cumberland and Congress Street	1	1.11
Intersection of North and Congress Street	4	1.00

Location Description	# of Acc.	CRF
Intersection of Eastern Prom and Washington	1	0.17
Intersection of Eastern Prom and Walnut Street	1	0.39
Eastern Prom between Melbourne and Quebec	1	0.59
Intersection of Eastern Prom and Turner Street	1	0.34
Eastern Prom between Turner and Congress Street	1	0.41
Intersection of Eastern Prom and Congress Street	1	0.31
Walnut Street between Sheridan and Washington	1	0.81
Intersection of Walnut and Washington	**14**	**2.08**

As can be seen above, there is one high crash location within the study area, the intersection of Walnut Street and Washington Avenue. A collision diagram was prepared for the intersection from the individual accident reports to see if any accident patterns or trends could be identified that may indicate a correctable roadway deficiency. The diagram is included in the appendix of this report.

The diagram, which includes the near-by intersection of Fox Street, shows that the majority of accidents involved the Fox Street approach. One of the accidents had been mis-coded to this intersection so only 13 accidents occurred at the intersection during the three-year stuffy period.

There were three accidents in 2000, eight in 2001 and two in 2002. There were four rear-end type collisions on Fox Street and one rear-end on Washington Avenue. There was one sideswipe type collision due to a parking maneuver. There was one angle collision exiting Walnut Street. There were four angle collisions that involved vehicles exiting Fox Street and two that involved vehicles entering. A field review was conducted to determine if there are any factors contributing to the angle accidents exiting Fox Street. The field review indicated that sight distance, from a location behind the crosswalk, could be restricted by cars parked along Washington Street in the vicinity of the intersection. If the exiting vehicles pull forward to a location 10 feet behind the travel way, at the edge of parking lane, sight distance is adequate. Some vehicles were noted to be parked beyond the allowed parking limits. The City of Portland may want to reevaluate the parking zones in this area if accidents continue to occur at the intersection of Fox Street and Washington Avenue. In addition, there is a steep upgrade exiting Fox Street that may also be contributing to the accident problem.

SIGHT DISTANCE REVIEW

The minimum recommended sight distance for any school drive is 250 feet, based upon the 25 mph area speed limit. This sight distance is measured ten feet back from the edge of travel way at a driver's eye height of 3.5 feet to an object height of 4.25 feet. Detailed plans showing the North Street school access drive(s) are not yet available, given the fast track nature of this project. A preliminary review of potential locations on North Street did not reveal any potential sight distance restrictions. It is recommended that DeLuca-Hoffman Associates, the site engineers, confirm sight distance from the drive(s) after the site plan has been further developed. Based upon the review, no difficulties are anticipated in obtaining the recommended sight distance of 250 feet.

PARKING ANALYSIS

The Portland Traffic Engineer also requested information regarding availability of on-street parking in the area. All parking for the previous school was located on-street, on both North Streets and Eastern Promenade. The proposed new school will provide a 50-space parking lot on-site. Based upon information provided by DeLuca-Hoffman and included in the appendix, Portland standards for the maximum assembly size require 100 parking spaces for the proposed new facility. The State Department of Education standards generally recommend 113 spaces for a school of this size. This 113-space requirement was used as the basis of this analysis. The parking analysis was performed to determine if there would be adequate parking for the new facility, considering both the proposed 50-space lot and the available on-street parking.

On-street parking is currently allowed on both North Street and Eastern Promenade. North Street is currently 33' wide and provides for two-way traffic flow and parking on both sides. The American Association of State Highway and Transportation Officials (AASHTO) "A Policy on Geometric Design of Highways and Streets, 2001" recommends a minimum of 8' parking lanes. In addition, the minimum width for the travel lane should be 10' with up to 12' desirable. Based upon this, the recommended minimum total width for North Street, to provide for two-way travel and parking on both sides is 38' with 40' being desirable (12' travel and 8' parking lanes).

Parking observations were conducted on several days to determine the number of on-street spaces in the vicinity of the school currently being used. The number of spaces considered to be potentially available for school use was determined to be:

Eastern Promenade – School Side Only Within 300 Feet of School = 44 spaces
North Street – Both Sides Along School Frontage = 50 spaces

Based upon the calculations, there will be a minimum of 94 spaces on street in the vicinity of the school. The recommended parking stall length for parallel parking is 22 to 26'. It is recommended that any of the higher use, frequent turnover spaces be 26' long to provide for ease of parking. The number of vehicles parked in the above locations were recorded on three different dates and included early morning, mid-morning and mid-day hours. The maximum number of vehicles parked in these locations during any observation was six. Based upon this, there will be 88 spaces available for school use. This will leave an excess of 25 spaces on street available to other uses.

RECOMMENDATIONS AND CONCLUSIONS

The new Jack Elementary School in Portland is expected to generate a maximum of 36 new trips, over previous trip levels. This increase will occur during the AM peak hour. During the PM peak hour of the school, the facility will generate only 31 new trips. This level of traffic generally does not have a significant impact off-site beyond the drives. Level of service analyses were conducted for the study area intersections during both the AM and PM peak hour periods. No capacity constraints were identified by the analysis.

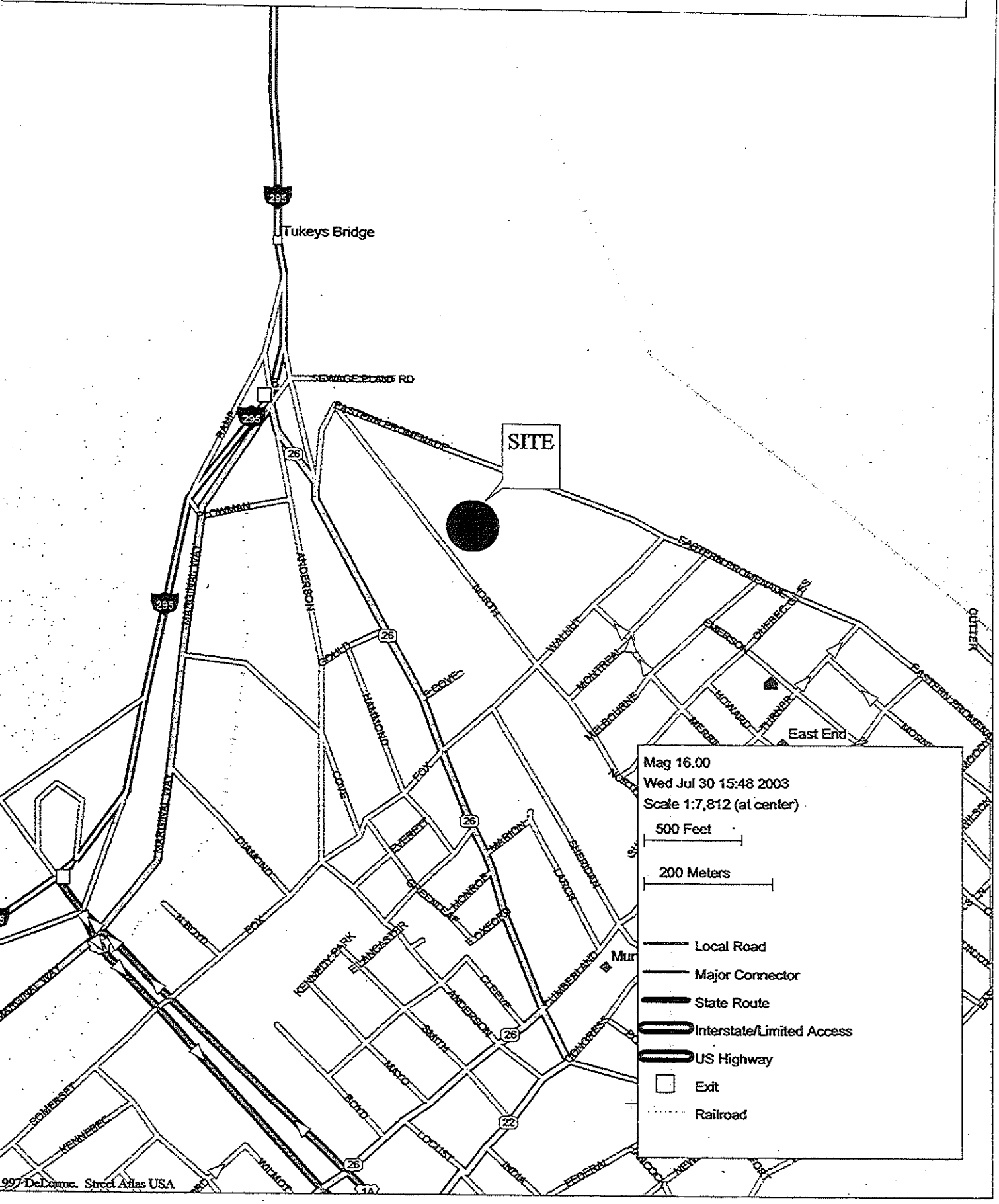
In terms of safety, the accident review identified one high crash location, the intersection of Washington Avenue and Walnut Street, in combination with the nearby intersection of Fox Street. A collision diagram was prepared for the intersection that did indicate a possible pattern of angle accidents exiting Fox Street. On-street parking in the vicinity, as well as the grade of Fox Street, may be contributing to the problem. If the accident problem continues then the City of Portland should reevaluate the parking zones, and possible parking violations in this area.

It is recommended that DeLuca-Hoffman Associates confirm that the sight distance from any school exit drive is a minimum of 250 feet, after the site plan has been further developed. Based upon a review of North Street, no difficulties are anticipated in obtaining this recommended sight distance.

Lastly, a parking analysis was performed to assure that there would be adequate parking at the new facility to meet the Maine Department of Education's expected 113 space standard. The school will provide for 50-space parking lot on-site. It was determined that there will be a minimum of 94 spaces located on both sides of North Street and along the school side of Eastern Promenade within the vicinity of the school. Based upon parking observations conducted over several days, a maximum of six vehicles were parked in theses locations. As a result, 88 of these on-street spaces would be available for school use, resulting in a 25 space excess overall.

It is recommended that North Street, currently 33' wide, be widened to a minimum width of 38' with 40' being desirable, to provide for both two-way traffic flow and 8' parking lanes on both sides. The recommended length of the parallel parking stalls is 22' minimum to 26'. It is recommended that any high use, frequent turnover spaces be 26' long to provide for parking ease.

