268-A-2 1999-0008

191 Riverside St.

Portland Commons Shopping Ctr.

Waterford Group

Scanned ✓

on Spreadsheet

I. INTRODUCTION

A public hearing has been scheduled to consider a proposal by the Waterford Group for a retail development at the vicinity of 191 Riverside Street(the Keenan Auction Company.) This development is intended to remove the existing structure and build two new structures, a two unit retail building and a resturaurant, and additional parking.

172 notices were sent to area property owners.

II. FINDINGS

Zoning:	B-4	
Land Area:		6.89 acres
Proposed Building Footprint:	Retail	48,850 sq. ft.
	Resturaurant	6,000 sq. ft.
	Total	54,850 sq. ft.
Proposed Parking Spaces:		266
Existing Building Footprint:		19,285 sq. ft.
Existing Impervious Surface %		55%
Proposed Impervious Surface %	68%	
Adjacent Uses:	Retail tire sales and residences to the north at Campbell Road, the Maine Turnpike to the east, Howard Johnson's and Verrillo's restaurant to the south.	

An ATM kiosk is proposed as a drive-up feature in the southwest corner of the property.

Building Elevations

Since the last workshop, the applicant has incorporated an architectural feature at the sides and rear of the building facing the Maine Turnpike. The alteration consists of a horizontal ribbon band of darker color and accent medallions executed in concrete block. Additional buffering has been added, as well as a stand alone sign feature at the Turnpike. Sign elevations have not been provided for review.

Riverside Court

Concerns have been raised over the status of Riverside Court as a public right of way. Public Work and Corporation Council have reviewed the status of Riverside Court and concluded that the section of right of way adjacent the proposed development is a City right of way. The City did abandon a rear portion of Riverside Court, but retained the section adjacent to Riverside Street and the Keenan Auction property. See Attachment D.

Portland Commons

Public Hearing

Quincy : Buffer ✓
Cellar Drains ✓
Traffic ~~at~~ at Campbell St
Tire Warehouse tree buffer ~~was~~ cut
Uses Campbell St.
What guarantee ~~that~~ doing improvements

Verrillo : Riverside Court - he has been maintaining
doesn't want Buffer

Barnard : Campbell
more Buffer

Quincy, Mayor : siting distance on Riverside
where tape ends
Buffer, light cutoff, noise
clean up site

Buffer
Traffic
Tire Warehouse - Review site plan

conditions

8. Removal of Verrillo Buffer
9. ROW agreements prior to COO

5-0 Rodrigues : Nelson absent

PB MTG 4/13

Waterfront Group
99 Boat - Woodson 130 slips + 30 stools
Office Use
3rd Unit - No tenant

24 ft to top of BLDG, 34± to parapet

Sep utility for each BLDG

Sidewalk along Riverside St.
~~Traffic~~
Signal ~~at~~ ~~Intersect~~
add turn lanes - both wants all to Way ~~to~~ Exits

Ped access - to Str - Store
~~Storm water~~ !
Treating Riparian
* Note on Plan for Drainage from Campbell St
* ~~Storm~~ water is being evaluated

Landscaping
Streams - Need water - developed
Some trees, plant Remarks,

Lighting - Cutoff, except on Port,

D. Kvamme - Buffer for Vasquez
add to Vasquez (looks like
need watershed map
Traffic - needs to be address.
- Vacated street - ?

Justine Carson -
Tone Warehouse, - access through site
S. Roe - don't block so
Parking validated?
Reduce if possible
Handwriting 3 intersections, -
Complex, need coordination of
intersections

K. Cole -
Traffic is key

John Carroll -
Parking & Restaurant
Large Parking - bond for Pedestrian
S. Doe - need Parking for Trucks
will look at it.

Recap - Watershed maps
Reduce Parking to ↑ Buffer
Traffic, Listen to Arch,
Overpass Ct,
Rear Elevation w/ Stairways + Buffer

Traffic Standard

submit all items which are outstanding within one hundred twenty (120) days of the date of the notice from the planning authority requiring additional information, a revision of the plan, or other submissions. If the applicant fails to submit any item specified within one hundred twenty (120) days of the date of said notice from the planning authority, the application shall expire and shall be deemed null and void. Nothing in this section shall prevent the planning board or planning authority from requiring additional information as otherwise permitted or required by the terms of the article.

(n) *Post-approval submissions.* Following site plan approval and prior to issuance of any building permit, the developer shall submit copies of the contract plans and specifications, in reproducible form, showing the design of all infrastructure improvements, including without limitation all streets, sewers, drainage structures and landscaping, for the review and approval of the public works authority for compliance with its technical standards. Thereafter, all departures from such plans shall be approved by the public works authority as field changes pursuant to subsection (l) above. Nothing herein shall diminish the obligation of the developer to supply plans or specifications as provided in this article.

(Ord. No. 355-89, 7-17-89; Ord. No. 233-90, 2-21-90; Ord. No. 286-90, 4-2-90; Ord. No. 122-91, §§ 2, 3, 9-16-91; Ord. No. 15-92, § 32, 6-15-92; Ord. No. 176-93, §§ 1—3, 1-4-93; Ord. No. 262-96, § 3, 5-20-96; Ord. No. 166-97, § 1, 1-6-97; Ord. No. 126-98, § 2, 10-19-98; Ord. No. 158-98, § 1, 11-16-98)

Sec. 14-526. Standards.

(a) *Requirements for approval.* The planning board or planning authority shall not approve a site plan unless it meets the following criteria:

(1) The provisions for vehicular loading and unloading and parking and for vehicular and pedestrian circulation on the site and onto adjacent public streets and ways; and the incremental volume of traffic will not create or aggravate any significant hazard to safety at or to and including intersections in any direction where traffic could be expected to be impacted; and will not cause traffic congestion on any street which reduces the level of service below Level "D" as described in the 1985 Highway Capacity Manual published by the Transportation Research Board of the National Research Council, a copy of which manual is on file with the pubic works authority, or substantially increase congestion on any street which is already at a level of service below Level "D";

(2) a. Where construction is proposed of new structures having a total floor area in excess of ten thousand (10,000) square feet but less than fifty thousand (50,000) square feet, or building additions having a total floor area in excess of five thousand (5,000) square feet, and the provisions for off-street parking under article III (zoning) do not require off-street parking or are determined to be insufficient, the site plan shall provide sufficient parking to satisfy the reasonably foreseeable demand for parking which will be generated by the proposed development;

b. Where construction is proposed of new structures having a total floor area in excess of fifty thousand (50,000) square feet, the planning board shall establish

SEBAGO TECHNICS, INC.
12 Westbrook Common
P.O. Box 1339
WESTBROOK, ME 04098-1339

Phone (207) 856-0277 FAX (207) 856-2206

LETTER OF TRANSMITTAL

DATE	JOB NO.
4/28/99	97622

ATTENTION William Needleman

RE: Portland Commons

TO Planning & Urban Development
City of Portland
389 Congress St.
Portland, ME 04101

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☒ Report

COPIES	DATE	NO.	DESCRIPTION
1	4/14/99		Traffic Report

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints

☒ For review and comment ☐ _____

☐ FOR BIDS DUE _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS Bill - please find enclosed the Traffic Report for Portland Commons - additional site plan responses & engineering responses will be coming in on Monday or Tuesday of next week -

COPY TO John O'Brien

SIGNED: Steve Dee

If enclosures are not as noted, kindly notify us at once.

JOHN L. MURPHY, P.E.

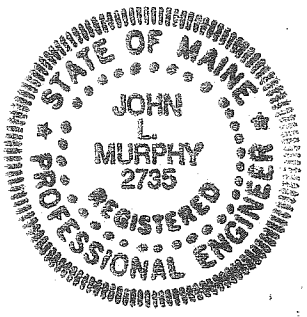
Civil Engineer
Traffic Engineer

RR1, BOX 6300
WEST BALDWIN, MAINE 04091-9745
207-625-8222

TRAFFIC IMPACT

PORTLAND COMMONS

RIVERSIDE STREET, PORTLAND



April 14, 1999

John L. Murphy

JOHN L. MURPHY, P.E.

Civil Engineer
Traffic Engineer

RR1, BOX 6300
WEST BALDWIN, MAINE 04091-9745
207-625-8222

TRAFFIC IMPACT

PORTLAND COMMONS

RIVERSIDE STREET, PORTLAND

General

This project will result in approximately 53,000 square feet of buildings including a restaurant, an office supply store, an ATM machine, plus other retail space of unknown usage. A scoping meeting was held with MDOT in March of 1999 regarding trip generation and distribution and study area boundaries.

Since the scoping meeting, analysis has been completed which shows that existing traffic volumes require highway widening improvements at Exit 8 and on Riverside Street north of Exit 8 to operate at an acceptable level of service. Minor changes in signal display and phasing are also necessary at Riverside Street and Warren Avenue. These latter changes could be implemented immediately to result in more efficient signal operation. The northerly quadrant of the Riverside Street and Warren Avenue intersection is currently scheduled for major reconstruction by MDOT.

Trip Generation and Distribution

Trip generation is based upon the 6th edition of the report "Trip Generation" as published by the Institute of Transportation Engineers in 1997. Uses 843, 815 and 832 (Auto Parts Store, Discount Store and Restaurant) were assumed prior to the scoping meeting with MDOT. An ATM machine was added to the project, resulting in 63 estimated additional trips per hour based upon use 912, Drive In Bank. Traffic was distributed in the study area of Riverside Street between Brighton Avenue and Warren Avenue based upon existing and estimated future traffic turning movements.

Since the study area has numerous retail and restaurant facilities, 50% of the total traffic was assumed to already be on Riverside Street. This is considered pass-by traffic that only impacts the entrance. This 50% estimate was acceptable to MDOT based upon experience in the Greater Portland Area and recent supplemental publications to the report "Trip Generation".

The trip generation, distribution and breakdown of primary, total and pass-by traffic is presented in the attached illustration "Project Impact on Weekday PM Peak Hour".

Design Year Base Traffic

Although the project is expected to be completed in 2000, the design year traffic is 2002. This traffic was estimated by Maine Turnpike Authority consultants for two study area intersections: Brighton Avenue at Riverside Street and Riverside Street at Exit 8. The 2002 volumes include the assumption that a new interchange with the Turnpike is constructed along with a connection from Rand Road in Portland to the Bypass Road in Westbrook.

The estimated volumes were further adjusted and then balanced over the study area as part of this impact study. This is presented as the balanced no build base volumes for 2002. These volumes are best described as being lower than currently exist on Larrabee Road, the Exit 8 approach to Riverside Street and on Brighton Avenue. The estimated 2002 volumes on Riverside Street between Warren Avenue and Exit 8 are higher than existing 1999 volumes.

Design Volumes

Since the Turnpike Authority volumes were only available for a 2002 weekday PM peak hour, this became the only design hour for the project. The project impact volumes were added to the 2002 no build base to result in the design hour volumes. These volumes are included in a sketch with this report and are the basis for all study area analysis.

Analysis

The NETSIM program in the CORSIM computer model was used for study area analysis. Highway capacity analysis was also completed at each intersection. The CORSIM model is the main basis for conclusions, as it is a system model that produces more extensive measures of effectiveness (MOEs), including but not limited to stop time delay and queue length. Stop time delay results in delay figures that compare with highway capacity delay as defined in the Highway Capacity Manual. Queue length provides numbers of vehicles stopped in a lane for design of storage lanes.

The CORSIM model outputs are included with this report on a link basis and on a per lane basis. The results are based upon simulation of a full hour of study area traffic flow. Level of service is best defined by stop delay in the computer print out as mentioned previously. Thus, the following defines level of service:

Level of service A	0 to 5 second delay
Level of service B	5 to 15 second delay
Level of service C	15 to 25 second delay
Level of service D	25 to 40 second delay
Level of service E	40 to 60 second delay
Level of service F	greater than 60 second delay

The storage length is defined by average storage per lane. This provides a basis for design of lanes at intersections. It also shows that, in the case of the 2002 design hour traffic volumes, the southbound curb lane on the Riverside Street approach to Exit 8 will often be blocked from use by peak hour traffic. Essentially, it will remain as a right turn lane providing minor relief to peak volume flows (assumed to be a right turn only lane in analysis).

The average storage numbers from the CORSIM output can be factored by 1.5 for design storage length of new turn lanes. This is a factor of safety. The maximum storage in the CORSIM output can not be used for design as it indicates a one time situation during the entire design hour simulation. Highway capacity analysis does not result in queue length calculations.

Required Improvements in Study Area

Review of the model output and highway capacity calculations shows that with the Maine Turnpike Authority year 2002 volumes, level of service D or better conditions will exist at all intersections with project impact if the following improvements are implemented:

1. Modify the traffic island in the southeasterly corner of the Exit 8/Riverside Street intersection to insure proper alignment for through traffic from the curb lane on Larrabee Road eastbound approach to Exit 8 toll booths.

2. Change the phasing and lane striping on both the Exit 8 and the Larrabee Road approach to Riverside Street to permit dual left turns and split phasing for these two approaches. Thus, Phase 3 (Exit 8) will be striped for a left lane, left plus through lane, through lane and right turn lane, and Phase 4 (Larrabee Road) will be striped for a left lane, left plus through lane and right plus through lane. Phases 3 and 4 will become sequential rather than the existing concurrent dual ring phasing for these two approaches.

3. The Riverside Street/Warren Avenue intersection phasing should be changed from the existing split leg or sequential operation on Warren Avenue to dual ring operation. For best operation, all approaches should use five section heads for left turn lanes.

4. The entrance to the Portland Commons project should have 80 foot long left turn lanes with 100 foot tapers.

5. The left turn lanes on Riverside Street at Portland Commons/Marks Showplace should also be controlled with five section signal heads.

6. Lane designation signs should be installed on the Larrabee Road approach to Riverside Street on a separate overhead structure using wood poles and span wires for support.

7. Overhead lane designation signs should also be installed on the traffic signal span wires facing the Exit 8 approach to Riverside Street.

8. The five Riverside Street signalized intersections should be interconnected with the Brighton Avenue controller using hard wire meeting City of Portland specifications.

9. To insure year round function of the curb lane on Larrabee Road, the existing vertical granite curb could be removed to prevent winter ice build-up.

Conclusions

1. Implementation of recommendations 1 through 9 for study area improvements will result in level of service D or better operation of all five signalized intersections in the study area assuming 2002 traffic volumes.

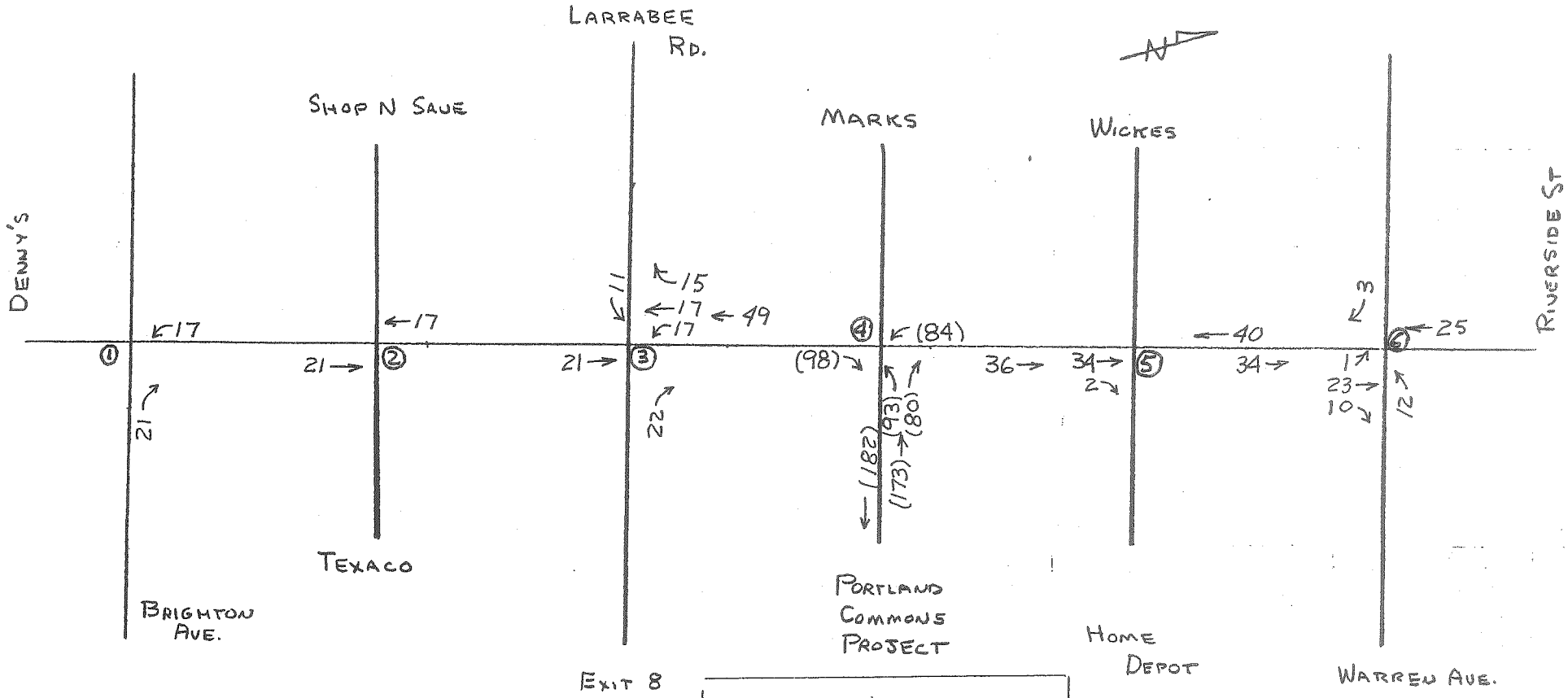
2. Study area volume decreases and signalization changes in 2002 should improve safety and existing accident history.

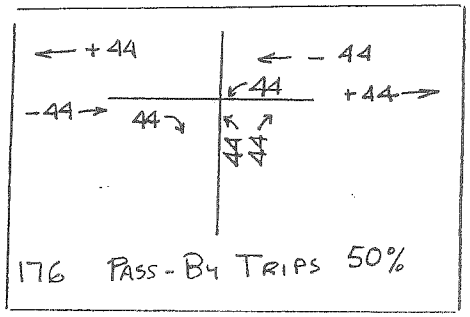
3. The conclusions and recommendations in this traffic study are based upon 2002 volumes projected as a result of construction of the proposed new Turnpike interchange and the related connection of Rand Road and the Westbrook Bypass.

ATTACHMENTS

A. TRIP INFORMATION

1. Project Impact on Weekday PM Peak Hour
2. No Build Volumes PM Peak Hour Base
3. 2002 PM Peak Hour
4. No Build 2002 Base
5. Build Portland Commons 2002 PM Peak Hour



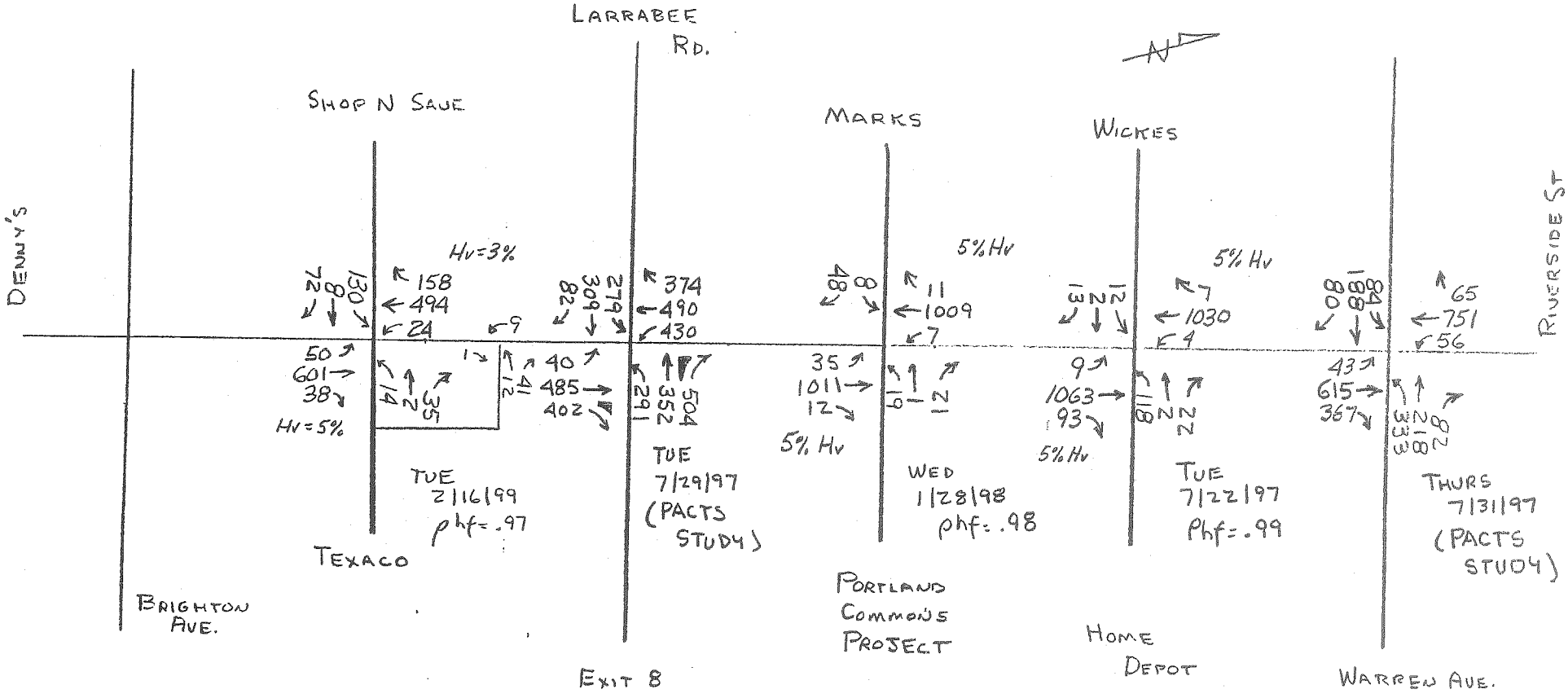


PROJECT IMPACT ON WEEKDAY PM PEAK HOUR (2002 MTA VOLUMES)

XX = PRIMARY (NEW) TRIPS

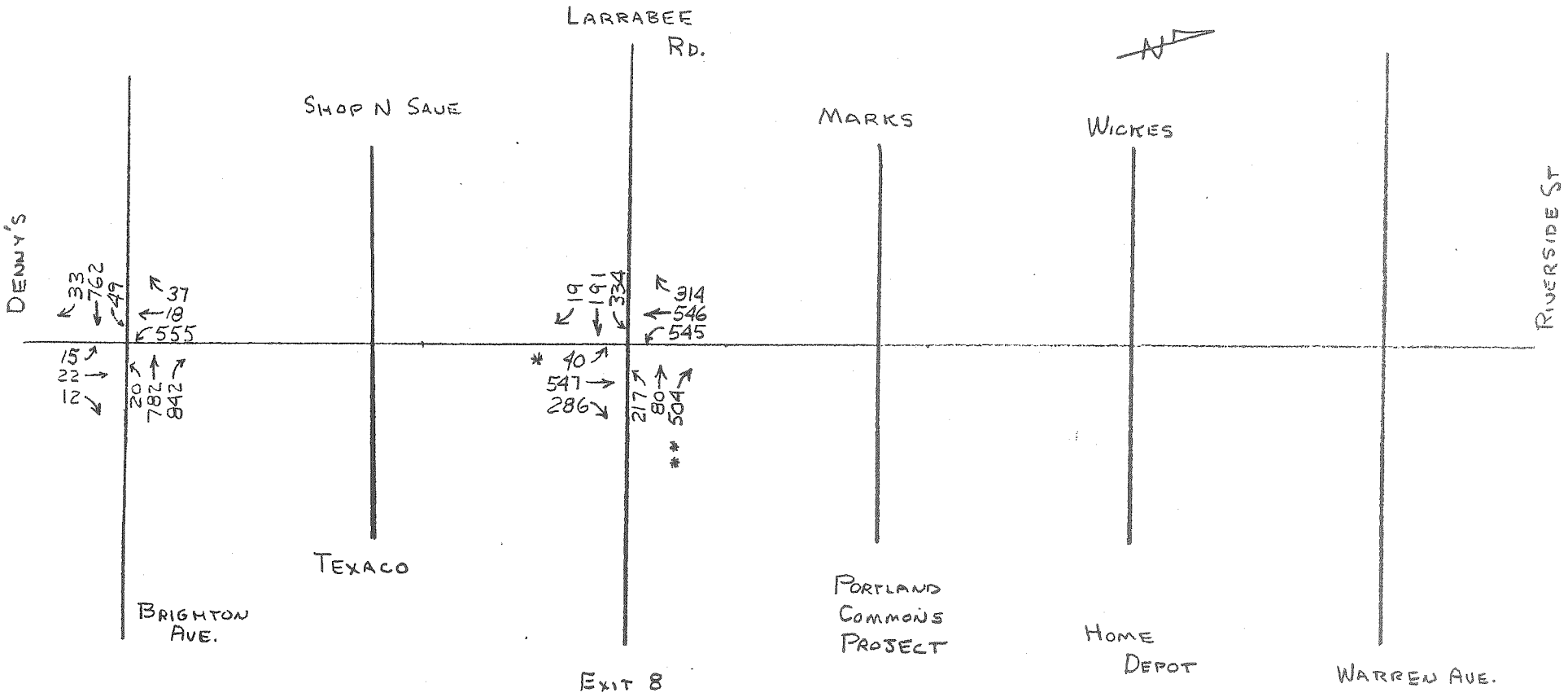
(XX) = TOTAL TRIPS

J Murphy
4/13/99



NO BUILD VOLUMES

PM PEAK HOUR BASE



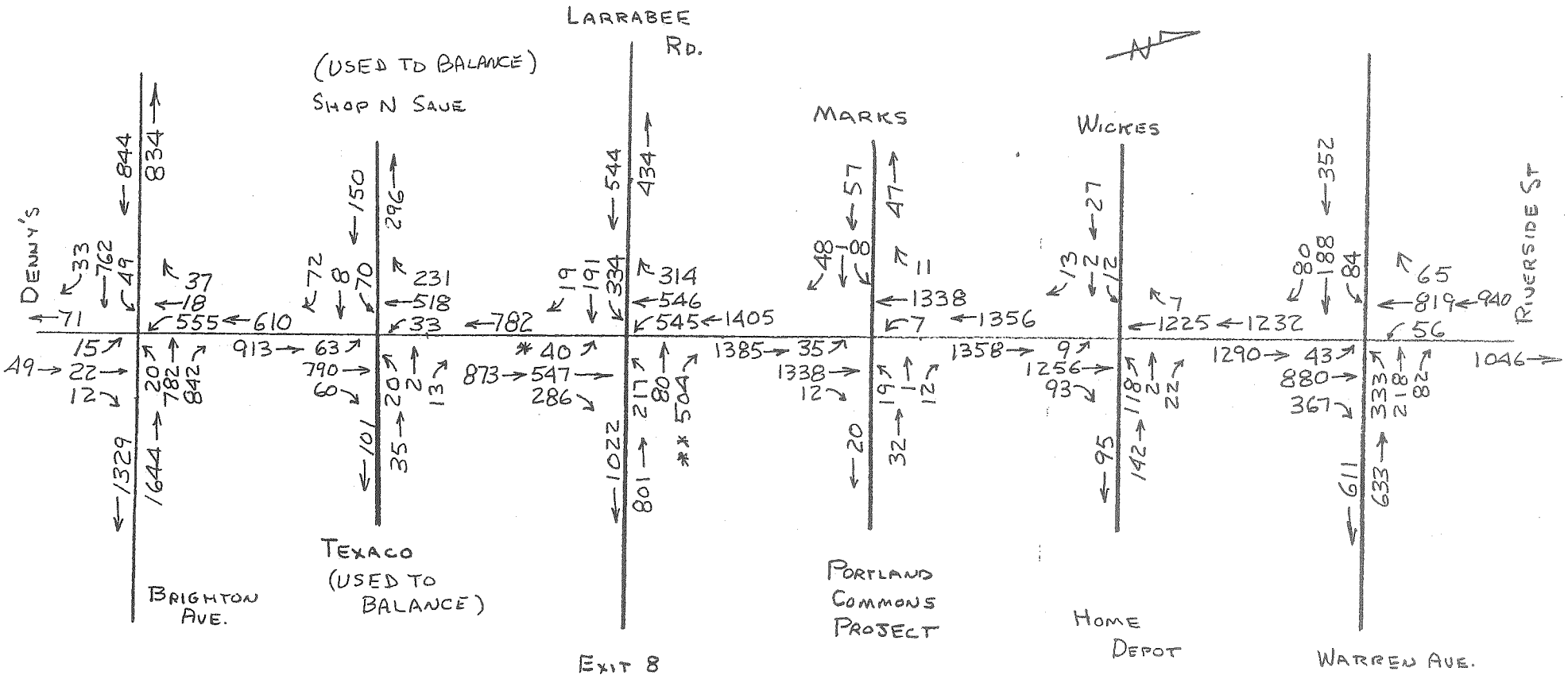
* ADJUSTED FROM 289

** ADJUSTED FROM 280

2002 PM PEAK HOUR

WILBUR SMITH / KEVIN HOOPER

ADJUSTED BY J MURPHY AND KEVIN HOOPER

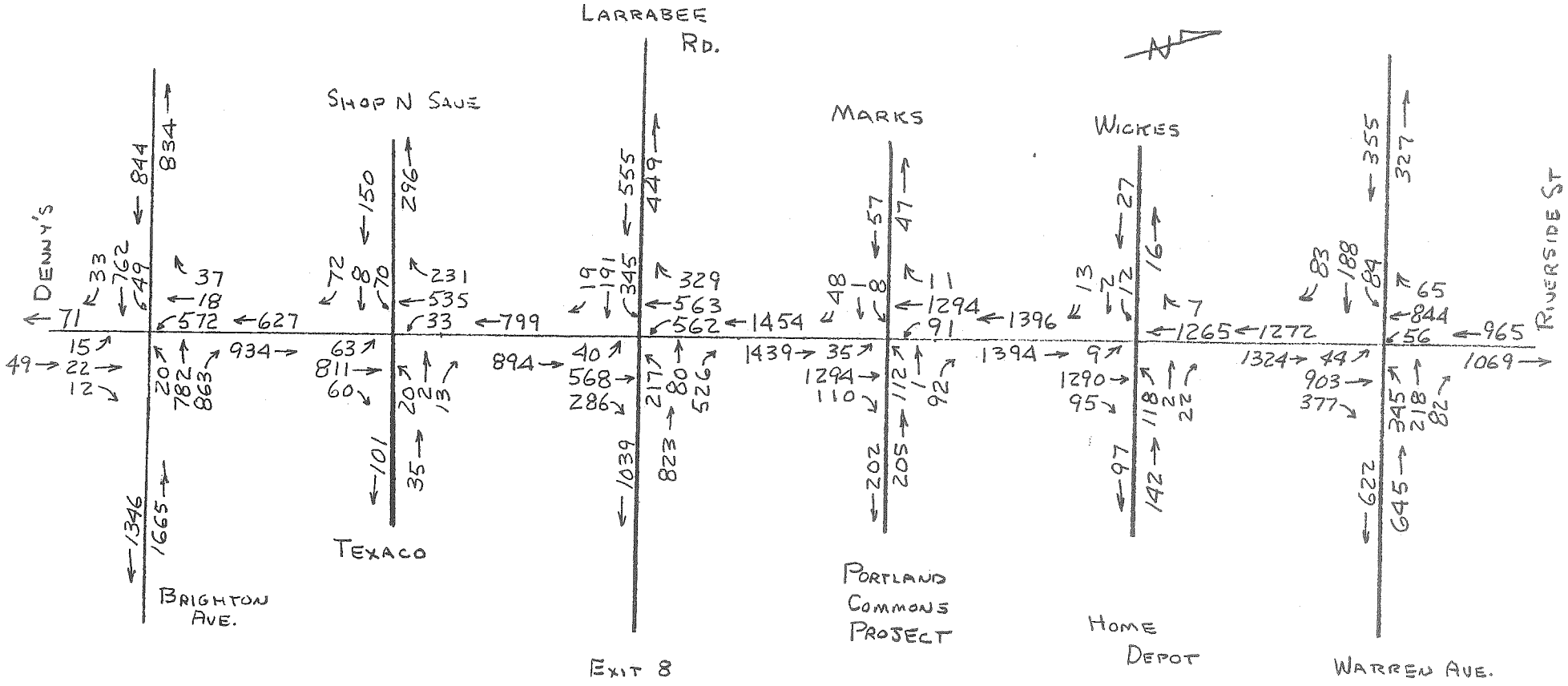


* ADJUSTED FROM 289

* * ADJUSTED FROM 280

NO BUILD 2002 BASE
(BALANCED MTA EST)
PM PEAK HOUR WEEKDAY

J. Murphy
4/13/99



BUILD PORTLAND COMMONS
2002 PM PEAK HOUR

J. Murphy
4/13/99

B. HIGHWAY CAPACITY ANALYSIS PM PEAK HOUR BUILD 2002 VOLUMES

1. Brighton and Riverside
2. Riverside and Exit 8
3. Riverside and Portland Commons
4. Riverside and Home Depot
5. Riverside and Warren

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 04-13-1999

John L. Murphy P. E. Traffic Engineer

Streets: (N-S) Riverside St (E-W) Brighton Ave

Analyst: J.Murphy File Name: HOME.HC9

Area Type: Other 4-13-99 PM

Comment: Build Portland Commons 2002 MTA base volumes

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	> 1	1	0	> 1	< 0	1	2	< 0	1	2	1
Volumes	15	22	12	572	18	37	49	762	33	20	782	863
PHF or PK15	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Lane W (ft)	12.0	12.0	12.0		12.0		12.0	12.0		12.0	12.0	12.0
Grade		0			0			0			0	
% Heavy Veh	2	2	2	4	2	2	5	4	2	2	4	4
Parking	N	N		N	N		N	N		N	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type	3	3	3		3		5	5		5	5	5
RTOR Vols			0			0			0			100
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share	47											
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
NB Left	*				EB Left	*			
Thru	*				Thru		*		
Right	*				Right		*		
Peds					Peds				
SB Left		*			WB Left	*			
Thru		*			Thru		*		
Right		*			Right	*	*		
Peds					Peds				
EB Right					NB Right				
WB Right	*	*			SB Right				
Green	3.0A	40.0A			Green	5.0A	22.0P		
Yellow/AR	5.0	5.0			Yellow/AR	5.0	5.0		

Cycle Length: 90 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Group:	Adj Sat Flow Cap	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
	Mvmts							
NB	L	98	1770	0.081	0.056	30.7	D	31.2	D
	LT	102	1840	0.303	0.056	31.6	D		
	R	88	1583	0.148	0.056	30.8	D		
SB	LTR	727	1559	0.907	0.467	27.7	D	27.7	D
EB	L	134	1719	0.389	0.078	28.8	D	23.6	C
	TR	968	3631	0.908	0.267	23.3	C		
WB	L	138	1770	0.153	0.078	27.8	D	11.7	B
	T	974	3654	0.887	0.267	22.1	C		
	R	1501	1553	0.535	0.967	0.2	A		

Intersection Delay = 18.5 sec/veh Intersection LOS = C

Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.822

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 04-13-1999

John L. Murphy P. E. Traffic Engineer

Streets: (N-S) RIVERSIDE ST. (E-W) EXIT 8

Analyst: JLM File Name: EXIT8E.HC9

Area Type: Other 4-10-99 PM PK.

Comment: 2002 MTA PM Peak Hour Volumes

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	1	1	1	> 2	< 0	1	> 2	1
Volumes	40	568	286	562	563	329	345	191	19	217	80	526
PHF or PK15	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Lane W (ft)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0
Grade		0			0			0			0	
% Heavy Veh	2	4	5	5	5	2	2	2	2	5	3	5
Parking	N	N		N	N		N	N		N	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type	3	3	3	3	3	3	3	3		3	3	3
RTOR Vols			100			0			0			284
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share							48			55		
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
NB Left	*				EB Left	*			
Thru			*		Thru	*			
Right		*	*		Right	*			
Peds					Peds				
SB Left	*	*			WB Left		*		
Thru		*	*		Thru		*		
Right		*	*		Right		*		
Peds					Peds				
EB Right					NB Right		*		
WB Right	*	*			SB Right				
Green	7.0A	23.0A	18.0A		Green	16.0A	11.0A		
Yellow/AR	5.0	5.0	5.0		Yellow/AR	5.0	5.0		

Cycle Length: 100 secs Phase combination order: #1 #2 #3 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
NB	L	159	1770	0.264	0.090	27.6	D	25.9	D
	T	731	3654	0.859	0.200	32.1	D		
	R	938	1538	0.209	0.610	5.6	B		
SB	L	636	1719	0.931	0.370	34.3	D	21.5	C
	T	869	1810	0.683	0.480	14.5	B		
	R	760	1583	0.455	0.480	11.5	B		
EB	L	319	1770	0.593	0.180	26.5	D	26.1	D
	LTR	651	3617	0.637	0.180	26.0	D		
WB	L	223	1719	0.461	0.130	27.1	D	19.3	C
	LT	466	3582	0.470	0.130	26.6	D		
	R	769	1538	0.332	0.500	9.8	B		

Intersection Delay = 23.0 sec/veh Intersection LOS = C

Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.786

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 04-13-1999

John L. Murphy P. E. Traffic Engineer

Streets: (N-S) RIVERSIDE ST (E-W) SITE

Analyst: JLM File Name: MARK.HC9

Area Type: Other 3-2-98 PM

Comment: BUILD PROJECT 2002 MTA estimated base

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	< 0	1	2	< 0	1	1	< 0	1	1	< 0
Volumes	35	1294	110	91	1294	11	8	1	48	112	1	92
PHF or PK15	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Lane W (ft)	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh	1	5	1	1	5	1	1	0	1	1	0	1
Parking	N	N		N	N		N	N		N	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type	3	3		3	3		3	3		3	3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
NB Left	*	*			EB Left	*			
Thru		*			Thru	*			
Right		*			Right	*			
Peds					Peds				
SB Left	*	*	*		WB Left	*			
Thru		*	*		Thru	*			
Right		*	*		Right	*			
Peds					Peds				
EB Right					NB Right				
WB Right					SB Right				
Green	4.0A	60.0A	5.0A		Green	12.0A			
Yellow/AR	5.0	5.0	4.0		Yellow/AR	5.0			

Cycle Length: 100 secs Phase combination order: #1 #2 #3 #5

Intersection Performance Summary

	Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
NB	L	212	1787	0.175	0.710	4.3	A	8.8	B
	TR	2217	3576	0.700	0.620	8.9	B		
SB	L	405	1787	0.237	0.800	11.7	B	5.2	B
	TR	2566	3614	0.562	0.710	4.7	A		
EB	L	160	1142	0.050	0.140	24.1	C	24.7	C
	TR	225	1604	0.232	0.140	24.8	C		
WB	L	212	1511	0.558	0.140	28.4	D	27.4	D
	TR	224	1602	0.437	0.140	26.3	D		

Intersection Delay = 8.6 sec/veh Intersection LOS = B

Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 0.750

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 04-13-1999

John L. Murphy P. E. Traffic Engineer

Streets: (N-S) RIVERSIDE ST (E-W) HOME DEPOT

Analyst: JLM File Name: HOME.HC9

Area Type: Other 3-2-98 PM

Comment: BUILD PROJECT

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	< 0	0	2	< 0	0	> 1	< 0	1	1	< 0
Volumes		1290	95		1265	7	12	2	13	118	2	22
PHF or PK15		0.95	0.95		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Lane W (ft)		12.0			12.0			12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh		5	0		5	0	0	0	0	0	0	0
Parking	N	N		N	N		N	N		N	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type		3			3			3		3	3	
RTOR Vols			0			0			0			0
Lost Time		3.00	3.00		3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
NB Left	*				EB Left		*		
Thru	*				Thru		*		
Right	*				Right		*		
Peds					Peds				
SB Left	*				WB Left	*			
Thru	*				Thru	*			
Right	*				Right	*			
Peds					Peds				
EB Right					NB Right				
WB Right					SB Right				
Green	45.0A				Green	10.0A	3.0A		
Yellow/AR	4.0				Yellow/AR	4.0	4.0		

Cycle Length: 70 secs Phase combination order: #1 #5 #6

Intersection Performance Summary

	Lane Group: Mvmts	Adj Sat Flow Cap	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
NB	TR	2354 3582	0.650	0.657	5.1	B	5.1	B
SB	TR	2376 3616	0.592	0.657	4.6	A	4.6	A
EB	LTR	89 1551	0.327	0.057	21.3	C	21.3	C
WB	L	284 1805	0.437	0.157	18.0	C	17.7	C
	TR	257 1638	0.097	0.157	16.3	C		

Intersection Delay = 5.6 sec/veh Intersection LOS = B

Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.591

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 04-13-1999

John L. Murphy P. E. Traffic Engineer

Streets: (N-S) RIVERSIDE ST (E-W) WARREN AVE

Analyst: JLM File Name: RWARN.HC9

Area Type: Other 2-23-99 PM

Comment: MTA Estimated 2002 + Build Portland Commons

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	2	< 0	1	1	< 0	1	1	< 0
Volumes	44	903	377	56	844	65	84	188	83	345	218	82
PHF or PK15	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Lane W (ft)	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh	5	5	4	4	5	5	4	5	5	5	5	4
Parking	N		N	N		N	N		N	N		N
Bus Stops			0			0			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type	3	3	3	3	3		3	3		3	3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share				0								
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
NB Left	*	*			EB Left	*		*	
Thru		*			Thru			*	
Right		*			Right			*	
Peds					Peds				
SB Left	*	*			WB Left	*	*	*	
Thru		*			Thru		*	*	
Right		*			Right		*	*	
Peds					Peds				
EB Right					NB Right	*			
WB Right					SB Right				
Green	4.0A	48.0A			Green	5.0A	12.0A	22.0A	
Yellow/AR	5.0	5.0			Yellow/AR	5.0	5.0	5.0	

Cycle Length: 116 secs Phase combination order: #1 #2 #5 #6 #7

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
NB	L	152	1719	0.303	0.509	11.8	B	29.0	D
	T	1560	3619	0.976	0.431	33.9	D		
	R	803	1553	0.494	0.517	12.1	B		
SB	L	153	1736	0.386	0.509	16.9	C	17.5	C
	TR	1543	3580	0.651	0.431	17.6	C		
EB	L	264	1736	0.333	0.293	21.5	C	32.9	D
	TR	357	1727	0.798	0.207	36.4	D		
WB	L	418	1719	0.868	0.440	31.9	D	26.2	D
	TR	613	1735	0.514	0.353	19.8	C		

Intersection Delay = 25.9 sec/veh Intersection LOS = D

Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.922

C. CORSIM MODEL OUTPUT

1. Network Map (link/node)

2. Delay and Queue Tables by Link and Movement

TIME INTERVAL NUMBER	SUBNETWORK TYPE	PRIOR CONTENT (VEHICLES)	CURRENT CONTENT (VEHICLES)	PERCENT DIFFERENCE	
1	NETSIM	0	73	10000	
2	NETSIM	73	115	57	
3	NETSIM	115	142	23	
4	NETSIM	142	153	7	
5	NETSIM	153	153	0	EQUILIBRIUM ATTAINED

ALL EXISTING SUBNETWORKS REACHED EQUILIBRIUM

1 RIVERA.OUT
4/14/99
3600 Sec
1 RUN

CUMULATIVE NETSIM STATISTICS AT TIME 17: 0: 0

ELAPSED TIME IS 1: 0: 0 (3600 SECONDS), TIME PERIOD 1 ELAPSED TIME IS 3600 SECONDS

LINK	VEHICLE MILES	VEHICLE TRIPS	VEHICLE MINUTES MOVE TIME	VEHICLE MINUTES DELAY TIME	VEHICLE MINUTES TOTAL TIME	RATIO MOVE/ TOTAL	MINUTES/MILE TOTAL TIME	MINUTES/MILE DELAY TIME	SECONDS / VEHICLE TOTAL TIME	SECONDS / VEHICLE DELAY TIME	SECONDS / VEHICLE QUEUE* TIME	SECONDS / VEHICLE STOP* TIME	AVERAGE VALUES STOPS (%)	AVERAGE VALUES VOLUME VPH	AVERAGE VALUES SPEED MPH
(1, 51)	1.78	70	3.6	1.2	4.7	.75	2.66	.66	4.1	1.0	.2	.0	0	70	22.5
(51, 1)	1.39	49	2.8	21.5	24.3	.11	17.43	15.43	29.7	26.3	25.0	24.8	91	49	3.4
(1, 41)	61.97	819	123.9	23.0	146.9	.84	2.37	.37	10.8	1.7	.0	.0	0	819	25.3
(41, 1)	63.64	840	127.3	207.1	334.4	.38	5.26	3.26	23.9	14.8	11.8	11.3	54	840	11.4
(1, 31)	100.73	1330	201.5	31.6	233.1	.86	2.31	.31	10.5	1.4	.0	.0	0	1330	25.9
(31, 1)	125.98	1663	252.0	302.2	554.2	.45	4.40	2.40	20.0	10.9	7.5	6.7	60	1663	13.6
(1, 2)	108.81	953	217.6	32.9	250.6	.87	2.30	.30	15.8	2.1	.5	.2	3	953	26.1
(2, 1)	75.19	627	150.4	281.4	431.8	.35	5.74	3.74	41.3	26.9	21.2	20.1	81	627	10.4
(32, 2)	1.29	34	2.6	4.8	7.4	.35	5.73	3.73	13.0	8.5	7.5	7.2	100	34	10.5
(2, 32)	3.07	85	6.1	1.5	7.6	.81	2.48	.48	5.4	1.0	.0	.0	0	85	24.2
(42, 2)	11.36	150	22.7	41.6	64.3	.35	5.66	3.66	25.7	16.6	14.7	14.6	100	150	10.6
(2, 42)	20.77	282	41.5	6.6	48.2	.86	2.32	.32	10.2	1.4	.0	.0	0	282	25.9
(2, 3)	134.85	913	269.7	549.0	818.7	.33	6.07	4.07	53.8	36.1	30.3	29.2	80	913	9.9
(3, 2)	112.41	762	224.8	39.1	263.9	.85	2.35	.35	20.8	3.1	.3	.3	4	762	25.6
(3, 43)	29.44	422	58.9	9.3	68.2	.86	2.32	.32	9.7	1.3	.1	.0	0	422	25.9
(43, 3)	42.73	564	85.5	455.6	541.1	.16	12.66	10.66	57.6	48.5	42.4	41.3	86	564	4.7
(3, 33)	75.31	1025	150.6	20.4	171.0	.88	2.27	.27	10.0	1.2	.1	.0	0	1025	26.4
(33, 3)	62.35	823	124.7	348.1	472.8	.26	7.58	5.58	34.5	25.4	21.8	21.3	64	823	7.9
(3, 4)	252.11	1473	504.2	279.7	784.0	.64	3.11	1.11	31.9	11.4	4.3	3.6	35	1473	19.3
(4, 44)	1.54	42	3.1	.9	4.0	.78	2.56	.56	5.6	1.2	.0	.0	0	42	23.4
(44, 4)	2.16	57	4.3	7.5	11.8	.37	5.46	3.46	12.4	7.9	6.6	6.2	71	57	11.0
(4, 34)	7.34	207	14.7	2.5	17.2	.85	2.35	.35	5.0	.7	.1	.0	0	207	25.6
(34, 4)	7.73	204	15.5	74.3	89.8	.17	11.62	9.62	26.4	21.9	19.5	18.9	86	204	5.2
(4, 5)	179.34	1426	358.7	192.3	551.0	.65	3.07	1.07	23.2	8.1	3.0	2.5	24	1426	19.5
(5, 4)	170.62	1355	341.2	170.0	511.3	.67	3.00	1.00	22.6	7.5	3.2	2.7	27	1355	20.0
(5, 35)	6.09	117	12.2	2.1	14.3	.85	2.35	.35	7.3	1.1	.1	.0	0	117	25.6
(35, 5)	8.01	141	16.0	63.2	79.2	.20	9.89	7.89	33.7	26.9	24.0	23.6	85	141	6.1
(5, 6)	124.29	1313	248.6	572.4	821.0	.30	6.61	4.61	37.5	26.2	18.1	16.8	66	1313	9.1
(6, 5)	114.28	1209	228.6	139.7	368.3	.62	3.22	1.22	18.3	6.9	3.3	2.9	29	1209	18.6
(6, 36)	34.61	654	69.2	14.6	83.8	.83	2.42	.42	7.7	1.3	.1	.0	0	654	24.8
(36, 6)	36.59	644	73.2	260.6	333.8	.22	9.12	7.12	31.1	24.3	19.9	18.9	71	644	6.6
(6, 46)	24.54	331	49.1	8.3	57.3	.86	2.34	.34	10.4	1.5	.1	.0	0	331	25.7
(46, 6)	26.89	355	53.8	193.8	247.6	.22	9.21	7.21	41.9	32.8	27.5	26.3	82	355	6.5
(52, 6)	63.77	962	127.5	365.7	493.3	.26	7.73	5.73	30.8	22.8	18.2	17.2	64	962	7.8
(5, 45)	.33	18	.7	.2	.9	.74	2.70	.70	2.9	.8	.1	.0	0	18	22.2
(45, 5)	.51	27	1.0	9.2	10.3	.10	20.08	18.08	22.8	20.5	19.6	19.3	100	27	3.0
(8051, 51)		48												48	
(8041, 41)		842												842	
(8031, 31)		1664												1664	
(8032, 32)		35												35	
(8042, 42)		149												149	

(4, 44)	.0	.0	.1	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(44, 4)	6.4	6.0	.4	1.9	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
(4, 34)	.3	.0	.5	4.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(34, 4)	67.3	65.2	2.1	10.7	0	0	1	0	0	0	0	0	3	4	0	0	0	0	0
(4, 5)	72.7	61.0	9.6	14.4	0	1	1	0	0	0	0	0	11	11	0	0	0	0	0
(5, 4)	71.7	62.1	8.9	12.6	0	1	1	0	0	0	0	0	11	9	0	0	0	0	1
(5, 35)	.3	.0	.4	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(35, 5)	57.2	56.2	1.9	10.2	0	1	0	0	0	0	0	0	4	0	0	0	0	0	1
(5, 6)	403.6	374.0	14.3	19.6	0	3	3	0	0	0	0	0	20	16	0	0	0	8	2
(6, 5)	66.7	58.0	6.6	13.2	0	1	1	0	0	0	0	0	9	10	0	0	0	0	0
(6, 36)	.7	.0	1.8	11.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(36, 6)	215.1	204.8	5.9	19.8	0	2	2	0	0	0	0	0	10	9	0	0	0	0	0
(6, 46)	.3	.0	1.3	6.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(46, 6)	163.4	156.8	4.7	15.6	0	3	0	0	0	0	0	0	9	0	0	0	0	0	3
(52, 6)	295.1	278.4	8.6	20.2	0	3	2	0	0	0	0	0	10	12	0	0	0	0	4
(5, 45)	.0	.0	.0	.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(45, 5)	9.1	9.0	.3	3.4	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0

1 CUMULATIVE NETSIM STATISTICS AT TIME 17: 0: 0

ELAPSED TIME IS 1: 0: 0 (3600 SECONDS), TIME PERIOD 1 ELAPSED TIME IS 3600 SECONDS

	VEH-MINS *		AVERAGE	-- CONGESTION --		Q U E U E L E N G T H (VEHICLE)													
	QUEUE	STOP	OCCUPANCY	STORAGE	PHASE	AVERAGE QUEUE BY LANE **							MAXIMUM QUEUE BY LANE						
LINK	TIME	TIME	(VEHICLE)	(%)	FAILURE	1	2	3	4	5	6	7	1	2	3	4	5	6	7
(6, 52)	.5	.0	3.2	9.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(62, 3)	540.5	507.1	19.2	25.5	2	4	7	0	0	0	0	0	24	22	0	0	0	0	3
(4, 62)	.6	.0	2.9	12.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSUBNETWORK=	3926.4	3690.4	186.9	12.1	2														

* THESE VALUES INCLUDE THE TIME FOR VEHICLES CURRENTLY ON THE LINK.
** AVERAGE QUEUE CALCULATED BASED ON TIME SINCE BEGINNING OF SIMULATION

(4, 62)	.00	121.97	.00	.00	28.01	.00	.00	149.98	.00	.00	.81	.00

1 NETSIM MOVEMENT SPECIFIC STATISTICS - TABLE III

LINK	TOTAL TIME (SECS/VEH)			DELAY TIME (SECS/VEH)			QUEUE TIME** (VEH-MINS)			STOP TIME** (VEH-MINS)		
	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT
(1, 51)	.0	4.1	.0	.0	.6	.0	.0	.2	.0	.0	.0	.0
(51, 1)	31.5	35.6	12.7	28.1	32.2	9.3	9.0	10.2	1.2	8.9	10.2	1.2
(1, 41)	.0	10.8	.0	.0	1.7	.0	.0	.4	.0	.0	.0	.0
(41, 1)	45.9	22.3	21.6	36.8	13.3	12.5	32.0	130.4	4.5	31.8	123.0	4.1
(1, 31)	.0	10.5	.0	.0	1.4	.0	.0	.4	.0	.0	.0	.0
(31, 1)	49.9	25.5	14.6	40.9	16.4	5.5	10.9	168.9	28.5	10.7	158.9	18.4
(1, 2)	19.1	15.4	17.3	4.7	1.0	2.9	2.8	4.1	.4	2.5	.1	.0
(2, 1)	42.1	43.4	23.4	27.7	28.9	9.0	212.5	8.7	2.5	201.6	8.3	2.4
(32, 2)	13.1	16.3	10.9	8.6	11.8	6.4	2.3	1.1	.9	2.3	1.0	.9
(2, 32)	.0	5.4	.0	.0	.8	.0	.0	.1	.0	.0	.0	.0
(42, 2)	34.3	165.0	15.9	25.2	155.9	6.8	27.8	2.5	6.5	27.5	2.5	6.4
(2, 42)	.0	10.2	.0	.0	1.2	.0	.0	.2	.0	.0	.0	.0
(2, 3)	73.2	66.0	24.5	55.4	48.2	6.8	37.2	415.1	13.7	36.8	399.8	12.3
(3, 2)	26.3	19.7	22.7	8.6	2.0	5.0	2.9	.3	.5	2.9	.1	.3

(8043, 43)	555	555
(8033, 33)	822	822
(8034, 34)	205	205
(8044, 44)	57	57

* AVERAGE QUEUE AND STOP TIME ARE COMPUTED AS TOTAL QUEUE TIME OR TOTAL STOP TIME DIVIDED BY TOTAL NUMBER OF VEHICLES DISCHARGED FROM LINK PLUS NUMBER OF VEHICLES CURRENTLY ON THE LINK.

1 CUMULATIVE NETSIM STATISTICS AT TIME 17: 0: 0

ELAPSED TIME IS 1: 0: 0 (3600 SECONDS), TIME PERIOD 1 ELAPSED TIME IS 3600 SECONDS

		VEHICLE MINUTES			RATIO	MINUTES/MILE		----- SECONDS / VEHICLE ----				-- AVERAGE VALUES --		
LINK	VEHICLE MILES TRIPS	MOVE TIME	DELAY TIME	TOTAL TIME	MOVE/ TOTAL	TOTAL TIME	DELAY TIME	TOTAL TIME	DELAY TIME	QUEUE* TIME	STOP* TIME	STOPS (%)	VOLUME VPH	SPEED MPH
(8035, 35)	141												141	
(8045, 45)	27												27	
(8036, 36)	645												645	
(8046, 46)	353												353	
(8052, 52)	964												964	
(6, 52)	70.88 1073	141.8	27.9	169.7	.84	2.39	.39	9.5	1.6	.0	.0	0	1073	25.1
(62, 3)	182.56 1397	365.1	760.0	1125.1	.32	6.16	4.16	48.3	32.6	23.1	21.6	64	1397	9.7
(4, 62)	60.85 1400	121.7	28.3	150.0	.81	2.46	.46	6.4	1.2	.0	.0	0	1400	24.3
0SUBNETWORK=	2408.11 6475	80.27	92.50	172.77	.46	4.30	2.30	1.60	.86	.59	.55	141.3 PER TRIP		13.9
		-- VEHICLE - HOURS --						--- MINUTES / VEHICLE-TRIP ---						

1 CUMULATIVE NETSIM STATISTICS AT TIME 17: 0: 0

ELAPSED TIME IS 1: 0: 0 (3600 SECONDS), TIME PERIOD 1 ELAPSED TIME IS 3600 SECONDS

	VEH-MINS *		AVERAGE	-- CONGESTION --		---------- Q U E U E L E N G T H (VEHICLE) ----------													
	QUEUE	STOP	OCCUPANCY	STORAGE	PHASE	AVERAGE QUEUE BY LANE **							MAXIMUM QUEUE BY LANE						O
LINK	TIME	TIME	(VEHICLE)	(%)	FAILURE	1	2	3	4	5	6	7	1	2	3	4	5	6	7 C
(1, 51)	.2	.0	.2	2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(51, 1)	20.4	20.2	.8	10.7	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
(1, 41)	.4	.0	2.8	6.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(41, 1)	166.9	158.8	6.0	12.1	0	1	1	0	0	0	0	1	7	7	0	0	0	0	3
(1, 31)	.4	.0	4.3	10.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(31, 1)	208.3	188.0	9.5	17.6	0	1	2	0	0	0	0	0	7	8	0	0	0	6	2
(1, 2)	7.3	2.6	4.7	7.4	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
(2, 1)	223.7	212.2	7.5	10.8	0	2	3	0	0	0	0	0	11	13	0	0	0	0	2
(32, 2)	4.3	4.2	.3	1.3	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
(2, 32)	.1	.0	.3	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(42, 2)	36.8	36.4	1.8	4.4	0	0	1	0	0	0	0	0	2	4	0	0	0	0	0
(2, 42)	.2	.0	1.1	5.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(2, 3)	466.0	448.9	14.1	14.2	0	4	4	0	0	0	0	1	13	12	0	0	0	4	3
(3, 2)	3.7	3.3	4.8	6.2	0	0	0	0	0	0	0	0	2	3	0	0	0	0	0
(3, 43)	.6	.0	1.5	3.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(43, 3)	403.4	392.7	9.3	15.4	0	2	2	3	0	0	0	0	6	7	8	0	0	0	0
(3, 33)	1.8	.0	3.3	5.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(33, 3)	303.9	295.9	8.3	16.2	0	1	2	0	0	0	1	2	8	5	0	0	0	4	6
(3, 4)	106.4	88.8	13.6	14.1	0	1	1	0	0	0	0	0	12	14	0	0	0	0	2

(3, 43)	.0	9.7	.0	.0	.6	.0	.0	.6	.0	.0	.0	.0
(43, 3)	58.1	57.9	43.5	49.0	48.8	34.4	255.0	139.5	9.0	247.7	136.6	8.4
(3, 33)	.0	10.0	.0	.0	.9	.0	.0	1.8	.0	.0	.0	.0
(33, 3)	62.7	59.4	19.7	53.6	50.4	10.6	172.4	63.9	67.5	169.6	63.3	62.9
(3, 4)	38.7	31.6	34.2	17.8	10.7	13.3	6.0	91.3	9.1	5.6	75.7	7.4
(4, 44)	.0	5.6	.0	.0	1.1	.0	.0	.0	.0	.0	.0	.0
(44, 4)	19.2	.0	11.1	14.7	.0	6.6	2.1	.0	4.3	2.0	.0	4.0
(4, 34)	.0	5.0	.0	.0	.4	.0	.0	.3	.0	.0	.0	.0
(34, 4)	34.0	.0	16.8	29.4	.0	12.3	51.1	.0	16.1	49.7	.0	15.4
(4, 5)	32.0	23.1	23.0	16.9	8.0	7.9	2.1	66.4	4.2	1.8	55.8	3.4
(5, 4)	21.9	22.7	23.3	6.7	7.6	8.2	3.5	67.8	.3	3.2	58.7	.2
(5, 35)	.0	7.3	.0	.0	.5	.0	.0	.3	.0	.0	.0	.0
(35, 5)	36.1	.0	16.1	29.3	.0	9.3	55.4	.0	1.7	54.7	.0	1.5
(5, 6)	35.4	42.1	27.0	24.0	30.7	15.6	8.5	344.6	50.5	8.3	322.6	43.1
(6, 5)	.0	18.3	22.0	.0	6.9	10.6	.0	66.4	.3	.0	57.8	.2
(6, 36)	.0	7.7	.0	.0	.9	.0	.0	.7	.0	.0	.0	.0
(36, 6)	29.1	35.2	28.2	22.3	28.4	21.3	101.5	90.0	23.6	97.1	85.7	22.1
(6, 46)	.0	10.4	.0	.0	1.3	.0	.0	.3	.0	.0	.0	.0
(46, 6)	29.3	47.6	41.0	20.2	38.5	31.9	23.6	108.0	31.9	22.2	104.0	30.6
(52, 6)	30.7	31.0	28.9	22.7	23.0	20.9	23.9	249.9	21.3	23.4	235.3	19.7
(5, 45)	.0	2.9	.0	.0	.7	.0	.0	.0	.0	.0	.0	.0
(45, 5)	40.8	.0	8.5	38.5	.0	6.2	7.6	.0	1.5	7.5	.0	1.5
(8051, 51)												
(8041, 41)												
(8031, 31)												
(8032, 32)												
(8042, 42)												
(8043, 43)												
(8033, 33)												
(8034, 34)												
(8044, 44)												

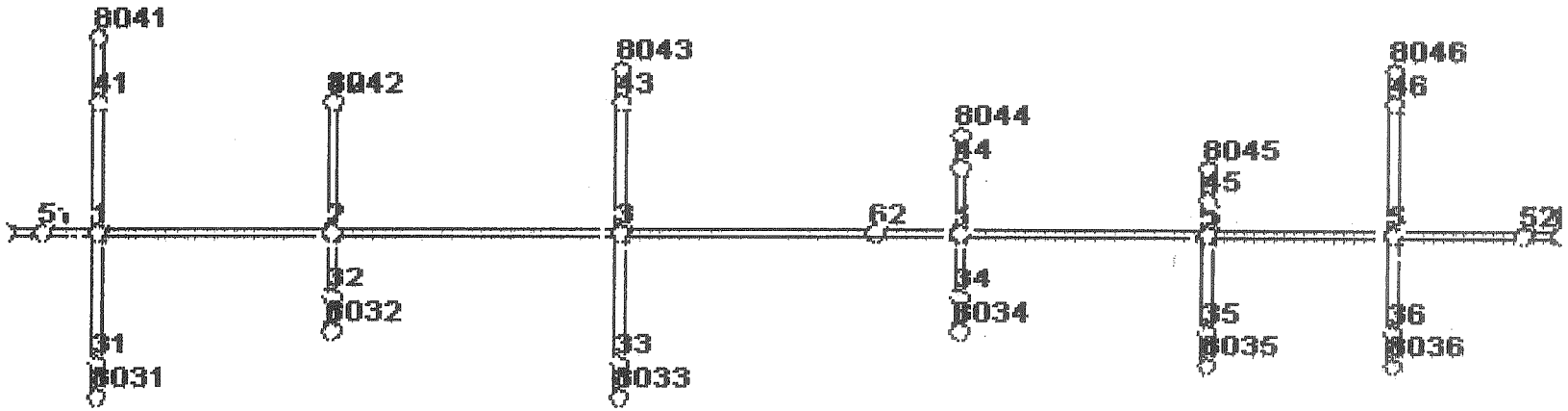
1 NETSIM MOVEMENT SPECIFIC STATISTICS - TABLE III

LINK	TOTAL TIME (SECS/VEH)			DELAY TIME (SECS/VEH)			QUEUE TIME** (VEH-MINS)			STOP TIME** (VEH-MINS)		
	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT
(8035, 35)												
(8045, 45)												
(8036, 36)												
(8046, 46)												
(8052, 52)												
(6, 52)	.0	9.5	.0	.0	1.5	.0	.0	.5	.0	.0	.0	.0
(62, 3)	63.3	42.4	30.6	47.7	26.7	14.9	339.0	167.3	34.1	321.8	155.5	29.8
(4, 62)	.0	6.4	.0	.0	1.2	.0	.0	.6	.0	.0	.0	.0

** TIME FOR VEHICLES CURRENTLY ON THE LINK ARE INCLUDED IN THESE VALUES.

4/14/99
JLM

PORTLAND COMMONS TRAFFIC STUDY AREA



Brighton Ave. to Warren Ave (#1 to #6 Warren Ave.)

SEBAGO TECHNICS, INC.
12 Westbrook Common
P.O. Box 1339
WESTBROOK, ME 04098-1339

Phone (207) 856-0277 FAX (207) 856-2206

LETTER OF TRANSMITTAL

DATE	JOB NO.
2/3/99	97622
ATTENTION	
RE: Portland Commons	

TO Bill Needelman
City of Portland
389 Congress St.
Portland, ME 04101

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1	1/20/99		11x17 Reductions of Site plan
	7/11/94		Existing plan
	1/10/94		Storm water evaluation P.
	7/11/94		" " " E.
↓	↓		Report on Stormwater (Preliminary)

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☒ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

COPY TO _____

SIGNED: Steve Dec

If enclosures are not as noted, kindly notify us at once.

CITY OF PORTLAND, MAINE
PLANNING BOARD

John H. Carroll, Chair
Jaimey Caron, Vice Chair
Kenneth M. Cole III
Cyrus Y. Hagge
Deborah Krichels
Erin Rodriquez
Mark Malone

WORKSHOP AGENDA

TUESDAY, FEBRUARY 9, 1999, AT 3:00 P.M.

ROOM 209, 2ND FLOOR, CITY HALL, PORTLAND, MAINE

1. **ROLL CALL**

2. **WORKSHOP ITEMS**

   i. AB/OP Zoning Field Trip; Vicinity of Outer Congress Street; City of Portland, Applicant.

   ii. Rezone R-3 Residential to OP Office Park; Vicinity of 1823-1855 Congress Street; Peter Kennedy, Applicant.

   iii. Bookland Site Plan; B-5 Business Zone; Vicinity of 87 Marginal Way; Southern Maine Properties, Applicant.

   iv. Keenan Property Site Plan; B-4 Business Zone; Portland Commons in Vicinity of 191 Riverside Street; Waterford Group, Applicant.

   v. B1-B2 Map for Zoning Amendment, City of Portland, Applicant.

City of Portland
Planning Department

389 Congress Street, 4th Floor
Portland, ME 04101
207-874-8721 or 207-874-8719
Fax: 207-756-8258

FAX TRANSMISSION COVER SHEET

Date: 2/9/99

To: Steve Doe

From: Bill Needelman / City of Portland

Fax: 856-2200

Re: Portland Comprehensive Workshop Memo & Agenda

YOU SHOULD RECEIVE 5 *PAGE(S),*
INCLUDING THIS COVER SHEET.
IF YOU DO NOT RECEIVE ALL THE PAGES,
PLEASE CALL 207-874-8721 or 207-874-8719.

SEBAGO TECHNICS, INC.
P.O. Box 1339 12 Westbrook Common
WESTBROOK, MAINE 04098
(207) 856-0277 FAX (207) 856-2206

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

Portland Commons

What Type of Wetland, Stream
Linda Cohen DEP

What can they Do?

Mary Beth Richardson

Storm water plan

NRPA permit

Traffic - Pending Scoping

11x17 reductions

Site location of Development

Standard - Ch 375.3.A

"No unreasonable Alteration of Natural Drainage ways"

What is Reasonable?

PRODUCT 204-1 (Single Sheets) 205-1 (Padded) NEBS® Inc., Groton, Mass. 01471. To Order PHONE TOLL FREE 1-800-225-6380

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LETTER OF TRANSMITTAL

DATE	JOB NO.
3.18.99	97622
ATTENTION	
RE: Portland Commons	

TO Bill Needleman

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
6	3.18.99	S1	Site Plan
		S2	Grading Plan
		D1	Details
		D2	
		D3	
2	3.18.99		Stormwater Runoff evaluation

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints

☒ For review and comment ☐ _____

☐ FOR BIDS DUE _____ 19 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS Bill - I sent an copy to Jim Hansel.

COPY TO _____

SIGNED: Steve Dec

If enclosures are not as noted, kindly notify us at once.

1/27

Conversation w/ Doug Burdock, DEP

if the stream @ the N'ly edge of the property is an identifiable stream, then the DEP must Permit any alteration. DEP would not be well disposed to culverting entire stream. Siting of the BFDs would be an issue if it has to site on the stream.

Portland Commons - Drainage Issues

* Possible Impacton Delineated Wetland South of Warren Ave PSSIE
  Palustrine Scrub/shrub, seasonally flooded
  ~~From~~ National Wetlands Inventory

* Stream runs Easterly along Northerly BNDRY feeding into Detention area.
  This Stream acts as drainage for Tire Warehouse and Southerly Houses along Campbell Road - Need to know if larger area feeds onto this system, ie HD Stormwater System. or / stormwater from Westerly side of ~~the~~ Riverside St.

* Wetland at South Easterly corner (wet swale which also receives SW from Holiday Inn Parking lot

* BIDS Placement:
  NRPA Has Minimization Standard for Wetland Impacts. BIDs as ~~Note~~ proposed sit directly on the N'ly Stream.
  This ~~[redacted]~~ Project should require DEP wetlands alteration permit.

Portland Commons – Drainage Cont.

* Water from Across Riverside ?
  2' Topo Map from Jon Giles
  (Map 07)

Other Comments

* Sewer line @ Sly corner
  what is the impact of proposed
  detention

* Building Placement

Kenan Suden B4 2010
Not sub-D — Name?

Selbeg Tedrick — Steve Doe, contact

Set copy of optin

Site plan — grandfather? get letter
Traffic
Dormant
— Dedication of Street
Deed, dispriptin

— Pedestrian circulation plan
W/in dev.
Side walk

— Impervious Surface
% for Zone

— landscaping — at
Turnpike in TPK ROW

— Traffic Report

— 11×17 site plan Reduction

Portland Comments from Staff mtg 1/14

Commons ~~Keenan~~ – Riverside Ct.

(1) ~~Traffic~~ ~~Require~~ New Tfc study
impact @ Exit 8
" " Home Depot Light
have Jack Murphy call Lavoy Asst for Details.

(2) Fire – Hydrant location & distance to furthest BLDG from Riverside

(3) ~~Impervious~~ Surface % – get before wkshop

(4) ~~Pedestrian Circulation~~ Plan –

(5) ~~B-4 Zone~~
Need Boundary before Feb 7

(6) Gamble Rd. – Restrict access permanently
└ Jim Robbins in City Vault
ask & status.
ask Jack Murphy

(7) Storm Water – impacts on Holiday Inn & Capisic Brook
Trace water shed analysis w/ Map
Detention & Quality

KEENAN PROPOSAL

UNDER OPTION

- GRANDFATHER SITE LOCATION PAVEMENT
  - ☐ TRAFFIC
  - ☐ STORMWATER

DEDICATION OF A PORTION OF A CUL-DE-SAC

FEB 9 would like earlier if possible

☐ two buildings + three tenant – a subdivision

To:	Rick Knowland
CC:	
From:	Penny Littell
Date:	December 24, 1998
Re:	Riverside Project/ Subdivision?

Rick: You asked my opinion on whether the erection of two structures on a single parcel of property on Riverside Street may be considered a "subdivision" under 30-A MRSA 4401 et seq. As I understand it, one of the structures shall be a stand alone restaurant, while the other structure will be divided into two leased spaces (one for an office supply store and one for an auto parts store).

While the statutory language of section 4401 may imply that such a division of property interests would constitute a subdivision, a 1988 case has held otherwise. In Town of York v. Cragin (attached for your review) the Court interpreted the language of former 30 MRSA 4956, now 30-A §4401, and held that the division of "structures, as distinguished from divisions of parcels of land into lots, did not result in the creation of a "subdivision. This case has not yet been overturned.

As a result, I would advise that the proposed development for the Keenan Riverside Street project as described would not constitute a subdivision under state statute.

March 1999

Mr. Joseph Gray, Jr.
Director of Planning & Urban Development
City Hall, 4th Floor
389 Congress St
Portland, Me. 04101

Re. Site Plan for Portland Commons Shopping Center
Keenan Property, Riverside Street

Dear Mr. Gray:

Once again, we as residents of Campbell Rd., are faced with another proposal from Keenan for development of his property for a shopping center. After attending the workshop meeting on Feb. 9, 1999 and viewing the revised site plans that were presented to the planning board by the developer, we are most concerned about the proposed storm water drainage system and the traffic issues. Also, how this development in our front yard will effect our property values as well as our privacy and daily life styles. We see no indication that the developer is giving any consideration to the residents of Campbell Rd. We will try to address these issues as briefly as possible for your consideration.

STORM WATER

If you would refer to Watershed Map D-3, you will note that no basement drains are shown other than the one at the end of Campbell St. The property at 4 Campbell Rd and 11 Campbell Rd. Have basement drains that drain into this drainage ditch. At the time Mr. Keenan bought and extended the back of the property, the drain at 4 Campbell Rd. was crushed and blocked and nothing was done to correct this situation. On plan "B" the developer is showing a detention pond directly on top of the outlet of the basement drain to the property of 11 Campbell Rd. The drainage ditch also takes care of the storm water from Riverside St down Campbell Rd. to a detention basin at the back of Keenan property. This drainage ditch and basement drains are grandfather under drainage rights. Please refer to General Notes #19C and #20B. on site plan D3, which describe these rights as deeded by the original owner Charles Grant. A copy of this plan is enclosed with highlighted notes. I find it amusing to note that " the existing pond treats the storm water before it leaves the site and enters the CMP turnpike culvert." This detention pond will be only about 30 feet from my driveway. This will be breeding grounds for mosquitoes and other health hazards . Any kind of a detention pond in this corner cannot be allowed. I cannot imagine the DEP would allow such a catch basin so close to a residential area.

TRAFFIC

At the workshop meeting Mr. Caron suggested possible use of Campbell Rd as an exit or entrance to this development. This would be a disaster as Campbell Rd is not capable of handling this amount of traffic. Our homes and lives would be in danger if this were the case. Campbell Rd is a private dead end street with deeded right of way to our properties. It is not built to handle heavy truck traffic that would be generated with this type of a development. Access to and from this development should stay on Riverside St and Riverside Court. The location of another traffic light on Riverside St in front of this development will make little difference as far as entering or exiting Campbell Rd. There will be bumper to bumper traffic all the way from Exit 8 of the Maine Turnpike to Warren Ave and beyond. It is very difficult at times to exit Campbell Rd now and make a left turn. Also coming from Warren Ave towards Me Turnpike and try to make left turn onto Campbell Rd is dangerous.

LANDSCAPING:

Mention is made to the mature trees and forest undergrowth which runs along Campbell Rd. There are mature pine, hemlock, oak and maple trees that act as a natural buffer for the residents of Campbell Rd. They also act as a sound barrier to traffic as well as blocking the bright lights from the parking lot. We find it unnecessary to cut these trees and leave us sitting as though we were in a fish bowl. Yes, they say plant trees in parking area but we have seen what happens with this plan. Plant 4 or 5 foot trees and 75% die within 2 months. What of our rights as residents? We need our privacy also.

The types of businesses that are proposed will be in operation 7 days a week and also nights. Most businesses in this area close by 6 p.m. Will there be any restrictions as far as hours of operation and noise level from this development? What kind of security is there for protection of our property from vandalism with this shopping center on our front doorstep? What happens to the value of our property? We certainly will have a very difficult time trying to sell and get a fair price for our property. Is this really a good plan for the city when this whole area could be developed for a more valuable development? Is this just a short term fix and not look at the long range advantages of a more economically developed plan for the area?

Also we feel there is a definite "Conflict of Interest" issue with this development. Mark Malone, a member of the planning board, is also the owner of Malone Commercial Real Estate and Brokerage firm who is the broker for Keenan and this development. Mr Malone's firm stands to gain a substantial commission on this transaction. We feel that any input Mr Malone makes to the board in respect to this development, would be influential to seeing this plan accepted by the planning board members..

We suggest that the planning board members take a field trip to Campbell Rd and the area being discussed. Our homes are the last of what was a nice residental area. How would you like to be living in the parking lot of a commerial development of this size on a small parcel of land? This parcel will certainly be over developed if all of the proposed site plans are accepted.

Your attention to these issues will be greatly appreciated.

Sincerely;

Donald & Marilyn Quincy

Eleanor V Davis
209 Riverside St

Grace N. Coy
40 Campbell Rd

Copies to:
Mr. Alexander Jaegerman, Chief Planner
Mr. William Needleman, Planner
Mr. John Carroll, Chair, Planning Board & members

Attachments:
Site plan D3 and D4 Notations

Kingsfield, Maine 04947

3. Deed Reference: Cumberland County Registry of Deeds Book 3191, Page 350

4. Assessor's Reference: Map No. 268 Lot No. A-2

5. The boundary lines shown hereon are based on a retracement survey of a plan by Robert P. Titcomb Inc. Land Surveyors dated September 8, 1980, made for AIKO Properties, Inc. and an earlier plan by Robert P. Titcomb dated June 1970 made for Chrysler Realty Corp. along with a plan for T&L Associates Inc. by Owen Haskell Inc., dated April 26, 1974. Bearings and distances shown hereon, are the result of an actual field survey locating existing monumentation and utilizing the above described plans.

6. Zoning District: Business 2 (B-2)

7. Space and Bulk Requirements:

Minimum rear yards:	Not required except where the rear line abuts a residence zone, in which case they shall be twenty (20) feet.
Minimum side yards:	Not required except where the side line abuts a residence zone in which case they must be ten (10) feet in width. If provided, side yards must be not less than three (3) feet in width.
Minimum front yards:	Not required but every property having frontage on Brighton Avenue, Riverside Street and Warren Avenue shall have a minimum front yard of twenty (20) feet.
Maximum height:	Five (5) stories but not to exceed sixty-five (65) feet. (Code 1968 Section 602.9.c: Ord. No. 274-77, 5-16-77).

8. Total Lot Area: 6.89 acres

9. Existing Use: Auto Dealership/Auto Repair Shop

10. Intended Use: Auction Center/Retail Store/Offices

11. Building Summary:

Footprint:	19,285 Sq. Ft.
No. of Stories:	1

12. Parking Space Requirements:

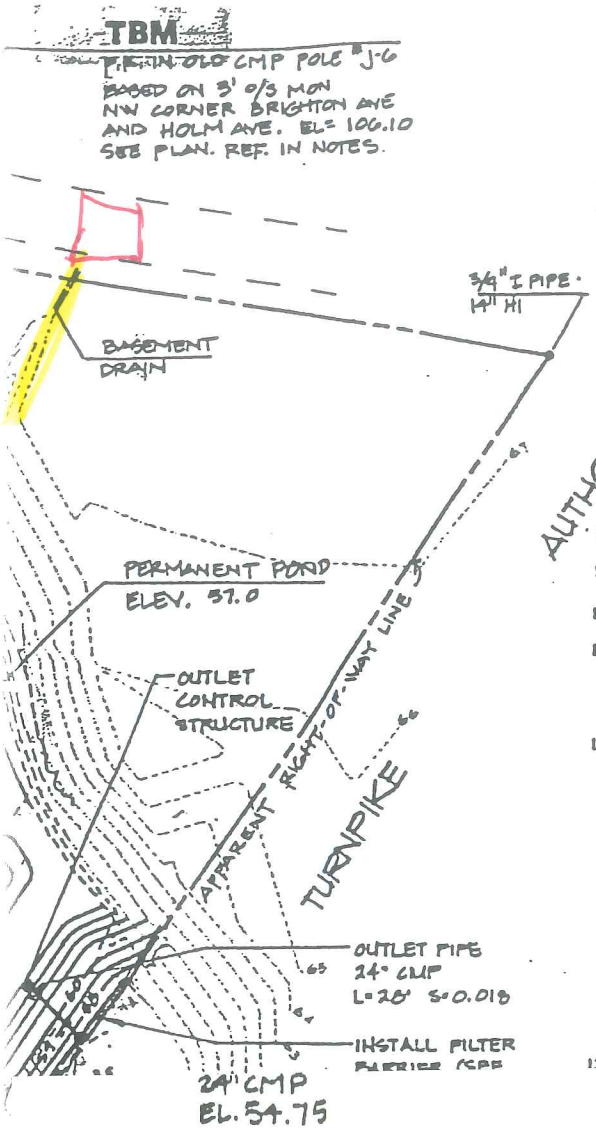
Required:

Retail	7,600 S.F. ÷ 150 S.F./Sp =	50 spaces
Office	4,000 S.F. ÷ 400 S.F./Sp =	10 spaces
Auction Center	7,685 S.F. ÷ 100 S.F./Sp =	77 spaces
Total Required		137 spaces

Proposed:

Total Striped	81 spaces
Total Unstripped	310 spaces
Total Available	391 spaces

13. The site is currently serviced by the power and water. Electric and telephone



19. The property is also subject to the following:

a. Central Maine Power Co. and New England Tel. & Tel. easement from pole #19.1 Riverside Street easterly to pole #1 Book 3346, Page 322.

b. Central Maine Power Co. and New England Tel. & Tel. Co. pol from pole #19.01 Riverside Street easterly to pole #19.03 then pole 19.04 recorded in Book 3770, Page 137.

c. Drainage rights for basement drain outflows into existing drainag Note 20b).

d. Lease agreement between Fletcher Brown and Chrysler Real dated July 31, 1973, recorded in Book 3628, Page 116 assignments.

20. The property is benefited by the following:

a. A right of way in common with others for the use of a proposed street known as Campbell Road as stated in a deed from Muriel E. Holmes to Olivier W. Holmes dated June 12, 1957, recorded in Book 2344, Page 132.

b. Drainage rights described in a deed from Stephen J. Nicoll to Fleet Bank of Maine dated September 18, 1992 and recorded in Book 10288, Page 75 as follows; "the right-of-draining land now belonging to Charles F. Grant, and lying northerly and southerly of the above described, across the rear of the above described land, by surface drains emptying into the gully, which starts at the southerly end of the above described property." These rights include property on both sides of Campbell Road formerly owned by Charles Grant.

21. Record deed calls indicate the boundary here is the centerline of the brook known as Capisic Brook, however, field conditions show evidence of possible site work which may have changed the location of the brook. The line shown hereon is a reconstruction of the line shown on the plans referenced in Note #5.

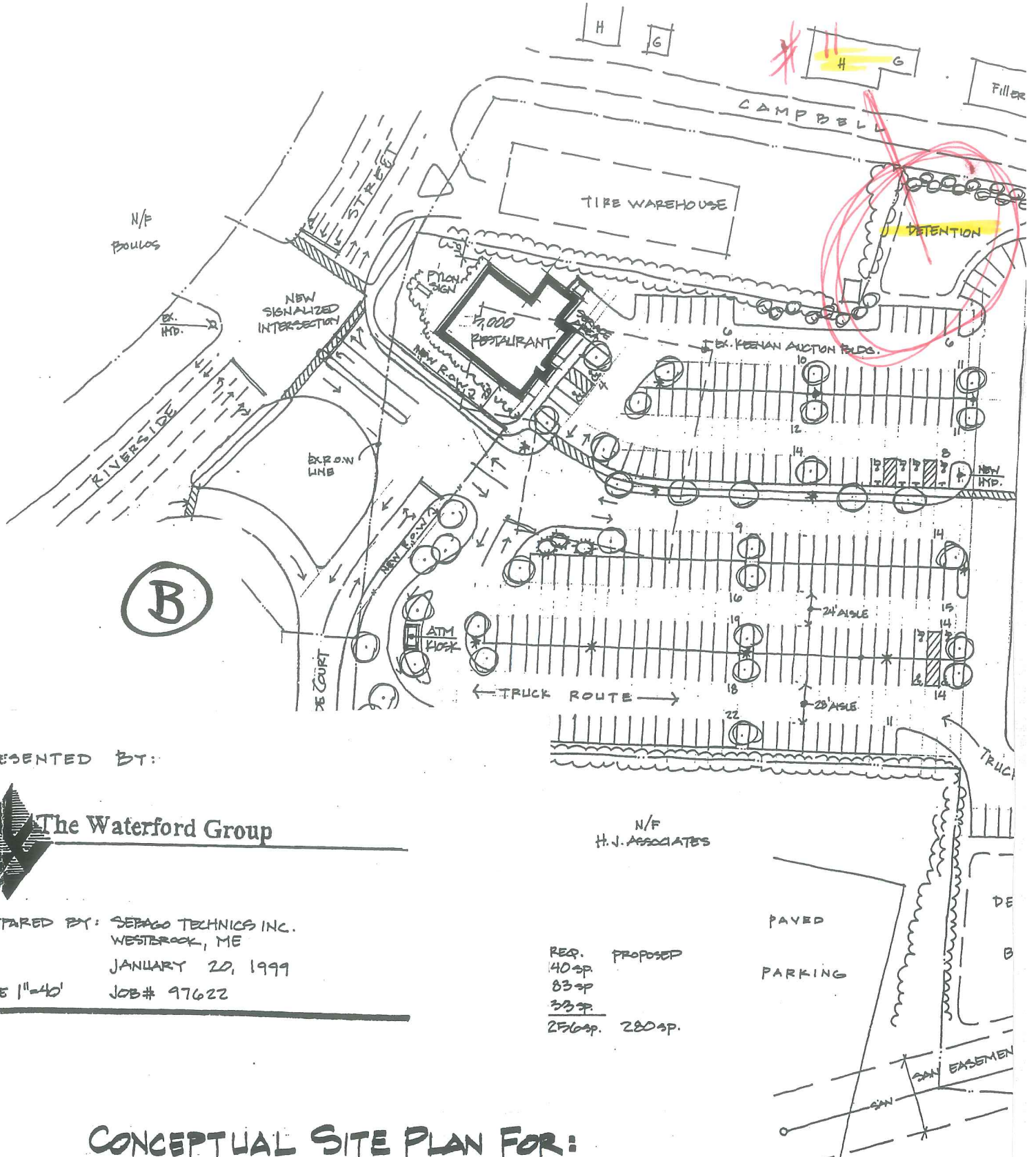
1H
1 = 63.70

ic Brook, however, field conditions show evidence of possible site work which have changed the location of the brook. The line shown hereon is a reconstruction line shown on the plans referenced in Note #5.

PRE-DEVELOPMENT WATER

D	RED	7-11-94	ADD DETENTION BASIN

D	RED	7-11-94	ADD DETENTION BASIN
C	SMF	5-24-93	REVISE PER CITY COMMENTS
B	SOD	7-2-93	REVISE PARKING AND ENTRANCE LAYOUT
A	RED	4-28-93	ADDED FILTER BARRIER
REV:	BY:	DATE:	STATUS:



PRESENTED BY:

The Waterford Group

PREPARED BY: SEBAGO TECHNICS INC.
WESTBROOK, ME
JANUARY 20, 1999
SCALE 1"=40' JOB# 97622

REQ.	PROPOSED
40 sp.	
83 sp.	
33 sp.	
256 sp.	280 sp.

CONCEPTUAL SITE PLAN FOR:

PORTLAND COMMO

Know all Men by these Presents,

That I, FLETCHER BROWN, of Falmouth, County of Cumberland and State of Maine, in consideration of One Dollar ($1.00) and other good and valuable considerations, paid by NEW KAJ INC., a Maine Corporation, and whose mailing address is 191 Riverside Street, Portland, Maine 04103, the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said New KAJ Inc., its successors and assigns forever, the following described lot or parcel of land, with the buildings thereon, situated in Portland, County of Cumberland and State of Maine, bounded and described as follows, to wit:

Beginning at an iron set in the ground at the southerly side line of Campbell Road and the northerly side line of land of the Maine Turnpike Authority; thence South 34° 12′ 45" West by said Maine Turnpike Authority land 655.53 feet to an iron set in the ground; thence North 85° 13′ 45" West 105.94 feet to an iron set in the ground; thence North 2° 14′ East 214.77 feet to an iron set in the ground; thence North 87° 46′ 45" West 405.60 feet to an iron set in the ground on the southeasterly side line of Riverside Court; thence North 2° 14′ East by the southeasterly side line of said Riverside Court 50 feet to another iron; thence continuing on the same course 19.3 feet by said Riverside Court to an iron and an angle in said road; thence North 6° 11" East continuing by the southeasterly side line of said Riverside Court 205.57 feet to an iron pipe; thence continuing by the southeasterly side line of said Riverside Court 75 feet, more or less, to an iron stake and a row of 8 inch pine trees; thence South 80° 04′ 20" East partially through said row of 8 inch pine trees 300 feet to an iron stake; thence North 17° 37′ 25" East 105.35 feet to an iron stake and the southerly side line of said Campbell Road; thence South 80° 10′ 20" East by the southerly side line of said Campbell Road 509 feet to the point of beginning.

Meaning and intending to convey and hereby conveying the premises conveyed by Chrysler Realty Corporation to Fletcher Brown by deed dated July 12, 1971, recorded in Cumberland County Registry of Deeds in Book 3191, Page 350.

Being subject to the following:

1. Easement for poles and wires described in an easement deed from Oliver Wendell Holmes to Central Maine Power Company and New England Telephone and Telegraph Company dated October 20, 1964, recorded in said Registry of Deeds in Book 2977, Page 305.

2. Easements for poles and wires described in deeds from Fletcher Brown to Central Maine Power Company and New England Telephone and Telegraph Company dated November 10, 1972 and September 15, 1975, recorded respectively in said Registry of Deeds in Book 3346, Page 322 and in Book 3770, Page 137.

3. Right of way for sewer described in a deed from Donald S. White

and Edwin C. White to the City of Portland described in a deed dated October 21, 1963, recorded in said Registry of Deeds in Book 2785, Page 416.

4. Real estate taxes for the current year, which the Grantee assumes and agrees to pay.

To have and to hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said New RAJ Inc., its successors and assigns, to its and their own use and behoof forever.

And I do covenant with the said Grantee, as aforesaid, its successors and assigns, that I am lawfully seized in fee of the premises, that they are free of all encumbrances; except as aforesaid; that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs shall and will Warrant and Defend the same to the said Grantee, its successors and assigns against the lawful claims and demands of all persons.

In Witness Whereof, I, the said Fletcher Brown, have hereunto set my hand and seal this 21 day of August, 1997.

Signed, Sealed and Delivered
in presence of

Fletcher Brown

State of Maine
Cumberland, ss.

August 21, 1997

Personally appeared the above named Fletcher Brown and acknowledged the foregoing instrument to be his free act and deed.

Before me,

~~Notary Public~~/Attorney at Law

Name: Jaimie P. Schmitz

Planning & Urban Development

Joseph E. Gray Jr.
Director

CITY OF PORTLAND

June 28, 2001

Mr. John O'Brien
Waterford LLC
6701 Manlius Center Road
East Syracuse, New York

Re: Portland Commons Shopping Center, 191 Riverside Street
CBL: 268-A-002

Dear Mr. O'Brien:

The Planning Office is aware that construction activity at 191 Riverside Street, the Portland Commons Shopping Center, has ceased and that no activity has taken place for some time. Planning Staff have inspected the site periodically over the last year and, while the site has remained for the most part stable, erosion control issues are becoming apparent. Also, as part of the regrading of the site, waste asphalt paving and demolition debris have been stockpiled on-site.

The Planning Office understands that your organization has been trying to market the property, but the extended period of inactivity and the eventuality of significant erosion problems suggest that the time has come to loam and seed the gravel area and to remove the demolition debris from the site. Please contact the Planning Office as soon as possible so that we can discuss a final solution for this property.