FIGURE 1: SITE LOCATION MAP



AM Peak Hour Volumes (XX)

PM Peak Hour of School Volumes XX

Approx. North

Not To Scale

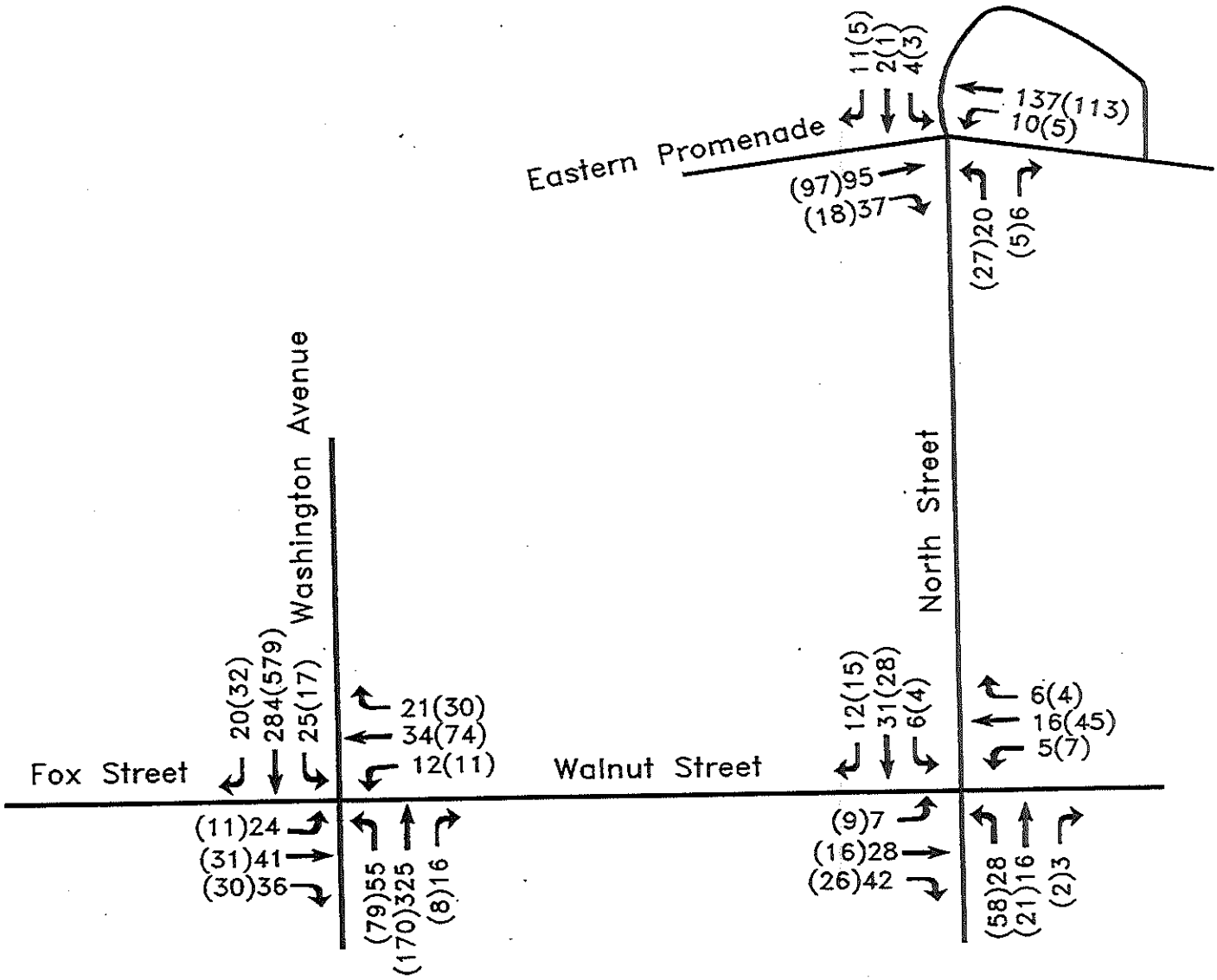


Figure 2

2003 Existing Volumes

AM and PM Peak Hour

Casey & Godfrey

Consulting Engineers

263 Water Street

Gardiner, Maine 04345

(207) 582-4526

AM Peak Hour Trips (XX)

PM Peak Hour Trips XX

Approx. North

Not To Scale

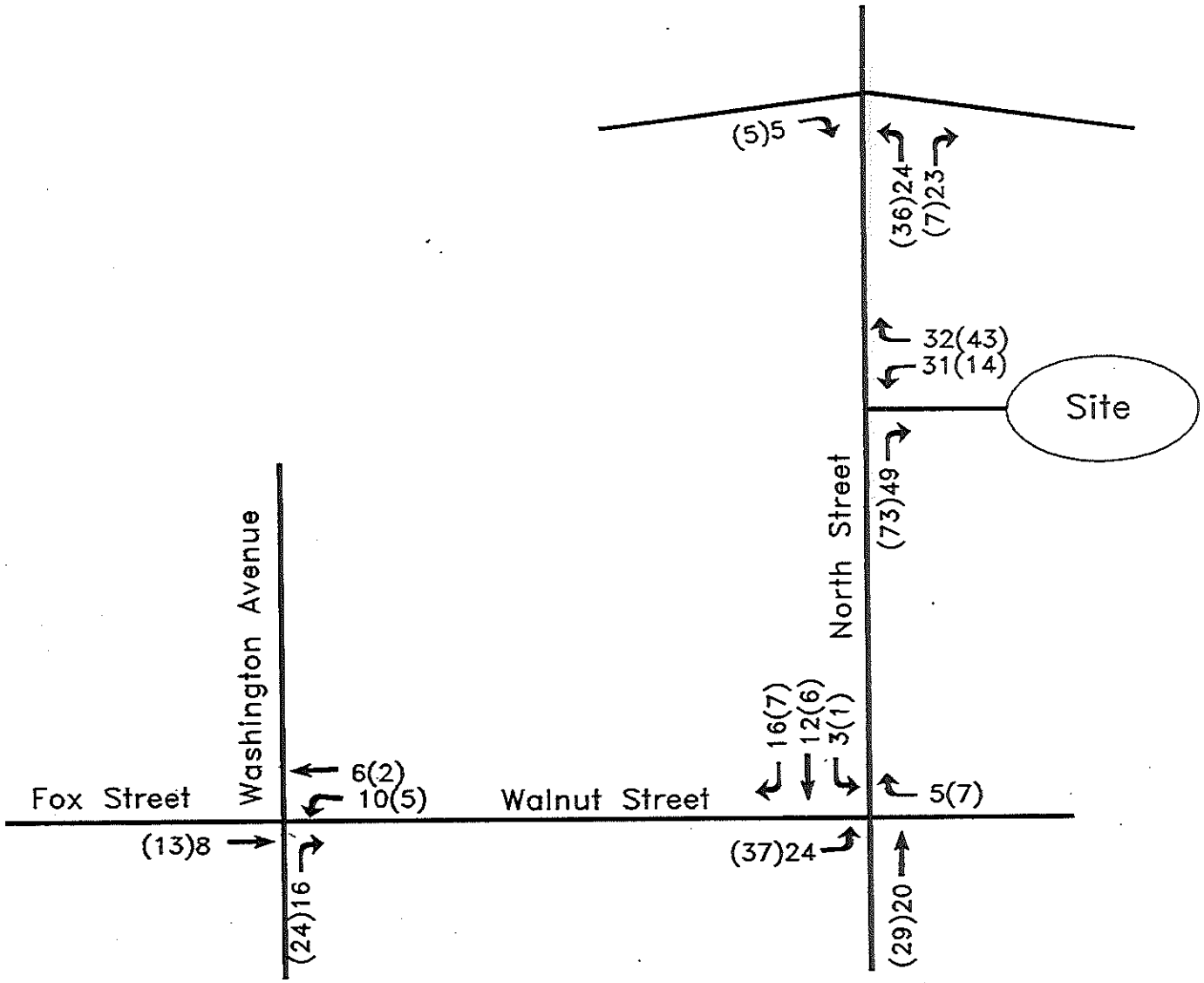


Figure 3

Trip Assignments

AM and PM Peak Hour

Casey & Godfrey

Consulting Engineers

263 Water Street
Gardiner, Maine 04345
(207) 582-4526

AM Peak Hour Volumes (XX)

PM Peak Hour of School Volumes XX

Approx. North

Not To Scale

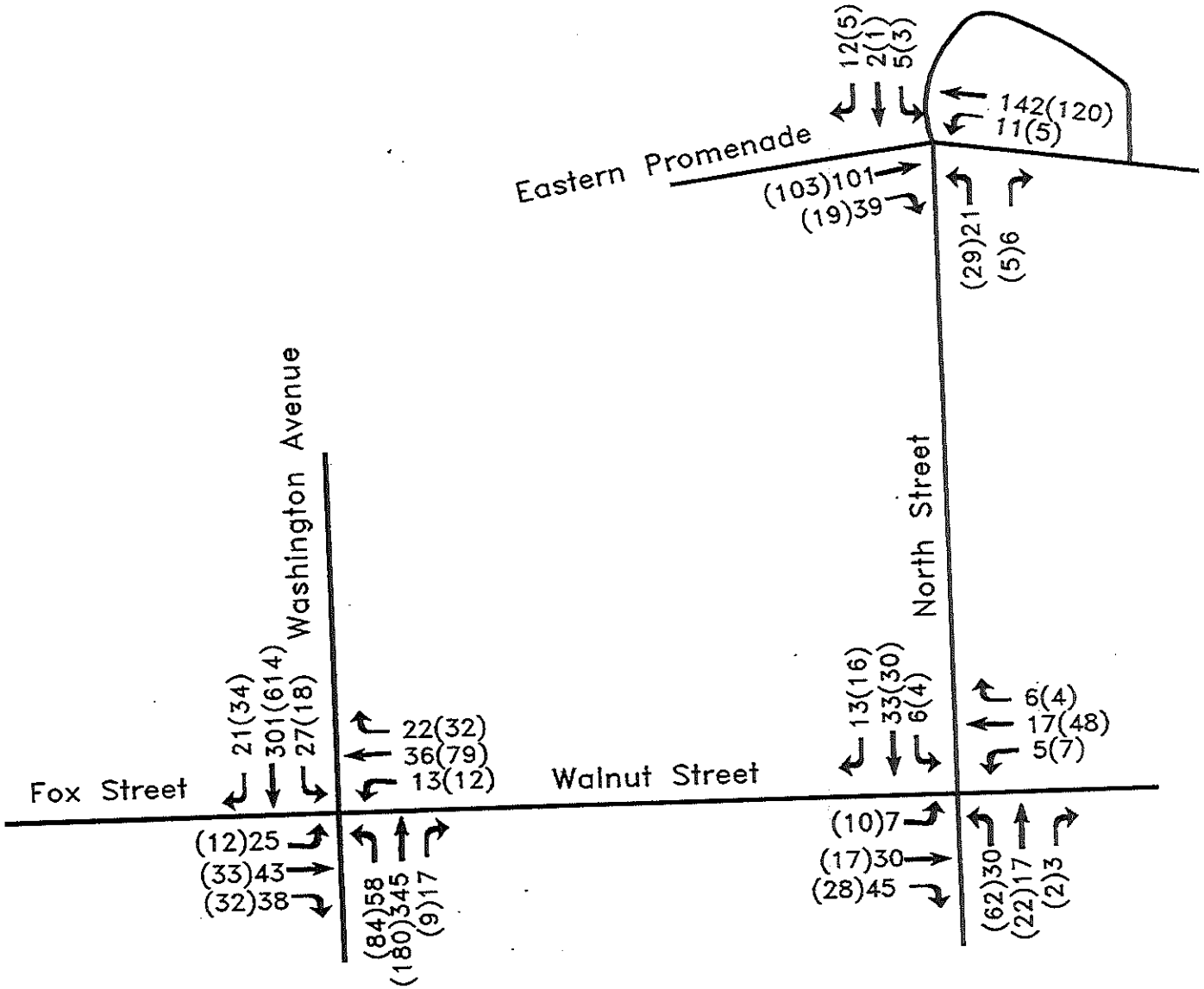


Figure 4

2005 Future No Build Volumes

AM and PM Peak hour

Casey & Godfrey

Consulting Engineers

263 Water Street

Gardiner, Maine 04345

(207) 582-4526

AM Peak Hour Volumes (XX)

PM Peak Hour of School Volumes XX

Approx. North

Not To Scale

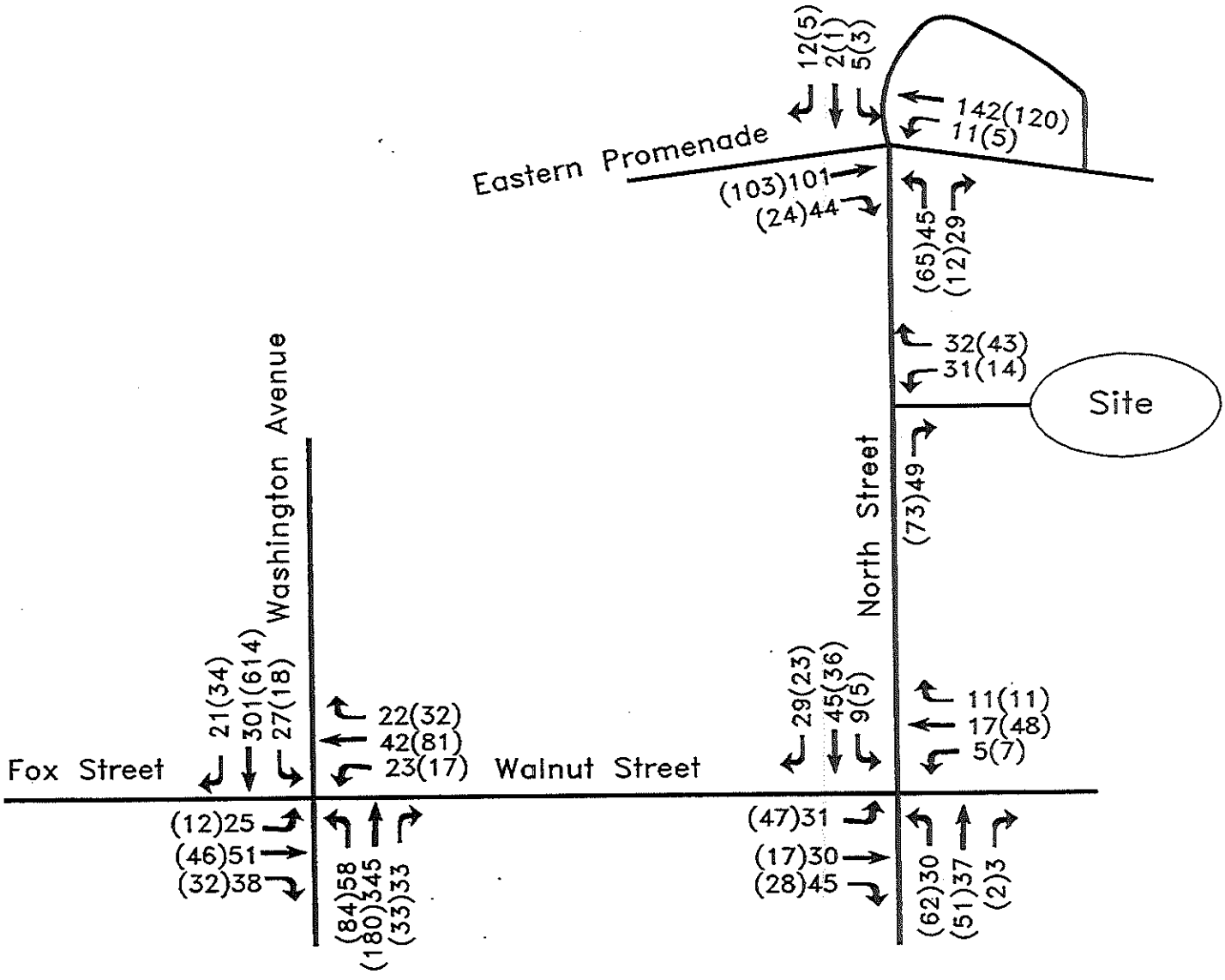


Figure 5
2005 Future Build Volumes
AM and PM Peak hour

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APPENDIX

Turning Movement Count Data

Capacity Analyses

Collision Diagram

DeLuca-Hoffman Parking Memorandum

Casey & Godfrey Consulting Engineers
263 Water Street, Gardiner, ME
Tel: (207) 582-4526 Fax: (207) 582-8526
Turning Movement Count

City/Town: Portland

Manual Counter: JRR

Weather: Sunny and Clear

File Name : NorthWalnutAM
Site Code : 11882277
Start Date : 07/29/2003
Page No : 1

Groups Printed- Passenger Car - Light Truck - Heavy Truck

	North St Southbound					Walnut St Westbound					North St Northbound					Walnut St Eastbound					
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		
06:30 AM	3	0	0	0	3	0	1	1	0	2	0	3	7	0	10	0	2	0	0	2	17
06:45 AM	5	4	0	0	9	0	6	0	0	6	0	3	6	0	9	1	2	2	1	6	30
Total	8	4	0	0	12	0	7	1	0	8	0	6	13	0	19	1	4	2	1	8	47
07:00 AM	2	2	0	0	4	1	8	0	2	11	0	4	8	0	12	2	2	2	0	6	33
07:15 AM	2	1	1	1	5	2	7	1	1	11	0	6	13	1	20	4	3	2	1	10	46
07:30 AM	3	6	0	0	9	2	12	2	4	20	0	4	18	0	22	7	1	1	3	12	63
07:45 AM	7	9	2	0	18	1	12	4	1	18	0	7	16	0	23	8	4	3	0	15	74
Total	14	18	3	1	36	6	39	7	8	60	0	21	55	1	77	21	10	8	4	43	216
08:00 AM	1	8	1	0	10	1	9	0	3	13	1	5	16	0	22	5	4	2	0	11	56
08:15 AM	4	6	1	0	11	0	13	1	1	15	1	6	10	0	17	7	7	3	0	17	60
08:30 AM	5	4	2	0	11	0	8	1	3	12	0	7	10	0	17	9	3	1	1	14	54
08:45 AM	5	5	0	1	11	0	8	1	0	9	0	8	11	0	19	8	6	0	0	14	53
Total	15	23	4	1	43	1	38	3	7	49	2	26	47	0	75	29	20	6	1	56	223
Grand Total	37	45	7	2	91	7	84	11	15	117	2	53	115	1	171	51	34	16	6	107	486
Apprch %	40.7	49.5	7.7	2.2		6.0	71.8	9.4	12.8		1.2	31.0	67.3	0.6		47.7	31.8	15.0	5.6		
Total %	7.6	9.3	1.4	0.4	18.7	1.4	17.3	2.3	3.1	24.1	0.4	10.9	23.7	0.2	35.2	10.5	7.0	3.3	1.2	22.0	

	North St Southbound					Walnut St Westbound					North St Northbound					Walnut St Eastbound					
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
Peak Hour From 06:30 AM to 08:45 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	15	29	4	0	48	4	46	7	9	66	2	22	60	0	84	27	16	9	3	55	253
Percent	31.2	60.4	8.3	0.0		6.1	69.7	10.6	13.6		2.4	26.2	71.4	0.0		49.1	29.1	16.4	5.5		
07:45 Volume	7	9	2	0	18	1	12	4	1	18	0	7	16	0	23	8	4	3	0	15	74
Peak Factor																					0.855
High Int.	07:45 AM					07:30 AM					07:45 AM					08:15 AM					
Volume	7	9	2	0	18	2	12	2	4	20	0	7	16	0	23	7	7	3	0	17	
Peak Factor					0.667					0.825					0.913					0.809	

Casey & Godfrey Consulting Engineers
263 Water Street, Gardiner, ME
Tel: (207) 582-4526 Fax: (207) 582-8526

ity/Town: Portland

Turning Movement Count

File Name : EPromenade&North
Site Code : 87658765
Start Date : 07/23/2003
Page No : 1

Manual Counter: JRR
Weather: Cloudy and rainy

Groups Printed- Passenger Car - Light Truck - Heavy Truck

	Loring Park Southbound					East Promenade Westbound					North Street Northbound					East Promenade Eastbound							
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	Exclu. Total	Inclu. 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				
06:30 AM	1	0	0	1	1	1	8	0	0	9	2	0	2	0	4	3	20	0	0	23	1	37	38
06:45 AM	0	0	0	0	0	1	12	1	0	14	1	0	3	2	4	2	10	0	0	12	2	30	32
Total	1	0	0	1	1	2	20	1	0	23	3	0	5	2	8	5	30	0	0	35	3	67	70
07:00 AM	0	1	0	0	1	2	19	1	0	22	1	0	3	0	4	2	9	0	0	11	0	38	38
07:15 AM	2	2	1	1	5	3	21	1	0	25	2	0	6	1	8	3	20	0	0	23	2	61	63
07:30 AM	2	0	1	0	3	4	23	1	0	28	1	0	7	0	8	4	22	0	1	26	1	65	66
07:45 AM	0	1	1	0	2	1	30	1	0	32	2	0	10	0	12	3	32	0	0	35	0	81	81
Total	4	4	3	1	11	10	93	4	0	107	6	0	26	1	32	12	83	0	1	95	3	245	248
08:00 AM	2	0	0	0	2	1	33	2	0	36	2	0	4	0	6	3	24	0	0	27	0	71	71
08:15 AM	1	0	1	0	2	0	30	1	0	31	0	0	7	0	7	9	22	0	0	31	0	71	71
08:30 AM	1	0	0	0	1	1	15	1	0	17	1	0	10	0	11	3	18	0	0	21	0	50	50
08:45 AM	0	0	0	0	0	1	26	1	0	28	2	0	12	1	14	2	16	0	0	18	1	60	61
Total	4	0	1	0	5	3	104	5	0	112	5	0	33	1	38	17	80	0	0	97	1	252	253
Grand Total	9	4	4	2	17	15	217	10	0	242	14	0	64	4	78	34	193	0	1	227	7	564	571
Apprch %	52.9	23.5	23.5			6.2	89.7	4.1			17.9	0.0	82.1			15.0	85.0	0.0					
Total %	1.6	0.7	0.7		3.0	2.7	38.5	1.8		42.9	2.5	0.0	11.3		13.8	6.0	34.2	0.0		40.2	1.2	98.8	