Sincerely:

William B. Needelman, Senior Planner

CC. Alex Jeagerman, Chief Planner
Sarah Hopkins, Development Review Services Manager
Lee Urban, Economic Development Director
Jay Reynolds, DRC

389 Congress Street • Portland, Maine 04101 • (207) 874-8721 • FAX 756-8258 • TTY 874-8936

United States Fidelity and Guaranty Company
Baltimore, Maryland
A Stock Company

USF+G INSURANCE

No. 78-0120-5169-99 $ 588,000.00

KNOWN ALL MEN BY THESE PRESENTS, That we, Waterford of Portland, LLC., as Principal, and United States Fidelity and Guaranty Company, a corporation organized under the laws of the State of Maryland and duly authorized to transact business in the State of Maine, as Surety, are held and firmly bound onto

THE CITY OF PORTLAND, MAINE

as Obligee, in the sum of Five Hundred Eighty Eight Thousand Dollars and No Cents ($588,000.00) for the payment whereof well and truly made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, in conjunction with the development of Portland Commons Shopping Center said Principal shall make, and ensure the fulfillment of, all site improvements required by Section 14-499 as well as the requirements of Article III of Chapter 25 of the City of Portland Land Use Code.

NOW, THEREFORE, the condition of the foregoing obligation is such that if the Principal shall indemnify the Obligee for all loss that the Obligee may sustain by reason of the Principal's failure to fulfill all improvements as required by Section 14-499 and Article III of Chapter 25 of the City of Portland Land Use Code, then this obligation shall be void, otherwise, it shall remain in full force and effect.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this 10th day of November, 1999.

Waterford of Portland, LLC.

By: _____
Michael A. Santaro, Member

United States Fidelity and Guaranty Co.

By: Patricia A. Lewis
Patricia A. Lewis, Attorney-in-fact

FS 26 (9-84)

The St Paul

POWER OF ATTORNEY

Seaboard Surety Company
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company
St. Paul Mercury Insurance Company

United States Fidelity and Guaranty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.

Power of Attorney No. 20226

Certificate No. 41607

KNOW ALL MEN BY THESE PRESENTS: That Seaboard Surety Company is a corporation duly organized under the laws of the State of New York, and that St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company and St. Paul Mercury Insurance Company are corporations duly organized under the laws of the State of Minnesota, and that United States Fidelity and Guaranty Company is a corporation duly organized under the laws of the State of Maryland, and that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc. is a corporation duly organized under the laws of the State of Wisconsin *(herein collectively called the "Companies")*, and that the Companies do hereby make, constitute and appoint

R. Martin Hanafin, Terry D. Shaffer, Sandra L. Cannon, Marilyn L. Burns, Richard W. Heinmiller, Thomas F. Fredenburg, Richard A. Nicolella and Patricia A. Lewis

of the City of Endicott, State New York, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign its name as surety to, and to execute, seal and acknowledge any and all bonds, undertakings, contracts and other written instruments in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed this 31st day of March, 1999.

Seaboard Surety Company
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company
St. Paul Mercury Insurance Company

United States Fidelity and Guaranty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.

MICHAEL B. KEEGAN, Vice President

MICHAEL R. MCKIBBEN, Assistant Secretary

State of Maryland
City of Baltimore

On this 31st day of March, 1999, before me, the undersigned officer, personally appeared Michael B. Keegan and Michael R. McKibben, who acknowledged themselves to be the Vice President and Assistant Secretary, respectively, of Seaboard Surety Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, United States Fidelity and Guaranty Company, Fidelity and Guaranty Insurance Company, and Fidelity and Guaranty Insurance Underwriters, Inc. and that they, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the names of the corporations by themselves as duly authorized officers.

In Witness Whereof, I hereunto set my hand and official seal.

My Commission expires the 13th day of July, 2002.

REBECCA EASLEY-ONOKALA, Notary Public

WARNING - THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Seaboard Surety Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, United States Fidelity and Guaranty Company, Fidelity and Guaranty Insurance Company, and Fidelity and Guaranty Insurance Underwriters, Inc. on September 2, 1998, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that in connection with the fidelity and surety insurance business of the Company, all bonds, undertakings, contracts and other instruments relating to said business may be signed, executed, and acknowledged by persons or entities appointed as Attorney(s)-in-Fact pursuant to a Power of Attorney issued in accordance with these resolutions. Said Power(s) of Attorney for and on behalf of the Company may and shall be executed in the name and on behalf of the Company, either by the Chairman, or the President, or any Vice President, or an Assistant Vice President, jointly with the Secretary or an Assistant Secretary, under their respective designations. The signature of such officers may be engraved, printed or lithographed. The signature of each of the foregoing officers and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Attorney(s)-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and subject to any limitations set forth therein, any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company, and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is validly attached; and

RESOLVED FURTHER, that Attorney(s)-in-Fact shall have the power and authority, and, in any case, subject to the terms and limitations of the Power of Attorney issued them, to execute and deliver on behalf of the Company and to attach the seal of the Company to any and all bonds and undertakings, and other writings obligatory in the nature thereof, and any such instrument executed by such Attorney(s)-in-Fact shall be as binding upon the Company as if signed by an Executive Officer and sealed and attested to by the Secretary of the Company.

I, Michael R. McKibben, Assistant Secretary of Seaboard Surety Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, United States Fidelity and Guaranty Company, Fidelity and Guaranty Insurance Company, and Fidelity and Guaranty Insurance Underwriters, Inc. do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I hereunto set my hand this 10th day of November, 1999.

Michael R. McKibben, Assistant Secretary

To verify the authenticity of this Power of Attorney, call 1-800-421-3880 and ask for the Power of Attorney clerk. Please refer to the Power of Attorney number, the above-named individuals and the details of the bond to which the power is attached.

THIS POWER OF ATTORNEY IS NOT VALID WITHOUT THE RED BORDER

(Acknowledgment by principal, if a limited liability company.)

STATE OF NEW YORK, }
} ss:
COUNTY OF Onondaga }

On this 10th day of November in the year 1999, before me personally came Michael A. Santaro, a Member of the Limited Liability Company of Waterford of Portland, LLC., to be known to me to be the person described in and who executed the foregoing instrument, and acknowledged to me that he/she executed the same as and for the act and deed of said firm.

.....

Notary Public.

(Acknowledgment by principal, if a partnership.)

RICHARD W. HEINMILLER
Notary Public in the State of New York
Qualified in Onondaga County
01HE6836015
My Commission Expires Feb. 28, 20 01

STATE OF NEW YORK, }
} ss:
COUNTY OF.....}

On this.....day of....., personally appeared before me.....
.....member of the firm of.....
.....to me known and known to me to be the individual.....described in and who executed the foregoing instrument and he acknowledged to me that he/she executed the same for and on behalf of said firm.
Sworn before me this.....day of.....19.....

.....

Notary Public.

(Acknowledgment by principal, if a corporation.)

STATE OF NEW YORK, }
} ss:
COUNTY OF Onondaga }

On this.....day of.....19....., before me personally came.....to me known to be the person by me duly sworn, did depose and say, that he/she resides in.....that he/she is the.....of the.....the corporation described in and which executed the foregoing instrument; that he/she knew the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was affixed by order of the Board of Directors of said corporation, and that he/she signed his/her name thereto by like order.
Sworn before me this.....day of.....19.....

.....

Notary Public.

STATE OF NEW YORK, }
} ss:
COUNTY OF Onondaga }

On this 10th of November, 1999, before me, the undersigned, a Notary Public in and for said county, personally appeared Patricia A. Lewis, who is to me well known, who being duly sworn, did depose and say that he/she resides in Solvay, New York, that he/she is Attorney-in-Fact of United States Fidelity and Guaranty Company of the City of Baltimore, MD, the corporation described in and who executed the within instrument as surety. That he/she knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was thereto affixed by order of the Board of Directors of said corporation, and that he/she signed his/her name thereto by like order.
Subscribed and sworn to before me this 10th
day of November, 1999. }

.....

Notary Public.

AFFIDAVIT OF PRINCIPAL AND SURETY

RICHARD W. HEINMILLER
Notary Public in the State of New York
Qualified in Onondaga County
01HE6836015
My Commission Expires Feb. 28, 20 01

United States Fidelity and Guaranty Company

(Commenced business August 1, 1896)

HOME OFFICE: BALTIMORE, MD

FINANCIAL STATEMENT DECEMBER 31, 1998

(STATUTORY BASIS)

ASSETS

Cash		$126,770,667
Invested Assets:		
Bonds	$4,757,107,219	
Preferred Stocks	4,485,136	
Common Stocks	803,793,131	
Mortgage Loans	358,365,128	
Real Estate	107,733,209	
Short-term Investments	213,724,848	
Other Invested Assets	227,140,002	$6,472,348,673
Net Premiums in Course of Collection *		439,367,993
Accrued Interest and Dividends		78,413,889
Other Admitted Assets		388,993,159
Total Assets		$7,505,894,381

LIABILITIES AND POLICYHOLDERS' SURPLUS

Reserves:		
Losses and Loss Adjustment Expenses	$4,780,893,923	
Premium Taxes and Operating Expenses	157,213,159	
Federal and Foreign Income Taxes	0	
Unearned Premiums	749,287,823	$5,687,394,905
Funds Held Under Reinsurance Treaties		549,723,368
Other Liabilities		209,522,793
Total Liabilities		$6,446,641,066
Capital Stock - $2.50 par value		$70,579,288
Surplus		988,674,027
Total Policyholders' Surplus		$1,059,253,315
Total Liabilities and Policyholders' Surplus		$7,505,894,381

Investment values as prescribed by the National Association of Insurance Commissioners.
Cash and Securities in the amount of $412,426,872 in the statement are deposited as required by law.
*Excludes Premiums Receivable over 90 days old.

M L Duvall
Controller

Rosemary Quinn
Assistant Corporate Secretary

County of Baltimore,
State of Maryland ss.

On February 19, 1999 before me, the subscriber, a Notary Public in and for the City and State aforesaid, personally appeared Mary Lura Duvall and Rosemary Quinn, Controller and Assistant Corporate Secretary, respectively, of the UNITED STATES FIDELITY AND GUARANTY COMPANY, who, being by me severally duly, sworn, did depose and say that they are such Officers of the said company and that the above and foregoing is a full, true and correct statement of the Assets and Liabilities of the said company, as they appeared upon the books of the said company on the 31st day of December A.D. 1998.

Donna Dixon
Notary Public

DONNA DIXON
BALTIMORE COUNTY MARYLAND
NOTARY PUBLIC

Donna Dixon, Notary Public
Baltimore County
State of Maryland
My Commission Expires Aug. 4, 2002

Contrl. 29 (12-98)

City of Portland
Planning Department

389 Congress Street, 4th Floor
Portland, ME 04101
207-874-8721 or 207-874-8719
Fax: 207-756-8258

FAX TRANSMISSION COVER SHEET

Date: ~~12~~ 12-13-99

To: T. Lombardo

Company:

Fax #: 874 8852

From: Bill Needelman

RE: Portland Commons Estimates

YOU SHOULD RECEIVE 3 PAGE(S),
INLUDING THIS COVER SHEET.
IF YOU DO NOT RECEIVE ALL THE PAGES,
PLEASE CALL 207-874-8721 OR 207-874-8719.

Department of Planning and Urban Development
SUBDIVISION/SITE DEVELOPMENT

COST ESTIMATE OF IMPROVEMENTS TO BE COVERED BY PERFORMANCE GUARANTEE

Date November 18, 1999

Name of Project Portland Commons Shopping Center

Address/Location 191 Riverside Street, Portland, Maine

Developer Waterford of Portland, L.L.C.

Form of Performance Guarantee Performance Bond

Type of Development: _____ Subdivision X Site Plan (Major/Minor)

TO BE FILLED OUT BY APPLICANT:

	PUBLIC			PRIVATE		
Item	Quantity	Unit Cost	Subtotal	Quantity	Unit Cost	Subtotal
1. STREET/SIDEWALK						
Road (Permit)	1	Lump Sum	$250.00	*1 ea.	Lump Sum	$114,000.00
Granite Curbing				2,584L.F.	$16.00	41,344.00
Sidewalks				125S.Y.	$49.50	6,187.50
Esplanades						
Monuments						
Street Lighting						
Other						
2. SANITARY SEWER						
Manholes				1 ea.	$2,065.00	$2,065.00
Piping	55L.F.	$27.25	$1,498.75	607L.F.	24.75	15,023.25
Connections						
Other						
3. STORM DRAINAGE						
Manholes				9 ea.	$2,076.00	$18,684.00
Catchbasins				860L.F.	31.50	27,090.00
Piping				1 ea.	Lump Sum	23,332.00
Detention Basin				1 ea.	Lump Sum	20,760.00
Other						
4. SITE LIGTING				21 ea.	$2,000.00	$42,000.00
EROSION CONTROL				1 ea.	Lump Sum	4,000.00
RECREATION AND OPEN SPACE AMENITIES						

*This item includes various site work activities i.e. clearing, grubbing, ripping, cuts, fills, gravels and miscellaneous earthwork items.

Item	PUBLIC Quantity	Unit Cost	Subtotal	PRIVATE Quantity	Unit Cost	Subtotal
7. LANDSCAPING (Attach breakdown of plant materials, quantities, and unit costs)				2,147S.Y. 1 ea.	$2.00/S.Y. Lump Sum	$4,294.00 38,799.00
8. MISCELLANEOUS			*$178,069.50	(See Breakdown)		50,603.00
TOTAL:	$179,818.25			$408,181.75		
GRAND TOTAL:	179,818.25			408,181.75		

* Estimated cost of off site improvements pending final design. Estimated price developed in conjunction with Sebago Technics, White Bros. Inc., Waterford Group and Mr. Bill Bray.

INSPECTION FEE (to be filled out by City)

	PUBLIC	PRIVATE	TOTAL
A: 1.7% of totals:			
or			
B: Alternative Assessment:			
Assessed by:	(name)	(name)	

Miscellaneous Breakdown	)	Private
Guardrail, signs, etc.	)	$9,653.00
Water Services	)	$32,296.00
Electrical Services	)	8,654.00
		$50,603.00

From: "Steve Bushey" <srbushey@maine.rr.com>
To: "William Needleman" <WBN@ci.portland.me.us>
Date: Wed, Dec 8, 1999 1:44 PM
Subject: Re: Portland Commons Estimates

Bill,
I have reviewed the cost estimate of improvements for the performance bond at Portland commons and find the Private amount to be satisfactory. The private amount needs to be reviewed by Public Works and/or Larry Ash as you discussed with him this a.m. If you have any questions please give me a call.
Steve
-----Original Message-----
From: William Needleman <WBN@ci.portland.me.us>
To: srbushey@maine.rr.com <srbushey@maine.rr.com>
Cc: Aqj@ci.portland.me.us <Aqj@ci.portland.me.us>
Date: Monday, December 06, 1999 4:18 PM
Subject: Portland Commons Estimates

Steve,

Have you had a chance to review the cost estimates submitted by Portland Commons? You may have given me the OK, but I can't recall. An Email or note for the file would be great. Thanks.

Bill

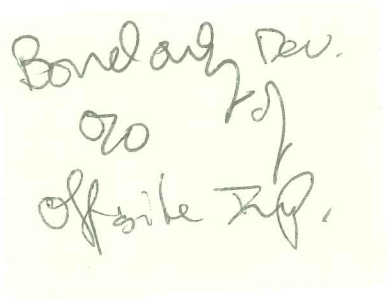
From: Larry Ash
To: William Needleman
Date: Thu, Dec 9, 1999 5:56 AM
Subject: Portland Commons

Bill: per our discussion yesterday the answer is the same, before a CO is issued street improvements(i.e. traffic signal and road widening, etc)
shall be completed.

If questions please call.

From: Larry Ash
To: William Needleman
Date: Fri, Dec 3, 1999 8:08 AM
Subject: Portland Commons

Bill: The developer will have to submit a design for traffic signals for my approval before proceeding. Mike White from White Bros called me and said that they(?) discussed the signals and that a cost of 45,000 was what he thought they would cost. I told him to double this amount plus there is work to be done on the signals at exit 8. Seems there needs to be a lot more communication on just what is going on, by whom, where. Jack Murphy does not know what is going on. Please advise thanks.



From: Larry Ash
To: William Needleman
Date: Tue, Dec 7, 1999 7:04 AM
Subject: Re: St Stevens Parish School, and Portland Commons

Bill: I don't need to attend their meeting. I DO have to review the signalization design. Please tell them the City would like to have mast arm installations and not strain poles. If any questions please call. Thanks.

>>> William Needleman 12/06 4:12 PM >>>
Larry,

Two items:

1. Let me know if you haven't received the plans for St. Stevens, I'll get them to you. They are hot for an answer.

2. Also, John O'Brien from Portland Commons says that he'll be setting up a meeting with White Bro's and jack Murphy to get a real number for traffic improvement estimates. You may be asked to attend. You're right, these people need to stream line their communication. O'Brien may call you or he may ask me to set up a meeting. Let me know if you think that you should be there when they discuss these numbers.

O'Brien also wants to know what percentage of the shared offsite improvements he needs to bond. The exit 8 work is to be shared with the turnpike and the City. Does he need to bond only his percentage? What did Coastal bank do for bonding off site traffic improvements?

Thanks,

Bill

From: Larry Ash
To: William Needleman
Date: Fri, Dec 3, 1999 8:08 AM
Subject: Portland Commons

Bill: The developer will have to submit a design for traffic signals for my approval before proceeding. Mike White from White Bros called me and said that they(?) discussed the signals and that a cost of 45,000 was what he thought they would cost. I told him to double this amount plus there is work to be done on the signals at exit 8. Seems there needs to be a lot more communication on just what is going on, by whom, where. Jack Murphy does not know what is going on. Please advise thanks.

City of Portland
Planning Department

389 Congress Street, 4th Floor
Portland, ME 04101
207-874-8721 or 207-874-8719
Fax: 207-756-8258

FAX TRANSMISSION COVER SHEET

Date: 12/7/99

To: Steve Bushy

Company: DeLuca Hoffman

Fax #: 879-0896

From: Bill Needelman

RE: Portland Commons Estimates

Steve,

Call if you have any questions. Thanks

Bill

YOU SHOULD RECEIVE 3 PAGE(S),
INLUDING THIS COVER SHEET.
IF YOU DO NOT RECEIVE ALL THE PAGES,
PLEASE CALL 207-874-8721 OR 207-874-8719.

CITY OF PORTLAND, MAINE
PLANNING BOARD

John H. Carroll, Chair
Jaimey Caron, Vice Chair
Kenneth M. Cole III
Cyrus Y. Hagge
Deborah Krichels
Erin Rodriquez
Mark Malone

July 13, 1999

The Waterford Group
Attn: John F. O'Brien
Piper Philips Building, Suite 204
227 West Fayette Street
Syracuse, New York 13202

re: Portland Commons Shopping Center

Dear Mr O'Brien:

On May 25, 1999 the Portland Planning Board voted 5 to 0 (Malone and Rodriguez absent) to approve your the site plan for the Portland Commons Shopping Center. The Board found that the application met the standards of the Site Plan ordinance of the Land Use code.

The approval was granted for the project with the following condition(s):

i. That the developer conduct the design, engineering, Right of Way acquisition, and construction of off-site traffic improvements as described in the traffic section of Planning Board Report #21-99. The preliminary engineering plans shall be reviewed for approval by City Public Works. The Developer's contribution for the road construction is $50,000, and the developer shall be responsible for all overages.

ii. That the developer's storm water management plan be acceptable to the Development Review Coordinator and City Public Works engineering.

iii. That a revised lighting plan be submitted with reduced light spill over on to adjacent properties for review and approval by Planning staff.

iv. That Signage Plans, details and elevations be submitted for review and approval by Planning staff and City Zoning.

v. That the applicant receive Maine Department of Environmental Protection permits for Wetlands filling and traffic impacts.

vi. The applicant shall submit letters of adequate capacity for utilities servicing the site for Planning staff review and approval.

vii. that the applicant submit heavy truck turning movements to the Planning staff for review and approval.

viii. That the applicant revise the southerly landscape buffer for review and approval by the Planning staff.

The approval is based on the submitted site plan and the findings related to site plan review standards as contained in Planning Report # 21-99, which is attached.

Please note the following provisions and requirements for all site plan approvals:

1. A performance guarantee covering the site improvements as well as an inspection fee payment of 1.7% of the guarantee amount and 7 final sets of plans must be submitted to and approved by the Planning Division and Public Works prior to the release of the building permit. If you need to make any modifications to the approved site plan, you must submit a revised site plan for staff review and approval.

2. The site plan approval will be deemed to have expired unless work in the development has commenced within one (1) year of the approval or within a time period agreed upon in writing by the City and the applicant. Requests to extend approvals must be received before the expiration date.

3. A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.

4. Prior to construction, a preconstruction meeting shall be held at the project site with the contractor, development review coordinator, Public Work's representative and owner to review the construction schedule and critical aspects of the site work. At that time, the site/building contractor shall provide three (3) copies of a detailed construction schedule to the attending City representatives. It shall be the contractor's responsibility to arrange a mutually agreeable time for the preconstruction meeting.

5. If work will occur within the public right-of-way such as utilities, curb, sidewalk and driveway construction, a street opening permit(s) is required for your site. Please contact Carol Merritt at 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)

The Development Review Coordinator (874-8300 ext. 8722) must be notified five (5) working days prior to date required for final site inspection. Please make allowances for completion of site plan requirements determined to be incomplete or defective during the inspection. This is essential as all site plan requirements must be completed and approved by the Development Review Coordinator prior to issuance of a Certificate of Occupancy. Please schedule any property closing with these requirements in mind.

If there are any questions, please contact the Planning Staff.

Sincerely,

John H. Carroll, Chair
Portland Planning Board

cc: Joseph E. Gray, Jr., Director of Planning and Urban Development
Alexander Jaegerman, Chief Planner
William B. Needelman, Planner
P. Samuel Hoffses, Building Inspector
Marge Schmuckal, Zoning Administrator
Tony Lombardo, Project Engineer
Development Review Coordinator
William Bray, Director of Public Works
Jeff Tarling, City Arborist
Penny Littell, Associate Corporation Counsel
Lt. Gaylen McDougall, Fire Prevention
Inspection Department
Kathleen Brown, Director of Economic Development
Susan Doughty, Assessor's Office
Approval Letter File

City of Portland
Planning Department

389 Congress Street, 4th Floor
Portland, ME 04101
207-874-8721 or 207-874-8719
Fax: 207-756-8258

FAX TRANSMISSION COVER SHEET

Date: 11/9/99

To: John F. O'Brien

Company: Water Board

Fax #: 315-414-0196

From: Bill Needelman

RE: Chap. 25, Art III of the Portland Code

for Board

YOU SHOULD RECEIVE 8 PAGE(S),
INLUDING THIS COVER SHEET.
IF YOU DO NOT RECEIVE ALL THE PAGES,
PLEASE CALL 207-874-8721 OR 207-874-8719.

in, on, above, or beneath public ways or other property upon receipt of proof of insurance in a form and in an amount satisfactory to the city. The city manager is also hereby authorized to promulgate from time to time such reasonable rules and regulations governing the design, construction, size and location of portable sidewalk signs as may be consistent with this division and in furtherance of the public interest, such rules and regulations to be submitted to the city council for approval. The city manager is further authorized to promulgate such other regulations as may be required for the location of other installations or structures in or use of the public ways.
(Code 1968, § 703.7A; Ord. No. 472-71, § 1, 9-20-71; Ord. No. 409-75, 7-21-75; Ord. No. 379-79, 12-3-79; Ord. No. 353-84, § 3, 4-23-84; Ord. No. 145-96, § 3, 1-17-96)

Sec. 25-29. Content.

The permit issued under this division shall contain such terms, conditions and restrictions as the city manager shall require.
(Code 1968, § 703.7A; Ord. No. 472-71, § 1, 9-20-71; Ord. No. 409-75, 7-21-75; Ord. No. 379-79, 12-3-79)

Sec. 25-30. Revocation; removal of installation.

The permit issued under this division shall be revocable by the city manager by written notice to the holder of such permit. Any such structure, tree or other installation not removed or relocated, or otherwise disposed of, in the manner and within the time specified in the notice shall be considered a defect in the public way or other public property and may be removed by the city without further notice and without any liability on the city's part whatsoever to the holder of the permit, his or her successors and assigns, and in the event the city shall be required to remove such installations, the costs of removal shall be borne by the permit holder.
(Code 1968, § 703.7A; Ord. No. 472-71, § 1, 9-20-71; Ord. No. 409-75, 7-21-75; Ord. No. 379-79, 12-3-79)

Secs. 25-31—25-45. Reserved.

ARTICLE III. STREET ACCEPTANCES

Sec. 25-46. Compliance.

No street or way shall be laid out and accepted as a public street or way by the city except in accordance with the provisions of this article.
(Code 1968, § 707.1)

Sec. 25-47. Acceptance of streets and ways dedicated for public travel prior to July 7, 1948.

A street or way dedicated for public travel prior to July 7, 1948, shall be laid out and accepted as a public street or way by the city only upon the following conditions:

(1) *Minimum width.* Such street or way shall have a minimum width of fifty (50) feet unless the owners of property adjoining the street or way shall convey to the city

sufficient land to lay out a fifty (50) foot street; provided, however, that the public works authority may permit a lesser width when a fifty (50) foot street is impracticable. Provided further that any such street or way located on any of the islands in Casco Bay, which is not considered to be a collector street in the opinion of the public

works authority and the planning board, may have a minimum width of thirty-two (32) feet.

(2) *Recorded plan.* A plan of the street or way shall have been recorded in the county registry of deeds prior to July 7, 1948.

(3) *Petition by abutters.* A majority of the abutters upon the street or way shall in writing, on a form to be prescribed by the public works authority, petition the city council to improve the street by grading, curbing, gravelling, macadamizing, paving, or in any other way making a permanent street of the same, or any part thereof; and in said petition shall waive any damages resulting from the laying out and acceptance of said street or way, or any necessary changes in the grade thereof; and shall agree to pay their just proportion of one-third of the cost thereof. For purposes of this article, a majority of the abutters shall mean those abutters who own more than fifty (50) percent of the frontage, both in front-feet and in assessed value.

(4) *Assessment of costs.* When the street or way shall have been laid out and accepted as a public street or way, and such improvements have been made, one-third of the cost thereof shall be assessed on the property adjacent to and bounded on the street or way in the manner, and with the same right of appeal, provided in 23 M.R.S.A §§ 3601–3605.

(Code 1968, § 707.2)

Cross reference—Uniform procedure for collecting assessments, § 1-16.

Sec. 25-48. Acceptance of streets and ways not previously dedicated for public travel.

A street or way constructed on private lands by the owner thereof, and a street or way not dedicated for public travel prior to July 7, 1948, shall be laid out and accepted as a public street or way by the city only upon the following conditions:

(1) *Deed from owners.* The owners shall give the city a deed to the property within the boundaries of the street.

(2) *Minimum width.* The street or way shall have a minimum width of fifty (50) feet. However, the street or way may have a lesser width if the plan thereof, showing such lesser width, has been approved by the planning board and the public works authority; provided that any such street or way located on any of the islands in Casco Bay, which is not considered to be a collector street in the opinion of the public works authority and the planning board, may have a minimum width of thirty-two (32) feet. In such cases, all other provisions of this article shall apply except that not more than sixteen (16) feet of such street or way shall be required to be developed for travel and only six (6) inches of gravel shall be required, but the entire width of such street or way shall be cleared of all stumps, roots, brush, perishable material and trees not intended for preservation as specified by the public works authority. There shall be no exceptions to the provisions of this article in the case of collector streets as determined as set forth above.

(3) *Recorded plan.* A plan of the street or way shall be recorded in the county registry of deeds.

(4) *Petition.* A petition for the laying out and acceptance of the street or way shall be submitted to the city council upon a form to be prescribed by the public works authority. The petition shall be accompanied by a plan, plot plan, profile and cross-section of the street or way as follows:

a. A plan and a plot plan drawn, when practicable, to a scale of forty (40) feet to one (1) inch, and to be on one (1) or more sheets of paper not exceeding twenty-four (24) inches by thirty-three (33) inches in size. The plot plan shall show the north point, the area of all lots, the length of all lot lines, the location and ownership of all adjoining subdivisions and adjacent acreage, passageways, street lines, buildings, boundary monuments, waterways, topography and natural drainage courses with contours at not greater than six (6) foot intervals, all angles necessary for the plotting of the street and lots and their reproduction on the ground, the distance to the nearest established street line, and any buildings abutting on the street or way, together with the stations of their side lines.

b. A profile of the street or way drawn to a longitudinal scale of forty (40) feet to one (1) inch and a vertical scale of four (4) feet to one (1) inch. The profile shall show the profile of the side lines and center lines of the street or way and the proposed grades thereof. Any buildings abutting on the street or way shall be shown on the profile.

c. A cross-section of the street or way drawn to a horizontal scale of five (5) feet to one (1) inch and a vertical scale of one (1) foot to one (1) inch.

d. The location and size of the proposed water mains in accordance with this article.

(5) *Specifications.* The street or way shall be previously constructed in accordance with the following specifications:

a. *Residential areas.* The roadway shall be built with a minimum thickness of fifteen (15) inches of road gravel, and three (3) inches of aggregate base gravel, both of which shall be satisfactory to the public works authority. The roadway shall be surfaced with two (2) inches of hot bituminous concrete properly prepared and laid in two (2) courses of one (1) inch each, in accordance with specifications of the public works authority.

The sidewalks shall be built of gravel six (6) inches in depth and the driveways, including that part crossing the sidewalk, shall be built of gravel ten (10) inches in depth; both to be covered by a two (2) inch top of hot bituminous concrete, properly prepared and laid in two (2) courses of one (1) inch each, in accordance with the standard specifications of the public works authority. Curbing shall be provided as required in article IV of chapter 14.

The street or way shall be constructed by the following method: It shall be cleared of all stumps, roots, brush, perishable material and all trees not intended for preservation. All loam, loamy material and clay shall be removed from the

street or way to the depths specified by the public works authority. The street shall then be graded to a subgrade of not less than twenty (20) inches in the roadway location and not less than twelve (12) inches in the driveway areas, below and parallel to the finished grade as shown on the plans, profiles and cross-section of the street or way. The subgrade shall be carefully shaped and thoroughly compacted before the gravel is placed. When a minimum length of three hundred (300) feet, or the entire length of street if less than three hundred (300) feet, has been excavated to subgrade and this subgrade properly prepared for the gravel, the public works authority shall be notified and after inspection his or her approval obtained for placing the gravel.

The gravel shall then be placed and compacted in layers of not more than six (6) inches in the roadway and driveway area and not more than eight (8) inches in the sidewalk areas. Before the roadway is paved, and the bituminous concrete laid in the sidewalk and driveway areas, the work shall again be inspected and approved by the public works authority. Suitable forms or headers must be used for the construction of the bituminous top to insure proper alignment and grade.

b. *Industrial areas.* Roadways shall be paved with a high type pavement in accordance with the standard specifications of the public works authority.

(6) *Engineering work.* All engineering work, including the setting of grade stakes, necessary for the construction of the street and sidewalks, shall be performed by the developer at his or her expense.

(7) *Sewers and drains.* Any sewers and appurtenances, drains, including house drains and catch basins, which are to be built iii the street or sidewalks, and all underground utilities and their respective services, shall be constructed before any road material is placed, except for house connections to serve lots where no construction has begun prior to the placing of such road material. In any event a minimum of seventy-five (75) percent of all lots on any one (1) street within the section of the subdivision being constructed shall have the house connections completed within the street right-of-way before the aggregate base course is placed thereon. If a hardship is created by strict compliance with the above requirements, request for a variance may be made in writing to the public works authority who shall respond in writing to the city council stating approval or disapproval. Whenever it shall be deemed necessary by the public works authority that a sanitary sewer or storm sewer be constructed to serve the street under consideration, such sanitary sewer or storm sewer shall be completed before the gravel or road material is placed thereon. The sewer shall be built by the developer in accordance with one (1) of the following methods:

a. The developer shall cause the sanitary sewers and storm sewers and appurtenances, including catch basins to be built to the specifications of the public works authority and under his or her supervision. Such construction shall be by competitive bids, duly advertised, and to the satisfaction of the public works authority. When the sewer and an easement therefor have been deeded to the city,

the city may make payment to the developer of the cost of any catch basins plus one-third of the total remaining costs thereof, as determined by the public works authority, the city's engineering costs to be included in the total cost and deducted from the city's payment.

b. The developer shall cause the sanitary sewers and storm sewers and appurtenances, including catch basins, to be built to the specifications of the public works authority and under his or her supervision, but without regard to competitive bids. When the street has been accepted, the sewer shall be deeded to the city as a public sewer at no cost to the city.

c. When the public works authority requires such sewer to be of a larger size than would be needed for the development under consideration, the added cost for the excess size as determined by the public works authority may be paid by the city upon authorization by the city council, provided the sewer is built through competitive bidding, properly advertised, and to the satisfaction of the public works authority.

(8) *Water main.* A reasonably available water main of at least eight (8) inches in diameter must exist for the use of buildings, residents and occupants of the street to be accepted and the chief of the fire department must, in writing, certify that adequate water service for sufficient fire protection hydrants exists. In the case of a street or way located on the islands in Casco Bay, no water main need be provided when the chief of the fire department and the planning board shall certify in writing that no water supply is reasonably available to serve such street or way. Provided, however, that the city council may accept a street with a water main of less than eight (8) inches in diameter when the chief of the fire department and the planning board, in writing, certify that a water main of less than eight (8) inches in diameter will furnish adequate water service for sufficient fire protection hydrants for the street to be accepted and any future extension or extensions of the street. If shall be the policy of the city to cause the installation of such hydrants as may be required for fire protection at the same time as the installation of the water main.

(Code 1968, § 707.3; Ord. No. 405A-73, §§ 1—6, 6-18-73)

Sec. 25-49. Streets and ways required by the general public interest.

Notwithstanding the provisions of sections 25-45 and 25-46, the city council may, at any time, lay out and accept any street or way in the city, as a public street or way of the city, the cost thereof to be borne by the city, whenever the general public interest so requires.

(Code 1968, § 707.4)

Sec. 25-50. No street or way to be accepted until after report by planning board and public works authority.

No street or way shall be laid out and accepted by the city until the planning board and the public works authority shall have made careful investigation thereof and shall have reported to the city council their recommendations with respect thereto.

(Code 1968, § 707.5)

Sec. 25-51. Improvement of streets which have been accepted but not improved or used for public travel.

(a) When any person owning property on a street which has been accepted but has not been improved or used for public travel prior to July 7, 1948, shall petition for the improvement of such street, such improvement may be ordered by the city council. The petition shall be in writing, shall be signed by a majority of the abutters on such street, and shall contain a waiver of any damages resulting from the improvement of the street and an agreement to pay their just proportion of one-third of the cost of the improvement.

(b) When the street shall have been improved, one-third of the cost thereof shall be assessed on the property adjacent to and bounded on the street in the manner, and with the same right of appeal, provided in 23 M.R.S.A §§ 3601—3605.

(c) A street shall be deemed, for purposes of this article, to have been improved and used for public travel if at some time in the past it has been graded to the established grade and surfaced with gravel or with some other type of street surfacing material authorized at the time by the public works authority.
(Code 1968, § 707.6)

Sec. 25-52. Improvement of streets required by the public interest.

Notwithstanding the provisions of section 25-51, the city council may, at any time, order the improvement of streets which have been accepted but not improved or used for public travel, the cost thereof to be borne by the city, whenever the general public interest so requires.
(Code 1968, § 707.7)

Secs. 25-53—25-65. Reserved.

ARTICLE IV. STREET GRADES

Sec. 25-66. Base line.

Mean tide elevation shall be adopted, as a base line from which all levels taken are to be measured, and to which all grades of streets, drains and sewers shall have reference.
(Code 1968, § 708.1)

Sec. 25-67. Reserved.

Editor's note—Ord. No. 279-85, § 1, adopted Dec. 2, 1985, repealed § 25-67, relative to the line and grade of streets, which derived from Code 1968, § 708.2.

Secs. 25-68—25-80. Reserved.

From: William Bray
To: Robert Ganley
Date: Thu, Oct 7, 1999 6:44 AM
Subject: Portland Commons Development

Bob, this project is the project located on Riverside Street near Exit 8. I have been working with MDOT in trying to resolve the MDOT traffic permit process for the Developer. After much discussion MDOT has agreed to issue a permit subject to the following condition. If the intersection of Exit 8 and Riverside Street reaches a failure condition within the next three years then the City would be obligated to improve the intersection to an acceptable condition. I have indicated to MDOT that I was comfortable with this condition with a modification that included lanquage that protected the City to outside Portland traffic growth. Hopefully , you are comfortable with this decision, I am especially knowing that Exit 8a will be operational in three years. I will continue to pursue and review the final draft document with yourself and Legal.
Bill

CC: Joe Gray , Larry Ash

III. STAFF REVIEW

This development has been reviewed by staff for conformance with the standards of the site plan ordinance. Since the previous Planning Board workshop on this project, revised stormwater management and traffic reports have been submitted. While these reports address specific staff concerns, their late submittal has not allowed for complete review by City Traffic or the Development Review Coordinator.

1. Traffic

Traffic has been the issue of greatest concern for this development and the developer, City Traffic Engineer, and Public Works have been working hard to find a solution which satisfies all parties and the standards.

Currently, the subject property is serviced by Riverside Court at its intersection with Riverside Street. The applicant proposes to reconfigure this intersection to a right angle geometry with the addition of a traffic signal. At the request of City traffic, a fifth southbound lane will be added to Riverside Street from 100 ft. north of the intersection extending to the intersection of Exit 8 of the Turnpike and Larrabee Road. An 80 ft. taper will proceed northerly from the southbound lane, terminating across from the intersection with Campbell Road.

The applicant's traffic engineer, Jack Murphy, has produced a report stating that a service level of D or better will be achieved throughout the study area. The study area runs from Exit 8 to Warren Avenue. City Traffic Engineer, Larry Ash, has only had opportunity to perform a preliminary review of the report, but has indicated that the proposed design will perform adequately. Public Works Director, Bill Bray, has indicated that the proposed design fits within the City's plans for Riverside street.

This development will require permitting under the Maine DEP Site Location of Development regulation for traffic impacts, as over 200 trips per peak hour is anticipated.

The extent of off-site traffic improvements for this projects will require the financial and technical cooperation of the City, the Maine Turnpike, and the developer. The negotiations have separated the traffic improvements into on-site improvements and off-site improvements: off-site improvements being the added southbound lane and alterations at Exit 8, and on-site improvements being the signalized intersection and all alterations north of the intersection, as well as improvements on the subject property. As of the writing of this report, the City and the Maine Turnpike have committed to contributing $50,000 each to the construction of the additional southbound lane and pavement overlay. The developer is responsible for the design, engineering, right of way acquisition, and $50,000 toward the off-site improvements, plus overages. The developer will be responsible for all on-site traffic improvements. See Traffic Report and Correspondence, Attachment E.

Pedestrian Circulation

Sidewalks and crosswalks are proposed along Riverside Street and at the re-designed intersection. Internal pedestrian circulation is provided along the entrance sides of the

proposed buildings and through the parking area on an extended landscape island.

2. Parking

The developer proposes to provide 266 parking spaces. As this development is over 50,000 sq. ft., under Site Plan Standard 14-526(1)a., the Planning Board shall establish the parking requirement for this development. A parking analysis has not been provided as part of this review.

3. Bulk, location, height of proposed structure, health and safety problems

There are no known health or safety problems associated with this project.

4. Bulk, location, height of proposed structures minimizes substantial diminution in the value or utility to surrounding structures

The proposed restaurant (6000 sq ft.) is a one story hip roofed structure of modest scale. The retail building (48,850 sq ft.) is a concrete block structure 24 ft tall at the roof and 35 ft. tall at the parapet.

This development will impact the residential neighbors and Tire Wear house on Campbell Road to the north, the Howard Johnson's/Verrillo's complex to the south, and the Maine Turnpike to the east.

Proprietors of Verrillo's resturaurant have concerns about the location of the 99 Resturaurant at Riverside Street. They feel that the location and intersection design of the proposed development gives a competitive advantage to the new resturaurant. See Attachment G.

The residents of Campbell Street will receive the greatest impact from the bulk and height of the retail building. The applicant has moved the building 10 ft. south providing a greater than 50 ft. set back from the property line and more than 115 ft. set back from the closest residence. Mature forest vegetation is proposed to remain along the Campbell Street property line and additional landscape buffering is being provided.

Drivers along the Maine Turnpike are presented with the rear of the retail building. Forest buffer currently exists on the turnpike property and the applicant has added some additional pine and cherry buffering along the easterly property line.

5. Sewers, storm drains, water, utility capacity

The applicant's agents have been asked to provide utility capacity letters, but none have been provided as of the writing of this report.

6/7. Landscaping

The proposed plan provides generous amounts of buffer and internal landscaping. At the Board's suggestion, buffer trees and shrubs have been added to the southerly and easterly property lines. A sign, presented to the Turnpike, is proposed within a landscaped bed. No details of the sign have been provided.

Existing forest and wetland vegetation will be lost along the northerly property line and at the southeasterly corner, in the vicinity of the proposed detention area. A Maine DEP wetlands filling permit will be needed for the filling in these areas. See DEP Letter, Attachment H.

8. Soil and drainage

The applicant has prepared an updated stormwater management report which responds to concerns of the Development Review Coordinator, Jim Wendell, and Public Work Engineer, Anthony Lombardo. As the updated report was not provided in time for adequate review, comments from the DRC and Public Works were not available at the writing of this report.

The pre-development stormwater flows from the Riverside Street and Campbell Street areas to the east and south, out flowing into a 48 in. culvert and a 24 in. culvert, both extending across the Maine Turnpike into a tributary of Capisic Brook.

Drainage from Campbell Street residents and the Tire Wear house utilizes a drainage stream at the north of the property, and residents retain rights of flowage over the subject parcel. The building footprint and associate grading will bury this surface drainage, and proposes sub-surface storm drains and catchment. The grading plan allows for continued drainage for Campbell Street and the existing cellar drains.

The stormwater generated by this development will be largely collected in a detention pond at the southeast corner of the property. The pond will outflow via sub-surface pipe to a Vortex model treatment tank before exiting the property through the 24 in. culvert under the turnpike. Water from the north of the property will access the Vortex unit directly. An emergency spillway flows from the detention pond into the 48 in. culvert during large storm events.

Comments from the DRC and Public Works will hopefully be available prior to the Public Hearing. See Stormwater correspondence, Attachment I.

9. Lighting

A lighting plan has been submitted indicating the proposed fixtures and photometric. The pole fixtures are to be modified shoe box cut off models from at the retail area, and are to be decorative pole mount models at the resturaurant. Wall mount units are positioned on the south and east of the retail building, and sign lights are positioned at the Turnpike.

The photometric plan shows adequate cut off at the property lines on the north and south, but some spill over encroaches onto the Turnpike property, and onto Riverside Street. By telephone conversation, the applicant's agent has indicated that additional cutoff will be provided in the areas of spill over. See lighting plan, Attachments B7 and L.

10. Fire

The Fire Department has reviewed the plan and finds it acceptable.

11. Infrastructure

The proposed development is designed so as to be consistent with off-premises infrastructure existing or planned by the city. See the Traffic section above.

12-19. N/A

20-21. Environmental Impact

As stated above, the stormwater report needs to be further reviewed, and DEP wetland filling permits needs to be obtained. The applicant provides stormwater treatment, and the DEP did not identify the northerly drainage area as a high value area.

22. Signs

Sign details have yet to be provided.

23. N/A

24. Requirements for Major and Minor Businesses

a. Signs. See above.

b. Circulation. See Traffic section.

c. Drive-up Features.

The proposed ATM kiosk has adequate setback from the street and adequate stacking for safe traffic circulation.

IV. MOTIONS FOR THE BOARD TO CONSIDER

On the basis of plans and material submitted by the applicant and on the basis of information provided in Planning Report # 21-99, the Planning Board finds:

A. That the plan is in conformance with the Site Plan Ordinance of the Land Use Code.

Subject to the following conditions:

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Subject to the following conditions:

1. That the developer conduct the design, engineering, Right of way acquisition, and construction of off-site traffic improvements as described in the traffic section of this report. The preliminary engineering plans shall be reviewed for approval by City Public Works. The developer's estimated contribution for these improvements is $50,000, and the developer shall be responsible for all overages.

2. That the developer's Stormwater Management Plan be acceptable to the Development Review Coordinator and Public Works Engineering.

3. That a revised Lighting Plan be submitted with reduced light spill over onto adjacent properties for review and approval by Planning Staff.

4. That Signage Plans, details and elevations be submitted for review and approval by Planning Staff and City Zoning.

5. That the applicant receive Maine Department of Environmental Protection permits for wetlands filling and traffic impacts.

Attachments

A. Background Information
B. Site Plans
C. Building Elevations
D. Riverside Court Issues
E. Traffic Report and Correspondence
F. Riverside Street Traffic Improvement Plans
G. Letters from Neighbors
H. DEP Letter
I. Stormwater Correspondence
J. Stormwater Report
K. Capisic Watershed Map
L. Lighting Fixtures

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1. That the developer conduct the design, engineering, Right of way acquisition, and construction of off-site traffic improvements as described in the traffic section of this report. The preliminary engineering plans shall be reviewed for approval by City Public Works. The developer's estimated contribution for these improvements is $50,000, and the developer shall be responsible for all overages.

2. That the developer's Stormwater Management Plan be acceptable to the Development Review Coordinator and Public Works Engineering.

3. That a revised Lighting Plan be submitted with reduced light spill over onto adjacent properties for review and approval by Planning Staff.

4. That Signage Plans, details and elevations be submitted for review and approval by Planning Staff and City Zoning.

5. That the applicant receive Maine Department of Environmental Protection permits for wetlands filling and traffic impacts.

Attachments

A. Background Information
B. Site Plans
C. Building Elevations
D. Riverside Court Issues
E. Traffic Report and Correspondence
F. Riverside Street Traffic Improvement Plans
G. Letters from Neighbors
H. DEP Letter
I. Stormwater Correspondence
J. Stormwater Report
K. Capisic Watershed Map
L. Lighting Fixtures

On the basis of plans and material submitted by the applicant and on the basis of information provided in Planning Report # 21-99, the Planning Board finds:

A. That the plan is in conformance with the Site Plan Ordinance of the Land Use Code.

Subject to the following conditions:

1. That the developer conduct the design, engineering, Right of way acquisition, and construction of off-site traffic improvements as described in the traffic section of this report. The preliminary engineering plans shall be reviewed for approval by City Public Works. The developer's estimated contribution for these improvements is $50,000, and the developer shall be responsible for all overages.

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H4

PUBLIC WORKS ENGINEERING MEMORANDUM

To: *Bill Needelman Senior Planner*
From: *Anthony Lombardo, P.E., Project Engineer*
Date: *March 26, 1999*
Subject: *Portland Commons Shopping Center....Riverside Street.*

The following comments were generated during Public Works Engineering review of proposed commercial development on Riverside Street by Waterford of Portland, L.L.C. The plans and application were dated March 18, 1999.

The proposed drainage outfall location, adjacent to the Me Turnpike Authority, is specifies a side slope less than 1:1. This slope is too steep for riprap and a retaining wall should be considered. As proposed, the applicant would have great difficulty in grading this side slope without encroaching on MTA property.

On Sheet S1, under General Notes, the Deed Book and Page has been omitted.

On Sheet S1, the plan references an "Offsite Improvement Plan" for Riverside Street. This plan was not included as part the plan and application submittal.

The detail sheets should include a construction detail for the proposed Vortechs Model 4000 stormwater treatment tank.

Per the City Ordinance, the applicant will have to submit a "Standard Boundary Plan", which includes plan references, stamped and signed by a licensed surveyor.

FAXED TO Sebago Tech.

SPILLWAY CHANNEL

LANDOWNER _____ ADDRESS _____

PROJECT PORTLAND COMMON BY DGE DATE 6/3/19

********** V AND TRAPEZOIDAL CHANNEL INPUT VALUES **********

BOTTOM WIDTH (USE 0 WHEN DESIGNING FOR V-DITCHES)	(FT)	B= 3
MANNINGS' N EARTH=.02, GRASS=.04-.1, NATURAL=.04-.08		N= .05
CHANNEL SLOPE	(FT/FT)	S= .06
SIDESLOPES *** EXPRESSED AS A WHOLE # (Z : 1) ***		Z= 3
MAXIMUM CHANNEL DEPTH	(FT)	D= 1
COMPUTATIONAL DEPTH INCREMENT (0 = DEFAULT = D/3)	(FT)	I= .25

********** V AND TRAPEZOIDAL CHANNEL OUTPUT VALUES **********

DEPTH D (FT)	FLOW AREA A (SF)	PERIMETER P (FT)	TOP WIDTH T (FT)	VELOCITY V (FPS)	DISCHARGE QA (CFS)	CRIT.VEL CV (FPS)
.25	.94	4.58	4.5	2.57	2.42	2.59
.5	2.25	6.16	6	3.75	8.44	3.47
.75	3.94	7.74	7.5	4.65	18	4.11
1	6	9.32	9	5.41	32	4.63

DO YOU WANT TO CHANGE A VARIABLE Y/N ?

EMERGENCY SPILLWAY

PROJECT PORTLAND COMMONS BY DGE DATE 5/3/99

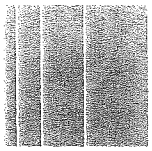
********** V AND TRAPEZOIDAL CHANNEL INPUT VALUES **********

BOTTOM WIDTH (USE 0 WHEN DESIGNING FOR V-DITCHES)	(FT)	B=	12
MANNINGS' N EARTH=.02, GRASS=.04-.1, NATURAL=.04-.08		N=	.05
CHANNEL SLOPE	(FT/FT)	S=	.01
SIDESLOPES *** EXPRESSED AS A WHOLE # (Z : 1) ***		Z=	3
MAXIMUM CHANNEL DEPTH	(FT)	D=	1.5
COMPUTATIONAL DEPTH INCREMENT (0 = DEFAULT = D/3)	(FT)	I=	.25

********** V AND TRAPEZOIDAL CHANNEL OUTPUT VALUES **********

DEPTH D (FT)	FLOW AREA A (SF)	PERIMETER P (FT)	TOP WIDTH T (FT)	VELOCITY V (FPS)	DISCHARGE QA (CFS)	CRIT.VEL CV (FPS)
.25	3.19	13.58	13.5	1.12	3.57	2.76
.5	6.75	15.16	15	1.74	12	3.8
.75	10.69	16.74	16.5	2.21	24	4.56
1	15	18.32	18	2.6	39	5.18
1.25	19.69	19.91	19.5	2.95	58	5.7
1.5	24.75	21.49	21	3.26	81	6.16

DO YOU WANT TO CHANGE A VARIABLE Y/N ?



SebagoTechnics

Engineering & Planning for the Future

Stormwater Runoff Evaluation/ Erosion & Sediment Control Plan

Portland Commons Shopping Center
191 Riverside Street
Portland, Maine

May 1999

prepared by:

Sebago Technics, Inc.
12 Westbrook Common
P. O. Box 1339
Westbrook, ME 04098-1339

TABLE OF CONTENTS

Section 1

- **Stormwater Management/ Erosion & Sediment Control Narrative**
- **U.S.G.S. Map**
- **Soil Map**

Stormwater Runoff - Summary Table				
Condition	Study Point	Peak Runoff Rate (cfs)		
		2-Year	10-Year	25-Year
Pre-Development	Flow Entering Reach 3	0.96	2.43	3.20
Post-Development	Flow Entering Reach 10	0	2.48	3.42
Net Change		-0.96	+0.05	+0.22
Pre-Development	Flow Leaving Pond 1	2.37	5.76	7.15
Post-Development	Flow Entering Reach 20	2.28	5.02	7.03
Net Change		-0.09	-0.74	-0.12

As mentioned previously, the study points are the existing 24" CMP and 48" RCP Turnpike culverts. Reach 3 in the pre-development condition and Reach 10 in the post-development condition represent the 24" CMP study point. Pond 1 in the pre-development condition and Reach 20 in the post-development condition represent the 48" RCP study point.

It is not anticipated that these flow rates will have an adverse affect on the downstream receiving area. The discharge locations for the drainage systems have been designed to be stabilized and limit potential erosion at the outlets.

In addition to the quantitative analysis, a qualitative analysis was performed for a 1-year, 24-hour duration storm event. In accordance with the State of Maine Stormwater Management Laws, a (TSS) total suspended solids removal rate of 71% efficiency is required based on this project's location and the extent of impervious area to be created. To obtain the 71% TSS efficiency, a "Vortechnics" stormwater treatment system will be utilized. Based on the contributing area, the removal efficiency of this system is estimated to be 73.5%.

Conclusion

The preceding stormwater narrative has been prepared to outline the pre- and post-development conditions for the proposed Portland Commons Shopping Center. The principal stormwater runoff features will include a combination of catch basins, detention pond, and stormwater treatment system. An erosion control plan has been made an integral part of the overall project, and specific instructions and details have been placed directly on the plans.

Prepared by:

SEBAGO TECHNICS, INC.

Nancy Gilbert for:

Donald G. Ettinger, Jr.
Project Engineer

DGE/NJG:dge/jc
May 4, 1999

Reviewed by:

SEBAGO TECHNICS, INC.

Nancy Gilbert

Nancy J. Gilbert
Professional Engineer

5. All hay bale and/or filter fabric barriers will remain in place until seedings have become 85%-90% established and then removed within 10 days.

D. Construction Schedule

Site improvements will most likely begin in the Spring of 1999, depending on final approval and the selection of a site contractor. Based upon a spring construction start, the following schedule has been prepared:

Schedule

1.	Estimated construction time: 6 months	May 1, 1999 - Octoberl, 1999
2.	Erosion control measures placed.	May 3, 1999
3.	Site clearing, grubbing, excavation and filling (roadway construction).	May 5, 1999 - June 1999
4.	Drainage and utility improvements.	May 1999 - July 1999
5.	Start final/temporary seedings on prepared areas.	May 15, 1999
6.	Biweekly monitoring of vegetative growth.	May 30, 1999 – October 1999
7.	Re-seeding of areas, if needed.	October 30, 1998 - July 1999
8.	Mulch spread for winter erosion control, if needed.	October 15, 1999
9.	Removal of erosion control devices.	June 2000

* Dates are subject to change at the discretion of the engineer, depending on construction progress.

2. All topsoil shall be collected, stockpiled and seeded with Rye at 3 lbs./1,000 square feet and mulched on site and re-used as required. Siltation fencing shall be placed down gradient from stockpiled loam. Loam shall be stockpiled at locations designated by the owner. Designated locations shall be determined prior to or at the pre-construction meeting.

3. All silt fences and/or hay bale barriers shall be installed according to this plan. These shall be maintained during development to remove sediment from runoff water. All the silt fences shall be inspected after any rainfall or runoff event, maintained and cleaned until all areas have at least 85%-90% vigorous perennial vegetative cover of grasses.

4. All areas shall be seeded in accordance with the following vegetation plan.

C. Vegetation Plan

Revegetation measures shall commence immediately upon completion of construction. Disturbed areas shall be mulched and anchored prior to any storm event. If final seeding cannot be accomplished by September 15th, then all disturbed areas shall be hay mulched at a rate of 150 lbs. per 1,000 S. F. and seeded with a winter cover crop of Rye at the rate of 3 lbs./1,000 S.F. to provide winter protection. Hay mulch shall be secured with a suitable binder to include RMB plus and/or erosion control netting as directed by the owner/inspection engineer.

Revegetation measures shall consist of the following:

1. Four inches of loam will be spread over disturbed areas and smoothed to a uniform surface. Loam shall be free of subsoil, clay lumps, stones and other objects over 1" in diameter, and without weeds, roots or other objectionable material.

2. In lieu of soil tests, agricultural limestone shall be spread at the rate of 3 tons per acre. 10-20-20 fertilizer shall be applied at a rate of 800 lbs./acre. These soil amendments shall be incorporated into the soil prior to final seeding.

3. Following seed bed preparation, swale areas, fill areas and back slopes shall be seeded at a rate of 4 lbs./1,000 square feet to a mixture of 35% Creeping Red Fescue, 6% Red Top, 24% Kentucky Bluegrass, 10% Perennial Ryegrass, 20% Annual Ryegrass and 5% White Dutch Clover. The lawn areas will be seeded to a premium turf mixture of Bluegrass and/or Fescue; seeding rate of 3 lbs. per 1,000 square feet.

4. Hay mulch shall be applied to all disturbed areas at the rate of 150 lbs. per 1,000 square feet, or a hydro-application of asphalt, wood or paper fiber will be applied following seeding. A suitable binder, such as RMB Plus and/or erosion control netting will be used on hay mulch for wind control.

E. Inspections/Monitoring

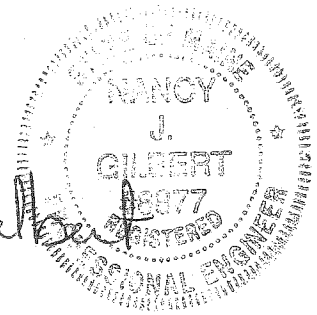
Maintenance measures shall be applied as needed during the entire construction cycle. After each rainfall, the site contractor shall perform a visual inspection of all installed erosion control measures and perform repairs as needed to insure their continuing function.

Following the temporary and/or final seedings, the contractor shall inspect the site semimonthly until the seedings have been established. Established means a minimum of 85%-90% of areas vegetated with vigorous growth. Reseeding shall be carried out by the contractor with follow-up inspections in the event of any failures until vegetation is adequately established.

Prepared by:

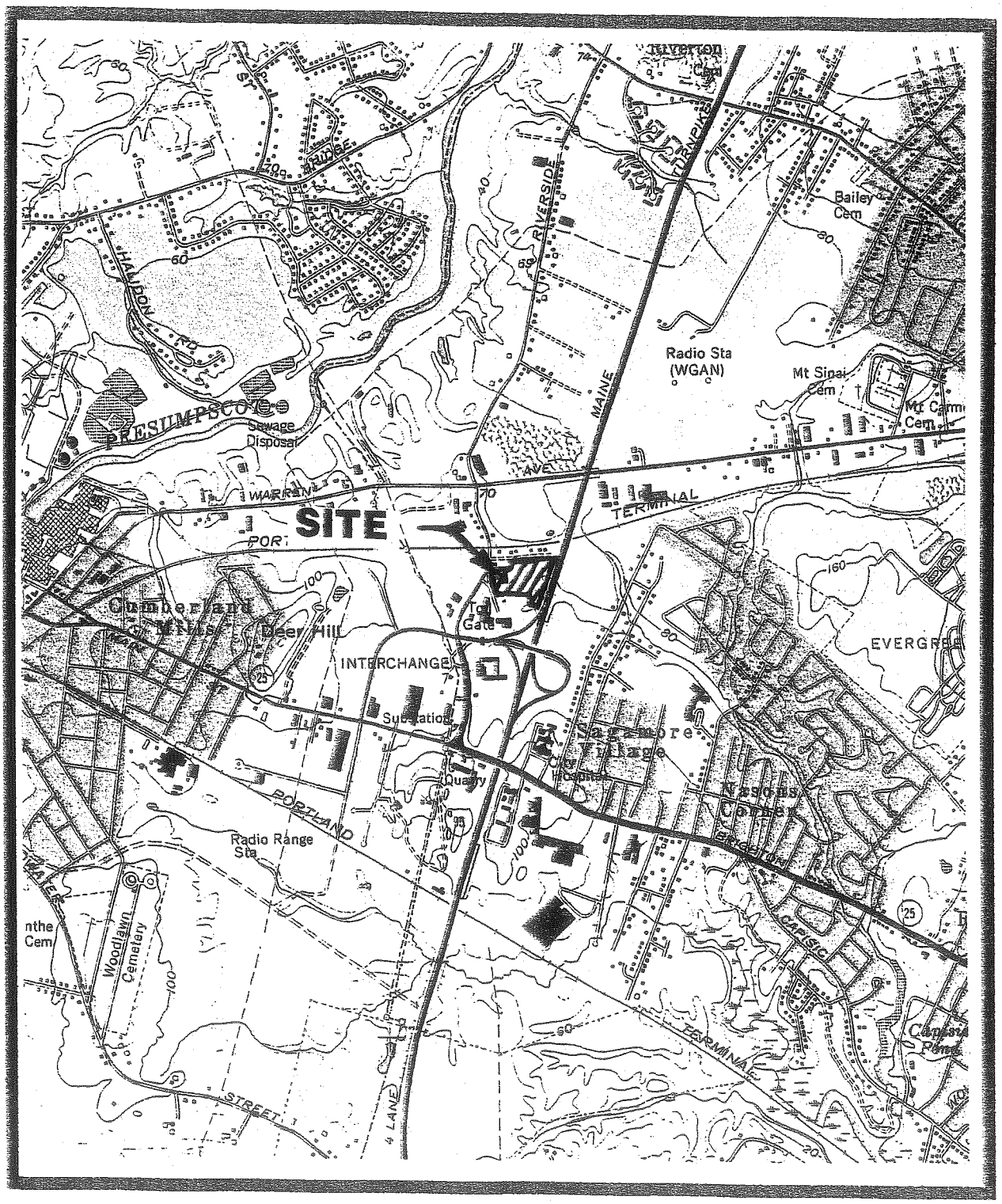
SEBAGO TECHNICS, INC.

Donald G. Ettinger
Project Engineer



Nancy J. Gilbert
Professional Engineer

DGE/NJG:jc
March 17, 1999



SITE LOCATION MAP

USGS 7.5 MIN. TOPOGRAPHIC

PORTLAND WEST QUADRANGLE

SCALE 1"=2000'

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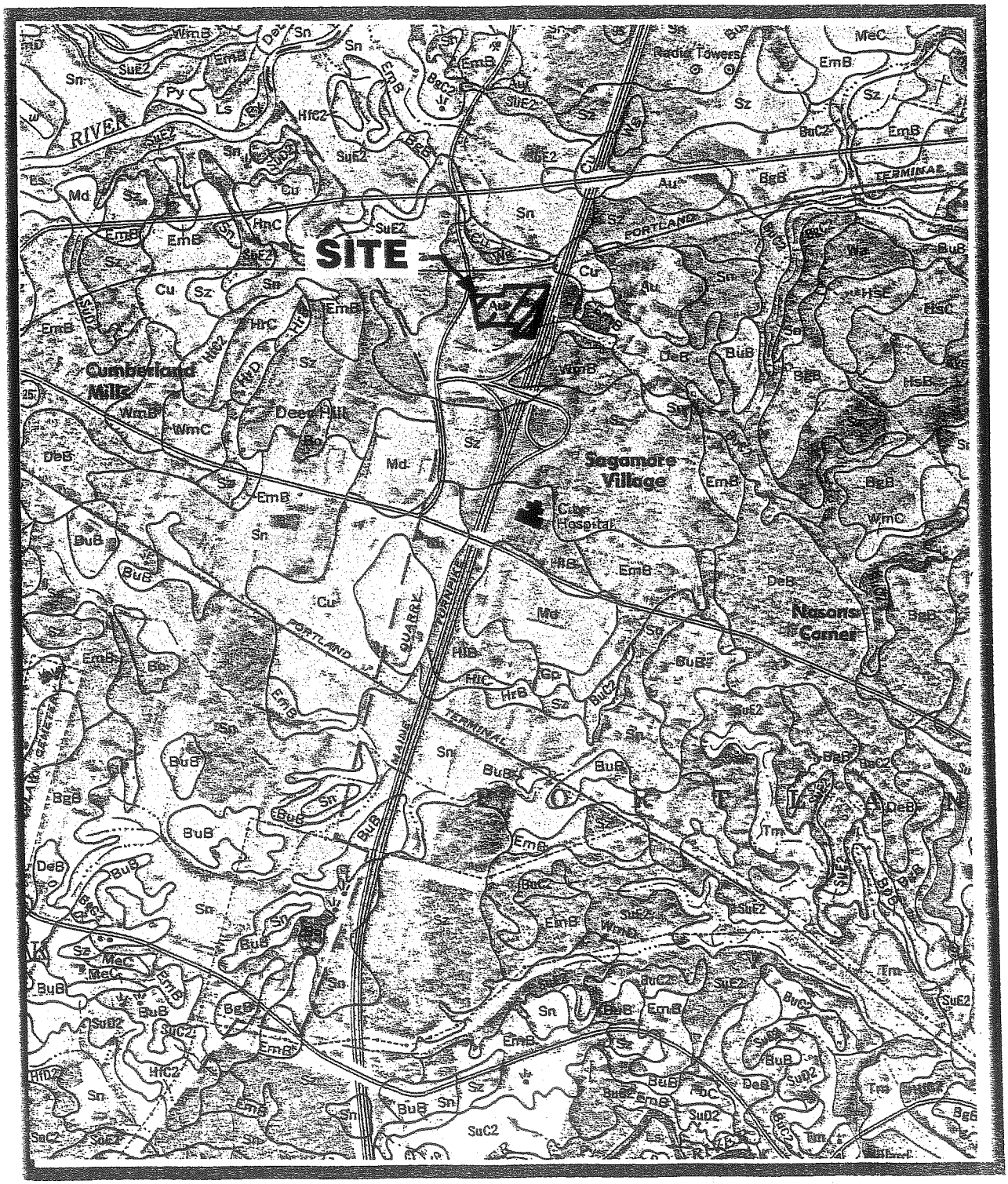


MEDIUM INTENSITY SOIL SURVEY

CUMBERLAND COUNTY

SHEETS 81

LOCATION: RIVERSIDE ST., PORTLAND

SCALE 1"=1667'

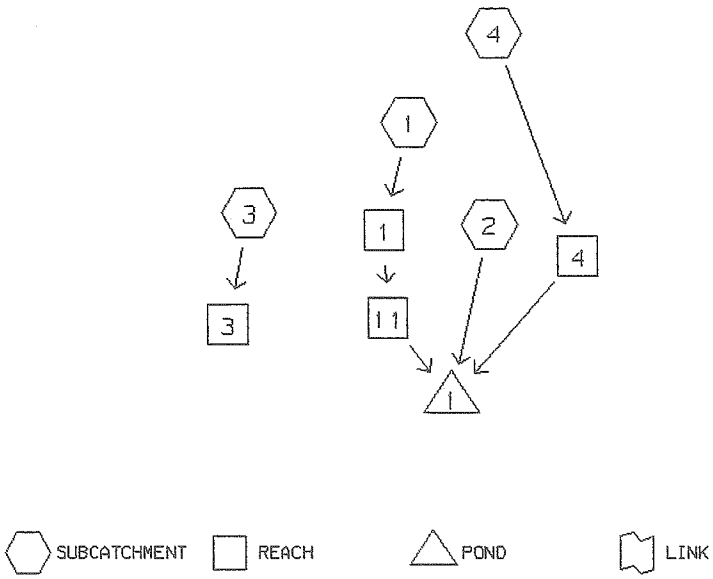
Sebago Technics

Engineering & Planning for the Future

Section 2

Peak Rates of Runoff: Pre-Developed Conditions

WATERSHED ROUTING



SUBCATCHMENT 1 UPPER PARKING & AUCTION BLDG

PEAK= 5.47 CFS @ 12.06 HRS, VOLUME= .42 AF

ACRES	CN	
2.22	98	IMPERVIOUS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	roof area	1.0
Smooth surfaces n=.011 L=40' P2=3 in s=.005 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	pavement area	.3
Paved Kv=20.3282 L=60' s=.02 '/' V=2.87 fps		
CIRCULAR CHANNEL	closed drainage system	6.2
8" Diameter a=.35 sq-ft Pw=2.1' r=.167'		
s=.005 '/' n=.025 V=1.27 fps L=477' Capacity=.4 cfs		
	Total Length= 577 ft Total Tc=	7.5

SUBCATCHMENT 2 NE PARKING, WOODS, POND, CAMPBELL ST

PEAK= 3.20 CFS @ 12.20 HRS, VOLUME= .31 AF

ACRES	CN	
1.42	55	WOODS, GOOD, B SOILS
1.59	61	LAWN , B SOILS
1.74	98	IMPERVIOUS
4.75	73	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	12.3
Grass: Short n=.15 L=90' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	STREET CROSSING & WOODS	1.1
Woodland Kv=5 L=75' s=.053 '/' V=1.15 fps		
CHANNEL FLOW	CHANNEL INTO POND	1.9
a=90 sq-ft Pw=29.8' r=3.02'		
s=.019 '/' n=.13 V=3.29 fps L=370' Capacity=296.3 cfs		
	Total Length= 535 ft Total Tc=	15.3

SUBCATCHMENT 3 SE PARKING AREA AND WOODS

PEAK= .96 CFS @ 12.10 HRS, VOLUME= .08 AF

ACRES	CN	
.36	55	WOODS, GOOD, B SOILS
.40	61	LAWN, B SOILS
.43	98	IMPERVIOUS
1.19	73	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**PARKING AREA**	1.7
Smooth surfaces n=.011 L=100'	P2=3 in s=.01 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	**PARKING AREA**	1.0
Paved Kv=20.3282 L=120' s=.01	'/' V=2.03 fps	
CHANNEL FLOW	**DITCH THRU WOODS**	5.6
a=9 sq-ft Pw=12.4' r=.726'		
s=.04 '/' n=.4 V=.6 fps L=200'	Capacity=5.4 cfs	
	Total Length= 420 ft Total Tc=	8.3

SUBCATCHMENT 4 TIRE WAREHOUSE & CAMPBELL ST

PEAK= 1.86 CFS @ 12.25 HRS, VOLUME= .19 AF

ACRES	CN	
1.00	98	IMPERVIOUS
.36	61	LAWN, B SOILS
.10	55	WOODS, GOOD, B SOILS
1.46	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**HOUSE LAWNS**	6.4
Grass: Short n=.15 L=40' P2=3	in s=.01 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	**ROADWAY DITCH & CROSSING ROADWAY**	1.1
Grassed Waterway Kv=15 L=100'	s=.01 '/' V=1.5 fps	
CHANNEL FLOW	**ROADSIDE DRAINAGE (IN BRUSH)**	13.7
a=6 sq-ft Pw=12.2' r=.492'		
s=.01 '/' n=.4 V=.23 fps L=190'	Capacity=1.4 cfs	
	Total Length= 330 ft Total Tc=	21.2

REACH 1 14" CMP

Qin = 5.47 CFS @ 12.06 HRS, VOLUME= .42 AF
Qout= 2.03 CFS @ 13.10 HRS, VOLUME= .42 AF, ATTEN= 63%, LAG= 62.3 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.04
.2	.2	.17
.4	.3	.39
.8	.8	1.65
.9	.9	1.93
1.1	1.0	2.11
1.1	1.0	2.13
1.1	1.1	2.11
1.2	1.1	1.98

14" PIPE
n= .025
LENGTH= 155 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.17 FT
PEAK VELOCITY= 2.1 FPS
TRAVEL TIME = 1.2 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3

Not described

Qin = .96 CFS @ 12.10 HRS, VOLUME= .08 AF
Qout= .96 CFS @ 12.10 HRS, VOLUME= .08 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4 CHANNEL INTO POND

Qin = 1.86 CFS @ 12.25 HRS, VOLUME= .19 AF
Qout= 1.64 CFS @ 12.48 HRS, VOLUME= .18 AF, ATTEN= 12%, LAG= 13.8 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.31
1.2	6.5	8.61
1.8	11.9	19.64
2.6	21.1	42.46
3.6	36.7	89.46
4.8	60.5	174.22
6.0	90.0	296.07

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 370 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .43 FT
PEAK VELOCITY= .9 FPS
TRAVEL TIME = 6.7 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 11 CHANNEL INTO POND

Qin = 2.03 CFS @ 13.10 HRS, VOLUME= .42 AF
Qout= 1.98 CFS @ 13.10 HRS, VOLUME= .42 AF, ATTEN= 2%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.25
1.2	6.5	8.38
1.8	11.9	19.12
2.6	21.1	41.33
3.6	36.7	87.07
4.8	60.5	169.57
6.0	90.0	288.17

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 265 FT
SLOPE= .018 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .53 FT
PEAK VELOCITY= .9 FPS
TRAVEL TIME = 5.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1

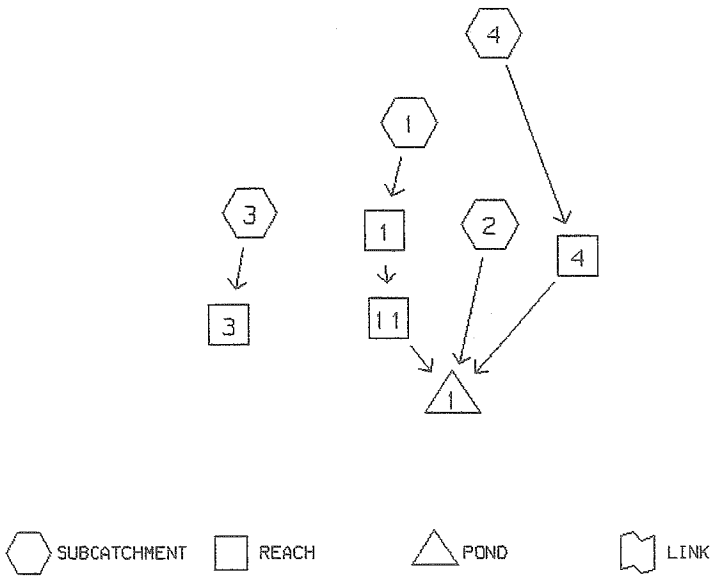
Qin = 6.12 CFS @ 12.25 HRS, VOLUME= .91 AF
Qout= 2.37 CFS @ 13.30 HRS, VOLUME= .83 AF, ATTEN= 61%, LAG= 63.2 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
57.0	8240	0	0
58.0	9650	8945	8945
59.0	12100	10875	19820
60.0	15000	13550	33370

STOR-IND METHOD
PEAK STORAGE = 17606 CF
PEAK ELEVATION= 58.8 FT
FLOOD ELEVATION= 62.0 FT
START ELEVATION= 57.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 127.7 MIN (.83 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	57.0'	**7.3" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	58.5'	**10.3" ORIFICE/GRATE X 2** Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	59.8'	**24" HORIZONTAL ORIFICE/GRATE** Q=.6 Area SQR(2gH)

WATERSHED ROUTING



SUBCATCHMENT 1 UPPER PARKING & AUCTION BLDG

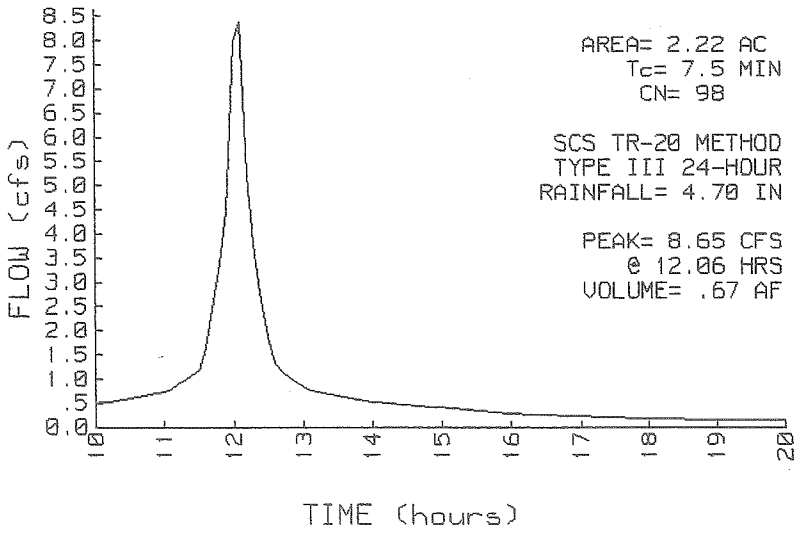
PEAK= 8.65 CFS @ 12.06 HRS, VOLUME= .67 AF

ACRES	CN	
2.22	98	IMPERVIOUS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	roof area	1.0
Smooth surfaces n=.011 L=40' P2=3 in s=.005 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	pavement area	.3
Paved Kv=20.3282 L=60' s=.02 '/' V=2.87 fps		
CIRCULAR CHANNEL	closed drainage system	6.2
8" Diameter a=.35 sq-ft Pw=2.1' r=.167'		
s=.005 '/' n=.025 V=1.27 fps L=477' Capacity=.4 cfs		
	Total Length= 577 ft Total Tc=	7.5

SUBCATCHMENT 1 RUNOFF
UPPER PARKING & AUCTION BLDG



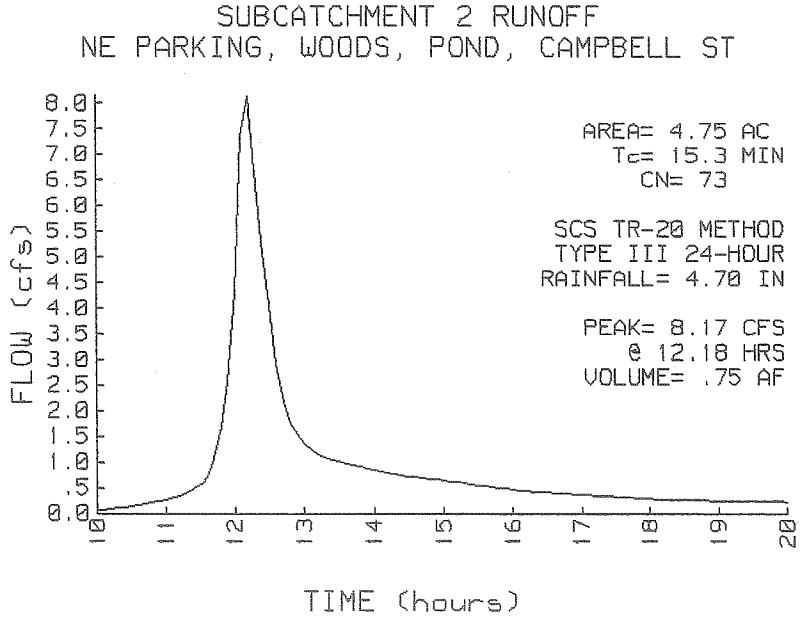
SUBCATCHMENT 2 NE PARKING, WOODS, POND, CAMPBELL ST

PEAK= 8.17 CFS @ 12.18 HRS, VOLUME= .75 AF

ACRES	CN	
1.42	55	WOODS, GOOD, B SOILS
1.59	61	LAWN , B SOILS
1.74	98	IMPERVIOUS
4.75	73	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	12.3
Grass: Short n=.15 L=90' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	STREET CROSSING & WOODS	1.1
Woodland Kv=5 L=75' s=.053 '/' V=1.15 fps		
CHANNEL FLOW	CHANNEL INTO POND	1.9
a=90 sq-ft Pw=29.8' r=3.02'		
s=.019 '/' n=.13 V=3.29 fps L=370' Capacity=296.3 cfs		
	Total Length= 535 ft Total Tc=	15.3



SUBCATCHMENT 2 NE PARKING, WOODS, POND, CAMPBELL ST

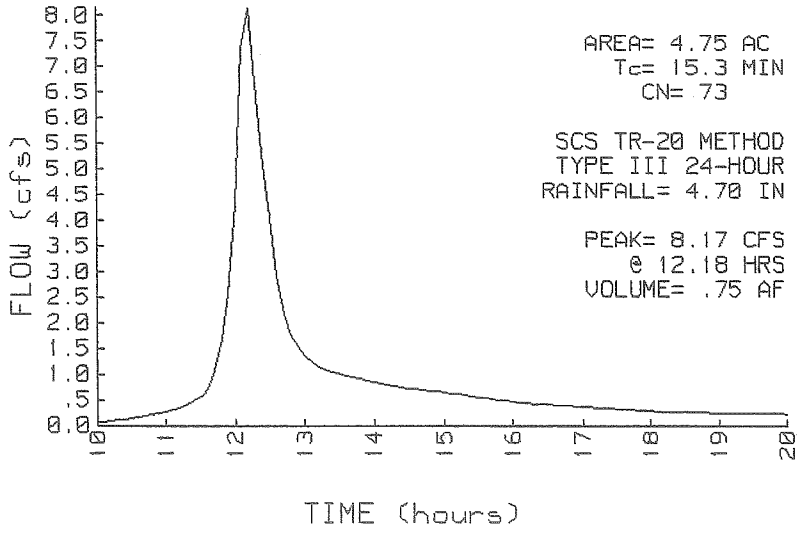
PEAK= 8.17 CFS @ 12.18 HRS, VOLUME= .75 AF

ACRES	CN	
1.42	55	WOODS, GOOD, B SOILS
1.59	61	LAWN , B SOILS
1.74	98	IMPERVIOUS
4.75	73	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**LAWN AREA**	12.3
Grass: Short n=.15 L=90' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**STREET CROSSING & WOODS**	1.1
Woodland Kv=5 L=75' s=.053 '/' V=1.15 fps		
CHANNEL FLOW	**CHANNEL INTO POND**	1.9
a=90 sq-ft Pw=29.8' r=3.02'		
s=.019 '/' n=.13 V=3.29 fps L=370' Capacity=296.3 cfs		
	Total Length= 535 ft Total Tc=	15.3

SUBCATCHMENT 2 RUNOFF
NE PARKING, WOODS, POND, CAMPBELL ST



SUBCATCHMENT 3 SE PARKING AREA AND WOODS

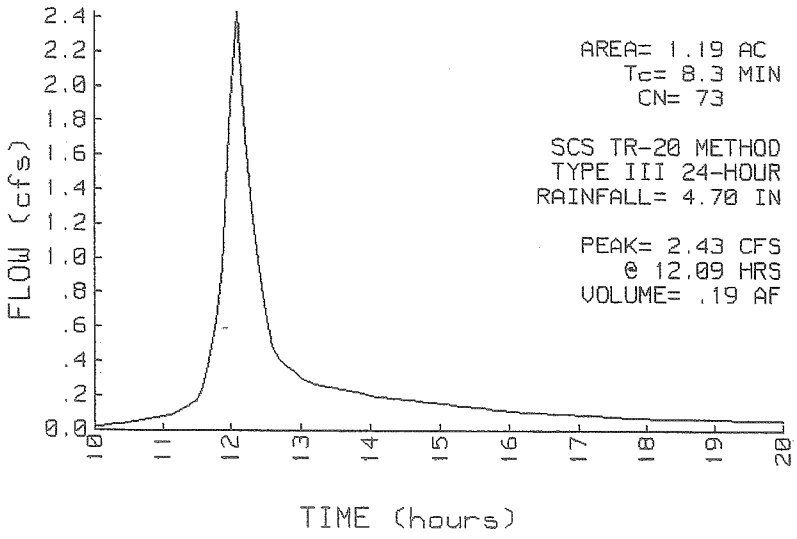
PEAK= 2.43 CFS @ 12.09 HRS, VOLUME= .19 AF

ACRES	CN	
.36	55	WOODS, GOOD, B SOILS
.40	61	LAWN, B SOILS
.43	98	IMPERVIOUS
1.19	73	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**PARKING AREA**	1.7
Smooth surfaces n=.011 L=100'	P2=3 in s=.01 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	**PARKING AREA**	1.0
Paved Kv=20.3282 L=120' s=.01 '/'	V=2.03 fps	
CHANNEL FLOW	**DITCH THRU WOODS**	5.6
a=9 sq-ft Pw=12.4' r=.726'		
s=.04 '/' n=.4 V=.6 fps L=200'	Capacity=5.4 cfs	
	Total Length= 420 ft	Total Tc= 8.3

SUBCATCHMENT 3 RUNOFF
SE PARKING AREA AND WOODS



SUBCATCHMENT 4 TIRE WAREHOUSE & CAMPBELL ST

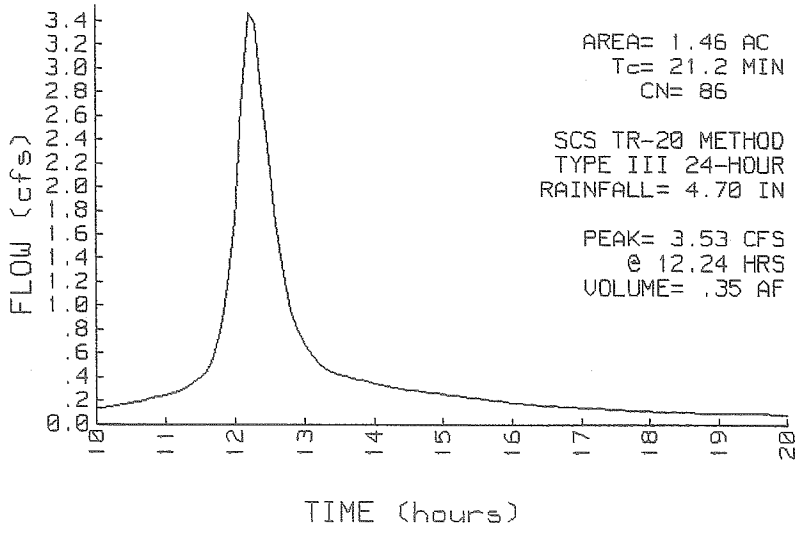
PEAK= 3.53 CFS @ 12.24 HRS, VOLUME= .35 AF

ACRES	CN	
1.00	98	IMPERVIOUS
.36	61	LAWN, B SOILS
.10	55	WOODS, GOOD, B SOILS
1.46	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	HOUSE LAWNS	6.4
Grass: Short n=.15 L=40' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	ROADWAY DITCH & CROSSING ROADWAY	1.1
Grassed Waterway Kv=15 L=100'	s=.01 '/' V=1.5 fps	
CHANNEL FLOW	ROADSIDE DRAINAGE (IN BRUSH)	13.7
a=6 sq-ft Pw=12.2' r=.492'		
s=.01 '/' n=.4 V=.23 fps L=190'	Capacity=1.4 cfs	
	Total Length= 330 ft	Total Tc= 21.2

SUBCATCHMENT 4 RUNOFF
TIRE WAREHOUSE & CAMPBELL ST



SUBCATCHMENT 4 TIRE WAREHOUSE & CAMPBELL ST

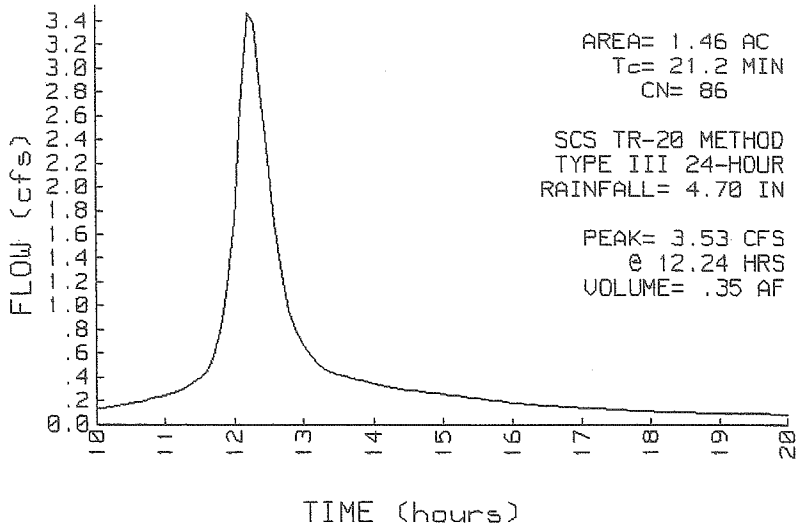
PEAK= 3.53 CFS @ 12.24 HRS, VOLUME= .35 AF

ACRES	CN	
1.00	98	IMPERVIOUS
.36	61	LAWN, B SOILS
.10	55	WOODS, GOOD, B SOILS
1.46	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	HOUSE LAWNS	6.4
Grass: Short n=.15 L=40' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	ROADWAY DITCH & CROSSING ROADWAY	1.1
Grassed Waterway Kv=15 L=100'	s=.01 '/' V=1.5 fps	
CHANNEL FLOW	ROADSIDE DRAINAGE (IN BRUSH)	13.7
a=6 sq-ft Pw=12.2' r=.492'		
s=.01 '/' n=.4 V=.23 fps L=190' Capacity=1.4 cfs		
	Total Length= 330 ft Total Tc=	21.2

SUBCATCHMENT 4 RUNOFF
TIRE WAREHOUSE & CAMPBELL ST



REACH 1 14" CMP

Qin = 8.65 CFS @ 12.06 HRS, VOLUME= .67 AF
Qout= 2.04 CFS @ 14.30 HRS, VOLUME= .67 AF, ATTEN= 76%, LAG= 134.3 MIN

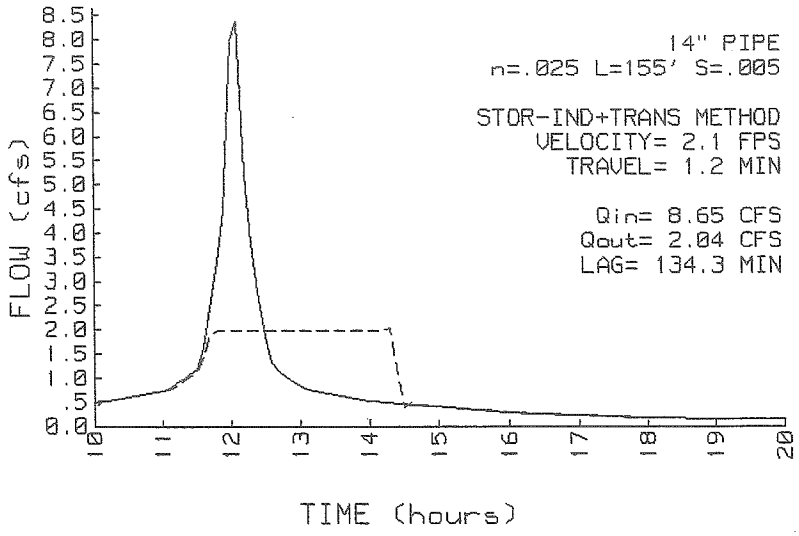
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.04
.2	.2	.17
.4	.3	.39
.8	.8	1.65
.9	.9	1.93
1.1	1.0	2.11
1.1	1.0	2.13
1.1	1.1	2.11
1.2	1.1	1.98

14" PIPE

n= .025
LENGTH= 155 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.17 FT
PEAK VELOCITY= 2.1 FPS
TRAVEL TIME = 1.2 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 1 INFLOW & OUTFLOW
14" CMP



REACH 3

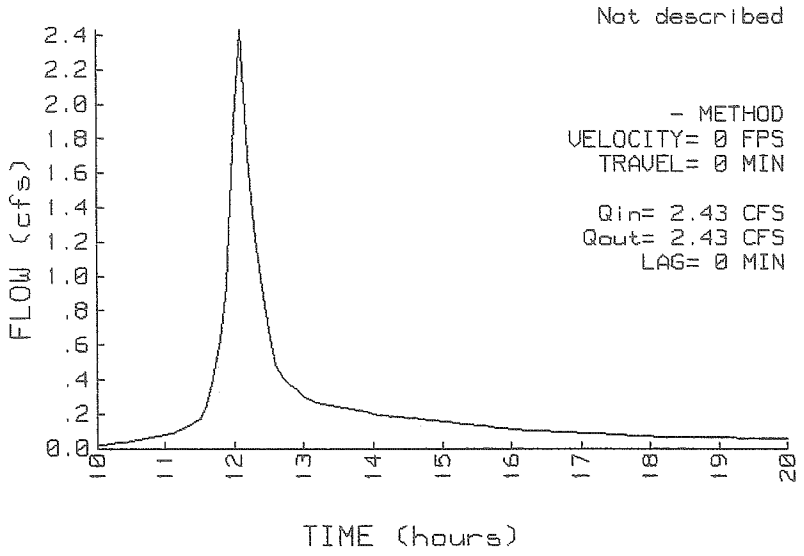
Not described

Qin = 2.43 CFS @ 12.09 HRS, VOLUME= .19 AF
Qout= 2.43 CFS @ 12.09 HRS, VOLUME= .19 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3 INFLOW & OUTFLOW



REACH 4 CHANNEL INTO POND

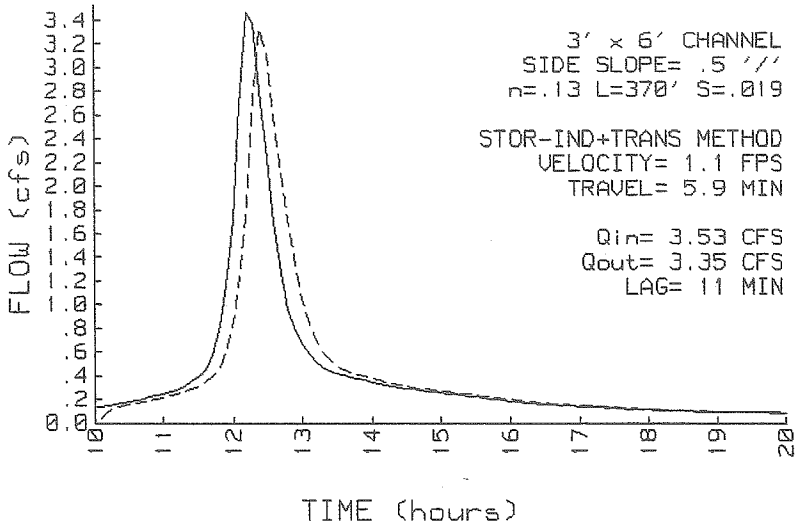
Qin = 3.53 CFS @ 12.24 HRS, VOLUME= .35 AF
Qout= 3.35 CFS @ 12.42 HRS, VOLUME= .35 AF, ATTEN= 5%, LAG= 11.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.31
1.2	6.5	8.61
1.8	11.9	19.64
2.6	21.1	42.46
3.6	36.7	89.46
4.8	60.5	174.22
6.0	90.0	296.07

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 370 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .70 FT
PEAK VELOCITY= 1.1 FPS
TRAVEL TIME = 5.9 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4 INFLOW & OUTFLOW
CHANNEL INTO POND



REACH 11 CHANNEL INTO POND

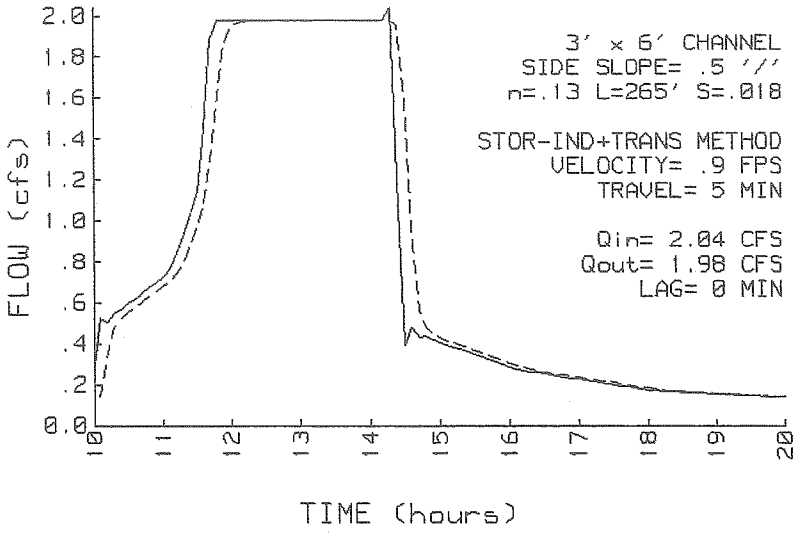
Qin = 2.04 CFS @ 14.30 HRS, VOLUME= .67 AF
Qout= 1.98 CFS @ 14.30 HRS, VOLUME= .67 AF, ATTEN= 3%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.25
1.2	6.5	8.38
1.8	11.9	19.12
2.6	21.1	41.33
3.6	36.7	87.07
4.8	60.5	169.57
6.0	90.0	288.17

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 265 FT
SLOPE= .018 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .53 FT
PEAK VELOCITY= .9 FPS
TRAVEL TIME = 5.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 11 INFLOW & OUTFLOW
CHANNEL INTO POND



REACH 11 CHANNEL INTO POND

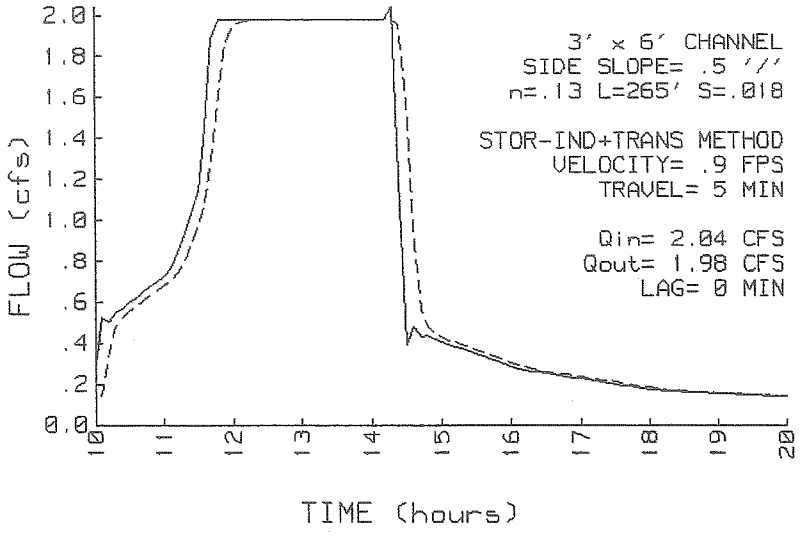
Qin = 2.04 CFS @ 14.30 HRS, VOLUME= .67 AF
Qout= 1.98 CFS @ 14.30 HRS, VOLUME= .67 AF, ATTEN= 3%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.25
1.2	6.5	8.38
1.8	11.9	19.12
2.6	21.1	41.33
3.6	36.7	87.07
4.8	60.5	169.57
6.0	90.0	288.17

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 265 FT
SLOPE= .018 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .53 FT
PEAK VELOCITY= .9 FPS
TRAVEL TIME = 5.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 11 INFLOW & OUTFLOW
CHANNEL INTO POND



POND 1

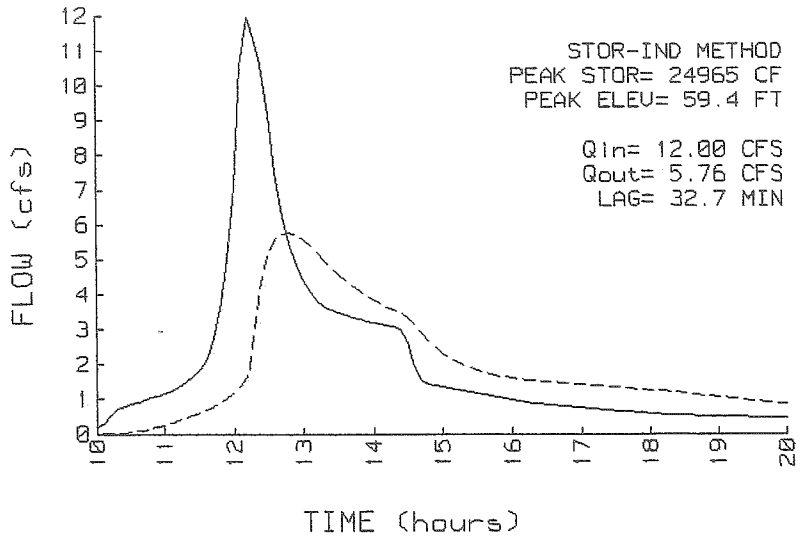
Qin = 12.00 CFS @ 12.22 HRS, VOLUME= 1.76 AF
Qout= 5.76 CFS @ 12.77 HRS, VOLUME= 1.62 AF, ATTEN= 52%, LAG= 32.7 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
57.0	8240	0	0
58.0	9650	8945	8945
59.0	12100	10875	19820
60.0	15000	13550	33370

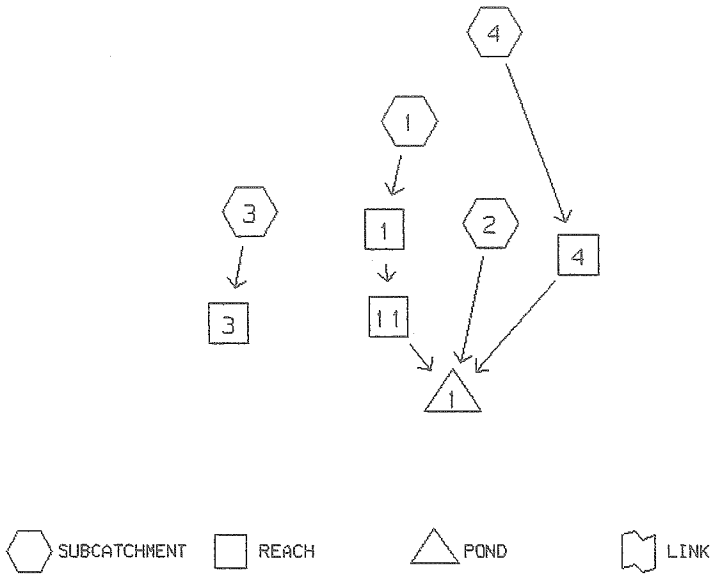
STOR-IND METHOD
PEAK STORAGE = 24965 CF
PEAK ELEVATION= 59.4 FT
FLOOD ELEVATION= 62.0 FT
START ELEVATION= 57.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 97.3 MIN (1.6 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	57.0'	**7.3" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	58.5'	**10.3" ORIFICE/GRATE X 2** Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	59.8'	**24" HORIZONTAL ORIFICE/GRATE** Q=.6 Area SQR(2gH)

POND 1 INFLOW & OUTFLOW



WATERSHED ROUTING



SUBCATCHMENT 1 UPPER PARKING & AUCTION BLDG

PEAK= 10.14 CFS @ 12.06 HRS, VOLUME= .78 AF

ACRES	CN	
2.22	98	IMPERVIOUS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	roof area	1.0
Smooth surfaces n=.011 L=40' P2=3 in s=.005 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	pavement area	.3
Paved Kv=20.3282 L=60' s=.02 '/' V=2.87 fps		
CIRCULAR CHANNEL	closed drainage system	6.2
8" Diameter a=.35 sq-ft Pw=2.1' r=.167'		
s=.005 '/' n=.025 V=1.27 fps L=477' Capacity=.4 cfs		
	Total Length= 577 ft Total Tc=	7.5

SUBCATCHMENT 2 NE PARKING, WOODS, POND, CAMPBELL ST

PEAK= 10.76 CFS @ 12.18 HRS, VOLUME= .98 AF

ACRES	CN	
1.42	55	WOODS, GOOD, B SOILS
1.59	61	LAWN , B SOILS
1.74	98	IMPERVIOUS
4.75	73	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	12.3
Grass: Short n=.15 L=90' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	STREET CROSSING & WOODS	1.1
Woodland Kv=5 L=75' s=.053 '/' V=1.15 fps		
CHANNEL FLOW	CHANNEL INTO POND	1.9
a=90 sq-ft Pw=29.8' r=3.02'		
s=.019 '/' n=.13 V=3.29 fps L=370' Capacity=296.3 cfs		
	Total Length= 535 ft Total Tc=	15.3

SUBCATCHMENT 3 SE PARKING AREA AND WOODS

PEAK= 3.20 CFS @ 12.09 HRS, VOLUME= .24 AF

ACRES	CN	
.36	55	WOODS, GOOD, B SOILS
.40	61	LAWN, B SOILS
.43	98	IMPERVIOUS
1.19	73	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	PARKING AREA	1.7
Smooth surfaces n=.011 L=100'	P2=3 in s=.01 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	PARKING AREA	1.0
Paved Kv=20.3282 L=120' s=.01	'/' V=2.03 fps	
CHANNEL FLOW	DITCH THRU WOODS	5.6
a=9 sq-ft Pw=12.4' r=.726'		
s=.04 '/' n=.4 V=.6 fps L=200'	Capacity=5.4 cfs	
	Total Length= 420 ft Total Tc=	8.3

SUBCATCHMENT 4 TIRE WAREHOUSE & CAMPBELL ST

PEAK= 4.33 CFS @ 12.24 HRS, VOLUME= .43 AF

ACRES	CN	
1.00	98	IMPERVIOUS
.36	61	LAWN, B SOILS
.10	55	WOODS, GOOD, B SOILS
1.46	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	HOUSE LAWNS	6.4
Grass: Short n=.15 L=40' P2=3	in s=.01 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	ROADWAY DITCH & CROSSING ROADWAY	1.1
Grassed Waterway Kv=15 L=100'	s=.01 '/' V=1.5 fps	
CHANNEL FLOW	ROADSIDE DRAINAGE (IN BRUSH)	13.7
a=6 sq-ft Pw=12.2' r=.492'		
s=.01 '/' n=.4 V=.23 fps L=190'	Capacity=1.4 cfs	
	Total Length= 330 ft Total Tc=	21.2

REACH 1 14" CMP

Qin = 10.14 CFS @ 12.06 HRS, VOLUME= .78 AF
Qout= 1.98 CFS @ 11.80 HRS, VOLUME= .78 AF, ATTEN= 81%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.04
.2	.2	.17
.4	.3	.39
.8	.8	1.65
.9	.9	1.93
1.1	1.0	2.11
1.1	1.0	2.13
1.1	1.1	2.11
1.2	1.1	1.98

14" PIPE

n= .025
LENGTH= 155 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.17 FT
PEAK VELOCITY= 2.1 FPS
TRAVEL TIME = 1.2 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3

Not described

Qin = 3.20 CFS @ 12.09 HRS, VOLUME= .24 AF
Qout= 3.20 CFS @ 12.09 HRS, VOLUME= .24 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4 CHANNEL INTO POND

Qin = 4.33 CFS @ 12.24 HRS, VOLUME= .43 AF
Qout= 4.09 CFS @ 12.41 HRS, VOLUME= .43 AF, ATTEN= 6%, LAG= 10.2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.31
1.2	6.5	8.61
1.8	11.9	19.64
2.6	21.1	42.46
3.6	36.7	89.46
4.8	60.5	174.22
6.0	90.0	296.07

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 370 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .77 FT
PEAK VELOCITY= 1.1 FPS
TRAVEL TIME = 5.5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 11 CHANNEL INTO POND

Qin = 1.98 CFS @ 11.80 HRS, VOLUME= .78 AF
Qout= 1.98 CFS @ 14.30 HRS, VOLUME= .78 AF, ATTEN= 0%, LAG= 150.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.25
1.2	6.5	8.38
1.8	11.9	19.12
2.6	21.1	41.33
3.6	36.7	87.07
4.8	60.5	169.57
6.0	90.0	288.17

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 265 FT
SLOPE= .018 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .53 FT
PEAK VELOCITY= .9 FPS
TRAVEL TIME = 5.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1

Qin = 15.11 CFS @ 12.22 HRS, VOLUME= 2.18 AF
Qout= 7.15 CFS @ 12.72 HRS, VOLUME= 2.01 AF, ATTEN= 53%, LAG= 29.9 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
57.0	8240	0	0
58.0	9650	8945	8945
59.0	12100	10875	19820
60.0	15000	13550	33370

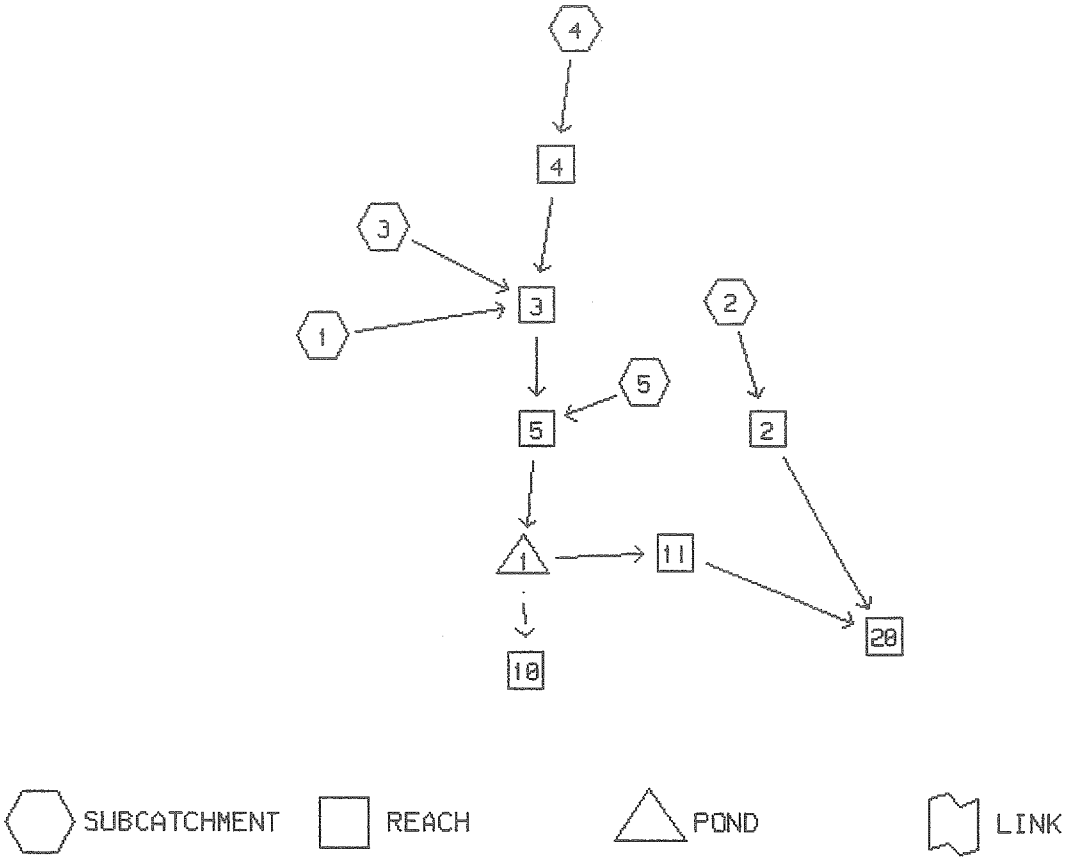
STOR-IND METHOD
PEAK STORAGE = 29675 CF
PEAK ELEVATION= 59.7 FT
FLOOD ELEVATION= 62.0 FT
START ELEVATION= 57.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 89.1 MIN (1.99 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	57.0'	**7.3" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	58.5'	**10.3" ORIFICE/GRATE X 2** Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	59.8'	**24" HORIZONTAL ORIFICE/GRATE** Q=.6 Area SQR(2gH)

Section 3

Peak Rates of Runoff: Developed Conditions

WATERSHED ROUTING



SUBCATCHMENT 1 PARKING & RESTAURANT BLDG

PEAK= 9.69 CFS @ 12.00 HRS, VOLUME= .61 AF

ACRES	CN	
.10	55	WOODS, GOOD, B SOILS
.50	61	LAWN, B SOILS
3.23	98	IMPERVIOUS
3.83	92	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**PAVEMENT AREA**	.7
Smooth surfaces n=.011 L=35' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**PAVEMENT AREA**	.7
Paved Kv=20.3282 L=80' s=.01 '/' V=2.03 fps		
CIRCULAR CHANNEL	**14" CMP**	1.4
14" Diameter a=1.07 sq-ft Pw=3.7' r=.292'		
s=.005 '/' n=.025 V=1.85 fps L=152' Capacity=2 cfs		
	Total Length= 267 ft Total Tc=	2.8

SUBCATCHMENT 2 EAST PORTION: PAVE, LOAD AREA & CAMPBELL S

PEAK= 1.58 CFS @ 12.23 HRS, VOLUME= .16 AF

ACRES	CN	
.50	55	WOODS, GOOD, B SOILS
.63	61	LAWN , B SOILS
.89	98	IMPERVIOUS
2.02	76	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**LAWN AREA**	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**WOODS**	5.0
Woodland Kv=5 L=150' s=.01 '/' V=.5 fps		
	Total Length= 250 ft Total Tc=	18.4

SUBCATCHMENT 3 WOODS AREA & CAMPBELL ST

PEAK= .32 CFS @ 12.25 HRS, VOLUME= .04 AF

ACRES	CN	
.38	55	WOODS, GOOD, B SOILS
.44	61	LAWN, B SOILS
.17	98	IMPERVIOUS
.99	65	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	STREET & WOODS	2.0
Woodland Kv=5 L=60' s=.01 '/' V=.5 fps		
CHANNEL FLOW	Segment ID:	.5
a=90 sq-ft Pw=29.8' r=3.02'		
s=.019 '/' n=.13 V=3.29 fps L=90' Capacity=296.3 cfs		
	Total Length= 250 ft Total Tc=	15.9

SUBCATCHMENT 4 TIRE WAREHOUSE & CAMPBELL ST

PEAK= 2.24 CFS @ 12.15 HRS, VOLUME= .19 AF

ACRES	CN	
1.03	98	IMPERVIOUS
.39	61	LAWN, B SOILS
.10	55	WOODS, GOOD
1.52	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	6.4
Grass: Short n=.15 L=40' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	ROADWAY DITCH	1.1
Grassed Waterway Kv=15 L=100'	s=.01 '/' V=1.5 fps	
SHALLOW CONCENTRATED/UPLAND FLOW	WOODED SWALE ALONG ROAD	6.3
Woodland Kv=5 L=190' s=.01 '/'	V=.5 fps	
	Total Length= 330 ft Total Tc=	13.8

SUBCATCHMENT 5 BLDG ROOF

PEAK= 3.15 CFS @ 12.00 HRS, VOLUME= .20 AF

ACRES	CN	
1.07	98	IMPERVIOUS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	ROOF	1.3
Smooth surfaces n=.011 L=50'	P2=3 in s=.005 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	BLDG ROOF	1.5
Paved Kv=20.3282 L=130'	s=.005 '/' V=1.44 fps	
CIRCULAR CHANNEL	6" ROOF DRAIN	.3
6" Diameter a=.2 sq-ft Pw=1.6'	r=.125'	
s=.005 '/' n=.009 V=2.92 fps	L=45' Capacity=.6 cfs	
	Total Length= 225 ft Total Tc=	3.1

REACH 2 — 15" SD

Qin = 1.58 CFS @ 12.23 HRS, VOLUME= .16 AF
Qout= 1.57 CFS @ 12.24 HRS, VOLUME= .16 AF, ATTEN= 1%, LAG= .5 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.27
.3	.2	1.13
.4	.3	2.52
.9	.9	10.77
1.0	1.1	12.57
1.1	1.2	13.71
1.2	1.2	13.84
1.2	1.2	13.71
1.3	1.2	12.86

15" PIPE
n= .009
LENGTH= 186 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .29 FT
PEAK VELOCITY= 7.2 FPS
TRAVEL TIME = .4 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3 — CLOSED DRAINAGE SYSTEM

Qin = 10.83 CFS @ 12.01 HRS, VOLUME= .84 AF
Qout= 10.51 CFS @ 12.01 HRS, VOLUME= .84 AF, ATTEN= 3%, LAG= .3 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	.3	.87
.5	.7	3.67
.8	1.2	8.20
1.8	3.7	35.08
2.0	4.2	40.95
2.3	4.7	44.65
2.4	4.8	45.06
2.4	4.9	44.65
2.5	4.9	41.89

30" PIPE
n= .009
LENGTH= 110 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .84 FT
PEAK VELOCITY= 7.3 FPS
TRAVEL TIME = .3 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4 — CHANNEL AREA

Qin = 2.24 CFS @ 12.15 HRS, VOLUME= .19 AF
Qout= 2.12 CFS @ 12.21 HRS, VOLUME= .19 AF, ATTEN= 5%, LAG= 4.1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.31
1.2	6.5	8.61
1.8	11.9	19.64
2.6	21.1	42.46
3.6	36.7	89.46
4.8	60.5	174.22
6.0	90.0	296.07

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 90 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .57 FT
PEAK VELOCITY= .9 FPS
TRAVEL TIME = 1.6 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 5 30" PIPE, CLOSED SYSTEM

Qin = 13.64 CFS @ 12.01 HRS, VOLUME= 1.05 AF
Qout= 12.76 CFS @ 12.02 HRS, VOLUME= 1.05 AF, ATTEN= 6%, LAG= .9 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	.3	.87
.5	.7	3.67
.8	1.2	8.20
1.8	3.7	35.08
2.0	4.2	40.95
2.3	4.7	44.65
2.4	4.8	45.06
2.4	4.9	44.65
2.5	4.9	41.89

30" PIPE

n= .009
LENGTH= 290 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .93 FT
PEAK VELOCITY= 7.8 FPS
TRAVEL TIME = .6 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 10

Not described

Qin = 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF
Qout= 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 11 15"SD

Qin = .83 CFS @ 14.51 HRS, VOLUME= .55 AF
Qout= .83 CFS @ 14.53 HRS, VOLUME= .55 AF, ATTEN= 0%, LAG= 1.1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.15
.3	.2	.62
.4	.3	1.38
.9	.9	5.90
1.0	1.1	6.89
1.1	1.2	7.51
1.2	1.2	7.58
1.2	1.2	7.51
1.3	1.2	7.04

15" PIPE

n= .009
LENGTH= 156 FT
SLOPE= .0057 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .29 FT
PEAK VELOCITY= 3.9 FPS
TRAVEL TIME = .7 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 20

Not described

Qin = 2.28 CFS @ 12.25 HRS, VOLUME= .71 AF
Qout= 2.28 CFS @ 12.25 HRS, VOLUME= .71 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 NEW POND

Qin = 12.76 CFS @ 12.02 HRS, VOLUME= 1.05 AF
Qout= .83 CFS @ 14.51 HRS, VOLUME= .55 AF, ATTEN= 93%, LAG= 149.2 MIN
Qpri= .83 CFS @ 14.51 HRS, VOLUME= .55 AF
Qsec= 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
58.0	4400	0	0
60.0	6400	10800	10800
62.0	8550	14950	25750
64.0	11000	19550	45300
65.0	12350	11675	56975

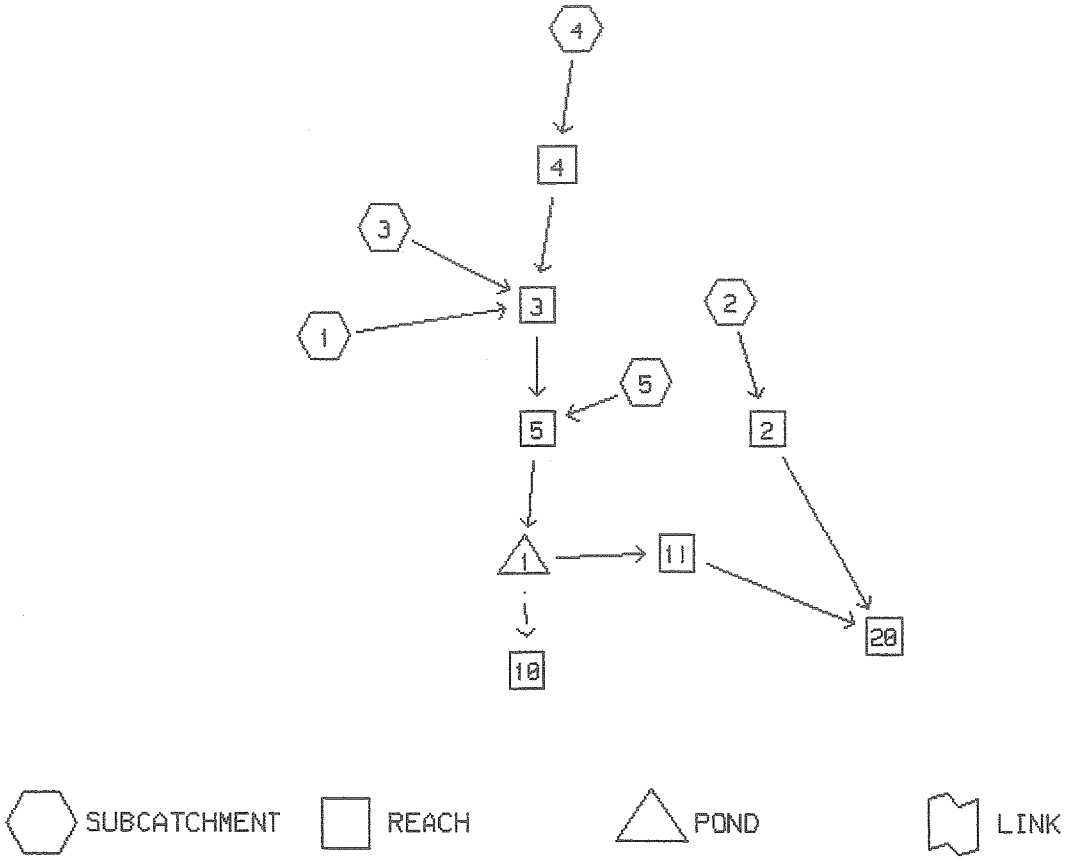
STOR-IND METHOD
PEAK STORAGE = 28523 CF
PEAK ELEVATION= 62.3 FT
FLOOD ELEVATION= 65.8 FT
START ELEVATION= 58.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING
Tdet= 237.4 MIN (.55 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	58.2'	4" ORIFICE/GRATE Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	62.8'	8" ORIFICE/GRATE Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	S	62.5'	12" CULVERT n=.009 L=30' S=.017'/' Ke=.9 Cc=.9 Cd=.47
4	P	64.5'	4' SHARP-CRESTED RECTANGULAR WEIR Q=C L H^1.5 C=3.27+.4 H/4 L=Length-2(.1 H)

Primary Discharge
├─1=Orifice/Grate
├─2=Orifice/Grate
└─4=Sharp-Crested Rectangular Weir

Secondary Discharge
└─3=Culvert

WATERSHED ROUTING



SUBCATCHMENT 1 PARKING & RESTAURANT BLDG

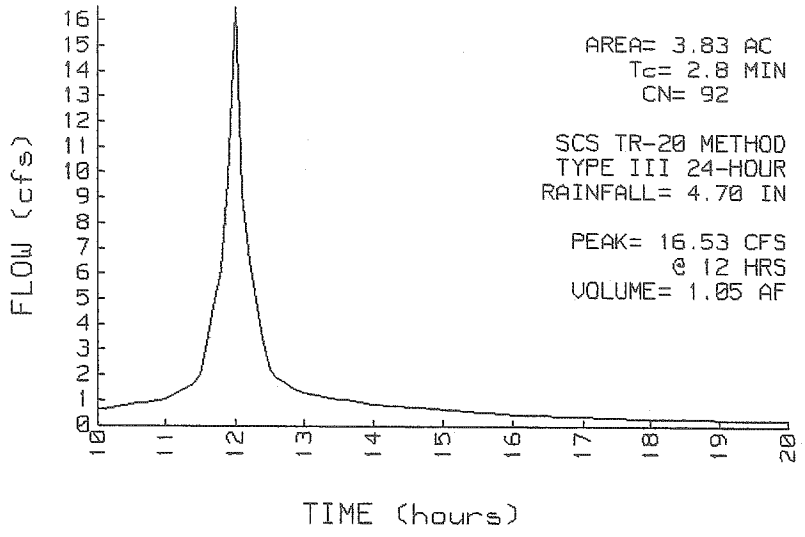
PEAK= 16.53 CFS @ 12.00 HRS, VOLUME= 1.05 AF

ACRES	CN	
.10	55	WOODS, GOOD, B SOILS
.50	61	LAWN, B SOILS
3.23	98	IMPERVIOUS
3.83	92	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	PAVEMENT AREA	.7
Smooth surfaces n=.011 L=35' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	PAVEMENT AREA	.7
Paved Kv=20.3282 L=80' s=.01 '/' V=2.03 fps		
CIRCULAR CHANNEL	14" CMP	1.4
14" Diameter a=1.07 sq-ft Pw=3.7' r=.292'		
s=.005 '/' n=.025 V=1.85 fps L=152' Capacity=2 cfs		
	Total Length= 267 ft	Total Tc= 2.8

SUBCATCHMENT 1 RUNOFF
PARKING & RESTAURANT BLDG



SUBCATCHMENT 2 EAST PORTION: PAVE, LOAD AREA & CAMPBELL S

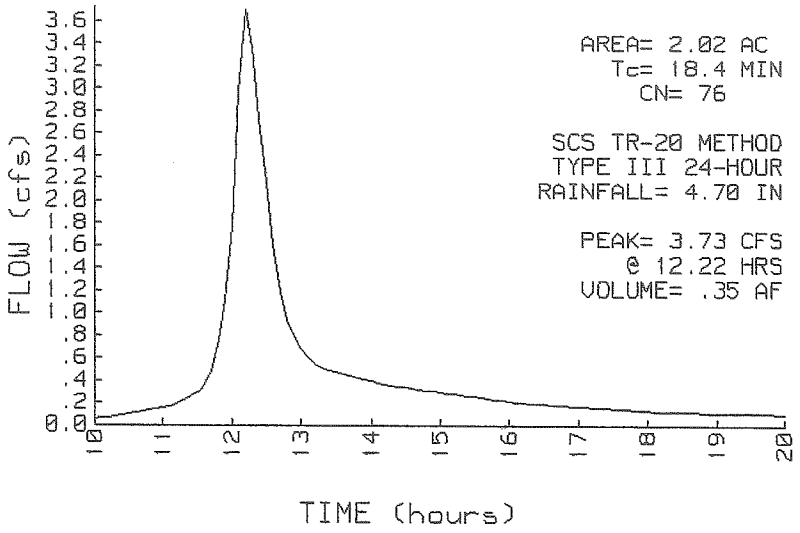
PEAK= 3.73 CFS @ 12.22 HRS, VOLUME= .35 AF

ACRES	CN	
.50	55	WOODS, GOOD, B SOILS
.63	61	LAWN , B SOILS
.89	98	IMPERVIOUS
2.02	76	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	WOODS	5.0
Woodland Kv=5 L=150' s=.01 '/' V=.5 fps		
	Total Length= 250 ft Total Tc=	18.4

SUBCATCHMENT 2 RUNOFF
EAST PORTION: PAVE, LOAD AREA & CAMPBELL S



SUBCATCHMENT 3 WOODS AREA & CAMPBELL ST

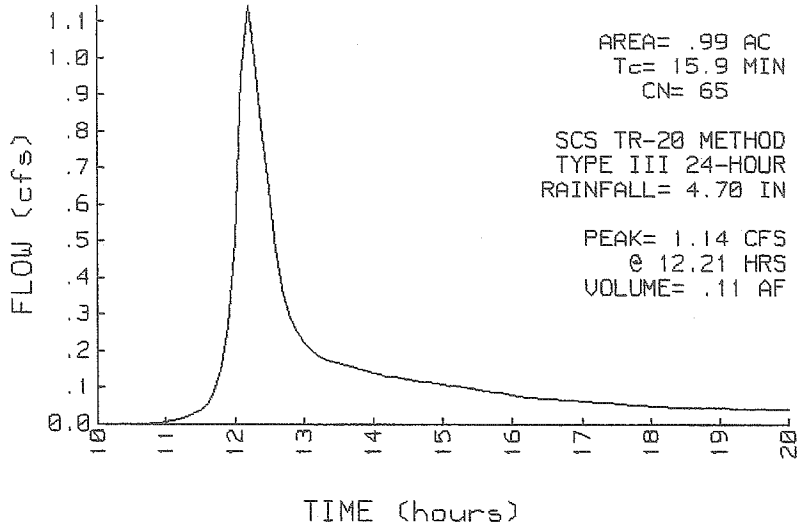
PEAK= 1.14 CFS @ 12.21 HRS, VOLUME= .11 AF

ACRES	CN	
.38	55	WOODS, GOOD, B SOILS
.44	61	LAWN, B SOILS
.17	98	IMPERVIOUS
.99	65	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	STREET & WOODS	2.0
Woodland Kv=5 L=60' s=.01 '/' V=.5 fps		
CHANNEL FLOW	Segment ID:	.5
a=90 sq-ft Pw=29.8' r=3.02'		
s=.019 '/' n=.13 V=3.29 fps L=90' Capacity=296.3 cfs		
	Total Length= 250 ft	Total Tc= 15.9

SUBCATCHMENT 3 RUNOFF
WOODS AREA & CAMPBELL ST



SUBCATCHMENT 4 TIRE WAREHOUSE & CAMPBELL ST

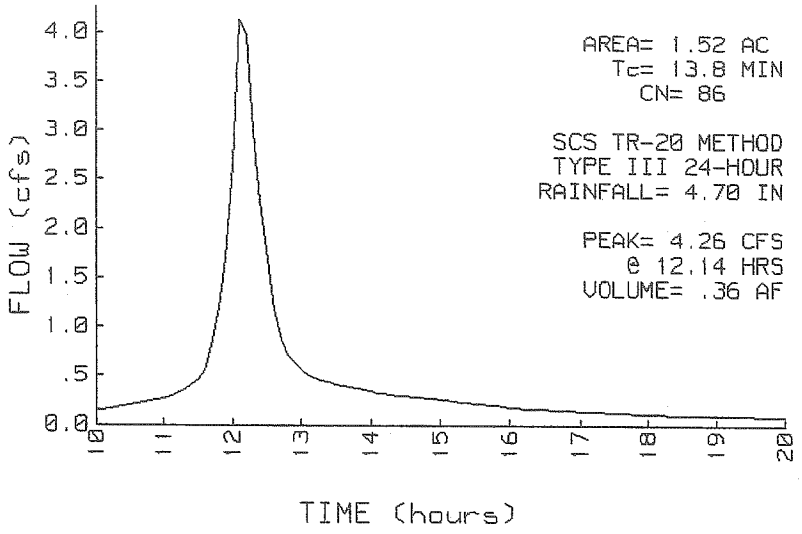
PEAK= 4.26 CFS @ 12.14 HRS, VOLUME= .36 AF

ACRES	CN	
1.03	98	IMPERVIOUS
.39	61	LAWN, B SOILS
.10	55	WOODS, GOOD
1.52	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	6.4
Grass: Short n=.15 L=40' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	ROADWAY DITCH	1.1
Grassed Waterway Kv=15 L=100'	s=.01 '/' V=1.5 fps	
SHALLOW CONCENTRATED/UPLAND FLOW	WOODED SWALE ALONG ROAD	6.3
Woodland Kv=5 L=190' s=.01 '/'	V=.5 fps	
	Total Length= 330 ft Total Tc=	13.8

SUBCATCHMENT 4 RUNOFF
TIRE WAREHOUSE & CAMPBELL ST



SUBCATCHMENT 5 BLDG ROOF

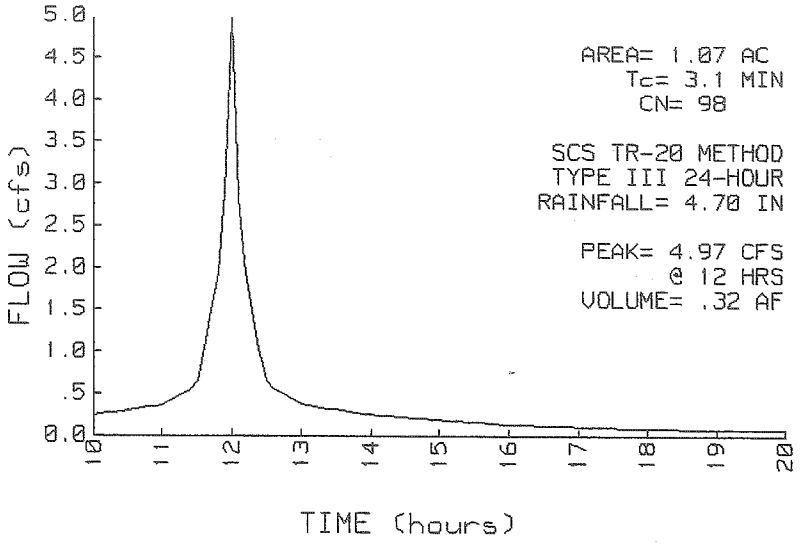
PEAK= 4.97 CFS @ 12.00 HRS, VOLUME= .32 AF

ACRES	CN	
1.07	98	IMPERVIOUS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	ROOF	1.3
Smooth surfaces n=.011 L=50' P2=3 in s=.005 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	BLDG ROOF	1.5
Paved Kv=20.3282 L=130' s=.005 '/' V=1.44 fps		
CIRCULAR CHANNEL	6" ROOF DRAIN	.3
6" Diameter a=.2 sq-ft Pw=1.6' r=.125'		
s=.005 '/' n=.009 V=2.92 fps L=45' Capacity=.6 cfs		
	Total Length= 225 ft Total Tc=	3.1

SUBCATCHMENT 5 RUNOFF
BLDG ROOF



REACH 2 15" SD

Qin = 3.73 CFS @ 12.22 HRS, VOLUME= .35 AF
Qout= 3.71 CFS @ 12.23 HRS, VOLUME= .35 AF, ATTEN= 0%, LAG= .4 MIN

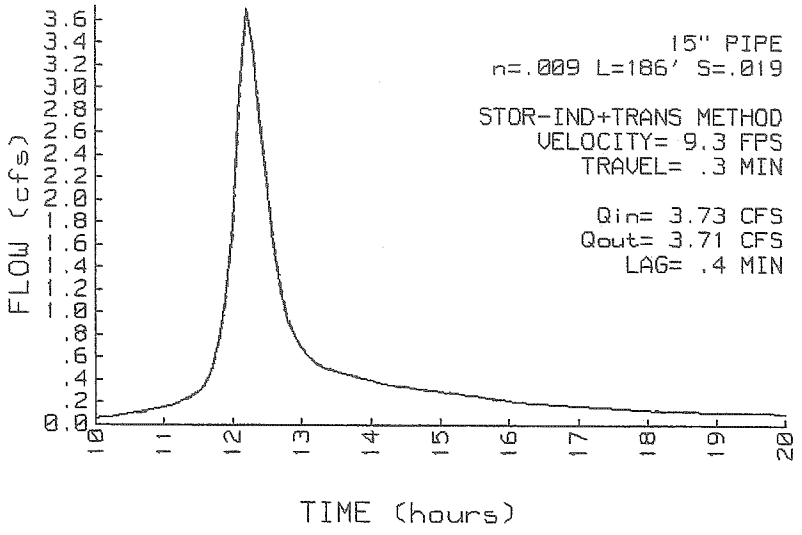
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.27
.3	.2	1.13
.4	.3	2.52
.9	.9	10.77
1.0	1.1	12.57
1.1	1.2	13.71
1.2	1.2	13.84
1.2	1.2	13.71
1.3	1.2	12.86

15" PIPE

n= .009
LENGTH= 186 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .45 FT
PEAK VELOCITY= 9.3 FPS
TRAVEL TIME = .3 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 2 INFLOW & OUTFLOW
15" SD



REACH 3 CLOSED DRAINAGE SYSTEM

Qin = 19.26 CFS @ 12.01 HRS, VOLUME= 1.52 AF
Qout= 18.76 CFS @ 12.01 HRS, VOLUME= 1.52 AF, ATTEN= 3%, LAG= .3 MIN

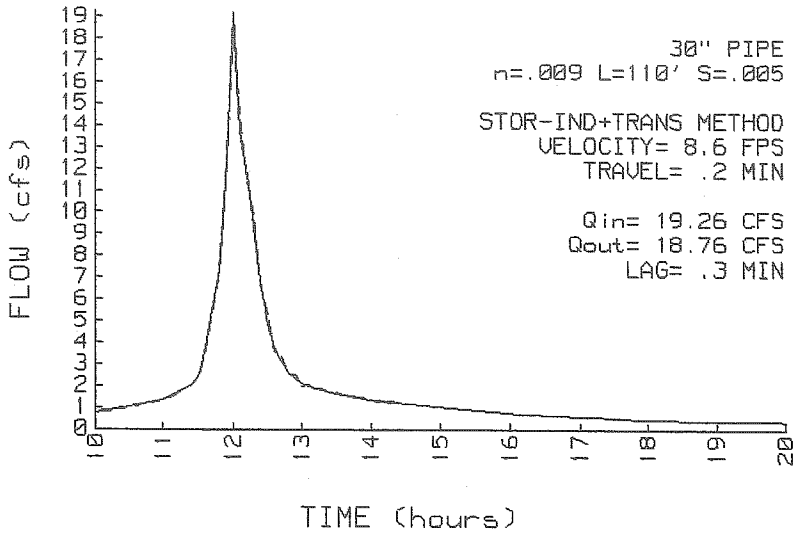
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	.3	.87
.5	.7	3.67
.8	1.2	8.20
1.8	3.7	35.08
2.0	4.2	40.95
2.3	4.7	44.65
2.4	4.8	45.06
2.4	4.9	44.65
2.5	4.9	41.89

30" PIPE

n= .009
LENGTH= 110 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.15 FT
PEAK VELOCITY= 8.6 FPS
TRAVEL TIME = .2 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3 INFLOW & OUTFLOW
CLOSED DRAINAGE SYSTEM



REACH 4 CHANNEL AREA

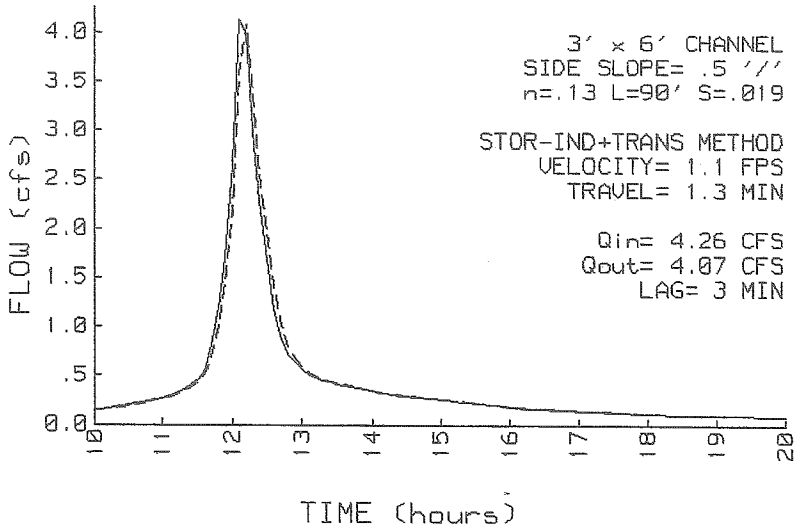
Qin = 4.26 CFS @ 12.14 HRS, VOLUME= .36 AF
Qout= 4.07 CFS @ 12.19 HRS, VOLUME= .36 AF, ATTEN= 4%, LAG= 3.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.31
1.2	6.5	8.61
1.8	11.9	19.64
2.6	21.1	42.46
3.6	36.7	89.46
4.8	60.5	174.22
6.0	90.0	296.07

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 90 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .77 FT
PEAK VELOCITY= 1.1 FPS
TRAVEL TIME = 1.3 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4 INFLOW & OUTFLOW
CHANNEL AREA



REACH 5 30" PIPE, CLOSED SYSTEM

Qin = 23.70 CFS @ 12.01 HRS, VOLUME= 1.84 AF
Qout= 22.29 CFS @ 12.03 HRS, VOLUME= 1.84 AF, ATTEN= 6%, LAG= .9 MIN

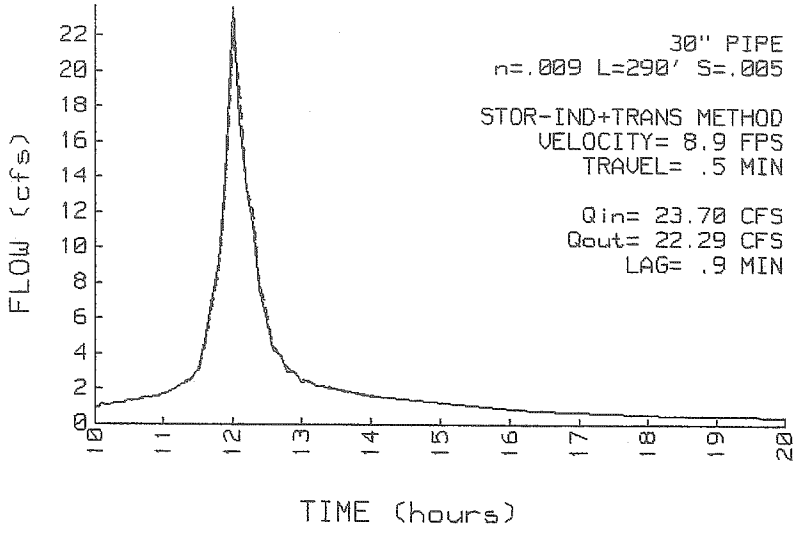
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	.3	.87
.5	.7	3.67
.8	1.2	8.20
1.8	3.7	35.08
2.0	4.2	40.95
2.3	4.7	44.65
2.4	4.8	45.06
2.4	4.9	44.65
2.5	4.9	41.89

30" PIPE

n= .009
LENGTH= 290 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.29 FT
PEAK VELOCITY= 8.9 FPS
TRAVEL TIME = .5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 5 INFLOW & OUTFLOW
30" PIPE, CLOSED SYSTEM



REACH 10

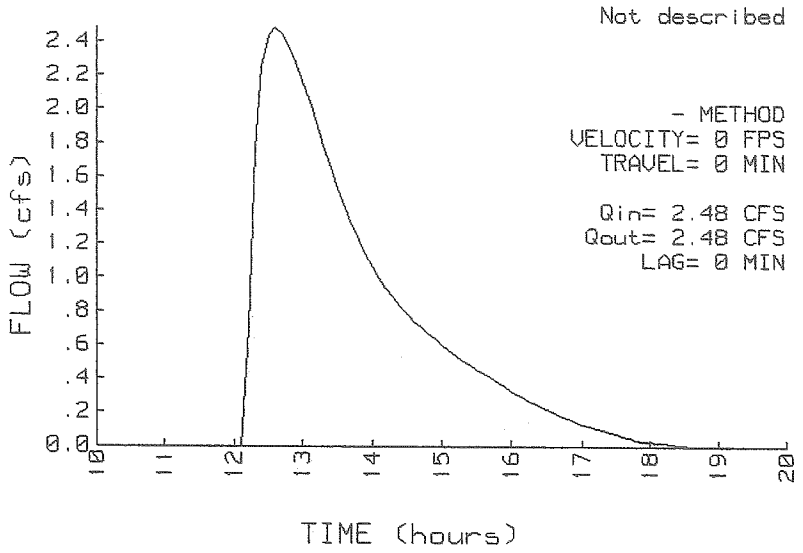
Not described

Qin = 2.48 CFS @ 12.61 HRS, VOLUME= .41 AF
Qout= 2.48 CFS @ 12.61 HRS, VOLUME= .41 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 10 INFLOW & OUTFLOW



REACH 11 15"SD

Qin = 2.24 CFS @ 12.61 HRS, VOLUME= .78 AF
Qout= 2.25 CFS @ 12.61 HRS, VOLUME= .78 AF, ATTEN= 0%, LAG= .5 MIN

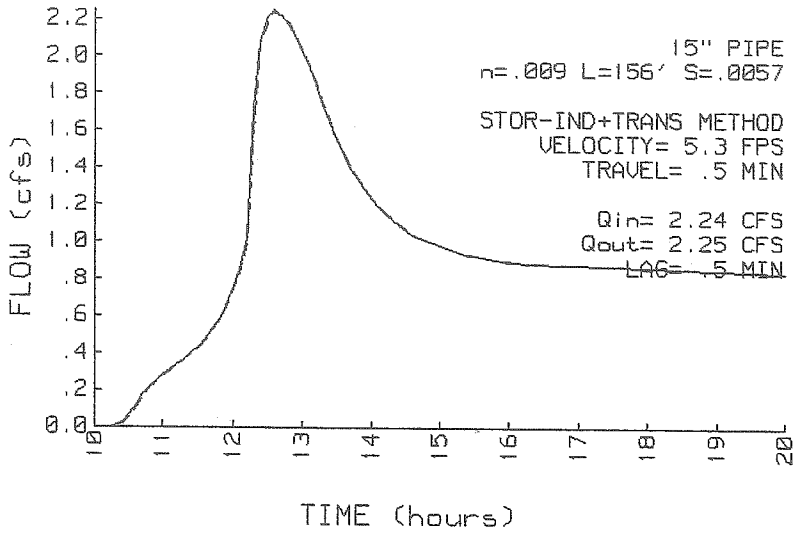
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.15
.3	.2	.62
.4	.3	1.38
.9	.9	5.90
1.0	1.1	6.89
1.1	1.2	7.51
1.2	1.2	7.58
1.2	1.2	7.51
1.3	1.2	7.04

15" PIPE

n= .009
LENGTH= 156 FT
SLOPE= .0057 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .47 FT
PEAK VELOCITY= 5.3 FPS
TRAVEL TIME = .5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 11 INFLOW & OUTFLOW
15"SD



REACH 20

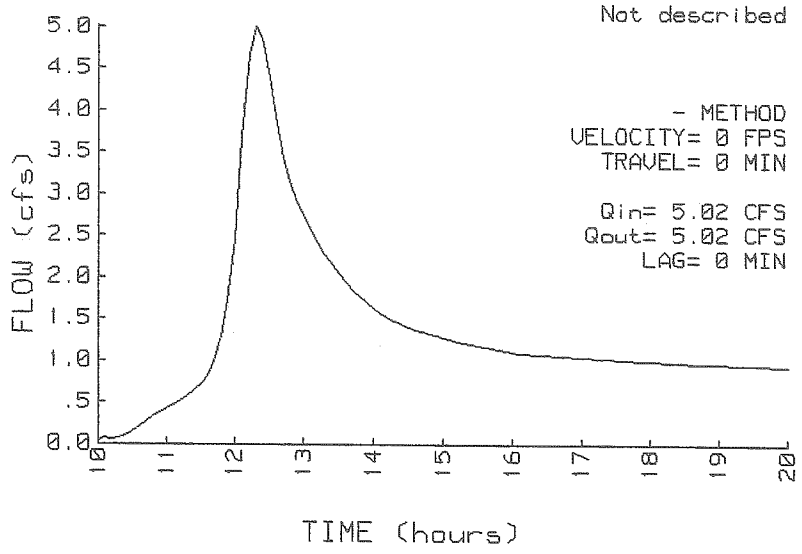
Not described

Qin = 5.02 CFS @ 12.32 HRS, VOLUME= 1.13 AF
Qout= 5.02 CFS @ 12.32 HRS, VOLUME= 1.13 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 20 INFLOW & OUTFLOW



POND 1 NEW POND

Qin = 22.29 CFS @ 12.03 HRS, VOLUME= 1.84 AF
Qout= 4.72 CFS @ 12.61 HRS, VOLUME= 1.18 AF, ATTEN= 79%, LAG= 34.8 MIN
Qpri= 2.24 CFS @ 12.61 HRS, VOLUME= .78 AF
Qsec= 2.48 CFS @ 12.61 HRS, VOLUME= .41 AF

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
58.0	4400	0	0
60.0	6400	10800	10800
62.0	8550	14950	25750
64.0	11000	19550	45300
65.0	12350	11675	56975

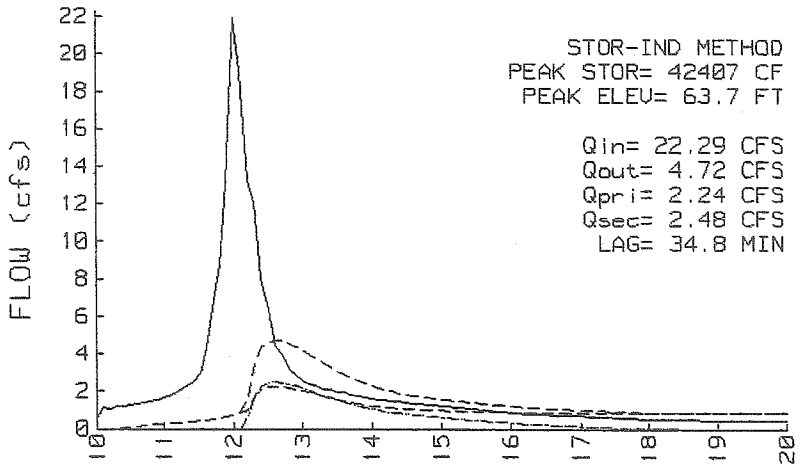
STOR-IND METHOD
PEAK STORAGE = 42407 CF
PEAK ELEVATION= 63.7 FT
FLOOD ELEVATION= 65.8 FT
START ELEVATION= 58.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING
Tdet= 166.9 MIN (1.18 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	58.2'	**4" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	62.8'	**8" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	S	62.5'	**12" CULVERT** n=.009 L=30' S=.017'/' Ke=.9 Cc=.9 Cd=.47
4	P	64.5'	**4' SHARP-CRESTED RECTANGULAR WEIR** Q=C L H^1.5 C=3.27+.4 H/4 L=Length-2(.1 H)

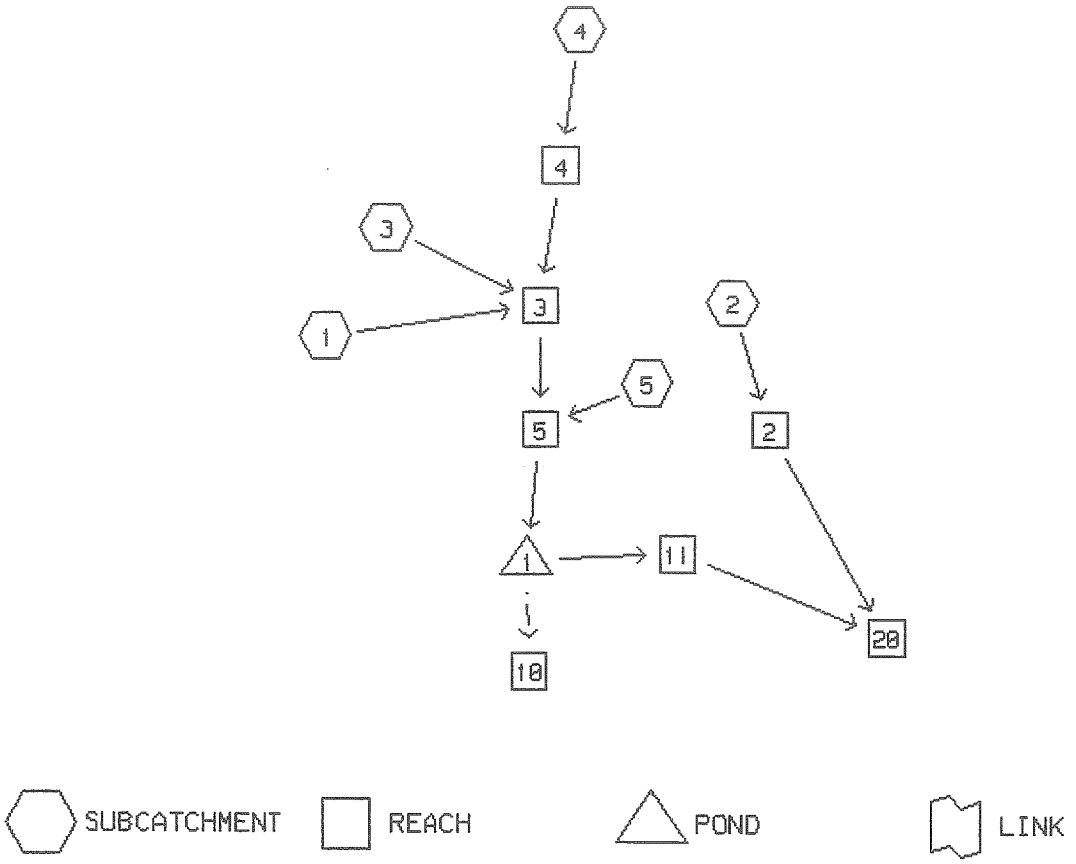
Primary Discharge
├─1=Orifice/Grate
├─2=Orifice/Grate
└─4=Sharp-Crested Rectangular Weir

Secondary Discharge
└─3=Culvert

POND 1 INFLOW & OUTFLOW
NEW POND



WATERSHED ROUTING



SUBCATCHMENT 1 PARKING & RESTAURANT BLDG

PEAK= 19.71 CFS @ 12.00 HRS, VOLUME= 1.25 AF

ACRES	CN	
.10	55	WOODS, GOOD, B SOILS
.50	61	LAWN, B SOILS
3.23	98	IMPERVIOUS
3.83	92	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**PAVEMENT AREA**	.7
Smooth surfaces n=.011 L=35' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**PAVEMENT AREA**	.7
Paved Kv=20.3282 L=80' s=.01 '/' V=2.03 fps		
CIRCULAR CHANNEL	**14" CMP**	1.4
14" Diameter a=1.07 sq-ft Pw=3.7' r=.292'		
s=.005 '/' n=.025 V=1.85 fps L=152' Capacity=2 cfs		
	Total Length= 267 ft	Total Tc= 2.8

SUBCATCHMENT 2 EAST PORTION: PAVE, LOAD AREA & CAMPBELL S

PEAK= 4.82 CFS @ 12.22 HRS, VOLUME= .46 AF

ACRES	CN	
.50	55	WOODS, GOOD, B SOILS
.63	61	LAWN , B SOILS
.89	98	IMPERVIOUS
2.02	76	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**LAWN AREA**	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**WOODS**	5.0
Woodland Kv=5 L=150' s=.01 '/' V=.5 fps		
	Total Length= 250 ft	Total Tc= 18.4

SUBCATCHMENT 3 WOODS AREA & CAMPBELL ST

PEAK= 1.61 CFS @ 12.20 HRS, VOLUME= .15 AF

ACRES	CN	
.38	55	WOODS, GOOD, B SOILS
.44	61	LAWN, B SOILS
.17	98	IMPERVIOUS
.99	65	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW Grass: Short n=.15 L=100' P2=3 in s=.01 '/'	LAWN AREA	13.4
SHALLOW CONCENTRATED/UPLAND FLOW Woodland Kv=5 L=60' s=.01 '/' V=.5 fps	STREET & WOODS	2.0
CHANNEL FLOW a=90 sq-ft Pw=29.8' r=3.02' s=.019 '/' n=.13 V=3.29 fps L=90' Capacity=296.3 cfs	Segment ID:	.5
	Total Length= 250 ft Total Tc=	15.9

SUBCATCHMENT 4 TIRE WAREHOUSE & CAMPBELL ST

PEAK= 5.22 CFS @ 12.14 HRS, VOLUME= .45 AF

ACRES	CN	
1.03	98	IMPERVIOUS
.39	61	LAWN, B SOILS
.10	55	WOODS, GOOD
1.52	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW Grass: Short n=.15 L=40' P2=3 in s=.01 '/'	LAWN AREA	6.4
SHALLOW CONCENTRATED/UPLAND FLOW Grassed Waterway Kv=15 L=100'	ROADWAY DITCH s=.01 '/' V=1.5 fps	1.1
SHALLOW CONCENTRATED/UPLAND FLOW Woodland Kv=5 L=190' s=.01 '/' V=.5 fps	WOODED SWALE ALONG ROAD	6.3
	Total Length= 330 ft Total Tc=	13.8

SUBCATCHMENT 5 BLDG ROOF

PEAK= 5.83 CFS @ 12.00 HRS, VOLUME= .38 AF

ACRES	CN	
1.07	98	IMPERVIOUS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW Smooth surfaces n=.011 L=50' P2=3 in s=.005 '/'	ROOF	1.3
SHALLOW CONCENTRATED/UPLAND FLOW Paved Kv=20.3282 L=130' s=.005 '/' V=1.44 fps	BLDG ROOF	1.5
CIRCULAR CHANNEL 6" Diameter a=.2 sq-ft Pw=1.6' r=.125' s=.005 '/' n=.009 V=2.92 fps L=45' Capacity=.6 cfs	6" ROOF DRAIN	.3
	Total Length= 225 ft Total Tc=	3.1

REACH 2 — 15" SD

Qin = 4.82 CFS @ 12.22 HRS, VOLUME= .46 AF
Qout= 4.79 CFS @ 12.22 HRS, VOLUME= .46 AF, ATTEN= 1%, LAG= .5 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.27
.3	.2	1.13
.4	.3	2.52
.9	.9	10.77
1.0	1.1	12.57
1.1	1.2	13.71
1.2	1.2	13.84
1.2	1.2	13.71
1.3	1.2	12.86

15" PIPE
n= .009
LENGTH= 186 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .51 FT
PEAK VELOCITY= 10.0 FPS
TRAVEL TIME = .3 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3 — CLOSED DRAINAGE SYSTEM

Qin = 23.34 CFS @ 12.01 HRS, VOLUME= 1.85 AF
Qout= 22.76 CFS @ 12.01 HRS, VOLUME= 1.85 AF, ATTEN= 2%, LAG= .3 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	.3	.87
.5	.7	3.67
.8	1.2	8.20
1.8	3.7	35.08
2.0	4.2	40.95
2.3	4.7	44.65
2.4	4.8	45.06
2.4	4.9	44.65
2.5	4.9	41.89

30" PIPE
n= .009
LENGTH= 110 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.30 FT
PEAK VELOCITY= 8.9 FPS
TRAVEL TIME = .2 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4 — CHANNEL AREA

Qin = 5.22 CFS @ 12.14 HRS, VOLUME= .45 AF
Qout= 5.01 CFS @ 12.19 HRS, VOLUME= .45 AF, ATTEN= 4%, LAG= 3.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.31
1.2	6.5	8.61
1.8	11.9	19.64
2.6	21.1	42.46
3.6	36.7	89.46
4.8	60.5	174.22
6.0	90.0	296.07

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 90 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .86 FT
PEAK VELOCITY= 1.2 FPS
TRAVEL TIME = 1.3 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 5 30" PIPE, CLOSED SYSTEM

Qin = 28.54 CFS @ 12.01 HRS, VOLUME= 2.22 AF
Qout= 26.92 CFS @ 12.03 HRS, VOLUME= 2.22 AF, ATTEN= 6%, LAG= .9 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	.3	.87
.5	.7	3.67
.8	1.2	8.20
1.8	3.7	35.08
2.0	4.2	40.95
2.3	4.7	44.65
2.4	4.8	45.06
2.4	4.9	44.65
2.5	4.9	41.89

30" PIPE
n= .009
LENGTH= 290 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.47 FT
PEAK VELOCITY= 9.2 FPS
TRAVEL TIME = .5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 10

Not described

Qin = 3.42 CFS @ 12.56 HRS, VOLUME= .62 AF
Qout= 3.42 CFS @ 12.56 HRS, VOLUME= .62 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 11 15"SD

Qin = 2.87 CFS @ 12.56 HRS, VOLUME= .92 AF
Qout= 2.88 CFS @ 12.54 HRS, VOLUME= .92 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.15
.3	.2	.62
.4	.3	1.38
.9	.9	5.90
1.0	1.1	6.89
1.1	1.2	7.51
1.2	1.2	7.58
1.2	1.2	7.51
1.3	1.2	7.04

15" PIPE
n= .009
LENGTH= 156 FT
SLOPE= .0057 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .54 FT
PEAK VELOCITY= 5.6 FPS
TRAVEL TIME = .5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 20

Not described

Qin = 7.03 CFS @ 12.27 HRS, VOLUME= 1.37 AF
Qout= 7.03 CFS @ 12.27 HRS, VOLUME= 1.37 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 NEW POND

Qin = 26.92 CFS @ 12.03 HRS, VOLUME= 2.22 AF
Qout= 6.29 CFS @ 12.56 HRS, VOLUME= 1.54 AF, ATTEN= 77%, LAG= 32.2 MIN
Qpri= 2.87 CFS @ 12.56 HRS, VOLUME= .92 AF
Qsec= 3.42 CFS @ 12.56 HRS, VOLUME= .62 AF

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
58.0	4400	0	0
60.0	6400	10800	10800
62.0	8550	14950	25750
64.0	11000	19550	45300
65.0	12350	11675	56975

STOR-IND METHOD
PEAK STORAGE = 49158 CF
PEAK ELEVATION= 64.3 FT
FLOOD ELEVATION= 65.8 FT
START ELEVATION= 58.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING
Tdet= 145.4 MIN (1.52 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	58.2'	**4" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	62.8'	**8" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	S	62.5'	**12" CULVERT** n=.009 L=30' S=.017'/' Ke=.9 Cc=.9 Cd=.47
4	P	64.5'	**4' SHARP-CRESTED RECTANGULAR WEIR** Q=C L H^1.5 C=3.27+.4 H/4 L=Length-2(.1 H)

Primary Discharge
├─1=Orifice/Grate
├─2=Orifice/Grate
└─4=Sharp-Crested Rectangular Weir

Secondary Discharge
└─3=Culvert

PROJECT Portland Commons BY DGE DATE 5/3/19

********** V AND TRAPEZOIDAL CHANNEL INPUT VALUES **********

BOTTOM WIDTH (USE 0 WHEN DESIGNING FOR V-DITCHES)	(FT)	B= 12
MANNINGS' N EARTH=.02, GRASS=.04-.1, NATURAL=.04-.08		N= .05
CHANNEL SLOPE	(FT/FT)	S= .01
SIDESLOPES *** EXPRESSED AS A WHOLE # (Z : 1) ***		Z= 3
MAXIMUM CHANNEL DEPTH	(FT)	D= 1.5
COMPUTATIONAL DEPTH INCREMENT (0 = DEFAULT = D/3)	(FT)	I= .25

********** V AND TRAPEZOIDAL CHANNEL OUTPUT VALUES **********

DEPTH D (FT)	FLOW AREA A (SF)	PERIMETER P (FT)	TOP WIDTH T (FT)	VELOCITY V (FPS)	DISCHARGE QA (CFS)	CRIT.VEL CV (FPS)
.25	3.19	13.58	13.5	1.12	3.57	2.76
.5	6.75	15.16	15	1.74	12	3.8
.75	10.69	16.74	16.5	2.21	24	4.56
1	15	18.32	18	2.6	39	5.18
1.25	19.69	19.91	19.5	2.95	58	5.7
1.5	24.75	21.49	21	3.26	81	6.16

DO YOU WANT TO CHANGE A VARIABLE Y/N ?

LANDOWNER _____ ADDRESS _____

PROJECT Portland Common BY DGE DATE 2/3/19

********** V AND TRAPEZOIDAL CHANNEL INPUT VALUES **********

BOTTOM WIDTH (USE 0 WHEN DESIGNING FOR V-DITCHES)	(FT)	B= 3
MANNINGS' N EARTH=.02, GRASS=.04-.1, NATURAL=.04-.08		N= .05
CHANNEL SLOPE	(FT/FT)	S= .06
SIDESLOPES *** EXPRESSED AS A WHOLE # (Z : 1) ***		Z= 3
MAXIMUM CHANNEL DEPTH	(FT)	D= 1
COMPUTATIONAL DEPTH INCREMENT (0 = DEFAULT = D/3)	(FT)	I= .25

********** V AND TRAPEZOIDAL CHANNEL OUTPUT VALUES **********

DEPTH D (FT)	FLOW AREA A (SF)	PERIMETER P (FT)	TOP WIDTH T (FT)	VELOCITY V (FPS)	DISCHARGE QA (CFS)	CRIT.VEL CV (FPS)
.25	.94	4.58	4.5	2.57	2.42	2.59
.5	2.25	6.16	6	3.75	8.44	3.47
.75	3.94	7.74	7.5	4.65	18	4.11
1	6	9.32	9	5.41	32	4.63

DO YOU WANT TO CHANGE A VARIABLE Y/N ?

Section 4

Watershed Maps (Pre and Post-Development)

Section 5

Water Quality Calculations

97622
4/14/99

Stormwater Quality Calculations
Portland Commons Shopping Center
Portland, Maine

Total Removal Efficiency:

Required:

Total site acreage = 6.89ac.
Total % Impervious = 68%
Removal Efficiency required = 71% Suspended Solids Removal
Using Sliding Scale Graph.

Proposed:

Subcatchment	Impervious Area Acres	% of Total Impervious Area
1	3.23	50.6%
2	0.89	13.9%
3	0.17	2.7%
4	1.03	16.1%
5	1.07	16.7%

Notes:

Subcatchments include offsite impervious area

Treatment of first flush, 1 yr, 24 hr storm event

In 1 yr storm event, pond secondary outlet no utilized. All pond stormwater exits into Vortechnics unit

Subcatchment 1:

BMP	TSS Removal
Vortechnics Treatment System	80 %
Dry Pond	10 %
Water Quality Inlet	10 %

Formula:

$(1-X) = (1-X_1)*(1-X_2)*(1-X_3)$****

****(From Stormwater Management for Maine: BMPS, Section 5.4)

Overall TSS Removal: $X = 1-\{(1-80\%)*(1-10\%)*(1-10\%)\}$

So X = 83.8%

Subcatchment 2:

BMP	TSS Removal
Water Quality Inlet	10 %

Subcatchment 3:

BMP	TSS Removal
Vortechnics Treatment System	80 %
Dry Pond	10 %
Water Quality Inlet	10 %

Formula:

$(1-X) = (1-X_1)*(1-X_2)*(1-X_3)$****

****(From Stormwater Management for Maine: BMPS, Section 5.4)

Overall TSS Removal: $X = 1-\{(1-80\%)*(1-10\%)*(1-10\%)\}$

So X = 83.8%

Subcatchment 4:

BMP	TSS Removal
Vortechnics Treatment System	80 %
Dry Pond	10 %
Water Quality Inlet	10 %

Formula:

$(1-X) = (1-X_1)*(1-X_2)*(1-X_3)$****

****(From Stormwater Management for Maine: BMPS, Section 5.4)

Overall TSS Removal: $X = 1-\{(1-80\%)*(1-10\%)*(1-10\%)\}$

So X = 83.8%

Subcatchment 5:

BMP	TSS Removal
Vortechnics Treatment System	80 %
Dry Pond	10 %
Water Quality Inlet	10 %

Formula:

$(1-X) = (1-X_1)*(1-X_2)*(1-X_3)$****

****(From Stormwater Management for Maine: BMPS, Section 5.4)

Overall TSS Removal: $X = 1-\{(1-80\%)*(1-10\%)*(1-10\%)\}$

So X = 83.8%

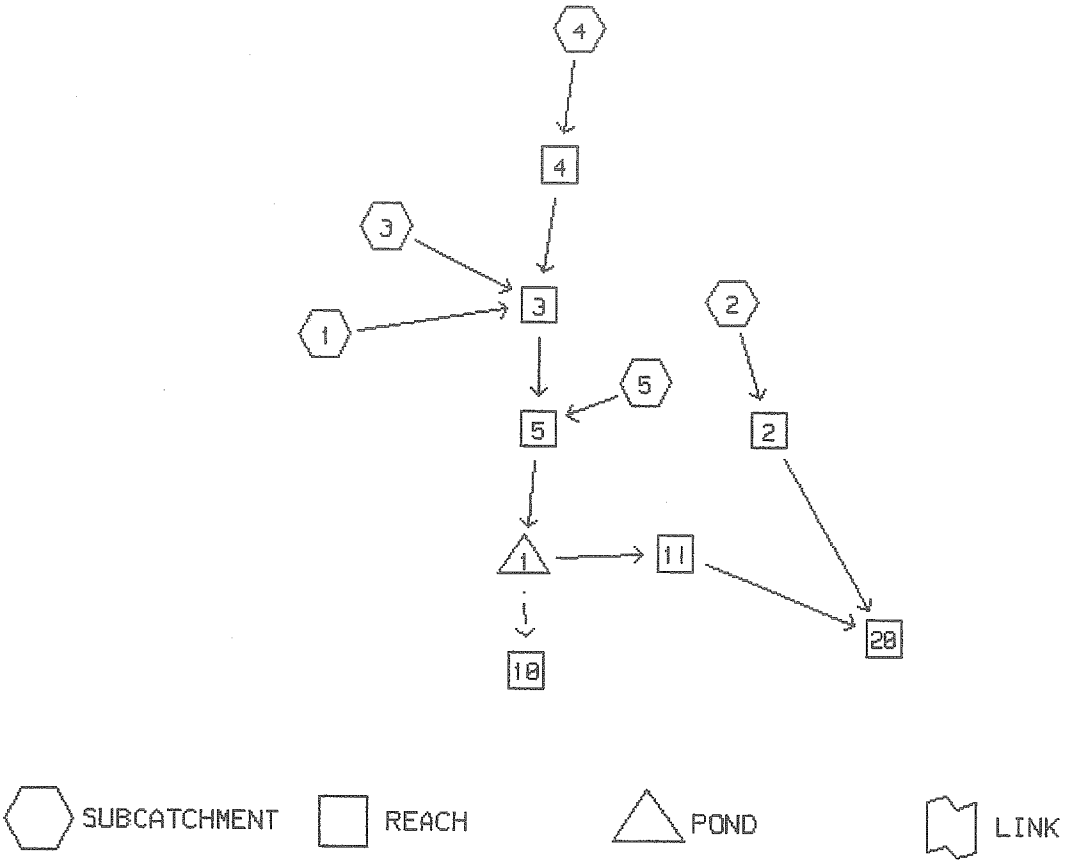
Formula for Total Removal Efficiency:

(50.6%*83.8%) + (13.9% * 10%) + (2.7%*83.8%) + (16.1%*83.8%) + (16.7%*83.8%) = 73.5%

Conclusion:

73.5% TSS Removal exceeds 71% minimum required.

WATERSHED ROUTING



SUBCATCHMENT 1 PARKING & RESTAURANT BLDG

PEAK= 7.67 CFS @ 12.00 HRS, VOLUME= .49 AF

ACRES	CN	
.10	55	WOODS, GOOD, B SOILS
.50	61	LAWN, B SOILS
3.23	98	IMPERVIOUS
3.83	92	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 2.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW Smooth surfaces n=.011 L=35' P2=3 in s=.01 '/'	PAVEMENT AREA	.7
SHALLOW CONCENTRATED/UPLAND FLOW Paved Kv=20.3282 L=80' s=.01 '/' V=2.03 fps	PAVEMENT AREA	.7
CIRCULAR CHANNEL 14" Diameter a=1.07 sq-ft Pw=3.7' r=.292' s=.005 '/' n=.025 V=1.85 fps L=152' Capacity=2 cfs	14" CMP	1.4
	Total Length= 267 ft	Total Tc= 2.8

SUBCATCHMENT 2 EAST PORTION: PAVE, LOAD AREA & CAMPBELL S

PEAK= 1.03 CFS @ 12.24 HRS, VOLUME= .11 AF

ACRES	CN	
.50	55	WOODS, GOOD, B SOILS
.63	61	LAWN , B SOILS
.89	98	IMPERVIOUS
2.02	76	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 2.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW Grass: Short n=.15 L=100' P2=3 in s=.01 '/'	LAWN AREA	13.4
SHALLOW CONCENTRATED/UPLAND FLOW Woodland Kv=5 L=150' s=.01 '/' V=.5 fps	WOODS	5.0
	Total Length= 250 ft	Total Tc= 18.4

SUBCATCHMENT 3 WOODS AREA & CAMPBELL ST

PEAK= .15 CFS @ 12.34 HRS, VOLUME= .02 AF

ACRES	CN	
.38	55	WOODS, GOOD, B SOILS
.44	61	LAWN, B SOILS
.17	98	IMPERVIOUS
.99	65	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 2.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	STREET & WOODS	2.0
Woodland Kv=5 L=60' s=.01 '/' V=.5 fps		
CHANNEL FLOW	Segment ID:	.5
a=90 sq-ft Pw=29.8' r=3.02'		
s=.019 '/' n=.13 V=3.29 fps L=90' Capacity=296.3 cfs		
	Total Length= 250 ft Total Tc=	15.9

SUBCATCHMENT 4 TIRE WAREHOUSE & CAMPBELL ST

PEAK= 1.67 CFS @ 12.15 HRS, VOLUME= .14 AF

ACRES	CN	
1.03	98	IMPERVIOUS
.39	61	LAWN, B SOILS
.10	55	WOODS, GOOD
1.52	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 2.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	6.4
Grass: Short n=.15 L=40' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	ROADWAY DITCH	1.1
Grassed Waterway Kv=15 L=100'	s=.01 '/' V=1.5 fps	
SHALLOW CONCENTRATED/UPLAND FLOW	WOODED SWALE ALONG ROAD	6.3
Woodland Kv=5 L=190' s=.01 '/' V=.5 fps		
	Total Length= 330 ft Total Tc=	13.8

SUBCATCHMENT 5 BLDG ROOF

PEAK= 2.61 CFS @ 12.00 HRS, VOLUME= .17 AF

ACRES	CN	
1.07	98	IMPERVIOUS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 2.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW Smooth surfaces n=.011 L=50' P2=3 in s=.005 '/'	ROOF	1.3
SHALLOW CONCENTRATED/UPLAND FLOW Paved Kv=20.3282 L=130' s=.005 '/' V=1.44 fps	BLDG ROOF	1.5
CIRCULAR CHANNEL 6" Diameter a=.2 sq-ft Pw=1.6' r=.125' s=.005 '/' n=.009 V=2.92 fps L=45' Capacity=.6 cfs	6" ROOF DRAIN	.3
	Total Length= 225 ft Total Tc=	3.1

REACH 2 — 15" SD

Qin = 1.03 CFS @ 12.24 HRS, VOLUME= .11 AF
Qout= 1.00 CFS @ 12.26 HRS, VOLUME= .11 AF, ATTEN= 3%, LAG= 1.3 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.27
.3	.2	1.13
.4	.3	2.52
.9	.9	10.77
1.0	1.1	12.57
1.1	1.2	13.71
1.2	1.2	13.84
1.2	1.2	13.71
1.3	1.2	12.86

15" PIPE

n= .009
LENGTH= 186 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .23 FT
PEAK VELOCITY= 6.3 FPS
TRAVEL TIME = .5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3 — CLOSED DRAINAGE SYSTEM

Qin = 8.45 CFS @ 12.01 HRS, VOLUME= .65 AF
Qout= 8.17 CFS @ 12.01 HRS, VOLUME= .65 AF, ATTEN= 3%, LAG= .4 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	.3	.87
.5	.7	3.67
.8	1.2	8.20
1.8	3.7	35.08
2.0	4.2	40.95
2.3	4.7	44.65
2.4	4.8	45.06
2.4	4.9	44.65
2.5	4.9	41.89

30" PIPE

n= .009
LENGTH= 110 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .75 FT
PEAK VELOCITY= 6.6 FPS
TRAVEL TIME = .3 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4 — CHANNEL AREA

Qin = 1.67 CFS @ 12.15 HRS, VOLUME= .14 AF
Qout= 1.58 CFS @ 12.22 HRS, VOLUME= .14 AF, ATTEN= 5%, LAG= 4.1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.31
1.2	6.5	8.61
1.8	11.9	19.64
2.6	21.1	42.46
3.6	36.7	89.46
4.8	60.5	174.22
6.0	90.0	296.07

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 90 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .43 FT
PEAK VELOCITY= .9 FPS
TRAVEL TIME = 1.6 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 5 30" PIPE, CLOSED SYSTEM

Qin = 10.76 CFS @ 12.01 HRS, VOLUME= .82 AF
Qout= 9.96 CFS @ 12.03 HRS, VOLUME= .82 AF, ATTEN= 7%, LAG= 1.1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	.3	.87
.5	.7	3.67
.8	1.2	8.20
1.8	3.7	35.08
2.0	4.2	40.95
2.3	4.7	44.65
2.4	4.8	45.06
2.4	4.9	44.65
2.5	4.9	41.89

30" PIPE

n= .009
LENGTH= 290 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .83 FT
PEAK VELOCITY= 7.2 FPS
TRAVEL TIME = .7 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 10

Not described

Qin = 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF
Qout= 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 11 15"SD

Qin = .74 CFS @ 14.12 HRS, VOLUME= .48 AF
Qout= .74 CFS @ 14.13 HRS, VOLUME= .48 AF, ATTEN= 0%, LAG= 1.1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.15
.3	.2	.62
.4	.3	1.38
.9	.9	5.90
1.0	1.1	6.89
1.1	1.2	7.51
1.2	1.2	7.58
1.2	1.2	7.51
1.3	1.2	7.04

15" PIPE

n= .009
LENGTH= 156 FT
SLOPE= .0057 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .27 FT
PEAK VELOCITY= 3.8 FPS
TRAVEL TIME = .7 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 20

Not described

Qin = 1.64 CFS @ 12.28 HRS, VOLUME= .58 AF
Qout= 1.64 CFS @ 12.28 HRS, VOLUME= .58 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT) | END AREA (SQ-FT) | DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 NEW POND

Qin = 9.96 CFS @ 12.03 HRS, VOLUME= .82 AF
Qout= .74 CFS @ 14.12 HRS, VOLUME= .48 AF, ATTEN= 93%, LAG= 125.3 MIN
Qpri= .74 CFS @ 14.12 HRS, VOLUME= .48 AF
* Qsec= 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF

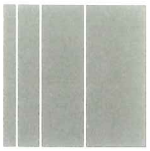
ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
58.0	4400	0	0
60.0	6400	10800	10800
62.0	8550	14950	25750
64.0	11000	19550	45300
65.0	12350	11675	56975

STOR-IND METHOD
PEAK STORAGE = 21575 CF
PEAK ELEVATION= 61.4 FT
FLOOD ELEVATION= 65.8 FT
START ELEVATION= 58.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING
Tdet= 235.3 MIN (.48 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	58.2'	**4" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	62.8'	**8" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	S	62.5'	**12" CULVERT** n=.009 L=30' S=.017'/' Ke=.9 Cc=.9 Cd=.47
4	P	64.5'	**4' SHARP-CRESTED RECTANGULAR WEIR** Q=C L H^1.5 C=3.27+.4 H/4 L=Length-2(.1 H)

Primary Discharge
├─1=Orifice/Grate
├─2=Orifice/Grate
└─4=Sharp-Crested Rectangular Weir

Secondary Discharge
└─3=Culvert



SebagoTechnics

Engineering & Planning for the Future

Stormwater Runoff Evaluation/ Erosion & Sediment Control Plan

Portland Commons Shopping Center
191 Riverside Street
Portland, Maine

May 1999

prepared by:

Sebago Technics, Inc.
12 Westbrook Common
P. O. Box 1339
Westbrook, ME 04098-1339

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- **Stormwater Management/ Erosion & Sediment Control Narrative**
- **U.S.G.S. Map**
- **Soil Map**

STORMWATER RUNOFF EVALUATION

Portland Commons Shopping Center
Portland, Maine
Revised May 4, 1999

General

The following Stormwater Management Plan has been prepared for the Waterford Group to evaluate runoff and erosion control for the proposed Portland Commons Shopping Center. The parcel, presently developed and operating as the Keenan Auction Center, is located on Riverside Street and is approximately 6.89 acres in size.

The development will include demolition of the existing building, redesign of traffic circulation and parking layout, construction of new buildings, and relocation of the existing detention/treatment pond.

Site Characteristics

The site is located on the eastern side of Riverside Street, north of the Howard Johnson's Hotel, and west of the Maine Turnpike. The property is presently developed with a building and parking lot.

Topography of the site generally slopes in an easterly direction from Riverside Street to the Maine Turnpike. Site drainage exits the site through two culverts (24" CMP and 48" RCP) under the Maine Turnpike.

Soils

Soils information used in the stormwater analysis was obtained from the Cumberland County Medium Intensity Soil Survey. The Cumberland County Medium Intensity Soil Survey Map indicates the predominant site soils as Au Gres. This soil is nearly level to gently sloping, somewhat poorly drained, and deep.

Watersheds and Stormwater Analysis

Based on the topography information, two study points will be analyzed during the pre and post-development conditions. The study points are the existing Turnpike culverts (mentioned above), as both currently accept drainage from this site. The site is divided into four watersheds in the pre development condition; five watersheds will occur in the post-development condition (see attached maps).

Existing Watersheds 1, 2 and 4 drain into the existing pond, located in the northeastern portion of the site. The existing pond detains and treats the stormwater before it leaves the site and enters the 24" CMP Turnpike culvert. Watershed 3 leaves the site to the south and enters the 48" RCP turnpike culvert.

In the post-development model, we are proposing to relocate the detention pond from the northeastern to the southeastern portion of the site (see attached plans). The pond will detain the stormwater from Watersheds 1, 3, 4 and 5 for the 2, 10 and 25-year storm events. A stormwater treatment system located east of the proposed building will provide treatment for stormwater from Watersheds 1, 3, 4 and 5. The pond and treatment system will be designed to provide stormwater detention and treatment as required by the Maine Department of Environmental Protection. The pond outlet control structures will be designed to distribute acceptable levels of stormwater into the outlet points (existing Turnpike culverts).

Post-development Watershed 1 consists of the majority of the project area, including the proposed parking and detention areas. Watershed 2 consists of the area east of the proposed building, including the homes at the end of Campbell Street. Watershed 3 collects a portion of Campbell Street and a portion of the wooded area north of the proposed building. Watershed 4 collects off-site stormwater from the "Tire Warehouse" parcel and a portion of Campbell Street. Watershed 5 consists of the approximate roof area of the proposed building. The area to the west, near the intersection of Riverside Street and Riverside Court, will be collected into the closed drainage system within Riverside Street, as it currently does.

Stormwater Management

In order to evaluate drainage characteristics as a result of the proposed development activities, a quantitative analysis was performed to determine peak rates of runoff for the 2, 10 and 25-year storm events. The analysis considered both pre- and post-development conditions. The evaluation was performed using the methodology outlined in the USDA Soil Conservation Service's "Urban Hydrology for Small Watersheds - Technical Release #55 (TR-55)". HydroCAD computer software was used to perform the calculations.

The results of the stormwater runoff calculations for the pre- and post-development conditions are summarized in the tables below:

Watershed Data - Summary Table

	Pre-Development			Post-Development		
Subcatchment	Area (Ac)	Cn	Tc (Min)	Area (Ac)	Cn	Tc (Min)
1	2.22	98	7.5	3.83	92	2.8
2	4.75	73	15.3	2.02	76	18.4
3	1.19	73	8.3	0.99	65	15.9
4	1.46	86	21.2	1.52	86	13.8
5				1.07	98	3.1

Stormwater Runoff - Summary Table				
Condition	Study Point	Peak Runoff Rate (cfs)		
		2-Year	10-Year	25-Year
Pre-Development	Flow Entering Reach 3	0.96	2.43	3.20
Post-Development	Flow Entering Reach 10	0	2.48	3.42
Net Change		-0.96	+0.05	+0.22
Pre-Development	Flow Leaving Pond 1	2.37	5.76	7.15
Post-Development	Flow Entering Reach 20	2.28	5.02	7.03
Net Change		-0.09	-0.74	-0.12

As mentioned previously, the study points are the existing 24" CMP and 48" RCP Turnpike culverts. Reach 3 in the pre-development condition and Reach 10 in the post-development condition represent the 24" CMP study point. Pond 1 in the pre-development condition and Reach 20 in the post-development condition represent the 48" RCP study point.

It is not anticipated that these flow rates will have an adverse affect on the downstream receiving area. The discharge locations for the drainage systems have been designed to be stabilized and limit potential erosion at the outlets.

In addition to the quantitative analysis, a qualitative analysis was performed for a 1-year, 24-hour duration storm event. In accordance with the State of Maine Stormwater Management Laws, a (TSS) total suspended solids removal rate of 71% efficiency is required based on this project's location and the extent of impervious area to be created. To obtain the 71% TSS efficiency, a "Vortechnics" stormwater treatment system will be utilized. Based on the contributing area, the removal efficiency of this system is estimated to be 73.5%.

Conclusion

The preceding stormwater narrative has been prepared to outline the pre- and post-development conditions for the proposed Portland Commons Shopping Center. The principal stormwater runoff features will include a combination of catch basins, detention pond, and stormwater treatment system. An erosion control plan has been made an integral part of the overall project, and specific instructions and details have been placed directly on the plans.

Prepared by:

SEBAGO TECHNICS, INC.

Nancy Gilbert for:

Donald G. Ettinger, Jr.
Project Engineer

DGE/NJG:dge/jc
May 4, 1999

Reviewed by:

SEBAGO TECHNICS, INC.

Nancy Gilbert

Nancy J. Gilbert
Professional Engineer

EROSION & SEDIMENTATION CONTROL PLAN

Portland Commons Shopping Center
Waterford of Portland, L.L.C.

A. Pre-Construction Phase

Prior to the beginning of any construction, filter fabric fencing shall be staked across the slope(s), on the contour, at or just below the limits of clearing or grubbing, and /or just above any adjacent property line or watercourse to protect against construction related erosion. The placement of silt fences and hay bales shall be completed in accordance with guidelines established in Best Management Practices. This network is to be provided, installed and maintained by the contractor until all exposed slopes have at least 85%-90% vigorous perennial vegetative cover to prevent erosion.