	Loring Park Southbound				East Promenade Westbound				North Street Northbound				East Promenade Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 06:30 AM to 08:45 AM - Peak 1 of 1																	
Intersection	07:30 AM																
Volume	5	1	3	9	6	116	5	127	5	0	28	33	19	100	0	119	288
Percent	55.6	11.1	33.3		4.7	91.3	3.9		15.2	0.0	84.8		16.0	84.0	0.0		
07:45 Volume	0	1	1	2	1	30	1	32	2	0	10	12	3	32	0	35	81
Peak Factor																	0.889
High Int.	07:30 AM				08:00 AM				07:45 AM				07:45 AM				
Volume	2	0	1	3	1	33	2	36	2	0	10	12	3	32	0	35	
Peak Factor				0.750				0.882				0.688				0.850	

Casey & Godfrey Consulting Engineers
263 Water Street, Gardiner, ME
Tel: (207) 582-4526 Fax: (207) 582-8525

ty/Town: Portland

anual Counter: SAK

/eather: Sunny and Clear

Turning Movement Count

Site Name : WalnutWashingtonAM
Site Code : 00006262
Start Date : 07/29/2003
Page No : 1

Groups Printed- Passenger Car - Light Truck - Heavy Truck

	Washington St Southbound					WalnutSt Westbound					Washington St Northbound					Fox St Eastbound					
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		
06:30 AM	4	54	3	0	61	6	9	2	1	18	2	32	8	0	42	11	4	5	0	20	141
06:45 AM	3	87	4	0	94	4	10	2	0	16	0	32	9	0	41	9	5	4	0	18	169
Total	7	141	7	0	155	10	19	4	1	34	2	64	17	0	83	20	9	9	0	38	310
07:00 AM	7	79	4	0	90	6	8	5	0	19	1	22	13	0	36	3	5	5	3	16	161
07:15 AM	5	111	5	0	121	9	11	6	0	26	1	39	11	1	52	3	3	5	0	11	210
07:30 AM	8	99	5	0	112	10	23	1	1	35	3	47	9	0	59	4	5	5	0	14	220
07:45 AM	12	178	2	0	192	9	21	0	1	31	1	54	20	0	75	10	8	5	0	23	321
Total	32	467	16	0	515	34	63	12	2	111	6	162	53	1	222	20	21	20	3	64	912
08:00 AM	5	159	5	2	171	12	18	6	0	36	4	40	19	0	63	7	6	1	3	17	287
08:15 AM	9	134	8	1	152	6	18	2	5	31	1	40	21	0	62	7	8	1	0	16	261
08:30 AM	7	126	3	0	136	4	19	3	3	29	2	41	21	1	65	7	10	4	2	23	253
08:45 AM	7	126	4	2	139	9	20	3	0	32	1	48	15	0	64	13	8	7	0	28	263
Total	28	545	20	5	598	31	75	14	8	128	8	169	76	1	254	34	32	13	5	84	1064
Grand Total	67	1153	43	5	1268	75	157	30	11	273	16	395	146	2	559	74	62	42	8	186	2286
Apprch %	5.3	90.9	3.4	0.4		27.5	57.5	11.0	4.0		2.9	70.7	26.1	0.4		39.8	33.3	22.6	4.3		
Total %	2.9	50.4	1.9	0.2	55.5	3.3	6.9	1.3	0.5	11.9	0.7	17.3	6.4	0.1	24.5	3.2	2.7	1.8	0.3	8.1	

	Washington St Southbound					WalnutSt Westbound					Washington St Northbound					Fox St Eastbound					
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
Peak Hour From 06:30 AM to 08:45 AM - Peak 1 of 1																					
Intersection	07:45 AM																				
Volume	33	597	18	3	651	31	76	11	9	127	8	175	81	1	265	31	32	11	5	79	1122
Percent	5.1	91.7	2.8	0.5		24.4	59.8	8.7	7.1		3.0	66.0	30.6	0.4		39.2	40.5	13.9	6.3		
07:45 Volume	12	178	2	0	192	9	21	0	1	31	1	54	20	0	75	10	8	5	0	23	321
Peak Factor																					0.874
High Int.	07:45 AM					08:00 AM					07:45 AM					07:45 AM					
Volume	12	178	2	0	192	12	18	6	0	36	1	54	20	0	75	10	8	5	0	23	
Peak Factor					0.848					0.882					0.883					0.859	

Casey & Godfrey Consulting Engineers
263 Water Street, Gardiner, ME
Tel: (207) 582-4526 Fax: (207) 582-8526
Turning Movement Count

ity/Town: Portland

lanual Counter: JRR
Veather: Sunny & Clear

File Name : North & Walnut
Site Code : 55551111
Start Date : 07/17/2003
Page No : 1

Groups Printed- Passenger Car - Light Truck - Heavy Truck

	North Street Southbound					Walnut Street Westbound					North Street Northbound					Walnut Street Eastbound							
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	Exclu. Total	Inclu. 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				
02:00 PM	3	4	1	0	8	1	4	0	0	5	1	5	5	0	11	8	3	4	3	15	3	39	42
02:15 PM	4	7	2	0	13	3	11	1	0	15	0	10	11	0	21	7	5	7	0	19	0	68	68
02:30 PM	4	5	0	1	9	1	7	1	0	9	1	5	6	0	12	4	10	0	0	14	1	44	45
02:45 PM	1	9	0	0	10	0	2	0	2	2	1	8	8	0	17	5	7	3	0	15	2	44	46
Total	12	25	3	1	40	5	24	2	2	31	3	28	30	0	61	24	25	14	3	63	6	195	201
03:00 PM	4	8	0	0	12	2	2	1	3	5	1	7	5	0	13	10	6	1	1	17	4	47	51
03:15 PM	3	7	2	0	12	2	5	0	1	7	0	3	11	0	14	12	5	2	4	19	5	52	57
03:30 PM	3	12	2	3	17	2	5	2	3	9	0	5	5	0	10	9	8	2	0	19	6	55	61
03:45 PM	2	5	2	1	9	0	4	2	0	6	2	2	8	2	12	12	10	2	0	24	3	51	54
Total	12	32	6	4	50	6	16	5	7	27	3	17	29	2	49	43	29	7	5	79	18	205	223
04:00 PM	7	5	4	0	16	1	9	0	0	10	2	6	7	0	15	5	2	4	1	11	1	52	53
04:15 PM	1	5	0	0	6	2	4	0	3	6	2	4	8	0	14	18	7	3	3	28	6	54	60
04:30 PM	4	7	1	0	12	1	4	0	0	5	0	4	13	1	17	14	7	1	2	22	3	56	59
04:45 PM	2	10	0	0	12	2	4	0	4	6	1	7	6	0	14	18	12	3	3	33	7	65	72
Total	14	27	5	0	46	6	21	0	7	27	5	21	34	1	60	55	28	11	9	94	17	227	244
Grand Total	38	84	14	5	136	17	61	7	16	85	11	66	93	3	170	122	82	32	17	236	41	627	668
Apprch %	27.9	61.8	10.3			20.0	71.8	8.2			6.5	38.8	54.7			51.7	34.7	13.6					
Total %	6.1	13.4	2.2		21.7	2.7	9.7	1.1		13.6	1.8	10.5	14.8		27.1	19.5	13.1	5.1		37.6	6.1	93.9	

	North Street Southbound				Walnut Street Westbound				North Street Northbound				Walnut Street Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 02:00 PM to 04:45 PM - Peak 1 of 1																	
Intersection	04:00 PM																
Volume	14	27	5	46	6	21	0	27	5	21	34	60	55	28	11	94	227
Percent	30.4	58.7	10.9		22.2	77.8	0.0		8.3	35.0	56.7		58.5	29.8	11.7		
04:45 Volume	2	10	0	12	2	4	0	6	1	7	6	14	18	12	3	33	65
Peak Factor																	0.873
High Int.	04:00 PM				04:00 PM				04:30 PM				04:45 PM				
Volume	7	5	4	16	1	9	0	10	0	4	13	17	18	12	3	33	
Peak Factor				0.719				0.675				0.882				0.712	

Casey & Godfrey Consulting Engineers
263 Water Street, Gardiner, ME
Tel: (207) 582-4526 Fax: (207) 582-8526
Turning Movement Count

City/Town: Portland
Manual Counter: RJS
Weather: Sunny and Clear

File Name : FoxWashPM
Site Code : 00001234
Start Date : 07/29/2003
Page No : 1

Groups Printed- Passenger Car - Light Truck - Heavy Truck

	Washington Avenue Southbound					Walnut St Westbound					Washington Avenue Northbound					Fox St Eastbound					
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		
02:00 PM	9	61	3	0	73	5	9	1	0	15	3	56	9	0	68	9	8	9	0	26	182
02:15 PM	10	60	7	1	78	6	4	2	2	14	4	60	9	0	73	18	12	10	3	43	208
02:30 PM	5	64	6	0	75	8	10	2	2	22	3	73	12	0	88	17	11	9	5	42	227
02:45 PM	1	86	8	0	95	9	12	3	2	26	3	61	9	0	73	14	13	3	0	30	224
Total	25	271	24	1	321	28	35	8	6	77	13	250	39	0	302	58	44	31	8	141	841
03:00 PM	6	68	5	0	79	4	6	4	3	17	4	74	19	8	105	10	11	5	2	28	229
03:15 PM	5	67	3	1	76	6	13	1	1	21	4	82	13	0	99	5	11	6	5	27	223
03:30 PM	3	83	13	0	99	6	12	4	2	24	2	92	9	2	105	6	11	12	3	32	260
03:45 PM	6	75	5	0	86	6	4	3	0	13	6	87	16	0	109	16	9	2	5	32	240
Total	20	293	26	1	340	22	35	12	6	75	16	335	57	10	418	37	42	25	15	119	952
04:00 PM	6	78	8	0	92	3	12	4	3	22	0	89	15	4	108	18	16	22	7	63	285
04:15 PM	8	68	4	0	80	4	10	3	4	21	6	100	23	0	129	15	25	3	6	49	279
04:30 PM	4	68	7	0	79	3	14	6	3	26	8	144	19	0	171	16	21	11	1	49	325
04:45 PM	5	70	13	2	90	9	9	3	1	22	2	144	14	2	162	12	10	11	6	39	313
Total	23	284	32	2	341	19	45	16	11	91	16	477	71	6	570	61	72	47	20	200	1202
Grand Total	68	848	82	4	1002	69	115	36	23	243	45	1062	167	16	1290	156	158	103	43	460	2995
Apprch %	6.8	84.6	8.2	0.4		28.4	47.3	14.8	9.5		3.5	82.3	12.9	1.2		33.9	34.3	22.4	9.3		
Total %	2.3	28.3	2.7	0.1	33.5	2.3	3.8	1.2	0.8	8.1	1.5	35.5	5.6	0.5	43.1	5.2	5.3	3.4	1.4	15.4	

	Washington Avenue Southbound					Walnut St Westbound					Washington Avenue Northbound					Fox St Eastbound					
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
Peak Hour From 02:00 PM to 04:45 PM - Peak 1 of 1																					
Intersection	04:00 PM																				
Volume	23	284	32	2	341	19	45	16	11	91	16	477	71	6	570	61	72	47	20	200	1202
Percent	6.7	83.3	9.4	0.6		20.9	49.5	17.6	12.1		2.8	83.7	12.5	1.1		30.5	36.0	23.5	10.0		
04:30 Volume	4	68	7	0	79	3	14	6	3	26	8	144	19	0	171	16	21	11	1	49	325
Peak Factor																					0.925
High Int.	04:00 PM					04:30 PM					04:30 PM					04:00 PM					
Volume	6	78	8	0	92	3	14	6	3	26	8	144	19	0	171	18	16	22	7	63	
Peak Factor					0.927					0.875					0.833					0.794	

City/Town: Portland

Manual Counter: RJS
Weather: Sunny

Casey & Godfrey Consulting Engineers
263 Water Street, Gardiner, ME
Tel: (207) 582-4526 Fax: (207) 582-8526
Turning Movement Count

File Name : NORTH&~2
Site Code : 66667777
Start Date : 07/17/2003
Page No : 1

Groups Printed- Passenger Car - Light Truck - Heavy Truck

	Loring Memorial Park Southbound					E Promenade Westbound					North St Northbound					E Promenade Eastbound							
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	Exclu. Total	Inclu. 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				
02:00 PM	4	2	3	0	9	0	33	2	0	35	1	0	8	0	9	5	24	0	0	29	0	82	82
02:15 PM	3	0	0	0	3	0	30	1	0	31	4	0	12	0	16	6	21	0	0	27	0	77	77
02:30 PM	4	1	0	0	5	0	30	2	1	32	2	0	4	1	6	8	14	0	0	22	2	65	67
02:45 PM	2	0	2	0	4	0	35	2	0	37	2	0	10	0	12	2	21	0	1	23	1	76	77
Total	13	3	5	0	21	0	128	7	1	135	9	0	34	1	43	21	80	0	1	101	3	300	303
03:00 PM	1	0	1	0	2	0	37	3	0	40	1	0	6	0	7	10	22	0	0	32	0	81	81
03:15 PM	2	1	0	1	3	0	35	4	0	39	3	0	4	0	7	7	19	0	1	26	2	75	77
03:30 PM	7	1	2	0	10	0	35	2	1	37	2	0	8	1	10	12	29	0	0	41	2	98	100
03:45 PM	1	0	1	1	2	0	34	1	1	35	0	0	3	0	3	9	28	0	0	37	2	77	79
Total	11	2	4	2	17	0	141	10	2	151	6	0	21	1	27	38	98	0	1	136	6	331	337
04:00 PM	5	1	2	0	8	0	28	1	0	29	2	0	10	3	12	7	25	0	1	32	4	81	85
04:15 PM	3	0	0	1	3	0	40	2	1	42	3	0	7	0	10	5	21	0	1	26	3	81	84
04:30 PM	7	0	2	0	9	0	40	2	0	42	3	0	7	1	10	11	35	0	0	46	1	107	108
04:45 PM	1	0	1	1	2	0	49	2	1	51	1	0	5	0	6	6	33	0	0	39	2	98	100
Total	16	1	5	2	22	0	157	7	2	164	9	0	29	4	38	29	114	0	2	143	10	367	377
Grand Total	40	6	14	4	60	0	426	24	5	450	24	0	84	6	108	88	292	0	4	380	19	998	1017
Apprch %	66.7	10.0	23.3			0.0	94.7	5.3			22.2	0.0	77.8			23.2	76.8	0.0					
Total %	4.0	0.6	1.4		6.0	0.0	42.7	2.4		45.1	2.4	0.0	8.4		10.8	8.8	29.3	0.0		38.1	1.9	98.1	

	Loring Memorial Park Southbound				E Promenade Westbound				North St Northbound				E Promenade Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 02:00 PM to 04:45 PM - Peak 1 of 1																	
Intersection 04:00 PM																	
Volume	16	1	5	22	0	157	7	164	9	0	29	38	29	114	0	143	367
Percent	72.7	4.5	22.7		0.0	95.7	4.3		23.7	0.0	76.3		20.3	79.7	0.0		
04:30 Volume	7	0	2	9	0	40	2	42	3	0	7	10	11	35	0	46	107
Peak Factor																	0.857
High Int.	04:30 PM				04:45 PM				04:00 PM				04:30 PM				
Volume	7	0	2	9	0	49	2	51	2	0	10	12	11	35	0	46	
Peak Factor				0.611				0.804				0.792				0.777	

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*DWM*
Agency/Co.	*Casey & Godfrey Engineers*
Date Performed	*07/29/2003*
Analysis Time Period	*AM Peak*

Site Information

Intersection	*North and Eastern Prom*
Jurisdiction	*Portland*
Analysis Year	*2003 Existing June*

Project Description

East/West Street: *Eastern Prom* | North/South Street: *North Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*97*	*18*	*5*	*113*	*0*
Peak-Hour Factor, PHF	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*
Hourly Flow Rate, HFR	*0*	*114*	*21*	*5*	*132*	*0*
Percent Heavy Vehicles	*3*	–	–	*3*	–	–
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*27*	*0*	*5*	*3*	*1*	*5*
Peak-Hour Factor, PHF	*0.75*	*0.75*	*0.75*	*0.75*	*0.75*	*0.75*
Hourly Flow Rate, HFR	*36*	*0*	*6*	*4*	*1*	*6*
Percent Heavy Vehicles	*3*	*3*	*3*	*3*	*3*	*3*
Percent Grade (%)		*-4*			*2*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*1*	*0*
Configuration		*LR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LR*			*LTR*	
v (vph)	*0*	*5*		*42*			*11*	
C (m) (vph)	*1447*	*1443*		*701*			*781*	
v/c	*0.00*	*0.00*		*0.06*			*0.01*	
95% queue length	*0.00*	*0.01*		*0.19*			*0.04*	
Control Delay	*7.5*	*7.5*		*10.5*			*9.7*	
				B			A	

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*DWM*
Agency/Co.	*Casey & Godfrey Engineers*
Date Performed	*07/29/2003*
Analysis Time Period	*AM Peak*

Site Information

Intersection	*North and Eastern Prom*
Jurisdiction	*Portland*
Analysis Year	*2005 No-Build June*

Project Description

East/West Street: *Eastern Prom* | North/South Street: *North Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*103*	*19*	*5*	*120*	*0*
Peak-Hour Factor, PHF	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*
Hourly Flow Rate, HFR	*0*	*121*	*22*	*5*	*141*	*0*
Percent Heavy Vehicles	*3*	–	–	*3*	–	–
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*29*	*0*	*5*	*3*	*1*	*5*
Peak-Hour Factor, PHF	*0.75*	*0.75*	*0.75*	*0.75*	*0.75*	*0.75*
Hourly Flow Rate, HFR	*38*	*0*	*6*	*4*	*1*	*6*
Percent Heavy Vehicles	*3*	*3*	*3*	*3*	*3*	*3*
Percent Grade (%)	*-4*			*2*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*1*	*0*
Configuration		*LR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LR*			*LTR*	
v (vph)	*0*	*5*		*44*			*11*	
C (m) (vph)	*1436*	*1434*		*684*			*767*	
v/c	*0.00*	*0.00*		*0.06*			*0.01*	
95% queue length	*0.00*	*0.01*		*0.21*			*0.04*	
Control Delay	*7.5*	*7.5*		*10.6*			*9.8*	
				B			A	

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	DWM
Agency/Co.	Casey & Godfrey Engineers
Date Performed	07/29/2003
Analysis Time Period	AM Peak

Site Information

Intersection	North and Eastern Prom
Jurisdiction	Portland
Analysis Year	2005 Build June

Project Description

East/West Street: *Eastern Prom* | North/South Street: *North Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	0	103	24	5	120	0
Peak-Hour Factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85
Hourly Flow Rate, HFR	0	121	28	5	141	0
Percent Heavy Vehicles	3	--	--	3	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	65	0	12	3	1	5
Peak-Hour Factor, PHF	0.75	0.75	0.75	0.75	0.75	0.75
Hourly Flow Rate, HFR	86	0	16	4	1	6
Percent Heavy Vehicles	3	3	3	3	3	3
Percent Grade (%)	-4			2		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	1	0
Configuration		LR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LR			LTR	
v (vph)	0	5		102			11	
C (m) (vph)	1436	1426		685			758	
v/c	0.00	0.00		0.15			0.01	
95% queue length	0.00	0.01		0.52			0.04	
Control Delay	7.5	7.5		11.2			9.8	
				B			A	

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*DWM*
Agency/Co.	*Casey & Godfrey Engineers*
Date Performed	*07/29/2003*
Analysis Time Period	*PM Peak*

Site Information

Intersection	*North and Eastern Prom*
Jurisdiction	*Portland*
Analysis Year	*2003 Existing June*

Project Description

East/West Street: *Eastern Prom* | North/South Street: *North Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*95*	*37*	*10*	*137*	*0*
Peak-Hour Factor, PHF	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*
Hourly Flow Rate, HFR	*0*	*111*	*43*	*11*	*161*	*0*
Percent Heavy Vehicles	*3*	–	–	*0*	–	–
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*20*	*0*	*6*	*4*	*2*	*11*
Peak-Hour Factor, PHF	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*
Hourly Flow Rate, HFR	*23*	*0*	*7*	*4*	*2*	*12*
Percent Heavy Vehicles	*3*	*3*	*3*	*3*	*3*	*3*
Percent Grade (%)	*-4*			*2*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*1*	*0*
Configuration		*LR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*			*LTR*	
v (vph)		*11*		*30*			*18*	
C (m) (vph)		*1439*		*666*			*766*	
v/c		*0.01*		*0.05*			*0.02*	
95% queue length		*0.02*		*0.14*			*0.07*	
Control Delay		*7.5*		*10.7*			*9.8*	
				B			A	