Prior to any construction at the site, representatives of the general contractor, site contractor and the site design engineer shall arrange for and meet with the Director of Public Works and City Engineer to discuss the scheduling of the site construction. On or before that meeting, the contractor will prepare a detailed schedule and marked up site plan indicating areas and components of the work and key dates showing date of disturbance and completion of the work. Three copies of the schedule and marked up site plan shall be provided to the City. Special attention shall be given to the 14 day limit of disturbance in the schedule addressing temporary and permanent vegetation measures.

The following erosion control measures shall be followed by the site contractor(s) throughout construction of this project.

B. Construction and Post-Construction Phase

1. Areas undergoing actual construction shall only expose that amount of mineral soil necessary for progressive and efficient site construction and shall not exceed 14 days. Areas that will not be completed (covered and/or finish graded) within fourteen (14) days of disturbance shall be anchored with temporary erosion control within fourteen (14) days of disturbance. Temporary erosion control shall include erosion control mesh, netting, or mulch and as directed by the inspecting engineer. If disturbed areas do not receive final seeding by September 15th of the year of construction, then all disturbed areas shall be hay mulched at a rate of 150 lbs. per 1,000 square feet and seeded with a winter cover crop of Rye at the rate of 3 lbs./1,000 square feet to provide winter protection. The hay mulch shall be anchored with a suitable binder, such as RMB Plus and/or secured with netting for wind protection.

2. All topsoil shall be collected, stockpiled and seeded with Rye at 3 lbs./1,000 square feet and mulched on site and re-used as required. Siltation fencing shall be placed down gradient from stockpiled loam. Loam shall be stockpiled at locations designated by the owner. Designated locations shall be determined prior to or at the pre-construction meeting.

3. All silt fences and/or hay bale barriers shall be installed according to this plan. These shall be maintained during development to remove sediment from runoff water. All the silt fences shall be inspected after any rainfall or runoff event, maintained and cleaned until all areas have at least 85%-90% vigorous perennial vegetative cover of grasses.

4. All areas shall be seeded in accordance with the following vegetation plan.

C. Vegetation Plan

Revegetation measures shall commence immediately upon completion of construction. Disturbed areas shall be mulched and anchored prior to any storm event. If final seeding cannot be accomplished by September 15th, then all disturbed areas shall be hay mulched at a rate of 150 lbs. per 1,000 S. F. and seeded with a winter cover crop of Rye at the rate of 3 lbs./1,000 S.F. to provide winter protection. Hay mulch shall be secured with a suitable binder to include RMB plus and/or erosion control netting as directed by the owner/inspection engineer.

Revegetation measures shall consist of the following:

1. Four inches of loam will be spread over disturbed areas and smoothed to a uniform surface. Loam shall be free of subsoil, clay lumps, stones and other objects over 1" in diameter, and without weeds, roots or other objectionable material.

2. In lieu of soil tests, agricultural limestone shall be spread at the rate of 3 tons per acre. 10-20-20 fertilizer shall be applied at a rate of 800 lbs./acre. These soil amendments shall be incorporated into the soil prior to final seeding.

3. Following seed bed preparation, swale areas, fill areas and back slopes shall be seeded at a rate of 4 lbs./1,000 square feet to a mixture of 35% Creeping Red Fescue, 6% Red Top, 24% Kentucky Bluegrass, 10% Perennial Ryegrass, 20% Annual Ryegrass and 5% White Dutch Clover. The lawn areas will be seeded to a premium turf mixture of Bluegrass and/or Fescue; seeding rate of 3 lbs. per 1,000 square feet.

4. Hay mulch shall be applied to all disturbed areas at the rate of 150 lbs. per 1,000 square feet, or a hydro-application of asphalt, wood or paper fiber will be applied following seeding. A suitable binder, such as RMB Plus and/or erosion control netting will be used on hay mulch for wind control.

E. Inspections/Monitoring

Maintenance measures shall be applied as needed during the entire construction cycle. After each rainfall, the site contractor shall perform a visual inspection of all installed erosion control measures and perform repairs as needed to insure their continuing function.

Following the temporary and/or final seedings, the contractor shall inspect the site semimonthly until the seedings have been established. Established means a minimum of 85%-90% of areas vegetated with vigorous growth. Reseeding shall be carried out by the contractor with follow-up inspections in the event of any failures until vegetation is adequately established.

Prepared by:

SEBAGO TECHNICS, INC.

Donald G. Ettinger
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Nancy J. Gilbert
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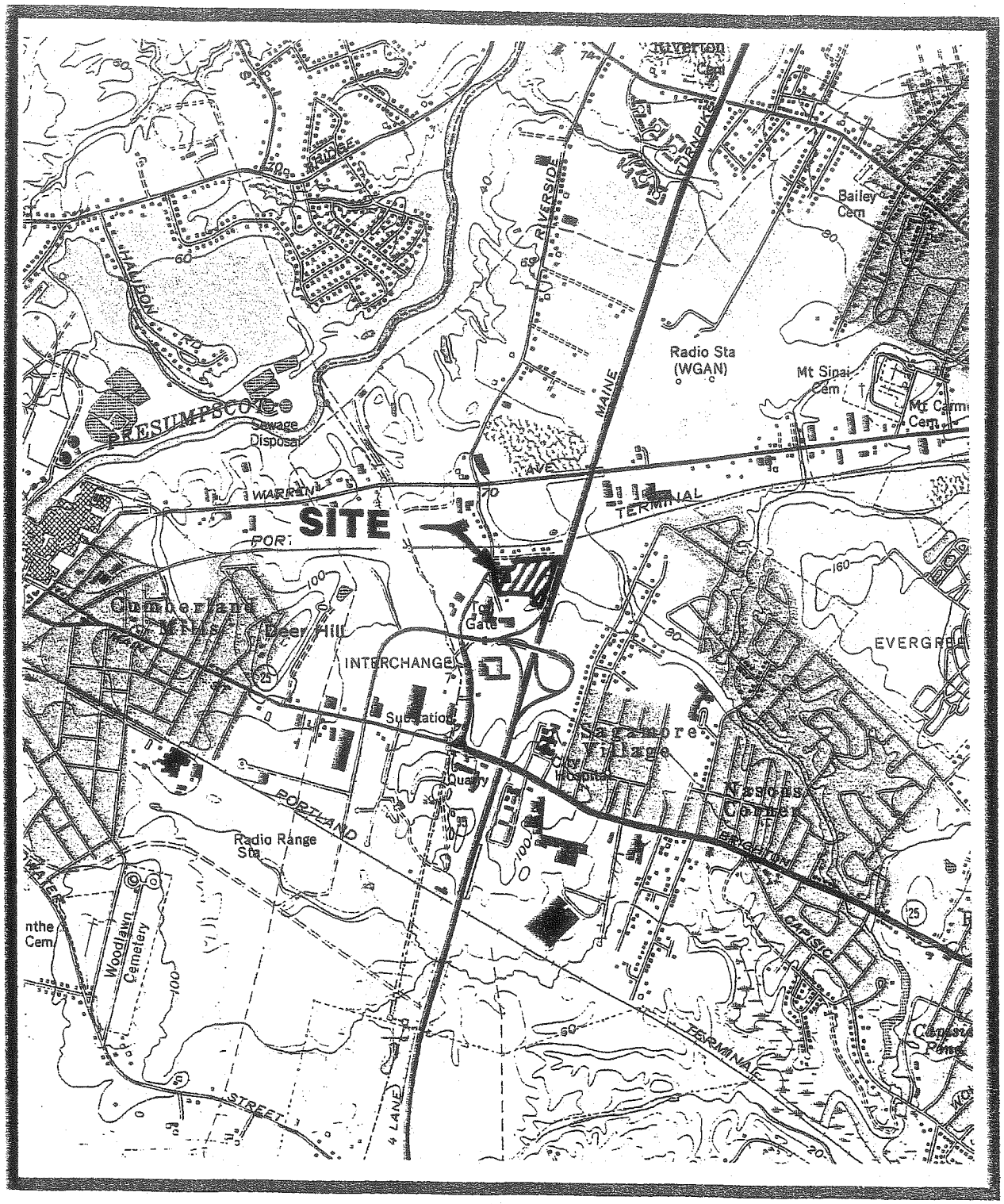
DGE/NJG:jc
March 17, 1999



SITE LOCATION MAP

USGS 7.5 MIN. TOPOGRAPHIC

PORTLAND WEST QUADRANGLE

SCALE 1"=2000'

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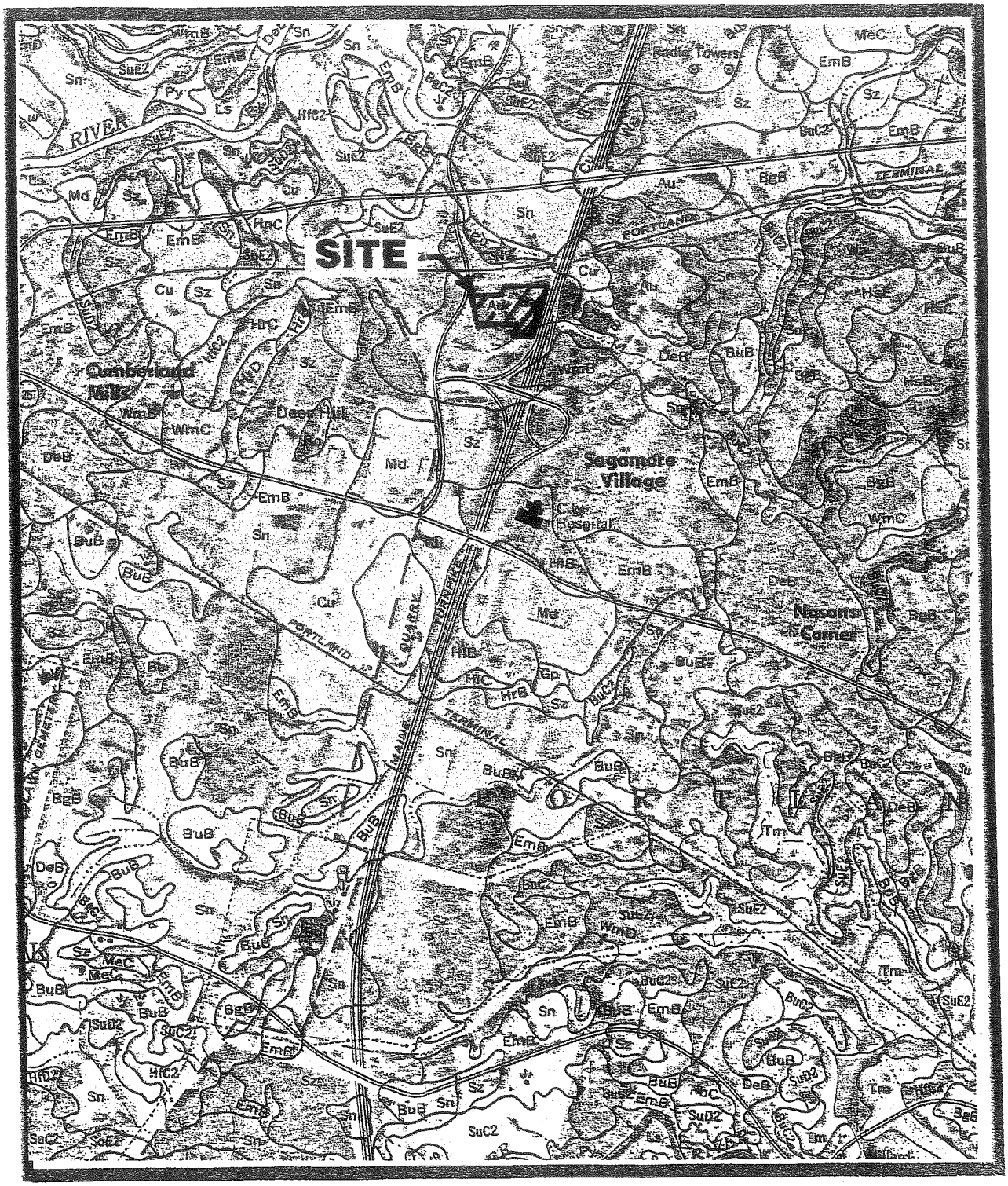

MEDIUM INTENSITY SOIL SURVEY

CUMBERLAND COUNTY

SHEETS 81

LOCATION: RIVERSIDE ST., PORTLAND

SCALE 1"=1667'

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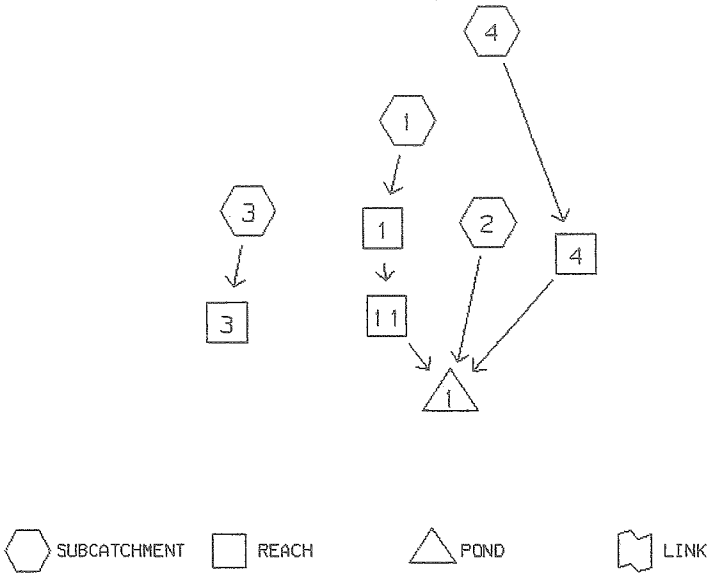
Section 2

Peak Rates of Runoff: Pre-Developed Conditions

WATERSHED ROUTING



SUBCATCHMENT 1 UPPER PARKING & AUCTION BLDG

PEAK= 5.47 CFS @ 12.06 HRS, VOLUME= .42 AF

ACRES	CN	
2.22	98	IMPERVIOUS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	roof area	1.0
Smooth surfaces n=.011 L=40' P2=3 in s=.005 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	pavement area	.3
Paved Kv=20.3282 L=60' s=.02 '/' V=2.87 fps		
CIRCULAR CHANNEL	closed drainage system	6.2
8" Diameter a=.35 sq-ft Pw=2.1' r=.167'		
s=.005 '/' n=.025 V=1.27 fps L=477' Capacity=.4 cfs		
	Total Length= 577 ft Total Tc=	7.5

SUBCATCHMENT 2 NE PARKING, WOODS, POND, CAMPBELL ST

PEAK= 3.20 CFS @ 12.20 HRS, VOLUME= .31 AF

ACRES	CN	
1.42	55	WOODS, GOOD, B SOILS
1.59	61	LAWN , B SOILS
1.74	98	IMPERVIOUS
4.75	73	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	12.3
Grass: Short n=.15 L=90' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	STREET CROSSING & WOODS	1.1
Woodland Kv=5 L=75' s=.053 '/' V=1.15 fps		
CHANNEL FLOW	CHANNEL INTO POND	1.9
a=90 sq-ft Pw=29.8' r=3.02'		
s=.019 '/' n=.13 V=3.29 fps L=370' Capacity=296.3 cfs		
	Total Length= 535 ft Total Tc=	15.3

SUBCATCHMENT 3 SE PARKING AREA AND WOODS

PEAK= .96 CFS @ 12.10 HRS, VOLUME= .08 AF

ACRES	CN	
.36	55	WOODS, GOOD, B SOILS
.40	61	LAWN, B SOILS
.43	98	IMPERVIOUS
1.19	73	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	PARKING AREA	1.7
Smooth surfaces n=.011 L=100'	P2=3 in s=.01 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	PARKING AREA	1.0
Paved Kv=20.3282 L=120' s=.01	'/' V=2.03 fps	
CHANNEL FLOW	DITCH THRU WOODS	5.6
a=9 sq-ft Pw=12.4' r=.726'		
s=.04 '/' n=.4 V=.6 fps L=200'	Capacity=5.4 cfs	
	Total Length= 420 ft	Total Tc= 8.3

SUBCATCHMENT 4 TIRE WAREHOUSE & CAMPBELL ST

PEAK= 1.86 CFS @ 12.25 HRS, VOLUME= .19 AF

ACRES	CN	
1.00	98	IMPERVIOUS
.36	61	LAWN, B SOILS
.10	55	WOODS, GOOD, B SOILS
1.46	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	HOUSE LAWNS	6.4
Grass: Short n=.15 L=40' P2=3	in s=.01 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	ROADWAY DITCH & CROSSING ROADWAY	1.1
Grassed Waterway Kv=15 L=100'	s=.01 '/' V=1.5 fps	
CHANNEL FLOW	ROADSIDE DRAINAGE (IN BRUSH)	13.7
a=6 sq-ft Pw=12.2' r=.492'		
s=.01 '/' n=.4 V=.23 fps L=190'	Capacity=1.4 cfs	
	Total Length= 330 ft	Total Tc= 21.2

REACH 1 14" CMP

Qin = 5.47 CFS @ 12.06 HRS, VOLUME= .42 AF
Qout= 2.03 CFS @ 13.10 HRS, VOLUME= .42 AF, ATTEN= 63%, LAG= 62.3 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.04
.2	.2	.17
.4	.3	.39
.8	.8	1.65
.9	.9	1.93
1.1	1.0	2.11
1.1	1.0	2.13
1.1	1.1	2.11
1.2	1.1	1.98

14" PIPE

n= .025
LENGTH= 155 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.17 FT
PEAK VELOCITY= 2.1 FPS
TRAVEL TIME = 1.2 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3

Not described

Qin = .96 CFS @ 12.10 HRS, VOLUME= .08 AF
Qout= .96 CFS @ 12.10 HRS, VOLUME= .08 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4 CHANNEL INTO POND

Qin = 1.86 CFS @ 12.25 HRS, VOLUME= .19 AF
Qout= 1.64 CFS @ 12.48 HRS, VOLUME= .18 AF, ATTEN= 12%, LAG= 13.8 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.31
1.2	6.5	8.61
1.8	11.9	19.64
2.6	21.1	42.46
3.6	36.7	89.46
4.8	60.5	174.22
6.0	90.0	296.07

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 370 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .43 FT
PEAK VELOCITY= .9 FPS
TRAVEL TIME = 6.7 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 11 CHANNEL INTO POND

Qin = 2.03 CFS @ 13.10 HRS, VOLUME= .42 AF
Qout= 1.98 CFS @ 13.10 HRS, VOLUME= .42 AF, ATTEN= 2%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.25
1.2	6.5	8.38
1.8	11.9	19.12
2.6	21.1	41.33
3.6	36.7	87.07
4.8	60.5	169.57
6.0	90.0	288.17

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 265 FT
SLOPE= .018 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .53 FT
PEAK VELOCITY= .9 FPS
TRAVEL TIME = 5.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1

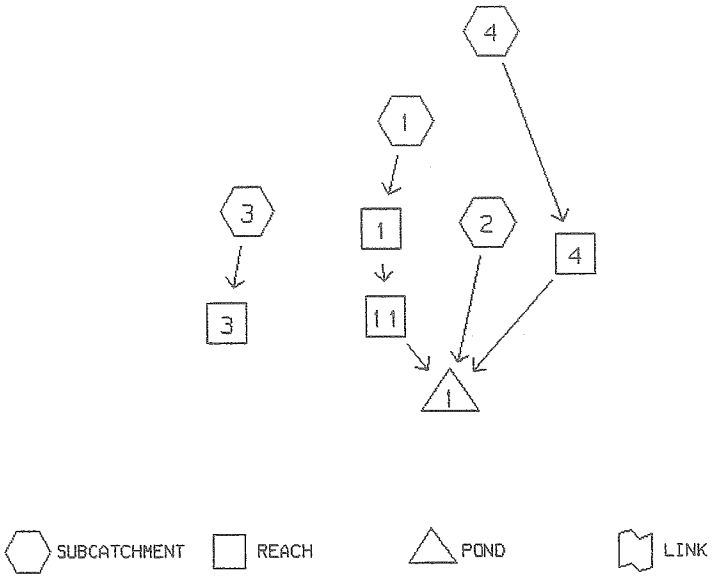
Qin = 6.12 CFS @ 12.25 HRS, VOLUME= .91 AF
Qout= 2.37 CFS @ 13.30 HRS, VOLUME= .83 AF, ATTEN= 61%, LAG= 63.2 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
57.0	8240	0	0
58.0	9650	8945	8945
59.0	12100	10875	19820
60.0	15000	13550	33370

STOR-IND METHOD
PEAK STORAGE = 17606 CF
PEAK ELEVATION= 58.8 FT
FLOOD ELEVATION= 62.0 FT
START ELEVATION= 57.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 127.7 MIN (.83 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	57.0'	**7.3" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	58.5'	**10.3" ORIFICE/GRATE X 2** Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	59.8'	**24" HORIZONTAL ORIFICE/GRATE** Q=.6 Area SQR(2gH)

WATERSHED ROUTING



SUBCATCHMENT 1 UPPER PARKING & AUCTION BLDG

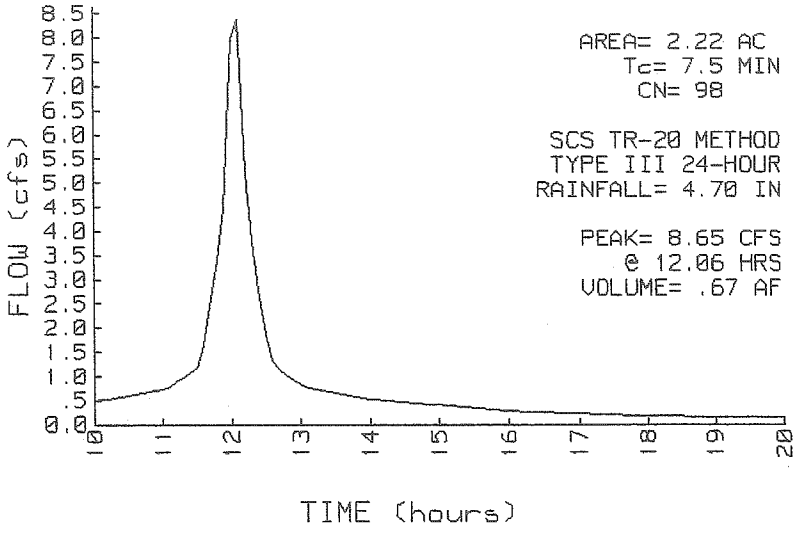
PEAK= 8.65 CFS @ 12.06 HRS, VOLUME= .67 AF

ACRES	CN	
2.22	98	IMPERVIOUS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	roof area	1.0
Smooth surfaces n=.011 L=40' P2=3 in s=.005 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	pavement area	.3
Paved Kv=20.3282 L=60' s=.02 '/' V=2.87 fps		
CIRCULAR CHANNEL	closed drainage system	6.2
8" Diameter a=.35 sq-ft Pw=2.1' r=.167'		
s=.005 '/' n=.025 V=1.27 fps L=477' Capacity=.4 cfs		
	Total Length= 577 ft Total Tc=	7.5

SUBCATCHMENT 1 RUNOFF
UPPER PARKING & AUCTION BLDG



SUBCATCHMENT 2 NE PARKING, WOODS, POND, CAMPBELL ST

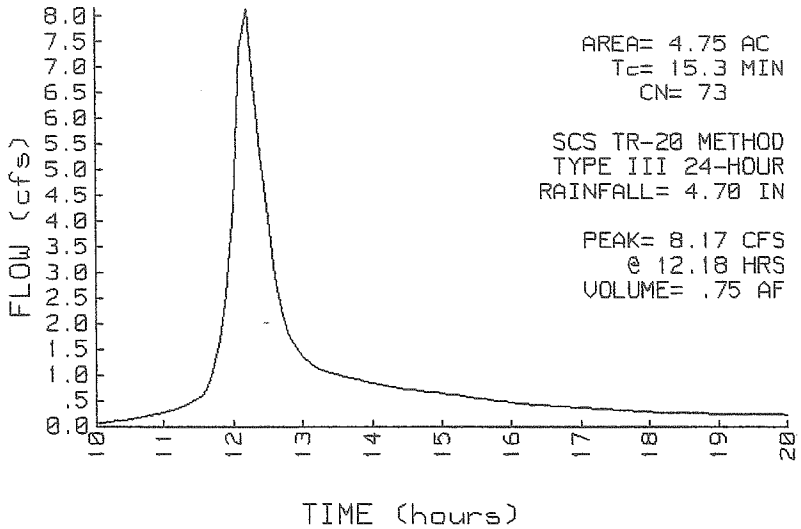
PEAK= 8.17 CFS @ 12.18 HRS, VOLUME= .75 AF

ACRES	CN	
1.42	55	WOODS, GOOD, B SOILS
1.59	61	LAWN , B SOILS
1.74	98	IMPERVIOUS
4.75	73	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**LAWN AREA**	12.3
Grass: Short n=.15 L=90' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**STREET CROSSING & WOODS**	1.1
Woodland Kv=5 L=75' s=.053 '/' V=1.15 fps		
CHANNEL FLOW	**CHANNEL INTO POND**	1.9
a=90 sq-ft Pw=29.8' r=3.02'		
s=.019 '/' n=.13 V=3.29 fps L=370' Capacity=296.3 cfs		
	Total Length= 535 ft Total Tc=	15.3

SUBCATCHMENT 2 RUNOFF
NE PARKING, WOODS, POND, CAMPBELL ST



SUBCATCHMENT 3 SE PARKING AREA AND WOODS

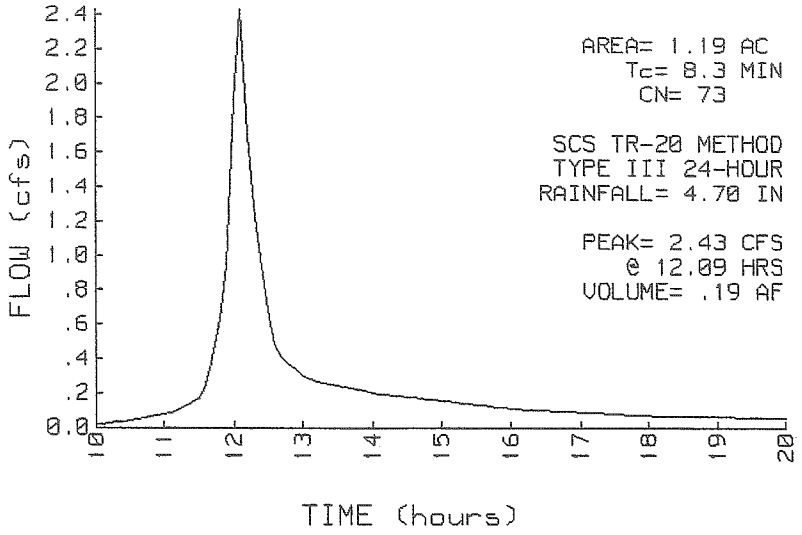
PEAK= 2.43 CFS @ 12.09 HRS, VOLUME= .19 AF

ACRES	CN	
.36	55	WOODS, GOOD, B SOILS
.40	61	LAWN, B SOILS
.43	98	IMPERVIOUS
1.19	73	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**PARKING AREA**	1.7
Smooth surfaces n=.011 L=100'	P2=3 in s=.01 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	**PARKING AREA**	1.0
Paved Kv=20.3282 L=120' s=.01 '/'	V=2.03 fps	
CHANNEL FLOW	**DITCH THRU WOODS**	5.6
a=9 sq-ft Pw=12.4' r=.726'		
s=.04 '/' n=.4 V=.6 fps L=200'	Capacity=5.4 cfs	
	Total Length= 420 ft	Total Tc= 8.3

SUBCATCHMENT 3 RUNOFF
SE PARKING AREA AND WOODS



SUBCATCHMENT 4 TIRE WAREHOUSE & CAMPBELL ST

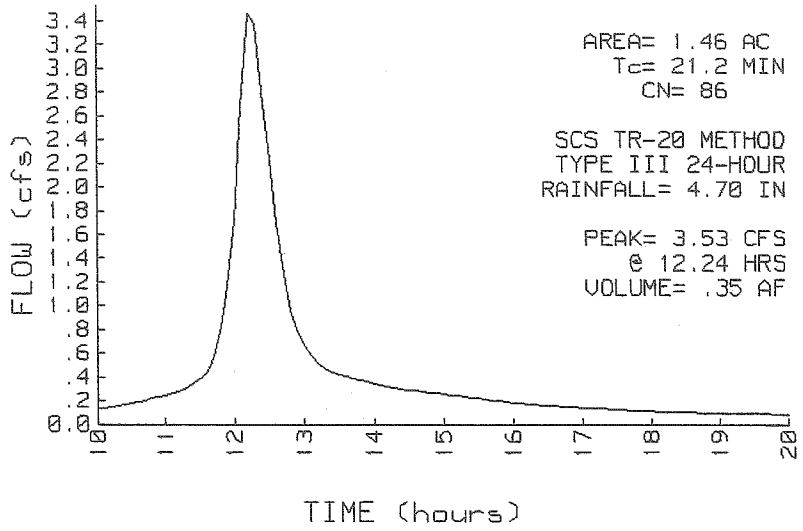
PEAK= 3.53 CFS @ 12.24 HRS, VOLUME= .35 AF

ACRES	CN	
1.00	98	IMPERVIOUS
.36	61	LAWN, B SOILS
.10	55	WOODS, GOOD, B SOILS
1.46	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	HOUSE LAWNS	6.4
Grass: Short n=.15 L=40' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	ROADWAY DITCH & CROSSING ROADWAY	1.1
Grassed Waterway Kv=15 L=100'	s=.01 '/' V=1.5 fps	
CHANNEL FLOW	ROADSIDE DRAINAGE (IN BRUSH)	13.7
a=6 sq-ft Pw=12.2' r=.492'		
s=.01 '/' n=.4 V=.23 fps L=190' Capacity=1.4 cfs		
	Total Length= 330 ft Total Tc=	21.2

SUBCATCHMENT 4 RUNOFF
TIRE WAREHOUSE & CAMPBELL ST



REACH 1 14" CMP

Qin = 8.65 CFS @ 12.06 HRS, VOLUME= .67 AF
Qout= 2.04 CFS @ 14.30 HRS, VOLUME= .67 AF, ATTEN= 76%, LAG= 134.3 MIN

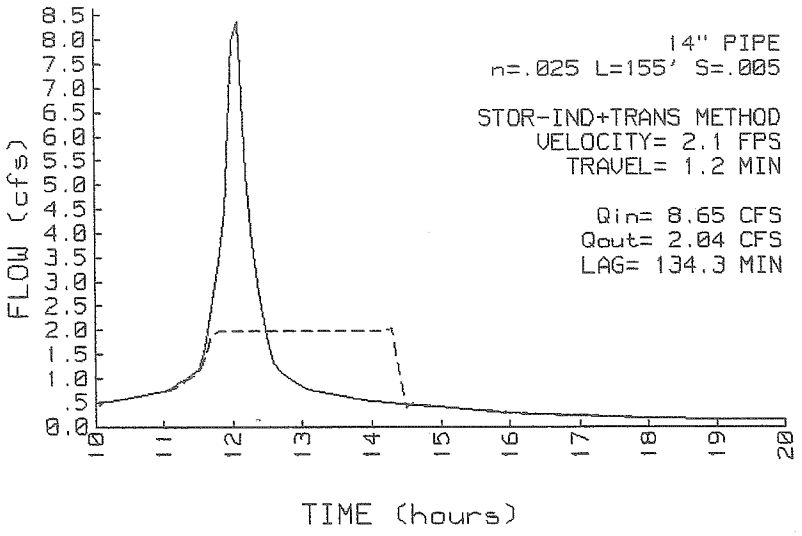
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.04
.2	.2	.17
.4	.3	.39
.8	.8	1.65
.9	.9	1.93
1.1	1.0	2.11
1.1	1.0	2.13
1.1	1.1	2.11
1.2	1.1	1.98

14" PIPE

n= .025
LENGTH= 155 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.17 FT
PEAK VELOCITY= 2.1 FPS
TRAVEL TIME = 1.2 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 1 INFLOW & OUTFLOW
14" CMP



REACH 3

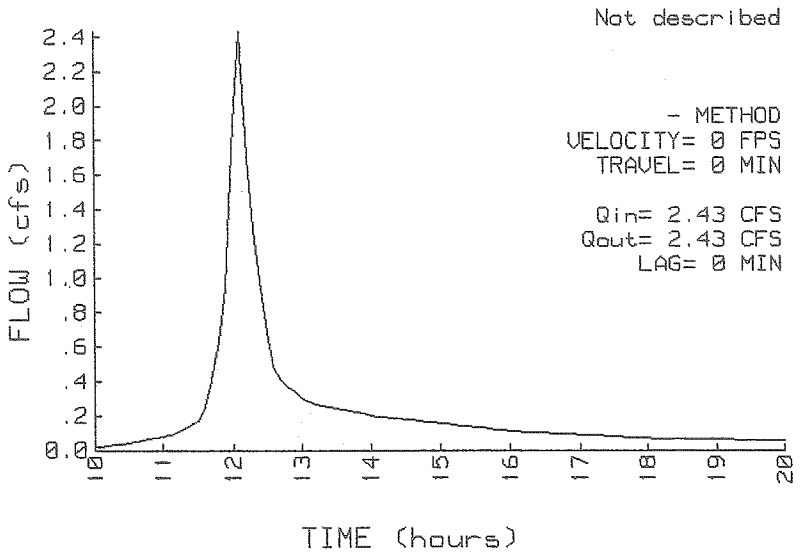
Not described

Qin = 2.43 CFS @ 12.09 HRS, VOLUME= .19 AF
Qout= 2.43 CFS @ 12.09 HRS, VOLUME= .19 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3 INFLOW & OUTFLOW



REACH 4 CHANNEL INTO POND

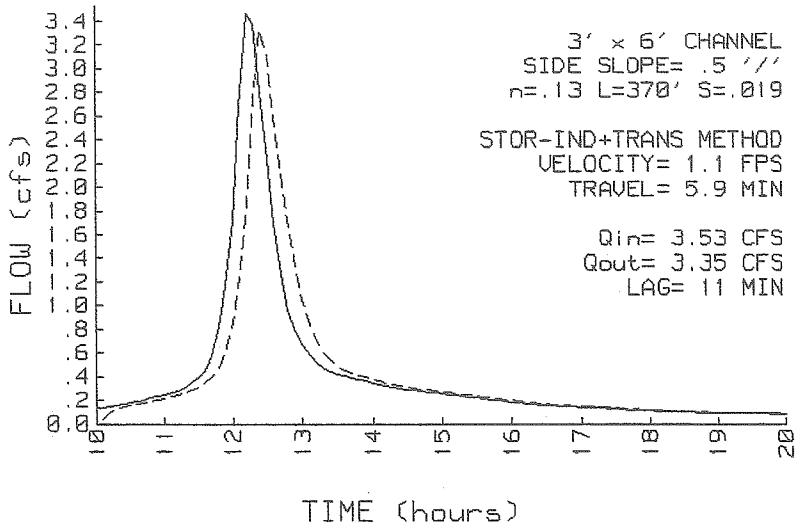
Qin = 3.53 CFS @ 12.24 HRS, VOLUME= .35 AF
Qout= 3.35 CFS @ 12.42 HRS, VOLUME= .35 AF, ATTEN= 5%, LAG= 11.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.31
1.2	6.5	8.61
1.8	11.9	19.64
2.6	21.1	42.46
3.6	36.7	89.46
4.8	60.5	174.22
6.0	90.0	296.07

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 370 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .70 FT
PEAK VELOCITY= 1.1 FPS
TRAVEL TIME = 5.9 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4 INFLOW & OUTFLOW
CHANNEL INTO POND



REACH 11 CHANNEL INTO POND

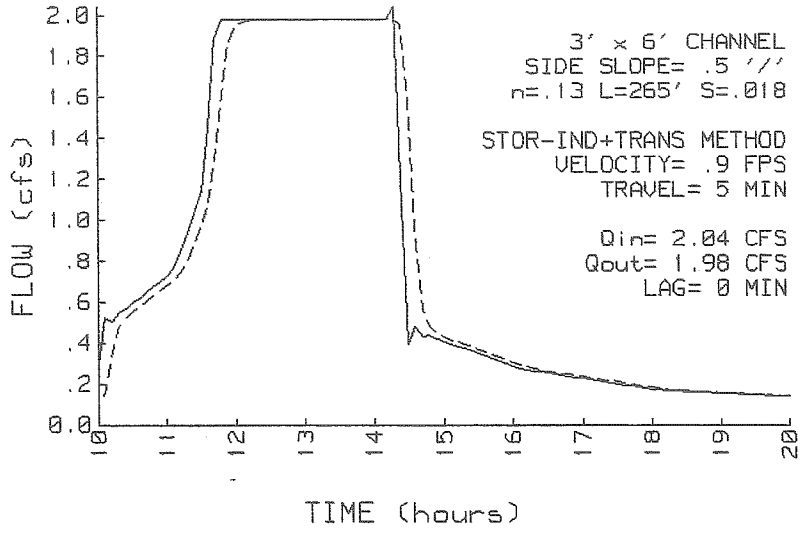
Qin = 2.04 CFS @ 14.30 HRS, VOLUME= .67 AF
Qout= 1.98 CFS @ 14.30 HRS, VOLUME= .67 AF, ATTEN= 3%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.25
1.2	6.5	8.38
1.8	11.9	19.12
2.6	21.1	41.33
3.6	36.7	87.07
4.8	60.5	169.57
6.0	90.0	288.17

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 265 FT
SLOPE= .018 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .53 FT
PEAK VELOCITY= .9 FPS
TRAVEL TIME = 5.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 11 INFLOW & OUTFLOW
CHANNEL INTO POND



POND 1

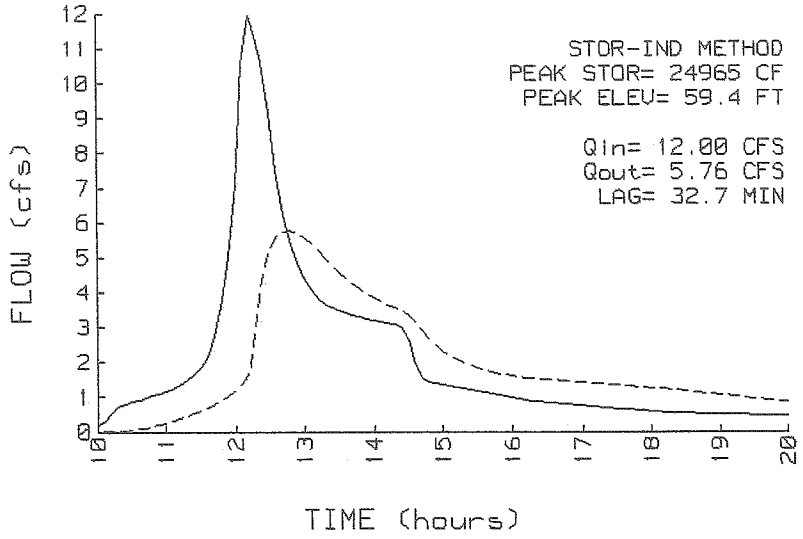
Qin = 12.00 CFS @ 12.22 HRS, VOLUME= 1.76 AF
Qout= 5.76 CFS @ 12.77 HRS, VOLUME= 1.62 AF, ATTEN= 52%, LAG= 32.7 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
57.0	8240	0	0
58.0	9650	8945	8945
59.0	12100	10875	19820
60.0	15000	13550	33370

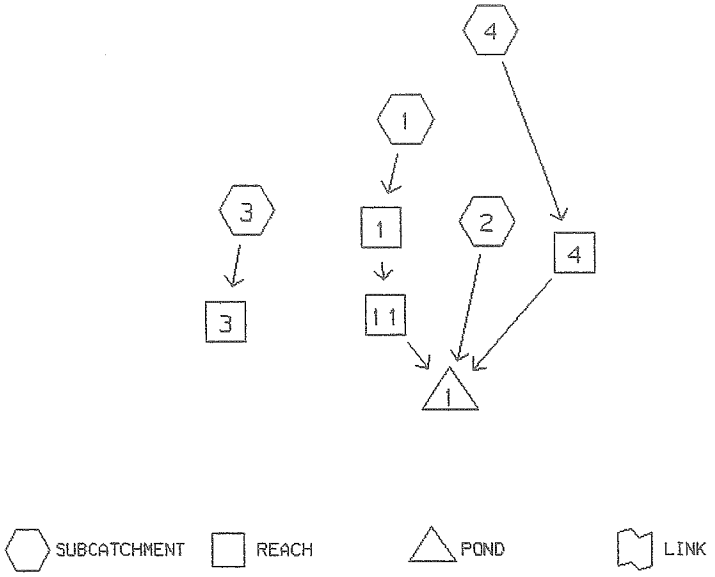
STOR-IND METHOD
PEAK STORAGE = 24965 CF
PEAK ELEVATION= 59.4 FT
FLOOD ELEVATION= 62.0 FT
START ELEVATION= 57.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 97.3 MIN (1.6 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	57.0'	**7.3" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	58.5'	**10.3" ORIFICE/GRATE X 2** Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	59.8'	**24" HORIZONTAL ORIFICE/GRATE** Q=.6 Area SQR(2gH)

POND 1 INFLOW & OUTFLOW



WATERSHED ROUTING



SUBCATCHMENT 1 UPPER PARKING & AUCTION BLDG

PEAK= 10.14 CFS @ 12.06 HRS, VOLUME= .78 AF

ACRES	CN	
2.22	98	IMPERVIOUS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	roof area	1.0
Smooth surfaces n=.011 L=40'	P2=3 in s=.005 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	pavement area	.3
Paved Kv=20.3282 L=60' s=.02 '/'	V=2.87 fps	
CIRCULAR CHANNEL	closed drainage system	6.2
8" Diameter a=.35 sq-ft Pw=2.1'	r=.167'	
s=.005 '/' n=.025 V=1.27 fps	L=477' Capacity=.4 cfs	
	Total Length= 577 ft Total Tc=	7.5

SUBCATCHMENT 2 NE PARKING, WOODS, POND, CAMPBELL ST

PEAK= 10.76 CFS @ 12.18 HRS, VOLUME= .98 AF

ACRES	CN	
1.42	55	WOODS, GOOD, B SOILS
1.59	61	LAWN , B SOILS
1.74	98	IMPERVIOUS
4.75	73	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	12.3
Grass: Short n=.15 L=90' P2=3	in s=.01 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	STREET CROSSING & WOODS	1.1
Woodland Kv=5 L=75' s=.053 '/'	V=1.15 fps	
CHANNEL FLOW	CHANNEL INTO POND	1.9
a=90 sq-ft Pw=29.8' r=3.02'		
s=.019 '/' n=.13 V=3.29 fps	L=370' Capacity=296.3 cfs	
	Total Length= 535 ft Total Tc=	15.3

SUBCATCHMENT 3 SE PARKING AREA AND WOODS

PEAK= 3.20 CFS @ 12.09 HRS, VOLUME= .24 AF

ACRES	CN	
.36	55	WOODS, GOOD, B SOILS
.40	61	LAWN, B SOILS
.43	98	IMPERVIOUS
1.19	73	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW Smooth surfaces n=.011 L=100'	PARKING AREA P2=3 in s=.01 '/'	1.7
SHALLOW CONCENTRATED/UPLAND FLOW Paved Kv=20.3282 L=120' s=.01 '/' V=2.03 fps	PARKING AREA	1.0
CHANNEL FLOW a=9 sq-ft Pw=12.4' r=.726' s=.04 '/' n=.4 V=.6 fps L=200' Capacity=5.4 cfs	DITCH THRU WOODS	5.6
	Total Length= 420 ft Total Tc=	8.3

SUBCATCHMENT 4 TIRE WAREHOUSE & CAMPBELL ST

PEAK= 4.33 CFS @ 12.24 HRS, VOLUME= .43 AF

ACRES	CN	
1.00	98	IMPERVIOUS
.36	61	LAWN, B SOILS
.10	55	WOODS, GOOD, B SOILS
1.46	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW Grass: Short n=.15 L=40' P2=3 in	HOUSE LAWNS s=.01 '/'	6.4
SHALLOW CONCENTRATED/UPLAND FLOW Grassed Waterway Kv=15 L=100'	ROADWAY DITCH & CROSSING ROADWAY s=.01 '/' V=1.5 fps	1.1
CHANNEL FLOW a=6 sq-ft Pw=12.2' r=.492' s=.01 '/' n=.4 V=.23 fps L=190' Capacity=1.4 cfs	ROADSIDE DRAINAGE (IN BRUSH)	13.7
	Total Length= 330 ft Total Tc=	21.2

REACH 1 14" CMP

Qin = 10.14 CFS @ 12.06 HRS, VOLUME= .78 AF
Qout= 1.98 CFS @ 11.80 HRS, VOLUME= .78 AF, ATTEN= 81%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.04
.2	.2	.17
.4	.3	.39
.8	.8	1.65
.9	.9	1.93
1.1	1.0	2.11
1.1	1.0	2.13
1.1	1.1	2.11
1.2	1.1	1.98

14" PIPE

n= .025
LENGTH= 155 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.17 FT
PEAK VELOCITY= 2.1 FPS
TRAVEL TIME = 1.2 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3

Not described

Qin = 3.20 CFS @ 12.09 HRS, VOLUME= .24 AF
Qout= 3.20 CFS @ 12.09 HRS, VOLUME= .24 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4 CHANNEL INTO POND

Qin = 4.33 CFS @ 12.24 HRS, VOLUME= .43 AF
Qout= 4.09 CFS @ 12.41 HRS, VOLUME= .43 AF, ATTEN= 6%, LAG= 10.2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.31
1.2	6.5	8.61
1.8	11.9	19.64
2.6	21.1	42.46
3.6	36.7	89.46
4.8	60.5	174.22
6.0	90.0	296.07

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 370 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .77 FT
PEAK VELOCITY= 1.1 FPS
TRAVEL TIME = 5.5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 11 CHANNEL INTO POND

Qin = 1.98 CFS @ 11.80 HRS, VOLUME= .78 AF
Qout= 1.98 CFS @ 14.30 HRS, VOLUME= .78 AF, ATTEN= 0%, LAG= 150.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.25
1.2	6.5	8.38
1.8	11.9	19.12
2.6	21.1	41.33
3.6	36.7	87.07
4.8	60.5	169.57
6.0	90.0	288.17

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 265 FT
SLOPE= .018 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .53 FT
PEAK VELOCITY= .9 FPS
TRAVEL TIME = 5.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1

Qin = 15.11 CFS @ 12.22 HRS, VOLUME= 2.18 AF
Qout= 7.15 CFS @ 12.72 HRS, VOLUME= 2.01 AF, ATTEN= 53%, LAG= 29.9 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
57.0	8240	0	0
58.0	9650	8945	8945
59.0	12100	10875	19820
60.0	15000	13550	33370

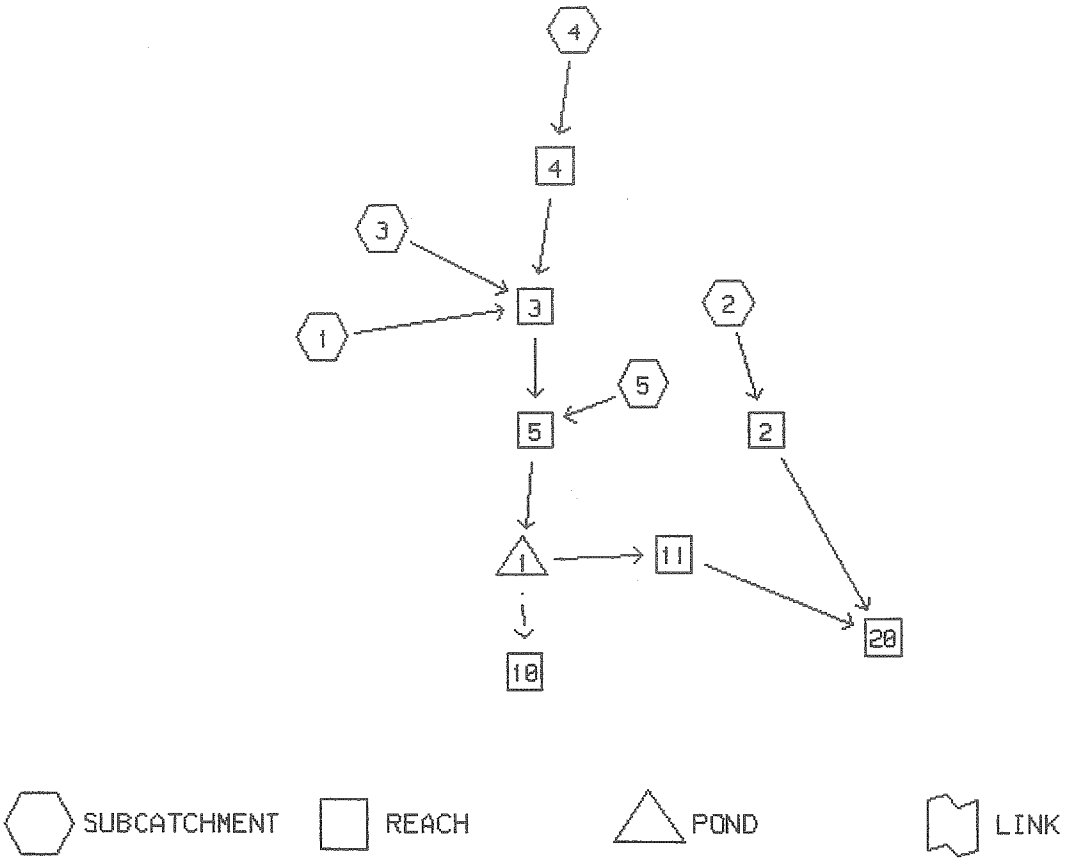
STOR-IND METHOD
PEAK STORAGE = 29675 CF
PEAK ELEVATION= 59.7 FT
FLOOD ELEVATION= 62.0 FT
START ELEVATION= 57.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 89.1 MIN (1.99 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	57.0'	**7.3" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	58.5'	**10.3" ORIFICE/GRATE X 2** Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	P	59.8'	**24" HORIZONTAL ORIFICE/GRATE** Q=.6 Area SQR(2gH)

Section 3

Peak Rates of Runoff: Developed Conditions

WATERSHED ROUTING



SUBCATCHMENT 1 PARKING & RESTAURANT BLDG

PEAK= 9.69 CFS @ 12.00 HRS, VOLUME= .61 AF

ACRES	CN	
.10	55	WOODS, GOOD, B SOILS
.50	61	LAWN, B SOILS
3.23	98	IMPERVIOUS
3.83	92	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	PAVEMENT AREA	.7
Smooth surfaces n=.011 L=35' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	PAVEMENT AREA	.7
Paved Kv=20.3282 L=80' s=.01 '/' V=2.03 fps		
CIRCULAR CHANNEL	14" CMP	1.4
14" Diameter a=1.07 sq-ft Pw=3.7' r=.292'		
s=.005 '/' n=.025 V=1.85 fps L=152' Capacity=2 cfs		
	Total Length= 267 ft Total Tc=	2.8

SUBCATCHMENT 2 EAST PORTION: PAVE, LOAD AREA & CAMPBELL S

PEAK= 1.58 CFS @ 12.23 HRS, VOLUME= .16 AF

ACRES	CN	
.50	55	WOODS, GOOD, B SOILS
.63	61	LAWN , B SOILS
.89	98	IMPERVIOUS
2.02	76	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	WOODS	5.0
Woodland Kv=5 L=150' s=.01 '/' V=.5 fps		
	Total Length= 250 ft Total Tc=	18.4

SUBCATCHMENT 3 WOODS AREA & CAMPBELL ST

PEAK= .32 CFS @ 12.25 HRS, VOLUME= .04 AF

ACRES	CN	
.38	55	WOODS, GOOD, B SOILS
.44	61	LAWN, B SOILS
.17	98	IMPERVIOUS
.99	65	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	STREET & WOODS	2.0
Woodland Kv=5 L=60' s=.01 '/' V=.5 fps		
CHANNEL FLOW	Segment ID:	.5
a=90 sq-ft Pw=29.8' r=3.02'		
s=.019 '/' n=.13 V=3.29 fps L=90' Capacity=296.3 cfs		
	Total Length= 250 ft Total Tc=	15.9

SUBCATCHMENT 4 TIRE WAREHOUSE & CAMPBELL ST

PEAK= 2.24 CFS @ 12.15 HRS, VOLUME= .19 AF

ACRES	CN	
1.03	98	IMPERVIOUS
.39	61	LAWN, B SOILS
.10	55	WOODS, GOOD
1.52	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	6.4
Grass: Short n=.15 L=40' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	ROADWAY DITCH	1.1
Grassed Waterway Kv=15 L=100'	s=.01 '/' V=1.5 fps	
SHALLOW CONCENTRATED/UPLAND FLOW	WOODED SWALE ALONG ROAD	6.3
Woodland Kv=5 L=190' s=.01 '/' V=.5 fps		
	Total Length= 330 ft Total Tc=	13.8

SUBCATCHMENT 5 BLDG ROOF

PEAK= 3.15 CFS @ 12.00 HRS, VOLUME= .20 AF

ACRES	CN	
1.07	98	IMPERVIOUS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 3.00 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	ROOF	1.3
Smooth surfaces n=.011 L=50' P2=3 in s=.005 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	BLDG ROOF	1.5
Paved Kv=20.3282 L=130' s=.005 '/' V=1.44 fps		
CIRCULAR CHANNEL	6" ROOF DRAIN	.3
6" Diameter a=.2 sq-ft Pw=1.6' r=.125'		
s=.005 '/' n=.009 V=2.92 fps L=45' Capacity=.6 cfs		
	Total Length= 225 ft Total Tc=	3.1

REACH 2 — 15" SD

Qin = 1.58 CFS @ 12.23 HRS, VOLUME= .16 AF
Qout= 1.57 CFS @ 12.24 HRS, VOLUME= .16 AF, ATTEN= 1%, LAG= .5 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.27
.3	.2	1.13
.4	.3	2.52
.9	.9	10.77
1.0	1.1	12.57
1.1	1.2	13.71
1.2	1.2	13.84
1.2	1.2	13.71
1.3	1.2	12.86

15" PIPE
n= .009
LENGTH= 186 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .29 FT
PEAK VELOCITY= 7.2 FPS
TRAVEL TIME = .4 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3 — CLOSED DRAINAGE SYSTEM

Qin = 10.83 CFS @ 12.01 HRS, VOLUME= .84 AF
Qout= 10.51 CFS @ 12.01 HRS, VOLUME= .84 AF, ATTEN= 3%, LAG= .3 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	.3	.87
.5	.7	3.67
.8	1.2	8.20
1.8	3.7	35.08
2.0	4.2	40.95
2.3	4.7	44.65
2.4	4.8	45.06
2.4	4.9	44.65
2.5	4.9	41.89

30" PIPE
n= .009
LENGTH= 110 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .84 FT
PEAK VELOCITY= 7.3 FPS
TRAVEL TIME = .3 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4 — CHANNEL AREA

Qin = 2.24 CFS @ 12.15 HRS, VOLUME= .19 AF
Qout= 2.12 CFS @ 12.21 HRS, VOLUME= .19 AF, ATTEN= 5%, LAG= 4.1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.31
1.2	6.5	8.61
1.8	11.9	19.64
2.6	21.1	42.46
3.6	36.7	89.46
4.8	60.5	174.22
6.0	90.0	296.07

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 90 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .57 FT
PEAK VELOCITY= .9 FPS
TRAVEL TIME = 1.6 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 5 30" PIPE, CLOSED SYSTEM

Qin = 13.64 CFS @ 12.01 HRS, VOLUME= 1.05 AF
Qout= 12.76 CFS @ 12.02 HRS, VOLUME= 1.05 AF, ATTEN= 6%, LAG= .9 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	.3	.87
.5	.7	3.67
.8	1.2	8.20
1.8	3.7	35.08
2.0	4.2	40.95
2.3	4.7	44.65
2.4	4.8	45.06
2.4	4.9	44.65
2.5	4.9	41.89

30" PIPE

n= .009
LENGTH= 290 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .93 FT
PEAK VELOCITY= 7.8 FPS
TRAVEL TIME = .6 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 10

Not described

Qin = 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF
Qout= 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 11 15"SD

Qin = .83 CFS @ 14.51 HRS, VOLUME= .55 AF
Qout= .83 CFS @ 14.53 HRS, VOLUME= .55 AF, ATTEN= 0%, LAG= 1.1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.15
.3	.2	.62
.4	.3	1.38
.9	.9	5.90
1.0	1.1	6.89
1.1	1.2	7.51
1.2	1.2	7.58
1.2	1.2	7.51
1.3	1.2	7.04

15" PIPE

n= .009
LENGTH= 156 FT
SLOPE= .0057 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .29 FT
PEAK VELOCITY= 3.9 FPS
TRAVEL TIME = .7 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 20

Not described

Qin = 2.28 CFS @ 12.25 HRS, VOLUME= .71 AF
Qout= 2.28 CFS @ 12.25 HRS, VOLUME= .71 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 **NEW POND**

Qin = 12.76 CFS @ 12.02 HRS, VOLUME= 1.05 AF
Qout= .83 CFS @ 14.51 HRS, VOLUME= .55 AF, ATTEN= 93%, LAG= 149.2 MIN
Qpri= .83 CFS @ 14.51 HRS, VOLUME= .55 AF
Qsec= 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
58.0	4400	0	0
60.0	6400	10800	10800
62.0	8550	14950	25750
64.0	11000	19550	45300
65.0	12350	11675	56975

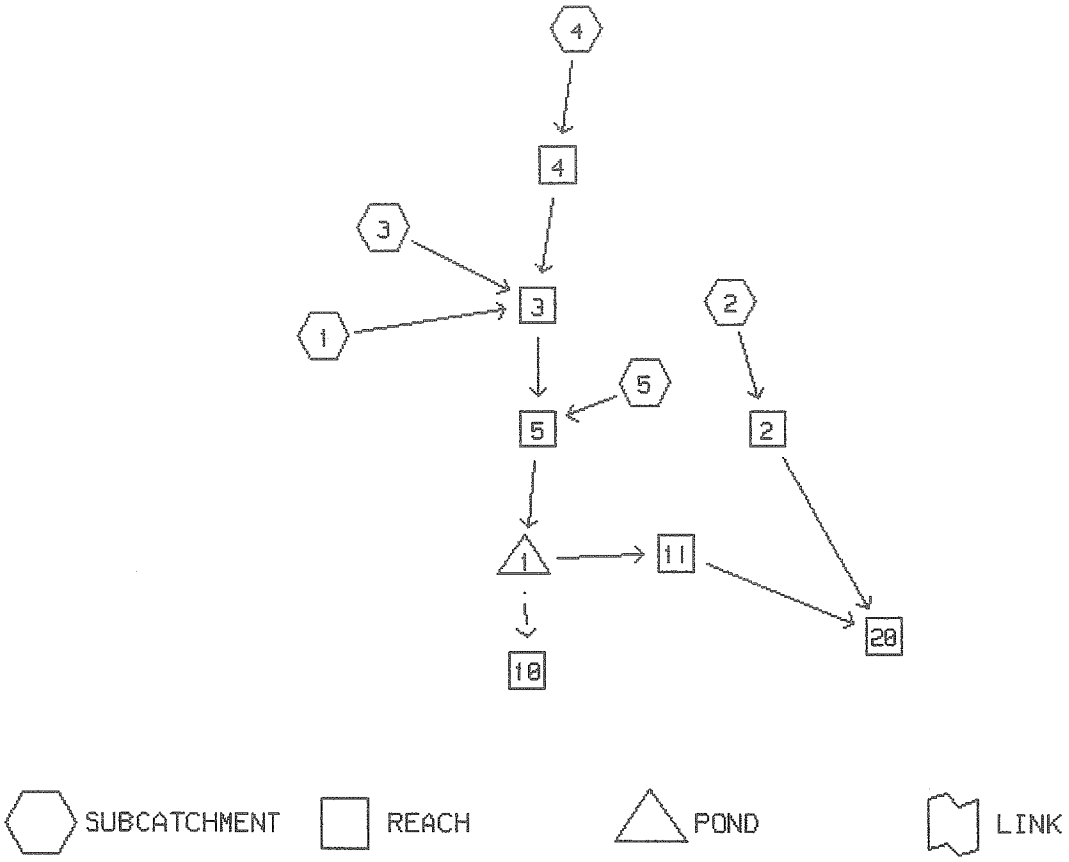
STOR-IND METHOD
PEAK STORAGE = 28523 CF
PEAK ELEVATION= 62.3 FT
FLOOD ELEVATION= 65.8 FT
START ELEVATION= 58.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING
Tdet= 237.4 MIN (.55 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	58.2'	**4" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	62.8'	**8" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	S	62.5'	**12" CULVERT** n=.009 L=30' S=.017'/' Ke=.9 Cc=.9 Cd=.47
4	P	64.5'	**4' SHARP-CRESTED RECTANGULAR WEIR** Q=C L H^1.5 C=3.27+.4 H/4 L=Length-2(.1 H)

Primary Discharge
├─1=Orifice/Grate
├─2=Orifice/Grate
└─4=Sharp-Crested Rectangular Weir

Secondary Discharge
└─3=Culvert

WATERSHED ROUTING



SUBCATCHMENT 1 PARKING & RESTAURANT BLDG

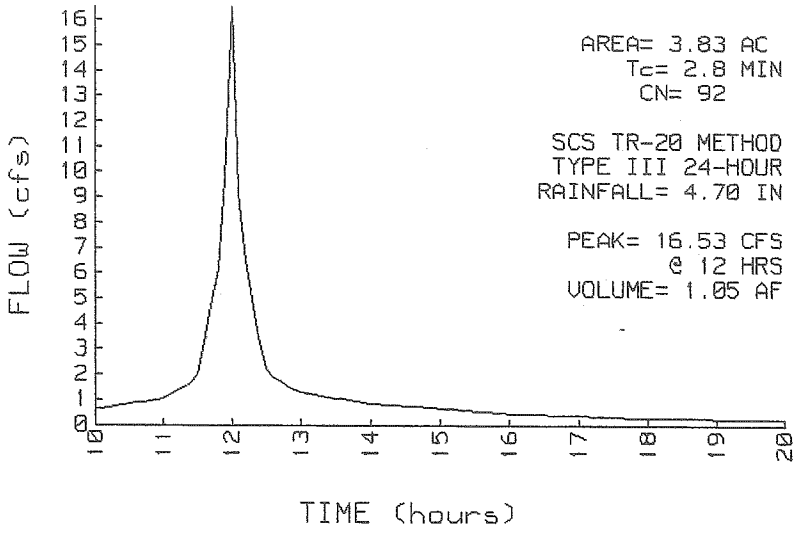
PEAK= 16.53 CFS @ 12.00 HRS, VOLUME= 1.05 AF

ACRES	CN	
.10	55	WOODS, GOOD, B SOILS
.50	61	LAWN, B SOILS
3.23	98	IMPERVIOUS
3.83	92	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**PAVEMENT AREA**	.7
Smooth surfaces n=.011 L=35' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**PAVEMENT AREA**	.7
Paved Kv=20.3282 L=80' s=.01 '/' V=2.03 fps		
CIRCULAR CHANNEL	**14" CMP**	1.4
14" Diameter a=1.07 sq-ft Pw=3.7' r=.292'		
s=.005 '/' n=.025 V=1.85 fps L=152' Capacity=2 cfs		
	Total Length= 267 ft	Total Tc= 2.8

SUBCATCHMENT 1 RUNOFF
PARKING & RESTAURANT BLDG



SUBCATCHMENT 2 EAST PORTION: PAVE, LOAD AREA & CAMPBELL S

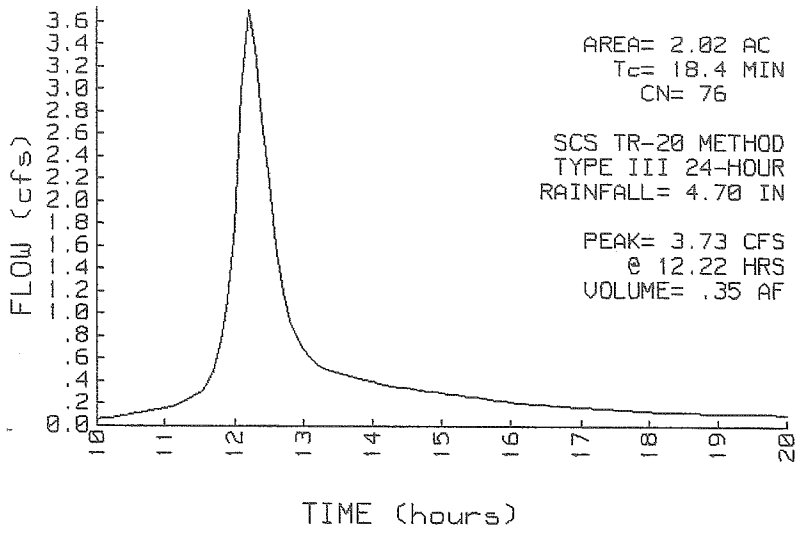
PEAK= 3.73 CFS @ 12.22 HRS, VOLUME= .35 AF

ACRES	CN	
.50	55	WOODS, GOOD, B SOILS
.63	61	LAWN , B SOILS
.89	98	IMPERVIOUS
2.02	76	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	WOODS	5.0
Woodland Kv=5 L=150' s=.01 '/' V=.5 fps		
	Total Length= 250 ft Total Tc=	18.4

SUBCATCHMENT 2 RUNOFF
EAST PORTION: PAVE, LOAD AREA & CAMPBELL S



SUBCATCHMENT 3 WOODS AREA & CAMPBELL ST

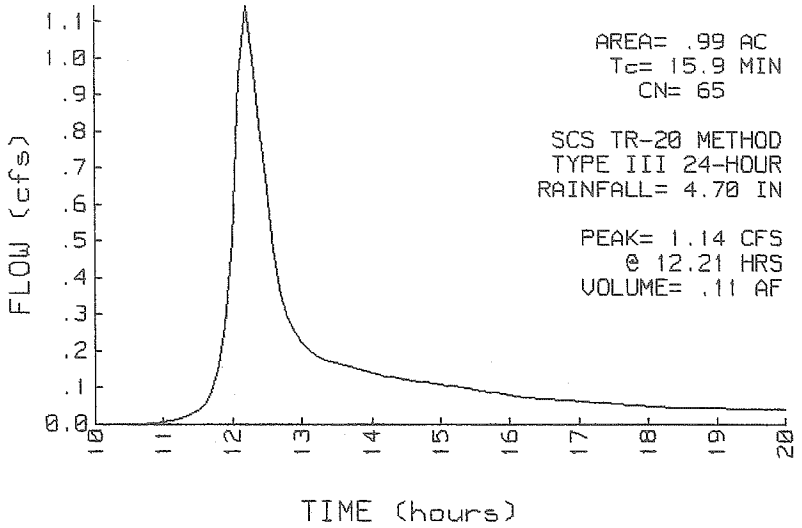
PEAK= 1.14 CFS @ 12.21 HRS, VOLUME= .11 AF

ACRES	CN	
.38	55	WOODS, GOOD, B SOILS
.44	61	LAWN, B SOILS
.17	98	IMPERVIOUS
.99	65	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	STREET & WOODS	2.0
Woodland Kv=5 L=60' s=.01 '/' V=.5 fps		
CHANNEL FLOW	Segment ID:	.5
a=90 sq-ft Pw=29.8' r=3.02'		
s=.019 '/' n=.13 V=3.29 fps L=90' Capacity=296.3 cfs		
	Total Length= 250 ft	Total Tc= 15.9

SUBCATCHMENT 3 RUNOFF
WOODS AREA & CAMPBELL ST



SUBCATCHMENT 4 TIRE WAREHOUSE & CAMPBELL ST

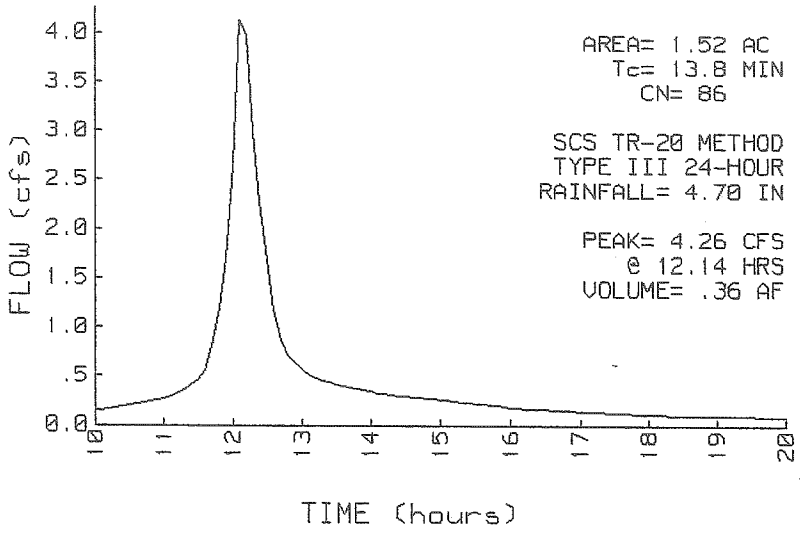
PEAK= 4.26 CFS @ 12.14 HRS, VOLUME= .36 AF

ACRES	CN	
1.03	98	IMPERVIOUS
.39	61	LAWN, B SOILS
.10	55	WOODS, GOOD
1.52	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	6.4
Grass: Short n=.15 L=40' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	ROADWAY DITCH	1.1
Grassed Waterway Kv=15 L=100'	s=.01 '/' V=1.5 fps	
SHALLOW CONCENTRATED/UPLAND FLOW	WOODED SWALE ALONG ROAD	6.3
Woodland Kv=5 L=190' s=.01 '/'	V=.5 fps	
	Total Length= 330 ft Total Tc=	13.8

SUBCATCHMENT 4 RUNOFF
TIRE WAREHOUSE & CAMPBELL ST



SUBCATCHMENT 5 BLDG ROOF

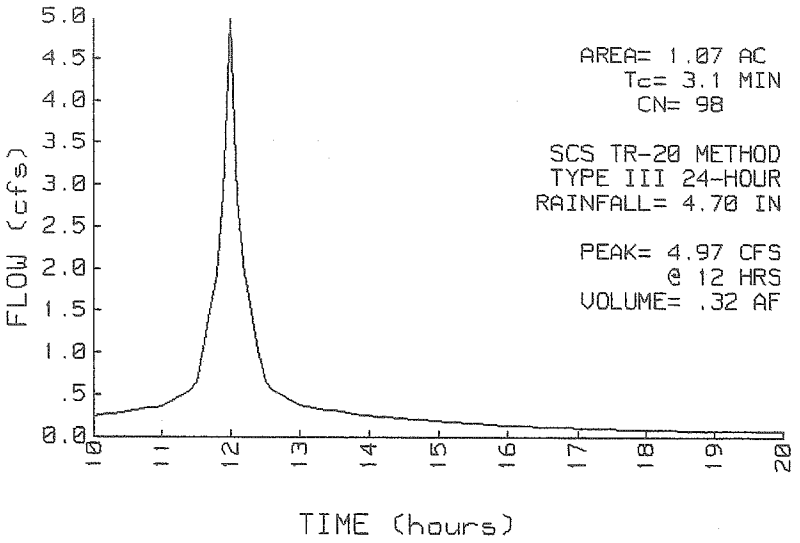
PEAK= 4.97 CFS @ 12.00 HRS, VOLUME= .32 AF

ACRES	CN	
1.07	98	IMPERVIOUS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.70 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	ROOF	1.3
Smooth surfaces n=.011 L=50' P2=3 in s=.005 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	BLDG ROOF	1.5
Paved Kv=20.3282 L=130' s=.005 '/' V=1.44 fps		
CIRCULAR CHANNEL	6" ROOF DRAIN	.3
6" Diameter a=.2 sq-ft Pw=1.6' r=.125'		
s=.005 '/' n=.009 V=2.92 fps L=45' Capacity=.6 cfs		
	Total Length= 225 ft Total Tc=	3.1

SUBCATCHMENT 5 RUNOFF
BLDG ROOF



REACH 2 15" SD

Qin = 3.73 CFS @ 12.22 HRS, VOLUME= .35 AF
Qout= 3.71 CFS @ 12.23 HRS, VOLUME= .35 AF, ATTEN= 0%, LAG= .4 MIN

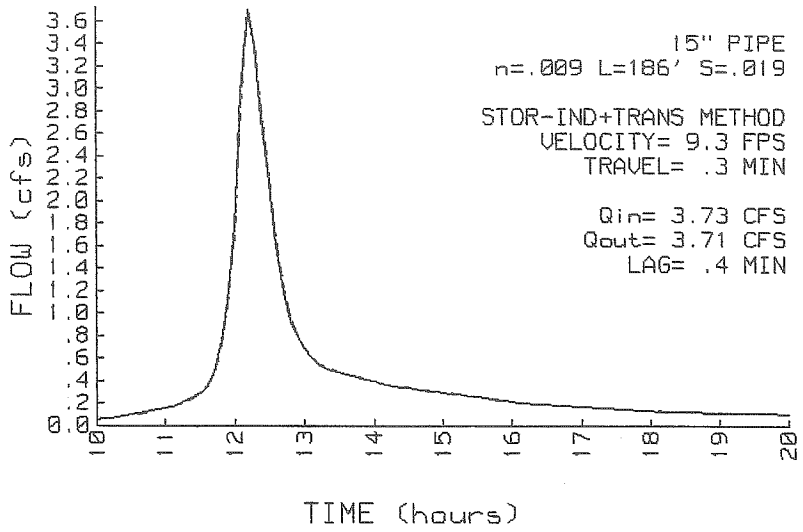
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.27
.3	.2	1.13
.4	.3	2.52
.9	.9	10.77
1.0	1.1	12.57
1.1	1.2	13.71
1.2	1.2	13.84
1.2	1.2	13.71
1.3	1.2	12.86

15" PIPE

n= .009
LENGTH= 186 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .45 FT
PEAK VELOCITY= 9.3 FPS
TRAVEL TIME = .3 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 2 INFLOW & OUTFLOW
15" SD



REACH 3 CLOSED DRAINAGE SYSTEM

Qin = 19.26 CFS @ 12.01 HRS, VOLUME= 1.52 AF
Qout= 18.76 CFS @ 12.01 HRS, VOLUME= 1.52 AF, ATTEN= 3%, LAG= .3 MIN

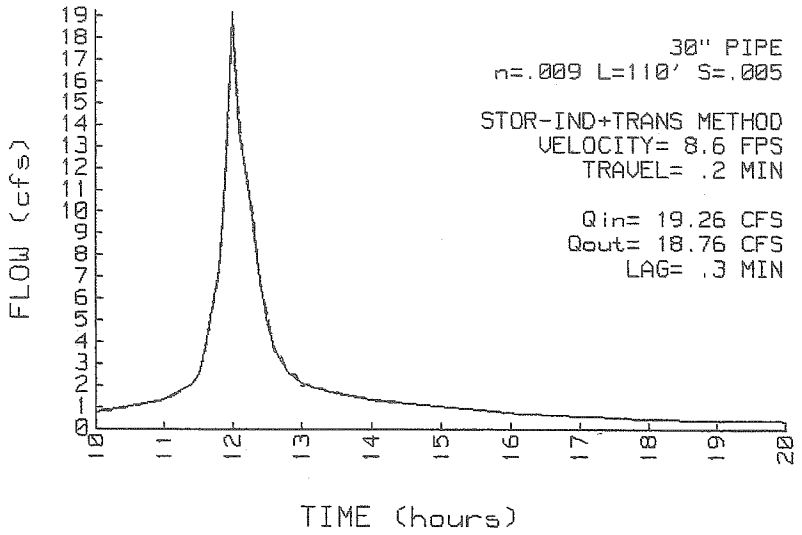
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	.3	.87
.5	.7	3.67
.8	1.2	8.20
1.8	3.7	35.08
2.0	4.2	40.95
2.3	4.7	44.65
2.4	4.8	45.06
2.4	4.9	44.65
2.5	4.9	41.89

30" PIPE

n= .009
LENGTH= 110 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.15 FT
PEAK VELOCITY= 8.6 FPS
TRAVEL TIME = .2 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3 INFLOW & OUTFLOW
CLOSED DRAINAGE SYSTEM



REACH 4 CHANNEL AREA

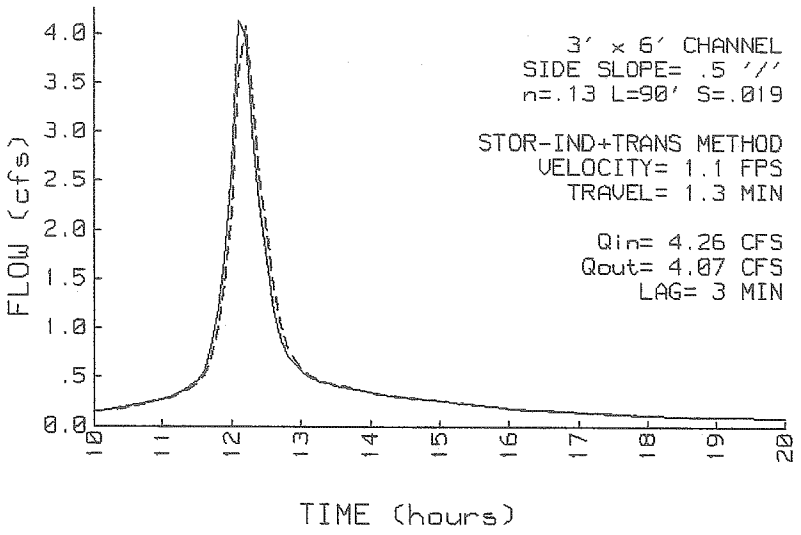
Qin = 4.26 CFS @ 12.14 HRS, VOLUME= .36 AF
Qout= 4.07 CFS @ 12.19 HRS, VOLUME= .36 AF, ATTEN= 4%, LAG= 3.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.31
1.2	6.5	8.61
1.8	11.9	19.64
2.6	21.1	42.46
3.6	36.7	89.46
4.8	60.5	174.22
6.0	90.0	296.07

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 90 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .77 FT
PEAK VELOCITY= 1.1 FPS
TRAVEL TIME = 1.3 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4 INFLOW & OUTFLOW
CHANNEL AREA



REACH 5 30" PIPE, CLOSED SYSTEM

Qin = 23.70 CFS @ 12.01 HRS, VOLUME= 1.84 AF
Qout= 22.29 CFS @ 12.03 HRS, VOLUME= 1.84 AF, ATTEN= 6%, LAG= .9 MIN

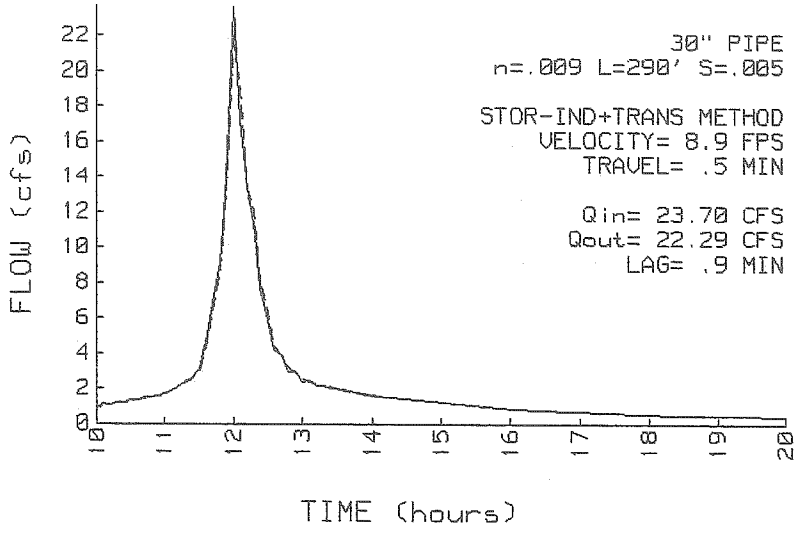
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	.3	.87
.5	.7	3.67
.8	1.2	8.20
1.8	3.7	35.08
2.0	4.2	40.95
2.3	4.7	44.65
2.4	4.8	45.06
2.4	4.9	44.65
2.5	4.9	41.89

30" PIPE

n= .009
LENGTH= 290 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.29 FT
PEAK VELOCITY= 8.9 FPS
TRAVEL TIME = .5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 5 INFLOW & OUTFLOW
30" PIPE, CLOSED SYSTEM



REACH 10

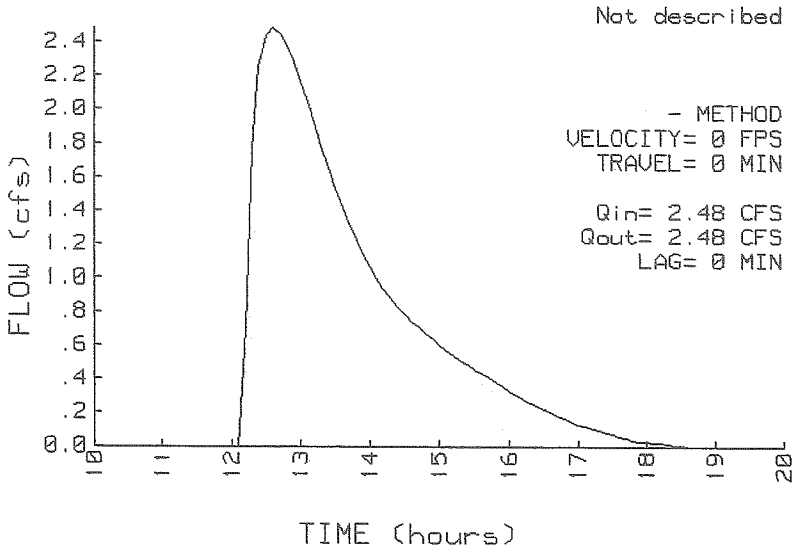
Not described

Qin = 2.48 CFS @ 12.61 HRS, VOLUME= .41 AF
Qout= 2.48 CFS @ 12.61 HRS, VOLUME= .41 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 10 INFLOW & OUTFLOW



REACH 11 15"SD

Qin = 2.24 CFS @ 12.61 HRS, VOLUME= .78 AF
Qout= 2.25 CFS @ 12.61 HRS, VOLUME= .78 AF, ATTEN= 0%, LAG= .5 MIN

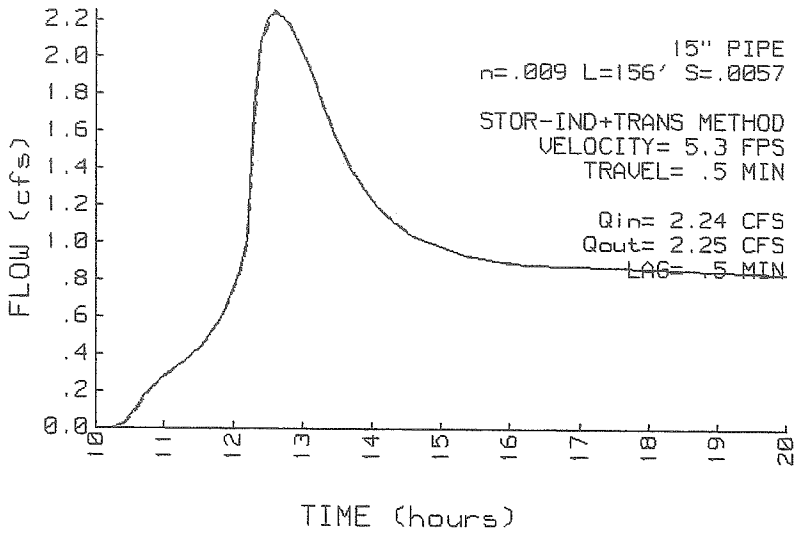
DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.15
.3	.2	.62
.4	.3	1.38
.9	.9	5.90
1.0	1.1	6.89
1.1	1.2	7.51
1.2	1.2	7.58
1.2	1.2	7.51
1.3	1.2	7.04

15" PIPE

n= .009
LENGTH= 156 FT
SLOPE= .0057 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .47 FT
PEAK VELOCITY= 5.3 FPS
TRAVEL TIME = .5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 11 INFLOW & OUTFLOW
15"SD



REACH 20

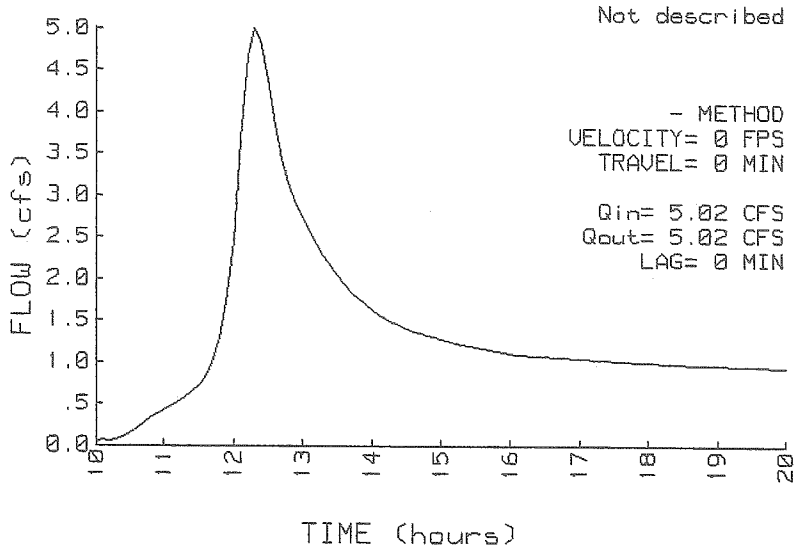
Not described

Qin = 5.02 CFS @ 12.32 HRS, VOLUME= 1.13 AF
Qout= 5.02 CFS @ 12.32 HRS, VOLUME= 1.13 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 20 INFLOW & OUTFLOW



POND 1 NEW POND

Qin = 22.29 CFS @ 12.03 HRS, VOLUME= 1.84 AF
Qout= 4.72 CFS @ 12.61 HRS, VOLUME= 1.18 AF, ATTEN= 79%, LAG= 34.8 MIN
Qpri= 2.24 CFS @ 12.61 HRS, VOLUME= .78 AF
Qsec= 2.48 CFS @ 12.61 HRS, VOLUME= .41 AF

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
58.0	4400	0	0
60.0	6400	10800	10800
62.0	8550	14950	25750
64.0	11000	19550	45300
65.0	12350	11675	56975

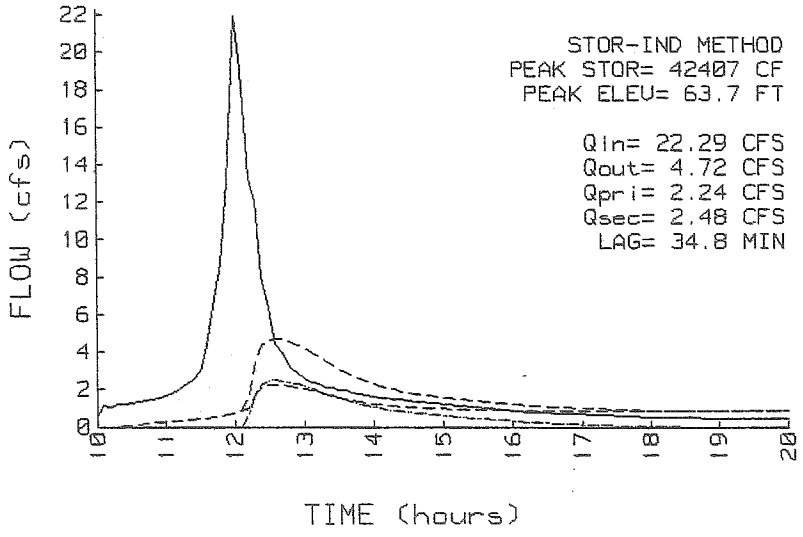
STOR-IND METHOD
PEAK STORAGE = 42407 CF
PEAK ELEVATION= 63.7 FT
FLOOD ELEVATION= 65.8 FT
START ELEVATION= 58.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING
Tdet= 166.9 MIN (1.18 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	58.2'	**4" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	62.8'	**8" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	S	62.5'	**12" CULVERT** n=.009 L=30' S=.017'/' Ke=.9 Cc=.9 Cd=.47
4	P	64.5'	**4' SHARP-CRESTED RECTANGULAR WEIR** Q=C L H^1.5 C=3.27+.4 H/4 L=Length-2(.1 H)

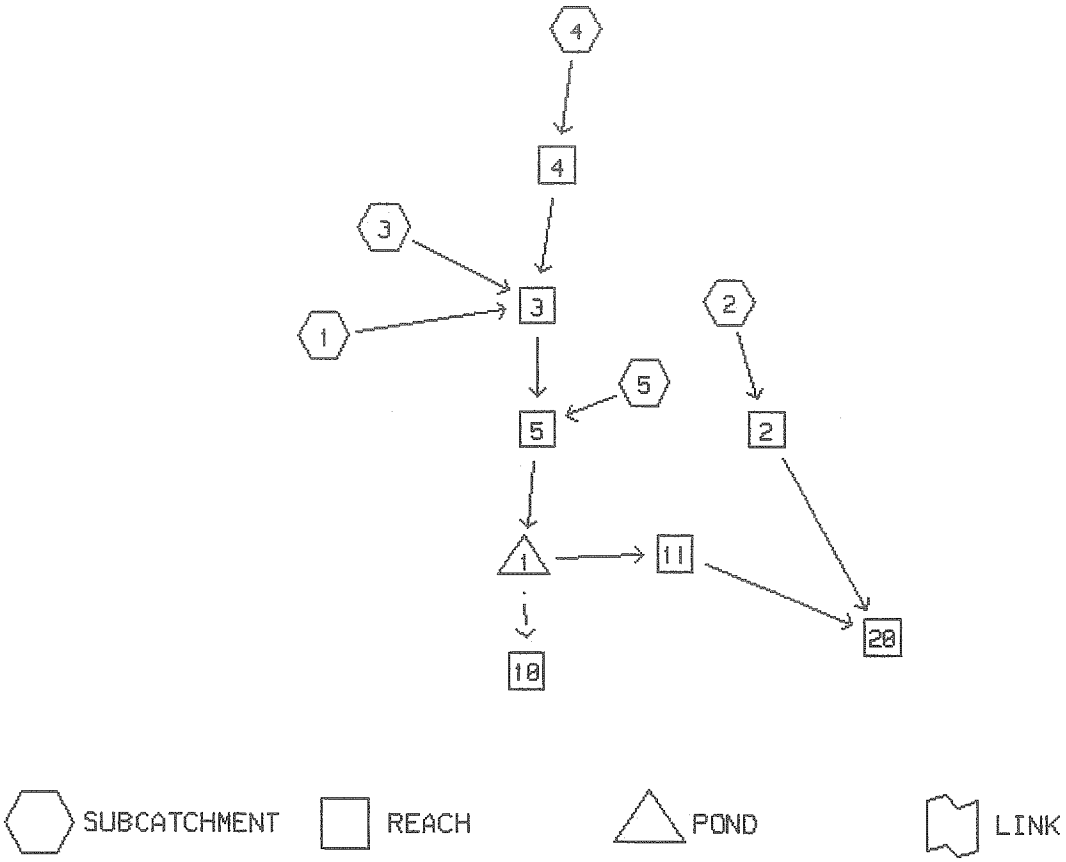
Primary Discharge
├─1=Orifice/Grate
├─2=Orifice/Grate
└─4=Sharp-Crested Rectangular Weir

Secondary Discharge
└─3=Culvert

POND 1 INFLOW & OUTFLOW
NEW POND



WATERSHED ROUTING



SUBCATCHMENT 1 PARKING & RESTAURANT BLDG

PEAK= 19.71 CFS @ 12.00 HRS, VOLUME= 1.25 AF

ACRES	CN	
.10	55	WOODS, GOOD, B SOILS
.50	61	LAWN, B SOILS
3.23	98	IMPERVIOUS
3.83	92	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**PAVEMENT AREA**	.7
Smooth surfaces n=.011 L=35' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**PAVEMENT AREA**	.7
Paved Kv=20.3282 L=80' s=.01 '/' V=2.03 fps		
CIRCULAR CHANNEL	**14" CMP**	1.4
14" Diameter a=1.07 sq-ft Pw=3.7' r=.292'		
s=.005 '/' n=.025 V=1.85 fps L=152' Capacity=2 cfs		
	Total Length= 267 ft Total Tc=	2.8

SUBCATCHMENT 2 EAST PORTION: PAVE, LOAD AREA & CAMPBELL S

PEAK= 4.82 CFS @ 12.22 HRS, VOLUME= .46 AF

ACRES	CN	
.50	55	WOODS, GOOD, B SOILS
.63	61	LAWN , B SOILS
.89	98	IMPERVIOUS
2.02	76	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**LAWN AREA**	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**WOODS**	5.0
Woodland Kv=5 L=150' s=.01 '/' V=.5 fps		
	Total Length= 250 ft Total Tc=	18.4

SUBCATCHMENT 3 WOODS AREA & CAMPBELL ST

PEAK= 1.61 CFS @ 12.20 HRS, VOLUME= .15 AF

ACRES	CN	
.38	55	WOODS, GOOD, B SOILS
.44	61	LAWN, B SOILS
.17	98	IMPERVIOUS
.99	65	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	STREET & WOODS	2.0
Woodland Kv=5 L=60' s=.01 '/' V=.5 fps		
CHANNEL FLOW	Segment ID:	.5
a=90 sq-ft Pw=29.8' r=3.02'		
s=.019 '/' n=.13 V=3.29 fps L=90' Capacity=296.3 cfs		
	Total Length= 250 ft Total Tc=	15.9

SUBCATCHMENT 4 TIRE WAREHOUSE & CAMPBELL ST

PEAK= 5.22 CFS @ 12.14 HRS, VOLUME= .45 AF

ACRES	CN	
1.03	98	IMPERVIOUS
.39	61	LAWN, B SOILS
.10	55	WOODS, GOOD
1.52	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	6.4
Grass: Short n=.15 L=40' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	ROADWAY DITCH	1.1
Grassed Waterway Kv=15 L=100'	s=.01 '/' V=1.5 fps	
SHALLOW CONCENTRATED/UPLAND FLOW	WOODED SWALE ALONG ROAD	6.3
Woodland Kv=5 L=190' s=.01 '/' V=.5 fps		
	Total Length= 330 ft Total Tc=	13.8

SUBCATCHMENT 5 BLDG ROOF

PEAK= 5.83 CFS @ 12.00 HRS, VOLUME= .38 AF

ACRES	CN	
1.07	98	IMPERVIOUS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	ROOF	1.3
Smooth surfaces n=.011 L=50' P2=3 in s=.005 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	BLDG ROOF	1.5
Paved Kv=20.3282 L=130' s=.005 '/' V=1.44 fps		
CIRCULAR CHANNEL	6" ROOF DRAIN	.3
6" Diameter a=.2 sq-ft Pw=1.6' r=.125'		
s=.005 '/' n=.009 V=2.92 fps L=45' Capacity=.6 cfs		
	Total Length= 225 ft Total Tc=	3.1

REACH 2 — 15" SD

Qin = 4.82 CFS @ 12.22 HRS, VOLUME= .46 AF
Qout= 4.79 CFS @ 12.22 HRS, VOLUME= .46 AF, ATTEN= 1%, LAG= .5 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.27
.3	.2	1.13
.4	.3	2.52
.9	.9	10.77
1.0	1.1	12.57
1.1	1.2	13.71
1.2	1.2	13.84
1.2	1.2	13.71
1.3	1.2	12.86

15" PIPE
n= .009
LENGTH= 186 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .51 FT
PEAK VELOCITY= 10.0 FPS
TRAVEL TIME = .3 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3 — CLOSED DRAINAGE SYSTEM

Qin = 23.34 CFS @ 12.01 HRS, VOLUME= 1.85 AF
Qout= 22.76 CFS @ 12.01 HRS, VOLUME= 1.85 AF, ATTEN= 2%, LAG= .3 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	.3	.87
.5	.7	3.67
.8	1.2	8.20
1.8	3.7	35.08
2.0	4.2	40.95
2.3	4.7	44.65
2.4	4.8	45.06
2.4	4.9	44.65
2.5	4.9	41.89

30" PIPE
n= .009
LENGTH= 110 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.30 FT
PEAK VELOCITY= 8.9 FPS
TRAVEL TIME = .2 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4 — CHANNEL AREA

Qin = 5.22 CFS @ 12.14 HRS, VOLUME= .45 AF
Qout= 5.01 CFS @ 12.19 HRS, VOLUME= .45 AF, ATTEN= 4%, LAG= 3.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.31
1.2	6.5	8.61
1.8	11.9	19.64
2.6	21.1	42.46
3.6	36.7	89.46
4.8	60.5	174.22
6.0	90.0	296.07

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 90 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .86 FT
PEAK VELOCITY= 1.2 FPS
TRAVEL TIME = 1.3 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 5 30" PIPE, CLOSED SYSTEM

Qin = 28.54 CFS @ 12.01 HRS, VOLUME= 2.22 AF
Qout= 26.92 CFS @ 12.03 HRS, VOLUME= 2.22 AF, ATTEN= 6%, LAG= .9 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	.3	.87
.5	.7	3.67
.8	1.2	8.20
1.8	3.7	35.08
2.0	4.2	40.95
2.3	4.7	44.65
2.4	4.8	45.06
2.4	4.9	44.65
2.5	4.9	41.89

30" PIPE
n= .009
LENGTH= 290 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 1.47 FT
PEAK VELOCITY= 9.2 FPS
TRAVEL TIME = .5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 10

Not described

Qin = 3.42 CFS @ 12.56 HRS, VOLUME= .62 AF
Qout= 3.42 CFS @ 12.56 HRS, VOLUME= .62 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 11 15"SD

Qin = 2.87 CFS @ 12.56 HRS, VOLUME= .92 AF
Qout= 2.88 CFS @ 12.54 HRS, VOLUME= .92 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.15
.3	.2	.62
.4	.3	1.38
.9	.9	5.90
1.0	1.1	6.89
1.1	1.2	7.51
1.2	1.2	7.58
1.2	1.2	7.51
1.3	1.2	7.04

15" PIPE
n= .009
LENGTH= 156 FT
SLOPE= .0057 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .54 FT
PEAK VELOCITY= 5.6 FPS
TRAVEL TIME = .5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 20

Not described

Qin = 7.03 CFS @ 12.27 HRS, VOLUME= 1.37 AF
Qout= 7.03 CFS @ 12.27 HRS, VOLUME= 1.37 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 NEW POND

Qin = 26.92 CFS @ 12.03 HRS, VOLUME= 2.22 AF
Qout= 6.29 CFS @ 12.56 HRS, VOLUME= 1.54 AF, ATTEN= 77%, LAG= 32.2 MIN
Qpri= 2.87 CFS @ 12.56 HRS, VOLUME= .92 AF
Qsec= 3.42 CFS @ 12.56 HRS, VOLUME= .62 AF

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
58.0	4400	0	0
60.0	6400	10800	10800
62.0	8550	14950	25750
64.0	11000	19550	45300
65.0	12350	11675	56975

STOR-IND METHOD
PEAK STORAGE = 49158 CF
PEAK ELEVATION= 64.3 FT
FLOOD ELEVATION= 65.8 FT
START ELEVATION= 58.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING
Tdet= 145.4 MIN (1.52 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	58.2'	**4" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	62.8'	**8" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	S	62.5'	**12" CULVERT** n=.009 L=30' S=.017'/' Ke=.9 Cc=.9 Cd=.47
4	P	64.5'	**4' SHARP-CRESTED RECTANGULAR WEIR** Q=C L H^1.5 C=3.27+.4 H/4 L=Length-2(.1 H)

Primary Discharge
├──1=Orifice/Grate
├──2=Orifice/Grate
└──4=Sharp-Crested Rectangular Weir

Secondary Discharge
└──3=Culvert

PROJECT PORTLAND COMMONS BY DGE DATE 5/3/17

********** V AND TRAPEZOIDAL CHANNEL INPUT VALUES **********

BOTTOM WIDTH (USE 0 WHEN DESIGNING FOR V-DITCHES)	(FT)	B= 12
MANNINGS' N EARTH=.02, GRASS=.04-.1, NATURAL=.04-.08		N= .05
CHANNEL SLOPE	(FT/FT)	S= .01
SIDESLOPES *** EXPRESSED AS A WHOLE # (Z : 1) ***		Z= 3
MAXIMUM CHANNEL DEPTH	(FT)	D= 1.5
COMPUTATIONAL DEPTH INCREMENT (0 = DEFAULT = D/3)	(FT)	I= .25

********** V AND TRAPEZOIDAL CHANNEL OUTPUT VALUES **********

DEPTH D (FT)	FLOW AREA A (SF)	PERIMETER P (FT)	TOP WIDTH T (FT)	VELOCITY V (FPS)	DISCHARGE QA (CFS)	CRIT.VEL CV (FPS)
.25	3.19	13.58	13.5	1.12	3.57	2.76
.5	6.75	15.16	15	1.74	12	3.8
.75	10.69	16.74	16.5	2.21	24	4.56
1	15	18.32	18	2.6	39	5.18
1.25	19.69	19.91	19.5	2.95	58	5.7
1.5	24.75	21.49	21	3.26	81	6.16

DO YOU WANT TO CHANGE A VARIABLE Y/N ?