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*DWM*
Agency/Co.	*Casey & Godfrey Engineers*
Date Performed	*07/29/2003*
Analysis Time Period	*PM Peak*

Site Information

Intersection	*North and Eastern Prom*
Jurisdiction	*Portland*
Analysis Year	*2005 No-Build June*

Project Description

East/West Street: *Eastern Prom* | North/South Street: *North Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*101*	*39*	*11*	*142*	*0*
Peak-Hour Factor, PHF	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*
Hourly Flow Rate, HFR	*0*	*118*	*45*	*12*	*167*	*0*
Percent Heavy Vehicles	*3*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*21*	*0*	*6*	*5*	*2*	*12*
Peak-Hour Factor, PHF	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*
Hourly Flow Rate, HFR	*24*	*0*	*7*	*5*	*2*	*14*
Percent Heavy Vehicles	*3*	*3*	*3*	*3*	*3*	*3*
Percent Grade (%)	*-4*			*2*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*1*	*0*
Configuration		*LR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*			*LTR*	
v (vph)		*12*		*31*			*21*	
C (m) (vph)		*1428*		*647*			*756*	
v/c		*0.01*		*0.05*			*0.03*	
95% queue length		*0.03*		*0.15*			*0.09*	
Control Delay		*7.5*		*10.8*			*9.9*	

B A

TWO-WAY STOP CONTROL SUMMARY

General Information	
Analyst	*DWM*
Agency/Co.	*Casey & Godfrey Engineers*
Date Performed	*07/29/2003*
Analysis Time Period	*PM Peak*

Site Information	
Intersection	*North and Eastern Prom*
Jurisdiction	*Portland*
Analysis Year	*2005 No-Build June*

Project Description

East/West Street: *Eastern Prom* | North/South Street: *North Street*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*101*	*39*	*11*	*142*	*0*
Peak-Hour Factor, PHF	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*
Hourly Flow Rate, HFR	*0*	*118*	*45*	*12*	*167*	*0*
Percent Heavy Vehicles	*3*	–	–	*0*	–	–
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*21*	*0*	*6*	*5*	*2*	*12*
Peak-Hour Factor, PHF	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*
Hourly Flow Rate, HFR	*24*	*0*	*7*	*5*	*2*	*14*
Percent Heavy Vehicles	*3*	*3*	*3*	*3*	*3*	*3*
Percent Grade (%)		*-4*			*2*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*1*	*0*
Configuration		*LR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*			*LTR*	
v (vph)		*12*		*31*			*21*	
C (m) (vph)		*1428*		*647*			*756*	
v/c		*0.01*		*0.05*			*0.03*	
95% queue length		*0.03*		*0.15*			*0.09*	
Control Delay		*7.5*		*10.8*			*9.9*	
				B			A	

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*DWM*
Agency/Co.	*Casey & Godfrey Engineers*
Date Performed	*07/31/2003*
Analysis Time Period	*AM Peak*

Site Information

Intersection	*Walnut/North*
Jurisdiction	*Portland*
Analysis Year	*2003 Existing*

Project Description

East/West Street: *Walnut* | North/South Street: *North*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*9*	*16*	*26*	*7*	*45*	*4*
Peak-Hour Factor, PHF	*0.81*	*0.81*	*0.81*	*0.83*	*0.83*	*0.83*
Hourly Flow Rate, HFR	*11*	*19*	*32*	*8*	*54*	*4*
Percent Heavy Vehicles	*2*	–	–	*2*	–	–
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*58*	*21*	*2*	*4*	*28*	*15*
Peak-Hour Factor, PHF	*0.91*	*0.91*	*0.91*	*0.70*	*0.70*	*0.70*
Hourly Flow Rate, HFR	*63*	*23*	*2*	*5*	*40*	*21*
Percent Heavy Vehicles	*2*	*2*	*2*	*2*	*2*	*2*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*11*	*8*		*88*			*66*	
C (m) (vph)	*1546*	*1555*		*755*			*812*	
v/c	*0.01*	*0.01*		*0.12*			*0.08*	
95% queue length	*0.02*	*0.02*		*0.39*			*0.26*	
Control Delay	*7.3*	*7.3*		*10.4*			*9.8*	
				B			A	

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	DWM
Agency/Co.	Casey & Godfrey Engineers
Date Performed	07/31/2003
Analysis Time Period	AM Peak

Site Information

Intersection	Walnut/North
Jurisdiction	Portland
Analysis Year	2005 No-Build

Project Description

East/West Street: *Walnut* | North/South Street: *North*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10	17	28	7	48	4
Peak-Hour Factor, PHF	0.81	0.81	0.81	0.83	0.83	0.83
Hourly Flow Rate, HFR	12	20	34	8	57	4
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	62	22	2	4	30	16
Peak-Hour Factor, PHF	0.91	0.91	0.91	0.70	0.70	0.70
Hourly Flow Rate, HFR	68	24	2	5	42	22
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	12	8		94			69	
C (m) (vph)	1542	1551		743			804	
v/c	0.01	0.01		0.13			0.09	
95% queue length	0.02	0.02		0.43			0.28	
Control Delay	7.4	7.3		10.5			9.9	

B A

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*DWM*
Agency/Co.	*Casey & Godfrey Engineers*
Date Performed	*07/31/2003*
Analysis Time Period	*AM Peak*

Site Information

Intersection	*Walnut/North*
Jurisdiction	*Portland*
Analysis Year	*2005 Build*

Project Description

East/West Street: *Walnut* | North/South Street: *North*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*47*	*17*	*28*	*7*	*48*	*11*
Peak-Hour Factor, PHF	*0.81*	*0.81*	*0.81*	*0.83*	*0.83*	*0.83*
Hourly Flow Rate, HFR	*58*	*20*	*34*	*8*	*57*	*13*
Percent Heavy Vehicles	*4*	–	–	*2*	–	–
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*62*	*51*	*2*	*9*	*45*	*29*
Peak-Hour Factor, PHF	*0.91*	*0.91*	*0.91*	*0.70*	*0.70*	*0.70*
Hourly Flow Rate, HFR	*68*	*56*	*2*	*12*	*64*	*41*
Percent Heavy Vehicles	*2*	*4*	*2*	*4*	*4*	*4*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*58*	*8*		*126*			*117*	
C (m) (vph)	*1518*	*1551*		*599*			*714*	
v/c	*0.04*	*0.01*		*0.21*			*0.16*	
95% queue length	*0.12*	*0.02*		*0.79*			*0.58*	
Control Delay	*7.5*	*7.3*		*12.6*			*11.0*	
				B			B	

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	DWM
Agency/Co.	Casey & Godfrey Eng
Date Performed	07/31/2003
Analysis Time Period	AM Peak

Site Information

Intersection	Walnut/North
Jurisdiction	Portland
Analysis Year	2003 Existing

Project ID

East/West Street: Walnut | North/South Street: North

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	9	16	26	7	45	4
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	58	21	2	4	28	15
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.81		0.83		0.91		0.70	
Flow Rate	62		66		88		66	
% Heavy Vehicles	2		2		2		2	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.2		0.1		0.7		0.1	
Prop. Right-Turns	0.5		0.1		0.0		0.3	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.08		4.08		4.08		4.08	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.06		0.06		0.08		0.06	
hd, final value	4.08		4.08		4.08		4.08	
x, final value	0.07		0.08		0.11		0.08	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.1		2.1		2.1		2.1	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	312		316		338		316	
Delay	7.39		7.71		7.95		7.48	
LOS	A		A		A		A	
Approach: Delay	7.39		7.71		7.95		7.48	
LOS	A		A		A		A	

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	DWM
Agency/Co.	Casey & Godfrey Eng
Date Performed	07/31/2003
Analysis Time Period	AM Peak

Site Information

Intersection	Walnut/North
Jurisdiction	Portland
Analysis Year	2005 No-Build

Project ID

East/West Street: Walnut North/South Street: North

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	10	17	28	7	48	4
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	62	22	2	4	30	16
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.81		0.83		0.91		0.70	
Flow Rate	66		69		94		69	
% Heavy Vehicles	2		2		2		2	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.2		0.1		0.7		0.1	
Prop. Right-Turns	0.5		0.1		0.0		0.3	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.11		4.11		4.11		4.11	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.06		0.06		0.08		0.06	
hd, final value	4.11		4.11		4.11		4.11	
x, final value	0.08		0.08		0.12		0.08	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.1		2.1		2.1		2.1	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	316		319		344		319	
Delay	7.44		7.76		8.02		7.53	
LOS	A		A		A		A	
Approach: Delay	7.44		7.76		8.02		7.53	
LOS	A		A		A		A	

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	DWM
Agency/Co.	Casey & Godfrey Eng
Date Performed	07/31/2003
Analysis Time Period	AM Peak

Site Information

Intersection	Walnut/North
Jurisdiction	Portland
Analysis Year	2006 Build

Project ID

East/West Street: Walnut | North/South Street: North

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	47	17	28	7	48	11
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	62	51	2	5	36	23
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.81		0.83		0.91		0.70	
Flow Rate	112		78		126		90	
% Heavy Vehicles	4		4		4		4	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.5		0.1		0.5		0.1	
Prop. Right-Turns	0.3		0.2		0.0		0.4	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.50		4.50		4.50		4.50	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.10		0.07		0.11		0.08	
hd, final value	4.50		4.50		4.50		4.50	
x, final value	0.14		0.10		0.16		0.11	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.5		2.5		2.5		2.5	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	362		328		376		340	
Delay	8.23		8.03		8.51		7.91	
LOS	A		A		A		A	
Approach: Delay	8.23		8.03		8.51		7.91	
LOS	A		A		A		A	

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*DWM*
Agency/Co.	*Casey & Godfrey Engineers*
Date Performed	*07/31/2003*
Analysis Time Period	*PM Peak*

Site Information

Intersection	*Walnut/North*
Jurisdiction	*Portland*
Analysis Year	*2003 Existing*