LANDOWNER _____ ADDRESS _____

PROJECT Portland Common BY DGE DATE 6/3/19

********** V AND TRAPEZOIDAL CHANNEL INPUT VALUES **********

BOTTOM WIDTH (USE 0 WHEN DESIGNING FOR V-DITCHES)	(FT)	B= 3
MANNINGS' N EARTH=.02, GRASS=.04-.1, NATURAL=.04-.08		N= .05
CHANNEL SLOPE	(FT/FT)	S= .06
SIDESLOPES *** EXPRESSED AS A WHOLE # (Z : 1) ***		Z= 3
MAXIMUM CHANNEL DEPTH	(FT)	D= 1
COMPUTATIONAL DEPTH INCREMENT (0 = DEFAULT = D/3)	(FT)	I= .25

********** V AND TRAPEZOIDAL CHANNEL OUTPUT VALUES **********

DEPTH D (FT)	FLOW AREA A (SF)	PERIMETER P (FT)	TOP WIDTH T (FT)	VELOCITY V (FPS)	DISCHARGE QA (CFS)	CRIT.VEL CV (FPS)
.25	.94	4.58	4.5	2.57	2.42	2.59
.5	2.25	6.16	6	3.75	8.44	3.47
.75	3.94	7.74	7.5	4.65	18	4.11
1	6	9.32	9	5.41	32	4.63

DO YOU WANT TO CHANGE A VARIABLE Y/N ?

Section 4

Watershed Maps (Pre and Post-Development)

Section 5

Water Quality Calculations

97622
4/14/99

Stormwater Quality Calculations
Portland Commons Shopping Center
Portland, Maine

Total Removal Efficiency:

Required:

Total site acreage = 6.89ac.
Total % Impervious = 68%
Removal Efficiency required = 71% Suspended Solids Removal
Using Sliding Scale Graph.

Proposed:

Subcatchment	Impervious Area Acres	% of Total Impervious Area
1	3.23	50.6%
2	0.89	13.9%
3	0.17	2.7%
4	1.03	16.1%
5	1.07	16.7%

Notes:

Subcatchments include offsite impervious area

Treatment of first flush, 1 yr, 24 hr storm event

In 1 yr storm event, pond secondary outlet no utilized. All pond stormwater exits into Vortechnics unit

Subcatchment 1:

BMP	TSS Removal
Vortechnics Treatment System	80 %
Dry Pond	10 %
Water Quality Inlet	10 %

Formula:

$(1-X) = (1-X_1)*(1-X_2)*(1-X_3)$****

****(From Stormwater Management for Maine: BMPS, Section 5.4)

Overall TSS Removal: $X = 1-\{(1-80\%)*(1-10\%)*(1-10\%)\}$

So X = 83.8%

Subcatchment 2:

BMP	TSS Removal
Water Quality Inlet	10 %

Subcatchment 3:

BMP	TSS Removal
Vortechnics Treatment System	80 %
Dry Pond	10 %
Water Quality Inlet	10 %

Formula:

$(1-X) = (1-X_1)*(1-X_2)*(1-X_3)$****

****(From Stormwater Management for Maine: BMPS, Section 5.4)

Overall TSS Removal: $X = 1-\{(1-80\%)*(1-10\%)*(1-10\%)\}$

So X = 83.8%

Subcatchment 4:

BMP	TSS Removal
Vortechnics Treatment System	80 %
Dry Pond	10 %
Water Quality Inlet	10 %

Formula:

$(1-X) = (1-X_1)*(1-X_2)*(1-X_3)$****

****(From Stormwater Management for Maine: BMPS, Section 5.4)

Overall TSS Removal: $X = 1-\{(1-80\%)*(1-10\%)*(1-10\%)\}$

So X = 83.8%

Subcatchment 5:

BMP	TSS Removal
Vortechnics Treatment System	80 %
Dry Pond	10 %
Water Quality Inlet	10 %

Formula:

$(1-X) = (1-X_1)*(1-X_2)*(1-X_3)$****

****(From Stormwater Management for Maine: BMPS, Section 5.4)

Overall TSS Removal: $X = 1-\{(1-80\%)*(1-10\%)*(1-10\%)\}$

So X = 83.8%

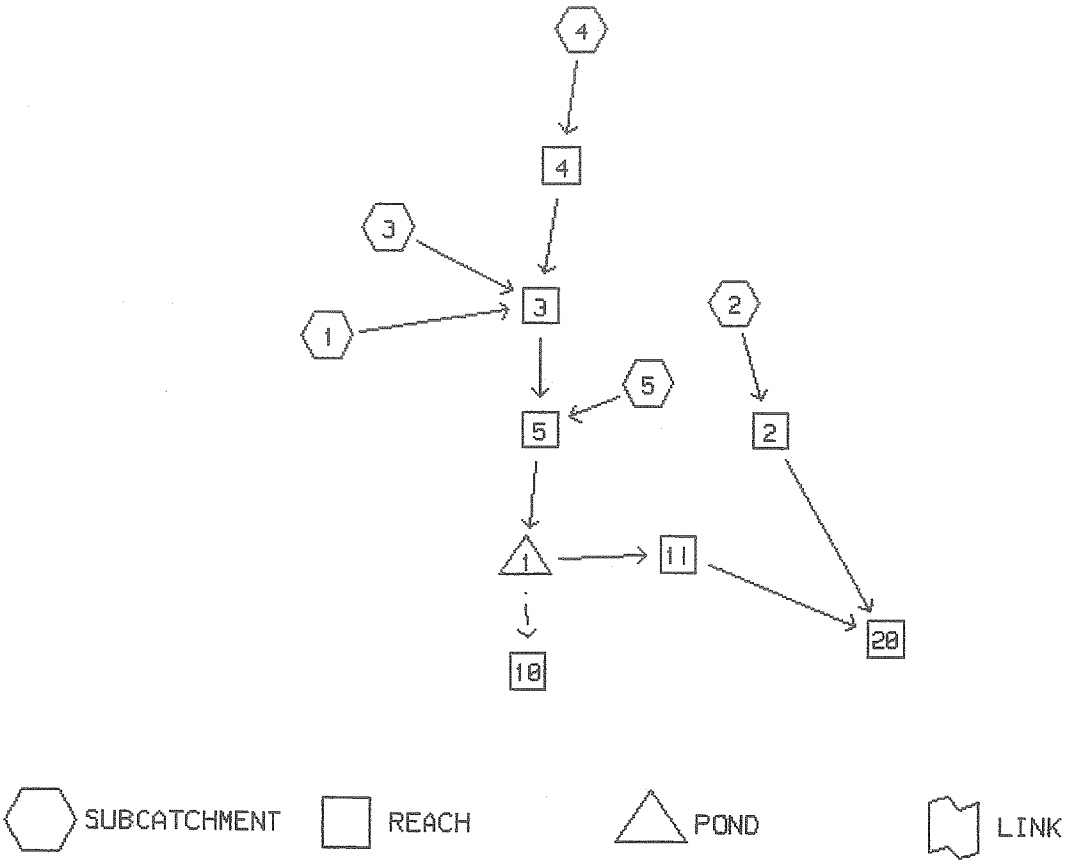
Formula for Total Removal Efficiency:

(50.6%*83.8%) + (13.9% * 10%) + (2.7%*83.8%) + (16.1%*83.8%) + (16.7%*83.8%) = 73.5%

Conclusion:

73.5% TSS Removal exceeds 71% minimum required.

WATERSHED ROUTING



SUBCATCHMENT 1 PARKING & RESTAURANT BLDG

PEAK= 7.67 CFS @ 12.00 HRS, VOLUME= .49 AF

ACRES	CN	
.10	55	WOODS, GOOD, B SOILS
.50	61	LAWN, B SOILS
3.23	98	IMPERVIOUS
3.83	92	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 2.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	PAVEMENT AREA	.7
Smooth surfaces n=.011 L=35' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	PAVEMENT AREA	.7
Paved Kv=20.3282 L=80' s=.01 '/' V=2.03 fps		
CIRCULAR CHANNEL	14" CMP	1.4
14" Diameter a=1.07 sq-ft Pw=3.7' r=.292'		
s=.005 '/' n=.025 V=1.85 fps L=152' Capacity=2 cfs		
	Total Length= 267 ft Total Tc=	2.8

SUBCATCHMENT 2 EAST PORTION: PAVE, LOAD AREA & CAMPBELL S

PEAK= 1.03 CFS @ 12.24 HRS, VOLUME= .11 AF

ACRES	CN	
.50	55	WOODS, GOOD, B SOILS
.63	61	LAWN , B SOILS
.89	98	IMPERVIOUS
2.02	76	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 2.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	LAWN AREA	13.4
Grass: Short n=.15 L=100' P2=3 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	WOODS	5.0
Woodland Kv=5 L=150' s=.01 '/' V=.5 fps		
	Total Length= 250 ft Total Tc=	18.4

SUBCATCHMENT 5 BLDG ROOF

PEAK= 2.61 CFS @ 12.00 HRS, VOLUME= .17 AF

ACRES	CN	
1.07	98	IMPERVIOUS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 2.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	ROOF	1.3
Smooth surfaces n=.011 L=50'	P2=3 in s=.005 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	BLDG ROOF	1.5
Paved Kv=20.3282 L=130'	s=.005 '/' V=1.44 fps	
CIRCULAR CHANNEL	6" ROOF DRAIN	.3
6" Diameter a=.2 sq-ft Pw=1.6'	r=.125'	
s=.005 '/' n=.009 V=2.92 fps	L=45' Capacity=.6 cfs	
	Total Length= 225 ft Total Tc=	3.1

REACH 2 — 15" SD

Qin = 1.03 CFS @ 12.24 HRS, VOLUME= .11 AF
Qout= 1.00 CFS @ 12.26 HRS, VOLUME= .11 AF, ATTEN= 3%, LAG= 1.3 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.27
.3	.2	1.13
.4	.3	2.52
.9	.9	10.77
1.0	1.1	12.57
1.1	1.2	13.71
1.2	1.2	13.84
1.2	1.2	13.71
1.3	1.2	12.86

15" PIPE
n= .009
LENGTH= 186 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .23 FT
PEAK VELOCITY= 6.3 FPS
TRAVEL TIME = .5 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 3 — CLOSED DRAINAGE SYSTEM

Qin = 8.45 CFS @ 12.01 HRS, VOLUME= .65 AF
Qout= 8.17 CFS @ 12.01 HRS, VOLUME= .65 AF, ATTEN= 3%, LAG= .4 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	.3	.87
.5	.7	3.67
.8	1.2	8.20
1.8	3.7	35.08
2.0	4.2	40.95
2.3	4.7	44.65
2.4	4.8	45.06
2.4	4.9	44.65
2.5	4.9	41.89

30" PIPE
n= .009
LENGTH= 110 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .75 FT
PEAK VELOCITY= 6.6 FPS
TRAVEL TIME = .3 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 4 — CHANNEL AREA

Qin = 1.67 CFS @ 12.15 HRS, VOLUME= .14 AF
Qout= 1.58 CFS @ 12.22 HRS, VOLUME= .14 AF, ATTEN= 5%, LAG= 4.1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	2.5	2.31
1.2	6.5	8.61
1.8	11.9	19.64
2.6	21.1	42.46
3.6	36.7	89.46
4.8	60.5	174.22
6.0	90.0	296.07

3' x 6' CHANNEL
SIDE SLOPE= .5 '/'
n= .13
LENGTH= 90 FT
SLOPE= .019 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .43 FT
PEAK VELOCITY= .9 FPS
TRAVEL TIME = 1.6 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 5 30" PIPE, CLOSED SYSTEM

Qin = 10.76 CFS @ 12.01 HRS, VOLUME= .82 AF
Qout= 9.96 CFS @ 12.03 HRS, VOLUME= .82 AF, ATTEN= 7%, LAG= 1.1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.3	.3	.87
.5	.7	3.67
.8	1.2	8.20
1.8	3.7	35.08
2.0	4.2	40.95
2.3	4.7	44.65
2.4	4.8	45.06
2.4	4.9	44.65
2.5	4.9	41.89

30" PIPE

n= .009
LENGTH= 290 FT
SLOPE= .005 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .83 FT
PEAK VELOCITY= 7.2 FPS
TRAVEL TIME = .7 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 10

Not described

Qin = 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF
Qout= 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 11 15"SD

Qin = .74 CFS @ 14.12 HRS, VOLUME= .48 AF
Qout= .74 CFS @ 14.13 HRS, VOLUME= .48 AF, ATTEN= 0%, LAG= 1.1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.15
.3	.2	.62
.4	.3	1.38
.9	.9	5.90
1.0	1.1	6.89
1.1	1.2	7.51
1.2	1.2	7.58
1.2	1.2	7.51
1.3	1.2	7.04

15" PIPE

n= .009
LENGTH= 156 FT
SLOPE= .0057 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .27 FT
PEAK VELOCITY= 3.8 FPS
TRAVEL TIME = .7 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 20

Not described

Qin = 1.64 CFS @ 12.28 HRS, VOLUME= .58 AF
Qout= 1.64 CFS @ 12.28 HRS, VOLUME= .58 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)

- METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY= 0.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 NEW POND

Qin = 9.96 CFS @ 12.03 HRS, VOLUME= .82 AF
Qout= .74 CFS @ 14.12 HRS, VOLUME= .48 AF, ATTEN= 93%, LAG= 125.3 MIN
Qpri= .74 CFS @ 14.12 HRS, VOLUME= .48 AF
* Qsec= 0.00 CFS @ 0.00 HRS, VOLUME= 0.00 AF

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
58.0	4400	0	0
60.0	6400	10800	10800
62.0	8550	14950	25750
64.0	11000	19550	45300
65.0	12350	11675	56975

STOR-IND METHOD
PEAK STORAGE = 21575 CF
PEAK ELEVATION= 61.4 FT
FLOOD ELEVATION= 65.8 FT
START ELEVATION= 58.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
2 x FINER ROUTING
Tdet= 235.3 MIN (.48 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	58.2'	**4" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
2	P	62.8'	**8" ORIFICE/GRATE** Q=.6 PI r^2 SQR(2g) SQR(H-r)
3	S	62.5'	**12" CULVERT** n=.009 L=30' S=.017'/' Ke=.9 Cc=.9 Cd=.47
4	P	64.5'	**4' SHARP-CRESTED RECTANGULAR WEIR** Q=C L H^1.5 C=3.27+.4 H/4 L=Length-2(.1 H)

Primary Discharge
├─1=Orifice/Grate
├─2=Orifice/Grate
└─4=Sharp-Crested Rectangular Weir

Secondary Discharge
└─3=Culvert

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Traffic Engineer

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Traffic Analysis
Portland Commons
Riverside Street, Portland
Supplemental Report

General

There was a meeting on 5/11/99 regarding this project and the related traffic analysis. Prior to the meeting, a letter was written by Larry Ash, City Traffic Engineer, asking for additional information. The letter was addressed to Bill Needleman of the Planning Department and was dated May 10, 1999. Some of the items requested in the May 10, 1999 letter were answered during the May 11, 1999 meeting at which all parties in attendance agreed that an additional lane would be required on Riverside Street between a point roughly 100 feet northerly of the project driveway and Exit 8/Larrabee Road.

Capacity Analysis (letter of 5/10/99 #1 and #5)

The meeting of 5/11/99 resulted in a conclusion that existing volumes projected to the year 2000 would be used for analysis. No new Turnpike access from Rand Road was assumed to be constructed.

Year 2000 design hour volumes were developed as follows:

1. Base weekday and Saturday peak hour volumes were assembled for Riverside Street between Warren Avenue and Brighton Avenue. Saturday data was all collected on April 10, 1999.

2. The data for Saturday and weekday were balanced for a base no build network. The weekday PM peak hour was balanced from the July 1997 count at Exit 8/Riverside Street. The Saturday data was balanced over the corridor around the Exit 8/Riverside Street count. This provided a July 1997 weekday base no build network and an April 10, 1999 Saturday base no build network.

3. The July 1997 data was factored by 1.03 (1%/year growth) to a weekday PM peak hour no build network for the year 2000. The April 10, 1999 data was factored by 1.18 to a summer 2000 no build base peak hour (17% for seasonal adjustment and 1% growth factor).

4. Saturday and weekday peak hour volumes were determined based upon project square footage and assumed usage of buildings.

5. The other project in the study area was a 9900 square foot warehouse, and Saturday plus weekday volumes were estimated from this use for inclusion in the study.

6. The project traffic and the warehouse traffic was then added to the no build base data for Saturday and weekday peak hours for 2000 for a design hour network.

Since a decision had already been made that a lane was required on Riverside Street due to capacity problems at Exit 8, analysis was performed on Saturday and weekday design hour volumes for the year 2000 with the project traffic included (build condition). Capacity analysis using the 1994 highway capacity software is included for the following locations as requested by Larry Ash, City Traffic Engineer.

1. Riverside Street/Warren Avenue
2. Riverside Street/Home Depot
3. Riverside Street/Exit 8
4. Riverside Street/Portland Commons

The analysis resulted in level of service D or better for all requested locations for Saturday and weekday peak hour build volumes for the year 2000.

The eight capacity analysis printouts are in the appendix, along with the data related to the development of design hour volumes described in items 1 through 6.

Accident Review (letter of 5/10/99 #2)

Accident diagrams are attached in the appendix for all MDOT defined high accident locations (HALs) in the study area. Basically, the accidents present a picture of a congested corridor where left turns from and into unsignalized driveways cause angle and rear end collisions. The existing alignment with fairly narrow lanes for the number of trucks causes lane change and sideswipe accidents on Riverside Street between Exit 8 and Warren Avenue.

Exit 8 just exceeded the threshold to be considered a high accident location due to a series of rear end accidents in 1996 (probably during construction of through-right turn lanes on Larrabee Road and Riverside Street). Warren Avenue at Riverside Street has several accident patterns, however, the City has recently installed a left turn arrow (5 section head) facing the southbound Riverside Street approach. This will address the more serious angle accident pattern involving southbound left turn and through vehicles northbound on Riverside Street.

Warrant Data (letter of 5/10/99 #3)

Based upon the estimated volumes for Portland Commons, the 150 vehicle threshold for the peak hour volume warrant will be exceeded during the weekday PM peak hour and during a Saturday midday peak hour. The four hour volume warrants will probably also be exceeded if normal shopping center type traffic flow occurs from Portland Commons.

Sight Distance (letter of 5/10/99 #4)

The proposed driveway will be signalized, but it has 425 feet of sight distance to the north and 920 feet to the south. This was considered by MDOT to be sufficient for the 35 mile per hour speed limit on Riverside Street.

Miscellaneous Items (letter of 5/10/99 #6, 7, 8 and 9)

6. A scaled drawing showing Riverside Street between Warren Avenue and Exit 8 has been provided. This drawing also includes the proposed improvement to Riverside Street.

7. The year 2002 volumes are not being used for analysis as previously discussed.

8. Pass-by trips are estimated to be 38% of total trips for Saturday and weekday design hour volumes.

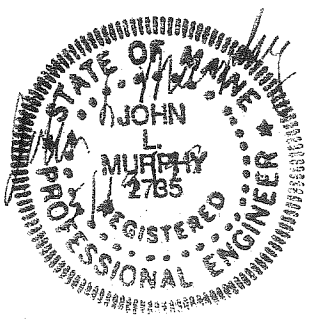
9. The traffic report will conform to the conditions requested by the DEP in the scoping meeting for the project.

Required Improvements for Level of Service D or Better

1. New lane southbound on the westerly side of Riverside Street from a point 100 feet northerly of Portland Commons Drive to Exit 8.

2. Reset curbing on traffic island on the southeasterly side of Riverside Street opposite the Larrabee Road approach to Exit 8.

3. Install an overhead sign assembly facing the Larrabee Road traffic approaching Exit 8.



APPENDIX

A. Capacity Analyses Saturday Build 2000 Weekday Build 2000

Riverside/Exit 8
Riverside/Portland Commons
Riverside/Home Depot
Riverside/Warren Ave.

B. Network Volume Data Saturday

1. Project Impact
2. Counts 4/10/99
3. Balanced No Build Saturday 1999
4. Balanced Saturday No Build Factored by 1.18 to Year 2000 No Build
5. Balanced Saturday Build 2000

C. Network Volume Data Weekday Peak Hour 2000

1. Project Impact
2. No Build Volumes (Counts)
3. Balanced No Build Weekday Base July 1997
4. Balanced No Build Weekday Base July 2000 (Factor 1.03)
5. Build Portland Commons 2000 Weekday DHV
6. Other Projects Weekday & Saturday

D. Accident Data High Accident Locations

1. Node Map
2. Nodes 6306 - 9090, Brighton - Exit 8 1993-1997
3. Node 9090, Exit 8 1995-1997
4. Nodes 9090 - 6307, Exit 8 - Riverside Court 1993-1997
5. Nodes 6307 - 6309, Riverside Court to Old RR Track 1993-1997
6. Node 6310, Riverside Street/Warren Avenue 1994-1997

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 05-18-1999

John L. Murphy P. E. Traffic Engineer

Streets: (N-S) RIVERSIDE ST. (E-W) EXIT 8

Analyst: JLM File Name: EX8BSAT.HC9

Area Type: Other 4-10-99 PM PK.

Comment: Build Portland Commons Saturday 2000

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	2	< 0	1	2	< 0	1	2	1
Volumes	47	673	224	413	674	269	371	198	66	264	197	479
Lane W (ft)	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	12.0
RTOR Vols			100			0			0			100
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
NB Left	*				EB Left	*	*		
Thru			*		Thru		*	*	
Right			*		Right		*	*	
Peds					Peds				
SB Left	*	*			WB Left	*			
Thru		*	*		Thru			*	
Right		*	*		Right			*	
Peds					Peds				
EB Right					NB Right	*	*	*	
WB Right	*	*			SB Right				
Green	7.0A	20.0A	25.0A		Green	22.0A	2.0A	12.0A	
Yellow/AR	5.0	5.0	5.0		Yellow/AR	5.0	5.0	5.0	

Cycle Length: 118 secs Phase combination order: #1 #2 #3 #5 #6 #7

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
NB	L	134	1752	0.367	0.076	34.2	D	30.4	D
	T	861	3762	0.863	0.229	34.6	D		
	R	1057	1599	0.124	0.661	4.8	A		
SB	L	505	1752	0.861	0.288	35.6	D	22.8	C
	TR	1587	3601	0.657	0.441	17.5	C		
EB	L	465	1770	0.841	0.263	35.6	D	32.6	D
	TR	626	3517	0.465	0.178	28.5	D		
WB	L	360	1770	0.772	0.203	35.5	D	27.5	D
	T	442	3725	0.491	0.119	32.2	D		
	R	638	1568	0.626	0.407	19.4	C		

Intersection Delay = 27.3 sec/veh Intersection LOS = D

Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.807

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 05-18-1999

John L. Murphy P. E. Traffic Engineer

Streets: (N-S) Riverside St. (E-W) Portland Commons

Analyst: JLM File Name: PCRBSAT.HC9

Area Type: Other 5-17-99 PM

Comment: Build Portland Commons 2000 Sat.

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	< 0	1	2	< 0	0	> 2	< 0	1	1	< 0
Volumes	18	1354	150	135	1189	18	6	1	25	140	1	130
PHF or PK15	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Lane W (ft)	12.0	12.0		12.0	12.0			12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh	2	2	2	2	2	2	2	2	2	2	2	2
Parking	N	N		N	N		N	N		N	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type	3	3		3	3			3		3	3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
NB Left	*				EB Left *			
Thru		*			Thru *			
Right		*			Right *			
Peds					Peds			
SB Left	*				WB Left *			
Thru		*			Thru *			
Right		*			Right *			
Peds					Peds			
EB Right					NB Right			
WB Right					SB Right			
Green	6.0A	45.0A			Green 12.0A			
Yellow/AR	5.0	5.0			Yellow/AR 5.0			

Cycle Length: 78 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
NB	L	181	1770	0.105	0.103	20.5	C	8.5	B
	TR	2211	3670	0.752	0.603	8.3	B		
SB	L	181	1770	0.782	0.103	35.1	D	9.3	B
	TR	2240	3717	0.596	0.603	6.5	B		
EB	LTR	523	2911	0.067	0.179	17.2	C	17.2	C
WB	L	287	1601	0.512	0.179	20.0	C	19.8	C
	TR	285	1585	0.485	0.179	19.6	C		

Intersection Delay = 9.8 sec/veh Intersection LOS = B

Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.706

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 05-18-1999

John L. Murphy P. E. Traffic Engineer

Streets: (N-S) Riverside St. (E-W) Home Depot

Analyst: JLM File Name: HDRIVB.HC9

Area Type: Other 5-17-99 PMPHr.

Comment: Balanced Build Saturday 2000

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	< 0	0	2	< 0	0	> 1	< 0	1	1	< 0
Volumes		1138	352		1069	3	13	1	13	270	3	59
PHF or PK15		0.95	0.95		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Lane W (ft)		12.0			12.0			12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh		2	2		2	2	2	2	2	2	2	2
Parking	N	N		N	N		N	N		N	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type		3			3			3		3	3	
RTOR Vols			0			0			0			0
Lost Time		3.00	3.00		3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
NB Left					EB Left	*		
Thru		*			Thru	*		
Right		*			Right	*		
Peds					Peds			
SB Left					WB Left	*		
Thru		*			Thru	*		
Right		*			Right	*		
Peds					Peds			
EB Right					NB Right			
WB Right					SB Right			
Green		45.0A			Green	25.0A	5.0A	
Yellow/AR		5.0			Yellow/AR	5.0	5.0	

Cycle Length: 90 secs Phase combination order: #1 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
NB	TR	1877	3593	0.878	0.522	15.9	C	15.9	C
SB	TR	1945	3724	0.609	0.522	10.1	B	10.1	B
EB	LTR	118	1518	0.246	0.078	25.4	D	25.4	D
WB	L	531	1770	0.535	0.300	17.8	C	17.3	C
	TR	479	1596	0.136	0.300	14.9	B		

Intersection Delay = 14.0 sec/veh Intersection LOS = B

Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.709

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 05-18-1999

John L. Murphy P. E. Traffic Engineer

Streets: (N-S) RIVERSIDE ST (E-W) WARREN AVE

Analyst: JLM File Name: RWBSAT.HC9

Area Type: Other 5-17-99 PM

Comment: Build Saturday Peak Hour 2000

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	2	< 0	1	1	< 0	1	1	< 0
Volumes	26	587	587	160	526	90	91	333	48	498	278	158
PHF or PK15	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Lane W (ft)	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh	2	2	2	5	5	5	2	2	2	1	1	1
Parking	N	N		N	N		N	N		N	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type	3	3	3	3	3		3	3		3	3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share				0								
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
NB Left	*				EB Left	*			
Thru		*			Thru	*			
Right		*			Right	*			
Peds					Peds				
SB Left	*	*			WB Left		*		
Thru		*			Thru		*		
Right		*			Right		*		
Peds					Peds				
EB Right					NB Right		*		
WB Right					SB Right				
Green	6.0A	27.0A			Green	25.0A	35.0A		
Yellow/AR	5.0	5.0			Yellow/AR	5.0	5.0		

Cycle Length: 113 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
NB	L	125	1770	0.216	0.071	32.1	D	40.5	E
	T	956	3725	1.034	0.257	58.7	E		
	R	925	1583	0.668	0.584	11.7	B		
SB	L	186	1719	0.903	0.354	47.3	E	31.4	D
	TR	908	3540	0.750	0.257	27.4	D		
EB	L	423	1770	0.227	0.239	22.4	C	40.5	E
	TR	437	1827	0.921	0.239	44.8	E		
WB	L	585	1787	0.895	0.327	35.0	D	31.3	D
	TR	583	1779	0.788	0.327	27.2	D		

Intersection Delay = 36.3 sec/veh Intersection LOS = D

Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.951

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 05-18-1999

John L. Murphy P. E. Traffic Engineer

Streets: (N-S) RIVERSIDE ST. (E-W) EXIT 8

Analyst: JLM File Name: EX8B.HC9

Area Type: Other 4-10-99 PM PK.

Comment: Build Portland Commons Weekday 2000

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	2	< 0	1	2	< 0	1	2	1
Volumes	41	532	414	482	532	415	301	318	85	300	363	546
PHF or PK15	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Lane W (ft)	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	12.0
Grade		0			0			0			0	
% Heavy Veh	2	4	5	5	5	2	2	2	2	5	3	5
Parking	N	N		N	N		N	N		N	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N) N			(Y/N) N			(Y/N) N			(Y/N) N		
Arr Type	3	3	3	3	3		3	3		3	3	3
RTOR Vols			100			0			0			100
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share				17			48			55		
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
NB Left	*				EB Left	*			
Thru			*		Thru		*		
Right			*		Right		*		
Peds					Peds				
SB Left	*	*			WB Left	*			
Thru		*	*		Thru		*		
Right		*	*		Right		*		
Peds					Peds				
EB Right					NB Right	*	*		
WB Right	*	*			SB Right				
Green	6.0A	26.0A	20.0A		Green	25.0A	18.0A		
Yellow/AR	5.0	5.0	5.0		Yellow/AR	5.0	5.0		

Cycle Length: 120 secs Phase combination order: #1 #2 #3 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
NB	L	118	1770	0.364	0.067	35.5	D	28.3	D
	T	670	3654	0.878	0.183	39.8	D		
	R	961	1538	0.344	0.625	7.0	B		
SB	L	559	1719	0.907	0.325	38.3	D	24.9	C
	TR	1508	3414	0.694	0.442	18.4	C		
EB	L	398	1770	0.796	0.225	35.7	D	34.8	D
	TR	601	3608	0.740	0.167	34.1	D		
WB	L	387	1719	0.817	0.225	37.3	D	26.9	D
	T	615	3689	0.652	0.167	31.9	D		
	R	756	1538	0.622	0.492	15.6	C		

Intersection Delay = 27.9 sec/veh Intersection LOS = D

Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.848

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 05-18-1999

John L. Murphy P. E. Traffic Engineer

Streets: (N-S) Riverside St. (E-W) Portland Commons

Analyst: JLM File Name: PCRIVB.HC9

Area Type: Other 5-17-99 PM

Comment: Build Portland Commons 2000

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	< 0	1	2	< 0	0	> 2	< 0	1	1	< 0
Volumes	36	1232	110	95	1261	11	8	1	48	113	1	102
PHF or PK15	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Lane W (ft)	12.0	12.0		12.0	12.0			12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh	2	2	2	2	2	2	2	2	2	2	2	2
Parking	N		N	N		N	N		N	N		N
Bus Stops			0			0			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type	3	3		3	3			3		3	3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
NB Left	*				EB Left	*			
Thru		*			Thru	*			
Right		*			Right	*			
Peds					Peds				
SB Left	*				WB Left	*			
Thru		*			Thru	*			
Right		*			Right	*			
Peds					Peds				
EB Right					NB Right				
WB Right					SB Right				
Green	6.0A	45.0A			Green	12.0A			
Yellow/AR	5.0	5.0			Yellow/AR	5.0			

Cycle Length: 78 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
NB	L	181	1770	0.209	0.103	20.8	C	7.6	B
	TR	2217	3680	0.669	0.603	7.2	B		
SB	L	181	1770	0.551	0.103	24.2	C	8.0	B
	TR	2242	3720	0.627	0.603	6.8	B		
EB	LTR	530	2952	0.119	0.179	17.3	C	17.3	C
WB	L	266	1485	0.447	0.179	19.3	C	19.0	C
	TR	285	1586	0.379	0.179	18.6	C		

Intersection Delay = 8.7 sec/veh Intersection LOS = B

Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.610

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 05-18-1999

John L. Murphy P. E. Traffic Engineer

Streets: (N-S) Riverside St. (E-W) Home Depot

Analyst: JLM File Name: HDRIVB.HC9

Area Type: Other 5-17-99 PMPHr.

Comment: Balanced Build Weekday 2000

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	< 0	0	2	< 0	0	> 1	< 0	1	1	< 0
Volumes		1232	109		1223	11	12	1	15	129	1	22
PHF or PK15		0.95	0.95		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Lane W (ft)		12.0			12.0			12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh		2	2		2	2	2	2	2	2	2	2
Parking	N	N		N	N		N	N		N	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type		3			3			3		3	3	
RTOR Vols			0			0			0			0
Lost Time		3.00	3.00		3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share												
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
NB Left					EB Left		*		
Thru		*			Thru		*		
Right		*			Right		*		
Peds					Peds				
SB Left					WB Left	*			
Thru		*			Thru	*			
Right		*			Right	*			
Peds					Peds				
EB Right					NB Right				
WB Right					SB Right				
Green		45.0A			Green	25.0A	5.0A		
Yellow/AR		5.0			Yellow/AR	5.0	5.0		

Cycle Length: 90 secs Phase combination order: #1 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
NB	TR	1922	3680	0.772	0.522	12.5	B	12.5	B
SB	TR	1943	3720	0.702	0.522	11.3	B	11.3	B
EB	LTR	117	1510	0.256	0.078	25.5	D	25.5	D
WB	L	531	1770	0.256	0.300	15.5	C	15.3	C
	TR	478	1595	0.050	0.300	14.5	B		

Intersection Delay = 12.2 sec/veh Intersection LOS = B

Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.555

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 05-18-1999

John L. Murphy P. E. Traffic Engineer

Streets: (N-S) RIVERSIDE ST (E-W) WARREN AVE

Analyst: JLM File Name: RWARNB.HC9

Area Type: Other 5-17-99 PM

Comment: Build Weekday PM Peak Hour 2000

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	2	< 0	1	1	< 0	1	1	< 0
Volumes	51	765	452	58	793	67	87	193	84	357	225	84
PHF or PK15	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Lane W (ft)	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	
Grade		0			0			0			0	
% Heavy Veh	5	5	4	4	5	5	4	5	5	5	5	4
Parking	N	N		N	N		N	N		N	N	
Bus Stops			0			0			0			0
Con. Peds			0			0			0			0
Ped Button	(Y/N)	N		(Y/N)	N		(Y/N)	N		(Y/N)	N	
Arr Type	3	3	3	3	3		3	3		3	3	
RTOR Vols			0			0			0			0
Lost Time	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Prop. Share				0								
Prop. Prot.												

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
NB Left	*	*			EB Left	*			
Thru		*			Thru	*			
Right		*			Right	*			
Peds					Peds				
SB Left	*	*			WB Left		*		
Thru		*			Thru		*		
Right		*			Right		*		
Peds					Peds				
EB Right					NB Right		*		
WB Right					SB Right				
Green	4.0A	38.0A			Green	22.0A	27.0A		
Yellow/AR	5.0	5.0			Yellow/AR	5.0	5.0		

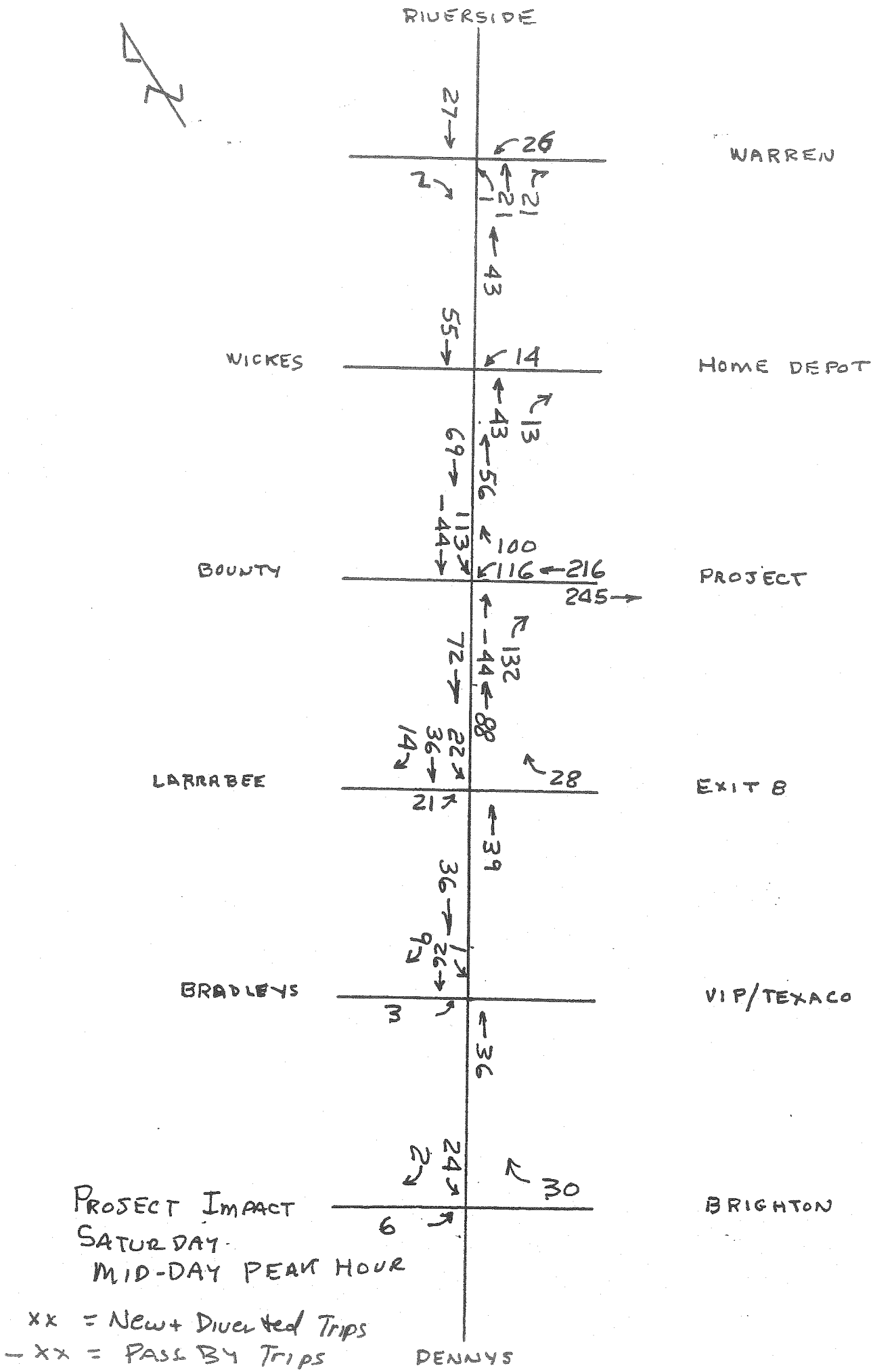
Cycle Length: 111 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
NB	L	158	1719	0.342	0.441	14.2	B	30.3	D
	T	1304	3619	0.988	0.360	39.4	D		
	R	965	1553	0.493	0.622	7.7	B		
SB	L	160	1736	0.381	0.441	16.9	C	21.3	C
	TR	1289	3577	0.738	0.360	21.6	C		
EB	L	375	1736	0.245	0.216	23.3	C	31.0	D
	TR	374	1727	0.779	0.216	33.4	D		
WB	L	449	1719	0.837	0.261	34.1	D	31.2	D
	TR	454	1736	0.717	0.261	27.8	D		

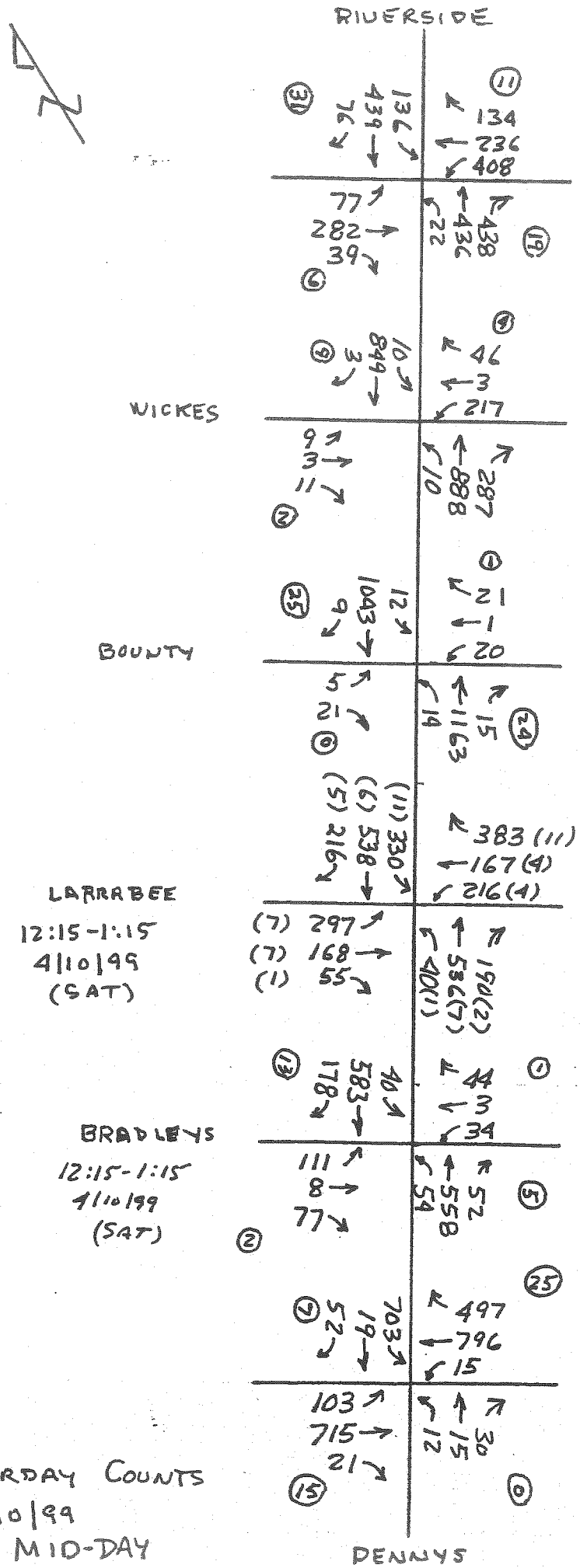
Intersection Delay = 28.2 sec/veh Intersection LOS = D

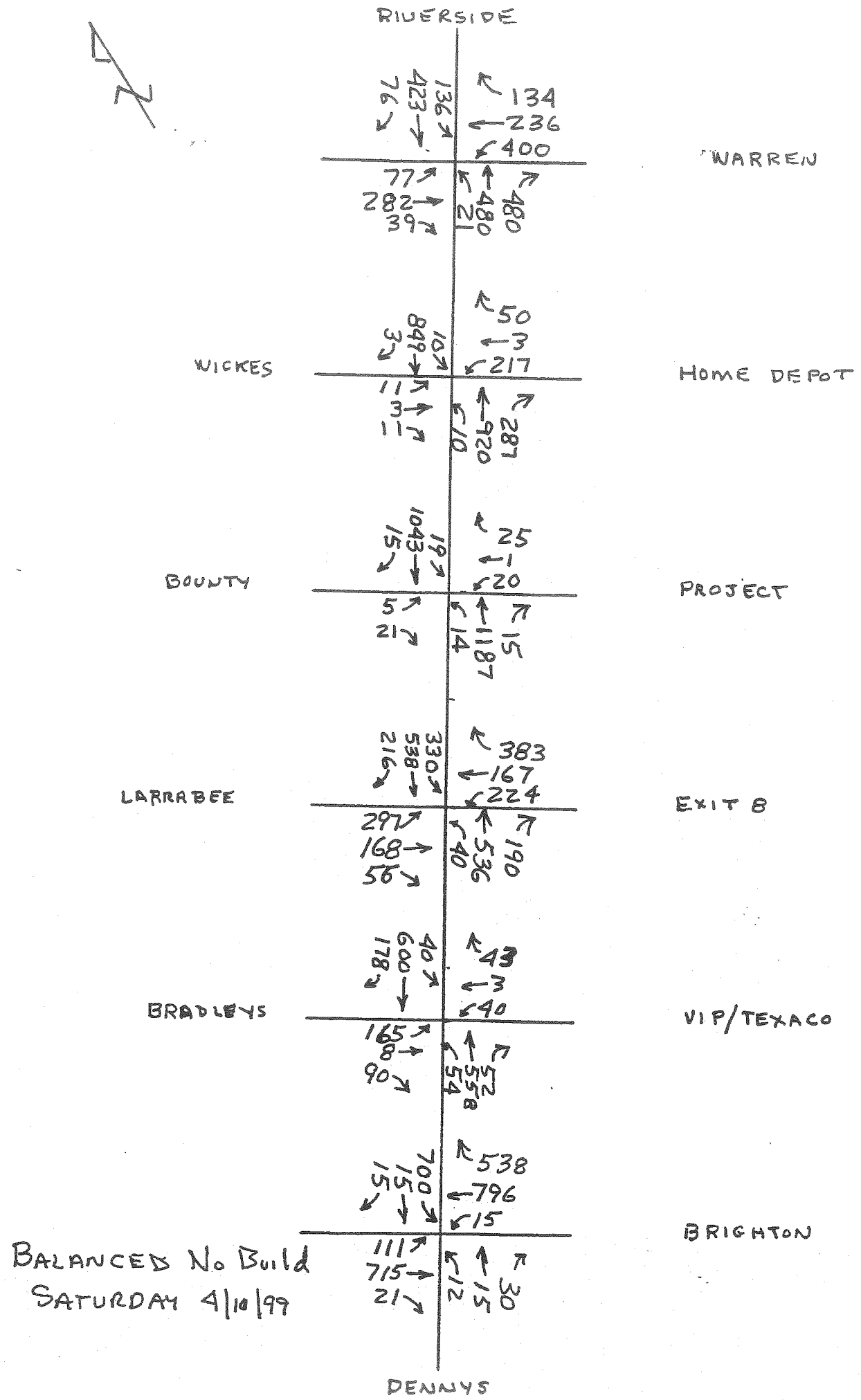
Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.873

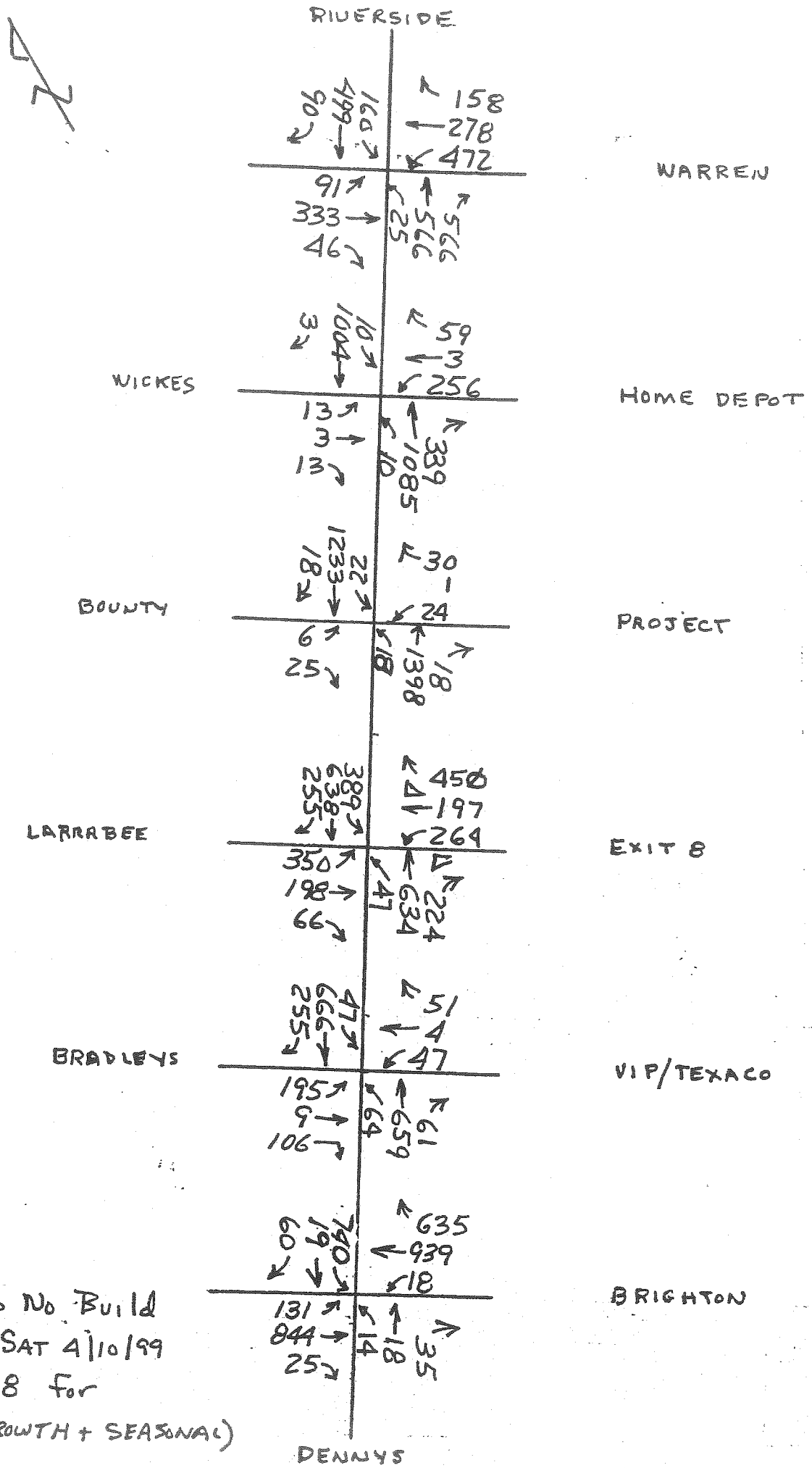


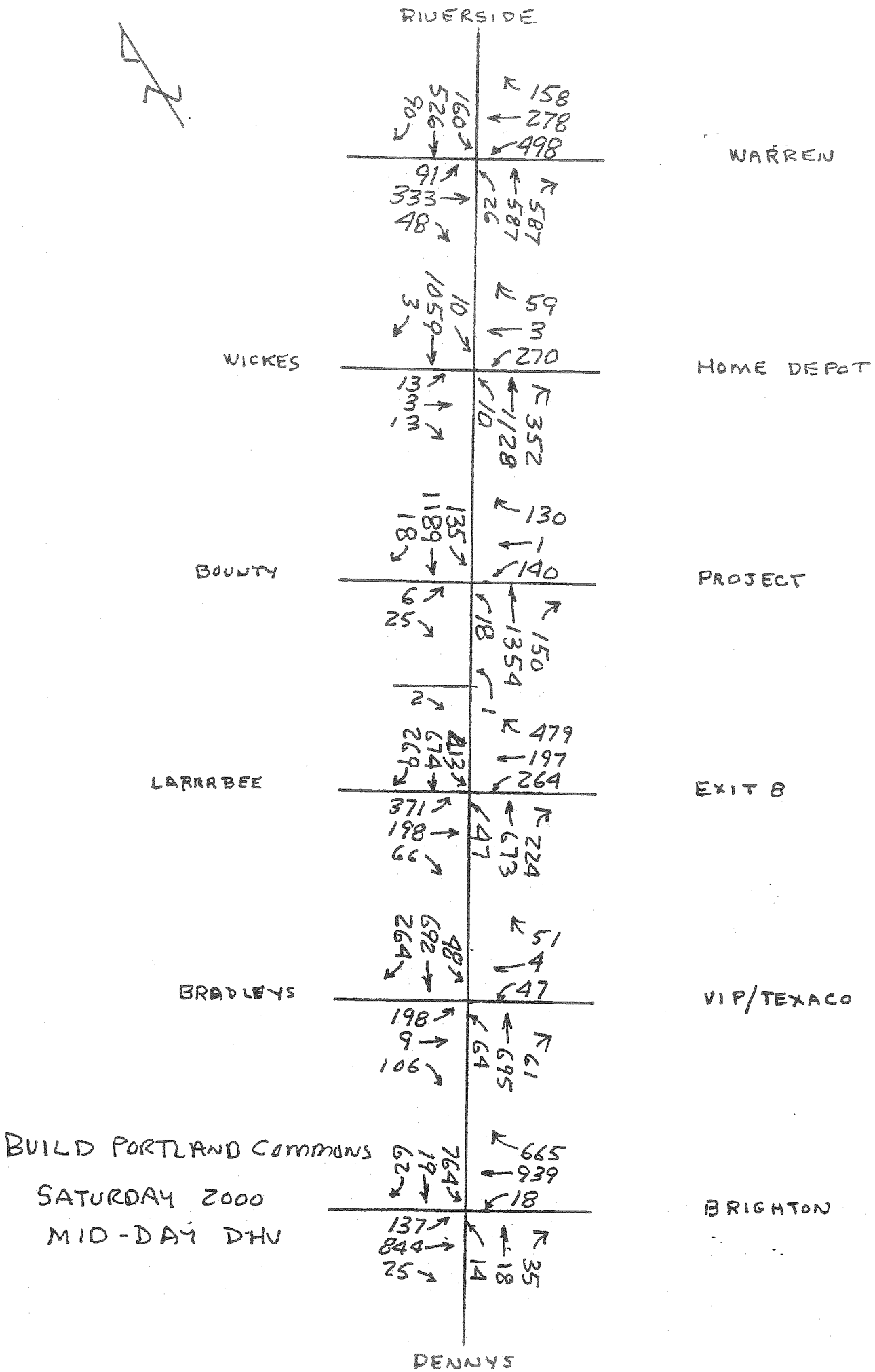
PROJECT IMPACT
SATURDAY
MID-DAY PEAK HOUR

xx = New + Diverted Trips
-xx = Pass By Trips


RIVERSIDE
WARREN
11:15-12:15
4/10/99 (SAT)
WICKES
HOME DEPOT
12:15-1:15
4/10/99 (SAT)
BOUNTY
PROJECT
12:15-1:15
4/10/99 (SAT)
LARRABEE
12:15-1:15
4/10/99
(SAT)
EXIT 8
BRADLEYS
12:15-1:15
4/10/99
(SAT)
VIP/TEXACO
BRIGHTON
11:30-12:30
4/10/99 (SAT)
SATURDAY COUNTS
4/10/99
MID-DAY
DENNYS

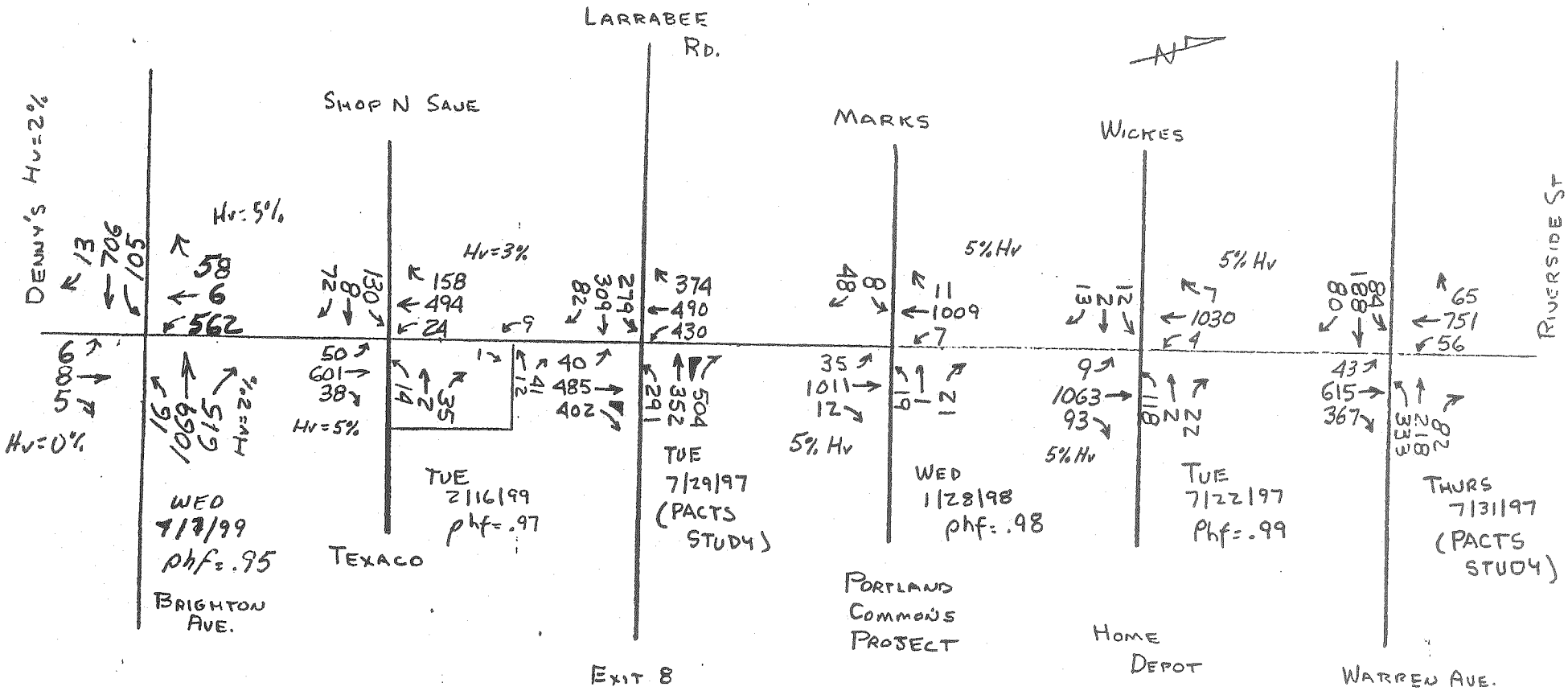

RIVERSIDE
WARREN
WICKES
HOME DEPOT
BOUNTY
PROJECT
LARRABEE
EXIT 8
BRADLEYS
VIP/TEXACO
BRIGHTON
DENNYS
BALANCED No Build
SATURDAY 4/10/99


RIVERSIDE
WARREN
WICKES
HOME DEPOT
BOUNTY
PROJECT
LARRABEE
EXIT 8
BRADLEYS
VIP/TEXACO
BRIGHTON
DENNYS
BALANCED NO BUILD
FACTOR SAT 4/10/99
BY 1.18 for
(1YR GROWTH + SEASONAL)


RIVERSIDE
WARREN
WICKES
HOME DEPOT
BOUNTY
PROJECT
LARRABEE
EXIT 8
BRADLEYS
VIP/TEXACO
BRIGHTON
DENNYS
BUILD PORTLAND COMMONS
SATURDAY 2000
MID-DAY DHV

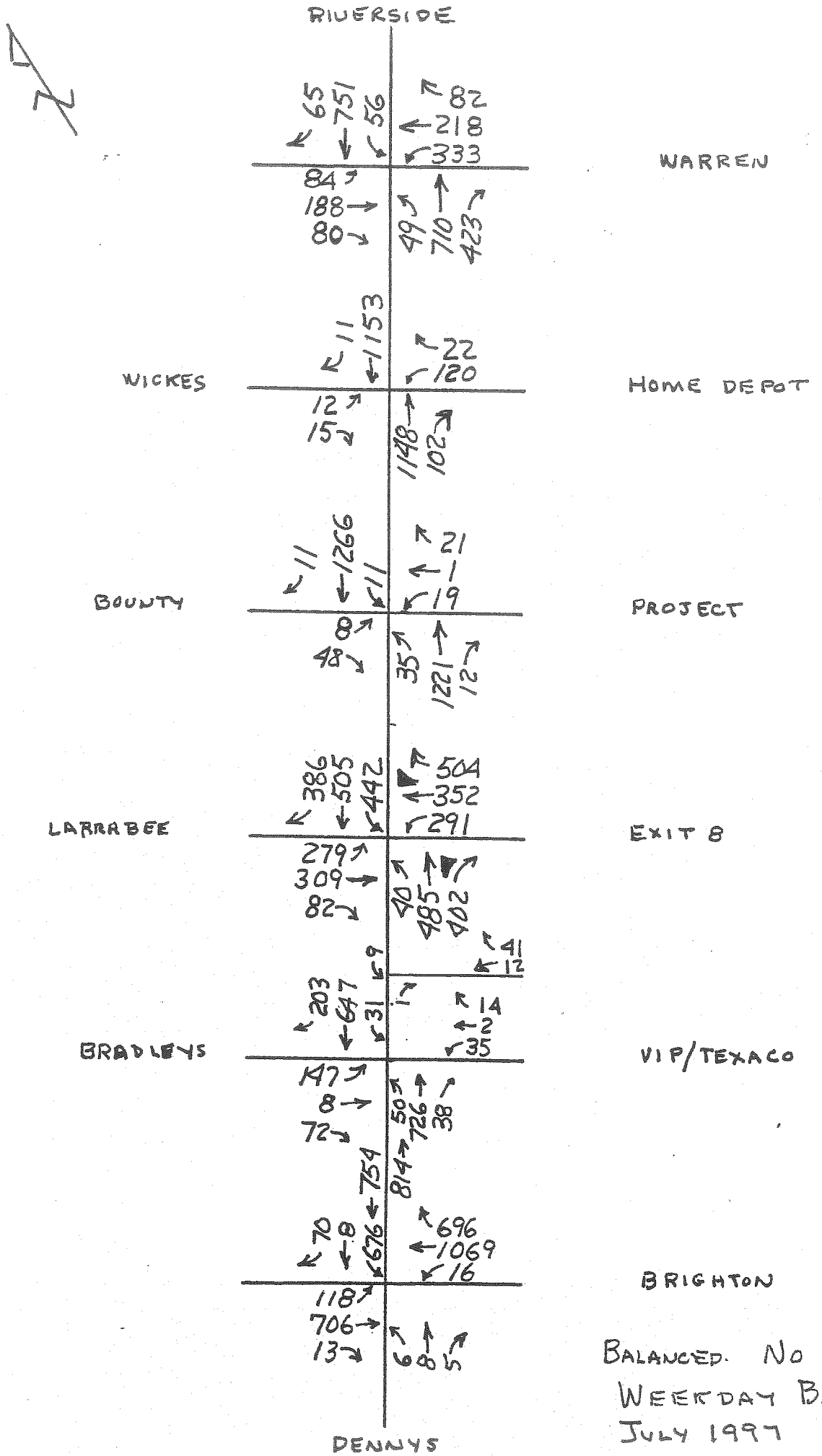
PROJECT IMPACT
WEEKDAY PM PEAK HOUR
PORTLAND COMMONS

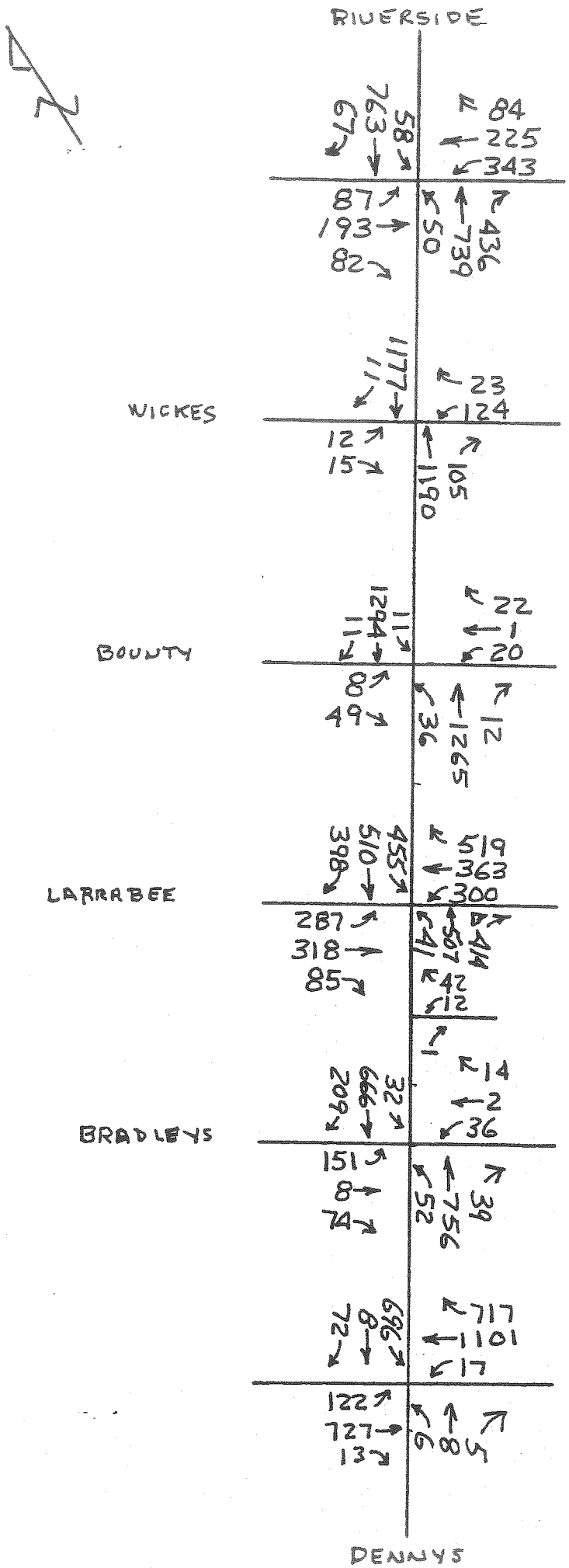
TRIPS
XX = NEW + DIVERTED
-XX = PASS-BY (38%)



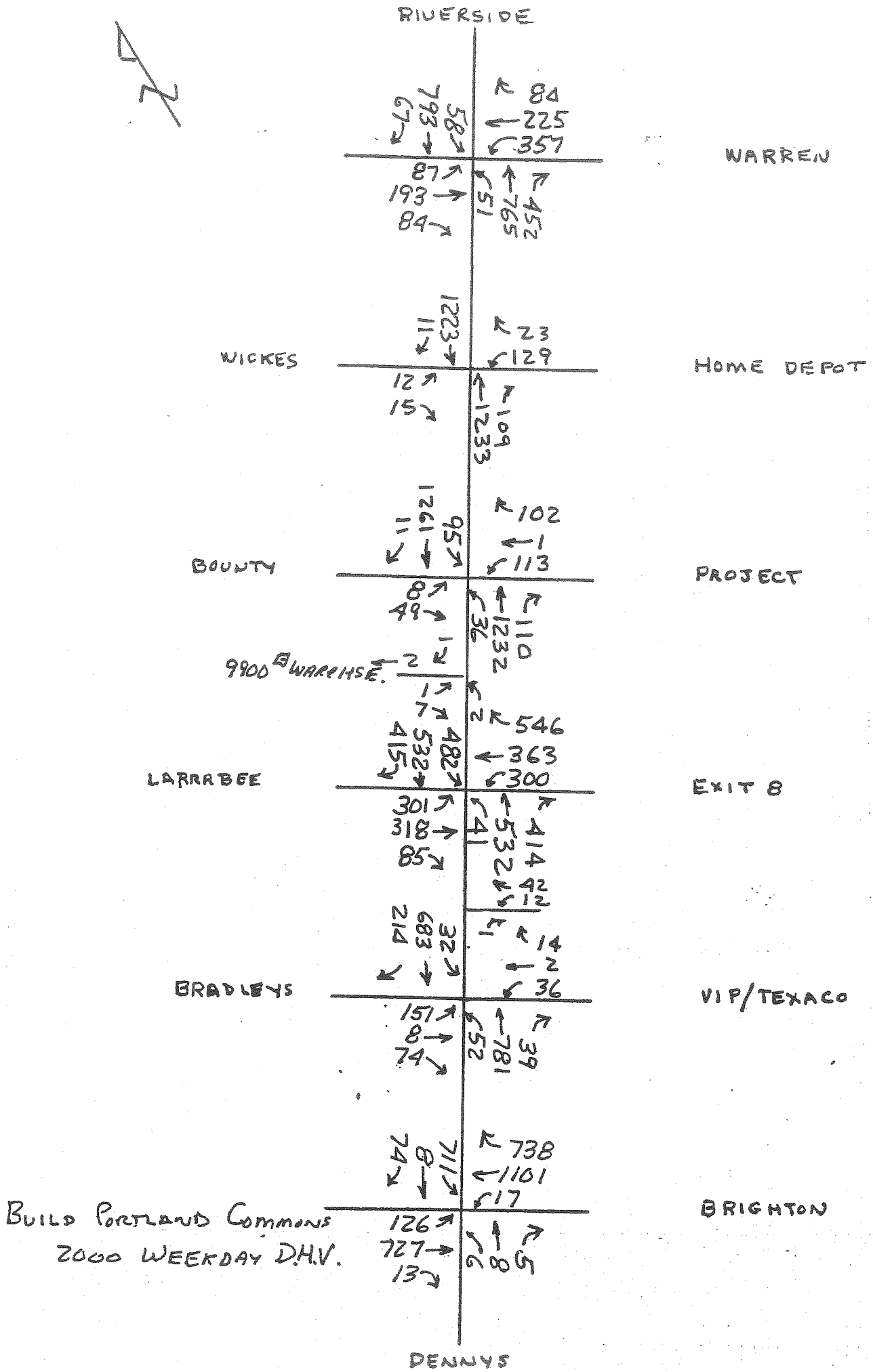
NO BUILD VOLUMES

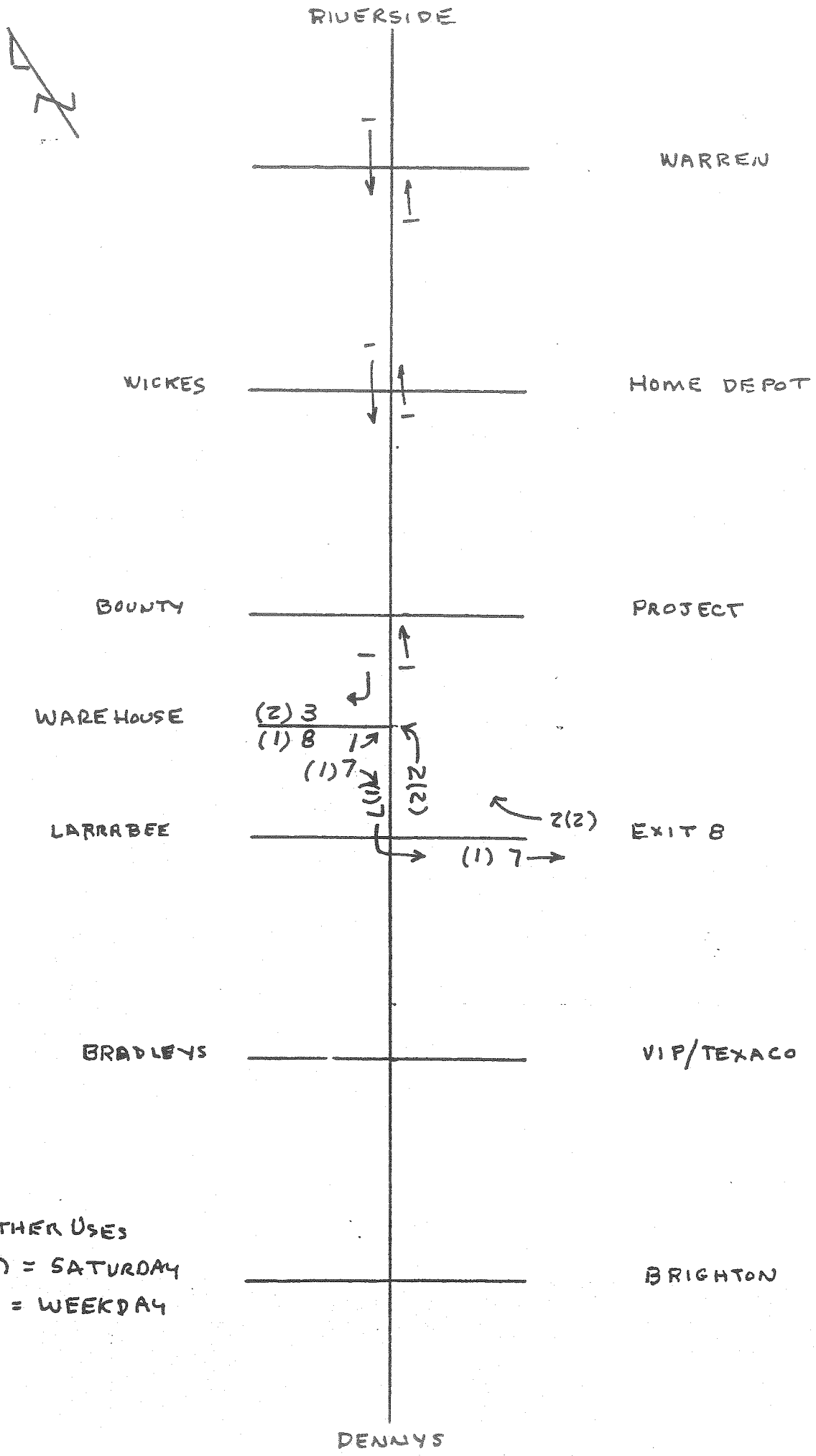
PM PEAK HOUR BASE

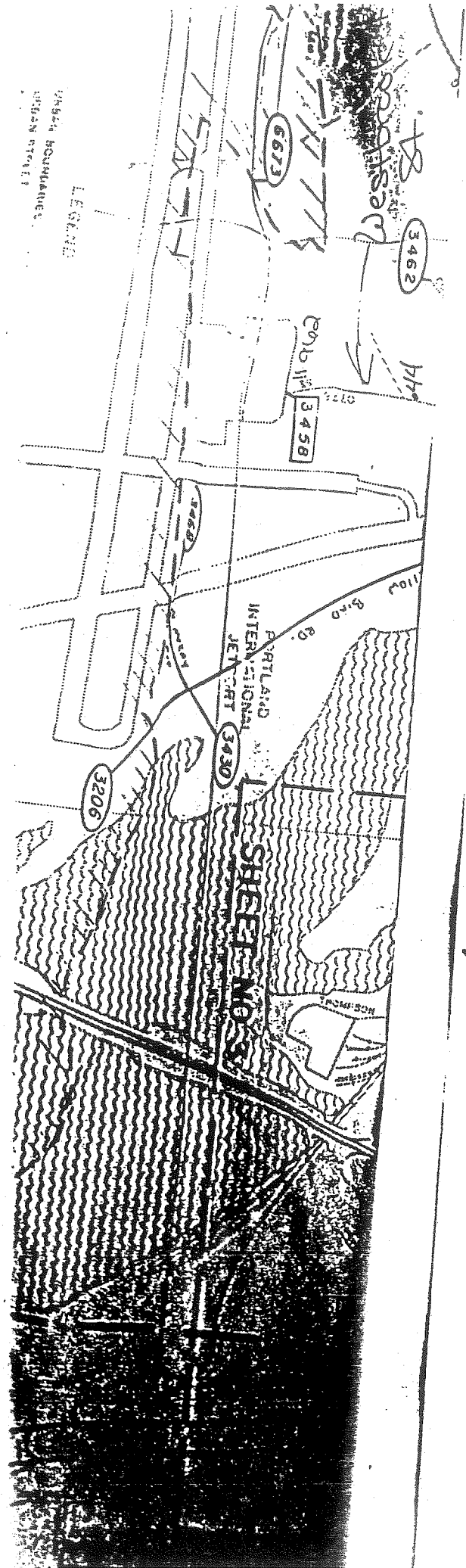

RIVERSIDE
WARREN
WICKES
HOME DEPOT
BOUNTY
PROJECT
LARRABEE
EXIT 8
BRADLEYS
VIP/TEXACO
BRIGHTON
DENNYS
65
751
56
82
218
333
84
188
80
49
710
423
11
1153
22
120
12
15
1148
102
11
1266
11
21
1
19
8
48
35
1221
12
386
505
442
504
352
291
279
309
82
40
485
402
41
12
203
647
31
9
14
2
35
47
8
72
50
726
38
814
754
676
70
8
696
1069
16
118
706
13
6
8
5
BALANCED. NO BUILD
WEEKDAY BASE
JULY 1997

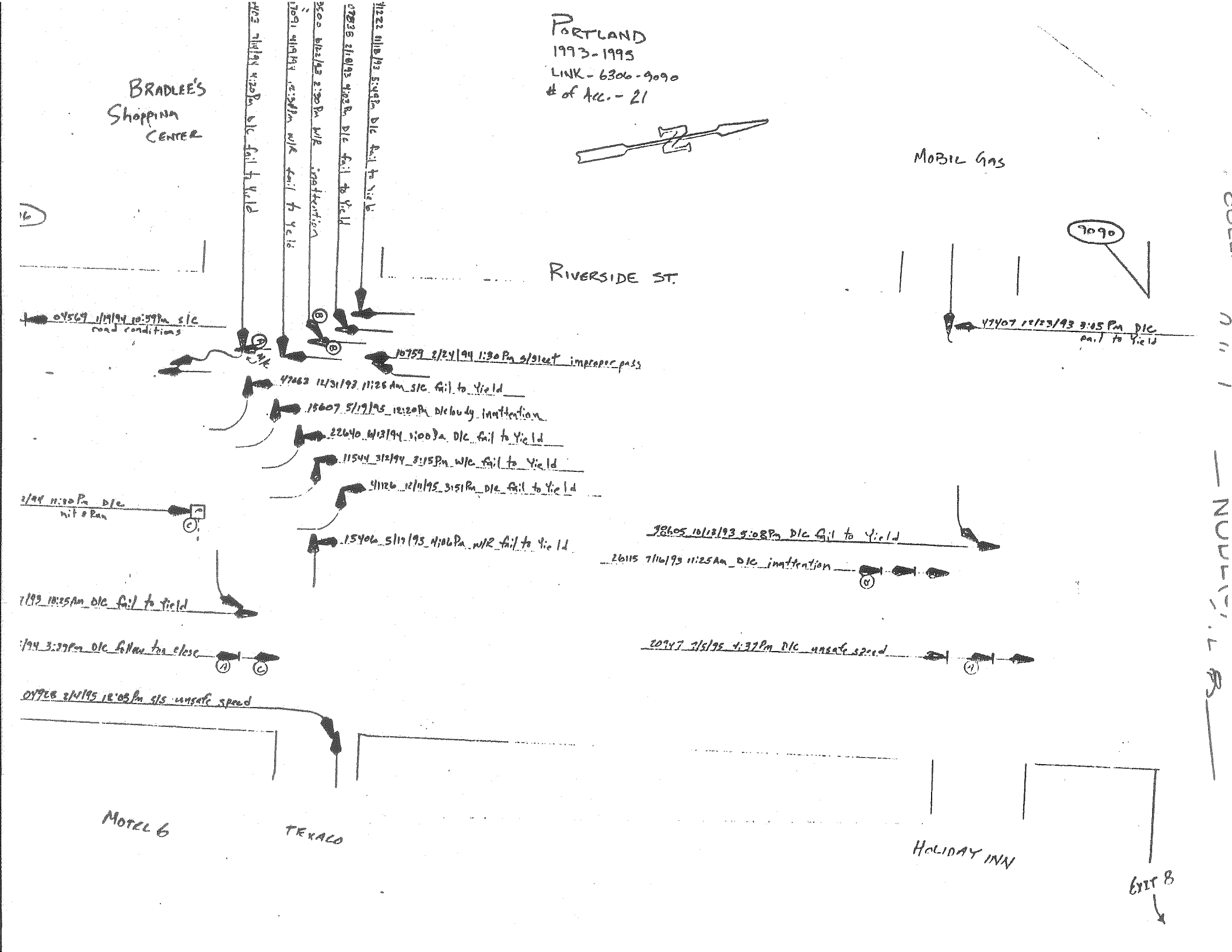


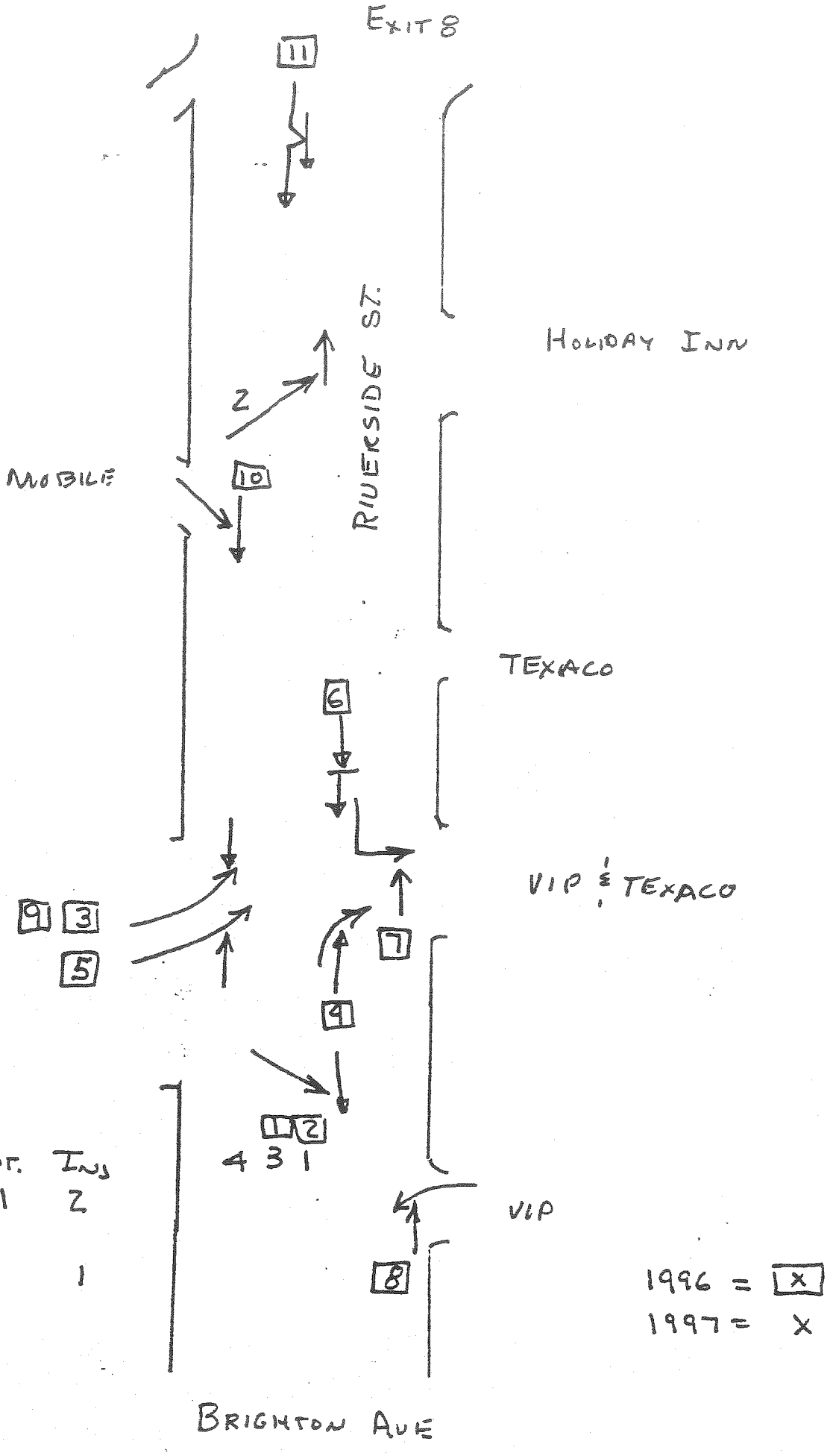
BALANCED NO BUILD
WEEKDAY PM BASE
JULY 2000
(JULY 1997 x 1.03)


RIVERSIDE
WARREN
WICKES
HOME DEPOT
BOUNTY
PROJECT
9900 @ WARRENSE.
LARRABEE
EXIT 8
BRADLEYS
VIP/TEXACO
BRIGHTON
DENNYS
BUILD PORTLAND COMMONS
2000 WEEKDAY D.H.V.


RIVERSIDE
N
WARREN
WICKES
HOME DEPOT
BOUNTY
PROJECT
WAREHOUSE
(2) 3
(1) 8
(1) 7
(2) 2
(1) 7
(2) 2
2(2)
LARRABEE
EXIT 8
(1) 7
BRADLEYS
VIP/TEXACO
OTHER USES
(x) = SATURDAY
X = WEEKDAY
BRIGHTON
DENNYS


LEGEND
3462
3458
PORTLAND INTERNATIONAL JETPORT
SHEEPSCOT RIVER
TOLL GATE
Holiday Inn
Marks Glowplace
Howard Johnson
Wicks
Harrabee St.
Westbrook T/L
RIVERSIDE
CAMPBELL ST.
BROVE ST.
TURNPIKE
Bradley's plaza
Reynolds Subaru #375
Handy Mun #357
Exit 8
DALE
GODFREY
JOSSLYN
HOLM
POPHAM
0800
0799
1908
1920
5549
6310
6309
6307
5589
9094
9693
9090
9093
3717
9675
9087
9026
9025
3567
3560
7475
6306
9992
9692
9024
9991
3553
3554
3555
3556
.19
.17
.24
.10
.32
.30


PORTLAND
1993-1995
LINK - 6306 - 9090
# of Acc. - 21
BRADLEE'S
Shopping
Center
MOBIL GAS
RIVERSIDE ST.
9090
MOTEL 6
TEXACO
HOLIDAY INN
EXIT 8
NORTH
04569 1/19/94 10:59Pm s/c road conditions
Y2407 12/23/93 3:05 Pm D/C fail to Yield
10759 2/24/94 1:30 Pm s/sleet improper pass
Y2463 12/31/93 11:26 Am s/c fail to Yield
15607 5/19/95 12:20Pm D/C lady inattention
22640 4/3/94 9:00 a D/C fail to Yield
11544 3/2/94 3:15Pm w/c fail to Yield
41126 12/1/95 3:51Pm D/C fail to Yield
15406 5/19/95 4:06Pm w/R fail to Yield
28605 10/13/93 3:08Pm D/C fail to Yield
26115 7/16/93 11:25Am D/C inattention
20947 7/5/95 4:37Pm D/C unsafe speed
D/C unsafe speed



	Tot.	Inj
1996	11	2
1997	4	1

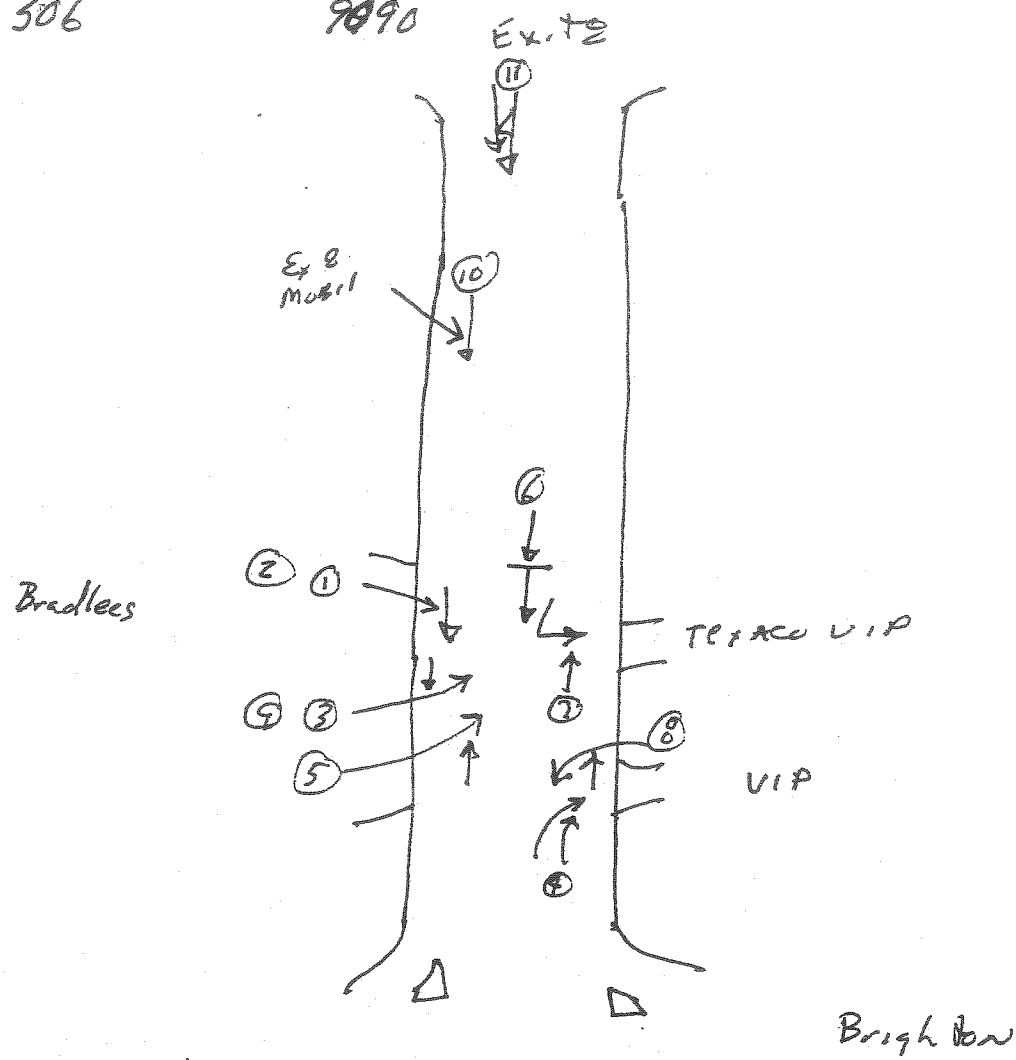
1996 = [X]
1997 = X

B/R

6306

Exits

~~9~~90



96.000822 ① 1/12/96 Tue 2315 (vision blocked snow bank)

96.13139 ② 4/4/96 Thu ~~1100~~ 1030

96.05407 ③ 2/6/96 Tue 1400 (B)

96.11139 ④ 3/12/96 Tue 0837

96.18393 ⑤ 5/24/96 Fri 1623

96.17996 ⑥ 5/17/96 Fri 1300

96.19378 ⑦ 6/3/96 Mon 1120 _ vision blocked by RV (Trap Rock)

96.29137 ⑧ 7/13/96 Sat 1420 (B)

96.00404 ⑨ 1/9/96 Tue 1700 icy

96.16910 ⑩ 5/11/96 Sat 1319

96.19310 ⑪ 6/3/96 Mon 1540 lane a

1997 only

6306 – 9090

R/R Ex. Pg 8

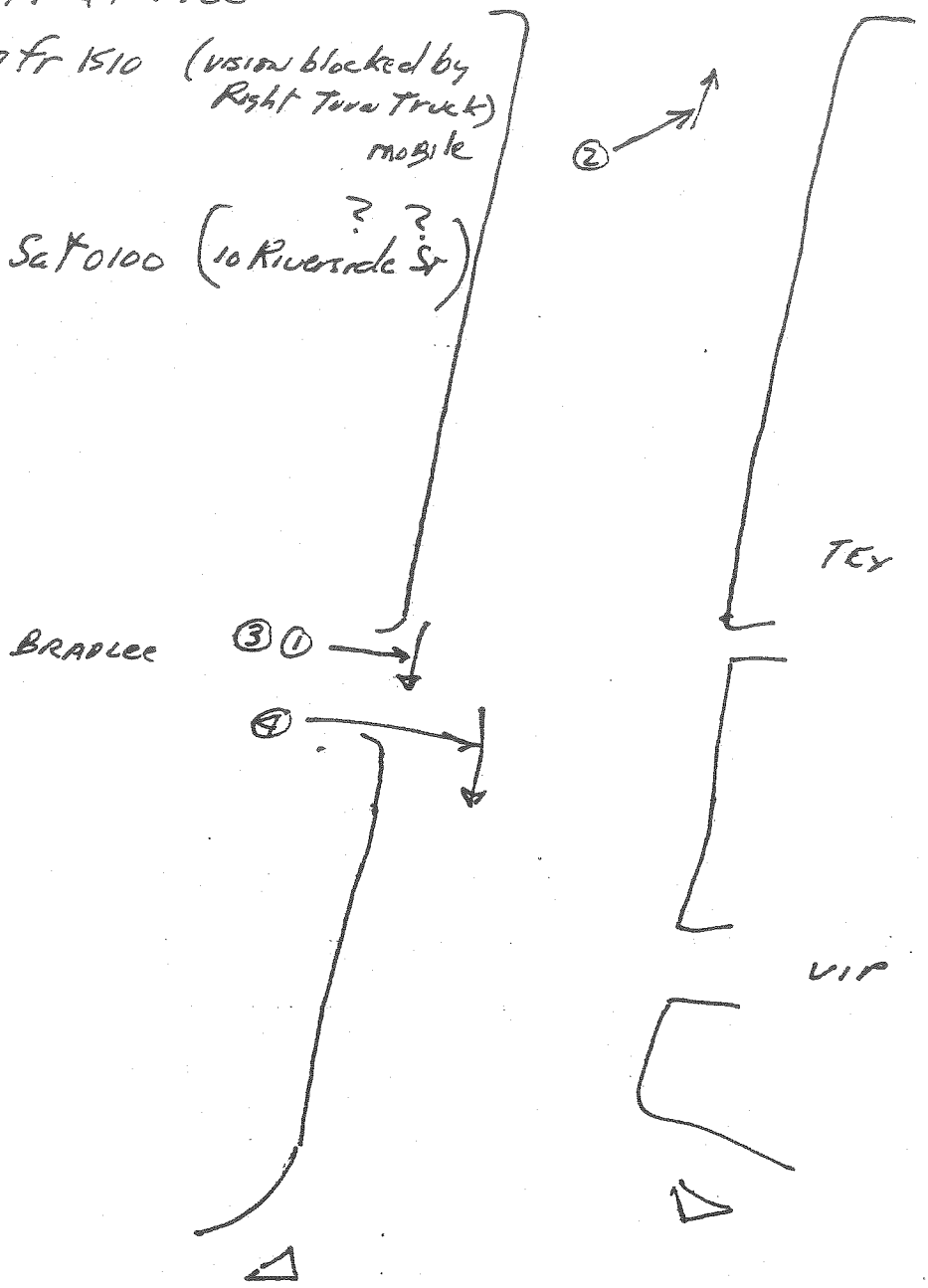
97.29502 ① 8/21/97 Th 1720 ⓒ

97.45456 ② 12/6/97 Sa T 1720

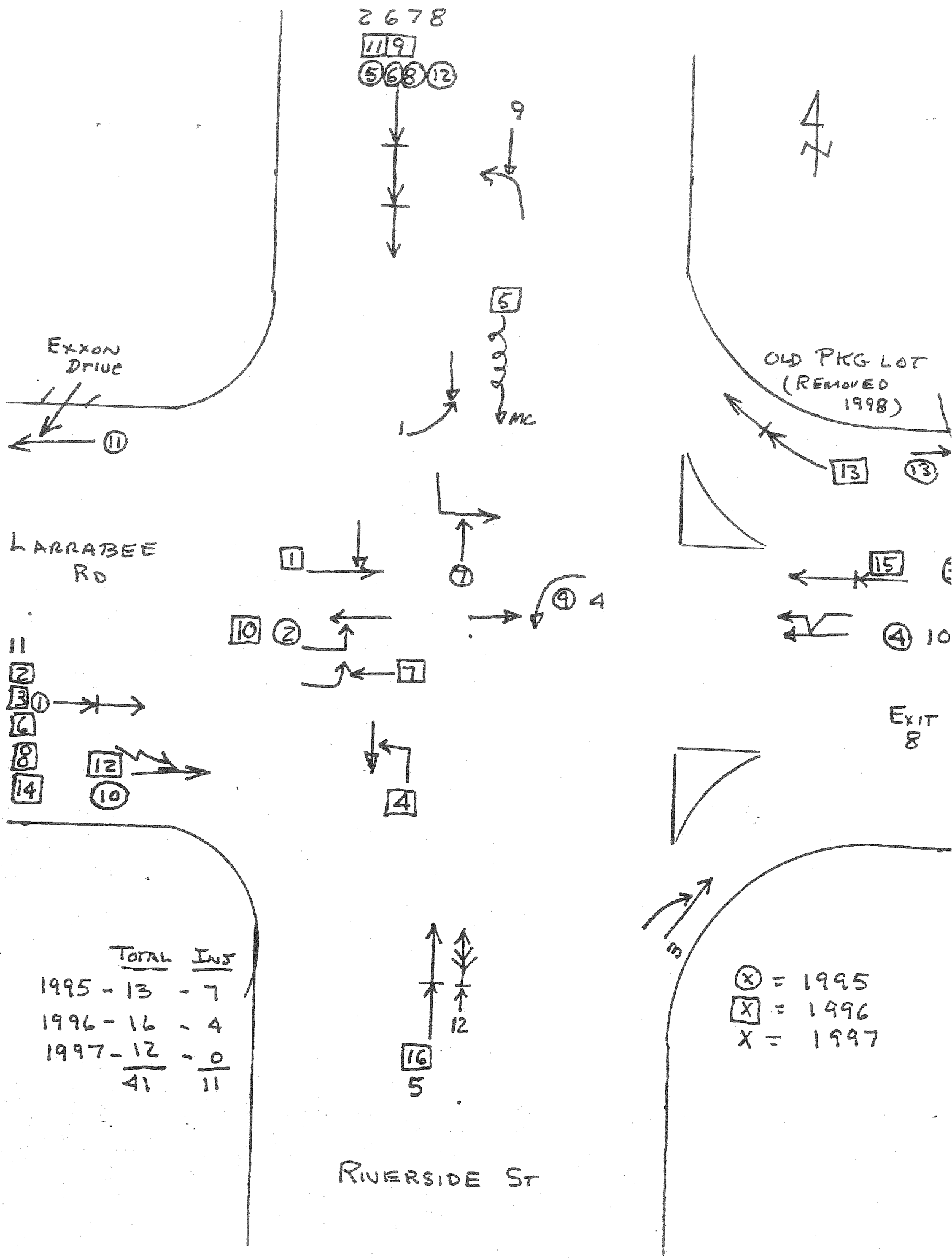
97.34169 ③ 10/3/97 Fr 1510 (vision blocked by Right Turn Truck) mobile

97.08802 ④ 3/1/97 Sa T 0100 (10 Riverside St ??)

Ex. Pg 3



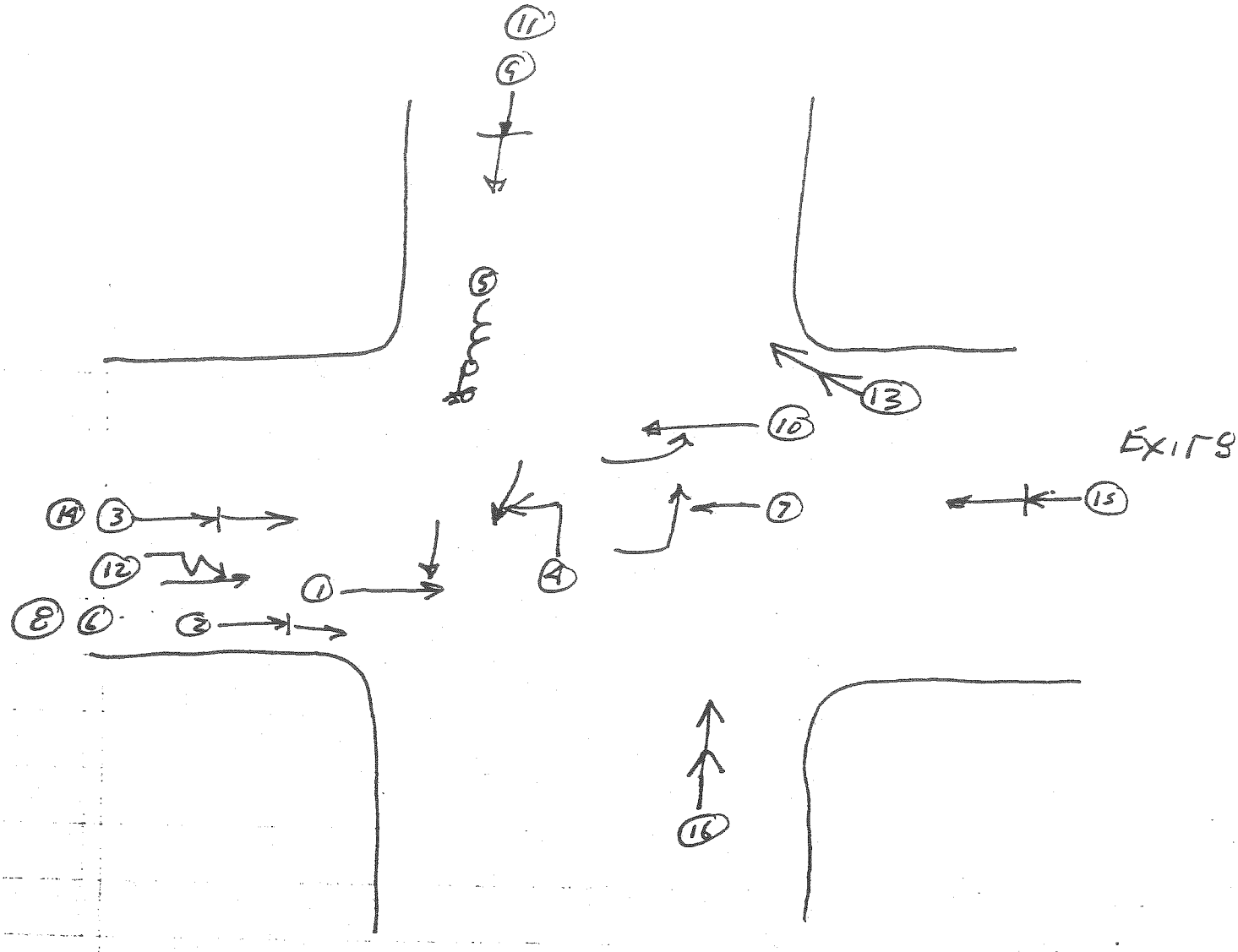
Brig Hitch



	TOTAL	INJ
1995 -	13	- 7
1996 -	16	- 4
1997 -	12	- 0
	41	11

(X) = 1995
[X] = 1996
X = 1997

9090 Exits 1996



96.36939 ① 10/30/96 Wed 1905 ✓

96. 39296 ② 11/16/96 Sat 1349 ✓

96. 37299 ③ 11/1/96 - Fri 1055 ✓

96. 26973 ④ 8/6/96 - Tue 1697 ⓒ ✓

96. 26967 ⑤ 8/2/96 - F 1330 Ⓑ ✓ Brake on MC Locked

96. 27652 ⑥ 8/13/96 Tue 0955 ⓒ ✓

96. 18475 ⑦ 5/29/96 Wed 1155 ⓒ ✓

96. 23947 ⑧ 7/12/96 Fri 1336 ✓

96. 09005 ⑨ 3/2/96 Sat 1130 ✓

96. 25307 ⑩ 8/27/96 Tue 1837 ✓

96.30631 ⑪ 9/9/96 M 1345 ✓

96.45757 ⑫ 12/25/96 W 1825 ✓

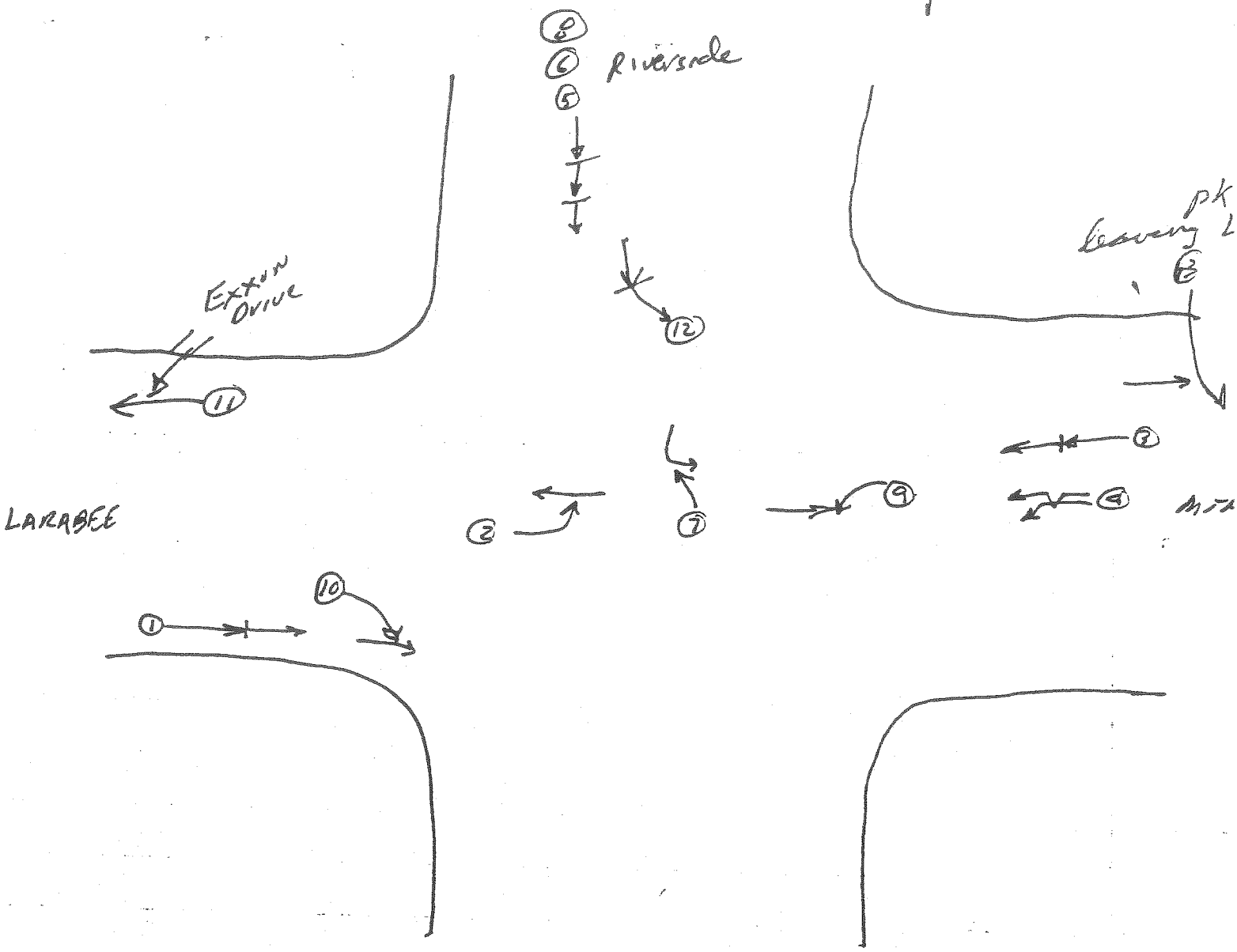
96.33509 ⑬ 10/3/96 Th 1405 ✓

96. 25277 ⑭ 7/23/96 Tu 1431 ✓

96. 02559 ⑮ 1/15/96 Mo 1747 ✓

96. 01262 ⑯ 1/9/96 Tue 1447 ✓

9090 Exits



95.26003 ① 8/1/95 Tue 0747 ✓

95.26731 ② 8/25/95 Fri 1743 ⓒ ✓

95.43817 ③ 12/22/95 Tue 1630 ⓒ (semi truck) ✓

95.29453 ④ 9/19/95 Tue 0745 (2 trucks mirrors hit) ✓

95.16929 ⑤ 6/1/95 Thurs 1705 ⓒ –

95.32887 ⑥ 10/18/95 Wed 1835 Ⓑ –

95.32529 ⑦ 10/15/95 Wed 0934 ⓒ

95.08848 Ⓑ 3/7/95 Tu 1450 (wet) –

95.08969 ⑨ 3/8/95 Wed 1745 Ⓑ

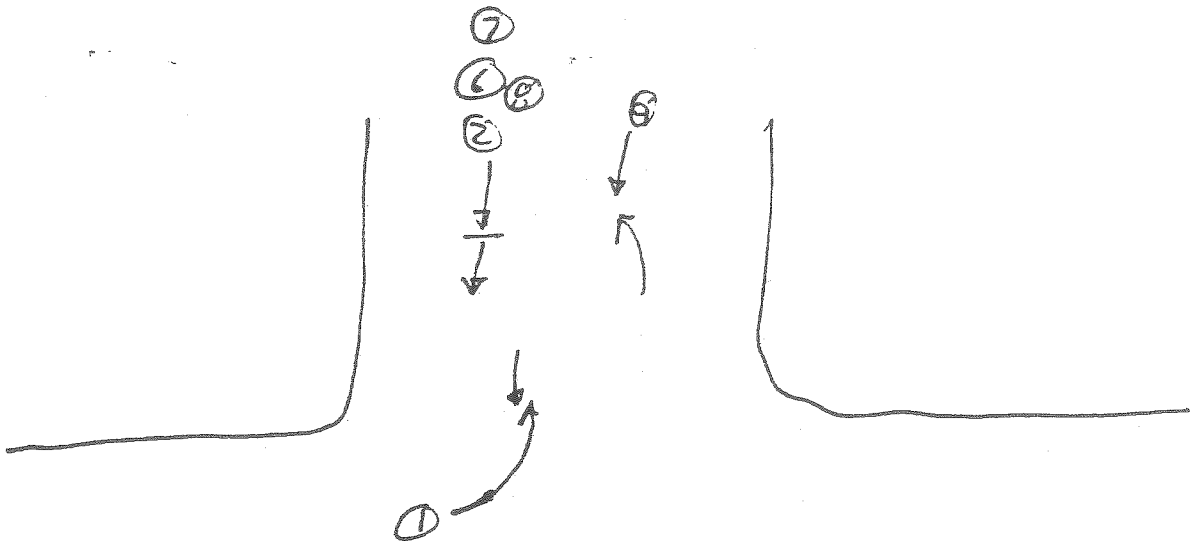
95.13918 ⑩ 5/2/95 Tue 0550 ⓒ

95.01344 ⑪ 1/6/95 Fri 1450 (miss fired) –

95.04474 ⑫ 1/31/95 Tu 1741 ⓒ –

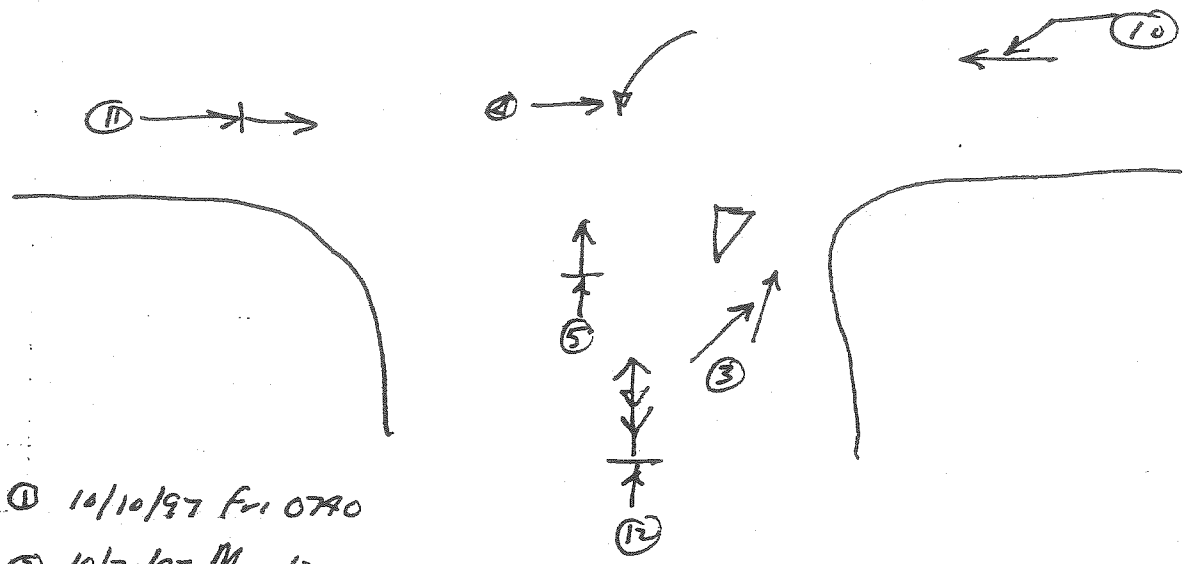
95.05838 ⑬ 2/9/95 Th 0840 leaving Pkg Lot (Same now)

1997 Ex. 48



LAMARBEE

Ex. 4



97.35495 ① 10/10/97 Fri 0740

97.36690 ② 10/20/97 Mon 1200

97.34565 ③ 10/3/97 Fri 1545

97.32627 ④ 9/17/97 W 1700

97.21715 ⑤ 6/21/97 SAT 1540

97.25085 ⑥ 7/17/97 Thu 0530

97.25393 ⑦ 7/19/97 SAT 2030

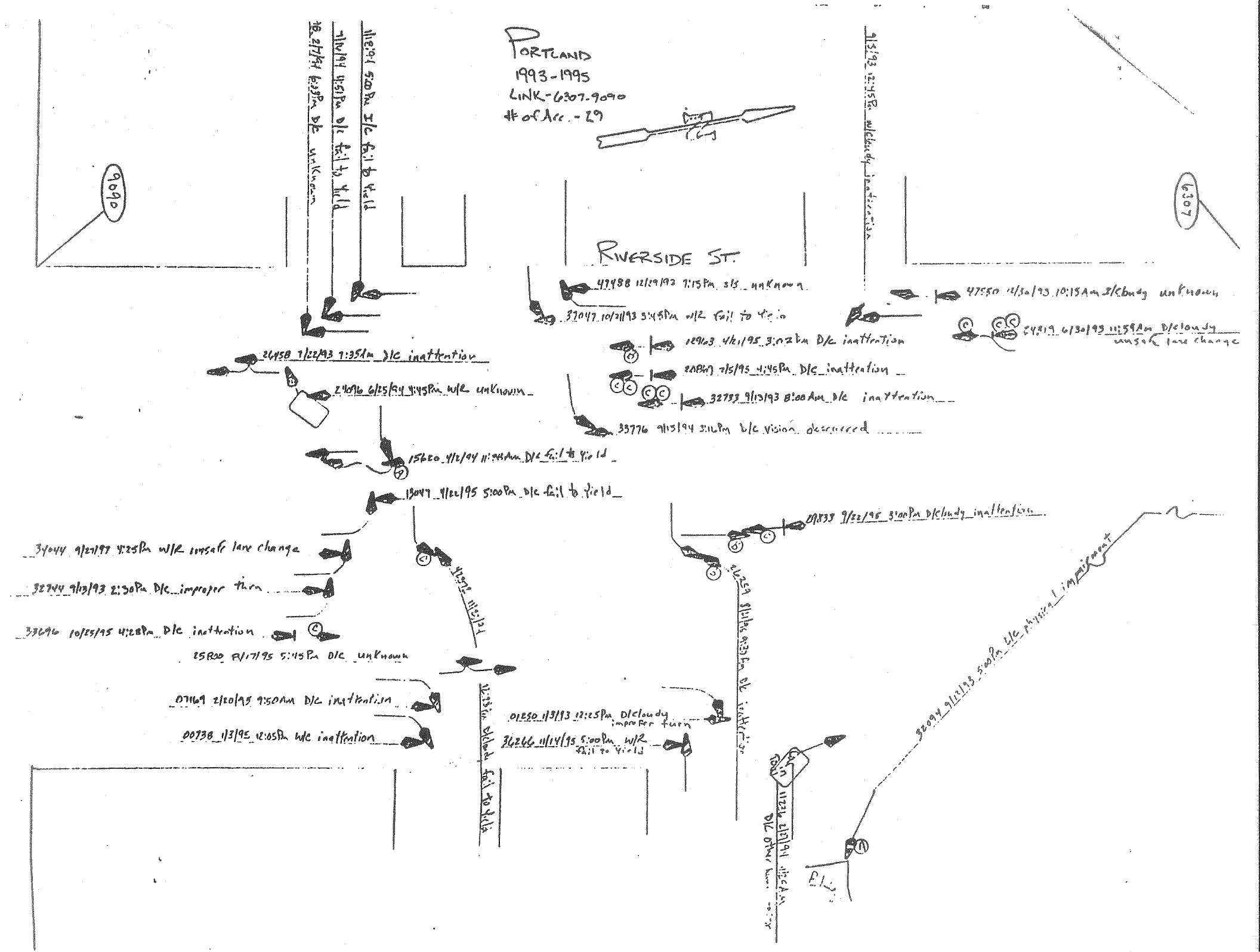
97.26494 ⑧ 7/22/97 Tue 1510

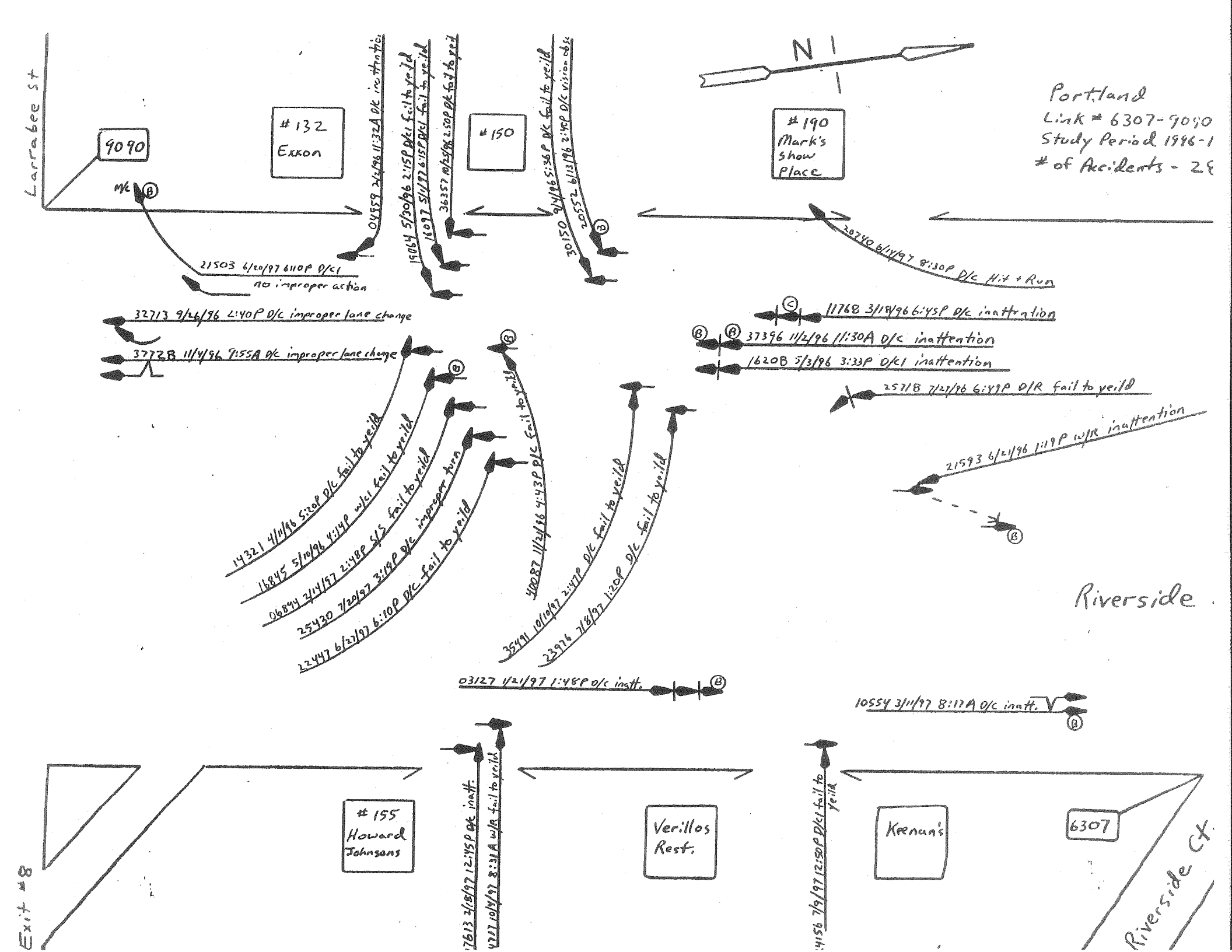
97.20450 ⑨ 6/11/97 Wed 1746 (??) Driveway Acc.

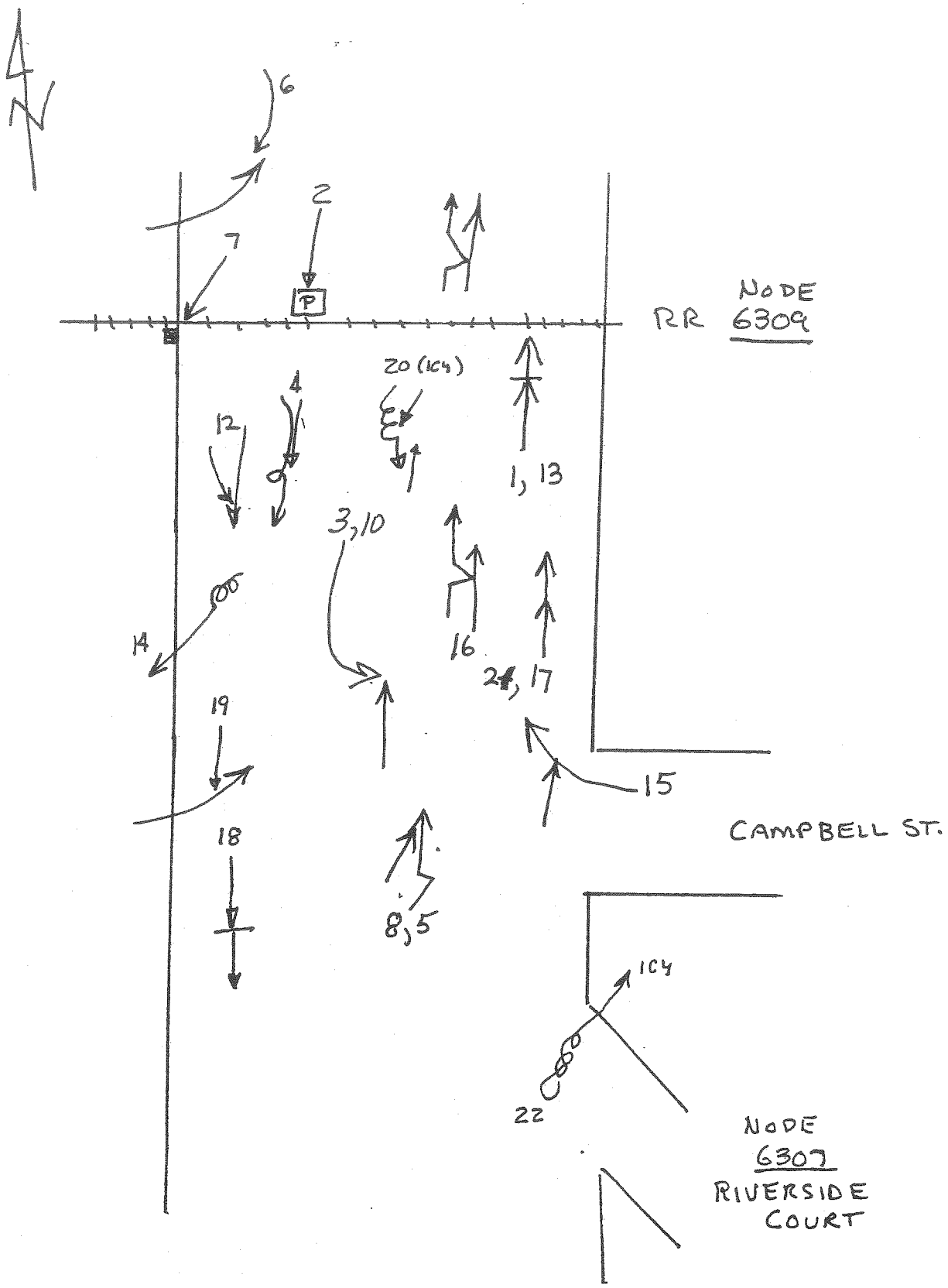
97.15202 ⑩ 4/22/97 Tue 1614

97.39079 ⑪ 11/11/97 Tue 1525

97.01013 ⑫ 1/7/97 Tue 0835 Backup.


PORTLAND
1993-1995
LINK-6307-9090
# of Acc. - 29
9090
6307
RIVERSIDE ST.
11/6/91 5:00PM I/C fail to yield
7/16/94 11:15PM D/C fail to yield
10/27/93 6:33PM D/C unknown
9/5/93 12:45PM w/cloudy inattention
47488 12/09/93 7:15PM S/S unknown
37047 10/21/93 5:45PM w/c fail to yield
47550 12/30/93 10:15AM S/Cloudy unknown
64819 6/30/93 11:59AM D/cloudy unsafe lane change
26458 7/22/93 7:35AM D/C inattention
10963 4/21/95 3:02PM D/C inattention
20867 7/5/95 4:45PM D/C inattention
32793 9/13/93 8:00AM D/C inattention
33776 9/13/94 3:16PM D/C vision obscurred
Z40916 6/25/94 4:45PM w/c unknown
15220 4/12/94 11:44AM D/C fail to yield
13047 9/22/95 5:00PM D/C fail to yield
09833 9/22/95 3:00PM D/cloudy inattention
34044 9/27/93 4:25PM w/c unsafe lane change
32744 9/13/93 2:30PM D/C improper turn
33696 10/25/95 4:28PM D/C inattention
25800 8/17/95 5:45PM D/C unknown
07169 2/20/95 9:50AM D/C inattention
00738 1/3/95 12:05PM w/c inattention
01250 1/13/93 12:25PM D/cloudy improper turn
36266 11/14/95 5:00PM w/c fail to yield
32094 9/22/93 5:00PM D/C physical impairment
11236 12/1/91 11:45AM D/C other unknown


Larrabee St
9090
#132 Exxon
N/c
04659 2/4/96 11:32A D/c inattentic
21503 6/20/97 6:10P D/C1
no improper action
19064 5/30/96 2:15P D/C1 f.t.y.
16092 5/1/97 6:15P D/C1 fail to yeild
#150
36357 10/25/96 2:50P D/C fail to yeild
30150 9/4/96 5:36P D/C fail to yeild
20552 6/13/96 2:40P D/C vision obst
#190 Mark's Show Place
N I
Portland
Link # 6307-9090
Study Period 1996-1
# of Accidents - 28
20740 6/14/97 8:30P D/C H.t + Run
11768 3/18/96 6:45P D/C inattention
37396 11/2/96 11:30A D/C inattention
16208 5/3/96 3:33P D/C1 inattention
25718 7/27/96 6:49P D/R fail to yeild
21593 6/21/96 1:19P W/R inattention
32713 9/26/96 4:40P D/C improper lane change
37728 11/4/96 9:55A D/C improper lane change
14321 4/11/96 5:20P D/C fail to yeild
16845 5/10/96 4:14P W/C1 fail to yeild
06894 2/14/97 2:48P S/S fail to yeild
25430 7/20/97 3:19P D/C improper turn
22447 6/21/97 6:10P D/C fail to yeild
40082 11/21/96 4:43P D/C fail to yeild
35491 10/10/97 2:47P D/C fail to yeild
23926 7/8/97 1:20P D/C fail to yeild
03127 1/21/97 1:48P D/C inatt.
Riverside
10554 3/11/97 8:17A D/C inatt.
#155 Howard Johnsons
Verillos Rest.
17613 2/8/97 12:45P D/C inatt.
04221 10/4/97 8:31A W/R fail to yeild
Exit #8
Keenan's
6307
Riverside Ct
4158 7/9/97 12:50P D/C1 fail to yeild


6
2
7
P
NODE
RR 6309
20 (104)
4
12
1, 13
3, 10
16
14
24, 17
19
15
CAMPBELL ST.
18
8, 5
104
22
NODE
6307
RIVERSIDE
COURT

LOCATION Riverside - Wethersfield to Exit 29 TOWN Hartford

NODE NO(S) _____ SYSTEM _____ URBAN _____ RURAL _____ R/U ✓

YEARS REVIEWED 93~95 PREPARED BY DAF DATE PREPARED 7/21/97

NODE 6307-6309 [RR TRACKS (covered now)]

CRITICAL RATE FACTOR: _____ EQUIV. PROP. DAMAGE ACC/YEAR: _____ ACC/MEV: _____

LIGHT CONDITIONS
1 DARK
2 DAYLIGHT
3 DUSK
4 DARK (STREET LIGHTS ON)
5 DARK (NO STREET LIGHTS)
6 DARK (STREET LIGHTS OFF)
7 OTHER

ROAD CONDITIONS
1 DRY
2 WET
3 SNOW, SLUSH - SANDED
4 ICE, PACKED SNOW - SANDED
5 MUDDY
6 DESERVE
7 OILY
8 SNOW, SLUSH - NOT SANDED
9 ICE, PACKED SNOW - NOT SANDED
10 OTHER

APPARENT PHYSICAL CONDITION
1 NORMAL
2 UNDER THE INFLUENCE
3 HAD BEEN DRINKING
4 HAD BEEN USING DRUGS
5 ASLEEP
6 FATIGUED
7 ILL
8 HANDICAPPED
9 OTHER

APPARENT CONTRIBUTING FACTORS
1 NO IMPROPER ACTION
2 FAIL TO YIELD RIGHT OF WAY
3 ILLEGAL, UNSAFE SPEED
4 FOLLOW TOO CLOSE
5 DISREGARD TRAFFIC CONTROL DEVICE
6 DRIVING LEFT OF CENTER - NO PASSING
7 IMPROPER PASS - OVERTAKING
8 IMPROPER UNSAFE LANE CHANGE
9 IMPROPER PARKING, START, STOP
10 IMPROPER TURN
11 UNSAFE BACKING
12 NO SIGNAL OR IMPROPER SIGNAL
13 IMPEDING TRAFFIC
14 DRIVER INATTENTION - DISTRACTION
15 DRIVER INDIFFERENCE
16 PEDESTRIAN VIOLATION ERROR
17 PHYSICAL IMPAIRMENT
18 VISION OBSCURED - WINDSHIELD GLASS
19 VISION OBSCURED - SUN, HEADLIGHTS
20 OTHER VISION OBSCUREMENT
30 OTHER HUMAN VIOLATION FACTOR
31 HIT AND RUN
41 DEFECTIVE BRAKES
42 DEFECTIVE TIRE - TIRE FAILURE
43 DEFECTIVE LIGHTS
44 DEFECTIVE SUSPENSION
45 DEFECTIVE STEERING
50 OTHER VEHICLE DEFECT OR FACTOR
51 UNKNOWN

INJURY TYPE
1 KILLED
2 INCAPACITATING
3 NON-INCAPACITATING
4 POSSIBLE INJURY
5 NO INJURY

TYLIN INTERNATIONAL

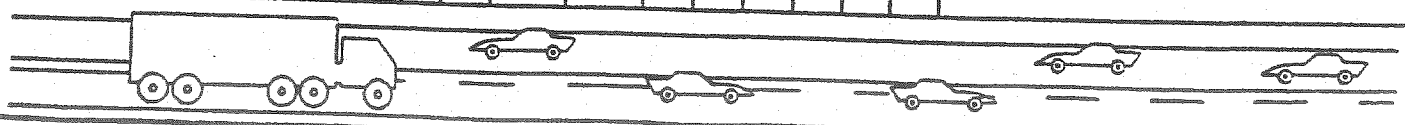
ITEM #	REPORT NUMBER	DATE	TIME	INJURIES #28				LIGHT COND. #8	ROAD COND. #9	CONTRIBUTING FACTOR				PHYSICAL CONDITION		OTHER
				1	2	3	4			#15	#16	#17	#18	#19	#20	
1		9/22/93	1715	5	5			2	1	1	4			1	1	11 1
2		2/22/93	1253	5	3			2	9	1	1			1	1	1 60
3		11/26/93	1931	4	5	5		4	1	1	2			1	2	1 6 left to Verillo's ?
4		12/27/93	1057	5	5	5/5	5/5	2	1	8	1			1	1	
5		12/5/94	1200	5	5	5		2	2	1	20			1	1	1 17
6		11/22/94	1115	5	5			2	1	2	1			1	1	6 1
7		12/3/94	0100	4				5	1	41		51		1		1 — HIT GR
8		10/10/94	1102	5	5	5	5	2	1	1	7	1	A	1	1	5 18
9		3/15/95	0100	5				4	1	30				2		99 — blew a tire
10		4/13/95	1718	5	5			2	2	10	1	20	1	1	1	6 1

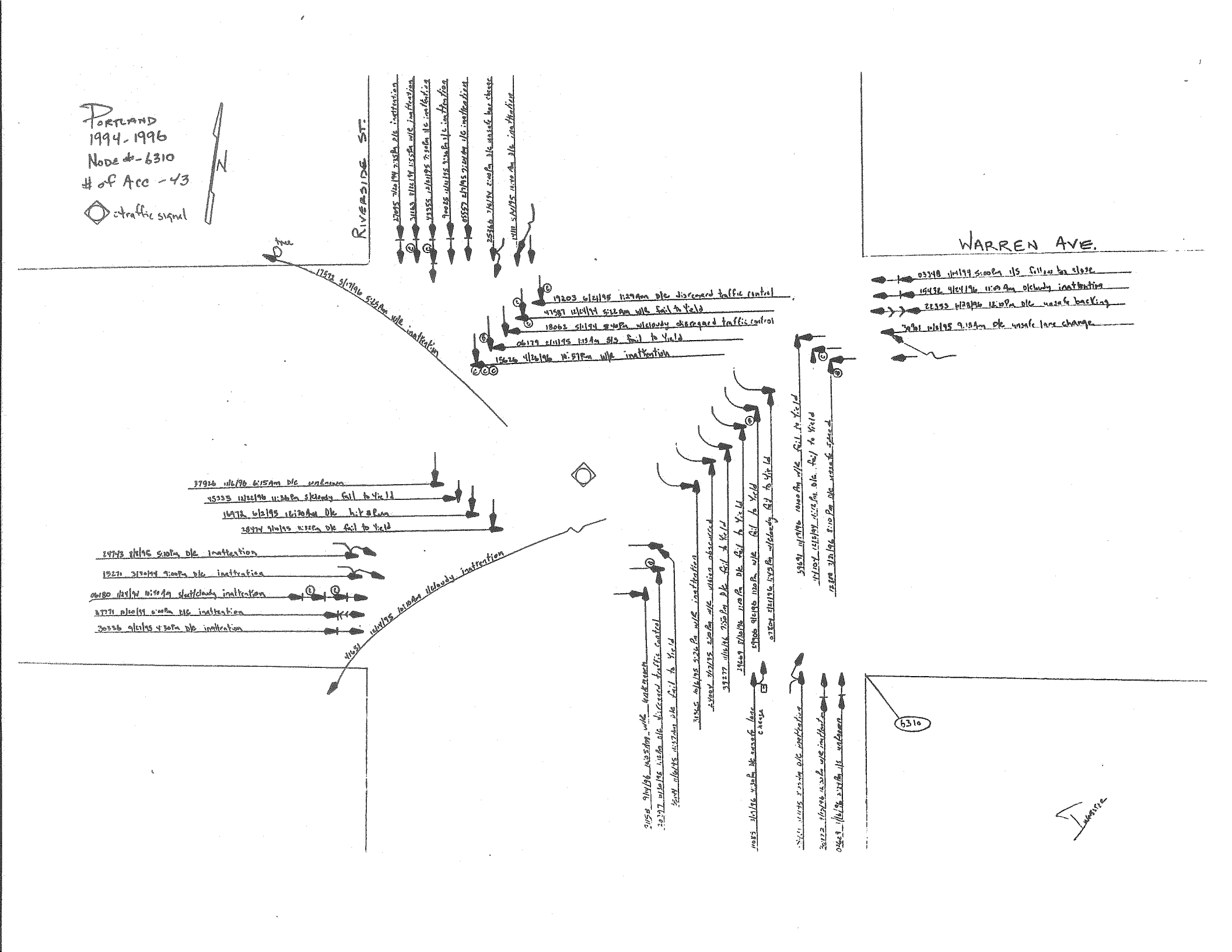
LOCATION KINGSIDE — SHEET 2 OF

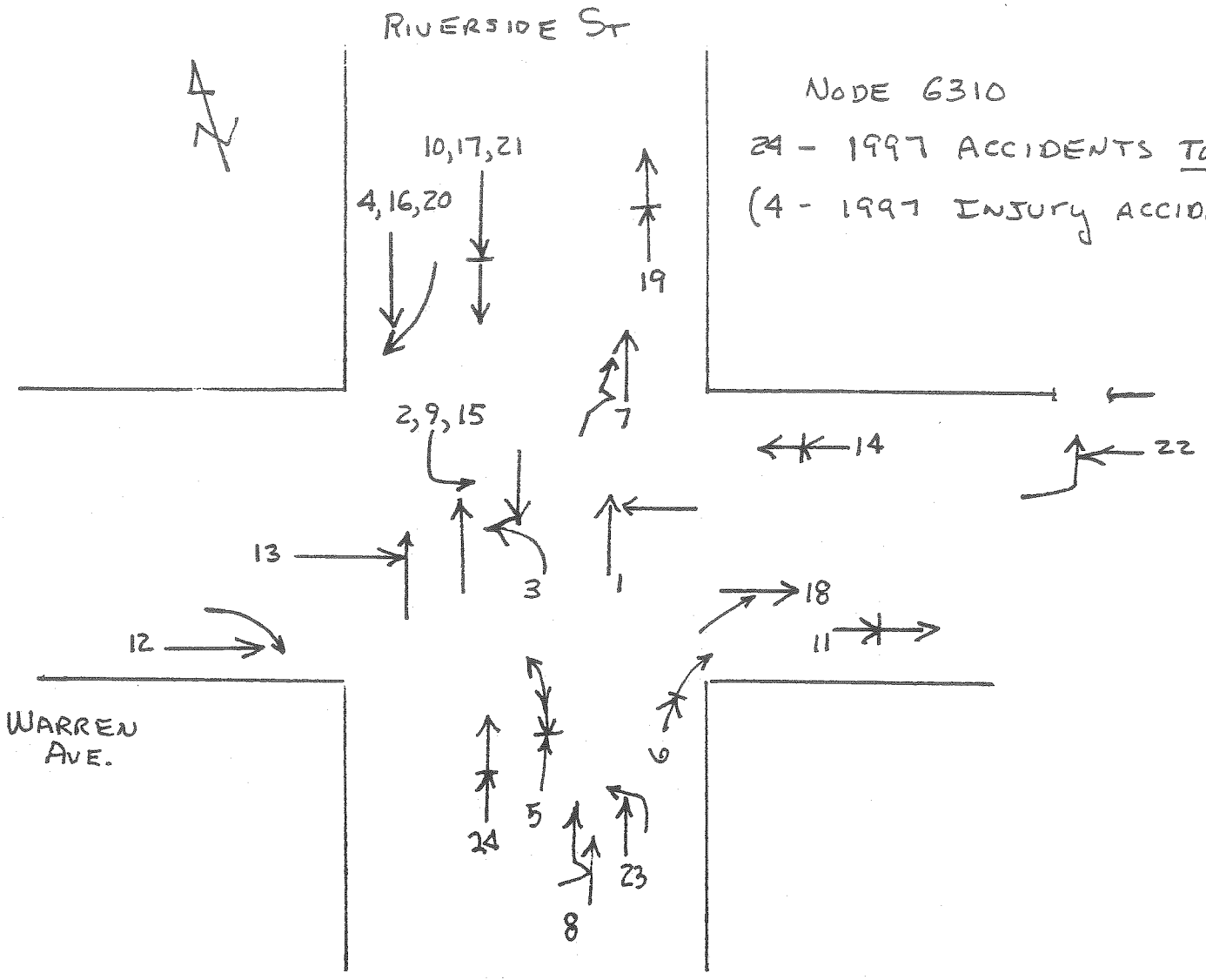
CODE NO(S) — SYSTEM — TOWN

YEARS REVIEWED — PREPARED BY — URBAN — RURAL — R/U — DATE PREPARED

ITEM #	REPORT NUMBER	DATE	TIME	INJURIES #28 1	2	3	4	LIGHT COND. #6	ROAD COND. #8	CONTRIBUTING FACTOR #15	#16	#17	#18	PHYSICAL CONDITION #19	#20	OTHER
11		8/24/95	0955	5	3			2	2	1	1			1	1	1 54 hit-run, hit ped
12		12/16/95	1541	5	5	5	5/5	4	4	10	1	14		1	1	6 1
13		5/3/95	1453	5	5	5		2	1	14	1			1	1	1 10
14	97-3C278	10/17/97	Fri 1500													ent Yo Accent X Cleaners
15	97-17866	5/6/97	Fri 1225													
16	97-08800	3/1/97	SAT 1230													
17	97 05401	2/3/97	Mon 1711													turning Yo #195 Riverside
18		10/17/96	Thu 1545	C												
19		11/22/96	FRI 1545													
20		11/26/96	TUE 1842	C												slush on road
21		7/31/96	WED 1255	B												
22		3/2/96	SAT 1530													icy road




PORTLAND
1994-1996
NODE #-6310
# of ACC - 43
traffic signal
N
RIVERSIDE ST.
WARREN AVE.
6310



① 9/28/97 M 0543 fl

② 12/4/97 Th 1818

③ 11/16/97 Sun 0510 fl (ICE)

④ 10/9/97 Th 2010 (TRAILER TRUCK)

⑤ 9/21/97 Sun 1350 (BACKING)

⑥ 12/30/97 Tue 1730

⑦ 9/1/97 M 1040 (merge)

⑧ 11/14/97 Fri 1740 (Trailer truck LANE CHANGE)

⑨ 8/20/97 W 0835

⑩ 7/22/97 Tue 1800 rear end

⑪ 7/2/97 W 1240

⑫ 7/8/97 Tue 1641

⑬ 7/2/97 W 1615 © rear ended

⑭ 6/10/97 Tue 1610 ®

⑮ 5/3/97 Sat 2000 ®

⑯ 5/13/97 Tue 1840

⑰ 4/16/97 W 1325 © (rear end)

⑱ 6/5/97 Thu 0750 (merge)

⑲ 4/7/97 Mon 0830

⑳ 2/12/97 Wed 1735 © (Trailer truck left turn)

㉑ 11/2/97 Sun 1247

㉒ 2/19/97 Wed 1713 (BLOCK VIEW)

㉓ 2/3/97 M 2000

㉔ 2/1/97 Sat 1752 (wet)

Department of Public Works

William J. Bray
Director

CITY OF PORTLAND

Mr. Bill Needleman
Planning Dept.
City of Portland
City Hall

May 10, 1999

RE: Portland Commons Development on Riverside St

Dear Bill:

The Traffic Impact Report for the Portland Commons development project on Riverside Street will need to also include the following:

1. An analysis of existing conditions in terms of Level of Service(LOS), delay, and capacity at these intersections:

   *RiversideSt/Larabee Rd/Exit 8
   *Riverside St/Home Depot
   *Riverside St/Warren
   *Proposed site

2. An accident review along the Riverside St corridor between and including the intersections of Exit 8 and Warren Ave. Conditions contributing to accidents should be identified.

3 A warrant analysis per MUTCD standards and criteria for the traffic signal at the proposed development site.

4. Whether or not there are any sight restrictions or problems related to the proposed development site.

5. An analysis of capacity and LOS for build-out conditions.

6. A scaled drawing of the Riverside St corridor between and including the intersections of Exit 8 and Warren Ave.

7. If the developer wishes to also use year 2002 for build-out design purposes the City asks that available data for future conditions for PACTS models for 2015 also be included.

Department of Public Works

William J. Bray
Director

CITY OF PORTLAND

8. A further explanation needs to be provided by the developer as to the justification for using 50% for pass-by trips instead of the 38% used in the preliminary traffic report.

9. The traffic report must comply with DEP requirements for developments that generate more than 200 trips per hour during the peak hour.

Should you have any questions please call me at 874-8894.

Sincerely,

Larry Ash
Traffic Engineer

cc. Bill Bray, Public Works Director
Joe Gray, Director of Planning
Alex Jaegerman, Planning

Department of Public Works

William J. Bray
Director

CITY OF PORTLAND

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4. Whether or not there are any sight restrictions or problems related to the proposed development site.

5. An analysis of capacity and LOS for build-out conditions.

6. A scaled drawing of the Riverside St corridor between and including the intersections of Exit 8 and Warren Ave.

7. If the developer wishes to also use year 2002 for build-out design purposes the City asks that available data for future conditions for PACTS models for 2015 also be included.

Department of Public Works

William J. Bray
Director

CITY OF PORTLAND

8. A further explanation needs to be provided by the developer as to the justification for using 50% for pass-by trips instead of the 38% used in the preliminary traffic report.

9. The traffic report must comply with DEP requirements for developments that generate more than 200 trips per hour during the peak hour.

Should you have any questions please call me at 874-8894.

Sincerely,

Larry Ash
Traffic Engineer

cc. Bill Bray, Public Works Director
Joe Gray, Director of Planning
Alex Jaegerman, Planning

Section 1

- **Stormwater Management/ Erosion & Sediment Control Narrative**
- **U.S.G.S. Map**
- **Soil Map**

TABLE OF CONTENTS

STORMWATER RUNOFF EVALUATION

Portland Commons Shopping Center
Portland, Maine
Revised May 4, 1999

General

The following Stormwater Management Plan has been prepared for the Waterford Group to evaluate runoff and erosion control for the proposed Portland Commons Shopping Center. The parcel, presently developed and operating as the Keenan Auction Center, is located on Riverside Street and is approximately 6.89 acres in size.

The development will include demolition of the existing building, redesign of traffic circulation and parking layout, construction of new buildings, and relocation of the existing detention/treatment pond.

Site Characteristics

The site is located on the eastern side of Riverside Street, north of the Howard Johnson's Hotel, and west of the Maine Turnpike. The property is presently developed with a building and parking lot.

Topography of the site generally slopes in an easterly direction from Riverside Street to the Maine Turnpike. Site drainage exits the site through two culverts (24" CMP and 48" RCP) under the Maine Turnpike.

Soils

Soils information used in the stormwater analysis was obtained from the Cumberland County Medium Intensity Soil Survey. The Cumberland County Medium Intensity Soil Survey Map indicates the predominant site soils as Au Gres. This soil is nearly level to gently sloping, somewhat poorly drained, and deep.

Watersheds and Stormwater Analysis

Based on the topography information, two study points will be analyzed during the pre and post-development conditions. The study points are the existing Turnpike culverts (mentioned above), as both currently accept drainage from this site. The site is divided into four watersheds in the pre development condition; five watersheds will occur in the post-development condition (see attached maps).

SUBCATCHMENT 3 WOODS AREA & CAMPBELL ST

PEAK= .15 CFS @ 12.34 HRS, VOLUME= .02 AF

ACRES	CN	
.38	55	WOODS, GOOD, B SOILS
.44	61	LAWN, B SOILS
.17	98	IMPERVIOUS
.99	65	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 2.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW Grass: Short n=.15 L=100' P2=3 in s=.01 '/'	LAWN AREA	13.4
SHALLOW CONCENTRATED/UPLAND FLOW Woodland Kv=5 L=60' s=.01 '/'	STREET & WOODS V=.5 fps	2.0
CHANNEL FLOW a=90 sq-ft Pw=29.8' r=3.02' s=.019 '/' n=.13 V=3.29 fps L=90' Capacity=296.3 cfs	Segment ID:	.5
	Total Length= 250 ft Total Tc=	15.9

SUBCATCHMENT 4 TIRE WAREHOUSE & CAMPBELL ST

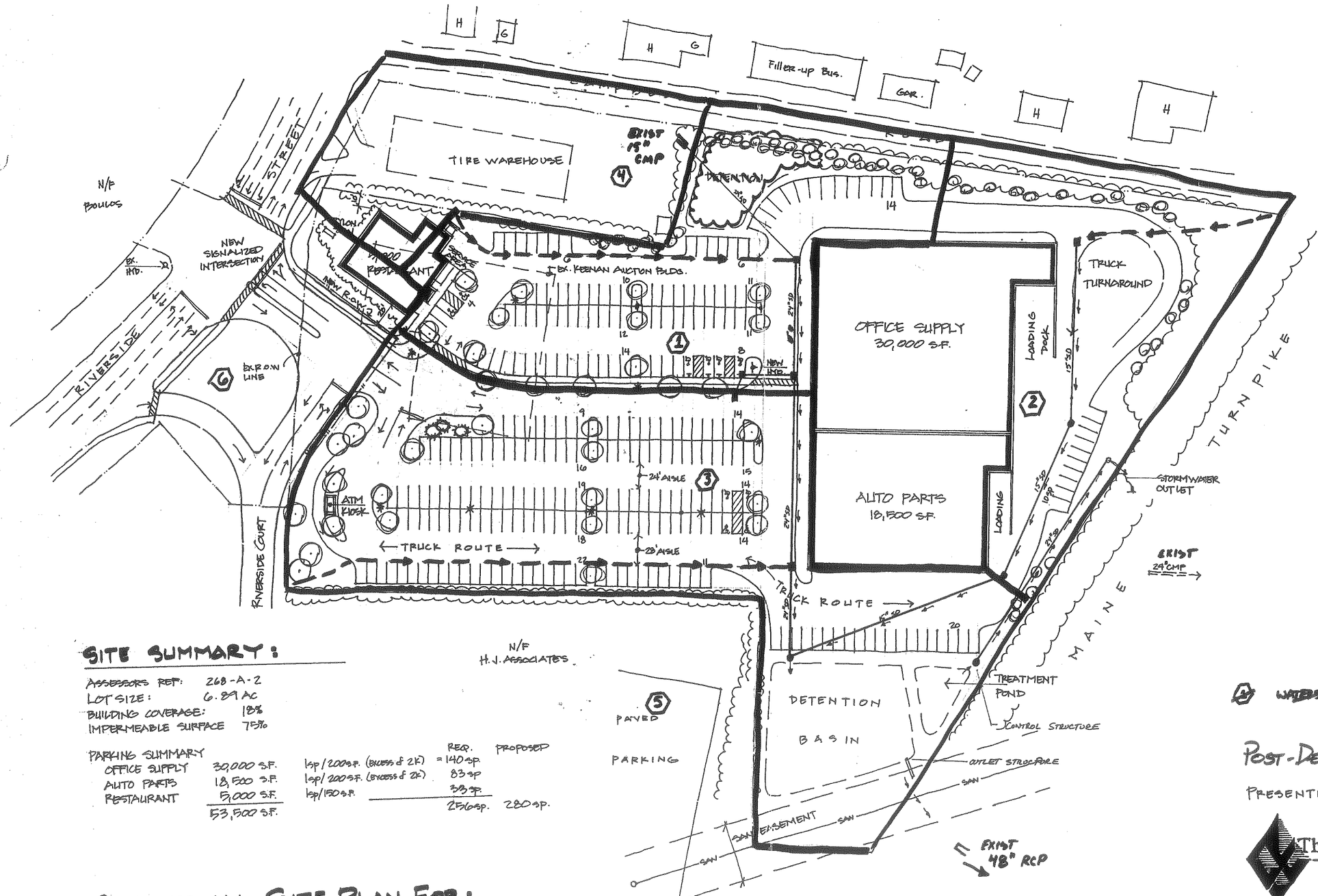
PEAK= 1.67 CFS @ 12.15 HRS, VOLUME= .14 AF

ACRES	CN	
1.03	98	IMPERVIOUS
.39	61	LAWN, B SOILS
.10	55	WOODS, GOOD
1.52	86	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 2.50 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW Grass: Short n=.15 L=40' P2=3 in s=.01 '/'	LAWN AREA	6.4
SHALLOW CONCENTRATED/UPLAND FLOW Grassed Waterway Kv=15 L=100'	ROADWAY DITCH s=.01 '/' V=1.5 fps	1.1
SHALLOW CONCENTRATED/UPLAND FLOW Woodland Kv=5 L=190' s=.01 '/'	WOODED SWALE ALONG ROAD V=.5 fps	6.3
	Total Length= 330 ft Total Tc=	13.8

D.4



SITE SUMMARY:

ASSESSORS REF: 268-A-2
LOT SIZE: 6.89 AC
BUILDING COVERAGE: 18%
IMPERMEABLE SURFACE 75%

PARKING SUMMARY			REQ.	PROPOSED
OFFICE SUPPLY	30,000 S.F.	1sp/200sp. (excess of 2K)	=140sp.	
AUTO PARTS	18,500 S.F.	1sp/200 S.F. (excess of 2K)	83sp	
RESTAURANT	5,000 S.F.	1sp/150 S.F.	33sp.	
	53,500 S.F.		256sp.	280sp.

WATERSHED

POST-DEVELOPMENT WATERSHED MAP

PRESENTED BY:

The Waterford Group

PREPARED BY: SEBAGO TECHNICS INC.
WESTBROOK, ME
JANUARY 20, 1999

SCALE 1"=40' JOB# 97622

CONCEPTUAL SITE PLAN FOR:

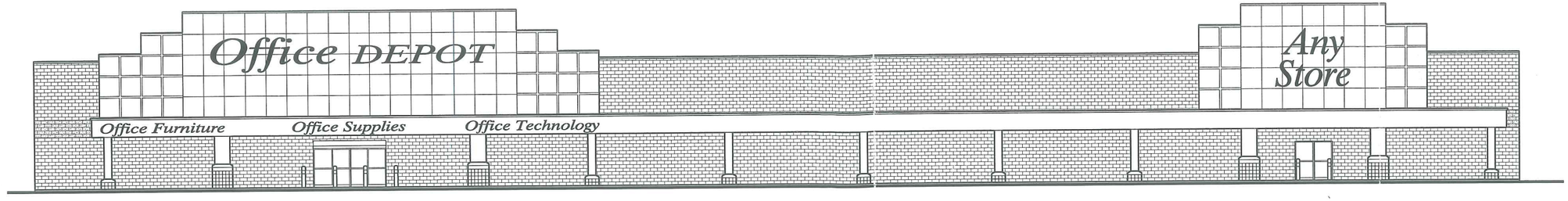
PORTLAND COMMONS SHOPPING CENTER

NORTH

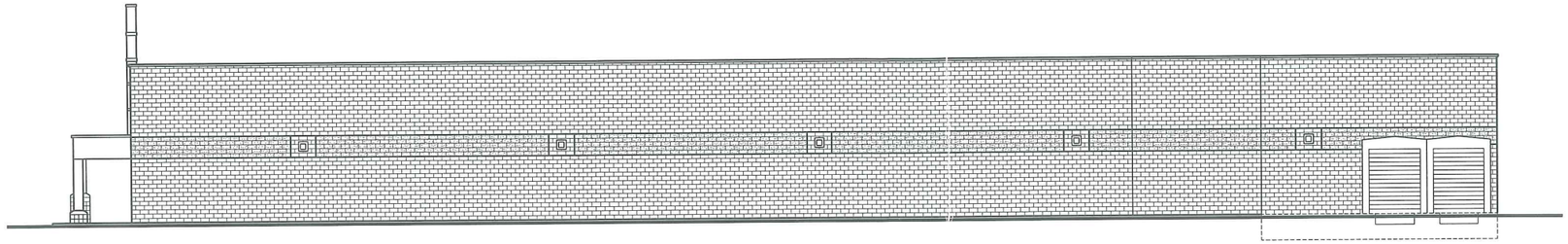
QUINLIVAN
PIERIK &
KRAUSE
ARCHITECTS
ENGINEERS
109 S. SALINA ST., P.O. BOX 33
SYRACUSE, NEW YORK 13201
TELEPHONE (315) 472-7020

QPK

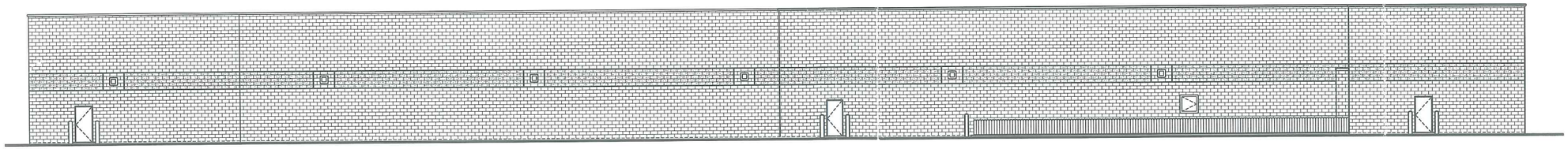
C3



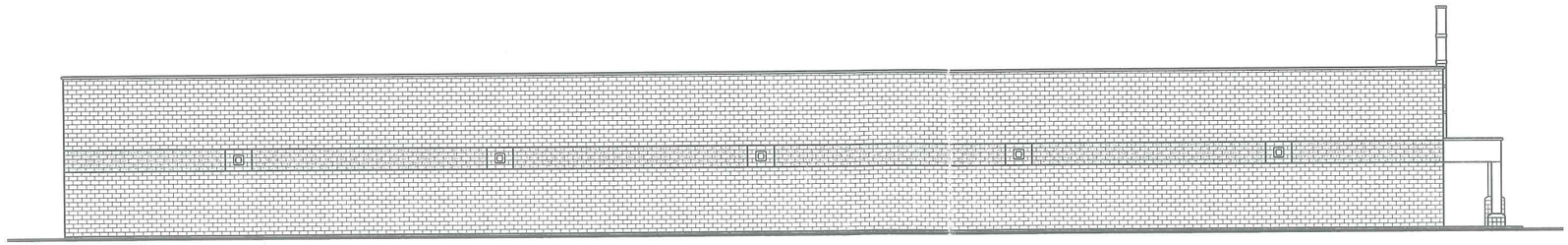
WEST ELEVATION



SOUTH ELEVATION



EAST ELEVATION



NORTH ELEVATION

PORTLAND COMMONS
PORTLAND, MAINE

WATERFORD GROUP
277 WEST FAYETTE STREET
SYRACUSE, NEW YORK

REVISIONS

PROJECT NO.
1-99107.00
DATE
MAY 14, 1999

ELEVATIONS

CASCO
CORPORATION
of CASCO Ltd

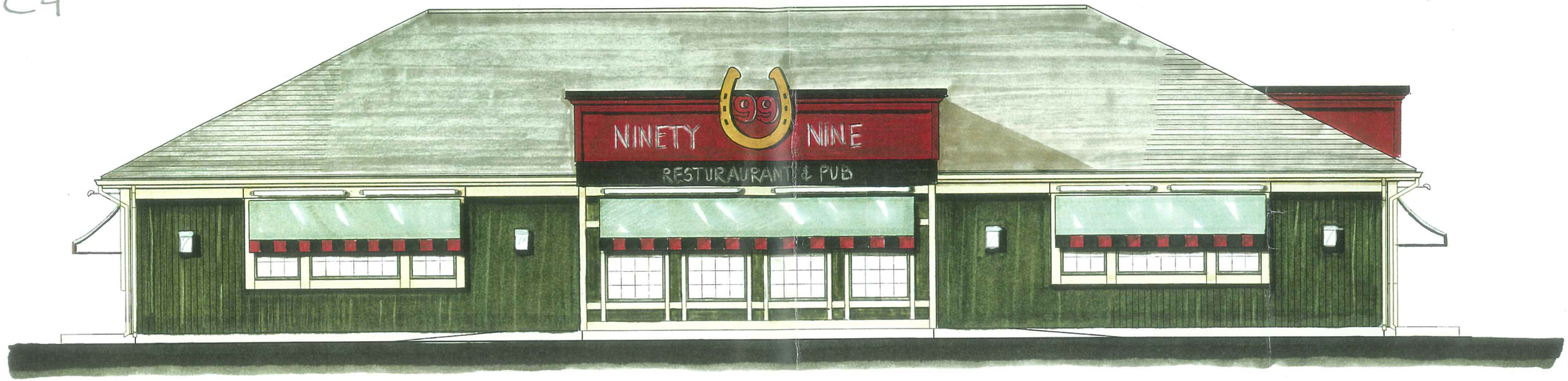
C2

Office Depot #400
N. Fort Myers, Florida

Office Depot #972
Salt Lake City, Utah

C4

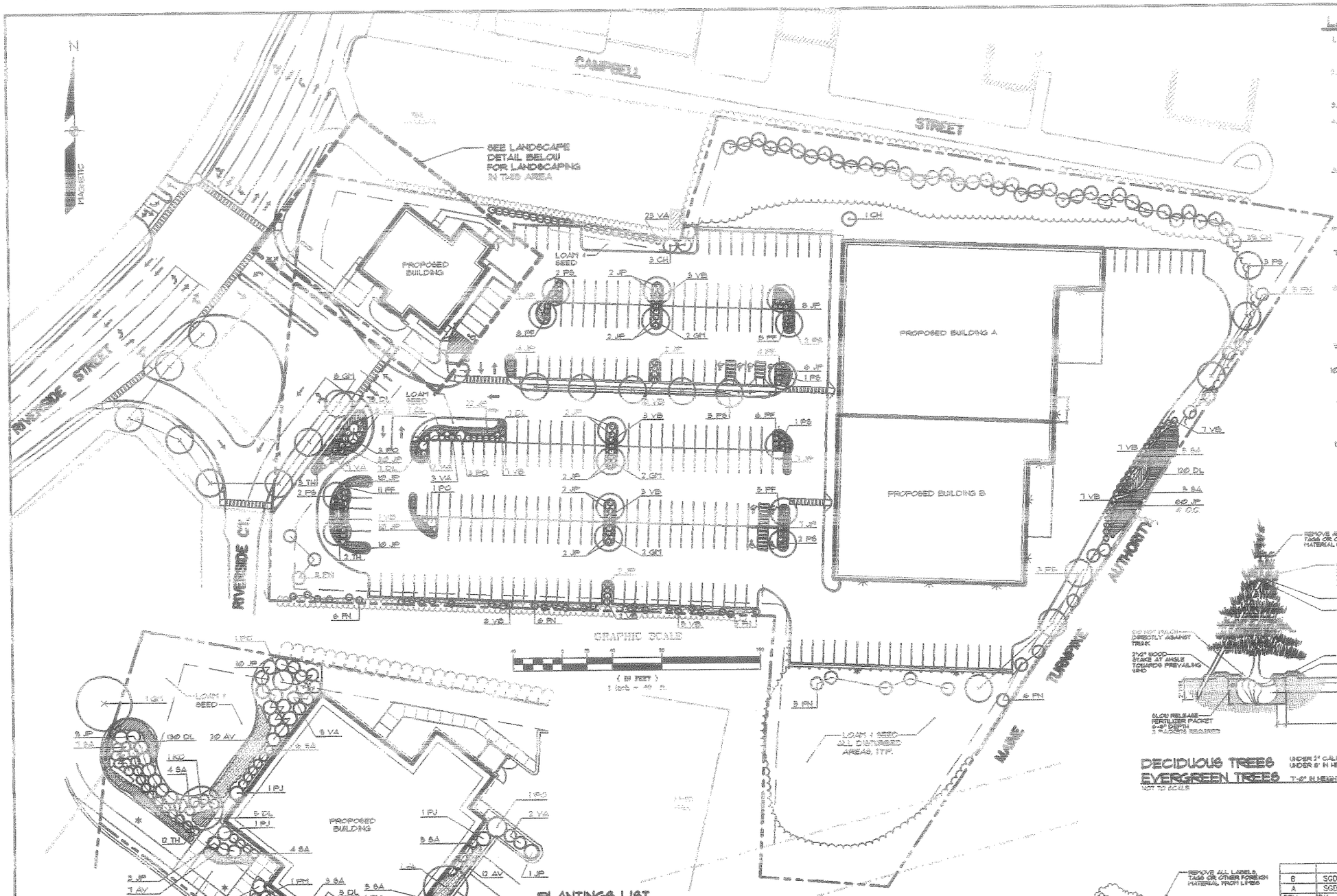
C4



A FRONT ELEVATION
NOT TO SCALE

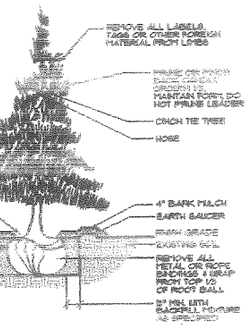
B RIGHT SIDE ELEVATION
NOT TO SCALE

B3

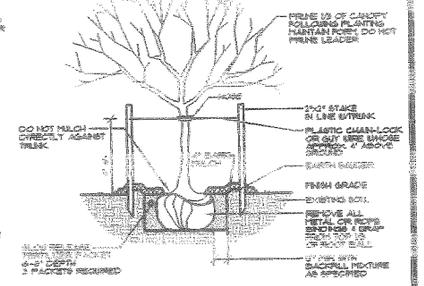


LANDSCAPE NOTES

1. PLANT QUANTITIES SHOWN ON PLANT LISTS ARE FOR CONVENIENCE TO THE CONTRACTOR ONLY. THE CONTRACTOR IS RESPONSIBLE FOR ALL PLANT MATERIAL INSTALLATION AS SHOWN ON PLANS.
2. SIZE AND SPACING STANDARDS OF PLANT MATERIALS SHALL CONFORM TO THE LATEST EDITION OF "U.S.A. STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
3. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.
4. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING, STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE BY THE OWNER.
5. PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR BY THE CONTRACTOR AND A PERIOD OF TWO YEARS THEREAFTER BY THE OWNER FROM DATE OF INSTALLATION. DURING THE ONE YEAR GUARANTEE PERIOD, DEAD PLANT MATERIAL SHALL BE REPLACED AT NO COST TO THE OWNER. AT THE END OF THE ONE YEAR PERIOD, THE CONTRACTOR SHALL OBTAIN FINAL ACCEPTANCE FROM THE OWNER.
6. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
7. EXISTING TREES TO BE PRESERVED WILL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
8. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF THE UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING ANY DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER.
9. ALL GARDEN BEDS SHALL BE FINISHED WITH 3" DUSKY SHREDDED BARK MULCH.
10. THE CONTRACTOR SHALL PROVIDE 4" LOAM FOR ALL AREAS TO BE SEEDED. THE LANDSCAPE CONTRACTOR SHALL COORDINATE SUBGRADE PREPARATION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.
11. ANY DEVIATION FROM THE LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY OR CONDITION SHALL BE REVIEWED AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT (AND MUNICIPAL AUTHORITY, IF APPLICABLE) PRIOR TO INSTALLATION ON SITE.
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR PERENNIAL AND ANNUAL FLOWER BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.



DECIDUOUS TREES — UNDER 2" CALIPER OR UNDER 8' IN HEIGHT
EVERGREEN TREES — 7'-0" IN HEIGHT & UNDER
NOT TO SCALE



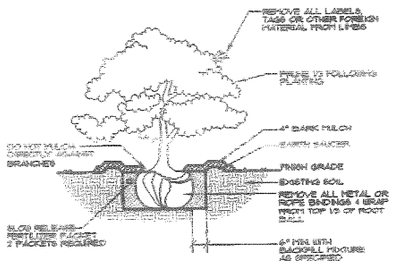
DECIDUOUS TREES — 2" TO 4" CALIPER
NOT TO SCALE

LANDSCAPE DETAIL

SCALE: 1"=20'

PLANTINGS LIST

KEY	BOTANICAL NAME	COMMON NAME	SIZE
CH	TSUGA CANADENSIS	CANADIAN HEMLOCK	6' HGT.
PN	PINUS NIGRA	AUSTRIAN PINE	6' HGT.
PF	POTENTILLA FRUTICOSA 'GOLDFINGER'	GOLD FINGER POTENTILLA	
PO	PICEA OMORIKA	SERBIAN SPRUCE	6'-8' HGT.
GH	ACER SACCHARUM 'GREEN MOUNTAIN'	GREEN MOUNTAIN SUGAR MAPLE	3½" CAL.
KD	CORNUS KOUSA	KOUSA DOGWOOD	2"-2½" CAL.
JP	JUNIPERUS HORIZONTALIS 'PLUMOSA YOUNGSTOWN'	YOUNGSTOWN ANDORRA JUNIPER	24"-30"
PS	PRUNUS SARGENTI	SARGENT CHERRY	2½" CAL.
VB	VIBURNUM X BURKWOODII	BURKWOOD VIBURNUM	2'-3'
VA	VIBURNUM X RHYTIDOPHYLLOIDES	ALLEGHANY VIBURNUM	2'-3'
TH	TAXUS X MEDIA 'HICKSII'	HICKS YEW	24"-30"
DL	HEMEROCALLIS STELLA 'D ORA	STELLA D. ORA DAYLILIES	NO. 1 CONT. 2 YR.
SA	SPIRAEA JAPONICA 'LITTLE PRINCESS'	LITTLE PRINCESS SPIRAEA	18"-24"
PJ	PIERIS JAPONICA 'VALLEY VALENTINE'	VALLEY VALENTINE ANDROMEDA	24"-30"
AV	ARCTOSTAPHYLOS UVA-URSI 'VANCOUVER JADE'	VANCOUVER JADE BEARBERRY	NO. 1 CONT.
PM	PINUS MUGHO 'PUMILO'	DWARF MUGO PINE	15"-18"
WP	PICEA ABIES 'PENDULA'	WEEPING NORWAY SPRUCE	5'-6' HGT.
AL	AMELANCHIER LAEVIS	ALLEGHENY SERVICEBERRY	8'-10' HGT.
TH	THUJA OCCIDENTALIS 'NIGRA'	DARK AMERICAN ARBORVITAE	5'-6' HGT.
FN	FORSYTHIA 'NORTHERN GOLD'	NORTHERN GOLD FORSYTHIA	2'-3' HGT.



DECIDUOUS & EVERGREEN SHRUB
NOT TO SCALE

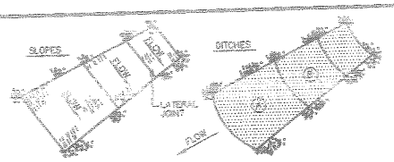
REV:	BY:	DATE:	STATUS:
B	SGD	4-23-99	INCREASE BUFFER PLANTINGS PER CITY COMMENTS
A	SGD	3-18-99	ISSUED FOR CITY REVIEW

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

LANDSCAPE PLAN
OF:
PORTLAND COMMONS SHOPPING CENTER
RIVERSIDE STREET
PORTLAND, MAINE
FOR:
WATERFORD OF PORTLAND, L.L.C.
PIPER PHILLIPS BUILDING, SUITE 204
227 WEST FAYETTE STREET
SYRACUSE, NY 13202

Sebago Technics
Engineering & Planning for the Future
12 WESTBROOK COMMON
WESTBROOK, ME 04092-1339
TEL. (207) 856-0277

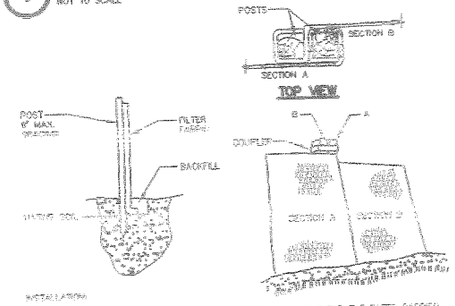
DESIGN BY:	SGD
DRAWN BY:	JLB
CHECKED BY:	SGD
DATE:	2-17-98
SCALE:	1"=40'
FIELD BK:	
PROJ. NO:	97622
DRAWING:	97622L
SHEET	S3



NOTES:

1. BURY THE TOP END OF THE MESH MATERIAL IN A 6" TRENCH AND BACKFILL AND TAMP TRENCHING SECURE END WITH STAPLES AT 6" SPACING, 4" DOWN FROM EXPOSED END.
2. FLOW DIRECTION JOINTS TO HAVE UPPER END OF LOWER STRIP BURIED WITH UPPER LAYERS OVERLAPPED 4" AND STAPLED. OVERLAP B OVER A.
3. LATERAL JOINTS TO HAVE 6" OVERLAP BY DOUBLE STAPLE 18" ON CENTER.
4. STAPLE OUTSIDE LATERAL EDGE 2' ON CENTER.
5. WIRE STAPLES TO BE MIN. OF ϕ 11 WIRE 8" LONG AND 1-1/2" WIDE.
6. USE NORTH AMERICAN GREEN DS 150 OR APPROVED EQUAL.

1 EROSION CONTROL BLANKET
NOT TO SCALE

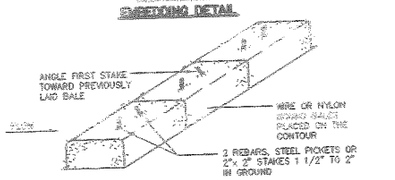


INSTALLATION

1. EXCAVATE A 6"± 6" TRENCH ALONG THE LINE OF PLACEMENT FOR THE FILTER BARRIER.
2. UNROLL A SECTION AT A TIME AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH.
3. DRIVE POSTS INTO THE GROUND UNTIL APPROXIMATELY 2" OF FABRIC IS LYING ON THE TRENCH BOTTOM.
4. LAY THE NOS-IN FLAP OF FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH. BACKFILL THE TRENCH AND TAMP THE SOIL. TOE-IN CAN ALSO BE ACCOMPLISHED BY LAYING THE FABRIC FLAP ON UNDISTURBED GROUND AND PILING AND TAMPING FILL AT THE BASE, BUT MUST BE ACCOMPANIED BY AN INTERCEPTION DITCH.
5. JOIN SECTION AS SHOWN ABOVE.
6. BARRIER SHALL BE WOVEN SILT FENCE OR EQUIV.

2 SILT FENCE
NOT TO SCALE

SWEEPING DETAIL

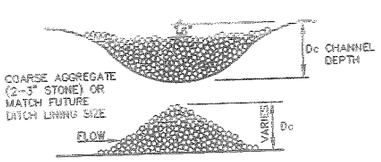


ANCHORING DETAIL

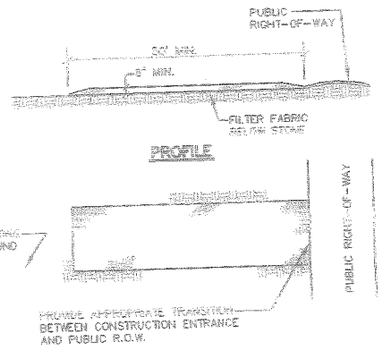
NOTES:

1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY STAKES OR REBARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

3 HAY BALE BARRIER
NOT TO SCALE



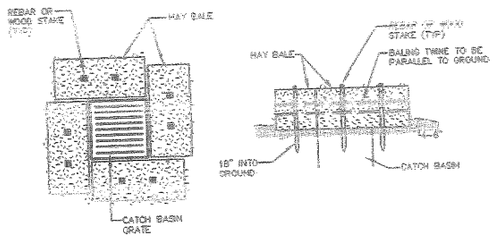
4 STONE CHECK DAM
NOT TO SCALE



NOTES:

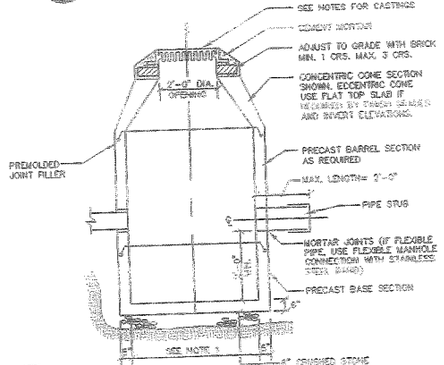
1. STONE SIZE- AASHTO DESIGNATION M43, SIZE NO. 2 (2 1/2" TO 1 1/2"). USE CRUSHED STONE.
2. LENGTH- AS SHOWN ON PLANS, MIN. 50 FEET.
3. THICKNESS- NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH- NOT LESS THAN FULL WIDTH OF ALL POINT OF INGRESS OR EGRESS.
5. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.