Project Description

East/West Street: *Walnut* | North/South Street: *North*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*7*	*28*	*42*	*5*	*16*	*6*
Peak-Hour Factor, PHF	*0.71*	*0.71*	*0.71*	*0.70*	*0.70*	*0.70*
Hourly Flow Rate, HFR	*9*	*39*	*59*	*7*	*22*	*8*
Percent Heavy Vehicles	*2*	–	–	*2*	–	–
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	*7*	*8*	*9*	*10*	*11*	*12*
	L	T	R	L	T	R
Volume	*28*	*16*	*3*	*6*	*31*	*12*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.72*	*0.72*	*0.72*
Hourly Flow Rate, HFR	*31*	*18*	*3*	*8*	*43*	*16*
Percent Heavy Vehicles	*2*	*2*	*2*	*2*	*2*	*2*
Percent Grade (%)	*0*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*9*	*7*		*52*			*67*	
C (m) (vph)	*1583*	*1495*		*765*			*796*	
v/c	*0.01*	*0.00*		*0.07*			*0.08*	
95% queue length	*0.02*	*0.01*		*0.22*			*0.27*	
Control Delay	*7.3*	*7.4*		*10.0+*			*9.9*	
				B			A	

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*DWM*
Agency/Co.	*Casey & Godfrey Engineers*
Date Performed	*07/31/2003*
Analysis Time Period	*PM Peak*

Site Information

Intersection	*Walnut/North*
Jurisdiction	*Portland*
Analysis Year	*2003 No-Build*

Project Description

East/West Street: *Walnut* | North/South Street: *North*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*7*	*30*	*45*	*5*	*17*	*6*
Peak-Hour Factor, PHF	*0.71*	*0.71*	*0.71*	*0.70*	*0.70*	*0.70*
Hourly Flow Rate, HFR	*9*	*42*	*63*	*7*	*24*	*8*
Percent Heavy Vehicles	*2*	--	--	*2*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LTR*			*LTR*		
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	*7*	*8*	*9*	*10*	*11*	*12*
	L	T	R	L	T	R
Volume	*30*	*17*	*3*	*6*	*33*	*13*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.72*	*0.72*	*0.72*
Hourly Flow Rate, HFR	*34*	*19*	*3*	*8*	*45*	*18*
Percent Heavy Vehicles	*2*	*2*	*2*	*2*	*2*	*2*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration		*LTR*			*LTR*	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LTR*	*LTR*		*LTR*			*LTR*	
v (vph)	*9*	*7*		*56*			*71*	
C (m) (vph)	*1580*	*1486*		*752*			*792*	
v/c	*0.01*	*0.00*		*0.07*			*0.09*	
95% queue length	*0.02*	*0.01*		*0.24*			*0.29*	
Control Delay	*7.3*	*7.4*		*10.2*			*10.0-*	
				B			A	

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	DWM
Agency/Co.	Casey & Godfrey Engineers
Date Performed	07/31/2003
Analysis Time Period	PM Peak

Site Information

Intersection	Walnut/North
Jurisdiction	Portland
Analysis Year	2003 Build

Project Description

East/West Street: *Walnut* North/South Street: *North*

Intersection Orientation: *East-West* Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	31	30	45	5	17	11
Peak-Hour Factor, PHF	0.71	0.71	0.71	0.70	0.70	0.70
Hourly Flow Rate, HFR	43	42	63	7	24	15
Percent Heavy Vehicles	4	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	30	37	3	9	45	29
Peak-Hour Factor, PHF	0.88	0.88	0.88	0.72	0.72	0.72
Hourly Flow Rate, HFR	34	42	3	12	62	40
Percent Heavy Vehicles	2	4	2	4	4	4
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR			LTR	
v (vph)	43	7		79			114	
C (m) (vph)	1558	1486		641			741	
v/c	0.03	0.00		0.12			0.15	
95% queue length	0.09	0.01		0.42			0.54	
Control Delay	7.4	7.4		11.4			10.7	
				B			B	

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	DWM
Agency/Co.	Casey & Godfrey Eng
Date Performed	07/31/2003
Analysis Time Period	PM Peak

Site Information

Intersection	Walnut/North
Jurisdiction	Portland
Analysis Year	2003 Existing

Project ID

East/West Street: Walnut

North/South Street: North

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	7	28	42	5	16	6
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	28	16	3	6	31	12
%Thrus Left Lane	50.			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.71		0.70		0.88		0.72	
Flow Rate	107		37		52		67	
% Heavy Vehicles	4		4		4		4	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.2		0.6		0.1	
Prop. Right-Turns	0.6		0.2		0.1		0.2	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	3.96		3.96		3.96		3.96	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.10		0.03		0.05		0.06	
hd, final value	3.96		3.96		3.96		3.96	
x, final value	0.12		0.04		0.06		0.08	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.0		2.0		2.0		2.0	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	357		287		302		317	
Delay	7.49		7.45		7.74		7.57	
LOS	A		A		A		A	
Approach: Delay	7.49		7.45		7.74		7.57	
LOS	A		A		A		A	

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	DWM
Agency/Co.	Casey & Godfrey Eng
Date Performed	07/31/2003
Analysis Time Period	PM Peak

Site Information

Intersection	Walnut/North
Jurisdiction	Portland
Analysis Year	2005 No-Build

Project ID

East/West Street: *Walnut*

North/South Street: *North*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	7	30	45	5	17	6
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	30	17	3	6	33	13
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.71		0.70		0.88		0.72	
Flow Rate	114		39		56		71	
% Heavy Vehicles	2		2		2		2	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1		0.2		0.6		0.1	
Prop. Right-Turns	0.6		0.2		0.1		0.3	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	3.95		3.95		3.95		3.95	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.10		0.03		0.05		0.06	
hd, final value	3.95		3.95		3.95		3.95	
x, final value	0.13		0.05		0.07		0.08	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	1.9		1.9		1.9		1.9	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	364		289		306		321	
Delay	7.51		7.45		7.75		7.57	
LOS	A		A		A		A	
Approach: Delay	7.51		7.45		7.75		7.57	
LOS	A		A		A		A	

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	DWM
Agency/Co.	Casey & Godfrey Eng
Date Performed	07/31/2003
Analysis Time Period	PM Peak

Site Information

Intersection	Walnut/North
Jurisdiction	Portland
Analysis Year	2005 Build

Project ID

East/West Street: *Walnut*

North/South Street: *North*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume	31	30	45	5	17	11
%Thrus Left Lane	50			50		

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume	30	37	3	9	45	29
%Thrus Left Lane	50			50		

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.71		0.70		0.88		0.72	
Flow Rate	148		46		79		114	
% Heavy Vehicles	4		4		4		4	
No. Lanes	1		1		1		1	
Geometry Group	1		1		1		1	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.3		0.2		0.4		0.1	
Prop. Right-Turns	0.4		0.3		0.0		0.4	
Prop. Heavy Vehicle	0.0		0.0		0.0		0.0	
hLT-adj	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	4.27		4.27		4.27		4.27	

Departure Headway and Service Time

hd, initial value	3.20		3.20		3.20		3.20	
x, initial	0.13		0.04		0.07		0.10	
hd, final value	4.27		4.27		4.27		4.27	
x, final value	0.18		0.06		0.10		0.14	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.3		2.3		2.3		2.3	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity	398		296		329		364	
Delay	8.18		7.68		8.12		8.00	
LOS	A		A		A		A	
Approach: Delay	8.18		7.68		8.12		8.00	
LOS	A		A		A		A	

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DWM*	Intersection	*Washington/Walnut*
Agency/Co.	*Casey & Godfrey*	Jurisdiction	*Portland*
Date Performed	*07/31/2003*	Analysis Year	*2003 Existing*
Analysis Time Period	*AM Peak*		
Project Description			
East/West Street: *Walnut*		North/South Street: *Washington*	
Intersection Orientation: *North-South*		Study Period (hrs): *0.25*	

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*170*	*8*	*17*	*611*	*0*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.85*	*0.85*	*0.88*
Hourly Flow Rate, HFR	*0*	*193*	*9*	*19*	*718*	*0*
Percent Heavy Vehicles	*0*	–	–	*2*	–	–
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*84*	*0*	*30*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR	*95*	*0*	*34*	*0*	*0*	*0*
Percent Heavy Vehicles	*2*	*0*	*2*	*0*	*0*	*0*
Percent Grade (%)	*-10*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*				
v (vph)		*19*		*129*				
C (m) (vph)		*1370*		*345*				
v/c		*0.01*		*0.37*				
95% queue length		*0.04*		*1.69*				
Control Delay		*7.7*		*21.5*				
LOS		*A*		*C*				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DWM*	Intersection	*Washington/Walnut*
Agency/Co.	*Casey & Godfrey*	Jurisdiction	*Portland*
Date Performed	*07/31/2003*	Analysis Year	*2005 No-Build*
Analysis Time Period	*AM Peak*		
Project Description			
East/West Street: *Walnut*		North/South Street: *Washington*	
Intersection Orientation: *North-South*		Study Period (hrs): *0.25*	

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*180*	*9*	*18*	*648*	*0*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR	*0*	*204*	*10*	*20*	*736*	*0*
Percent Heavy Vehicles	*0*	–	–	*2*	–	–
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*91*	*0*	*32*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR	*103*	*0*	*36*	*0*	*0*	*0*
Percent Heavy Vehicles	*2*	*0*	*2*	*0*	*0*	*0*
Percent Grade (%)	*-10*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*				
v (vph)		*20*		*139*				
C (m) (vph)		*1356*		*331*				
v/c		*0.01*		*0.42*				
95% queue length		*0.04*		*2.00*				
Control Delay		*7.7*		*23.5*				
LOS		*A*		*C*				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DWM*	Intersection	*Washington/Walnut*
Agency/Co.	*Casey & Godfrey*	Jurisdiction	*Portland*
Date Performed	*07/31/2003*	Analysis Year	*2005 Build*
Analysis Time Period	*AM Peak*		
Project Description			
East/West Street: *Walnut*		North/South Street: *Washington*	
Intersection Orientation: *North-South*		Study Period (hrs): *0.25*	

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*180*	*33*	*18*	*648*	*0*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR	*0*	*204*	*37*	*20*	*736*	*0*
Percent Heavy Vehicles	*0*	--	--	*2*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*98*	*0*	*32*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR	*111*	*0*	*36*	*0*	*0*	*0*
Percent Heavy Vehicles	*4*	*0*	*4*	*0*	*0*	*0*
Percent Grade (%)	*-10*			*0*		
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*				
v (vph)		*20*		*147*				
C (m) (vph)		*1326*		*317*				
v/c		*0.02*		*0.46*				
95% queue length		*0.05*		*2.34*				
Control Delay		*7.8*		*25.8*				
LOS		*A*		*D*				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DWM*	Intersection	*Washington/Walnut*
Agency/Co.	*Casey & Godfrey*	Jurisdiction	*Portland*
Date Performed	*07/31/2003*	Analysis Year	*2003 Existing*
Analysis Time Period	*PM Peak*		
Project Description			
East/West Street: *Walnut*		North/South Street: *Washington*	
Intersection Orientation: *North-South*		Study Period (hrs): *0.25*	

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*325*	*16*	*25*	*304*	*0*
Peak-Hour Factor, PHF	*0.88*	*0.83*	*0.83*	*0.93*	*0.93*	*0.88*
Hourly Flow Rate, HFR	*0*	*391*	*19*	*26*	*326*	*0*
Percent Heavy Vehicles	*0*	--	--	*3*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*46*	*0*	*21*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR	*52*	*0*	*23*	*0*	*0*	*0*
Percent Heavy Vehicles	*3*	*0*	*3*	*0*	*0*	*0*
Percent Grade (%)		*-10*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*				
v (vph)		*26*		*75*				
C (m) (vph)		*1143*		*414*				
v/c		*0.02*		*0.18*				
95% queue length		*0.07*		*0.65*				
Control Delay		*8.2*		*15.6*				
LOS		*A*		*C*				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DWM*	Intersection	*Washington/Walnut*
Agency/Co.	*Casey & Godfrey*	Jurisdiction	*Portland*
Date Performed	*07/31/2003*	Analysis Year	*2005 No-Build*
Analysis Time Period	*PM Peak*		
Project Description			
East/West Street: *Walnut*		North/South Street: *Washington*	
Intersection Orientation: *North-South*		Study Period (hrs): *0.25*	

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*345*	*17*	*27*	*322*	*0*
Peak-Hour Factor, PHF	*0.88*	*0.85*	*0.85*	*0.93*	*0.93*	*0.88*
Hourly Flow Rate, HFR	*0*	*405*	*19*	*29*	*346*	*0*
Percent Heavy Vehicles	*0*	--	--	*3*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*49*	*0*	*22*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR	*55*	*0*	*25*	*0*	*0*	*0*
Percent Heavy Vehicles	*3*	*0*	*3*	*0*	*0*	*0*
Percent Grade (%)		*-10*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*				
v (vph)		*29*		*80*				
C (m) (vph)		*1130*		*395*				
v/c		*0.03*		*0.20*				
95% queue length		*0.08*		*0.75*				
Control Delay		*8.3*		*16.4*				
LOS		*A*		*C*				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*DWM*	Intersection	*Washington/Walnut*
Agency/Co.	*Casey & Godfrey*	Jurisdiction	*Portland*
Date Performed	*07/31/2003*	Analysis Year	*2005 Build*
Analysis Time Period	*PM Peak*		
Project Description			
East/West Street: *Walnut*		North/South Street: *Washington*	
Intersection Orientation: *North-South*		Study Period (hrs): *0.25*	

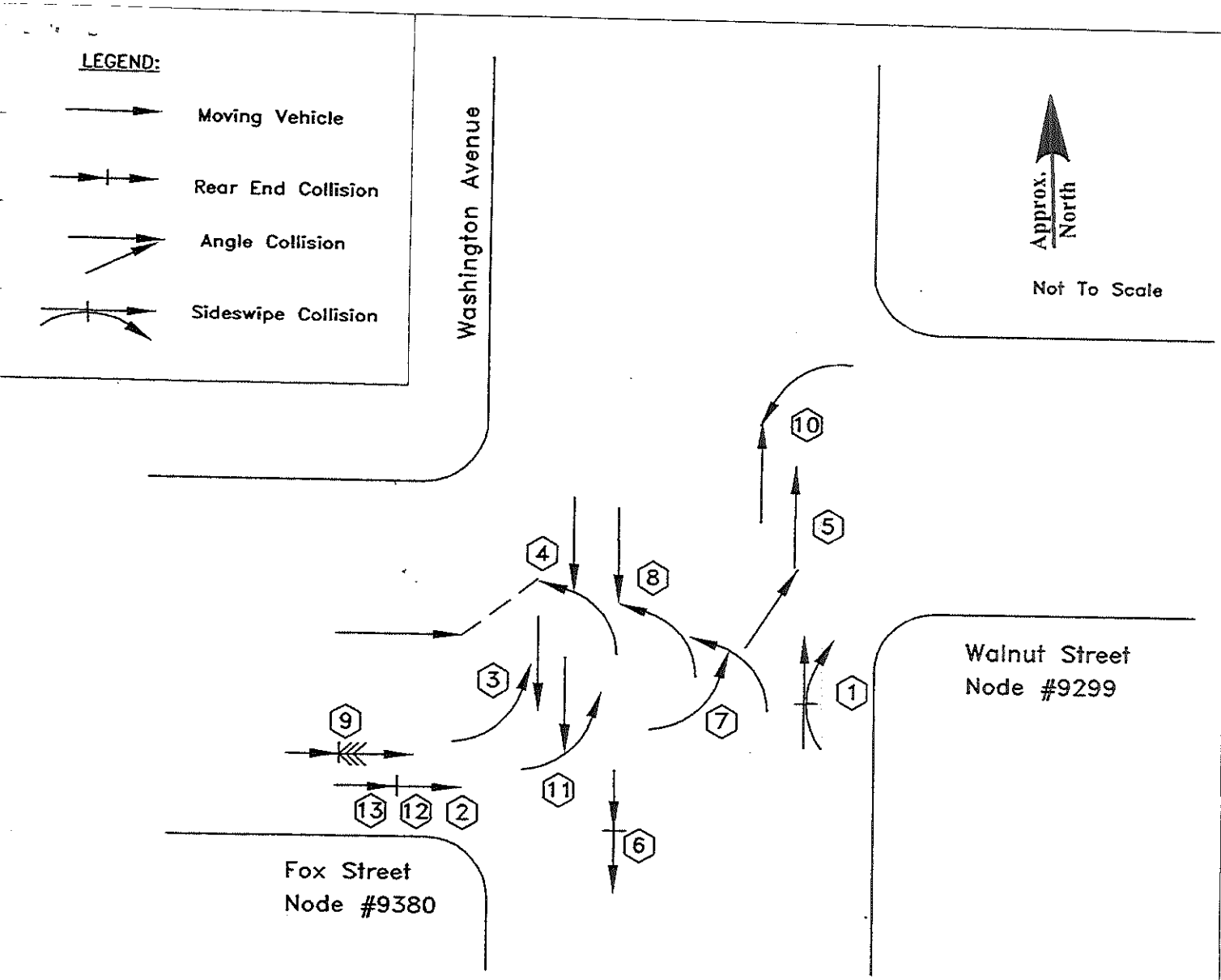
Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*0*	*345*	*33*	*27*	*322*	*0*
Peak-Hour Factor, PHF	*0.88*	*0.85*	*0.85*	*0.93*	*0.93*	*0.88*
Hourly Flow Rate, HFR	*0*	*405*	*38*	*29*	*346*	*0*
Percent Heavy Vehicles	*0*	--	--	*3*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration			*TR*	*LT*		
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*65*	*0*	*22*	*0*	*0*	*0*
Peak-Hour Factor, PHF	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*	*0.88*
Hourly Flow Rate, HFR	*73*	*0*	*25*	*0*	*0*	*0*
Percent Heavy Vehicles	*5*	*0*	*5*	*0*	*0*	*0*
Percent Grade (%)		*-10*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration		*LR*				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*LT*		*LR*				
v (vph)		*29*		*98*				
C (m) (vph)		*1112*		*374*				
v/c		*0.03*		*0.26*				
95% queue length		*0.08*		*1.03*				
Control Delay		*8.3*		*18.0*				
LOS		*A*		*C*				



#	DATE	TIME	CONTRIBUTING FACTOR	MDOT REPORT #
1	01/14/00	13:30	SIDESWIPE/IMPROPER MANEUVER/PULLING OUT FROM PARKING	02142
2	06/17/00	14:45	REAR-END/NEGLIGENCE/ROAD RAGE	18407
3	07/17/00	13:59	ANGLE/FAILURE TO YIELD/INATTENTION	22129
4	01/10/01	17:05	ANGLE/NO HEADLIGHT/FAILURE TO YIELD	001343
5	02/26/01	19:30	ANGLE/DID NOT STOP AT STOP SIGN	007339
6	03/23/01	07:56	REAR-END/NEGLIGENCE/IN TRAFFIC	010555
7	08/09/01	16:30	ANGLE/FAILURE TO YIELD	027433
8	08/12/01	16:49	ANGLE/FAILURE TO YIELD	027773
9	08/17/01	12:30	REAR-END/BACKING INTO	028249
10	09/12/01	07:44	ANGLE/FAILURE TO YIELD	022601
11	10/28/01	14:18	ANGLE/FAILURE TO YIELD	033525
12	01/23/02	15:30	REAR-END/SUN GLARE	004552
13	09/24/02	17:30	REAR-END/NEGLIGENCE/TRAFFIC	021091

Portland, Maine
Collision Diagram - 2000-2002
MDOT Node # 09299 & 09380

Casey & Godfrey
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- ROADWAY DESIGN
- ENVIRONMENTAL ENGINEERING
- TRAFFIC STUDIES AND MANAGEMENT
- PERMITTING
- AIRPORT ENGINEERING
- SITE PLANNING
- CONSTRUCTION ADMINISTRATION

MEMORANDUM

To: **File**

From: **William G. Hoffman, P.E.**

Date: **08/01/2003**

Re: **East End School Project – Basis of Parking Demand:**

The following were considered in assessing parking demand:

1. **Requirements of the City of Portland Ordinance:**

   The ordinance has the following requirements for parking:

   - *"(d) Schools providing instruction for students up to and including those fifteen (15) years of age: One (1) parking space for each room used for purposes of instruction."*
   - *"(g) Auditoriums, theaters, assembly halls, funeral homes: One (1) parking space for each five (5) seats or for each one hundred (100) square feet, or major fraction thereof, of assemblage space if no fixed seats."*
   - *"Major development means and includes:*

     (a) The construction of any building addition(s), cumulatively having either a total floor area of ten thousand (10,000) square feet or more or which is larger than the original structure, within any three-year period; or

     "Requirement:

     - *A Parking Study and Analysis is required when the building is over (>50,000 s.f.)"*

2. **Interviews with School Personnel:**

   Interviews with school personnel indicate that up 85 staff would be involved on a daily basis at the school. It is unlikely that all persons staff would be at the school at a given time. About 60 would be expected.

3. **State of Maine Department of Education Guidelines**

Based upon numerous past projects, the State of Maine Department of Education typically approves 1 space per 4 students at an elementary school. This is intended to provide for daily activities as well as special evening events. This would amount to 113 spaces.

Summary

Based upon providing 50 on site spaces and the 95 spaces that are intended to be provided for North Street and Eastern promenade, a parking supply of 145 spaces will be available. This exceeds that of staff or special events and should leave an adequate reservoir for afternoon parent pickup.

It is recommended that the "school side" of North Street be reserved for short-term visitors and student pickup during the weekday period between 7:00 am and 4:00 pm. If a special event was held during this period, the school would need to coordinate with the Portland Police Department to allow longer parking on this side of the street.