5 STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



NOTE: INSTALL BARRIER AT EACH CATCH BASIN

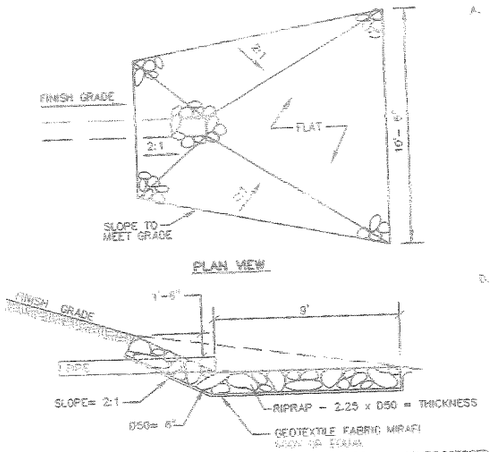
6 CATCH BASIN HAY BALE BARRIER
NOT TO SCALE



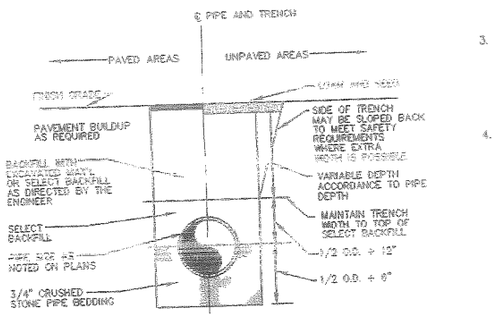
NOTES:

1. 4'-0" I.D. TYPICAL. SOME STRUCTURES MAY REQUIRE LARGER I.D. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. PIPE SIZES AND INVERTS AS NOTED ON PLANS.
4. CATCH BASIN FRAME AND GRATE TO BE ETHERIDGE FOUNDRY M248C OR APPROVED EQUAL.
5. DRAINAGE MANHOLE FRAME AND COVER TO BE ETHERIDGE FOUNDRY M248S OR APPROVED EQUAL. COVER SHALL BE MARKED "DRAIN".

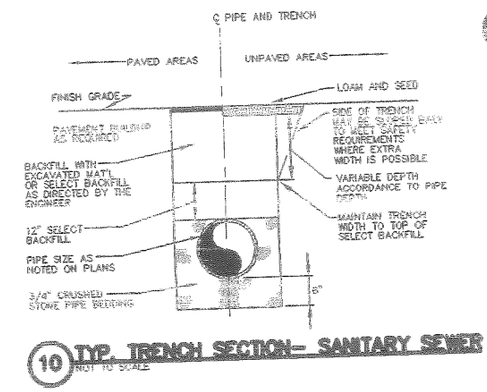
7 TYPICAL CATCH BASIN
NOT TO SCALE



8 RIPRAP APRON
NOT TO SCALE



9 TYP. TRENCH SECTION- STORM DRAINS
NOT TO SCALE



10 TYP. TRENCH SECTION- SANITARY SEWER
NOT TO SCALE

EROSION AND SEDIMENTATION CONTROL PLAN

A. PRE-CONSTRUCTION PHASE

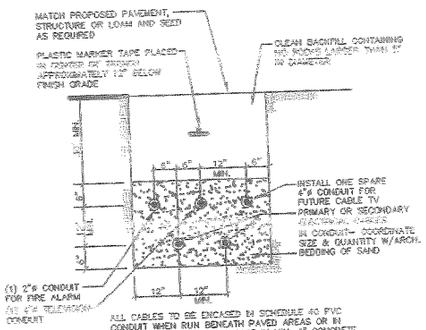
PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, HAY BALE BARRIERS/FILTER FABRIC FENCING SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR, AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND /OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. THE PLACEMENT OF SILT FENCES AND HAY BALES SHALL BE COMPLETED IN ACCORDANCE WITH DANIELSON ESTABLISHED IN BEST MANAGEMENT PRACTICES. THIS NETWORK IS TO BE PROVIDED, INSTALLED AND MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 85%-90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

PRIOR TO ANY CONSTRUCTION AT THE SITE, REPRESENTATIVES OF THE OWNER, SITE CONTRACTOR AND THE SITE DESIGN ENGINEER SHALL MEET WITH THE OWNER TO DISCUSS THE SCHEDULING OF THE SITE CONSTRUCTION.

THE FOLLOWING EROSION CONTROL MEASURES SHALL BE FOLLOWED BY THE SITE CONTRACTOR(S) THROUGHOUT CONSTRUCTION OF THIS PROJECT.

B. CONSTRUCTION AND POST-CONSTRUCTION PHASE

1. AREAS UNDERGOING ACTUAL CONSTRUCTION SHALL ONLY EXPOSE THAT AMOUNT OF MINERAL SOIL NECESSARY FOR PROGRESSIVE AND EFFICIENT SITE CONSTRUCTION AND SHALL NOT EXCEED 14 DAYS. AREAS THAT WILL NOT BE COMPLETED (COVERED AND/OR FINISH GRADED) WITHIN FOURTEEN (14) DAYS OF DISTURBANCE SHALL BE PROTECTED WITH TEMPORARY EROSION CONTROL WITHIN FOURTEEN (14) DAYS OF DISTURBANCE. AREAS WITHIN 100 FEET OF DELINEATED WETLANDS SHALL BE ESTABLISHED WITHIN SEVEN (7) DAYS OF DISTURBANCE. TEMPORARY EROSION CONTROL SHALL INCLUDE EROSION CONTROL MESH, NETTING, OR MULCH AND AS DIRECTED BY THE INSPECTING ENGINEER. IF DISTURBED AREAS DO NOT RECEIVE FINAL SEEDING BY SEPTEMBER 15TH OF THE YEAR OF CONSTRUCTION, THEN ALL DISTURBED AREAS SHALL BE HAY MULCHED AT A RATE OF 150 LBS. PER 1000 SQUARE FEET AND SEEDED WITH A WINTER COVER CROP OF RYE AT THE RATE OF 3 LBS./1,000 S.F. TO PROVIDE WINTER PROTECTION. THE HAY MULCH SHALL BE ANCHORED WITH A SUITABLE BINDER, SUCH AS RMB PLUS AND/OR SECURED WITH NETTING FOR WIND PROTECTION.
2. ALL TOPSOIL SHALL BE COLLECTED, STOCKPILED, SEEDED WITH RYE AT 3 LBS/1,000 S.F., AND MULCHED ON-SITE AND RE-USED AS REQUIRED. SILTATION FENCING SHALL BE PLACED DOWN GRADIENT FROM STOCKPILED LOAM. LOAM SHALL BE STOCKPILED AT LOCATIONS DELINEATED BY THE OWNER. DESIGNATED LOCATIONS SHALL BE DETERMINED PRIOR TO OR AT THE PRE-CONSTRUCTION MEETING.
3. ALL SILT FENCES AND/OR HAY BALE BARRIERS SHALL BE INSTALLED ACCORDING TO THIS PLAN. THESE SHALL BE MAINTAINED DURING DEVELOPMENT TO REMOVE SEDIMENT FROM RUNOFF WATER. ALL THE SILT FENCES SHALL BE INSPECTED AFTER ANY RAINFALL OR RUNOFF EVENT, MAINTAINED AND CLEANED UNTIL ALL AREAS HAVE AT LEASE 85%-90% VIGOROUS PERENNIAL VEGETATIVE OF GRASSES.
4. ALL AREAS SHALL BE SEEDED IN ACCORDANCE WITH THE FOLLOWING VEGETATION PLAN.



ALL CABLES TO BE ENCASED IN SCHEDULE 40 PVC CONDUIT WHEN RUN BENEATH PAVED AREAS OR IN PUBLIC RIGHT-OF-WAY. ENCASE IN MIN. 4" CONCRETE WHEN RUN IN PUBLIC RIGHT-OF-WAY.

11 TYP. UNDERGROUND CABLE INSTALLATION
NOT TO SCALE

C. VEGETATION PLAN

REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF CONSTRUCTION. DISTURBED AREAS SHALL BE MULCHED AND ANCHORED PRIOR TO ANY STORM EVENT. IF FINAL SEEDING CANNOT BE ACCOMPLISHED BY SEPTEMBER 15TH, THEN ALL DISTURBED AREAS SHALL BE HAY MULCHED AT A RATE OF 150 LBS PER 1,000 S. F. AND SEEDED WITH A WINTER COVER CROP OF RYE AT THE RATE OF 3 LBS/1,000 S.F. TO PROVIDE WINTER PROTECTION. HAY MULCH SHALL BE SECURED WITH A SUITABLE BINDER TO INCLUDE RMB PLUS AND /OR EROSION CONTROL NETTING AS DIRECTED BY THE OWNER/INSPECTION ENGINEER.

REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

1. FOUR INCHES OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 1" IN DIAMETER, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.
2. AGRICULTURAL LIMESTONE SHALL BE SPREAD AT THE RATE OF 3 TONS PER ACRE. 10-20-20 FERTILIZER SHALL BE APPLIED AT A RATE OF 600 LBS/ACRE. THESE SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING.
3. FOLLOWING SEED BED PREPARATION, SWALE AREAS, FILL AREAS AND BACK SLOPES SHALL BE SEEDED AT A RATE OF 4 LBS/1,000 S.F. TO A MIXTURE OF 35% CREEPING RED FESCUE, 30% RED TOP, 5% KENTUCKY BLUEGRASS, 10% PERENNIAL RYEGRASS, 20% ANNUAL RYEGRASS AND 5% WHITE DUTCH CLOVER. THE LAWN AREAS WILL BE SEEDED TO A PREMIUM TURF MIXTURE OF BLUEGRASS AND/OR FESCUE; SEEDING RATE OF 3 LBS. PER 1,000 SQUARE FEET.
4. HAY MULCH SHALL BE APPLIED TO ALL DISTURBED AREAS AT THE RATE OF 150 LBS. PER 1,000 SQUARE FEET, OR A HYDRO-APPLICATION OF ASPHALT, WOOD OR PAPER FIBER WILL BE APPLIED FOLLOWING SEEDING. A SUITABLE BINDER, SUCH AS RMB PLUS AND/OR EROSION CONTROL NETTING WILL BE USED ON HAY MULCH FOR WIND CONTROL.
5. HAY BALE BARRIERS AND/OR FILTER FABRIC BARRIERS WILL REMAIN IN PLACE UNTIL SEEDING HAVE BECOME 85%-90% ESTABLISHED AND THEN REMOVED WITHIN 10 DAYS.

D. CONSTRUCTION SCHEDULE

CONSTRUCTION WILL MOST LIKELY BEGIN IN SPRING 1999. THE FOLLOWING SCHEDULE HAS BEEN PREPARED BASED UPON AN ANTICIPATED CONSTRUCTION SCHEDULE FOR ROADWAY IMPROVEMENTS.

SCHEDULE

1.	ESTIMATED CONSTRUCTION TIME: 4 MONTHS	MAY 1, 1999 – OCT., 1999
2.	EROSION CONTROL MEASURES PLACED.	MAY 3, 1999
3.	SITE CLEARING, GRUBBING, EXCAVATION AND FILLING (ROADWAY CONSTRUCTION)	MAY 5, 1999 – JUNE 1999
4.	START FINAL/TEMPORARY SEEDINGS ON PREPARED AREAS.	MAY 15, 1999
5.	BIWEEKLY MONITORING OF VEGETATIVE GROWTH	MAY 30, 1999 – OCT., 1999
6.	RE-SEEDING OF AREAS, IF NEEDED.	MAY 30, 1999 – OCT., 1999
7.	MULCH SPREAD FOR WINTER EROSION CONTROL IF NEEDED.	OCT. 15, 1999
8.	REMOVAL OF EROSION CONTROL DEVICES.	JUNE, 2000

E. INSPECTIONS/MONITORING

MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. AFTER EACH RAINFALL, THE SITE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUING FUNCTION.

FOLLOWING THE TEMPORARY AND/OR FINAL SEEDINGS, THE CONTRACTOR SHALL INSPECT THE SITE SEMIMONTHLY UNTIL THE SEEDINGS HAVE BEEN ESTABLISHED. ESTABLISHED MEANS A MINIMUM OF 85%-90% OF AREAS VEGETATED WITH VIGOROUS GROWTH. RESEEDING SHALL BE CARRIED OUT BY THE CONTRACTOR WITH FOLLOW-UP INSPECTIONS IN THE EVENT OF ANY FAILURES UNTIL VEGETATION IS ADEQUATELY ESTABLISHED.

REV:	BY:	DATE:	STATUS:
A	SGD	3-18-99	ISSUED FOR CITY REVIEW

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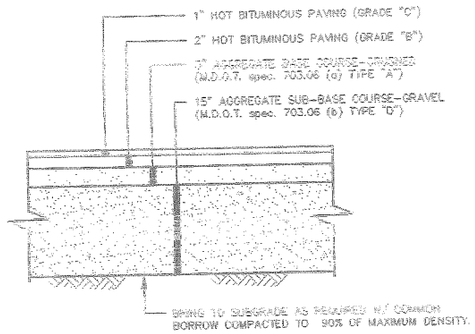
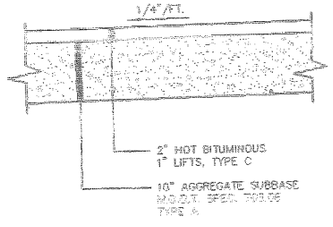
TEL. (207) 856-0277

DESIGN BY:	SG
DRAWN BY:	JU
CHECKED BY:	
DATE:	2-22-
SCALE:	AS SHO
FIELD BK:	
PROJ. NO:	9762
DRAWING:	9762
SHEET	D1

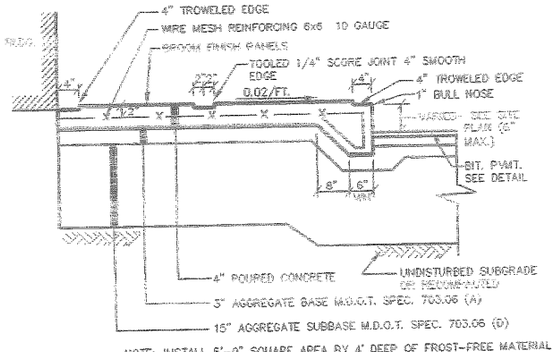


NOTE:
1. COMPACT GRAVEL SUB-BASE, BASE COURSE TO 92% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
2. CONTRACTOR SHALL SET GRADE STAKES MARKING SUB-BASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE.

1 TYPICAL PAVED PARKING LOT SECTION
NOT TO SCALE

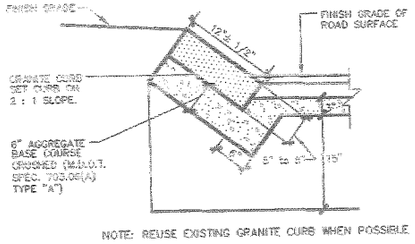


2 BITUMINOUS SIDEWALK
NOT TO SCALE



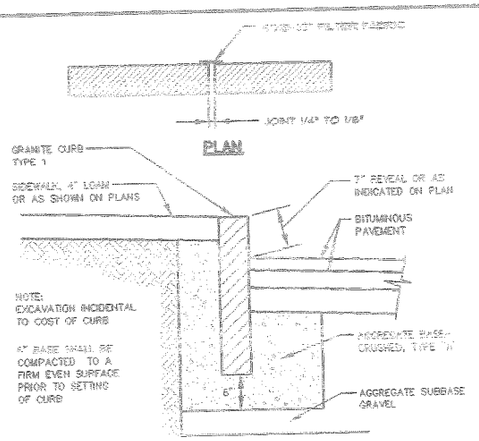
NOTE: INSTALL 5'-0" SQUARE AREA BY 4" DEEP OF FROST-FREE MATERIAL BELOW ALL HANDICAP RAMPS AND ENTRY POINTS AT BUILDING.

3 CONCRETE SIDEWALK
NOT TO SCALE

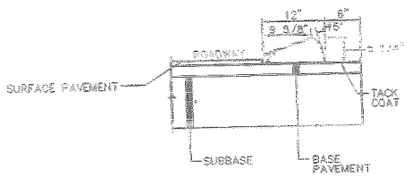


NOTE: REUSE EXISTING GRANITE CURB WHEN POSSIBLE

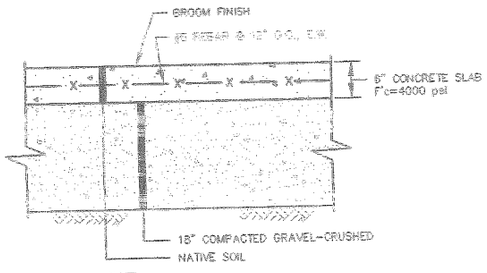
4 45° GRANITE CURB
NOT TO SCALE



5 VERTICAL GRANITE CURB
NOT TO SCALE

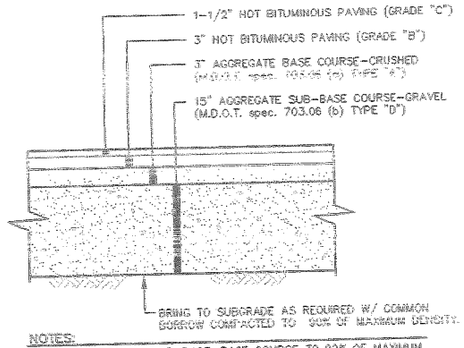


6 CAPE COD CURB
NOT TO SCALE



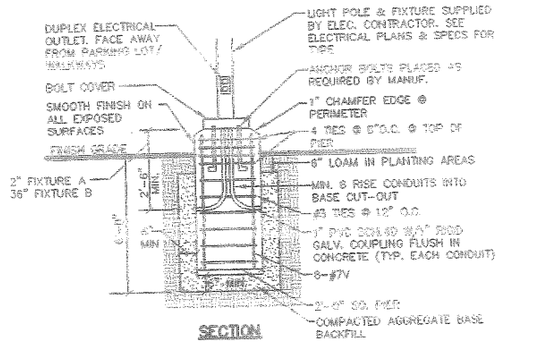
NOTE:
1. PROVIDE CONTRACTION CONTROL JOINTS EVERY 6' IN EACH DIRECTION

7 TYPICAL CONCRETE SLAB DETAIL
NOT TO SCALE



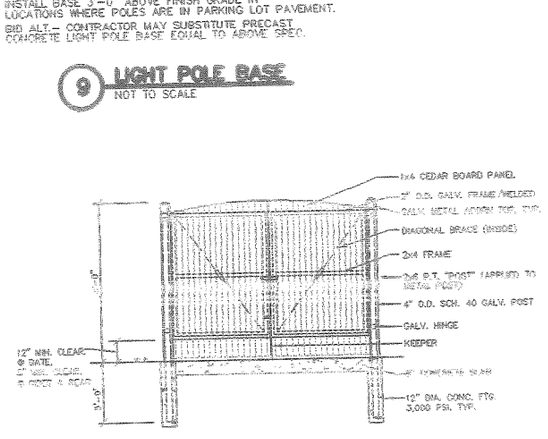
NOTES:
1. COMPACT GRAVEL SUB-BASE, BASE COURSE TO 92% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
2. CONTRACTOR SHALL SET GRADE STAKES MARKING SUB-BASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE.

8 HEAVY-DUTY BITUMINOUS PAVEMENT
NOT TO SCALE

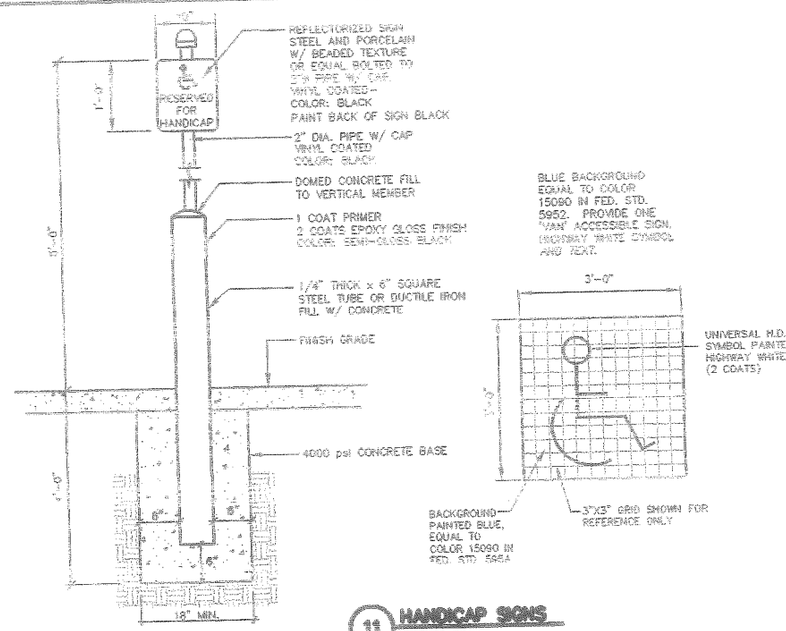


NOTES:
1. CONCRETE f'c=4000 psi.
2. REINF. STEEL GRADE 60 NEW BARS.
3. CONCRETE 3/4" ADD. @ 3/4" - 1" ENTRAINED AIR.
4. PROVIDE 2 COATS BITUMINOUS DAMPROOFING OR WRAP IN 3 LAYERS BLACK POLY FOR ALL CONCRETE BELOW GRADE.
5. INSTALL BASE 3'-0" ABOVE FINISH GRADE IN LOCATIONS WHERE POLES ARE IN PARKING LOT PAVEMENT.
6. BID ALT.- CONTRACTOR MAY SUBSTITUTE PRECAST CONCRETE LIGHT POLE BASE EQUAL TO ABOVE SPEC.

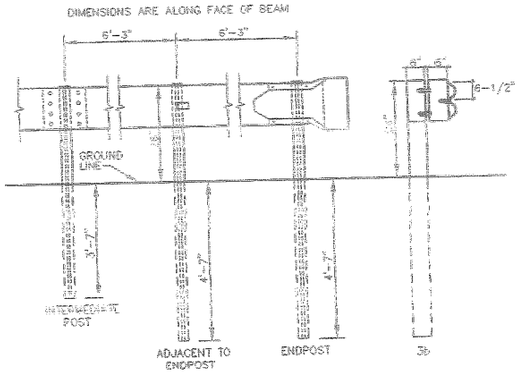
9 LIGHT POLE BASE
NOT TO SCALE



10 TYPICAL DUMPSTER ENCLOSURE
NOT TO SCALE



11 HANDICAP SIGNS
NOT TO SCALE



NOTES:
1. INTERMEDIATE POST SPACING SHALL BE 6'-3" UNLESS OTHERWISE SHOWN.
2. POSTS AND OFFSET BRACKETS FOR TYPE 3b GUARD RAIL SHALL BE W 6x9.
3. ALL PARTS TO BE HOT-DIP GALVANIZED AFTER FABRICATION.

12 METAL GUARDRAIL TYPE 3b
NOT TO SCALE

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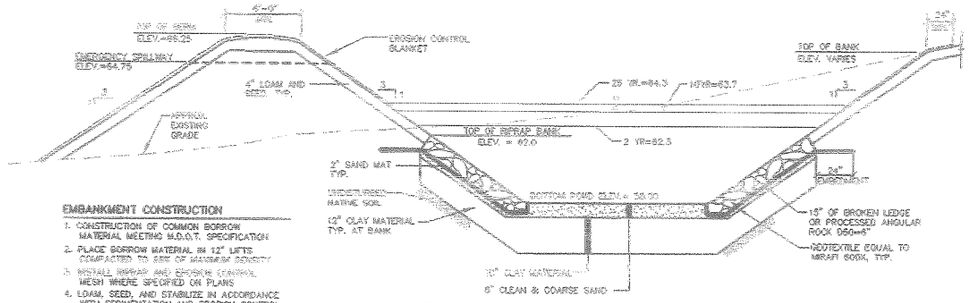
TEL. (207) 856-0277

DESIGN BY:	SGD
DRAWN BY:	JLB
CHECKED BY:	
DATE:	2-22-99
SCALE:	AS SHOWN
FIELD BK:	
PROJ. NO:	97622
DRAWING:	97622D2
SHEET	D2

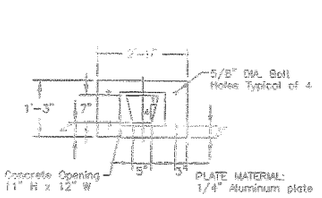
B6



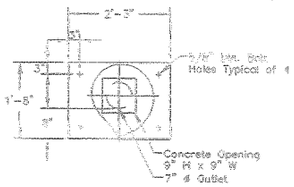
EMBANKMENT CONSTRUCTION

1. CONSTRUCTION OF COMMON BORROW MATERIAL MEETING M.D.O.T. SPECIFICATION
2. PLACE BORROW MATERIAL IN 12" LIFTS COMPACTED TO 95% OF MAXIMUM DENSITY
3. INSTALL RIPRAP AND EROSION CONTROL MESH WHERE SPECIFIED ON PLANS
4. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN.

1 TYP. DETENTION POND SECTION
NOT TO SCALE

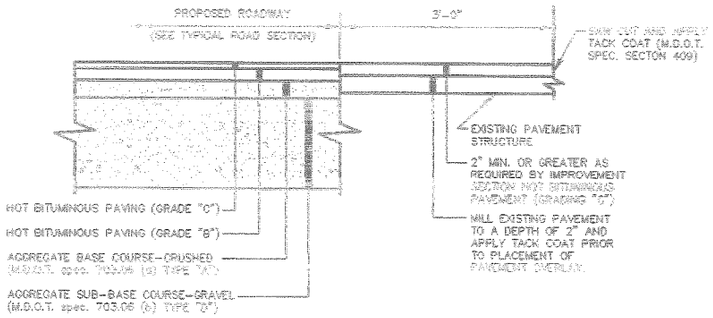


WEIR PLATE

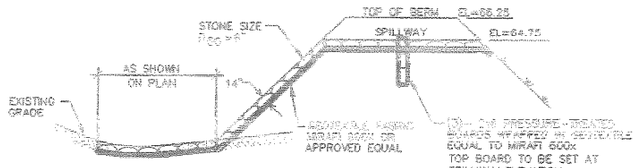


STEEL HYDRO-BRAKE w/ PLATE ATTACHMENT

2 FLOW CONTROL STRUCTURE IN VORTECHNICS UNIT
NOT TO SCALE



3 TYPICAL PAVEMENT JOINT
NOT TO SCALE



EMBANKMENT CONSTRUCTION

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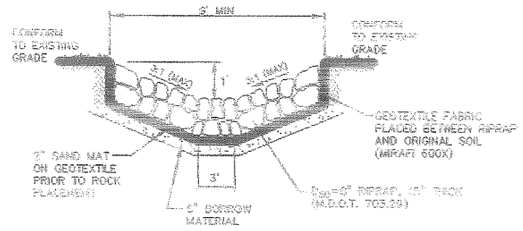
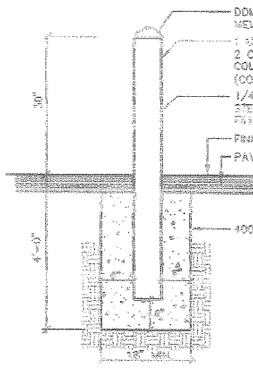
2. PLACE BORROW MATERIAL IN 12" LIFTS COMPACTED TO 95% OF MAXIMUM DENSITY
3. INSTALL RIPRAP AND EROSION CONTROL MESH WHERE SPECIFIED ON PLANS
4. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN.

2 SPILLWAY SECTION
NOT TO SCALE

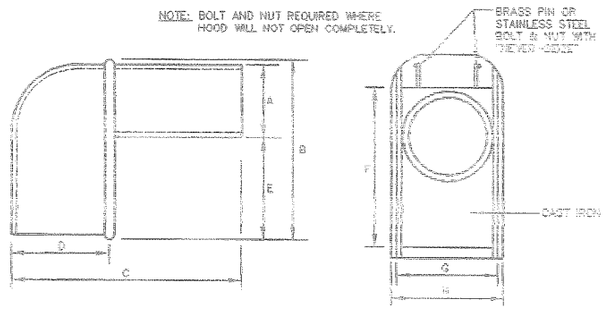


6 RIPRAP SWALE
NOT TO SCALE



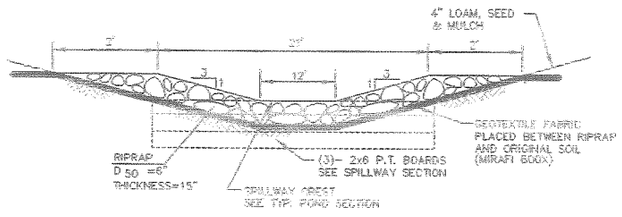
7 METAL BOLLARD
NOT TO SCALE

NOTE: BOLT AND NUT REQUIRED WHERE HOOD WILL NOT OPEN COMPLETELY.



SIZE	A	B	C	D	E	F	G	H
6 IN.	5 1/2"	13 3/8"	13 3/4"	5 3/8"	5 7/8"	11 5/8"	6 1/2"	7 1/4"
8 IN.	7 1/2"	14"	15 5/8"	6 1/2"	6 3/8"	13 3/4"	8 3/4"	9 3/8"
10 IN.	9 1/2"	16"	18 1/4"	8"	4 1/2"	14 1/8"	11 1/2"	12 3/8"
12 IN.	11 1/2"	17"	22"	8"	3 1/2"	17"	12 1/2"	13 3/8"

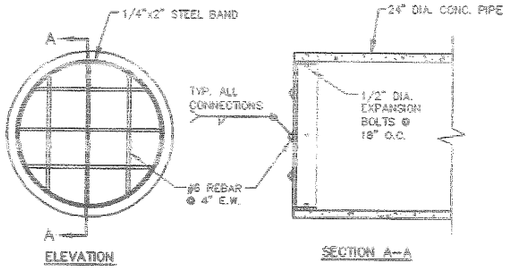
9 CASCO TRAP
NOT TO SCALE



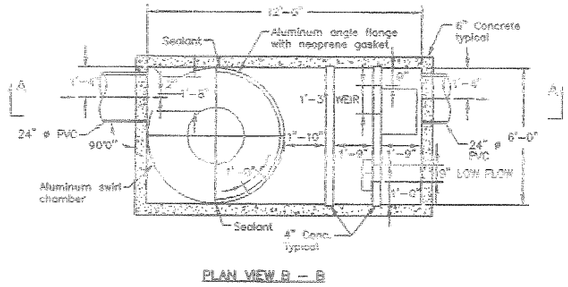
3 SPILLWAY CROSS-SECTION
NOT TO SCALE

DESIGN SPECIFICATIONS:

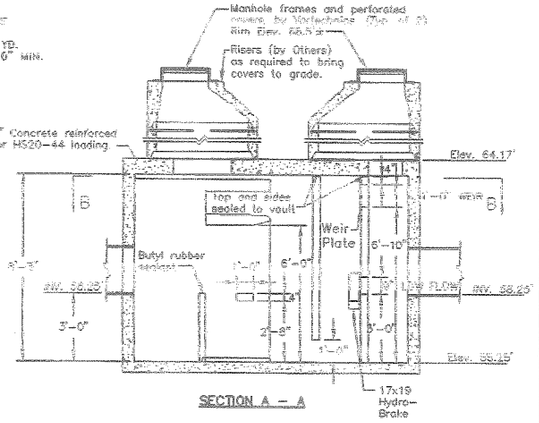
TREATMENT CAPACITY: 2.0 CFS
ON STORAGE: 7000 GALLONS
SEDIMENT STORAGE: 2.5 CU. YD.
SEDIMENT CHAMBER DIA.: 6'-0" MIN.



4 TRASH RACK
NOT TO SCALE



PLAN VIEW B - B



SECTION A - A

10 VORTECHNICS UNIT / MODEL 4000
NOT TO SCALE

REV:	BY:	DATE:	STATUS:
B	SGD	5-5-99	REVISED PER CITY COMMENTS
A	SGD	3-19-99	ISSUED FOR CITY REVIEW

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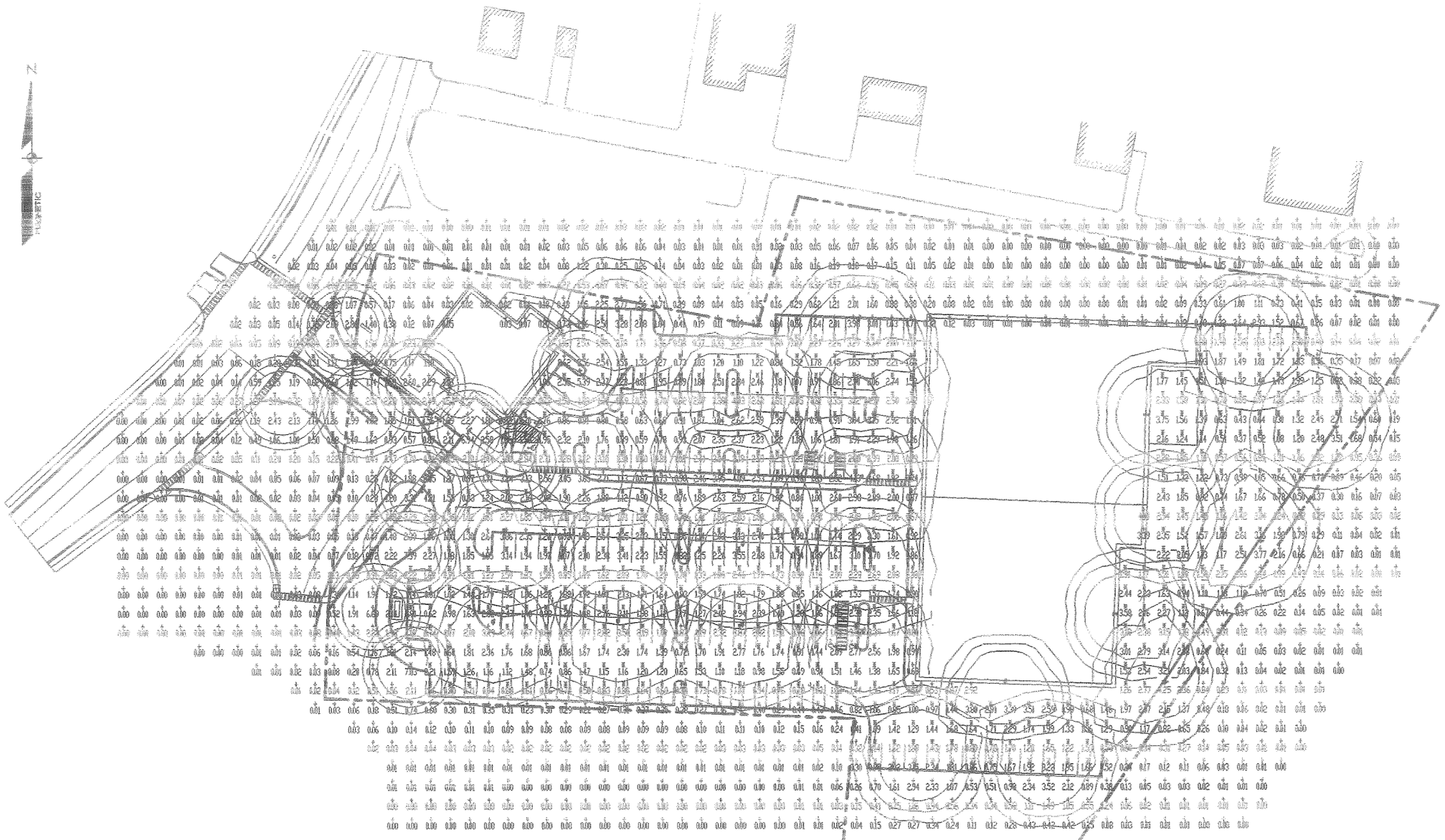
DRAWING:	97622D3
SHEET	03



CALCULATION SUMMARY

AREA NAME	DIMENSIONS	GRID NAME	AVG	MAX	MIN
PARTLAND COMMONS		GRID	(+) 0.4 (SD) 0.7	7.4 7.8	0.0 0.2

LUMINAIRE SCHEDULE

TYP	SYMBOL	DESCRIPTION	LAMP	LUMENS	MOUNTING/BALLAST	LLF	QTY
B5		AAL ALLEGHENY ① "AL5" ALLEGHENY	① M-175/U-HBR	13500	18'T ,	0.69	18
B4		XTM LIGHTING AR4/250HI ① "AR4" AR4/250MH/HX/	① MS-250/HBR	23000	22'T ,	0.78	13
B2		XTM LIGHTING AR3/250HI ① "AR3" AR3/250MH/HX/	① MS-250/HBR	23000	22'T ,	0.78	5
B3		XTM LIGHTING AR3/250HI ① "AR3" AR3/250MH/HX/	① MS-250/HBR	23000	22'T ,	0.78	3
V4		XTM LIGHTING WB884/250HI ① "WB8" WB884/250MH	① MS-250/HBR	23000	16'T ,	0.78	2
V2		XTM LIGHTING WB636/250HI ① "WBC" WB636/250MH	① MS-250/HBR	23000	16'T ,	0.78	1

REV:	BY:	DATE:	STATUS:
A	SGD	4-7-99	ISSUED FOR CITY REVIEW

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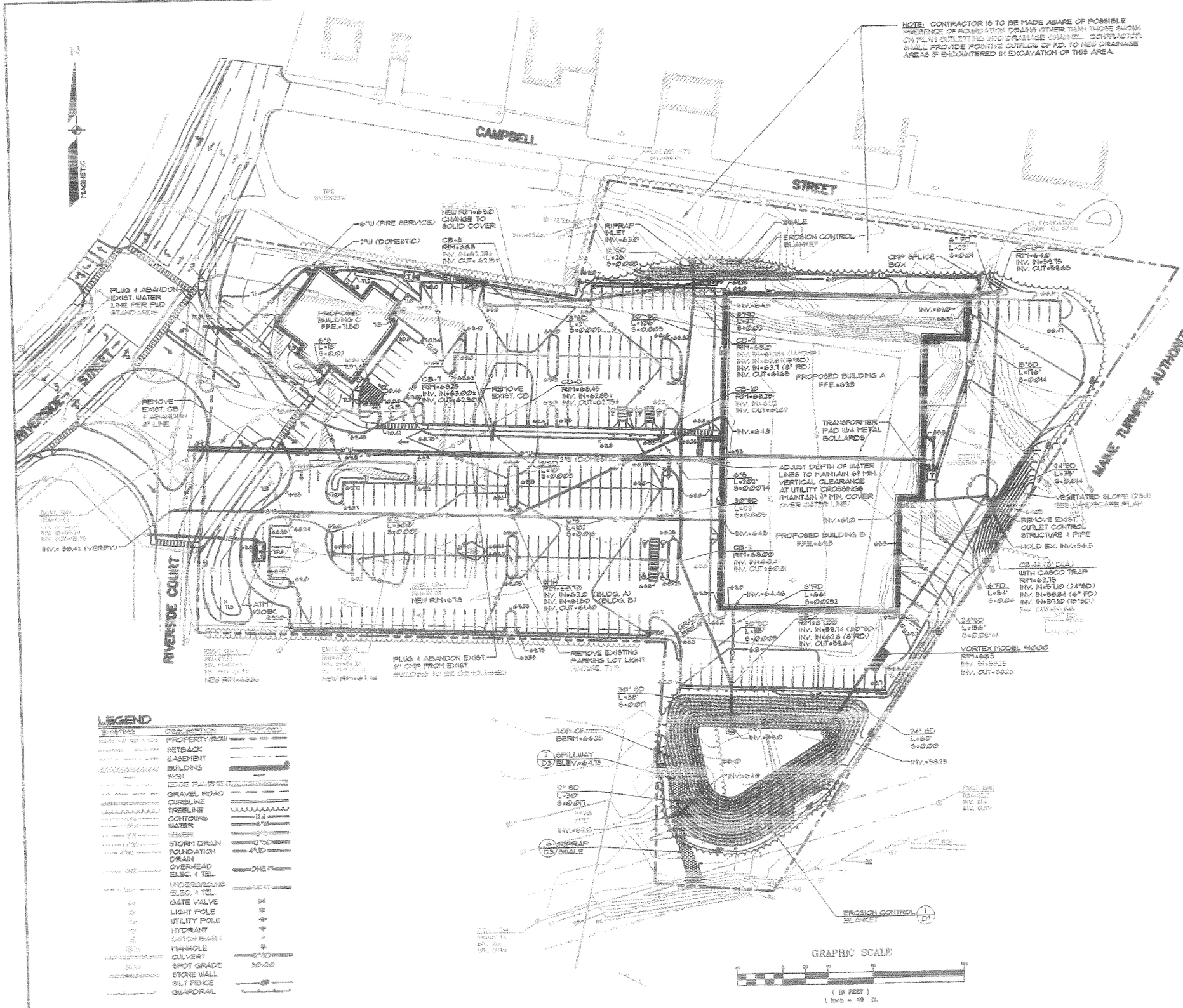
LIGHTING PHOTOMETRIC PLAN
OF:
PORTLAND COMMONS SHOPPING CENTER
RIVERSIDE STREET
PORTLAND, MAINE
FOR:
WATERFORD OF PORTLAND, L.L.C.
PIPER PHILLIPS BUILDING, SUITE 204
227 WEST FAYETTE STREET
SYRACUSE, NY 13202

Sebago Technics
Engineering & Planning for the Future
12 WESTBROOK COMMON
WESTBROOK, ME 04092-1339
TEL. (207) 856-0277

DESIGN BY:	HC
DRAWN BY:	BRF
CHECKED BY:	SGD
DATE:	4-7-99
SCALE:	1" = 40'
FIELD BK:	.
PROJ. NO:	97622
DRAWING:	97622LP
SHEET 1 OF 1	

B2



CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL PROVIDE ADEQUATE MEANS OF CLEANING MUD FROM TRUCKS AND/OR OTHER EQUIPMENT PRIOR TO ENTERING PUBLIC STREETS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CLEAN STREETS, ALLAY DUST, AND TAKE WHATEVER MEASURES ARE NECESSARY TO INSURE THAT THE STREETS ARE MAINTAINED IN A CLEAN, MUD AND DUST FREE CONDITION AT ALL TIMES.
2. INSTALL UNDERGROUND SERVICE IN SCHEDULE 40 PVC CONDUIT AT LOCATIONS WITHIN PAVED, GRAVEL, OR TRAFFIC AREAS. UNDERGROUND SERVICES IN CITY R.O.W. SHALL BE ENCASED IN CONCRETE.
3. EXISTING UTILITY LOCATIONS ARE APPROXIMATE BASED ON UTILITY OWNERS RECORDS, FIELD SURVEY, AND R.O.W. PLANS. CONTRACTORS SHALL CONTACT DIG SAFE AT LEAST THREE (3) BUT NOT MORE THAN THIRTY (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION TO VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITIES. CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE REQUIREMENTS OF 23 MRSA 3360-A.
4. CONTRACTOR SHALL PERFORM ALL CONSTRUCTION IN ACCORDANCE WITH CURRENT M.D.O.T. STANDARD SPECIFICATIONS AND CITY CONSTRUCTION STANDARDS.
5. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL INSPECT THE SITE FOR GENERAL CONDITIONS AND ANY SPECIAL REQUIREMENTS NECESSARY FOR PROJECT CONSTRUCTION. THESE COSTS SHALL BE INCLUDED IN CONTRACTOR'S BID.
6. CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN PROJECT CONSTRUCTION TO PROTECT EXISTING STRUCTURES, PHYSICAL FEATURES, AND MAINTAIN SITE STABILITY DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE ALL AREAS TO ORIGINAL CONDITION OR AS DIRECTED BY DESIGN DRAWINGS.
7. CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY ELECTRICAL SERVICES IN CONDUIT TO SITE LIGHTING COMPLYING WITH APPLICABLE CODES.
8. ALL WORK TO BE PERFORMED IN ACCORDANCE WITH EROSION AND SEDIMENT CONTROL PROVISIONS DEPICTED AND AS SPECIFIED ON PLANS.
9. SITE AND BUILDING CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.
10. ALL SEWER PIPE TO BE P.V.C. SDR 35. ALL OTHER REQUIRED DRAINAGE PIPE SHALL BE HDPE SMOOTH BORE.
11. PRIOR TO ANY CONSTRUCTION AT THE SITE, REPRESENTATIVES OF THE OWNER, SITE CONTRACTOR AND THE SITE DESIGN ENGINEER SHALL ARRANGE FOR AND MEET WITH THE DIRECTOR OF PUBLIC WORKS AND CITY ENGINEER TO DISCUSS THE SCHEDULING OF THE SITE CONSTRUCTION. ON OR BEFORE THAT MEETING, THE CONTRACTOR WILL PREPARE A DETAILED SCHEDULE AND MARKED-UP SITE PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK. IF DISTURBED AREAS ARE NOT TO BE FINISHED (LOAMED, SEEDED AND MULCHED) WITHIN FOURTEEN (14) DAYS, THE SCHEDULE SHALL INDICATE THOSE AREAS TO BE PROTECTED WITH TEMPORARY SEEDING/MULCH.
12. PRIOR TO CONSTRUCTION, THE SITE CONTRACTOR SHALL CONFIRM SETBACKS AND BUILDING DIMENSIONS WITH ARCHITECTURAL DRAWINGS. CONTRACTOR SHALL NOTIFY ENGINEER AND OWNER OF ANY DIFFERENCES AFFECTING BUILDING OR SITE CONSTRUCTION.
13. ALL FILLS SHALL BE PLACED IN LAYERS NOT MORE THAN 12" LOOSE DEPTH AND COMPACTED BY HEAVY COMPACTION EQUIPMENT. MINIMUM COMPACTION SHALL BE 95% OF MAXIMUM DENSITY ASTM D51, MODIFIED AND FIELD DENSITY ASTM D2922 (NUCLEAR METHODS).
14. IMMEDIATELY UPON COMPLETION OF CUTS/FILLS, THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH EROSION CONTROL NOTES AND SPECIFIED ON PLANS.
15. REMOVE TOPSOIL AND ROUGHEN SUBGRADE TO ESTABLISH SUITABLE INTERFACE FOR ALL FILLS.
16. SEWER MANHOLES SHALL BE VACUUM TESTED AND SANITARY LINES SHALL BE LEAKAGE TESTED PER CITY OF PORTLAND STANDARDS.
17. FILL AREAS UNDER PAVEMENT SHALL BE GRANULAR BORROW. ALL OTHER FILL AREAS SHALL BE A COMMON BORROW MATERIAL SUITABLE FOR EMBANKMENT CONSTRUCTION FREE FROM FROZEN MATERIAL, PERISHABLE SPONGY PEAT, ORGANICS, ROCKS LARGER THAN 12" IN DIAMETER, VEGETATION AND OTHER MATERIAL UNSUITABLE FOR ROADWAY AND SUBGRADE CONSTRUCTION. EXCAVATED ON-SITE MATERIALS MAY BE USED FOR FILL PROVIDED THE MATERIAL IS FREE FROM UNSUITABLE MATERIAL DESCRIBED IN THIS NOTE AND UPON APPROVAL OF THE ENGINEER. GRANULAR BORROW AND COMMON BORROW SHALL COMPLY WITH M.D.O.T. SPECIFICATIONS
18. CONTRACTOR SHALL INSTALL, WHERE CAN MEET GRADE EXISTING CATCH BASIN RIMS AS REQUIRED TO PROVIDE A SMOOTH INTERFACE WITH NEW PAVEMENT.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY/ROW	
	SETBACK	
	EASEMENT	
	BUILDING	
	EDGE PAVED SURFACE	
	GRAVEL ROAD	
	CURBLINE	
	TREELINE	
124	CONTOURS	124
	WATER	W
	SEWER	S
	STORM DRAIN	SD
	FOUNDATION DRAIN	FD
	OVERHEAD ELEC. & TEL.	OHE
	UNDERGROUND ELEC. & TEL.	UGT
	GATE VALVE	
	LIGHT POLE	
	UTILITY POLE	
	HYDRANT	
	CATCH BASIN	
	MANHOLE	
	CULVERT	
30.00	SPOT GRADE	30.00
	STONE WALL	
	SILT FENCE	SF
	GUARDRAIL	

REV:	BY:	DATE:	STATUS:
B	SGD	4-23-98	SHIFT BUILDING A 10' TO SOUTH
A	SGD	3-18-98	ISSUED FOR CITY REVIEW

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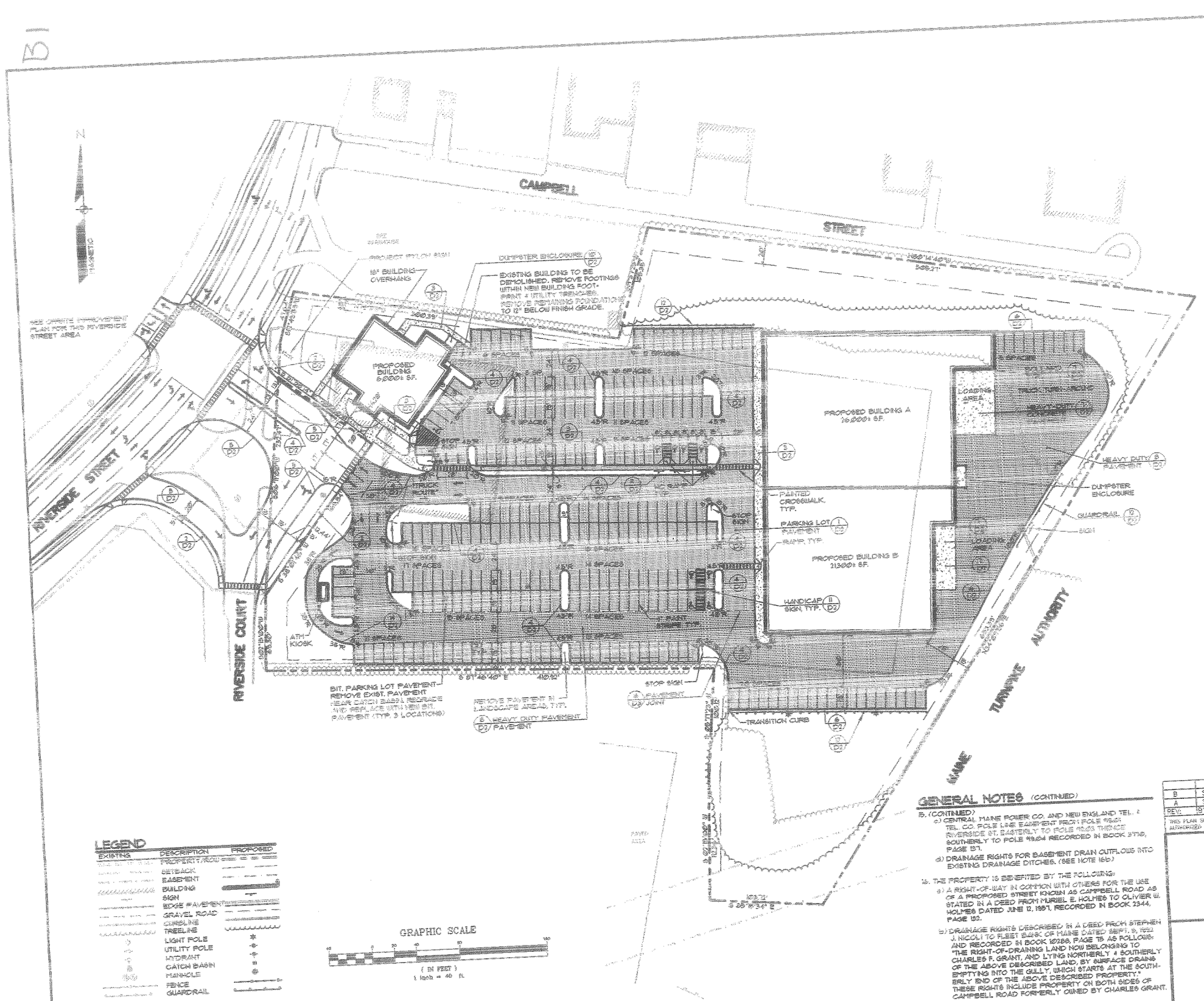
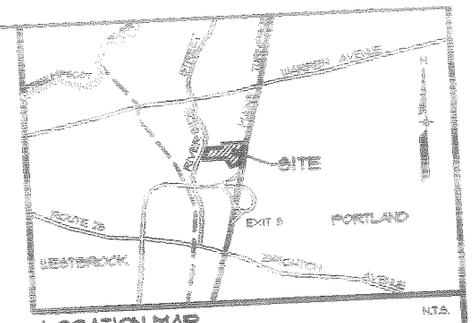
GRADING & UTILITY PLAN
OF:
PORTLAND COMMONS SHOPPING CENTER
191 RIVERSIDE STREET
PORTLAND, MAINE
FOR:
WATERFORD OF PORTLAND, L.L.C.
PIPER PHILLIPS BUILDING, SUITE 204
227 WEST FAYETTE STREET
SYRACUSE, NY 13202

Sebago Technics
Engineering & Planning for the Future
75 WESTBROOK COMMON
WESTBROOK, ME 04098-1339
TEL (207) 856-0277

DESIGN BY:	SGD
DRAWN BY:	JLB
CHECKED BY:	SGD
DATE:	2-17-98
SCALE:	1"=40'
FIELD BK:	167C
PROJ. NO:	97622
DRAWING:	97622GU
SHEET	S2





LOCATION MAP N.T.S.

GENERAL NOTES

1. RECORD OWNER: KEENAN AUCTION COMPANY RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK , PAGE .

   APPLICANT: WATERFORD OF PORTLAND, L.L.C.

2. ASSESSOR'S REFERENCE: TAX MAP 26B, LOT A-2

3. PLAN REFERENCES: TOPOGRAPHY: PERFORMED BY SEBAGO TECHNICS, INC 1993 AND 1998

4. TOTAL LOT AREA: 6.85 AC.

5. ZONING DISTRICT: COMMERCIAL CORRIDOR ZONE (B-4)

6. USE: EXISTING: AUCTION CENTER, RETAIL STORES / OFFICES PROPOSED: RETAIL, RESTAURANT

7. SPACE AND BULK REQUIREMENTS:

MINIMUM LOT SIZE:	10,000 S.F.
MINIMUM STREET FRONTAGE:	60 FEET
MINIMUM FRONT YARD:	25 FEET
MINIMUM SIDE YARD:	10 FEET
MINIMUM REAR YARD:	20 FEET
MINIMUM LOT WIDTH:	60 FEET
MAXIMUM BUILDING HEIGHT:	90 FEET
MAXIMUM IMPERVIOUS SURFACE:	80%

8. BUILDING SUMMARY:

	PROPOSED	EXISTING
	10,850 S.F.	
RETAIL:	6,000 S.F.	
RESTAURANT:	34,850 S.F.	19,285 S.F.
LOT COVERAGE:	68%	55%

9. PARKING SPACE REQUIREMENTS:

RETAIL: 1 SP/200 S.F. IN EXCESS OF 1,000 S.F.	229 SPACES
RESTAURANT: 1 SP/150 S.F.	33 SPACES
TOTAL REQUIRED:	262 SPACES
TOTAL PROPOSED:	266 SPACES

10. THE PROJECT WILL BE SERVICED BY UNDERGROUND ELECTRIC, TELEPHONE, CABLE, PUBLIC WATER AND SEWER.

11. WARNING SIGNS, MARKERS, BARRICADES OR FLAGMEN, APPROPRIATE FOR THE TYPE OF CONSTRUCTION, MUST BE EMPLOYED TO REGULATE TRAFFIC AND PEDESTRIANS.

12. ANY DAMAGE TO PUBLIC OR PRIVATE PROPERTY RESULTING FROM CONSTRUCTION ACTIVITIES SHALL BE REPAIRED BY THE DEVELOPER/ CONTRACTOR AT THEIR EXPENSE.

13. PROPERTY MARKERS AND STREET LINE MONUMENTS SHALL BE PROPERLY PROTECTED AT ALL TIMES DURING CONSTRUCTION TO INSURE THEIR INTEGRITY. IF DISTURBED, THEY SHALL BE REPLACED BY A SURVEYOR REGISTERED IN THE STATE OF MAINE AT THE CONTRACTOR/DEVELOPER'S EXPENSE.

14. BUILDINGS WILL BE SPRINKLERED.

15. EASEMENTS:

a) SEWER EASEMENT LOCATION OF THE CITY HOME BRANCH SEWER EXTENSION IS BASED ON FIELD LOCATION OF EXISTING MANHOLES AND THE 1980 PLAN BY ROBERT P. TITCOMB, INC. THIS EASEMENT IS FURTHER DESCRIBED IN AN EASEMENT DEED FROM DONALD S. GATE TO THE CITY OF PORTLAND DATED OCT. 4 1985 AND RECORDED IN BOOK 5788, PAGE 46.

b) CENTRAL MAINE POWER CO. AND NEW ENGLAND TEL. & TEL. CO. POLE LINE EASEMENT FORM POLE #83 RIVERSIDE ST. EASTERLY TO POLE #83 RECORDED IN BOOK 3346, PAGE 322.

GENERAL NOTES (CONTINUED)

15. (CONTINUED)

c) CENTRAL MAINE POWER CO. AND NEW ENGLAND TEL. & TEL. CO. POLE LINE EASEMENT FROM POLE #83A RIVERSIDE ST. EASTERLY TO POLE #83 THENCE SOUTHERLY TO POLE #84 RECORDED IN BOOK 3778, PAGE 157.

d) DRAINAGE RIGHTS FOR BASEMENT DRAIN OUTFLOWS INTO EXISTING DRAINAGE DITCHES. (SEE NOTE 16b)

16. THE PROPERTY IS BENEFITED BY THE FOLLOWING:

a) A RIGHT-OF-WAY IN COMMON WITH OTHERS FOR THE USE OF A PROPOSED STREET KNOWN AS CAMPBELL ROAD AS STATED IN A DEED FROM MURIEL E. HOLMES TO OLIVER W. HOLMES DATED JUNE 12, 1957, RECORDED IN BOOK 2344, PAGE 153.

b) DRAINAGE RIGHTS DESCRIBED IN A DEED FROM STEPHEN J. NICOLI TO FLEET BANK OF MAINE DATED SEPT. 9, 1992 AND RECORDED IN BOOK 10288, PAGE 75 AS FOLLOWS: "THE RIGHT-OF-DRAINING LAND NOW BELONGING TO CHARLES P. GRANT, AND LYING NORTHERLY & SOUTHERLY OF THE ABOVE DESCRIBED LAND, BY SURFACE DRAINS EMPTYING INTO THE GULLY, WHICH STARTS AT THE SOUTHERLY END OF THE ABOVE DESCRIBED PROPERTY." THESE RIGHTS INCLUDE PROPERTY ON BOTH SIDES OF CAMPBELL ROAD FORMERLY OWNED BY CHARLES GRANT.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY / ROW	
	SETBACK	
	EASEMENT	
	BUILDING	
	SIGN	
	EDGE PAVEMENT	
	GRAVEL ROAD	
	CURBLINE	
	TREELINE	
	LIGHT POLE	
	UTILITY POLE	
	HYDRANT	
	CATCH BASIN	
	MANHOLE	
	FENCE	
	GUARDRAIL	

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

REV:	BY:	DATE:	STATUS:
B	SGD	3-23-99	SHIFT BUILDING A 10' TO SOUTH
A	SGD	3-18-99	ISSUED FOR CITY REVIEW

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SITE PLAN OF PORTLAND COMMONS SHOPPING CENTER

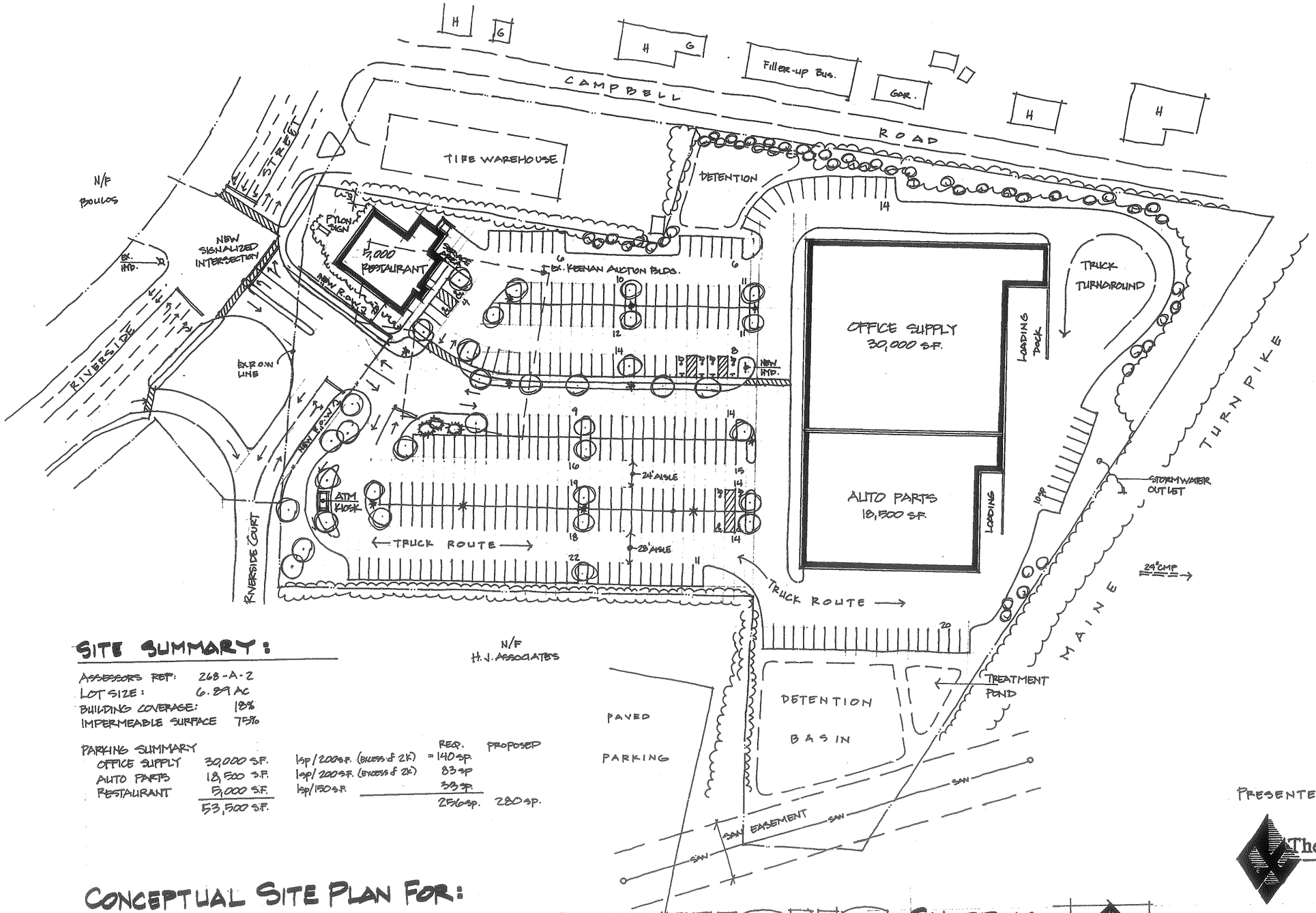
RIVERSIDE STREET
PORTLAND, MAINE
FOR:

WATERFORD OF PORTLAND, L.L.C.

PIPER PHILLIPS BUILDING, SUITE 204
227 WEST FAYETTE STREET
SYRACUSE, NY 13202

Sebago Technics
Engineering & Planning for the Future
12 WESTBROOK COMMON
WESTBROOK, ME 04098-1339
TEL. (207) 856-0277

DESIGN BY:	SGD
DRAWN BY:	JLB
CHECKED BY:	SGD
DATE:	2-17-98
SCALE:	1" = 40'
FIELD BK:	
PROJ. NO:	97822
DRAWING:	97822S1
SHEET	S1



SITE SUMMARY:

ASSESSORS REF: 268-A-2
LOT SIZE: 6.89 AC
BUILDING COVERAGE: 18%
IMPERMEABLE SURFACE 75%

PARKING SUMMARY			REQ.	PROPOSED
OFFICE SUPPLY	30,000 S.F.	1sp/200s.F. (EXCESS of 2K)	= 140 sp.	
AUTO PARTS	18,500 S.F.	1sp/200 S.F. (EXCESS of 2K)	83 sp	
RESTAURANT	5,000 S.F.	1sp/150 S.F.	33 sp.	
	53,500 S.F.		256 sp.	280 sp.

CONCEPTUAL SITE PLAN FOR:

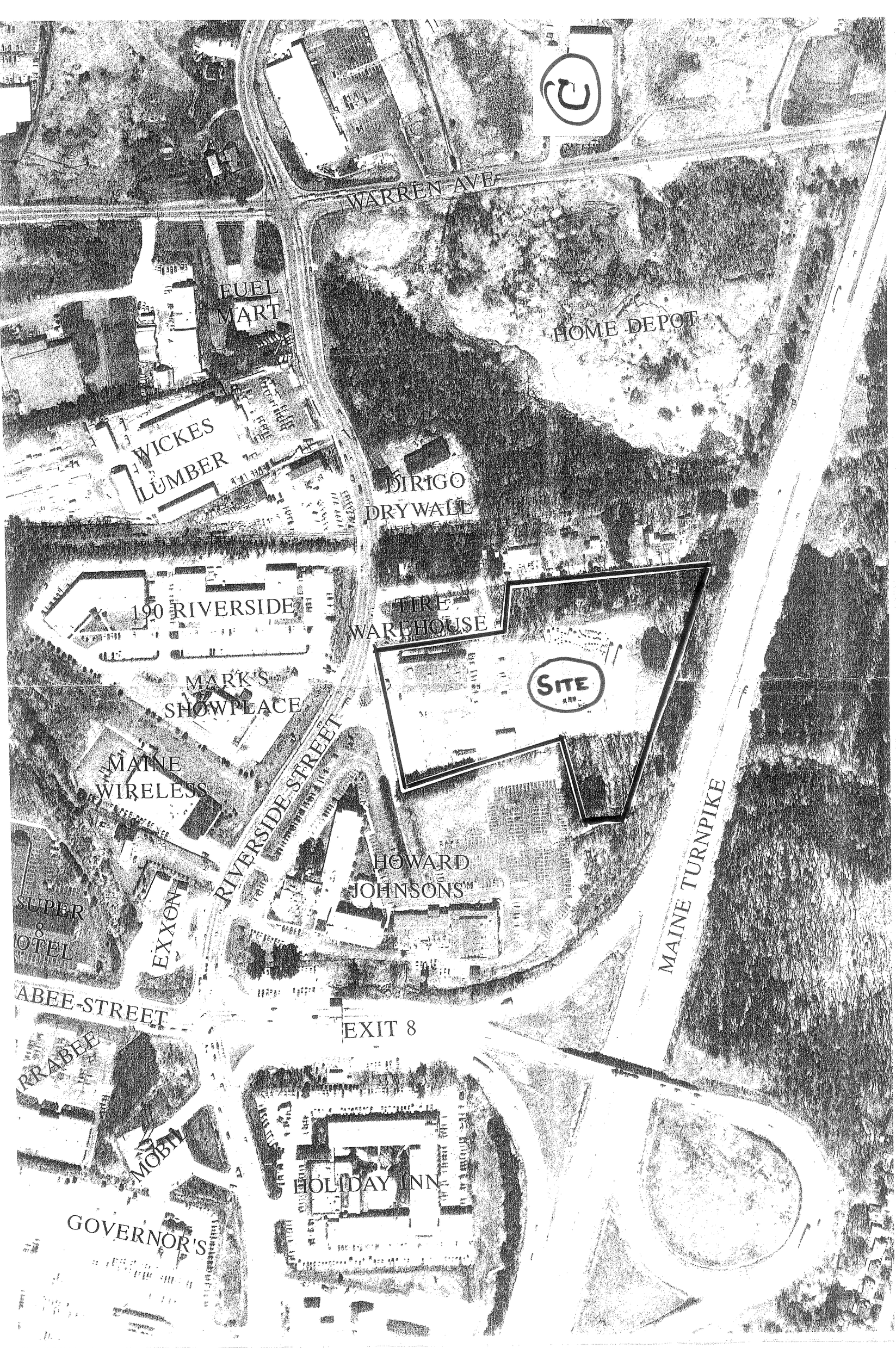
PORTLAND COMMONS SHOPPING CENTER

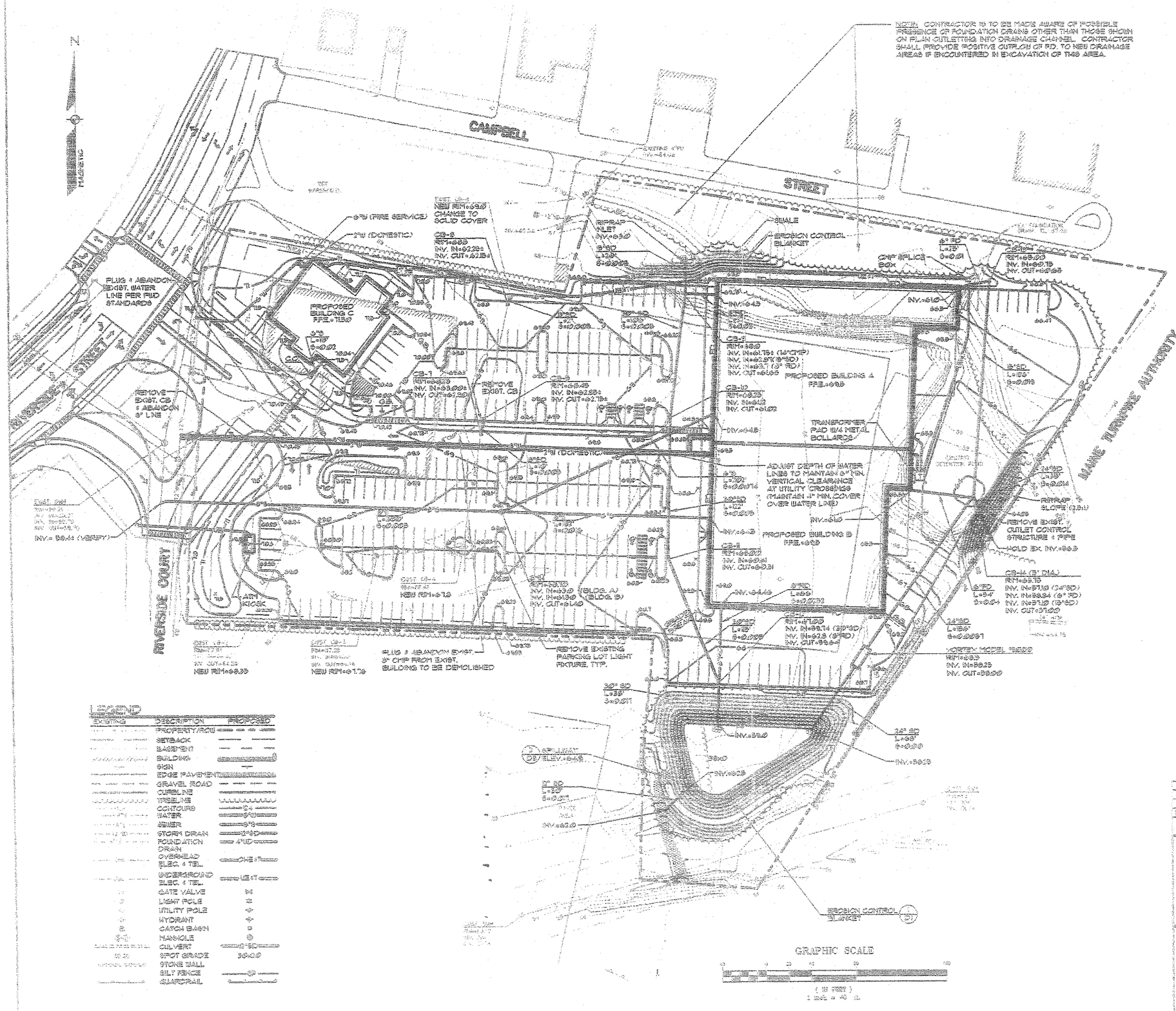
NORTH

PRESENTED BY:

The Waterford Group

PREPARED BY: SEBAGO TECHNICS INC.
WESTBROOK, ME
JANUARY 20, 1999
SCALE 1"=40' JOB# 97622


WARREN AVE
FUEL MART
HOME DEPOT
WICKES LUMBER
DIRIGO DRYWALL
190 RIVERSIDE
TIRE WAREHOUSE
SITE
MARK'S SHOWPLACE
MAINE WIRELESS
RIVERSIDE STREET
HOWARD JOHNSONS
MAINE TURNPIKE
SUPER 8 OTEL
EXXON
ABEE STREET
EXIT 8
RRABEE
MOBIL
HOLIDAY INN
GOVERNOR'S



LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY/ROW	
	SETBACK	
	EASEMENT	
	BUILDING	
	SIGN	
	EDGE PAVEMENT	
	GRAVEL ROAD	
	CURBLINE	
	TREELINE	
	CONTOURS	
	WATER	
	SEWER	
	STORM DRAIN	
	FOUNDATION DRAIN	
	OVERHEAD ELEC. & TEL.	
	UNDERGROUND ELEC. & TEL.	
	GATE VALVE	
	LIGHT POLE	
	UTILITY POLE	
	HYDRANT	
	CATCH BASIN	
	MANHOLE	
	CULVERT	
	SPOT GRADE	
	STONE BALL	
	SILT FENCE	
	GUARDRAIL	

CONSTRUCTION NOTES

Att. B-1

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4. CONTRACTOR SHALL PERFORM ALL CONSTRUCTION IN ACCORDANCE WITH CURRENT MDOT STANDARD SPECIFICATIONS AND CITY CONSTRUCTION STANDARDS.
5. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL INSPECT THE SITE FOR GENERAL CONDITIONS AND ANY SPECIAL REQUIREMENTS NECESSARY FOR PROJECT CONSTRUCTION. THESE COSTS SHALL BE INCLUDED IN CONTRACTOR'S BID.
6. CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN PROJECT CONSTRUCTION TO PROTECT EXISTING STRUCTURES, PHYSICAL FEATURES, AND MAINTAIN SITE STABILITY DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE ALL AREAS TO ORIGINAL CONDITION OR AS DIRECTED BY DESIGN DRAWINGS.
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9. SITE AND BUILDING CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.
10. ALL SEWER PIPE TO BE PVC SDR 35. ALL OTHER REQUIRED DRAINAGE PIPE SHALL BE HDPE SMOOTH BORE.
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14. IMMEDIATELY UPON COMPLETION OF CUTS/FILLS, THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH EROSION CONTROL NOTES AND SPECIFIED ON PLANS.
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18. CONTRACTOR SHALL INSPECT, RESET OR REPLACE EXISTING CATCH BASIN RIMS AS REQUIRED TO PROVIDE A SMOOTH INTERFACE WITH NEW PAVEMENT.

REV.	BY.	DATE:	STATUS:
A	SGD	3-16-99	ISSUED FOR CITY REVIEW

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GRADING & UTILITY PLAN

FOR:

PORTLAND COMMONS SHOPPING CENTER

194 RIVERSIDE STREET
PORTLAND, MAINE

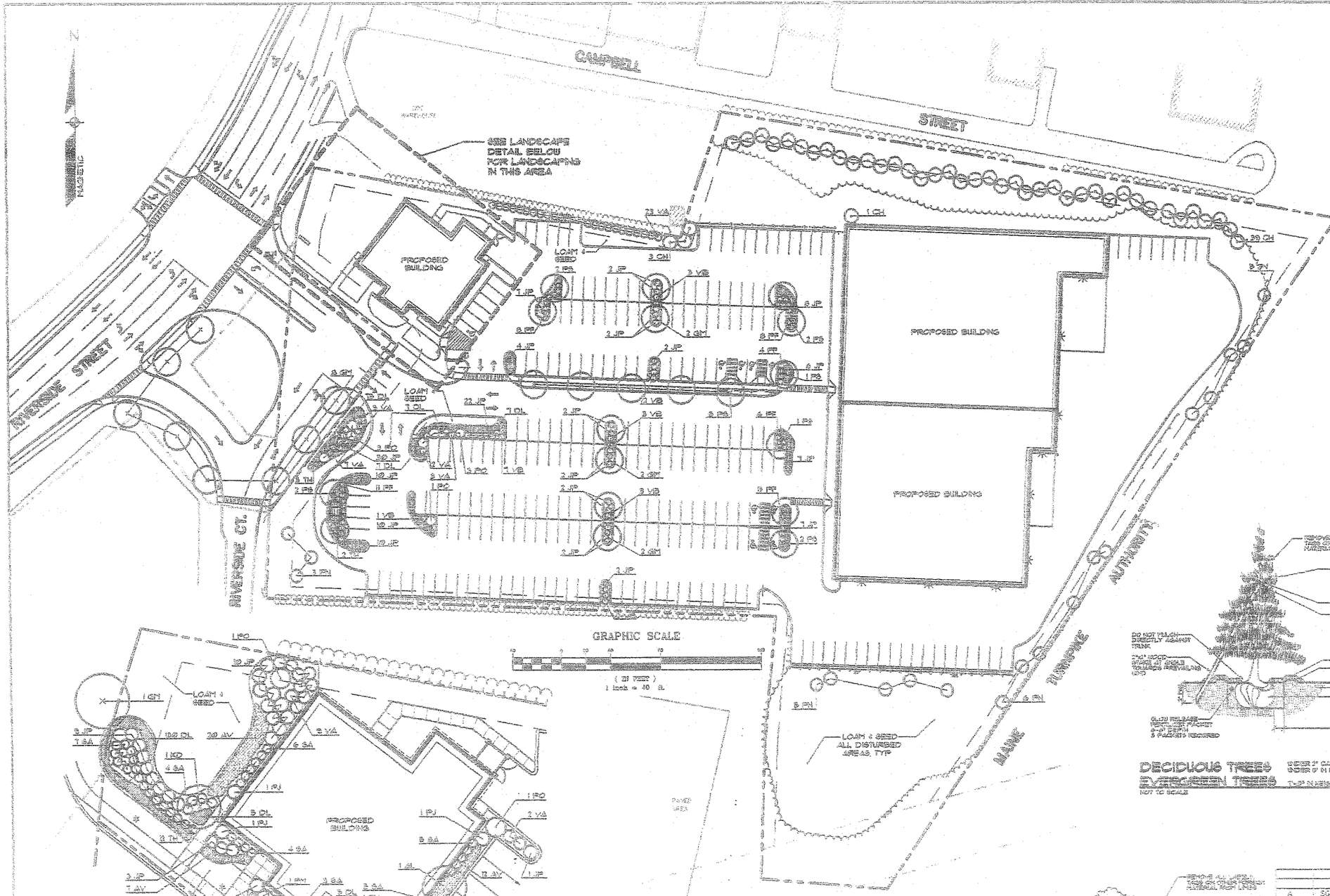
FOR:

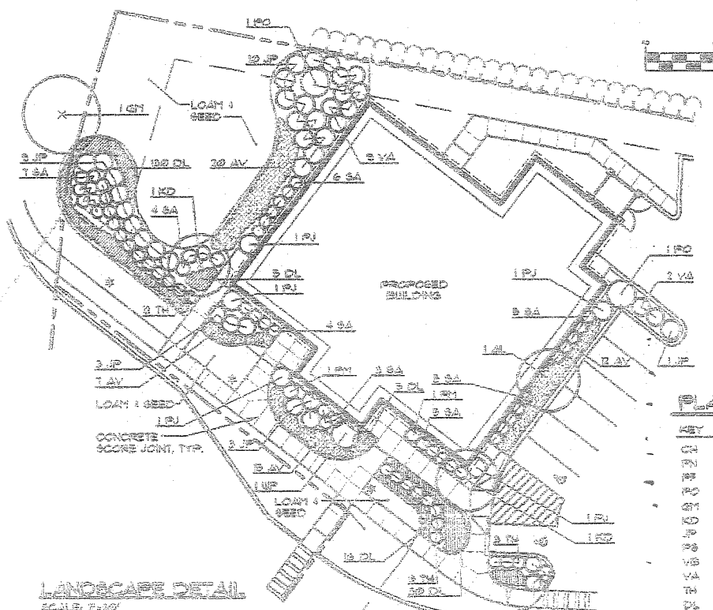
WATERFORD OF PORTLAND, L.L.C.

PIPER PHILLIPS BUILDING, SUITE 204
227 WEST FAYETTE STREET
SYRACUSE, NY 13202

Sebago Technics
Engineering & Planning for the Future
12 WESTBROOK COMMON
WESTBROOK, ME 04092-1338
(207) 856-0277

DESIGN BY:	SGD
DRAWN BY:	ALB
CHECKED BY:	SGD
DATE:	3-17-98
SCALE:	1"=40'
FIELD BK:	16 TO
PROJ. NO:	97-421
DRAWING:	421GRA
SHEET	12





LANDSCAPE DETAIL
SCALE: 1"=20'

1. PLANT QUANTITIES SHOWN ON PLANT LISTS ARE FOR CONVENIENCE TO THE CONTRACTOR ONLY. THE CONTRACTOR IS RESPONSIBLE FOR ALL PLANT MATERIAL INSTALLATION AS SHOWN ON PLANS.

2. SIZE AND GRADING STANDARDS OF PLANT MATERIALS SHALL CONFORM TO THE LATEST EDITION OF "USA STANDARD FOR NURSERY STOCK," BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.

3. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.

4. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING, STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE BY THE OWNER.

5. PLANT MATERIAL SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR BY THE CONTRACTOR AND A PERIOD OF TWO YEARS THEREAFTER BY THE OWNER FROM DATE OF INSTALLATION. DURING THE ONE YEAR GUARANTEE PERIOD, DEAD PLANT MATERIAL SHALL BE REPLACED AT NO COST TO THE OWNER. AT THE END OF THE ONE YEAR PERIOD, THE CONTRACTOR SHALL OBTAIN FINAL ACCEPTANCE FROM THE OWNER.

6. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.

7. EXISTING TREES TO BE PRESERVED WILL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

8. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF THE UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES, PAVING, WALKS, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO THE OWNER.

9. ALL SHRUB BEDS SHALL BE MULCHED WITH 3" CLEAN SHREDDED BARK MULCH.

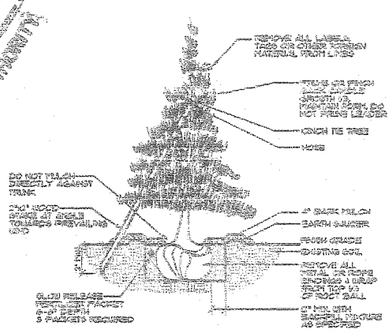
10. THE CONTRACTOR SHALL PROVIDE 4" LOAM FOR ALL AREAS TO BE SEEDED. THE LANDSCAPE CONTRACTOR SHALL COORDINATE SUBGRADE PREPARATION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.

11. ANY DEVIATION FROM THE LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY OR CONDITION SHALL BE REVIEWED AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT (AND MUNICIPAL AUTHORITY, IF APPLICABLE) PRIOR TO INSTALLATION ON SITE.

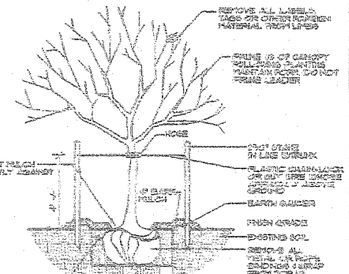
12. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR PERENNIAL AND ANNUAL FLOWER BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 9 INCHES.

PLANTING LIST

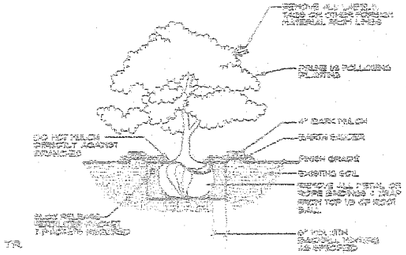
KEY	BOTANICAL NAME	COMMON NAME	SIZE
CH	TSUGA CANADENSIS	CANADIAN HEMLOCK	6' HGT.
PN	PINUS NIGRA	AUSTRIAN PINE	6' HGT.
PF	POTENTILLA FRUTICOSA 'GOLDFINGER'	GOLD FINGER POTENTILLA	
PG	PICEA GLAUCA	SERBIAN SPRUCE	6'-8' HGT.
GM	ACER SACCHARUM 'GREEN MOUNTAIN'	GREEN MOUNTAIN SUGAR MAPLE	2½" CAL.
KD	CORNUS KOUSA	KOUSA DOGWOOD	2"-2½" CAL.
JP	JUNIPERUS HORIZONTALIS 'PLUMOSA YOUNGSTOWN'	YOUNGSTOWN ANDORRA JUNIPER	24"-30"
PS	PRUNUS SARGENTII	SARGENT CHERRY	2½" CAL.
VB	VIBURNUM X BURKWOODII	BURKWOOD VIBURNUM	3'-5'
VA	VIBURNUM X RHYTIDOPHYLLOIDES	ALLEGHANY VIBURNUM	3'-5'
TM	TAXUS X MEDIA 'HICKSII'	HICKS TIBU	24"-30"
DL	HEMEROCALLIS STELLA D ORA	STELLA D. ORA DAYLILIES	NO. 1 CONT. 1 YR.
SA	SPIRAEA JAPONICA 'LITTLE PRINCESS'	LITTLE PRINCESS SPIRAEA	15"-24"
PJ	PIERIS JAPONICA 'VALLEY VALENTINE'	VALLEY VALENTINE ANDROMEDA	24"-30"
AV	ARCTOSTAPHYLOS UVA-URSI 'VANCOUVER JADE'	VANCOUVER JADE BEARBERRY	NO. 1 CONT.
PM	PINUS MUGO PUMILIO	DWARF MUGO PINE	15"-18"
NP	PICEA ABIES 'PENDULA'	WEEPING NORWAY SPRUCE	5'-6' HGT.
AL	AMELANCHIER LAEVIS	ALLEGHENY SERVICEBERRY	8'-10' HGT.



DECIDUOUS TREES & EVERGREEN TREES — UNDER 2" CALIPER OR UNDER 6' IN HEIGHT
TYP. PLANTING DETAIL
NOT TO SCALE



DECIDUOUS TREES — 2" TO 4" CALIPER
NOT TO SCALE



DECIDUOUS & EVERGREEN SHRUB
NOT TO SCALE

REV:	BY:	DATE:	STATUS:
A	SGD	3-8-99	ISSUED FOR CITY REVIEW

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LANDSCAPE PLAN
OF
PORTLAND COMMONS SHOPPING CENTER
RIVERSIDE STREET
PORTLAND, MAINE

FOR:
WATERFORD OF PORTLAND, L.L.C.
PIPER PHILLIPS BUILDING, SUITE 204
227 WEST FAYETTE STREET
SYRACUSE, N.Y. 13202

Sebago Technics
Engineering & Planning for the Future
10 WESTBROOK COMMON
WESTBROOK, ME 04092-1330
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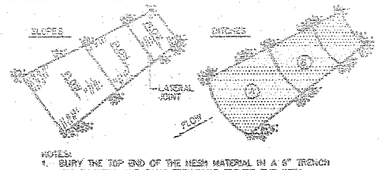
VERSION NO.	5.0
DRAWN BY:	GLB
CHECKED BY:	SGD
DATE:	3-17-98
SCALE:	1"=40'
FIELD BK:	
PROJ. NO.	97.142
DRAWING NO.	L-PLAN
SHEET NO.	1

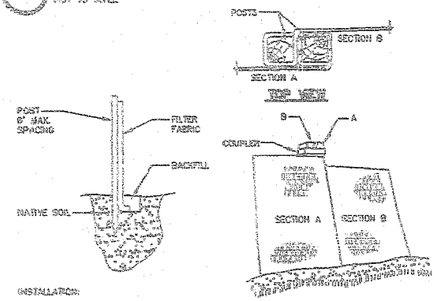
ATT. B-2

AH.B2



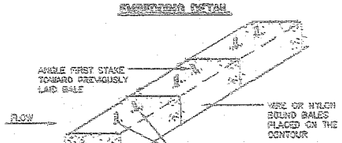
NOTES:
1. BURY THE TOP END OF THE MESH MATERIAL IN A 6" TRENCH AND BACKFILL AND TAMP TRENCHING SECURE END WITH STAPLES AT 6" SPACING, 4" DOWN FROM EXPOSED END.
2. FLOW DIRECTION JOINTS TO HAVE UPPER END OF LOWER STRIP BURIED WITH UPPER LAYERS OVERLAPPED 4" AND STAPLED. OVERLAP IS OVER A.
3. LATERAL JOINTS TO HAVE 4" OVERLAP OF STRIPS. STAPLE 18" ON CENTER.
4. STAPLE OUTSIDE LATERAL EDGE 2" ON CENTER.
5. WIRE STAPLES TO BE MIN. OF ø 11 WIRE 6" LONG AND 1-1/2" WIDE.
6. USE NORTH AMERICAN GREEN DS 150 OR APPROVED EQUAL.

1 EROSION CONTROL BLANKET
NOT TO SCALE



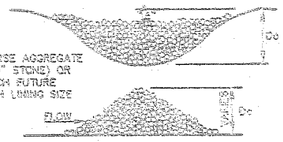
INSTALLATION:
1. EXCAVATE A 6"x 4" TRENCH ALONG THE LINE OF PLACEMENT FOR THE FILTER BARRIER.
2. UNROLL A SECTION AT A TIME AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH.
3. DRIVE POSTS INTO THE GROUND UNTIL APPROXIMATELY 2" OF FABRIC IS LYING ON THE TRENCH BOTTOM.
4. LAY THE POR-IN FLAP OF FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH. BACKFILL THE TRENCH AND TAMP THE SOIL. THE-IN CAN ALSO BE ACCOMPLISHED BY LAYING THE FABRIC FLAP ON UNDISTURBED GROUND AND PILING AND TAMPING FILL AT THE BASE, BUT MUST BE ACCOMPANIED BY AN INTERCEPTOR DITCH.
5. JOIN SECTION AS SHOWN ABOVE.
6. BARRIER SHALL BE MIRAFI SILT FENCE OR EQUAL.

2 SILT FENCE
NOT TO SCALE

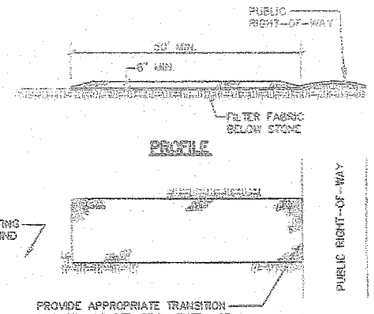


NOTES:
1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY STAKES OR REBARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

3 HAY BALE BARRIER
NOT TO SCALE

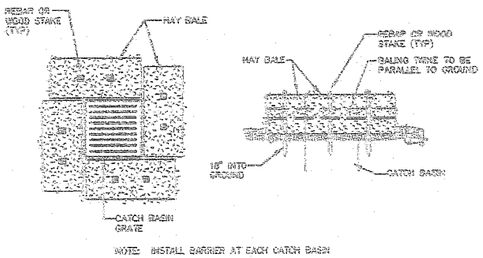


4 STONE CHECK DAM
NOT TO SCALE



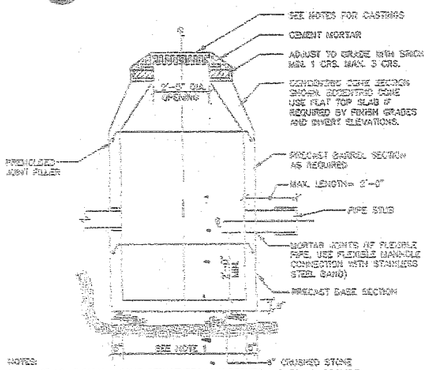
NOTES:
1. STONE SIZE- AASHTO DESIGNATION M43, SIZE NO. 2 (2 1/2" TO 1 1/2"). USE CRUSHED STONE.
2. LENGTH- AS SHOWN ON PLANS, MIN. 50 FEET.
3. THICKNESS- NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH- NOT LESS THAN FULL WIDTH OF ALL POINT OF INGRESS OR EGRESS.
5. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.

5 STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



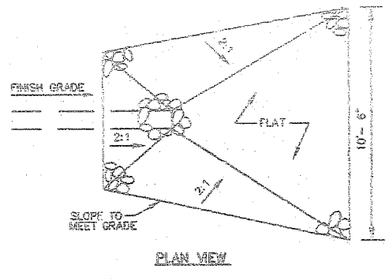
NOTE: INSTALL BARRIER AT EACH CATCH BASIN

6 CATCH BASIN HAY BALE BARRIER
NOT TO SCALE

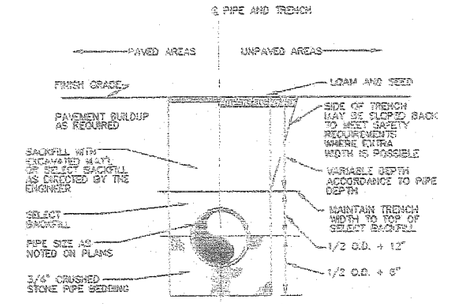


NOTES:
1. 4'-0" I.D. TYPICAL. SOME STRUCTURES MAY REQUIRE LARGER I.D. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. PIPE SIZES AND INVERTS AS NOTED ON PLANS.
4. CATCH BASIN FRAME AND GRATE TO BE NEENAH FOUNDRY NEA860 OR APPROVED EQUAL.
5. DRAINAGE MANHOLE FRAME AND COVER TO BE NEENAH FOUNDRY NEA860 OR APPROVED EQUAL. COVER SHALL BE MARKED "DRAIN"

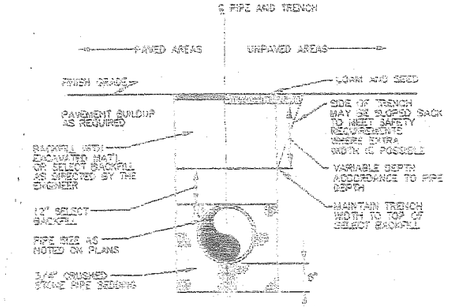
7 TYPICAL CATCH BASIN
NOT TO SCALE



8 RIPRAP APRON
NOT TO SCALE



9 TYP. TRENCH SECTION- STORM DRAINS
NOT TO SCALE



10 TYP. TRENCH SECTION- SANITARY SEWER
NOT TO SCALE

EROSION AND SEDIMENTATION CONTROL PLAN

A. PRE-CONSTRUCTION PHASE

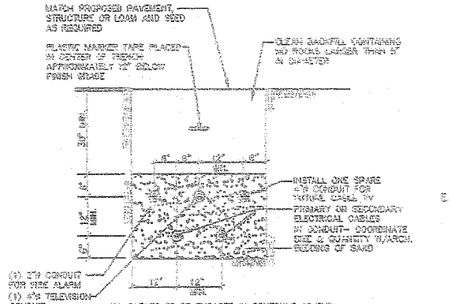
PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, HAY BALE BARRIERS/FILTER FABRIC FENCING SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR, AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND /OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. THE PLACEMENT OF SILT FENCES AND HAY BALES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES. THIS NETWORK IS TO BE PROVIDED, INSTALLED AND MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 85%-90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

PRIOR TO ANY CONSTRUCTION AT THE SITE, REPRESENTATIVES OF THE OWNER, SITE CONTRACTOR AND THE SITE DESIGN ENGINEER SHALL MEET WITH THE OWNER TO DISCUSS THE SCHEDULING OF THE SITE CONSTRUCTION.

THE FOLLOWING EROSION CONTROL MEASURES SHALL BE FOLLOWED BY THE SITE CONTRACTOR(S) THROUGHOUT CONSTRUCTION OF THIS PROJECT.

B. CONSTRUCTION AND POST-CONSTRUCTION PHASE

1. AREAS UNDERGOING ACTUAL CONSTRUCTION SHALL ONLY EXPOSE THAT AMOUNT OF MINERAL SOIL NECESSARY FOR PROGRESSIVE AND EFFICIENT SITE CONSTRUCTION AND SHALL NOT EXCEED 14 DAYS. AREAS THAT WILL NOT BE COMPLETED (COVERED AND/OR FINISH GRADED) WITHIN FOURTEEN (14) DAYS OF DISTURBANCE SHALL BE PROTECTED WITH TEMPORARY EROSION CONTROL WITHIN FOURTEEN (14) DAYS OF DISTURBANCE. AREAS WITHIN 100 FEET OF DELINEATED WETLANDS SHALL BE ESTABLISHED WITHIN SEVEN (7) DAYS OF DISTURBANCE. TEMPORARY EROSION CONTROL SHALL INCLUDE EROSION CONTROL MESH, NETTING, OR MULCH AND AS DIRECTED BY THE INSPECTING ENGINEER. IF DISTURBED AREAS DO NOT RECEIVE FINAL SEEDING BY SEPTEMBER 15TH OF THE YEAR OF CONSTRUCTION, THEN ALL DISTURBED AREAS SHALL BE HAY MULCHED AT A RATE OF 150 LBS. PER 1000 SQUARE FEET AND SEEDED WITH A WINTER COVER CROP OF RYE AT THE RATE OF 3 LBS./1,000 S.F. TO PROVIDE WINTER PROTECTION. THE HAY MULCH SHALL BE ANCHORED WITH A SUITABLE BINDER, SUCH AS RMB PLUS AND/OR SECURED WITH NETTING FOR WIND PROTECTION.
2. ALL TOPSOIL SHALL BE COLLECTED, STOCKPILED, SEEDED WITH RYE AT 3 LBS/1,000 S.F., AND MULCHED ON-SITE AND RE-USED AS REQUIRED. SILTATION FENCING SHALL BE PLACED DOWN GRADIENT FROM STOCKPILED LOAM. LOAM SHALL BE STOCKPILED AT LOCATIONS DESIGNATED BY THE OWNER. DESIGNATED LOCATIONS SHALL BE DETERMINED PRIOR TO OR AT THE PRE-CONSTRUCTION MEETING.
3. ALL SILT FENCES AND/OR HAY BALE BARRIERS SHALL BE INSTALLED ACCORDING TO THIS PLAN. THESE SHALL BE MAINTAINED DURING DEVELOPMENT TO REMOVE SEDIMENT FROM RUNOFF WATER. ALL THE SILT FENCES SHALL BE INSPECTED AFTER ANY RAINFALL OR RUNOFF EVENT, MAINTAINED AND CLEANED UNTIL ALL AREAS HAVE AT LEASE 85%-90% VIGOROUS PERENNIAL VEGETATIVE COVER OF GRASSES.
4. ALL AREAS SHALL BE SEEDED IN ACCORDANCE WITH THE FOLLOWING VEGETATION PLAN.



11 TYP. UNDERGROUND CABLE INSTALLATION
NOT TO SCALE

C. VEGETATION PLAN

REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF CONSTRUCTION. DISTURBED AREAS SHALL BE MULCHED AND ANCHORED PRIOR TO ANY STORM EVENT. IF FINAL SEEDING CANNOT BE ACCOMPLISHED BY SEPTEMBER 15TH, THEN ALL DISTURBED AREAS SHALL BE HAY MULCHED AT A RATE OF 150 LBS PER 1,000 S. F. AND SEEDED WITH A WINTER COVER CROP OF RYE AT THE RATE OF 3 LBS/1,000 S.F. TO PROVIDE WINTER PROTECTION. HAY MULCH SHALL BE SECURED WITH A SUITABLE BINDER TO INCLUDE RMB PLUS AND /OR EROSION CONTROL NETTING AS DIRECTED BY THE OWNER/INSPECTION ENGINEER.

REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

1. FOUR INCHES OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 1" IN DIAMETER, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.
2. AGRICULTURAL LIMESTONE SHALL BE SPREAD AT THE RATE OF 3 TONS PER ACRE. 10-20-20 FERTILIZER SHALL BE APPLIED AT A RATE OF 600 LBS/ACRE. THESE SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING.
3. FOLLOWING SEED BED PREPARATION, SWALE AREAS, FILL AREAS AND BACK SLOPES SHALL BE SEEDED AT A RATE OF 4 LBS/1,000 S.F. TO A MIXTURE OF 35% CREEPING RED FESCUE, 5% RED TOP, 24% KENTUCKY BLUEGRASS, 10% PERENNIAL RYEGRASS, 20% ANNUAL RYEGRASS AND 5% WHITE DUTCH CLOVER. THE LAWN AREAS WILL BE SEEDED TO A PREMIUM TURF MIXTURE OF BLUEGRASS AND/OR FESCUE, SEEDING RATE OF 3 LBS. PER 1,000 SQUARE FEET.
4. HAY MULCH SHALL BE APPLIED TO ALL DISTURBED AREAS AT THE RATE OF 150 LBS. PER 1,000 SQUARE FEET, OR A HYDRO-APPLICATION OF ASPHALT, WOOD OR PAPER FIBER WILL BE APPLIED FOLLOWING SEEDING. A SUITABLE BINDER, SUCH AS RMB PLUS AND/OR EROSION CONTROL NETTING WILL BE USED ON HAY MULCH FOR WIND CONTROL.
5. ALL HAY BALE AND/OR FILTER FABRIC BARRIERS WILL REMAIN IN PLACE UNTIL SEEDING HAVE BECOME 85%-90% ESTABLISHED AND THEN REMOVED WITHIN 10 DAYS.

D. CONSTRUCTION SCHEDULE

CONSTRUCTION WILL MOST LIKELY BEGIN IN SPRING 1999. THE FOLLOWING SCHEDULE HAS BEEN PREPARED BASED UPON AN ANTICIPATED CONSTRUCTION SCHEDULE FOR ROADWAY IMPROVEMENTS.

SCHEDULE

1.	ESTIMATED CONSTRUCTION TIME: 6 MONTHS	MAY 1, 1999 - OCT., 1999
2.	EROSION CONTROL MEASURES PLACED.	MAY 3, 1999
3.	SITE CLEARING, GRUBBING, EXCAVATION AND FILLING (ROADWAY CONSTRUCTION)	MAY 3, 1999 - JUNE 1999
4.	START FINAL/TEMPORARY SEEDINGS ON PREPARED AREAS.	MAY 15, 1999
5.	BIWEEKLY MONITORING OF VEGETATIVE GROWTH	MAY 30, 1999 - OCT., 1999
6.	RE-SEEDING OF AREAS, IF NEEDED.	MAY 30, 1999 - OCT., 1999
7.	MULCH SPREAD FOR WINTER EROSION CONTROL, IF NEEDED.	OCT. 15, 1999
8.	REMOVAL OF EROSION CONTROL DEVICES.	JUNE, 2000

E. INSPECTIONS/MONITORING

MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. AFTER EACH RAINFALL, THE SITE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES AND PERFORM REPAIRS AS NEEDED TO INSURE THEIR CONTINUING FUNCTION.

FOLLOWING THE TEMPORARY AND/OR FINAL SEEDINGS, THE CONTRACTOR SHALL INSPECT THE SITE SEMIMONTHLY UNTIL THE SEEDINGS HAVE BEEN ESTABLISHED. ESTABLISHED MEANS A MINIMUM OF 85%-90% OF AREAS VEGETATED WITH VIGOROUS GROWTH. RESEEDING SHALL BE CARRIED OUT BY THE CONTRACTOR WITH FOLLOW-UP INSPECTIONS IN THE EVENT OF ANY FAILURES UNTIL VEGETATION IS ADEQUATELY ESTABLISHED.

REV.	BY:	DATE:	STATUS:
4	SCD	3-18-99	ISSUED FOR CITY REVIEW

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PLANS OF:
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DESIGN BY:	JLD
DRAWN BY:	JLS
CHECKED BY:	
DATE:	11-25-98
SCALE:	AS SHOWN
FIELD BK:	
PROJ. NO:	97803
DRAWING:	A11.03
SHEET:	9 OF 11

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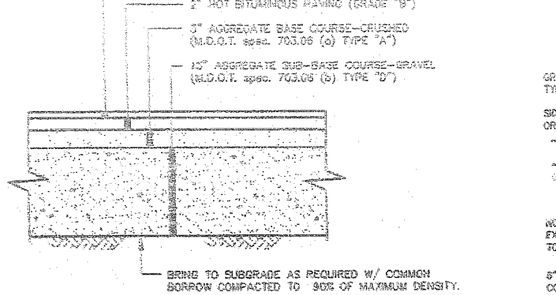
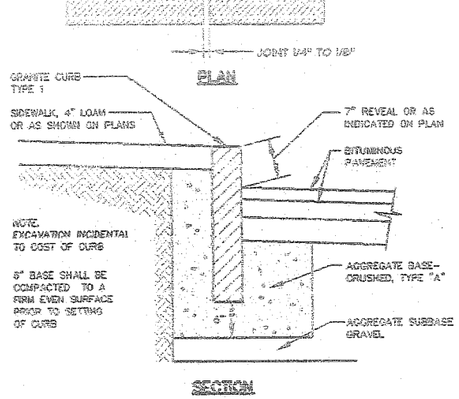
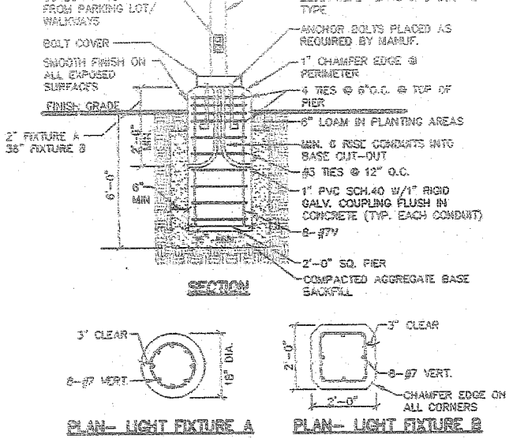


NOTE:
1. COMPACT GRAVEL SUB-BASE, BASE COURSE TO 92% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
2. CONTRACTOR SHALL SET GRADE STAKES MARKING SUB-BASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE.

1 TYPICAL PAVED PARKING LOT SECTION
NOT TO SCALE

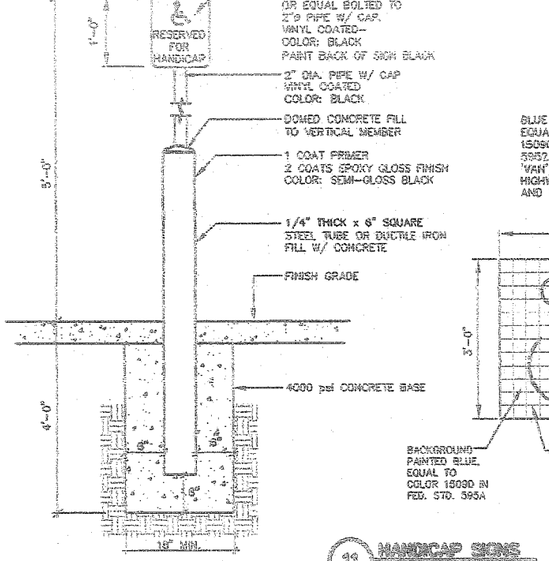


5 VERTICAL GRANITE CURB
NOT TO SCALE

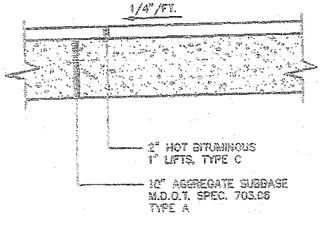


NOTES:
1. CONCRETE f'c=4000 psi.
2. REINF. STEEL GRADE 60 NEW BARS.
3. CONCRETE 3/4" AGG., 6 +/- 1% ENTRAINED AIR.
4. PROVIDE 2 COATS BITUMINOUS DAMPROOFING OR WRAP IN 3 LAYERS BLACK POLY FOR ALL CONCRETE BELOW GRADE.
5. INSTALL BASE 3'-0" ABOVE FINISH GRADE IN LOCATIONS WHERE POLES ARE IN PARKING LOT PAVEMENT.
6. BID ALT.- CONTRACTOR MAY SUBSTITUTE PRECAST CONCRETE LIGHT POLE BASE EQUAL TO ABOVE SPEC.

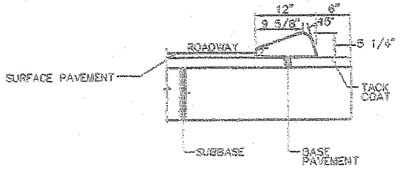
9 LIGHT POLE BASE
NOT TO SCALE



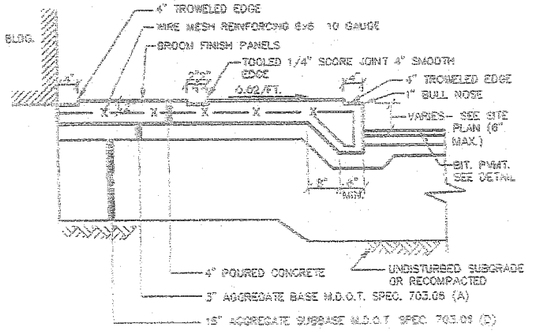
11 HANDICAP SIGNS
NOT TO SCALE



2 BITUMINOUS SIDEWALK
NOT TO SCALE

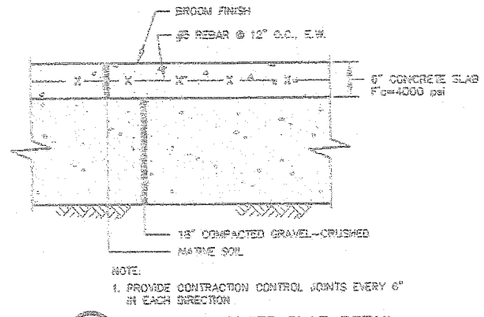


6 CAPE COD CURB
NOT TO SCALE



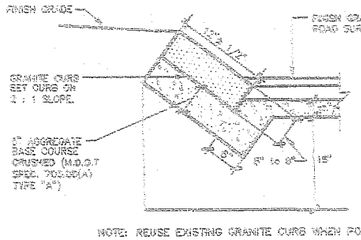
NOTE: INSTALL 3'-0" SQUARE AREA 8" X 4' DEEP OF FROST-FREE MATERIAL BELOW ALL HANDICAP RAMPS AND ENTRY POINTS AT BUILDING

3 CONCRETE SIDEWALK
NOT TO SCALE



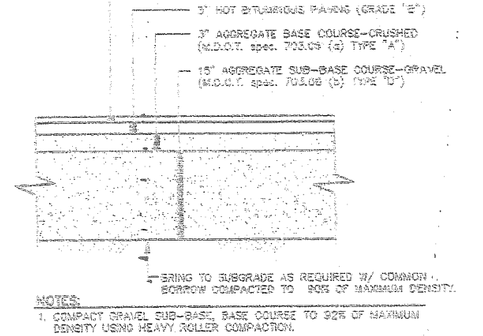
NOTE:
1. PROVIDE CONTRACTION CONTROL JOINTS EVERY 6' IN EACH DIRECTION

7 TYPICAL CONCRETE SLAB DETAIL
NOT TO SCALE



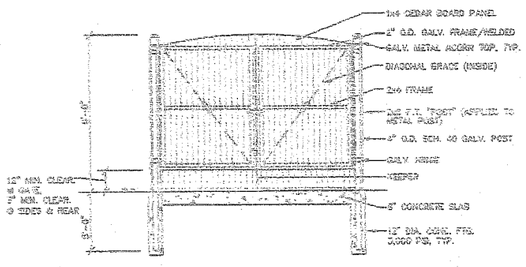
NOTE: REUSE EXISTING GRANITE CURB WHEN POSSIBLE

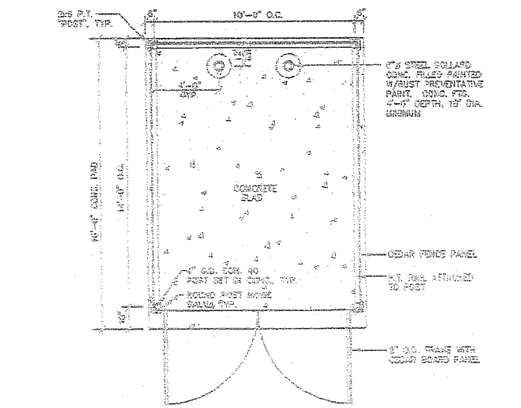
4 45° GRANITE CURB
NOT TO SCALE



NOTES:
1. COMPACT GRAVEL SUB-BASE, BASE COURSE TO 92% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
2. CONTRACTOR SHALL SET GRADE STAKES MARKING SUB-BASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE.

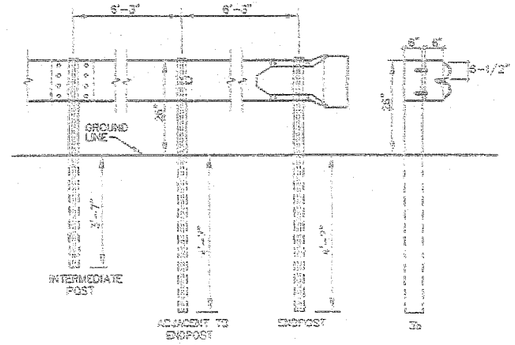
8 HEAVY-DUTY BITUMINOUS PAVEMENT
NOT TO SCALE





10 TYPICAL DUMPSTER ENCLOSURE
NOT TO SCALE

DIMENSIONS ARE ALONG FACE OF BEAM



NOTES:
1. INTERMEDIATE POST SPACING SHALL BE 6'-3" UNLESS OTHERWISE SHOWN.
2. POSTS AND OFFSET BRACKETS FOR TYPE 3b GUARD RAIL SHALL BE W 6x9.
3. ALL HOLES IN BEAM TO BE SHOP-PUNCHED BEFORE GALVANIZING.

12 METAL GUARDRAIL TYPE 3b
NOT TO SCALE

REV.	BY	DATE	STATUS
A	SCD	5-18-99	ISSUED FOR CITY REVIEW

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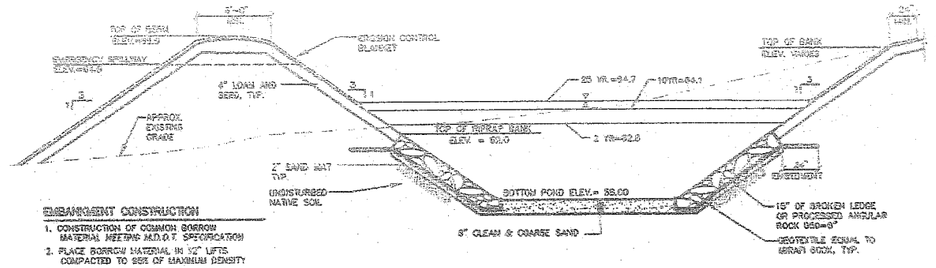
DETAILS
OF:
PORTLAND COMMONS SHOPPING CENTER
191 RIVERSIDE STREET
PORTLAND, MAINE
FOR:
WATERFORD OF PORTLAND, L.L.C.
PIPER PHILIPS BUILDING, SUITE 204
227 WEST FAYETTE STREET
SYRACUSE, NY 13202

Sebago Technics
Engineering & Planning for the Future
12 WESTBROOK COMMON
WESTBROOK, ME 04092-1339
TEL (207) 856-0277

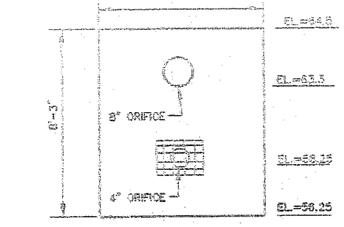
DESIGN BY:	SCD
DRAWN BY:	JJB
CHECKED BY:	
DATE:	5-18-99
SCALE:	AS SHOWN
PROJ. NO.:	97662
DRAWING NO.:	97662D2
SHEET	D2



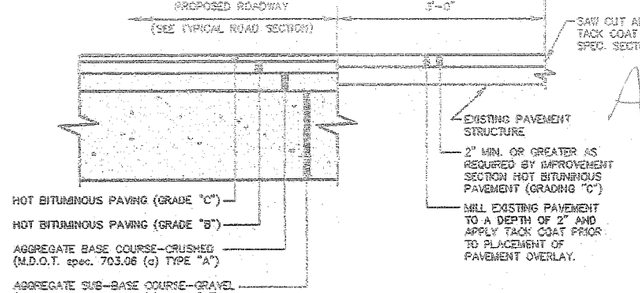
EMBANKMENT CONSTRUCTION

1. CONSTRUCTION OF COMMON BORROW MATERIAL MEETING M.D.O.T. SPECIFICATION
2. PLACE BORROW MATERIAL IN 12" LIFTS COMPACTED TO 95% OF MAXIMUM DENSITY
3. INSTALL RIPRAP AND EROSION CONTROL MESH WHERE SPECIFIED ON PLANS
4. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN.

1 DRY DETENTION POND SECTION
NOT TO SCALE

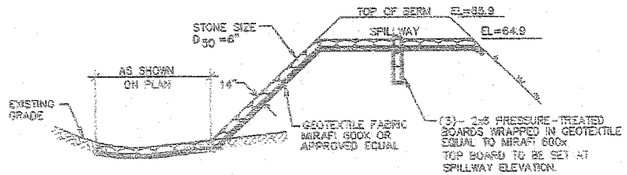


5 PRECAST FLOW CONTROL PANEL
NOT TO SCALE



A1.35

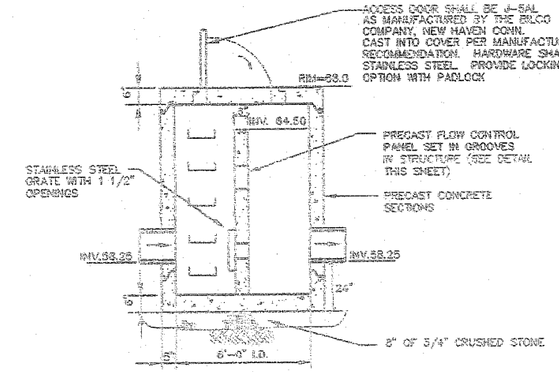
8 TYPICAL PAVEMENT JOINT
NOT TO SCALE



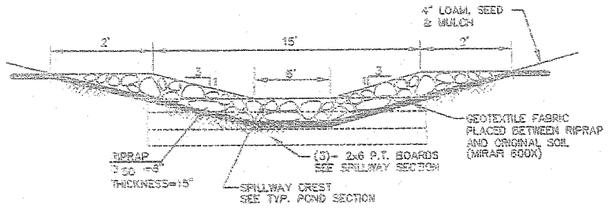
EMBANKMENT CONSTRUCTION

1. CONSTRUCTION OF COMMON BORROW MATERIAL MEETING M.D.O.T. SPECIFICATION
2. PLACE BORROW MATERIAL IN 12" LIFTS COMPACTED TO 95% OF MAXIMUM DENSITY
3. INSTALL RIPRAP AND EROSION CONTROL MESH WHERE SPECIFIED ON PLANS
4. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN.

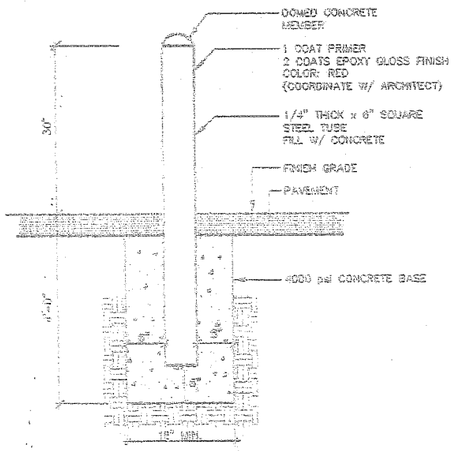
2 SPILLWAY SECTION
NOT TO SCALE



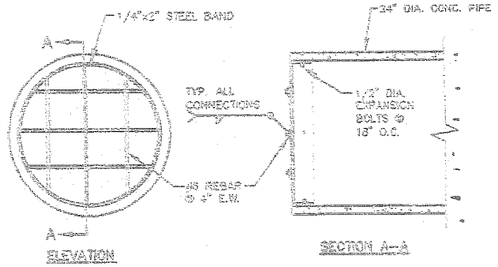
6 OUTLET CONTROL STRUCTURE
NOT TO SCALE



3 SPILLWAY CROSS-SECTION
NOT TO SCALE



7 METAL BOLLARD
NOT TO SCALE



4 TRASH RACK
NOT TO SCALE

REV.	BY	DATE:	STATUS:
A	SGD	3-13-99	ISSUED FOR CITY REVIEW

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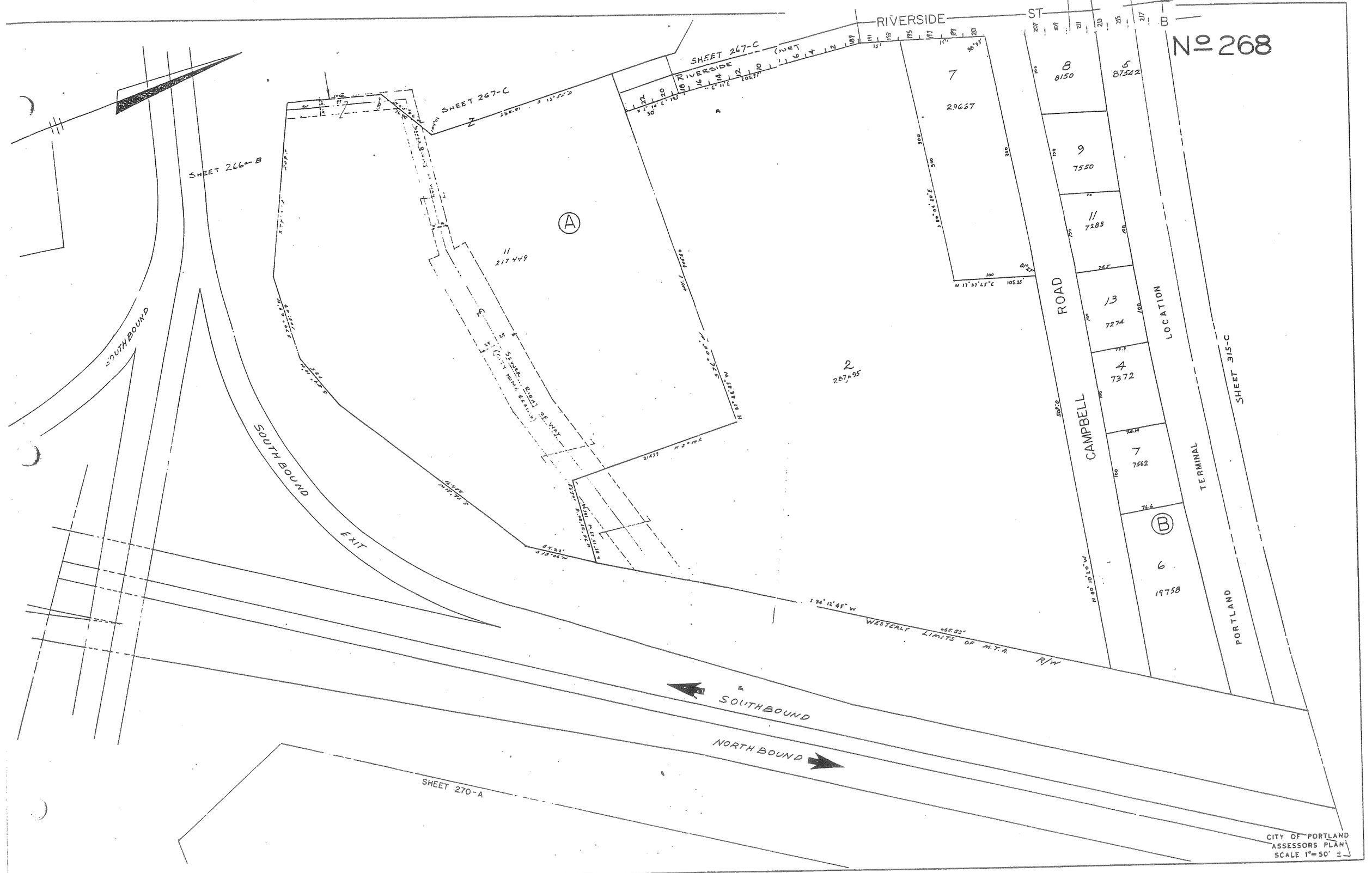
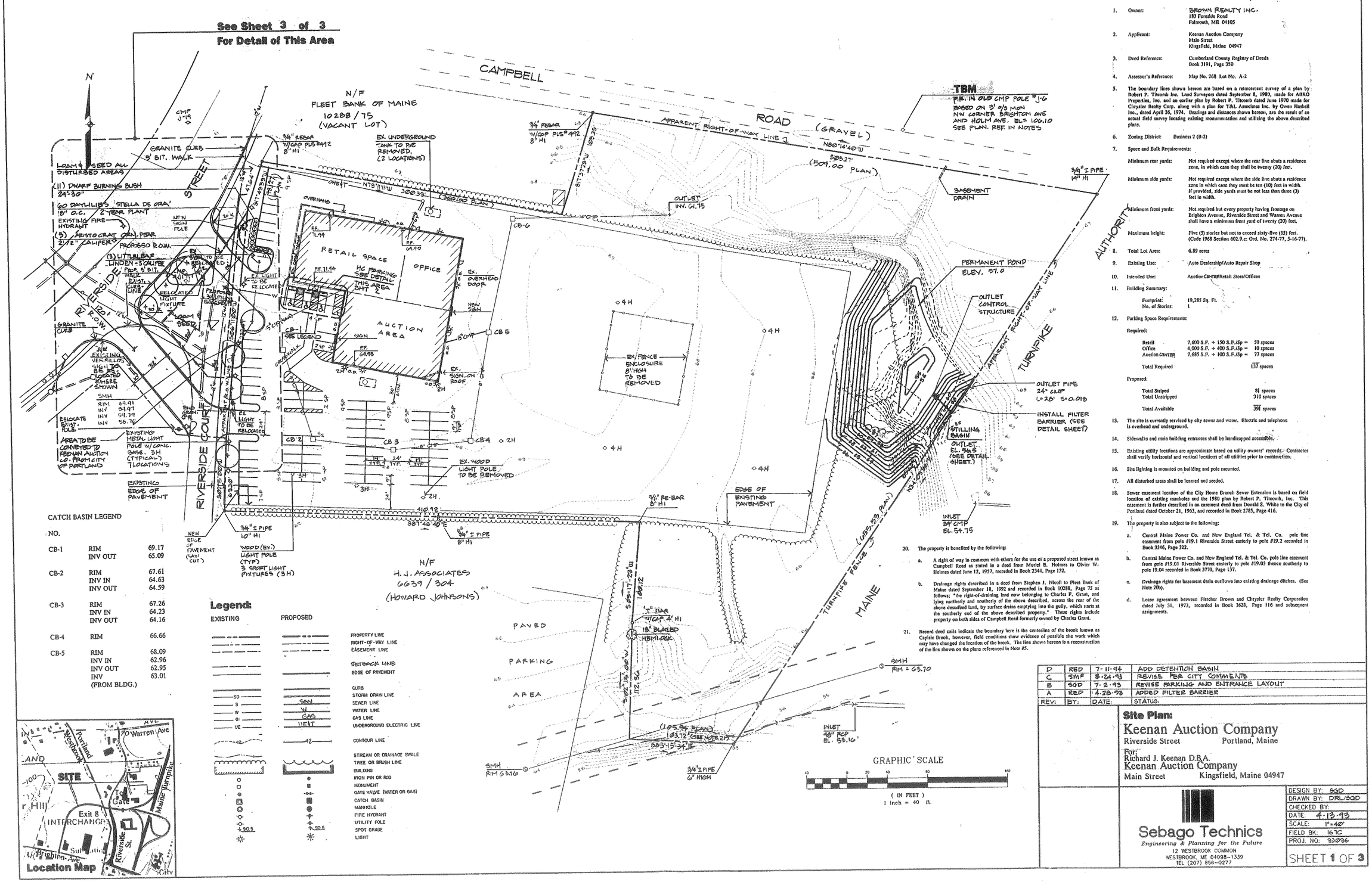
DETAILS
OF:
PORTLAND COMMONS SHOPPING CENTER
194 RIVERSIDE STREET
PORTLAND, MAINE
FOR:
WATERFORD OF PORTLAND, L.L.C.
PIPER PHILIPS BUILDING, SUITE 204
247 WEST FAYETTE STREET
SYRACUSE, NY 13202

Sebago Technics
Engineering & Planning for the Future
75 WESTBROOK COMMON
WESTBROOK, ME 04092-1359
TEL. (207) 856-0277

DESIGN BY:	SGD
DRAWN BY:	JJD
CHECKED BY:	
DATE:	3-13-99
SCALE:	AS SHOWN
PROJ. No:	97892
DRAWING No:	97892D
SHEET	D5


No 268
RIVERSIDE ST
SHEET 267-C
SHEET 266-B
SHEET 315-C
SHEET 270-A
SOUTHBOUND
SOUTH BOUND EXIT
SOUTHBOUND
NORTHBOUND
CAMPBELL ROAD
PORTLAND TERMINAL LOCATION
WESTERLY LIMITS OF M.T.A. R/W
CITY OF PORTLAND
ASSESSORS PLAN
SCALE 1"= 50' ±

E



CATCH BASIN LEGEND

NO.		
CB-1	RIM	69.17
	INV OUT	65.09
CB-2	RIM	67.61
	INV IN	64.63
	INV OUT	64.59
CB-3	RIM	67.26
	INV IN	64.23
	INV OUT	64.16
CB-4	RIM	66.66
CB-5	RIM	68.09
	INV IN	62.96
	INV OUT	62.95
	INV	63.01
	(FROM BLDG.)	

Legend:

EXISTING	PROPOSED	
		PROPERTY LINE
		RIGHT-OF-WAY LINE
		EASEMENT LINE
		SETBACK LINE
		EDGE OF PAVEMENT
		CURB
SD	SAN	STORM DRAIN LINE
S	SAN	SEWER LINE
W	W	WATER LINE
G	GAS	GAS LINE
UE	HEAT	UNDERGROUND ELECTRIC LINE
42	42	CONTOUR LINE
		STREAM OR DRAINAGE SWALE
		TREE OR BRUSH LINE
		BUILDING
		IRON PIN OR ROD
		MONUMENT
		GATE VALVE (WATER OR GAS)
		CATCH BASIN
		MANHOLE
		FIRE HYDRANT
		UTILITY POLE
+90.5	+90.5	SPOT GRADE
		LIGHT

General Notes:

1. Owner: BROWN REALTY INC. 183 Portside Road Falmouth, ME 04105
2. Applicant: Keenan Auction Company Main Street Kingsfield, Maine 04947
3. Deed Reference: Cumberland County Registry of Deeds Book 3191, Page 350
4. Assessor's Reference: Map No. 268 Lot No. A-2
5. The boundary lines shown hereon are based on a retracement survey of a plan by Robert P. Titcomb Inc. Land Surveyors dated September 8, 1980, made for ARKO Properties, Inc. and an earlier plan by Robert P. Titcomb dated June 1970 made for Chrysler Realty Corp. along with a plan for T&L Associates Inc. by Owen Haskell Inc., dated April 26, 1974. Bearings and distances shown hereon, are the result of an actual field survey locating existing monumentation and utilizing the above described plans.
6. Zoning District: Business 2 (B-2)
7. Space and Bulk Requirements:
   - Minimum rear yards: Not required except where the rear line abuts a residence zone, in which case they shall be twenty (20) feet.
   - Minimum side yards: Not required except where the side line abuts a residence zone in which case they must be ten (10) feet in width. If provided, side yards must be not less than three (3) feet in width.
   - Minimum front yards: Not required but every property having frontage on Brighton Avenue, Riverside Street and Warren Avenue shall have a minimum front yard of twenty (20) feet.
   - Maximum height: Five (5) stories but not to exceed sixty-five (65) feet. (Code 1968 Section 602.9.c: Ord. No. 274-77, 5-16-77).
8. Total Lot Area: 6.89 acres
9. Existing Use: Auto Dealership/Auto Repair Shop
10. Intended Use: Auction Center/Retail Store/Offices
11. Building Summary:
    - Footprint: 19,285 Sq. Ft.
    - No. of Stories: 1
12. Parking Space Requirements:

    Required:

Retail	7,600 S.F. ÷ 150 S.F./Sp =	50 spaces
Office	4,000 S.F. ÷ 400 S.F./Sp =	10 spaces
Auction Center	7,685 S.F. ÷ 100 S.F./Sp =	77 spaces
Total Required		137 spaces

    Proposed:

Total Striped	81 spaces
Total Unstriped	310 spaces
Total Available	391 spaces

13. The site is currently serviced by city sewer and water. Electric and telephone is overhead and underground.
14. Sidewalks and main building entrances shall be handicapped accessible.
15. Existing utility locations are approximate based on utility owners' records. Contractor shall verify horizontal and vertical locations of all utilities prior to construction.
16. Site lighting is mounted on building and pole mounted.
17. All disturbed areas shall be loamed and seeded.
18. Sewer easement location of the City Home Branch Sewer Extension is based on field location of existing manholes and the 1980 plan by Robert P. Titcomb, Inc. This easement is further described in an easement deed from Donald S. White to the City of Portland dated October 21, 1963, and recorded in Book 2785, Page 416.
19. The property is also subject to the following:
    a. Central Maine Power Co. and New England Tel. & Tel. Co. pole line easement from pole #19.1 Riverside Street easterly to pole #19.2 recorded in Book 3346, Page 322.
    b. Central Maine Power Co. and New England Tel. & Tel. Co. pole line easement from pole #19.01 Riverside Street easterly to pole #19.03 thence southerly to pole 19.04 recorded in Book 3770, Page 137.
    c. Drainage rights for basement drain outflows into existing drainage ditches. (See Note 20b).
    d. Lease agreement between Fletcher Brown and Chrysler Realty Corporation dated July 31, 1973, recorded in Book 3628, Page 116 and subsequent assignments.
20. The property is benefitted by the following:
    a. A right of way in common with others for the use of a proposed street known as Campbell Road as stated in a deed from Muriel B. Holmes to Olivier W. Holmes dated June 12, 1957, recorded in Book 2344, Page 132.
    b. Drainage rights described in a deed from Stephen J. Nicoll to Fleet Bank of Maine dated September 18, 1992 and recorded in Book 10288, Page 75 as follows: "the right-of-draining land now belonging to Charles F. Grant, and lying northerly and southerly of the above described, across the rear of the above described land, by surface drains emptying into the gully, which starts at the southerly end of the above described property." These rights include property on both sides of Campbell Road formerly owned by Charles Grant.
21. Record deed calls indicate the boundary here is the centerline of the brook known as Capisic Brook, however, field conditions show evidence of possible site work which may have changed the location of the brook. The line shown hereon is a reconstruction of the line shown on the plans referenced in Note #5.

REV:	BY:	DATE:	STATUS:
D	RED	7-11-94	ADD DETENTION BASIN
C	SMP	5-24-93	REVISE PER CITY COMMENTS
B	SGD	7-2-93	REVISE PARKING AND ENTRANCE LAYOUT
A	RED	4-28-93	ADDED FILTER BARRIER

Site Plan:

Keenan Auction Company

Riverside Street Portland, Maine

For:

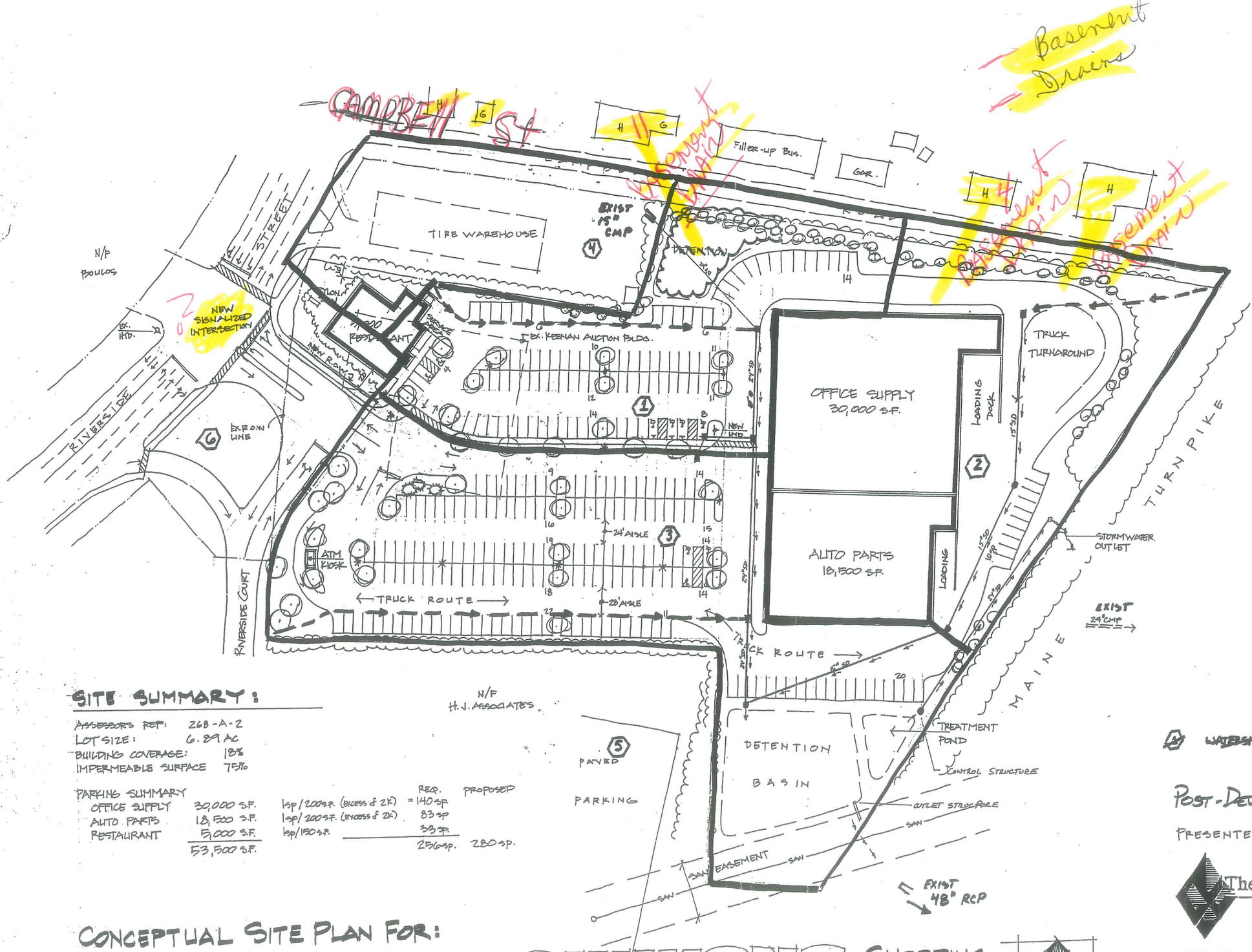
Richard J. Keenan D.B.A.
Keenan Auction Company
Main Street Kingsfield, Maine 04947

Sebago Technics
Engineering & Planning for the Future
12 WESTBROOK COMMON
WESTBROOK, ME 04098-1339
TEL (207) 856-0277

DESIGN BY:	SGD
DRAWN BY:	DRL/SGD
CHECKED BY:	
DATE:	4-13-93
SCALE:	1"=40'
FIELD BK:	167C
PROJ. NO:	93036

SHEET 1 OF 3

D.4



SITE SUMMARY:

ASSESSORS REF:	268-A-2
LOT SIZE:	6.89 AC
BUILDING COVERAGE:	18%
IMPERMEABLE SURFACE	75%

PARKING SUMMARY

			REQ.	PROPOSED
OFFICE SUPPLY	30,000 S.F.	1sp/200s.f. (EXCESS of 2K)	= 140 sp	
AUTO PARTS	18,500 S.F.	1sp/200 S.F. (EXCESS of 2K)	83 sp	
RESTAURANT	5,000 S.F.	1sp/150 s.f.	33 sp	
	53,500 S.F.		256 sp.	280 sp.

WATERSHED

POST-DEVELOPMENT WATERSHED MAP

PRESENTED BY:

The Waterford Group

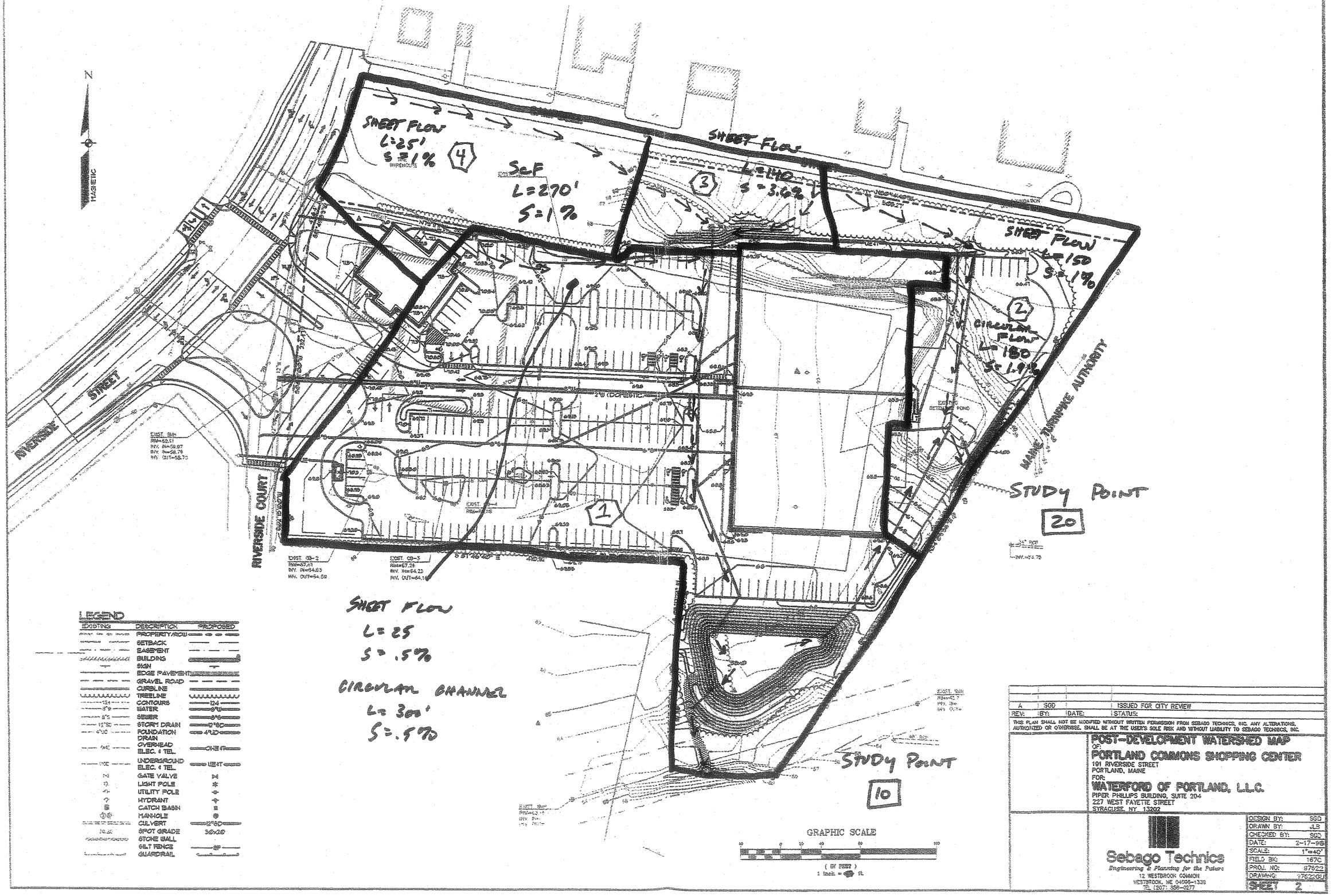
PREPARED BY: SEBAGO TECHNICS INC.
WESTBROOK, ME
JANUARY 20, 1999

SCALE 1"=40' JOB # 97622

CONCEPTUAL SITE PLAN FOR:

PORTLAND COMMONS SHOPPING CENTER

NORTH



LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY/ROW	
	SETBACK	
	EASEMENT	
	BUILDING	
	SIGN	
	EDGE PAVEMENT	
	GRAVEL ROAD	
	CURBLINE	
	TREELINE	
124	CONTOURS	124
8"W	WATER	8"W
8"S	SEWER	8"S
12"SD	STORM DRAIN	12"SD
FND	FOUNDATION DRAIN	4"FD
OHE	OVERHEAD ELEC. & TEL.	OHE
UGE	UNDERGROUND ELEC. & TEL.	UE&T
GV	GATE VALVE	GV
LP	LIGHT POLE	*
UP	UTILITY POLE	
H	HYDRANT	
CB	CATCH BASIN	
MH	MANHOLE	
12"SD	CULVERT	12"SD
50.25	SPOT GRADE	50x25
	STONE WALL	
SF	SILT FENCE	SF
	GUARDRAIL	

REV:	BY:	DATE:	STATUS:
A	SGD		ISSUED FOR CITY REVIEW

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POST-DEVELOPMENT WATERSHED MAP

OF:

PORTLAND COMMONS SHOPPING CENTER

101 RIVERSIDE STREET
PORTLAND, MAINE

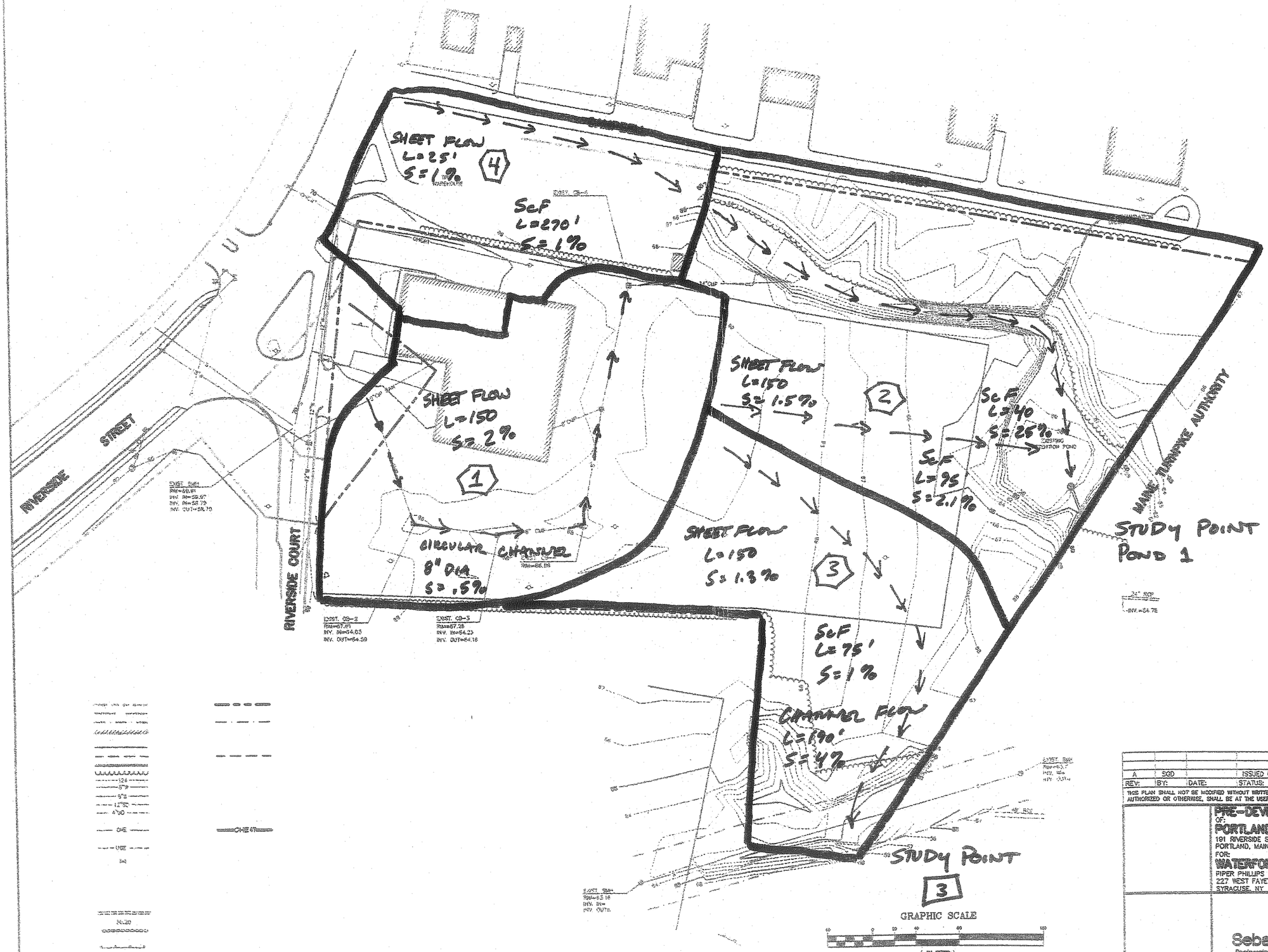
FOR:

WATERFORD OF PORTLAND, L.L.C.

PIPER PHILLIPS BUILDING, SUITE 204
227 WEST FAYETTE STREET
SYRACUSE, NY 13202

Sebago Technics
Engineering & Planning for the Future
12 WESTBROOK COMMON
WESTBROOK, ME 04092-1339
TEL (207) 856-0277

DESIGN BY:	SGD
DRAWN BY:	JLB
CHECKED BY:	SGD
DATE:	2-17-98
SCALE:	1"=40'
FIELD BK:	167C
PROJ. NO:	97822
DRAWING:	97822GU
SHEET	2



REV:	BY:	DATE:	STATUS:
A	SGD		ISSUED FOR CITY REVIEW

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PRE-DEVELOPMENT WATERSHED MAP

OF:

PORTLAND COMMONS SHOPPING CENTER

191 RIVERSIDE STREET
PORTLAND, MAINE

FOR:

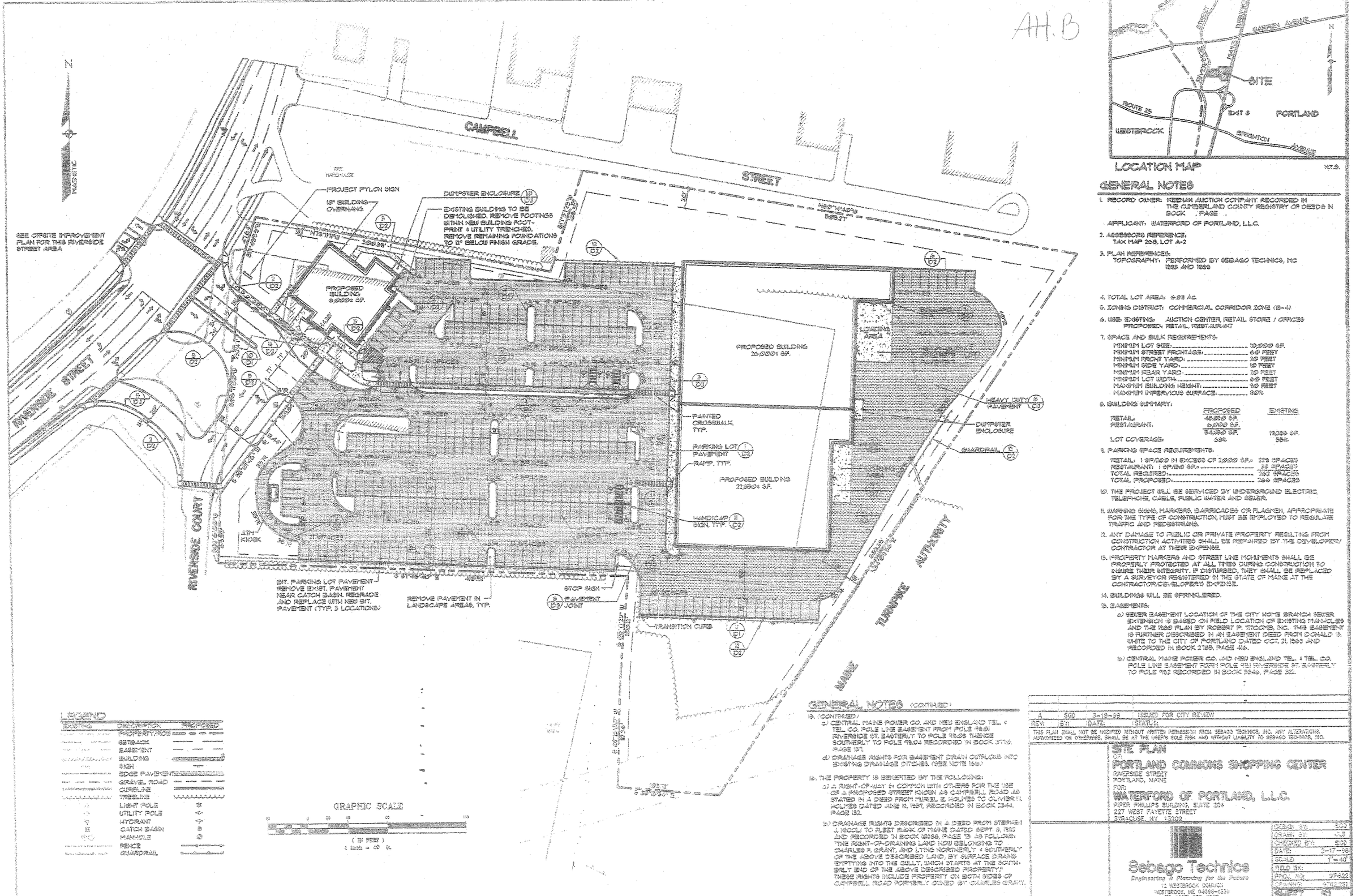
WATERFORD OF PORTLAND, L.L.C.

PIPER PHILLIPS BUILDING, SUITE 204
227 WEST FAYETTE STREET
SYRACUSE, NY 13202

Sebago Technics
Engineering & Planning for the Future
12 WESTBROOK COMMON
WESTBROOK, ME 04092-1339
TEL (207) 856-0277

DESIGN BY:	SGD
DRAWN BY:	JLB
CHECKED BY:	SGD
DATE:	2-17-98
SCALE:	1"=40'
FIELD BK:	167C
PROJ. NO:	97622
DRAWING:	97622OU
SHEET	1

AH.B



LOCATION MAP N.T.S.

GENERAL NOTES

1. RECORD OWNER: KEENAN AUCTION COMPANY, RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK , PAGE .
   APPLICANT: WATERFORD OF PORTLAND, L.L.C.
2. ASSESSORS REFERENCE: TAX MAP 268, LOT A-2
3. PLAN REFERENCES: TOPOGRAPHY: PERFORMED BY SEBAGO TECHNICS, INC 1993 AND 1999
4. TOTAL LOT AREA: 9.88 Ac.
5. ZONING DISTRICT: COMMERCIAL CORRIDOR ZONE (B-4)
6. USE: EXISTING: AUCTION CENTER, RETAIL STORE / OFFICES
   PROPOSED: RETAIL, RESTAURANT
7. SPACE AND BULK REQUIREMENTS:

MINIMUM LOT SIZE:	10,000 SF.
MINIMUM STREET FRONTAGE:	60 FEET
MINIMUM FRONT YARD:	20 FEET
MINIMUM SIDE YARD:	10 FEET
MINIMUM REAR YARD:	20 FEET
MINIMUM LOT WIDTH:	60 FEET
MAXIMUM BUILDING HEIGHT:	50 FEET
MAXIMUM IMPERVIOUS SURFACE:	90%

8. BUILDING SUMMARY:

	PROPOSED	EXISTING
RETAIL	48,850 SF.	
RESTAURANT	6,000 SF.	
	54,850 SF.	19,285 SF.
LOT COVERAGE:	58%	35%

9. PARKING SPACE REQUIREMENTS:

RETAIL: 1 SP/300 IN EXCESS OF 2,000 SF.=	239 SPACES
RESTAURANT: 1 SP/150 SF.=	55 SPACES
TOTAL REQUIRED=	1951 SPACES
TOTAL PROPOSED=	366 SPACES

10. THE PROJECT WILL BE SERVICED BY UNDERGROUND ELECTRIC, TELEPHONE, CABLE, PUBLIC WATER AND SEWER.
11. WARNING SIGNS, MARKERS, BARRICADES OR FLAGMEN, APPROPRIATE FOR THE TYPE OF CONSTRUCTION, MUST BE EMPLOYED TO REGULATE TRAFFIC AND PEDESTRIANS.
12. ANY DAMAGE TO PUBLIC OR PRIVATE PROPERTY RESULTING FROM CONSTRUCTION ACTIVITIES SHALL BE REPAIRED BY THE DEVELOPER/CONTRACTOR AT THEIR EXPENSE.
13. PROPERTY MARKERS AND STREET LINE MONUMENTS SHALL BE PROPERLY PROTECTED AT ALL TIMES DURING CONSTRUCTION TO INSURE THEIR INTEGRITY. IF DISTURBED, THEY SHALL BE REPLACED BY A SURVEYOR REGISTERED IN THE STATE OF MAINE AT THE CONTRACTOR'S/DEVELOPER'S EXPENSE.
14. BUILDINGS WILL BE SPRINKLERED.
15. EASEMENTS:
    a) SEWER EASEMENT LOCATION OF THE CITY HOME BRANCH SEWER EXTENSION IS BASED ON FIELD LOCATION OF EXISTING MANHOLES AND THE 1926 PLAN BY ROBERT P. STOCKS, INC. THIS EASEMENT IS FURTHER DESCRIBED IN AN EASEMENT DEED FROM DONALD B. WHITE TO THE CITY OF PORTLAND DATED OCT. 21, 1963 AND RECORDED IN BOOK 2789, PAGE 416.
    b) CENTRAL MAINE POWER CO. AND NEW ENGLAND TEL. & TEL. CO. POLE LINE EASEMENT FORM POLE #31 RIVERSIDE ST. EASTERLY TO POLE #42 RECORDED IN BOOK 3549, PAGE 302.

GENERAL NOTES (CONTINUED)

15. (CONTINUED)
    c) CENTRAL MAINE POWER CO. AND NEW ENGLAND TEL. & TEL. CO. POLE LINE EASEMENT FROM POLE #48-9 RIVERSIDE ST. EASTERLY TO POLE #48-5 THENCE SOUTHERLY TO POLE #48-4 RECORDED IN BOOK 3770, PAGE 97.
    d) DRAINAGE RIGHTS FOR EASEMENT DRAIN OUTFLOWS INTO EXISTING DRAINAGE DITCHES. (SEE NOTE 16c)
15. THE PROPERTY IS BENEFITED BY THE FOLLOWING:
    a) A RIGHT-OF-WAY IN COMMON WITH OTHERS FOR THE USE OF A PROPOSED STREET KNOWN AS CAMPBELL ROAD AS STATED IN A DEED FROM MURIEL S. HOLMES TO OLIVER H. HOLMES DATED JUNE 12, 1957, RECORDED IN BOOK 3344, PAGE 150.
    b) DRAINAGE RIGHTS DESCRIBED IN A DEED FROM STEPHEN J. NICOLI TO FLEET BANK OF MAINE DATED SEPT. 9, 1992 AND RECORDED IN BOOK 12288, PAGE 13 AS FOLLOWS: "THE RIGHT-OF-DRAINING LAND NOW BELONGING TO CHARLES F. GRANT, AND LYING NORTHERLY & SOUTHERLY OF THE ABOVE DESCRIBED LAND, BY SURFACE DRAINS EMPTYING INTO THE GULLY, WHICH STARTS AT THE SOUTHERLY END OF THE ABOVE DESCRIBED PROPERTY." THESE RIGHTS INCLUDE PROPERTY ON BOTH SIDES OF CAMPBELL ROAD FORMERLY OWNED BY CHARLES GRANT.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE	
	SETBACK	
	EASEMENT	
	BUILDING	
	SIGN	
	EDGE PAVEMENT	
	GRAVEL ROAD	
	CURBLINE	
	TREELINE	
	LIGHT POLE	
	UTILITY POLE	
	HYDRANT	
	CATCH BASIN	
	MANHOLE	
	FENCE	
	GUARDRAIL	

GRAPHIC SCALE
0 20 40 80 120
(IN FEET)
1 inch = 40 ft.

REV.	BY	DATE	STATUS
4	SGD	3-18-98	ISSUED FOR CITY REVIEW

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SITE PLAN
FOR
PORTLAND COMMONS SHOPPING CENTER
RIVERSIDE STREET
PORTLAND, MAINE
FOR:
WATERFORD OF PORTLAND, L.L.C.
PIPER, PHILLIPS BUILDING, SUITE 304
227 WEST FAYETTE STREET
SYRACUSE, NY 13202

Sebago Technics
Engineering & Planning for the Future
12 WESTBROOK COMMON
WESTBROOK, ME 04092-1330
TEL. (207) 856-0277

DESIGN BY:	SGD
DRAWN BY:	WJB
CHECKED BY:	SGD
DATE:	3-17-98
SCALE:	1"=40'
FIELD BK:	
PROJ. NO.:	97622
DRAWING:	97622-SP1
SHEET	1 OF 1

D3

D3

T & L ASSOCIATES, INC.
3523/225 3137/306 4.25 ACRES

405.6

0.1' IRON PIPE FOUND

25' PORTLAND WATER DISTRICT EASEMENT (APPROX LOCATION)

30' SEWER EASEMENT (approx location)

PINE HEDGEROW

PAVED PARKING LOT

0.2' IRON PIPE FOUND

Maples

868.38'

381.25

S PARCEL

RIVERSIDE DISCONTINUED

#9.4 COURT DEC. 5, 1973

S 45° 06' W 76.43

121.69

S 11°-20" E

S 00°-06" W 100.00

10" SEWER PLUGGED

MH

10"

8"

SEWER EASEMENT

Transformer pad

3 STORY MASONRY

PATIO

1 STORY FRAME POOL

PAVED PARKING LOT

SIDEWALK

HOWARD JOHNSON'S MOTOR LODGE

3 STORY- MASORY

1 STORY MASONRY

HOWARD JOHNSON RESTAURANT

Transformer

F-LETCHER BROWN 319/350

233.00 S 9°-58' E

S 13°-55' E 69.20'

COURT

SEE DETAIL "A"

S 9°-58' E 93.99

S 55°-10'-20" E 93.99

TEE IRON SET

PARCEL 1

T & L ASSOCIATES, INC.

3115/289 3.25 ACRES

PAVED PARKING LOT

TEE IRON SET

CB

291.05

S 34°-49'-40" W

MH

SD 12" SD

SIDEWALK

CB

+0-115.5

S 55°-10'-20" E 120.00

STREET

RIVERSIDE

12" W

10" W

S

CAMPBELL ROAD

NOW OR FORMERLY EDITH K. BURGESS 1525/427

S 2°-04' W 147.71

371.86'

R = 576.62'

GRAN MON FOUND

GRAN MON. FOUND

GRAN MON. FOUND

LEGEND

POWER POLE

UNDERGROUND SEWER

UNDERGROUND STORM DRA

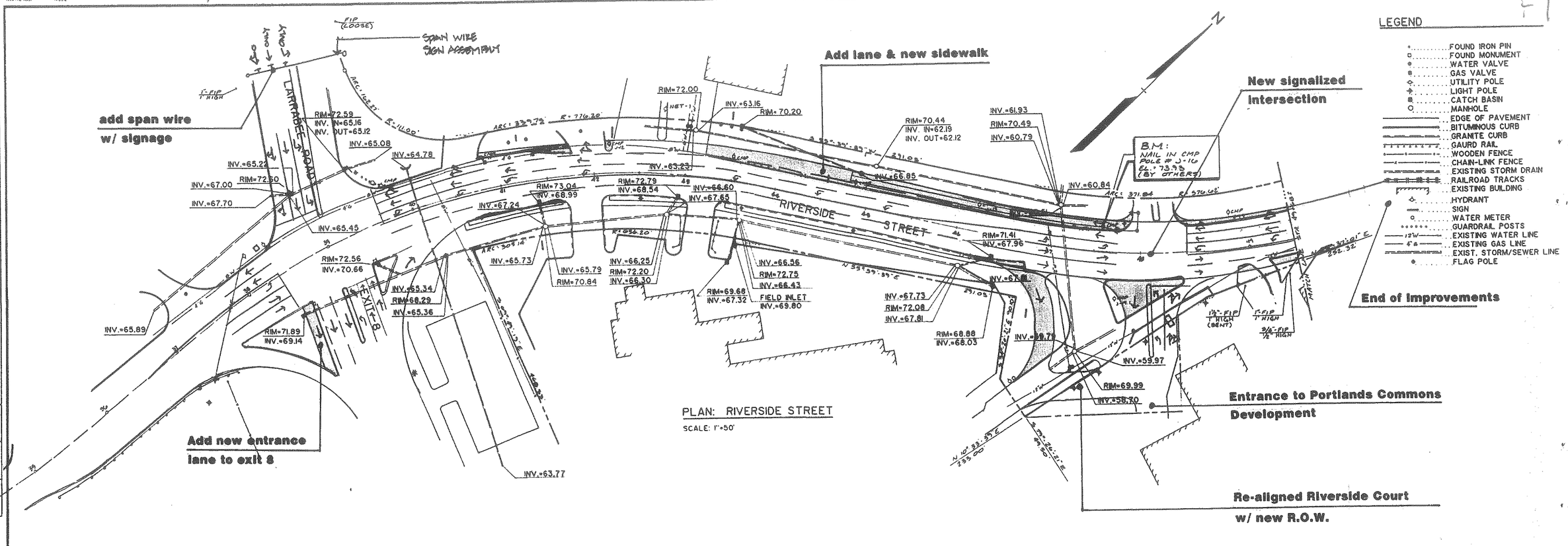
UNDERGRONO WATER MAIN

OVER HEAD POWER

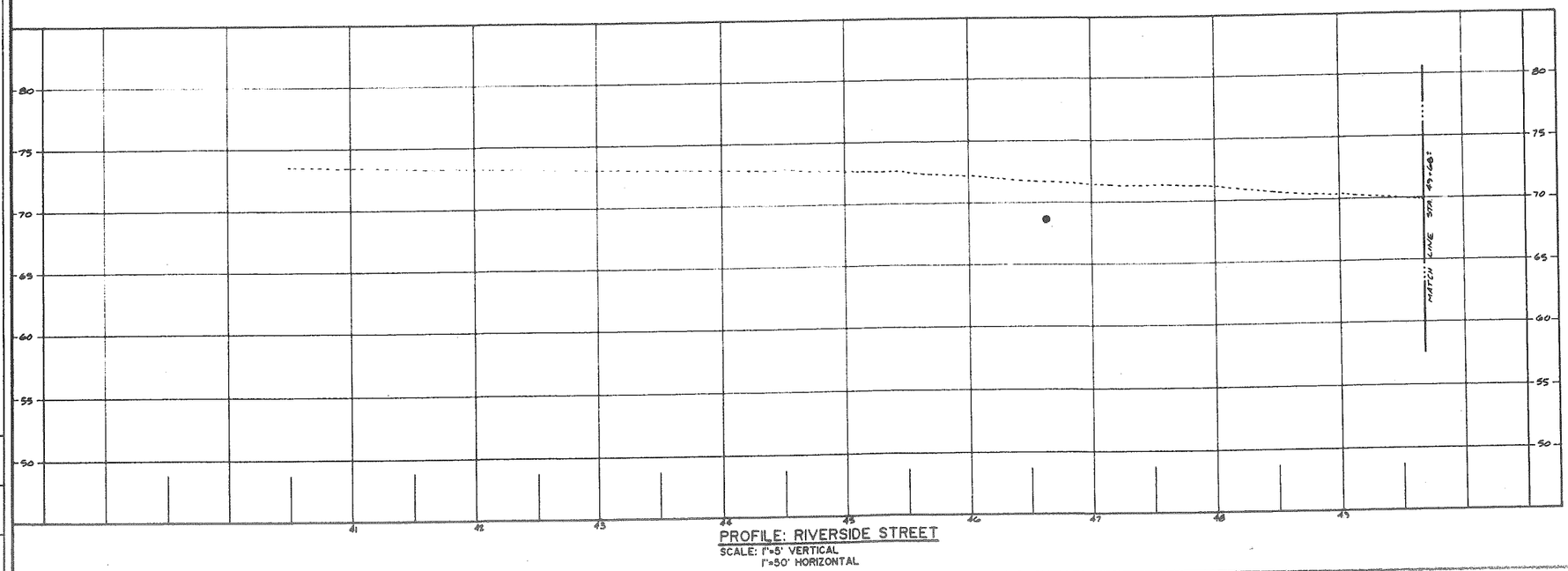
MANHOLE

CATCH BASIN

577/17



PLAN: RIVERSIDE STREET
SCALE: 1"=50'



PROFILE: RIVERSIDE STREET
SCALE: 1"=5' VERTICAL
1"=50' HORIZONTAL

GRAPHIC SCALE IN FEET: 1"=50'

PLAN & PROFILE: **PLAN OPTION A** 5/14/99
RIVERSIDE STREET RECONSTRUCTION

FOR:
CITY OF PORTLAND
389 CONGRESS STREET
PORTLAND, MAINE

STATE OF MAINE — LEWIS BROWN III 1170 REGISTERED LAND SURVEYOR

Sebago Technics, Inc.
CIVIL ENGINEERS AND SURVEYORS
12 Westbrook Common
Westbrook, Maine 04092
854-0471

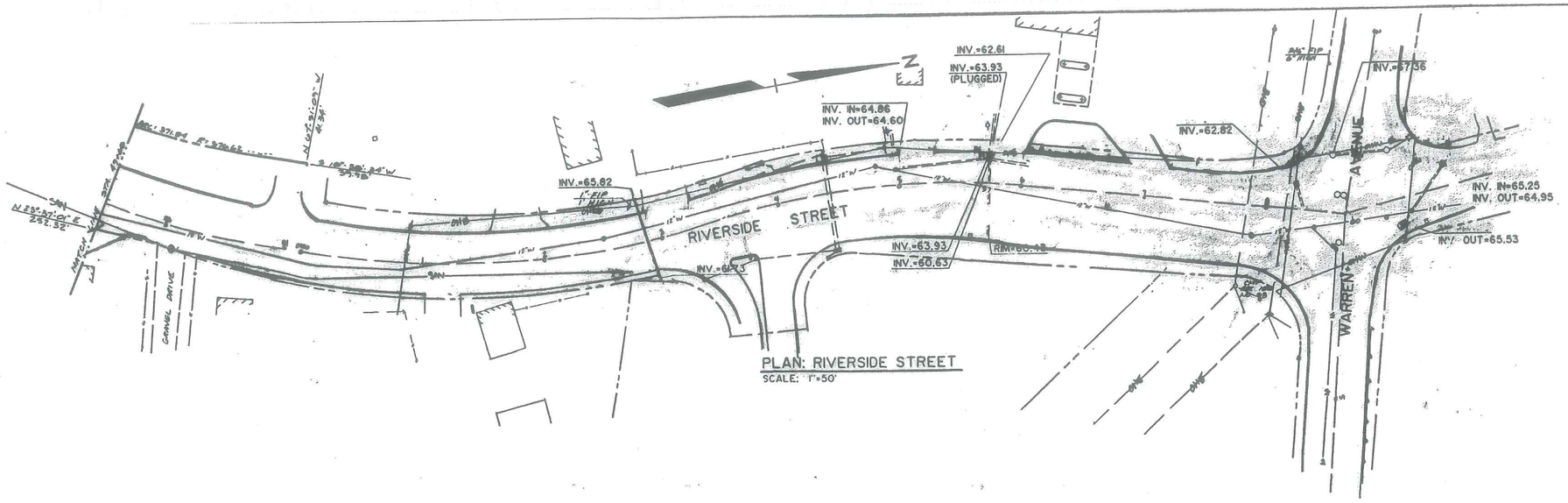
DRAWN BY: TSK
DESIGN BY:
CHECKED BY: SMF
DATE: 7/31/87
SCALE: AS NOTED
FIELD BOOK: 167 A&B
PROJECT NO. 97C2
SHEET 1 OF 2

REVISION	BY	DATE	STATUS

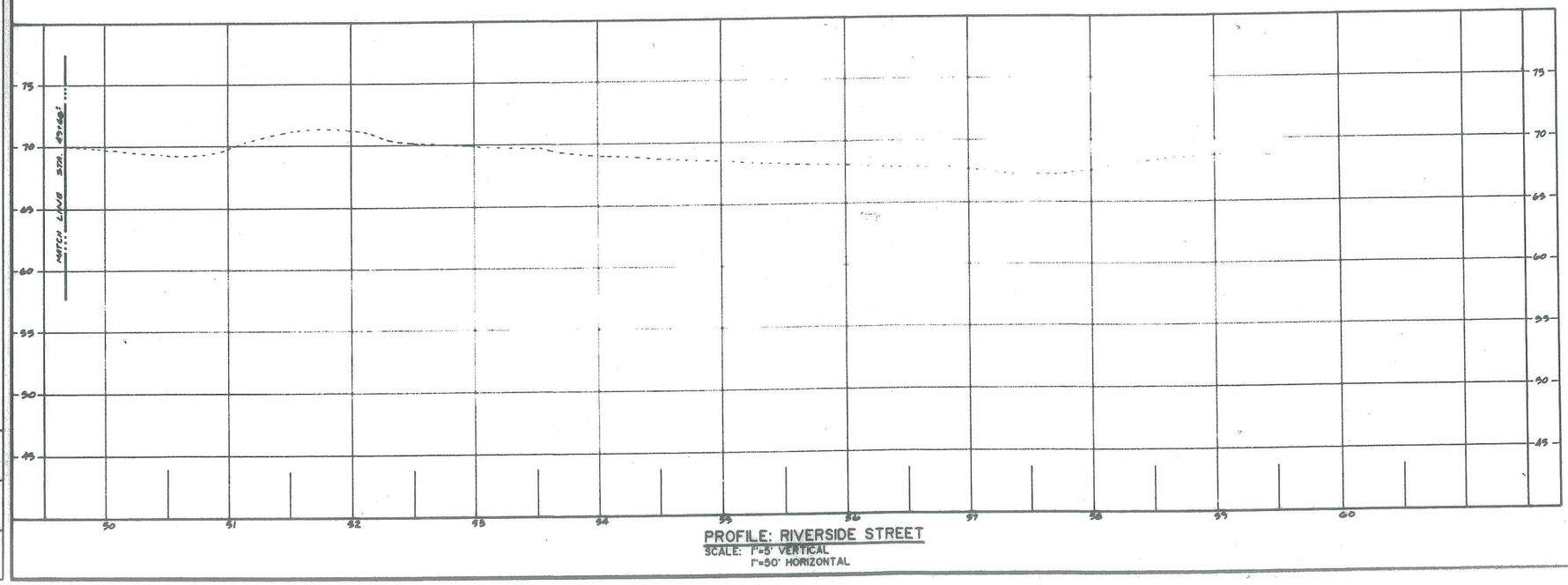
F2

LEGEND

- FOUND IRON PIN
- FOUND MONUMENT
- WATER VALVE
- GAS VALVE
- UTILITY POLE
- LIGHT POLE
- CATCH BASIN
- MANHOLE
- EDGE OF PAVEMENT
- BITUMINOUS CURB
- GRANITE CURB
- GAURD RAIL
- WOODEN FENCE
- CHAIN-LINK FENCE
- EXISTING STORM DRAIN
- RAILROAD TRACKS
- EXISTING BUILDING
- HYDRANT
- SIGN
- WATER METER
- GUARDRAIL POSTS
- EXISTING WATER LINE
- EXISTING GAS LINE
- EXIST. STORM/SEWER LINE
- FLAG POLE



PLAN: RIVERSIDE STREET
SCALE: 1"=50'



PROFILE: RIVERSIDE STREET
SCALE: 1"=5' VERTICAL
1"=50' HORIZONTAL

0 50 100 150
GRAPHIC SCALE IN FEET: 1"=50'

STATE OF MAINE
CHARLES LOWELL BROWN, JR. 1201 REGISTERED LAND SURVEYOR

PLAN & PROFILE:
RIVERSIDE STREET RECONSTRUCTION

FOR:
CITY OF PORTLAND
389 CONGRESS STREET
PORTLAND, MAINE

Sebago Technics, Inc.
CIVIL ENGINEERS AND SURVEYORS

12 Westbrook Common
Westbrook, Maine 04092
854-0471

DRAWN BY:	TSK
DESIGN BY:	
CHECKED BY:	SMF
DATE:	7/31/87
SCALE:	AS NOTED
FIELD BOOK:	167 A&B
PROJECT NO.	9762

SHEET 2 OF 2

REVISION	BY	DATE	STATUS

D.4

E-5
65

Basement Drains

CAMPBELL ST

Basement Drain

Basement Drain

Basement Drain

N/F BOULOS

STREET

EXIST 15" CMP

TIRE WAREHOUSE

Filler-up Bldg.

GAR.

DETENTION

TRUCK TURNAROUND

NEW SIGNALIZED INTERSECTION

EX. HYD.

RESTAURANT

NEW RD. NO. 2

EX. KEENAN AUCTION BLDG.

OFFICE SUPPLY 30,000 S.F.

LOADING DOCK

RIVERSIDE

EX. R.O.W. LINE

TURNPIKE

STORMWATER OUTLET

24' AISLE

ATM KIOSK

AUTO PARTS 18,500 S.F.

LOADING

RIVERSIDE COURT

TRUCK ROUTE

EXIST 24" CMP

TRUCK ROUTE

MAINE

N/F H.J. ASSOCIATES

PAVED PARKING

DETENTION BASIN

TREATMENT POND

CONTROL STRUCTURE

OUTLET STRUCTURE

SAN

SAN EASEMENT

SAN

SAN

EXIST 48" RCP

SITE SUMMARY:

ASSESSORS REF:	268-A-2
LOT SIZE:	6.89 AC
BUILDING COVERAGE:	18%
IMPERMEABLE SURFACE	75%

PARKING SUMMARY

			REQ.	PROPOSED
OFFICE SUPPLY	30,000 S.F.	1sp/200 s.f. (excess of 2K)	= 140 sp	
AUTO PARTS	18,500 S.F.	1sp/200 s.f. (excess of 2K)	83 sp	
RESTAURANT	5,000 S.F.	1sp/150 s.f.	33 sp	
	53,500 S.F.		256 sp.	280 sp.

WATERSHED

POST-DEVELOPMENT WATERSHED MAP

PRESENTED BY:

The Waterford Group

PREPARED BY: SEBAGO TECHNICS INC.
WESTBROOK, ME
JANUARY 20, 1999

SCALE 1"=40' JOB# 97622

CONCEPTUAL SITE PLAN FOR:

PORTLAND COMMONS SHOPPING CENTER

NORTH

SIGNAGE PROPOSED for WEST & EAST ELEVATIONS
CONCEPT DRAWING OF (2) D.F. FREESTANDING PYLONS

ALLUMINUM SUPPORT STRUCTURE & POLE WRAPS
COLOR DISTRIBUTION AS SHOWN _____ DARK GREY, _____ RED, _____ LT. GREY TO BEST MATCH BUILDING
REVEALS & ADDRESS HEADER'S ACCENT RED TRIMMED W/ RED NEON

(2) S.F. INTERNALLY ILLUMINATED ADDRESS HEADER & SUPPORT

COLOR DISTRIBUTION AS SHOWN _____ DARK GREY, _____ RED, _____ LT. GREY TO BEST MATCH BUILDING
COPY JIGGED OUT AND BACKED UP WITH WHITE PLEXI

D.F. 11'-6" X 12'-0" X _____" INTERNALLY ILLUMINATED TENANT CABINET

CABINET / 2 1/4" RETAINER / 2" DIVIDERS: _____ RED TO MATCH BUILDING
FACES: WHITE LEXAN
B/G: WHITE
(5) TENANT PANELS PER SIDE: V.O.S 25 1/8" X 139.5"
CUSTOM ART & COLORS

SQUARE FOOTAGE: 138

NOTES:

DESIGN STATUS:

PRESENTATION PRINT DATE:

PROGRESS PRINT #.:

CONSTRUCTION/MOUNTING: DATE:

PERMIT/SITE PLAN: DATE:

APPROVED MANUFACTURING:

DATE:

VOLTAGE:

REVISIONS:

Bailey sign incorporated
9 Thomas Drive
Col. Westbrook Executive Park
Westbrook, ME 04092
207-774-2843 / 1-800-539-SIGN
Fax: 774-1193
E-Mail: newsign@baileysign.com
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CUSTOMER: THE WATERFORD GROUP

LOCATION: 191 PORTLAND COMMONS
PORTLAND, ME

SALESPERSON: B.B. DRAWN BY: L.W.M.

ACCEPTANCE SIGNATURE DATE: _____

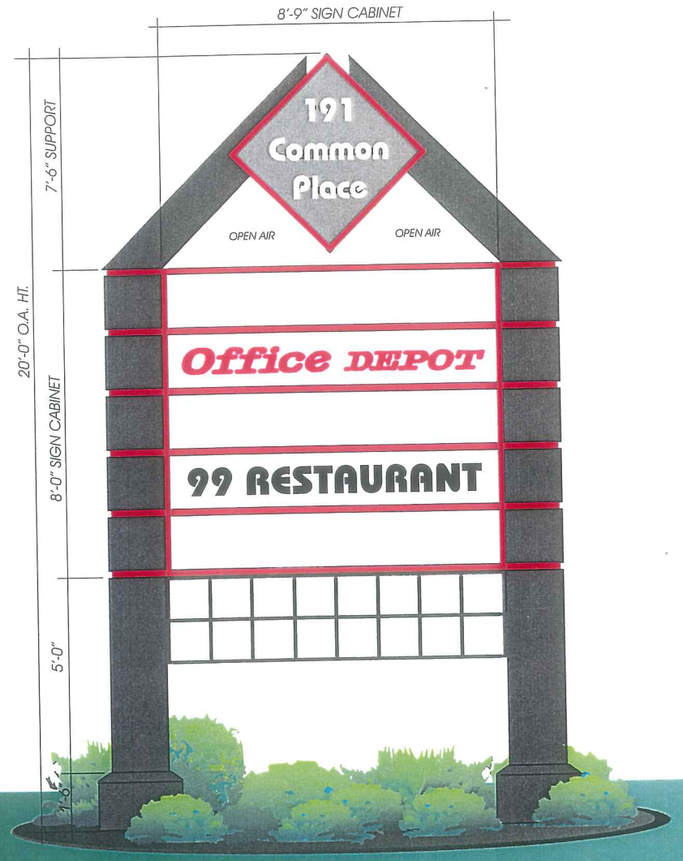
CLIENT _____

P.S. # D-394 W.O. #

SCALE 1/4"=1' DATE 5/21/99

DRAWING NO: 04095 A

SHEET ___ / ___



SIGNAGE PROPOSED for EAST ELEVATIONS
CONCEPT DRAWING OF (1) D.F. FREESTANDING PYLONS

ALLUMINUM SUPPORT STRUCTURE & POLE WRAPS
COLOR DISTRIBUTION AS SHOWN _____ DARK GREY, _____ RED, _____ LT. GREY TO BEST MATCH BUILDING
REVEALS & ADDRESS HEADER'S ACCENT RED TRIMMED W/ RED NEON

(2) S.F. INTERNALLY ILLUMINATED ADDRESS HEADER & SUPPORT

COLOR DISTRIBUTION AS SHOWN _____ DARK GREY, _____ RED, _____ LT. GREY TO BEST MATCH BUILDING
COPY JIGGED OUT AND BACKED UP WITH WHITE PLEXI

(1) D.F. 8'-0" X 8'-9" X _____" INTERNALLY ILLUMINATED TENANT CABINET

CABINET / 2 1/4" RETAINER / 2" DIVIDERS: _____ RED TO MATCH BUILDING
FACES: WHITE LEXAN
B/G: WHITE
(5) TENANT PANELS PER SIDE: V.O.S 16 3/4" X 100.5"
CUSTOM ART & COLORS

TOTAL SQUARE FOOTAGE: 70

NOTES:

DESIGN STATUS:

PRESENTATION PRINT DATE:

PROGRESS PRINT #.:

CONSTRUCTION/MOUNTING: DATE:

PERMIT/SITE PLAN: DATE:

APPROVED MANUFACTURING:

DATE:

VOLTAGE:

REVISIONS:

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Westbrook, ME 04092
207-774-2843 / 1-800-539-SIGN
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CUSTOMER:
THE WATERFORD GROUP
LOCATION:
191 PORTLAND COMMO
PORTLAND, ME

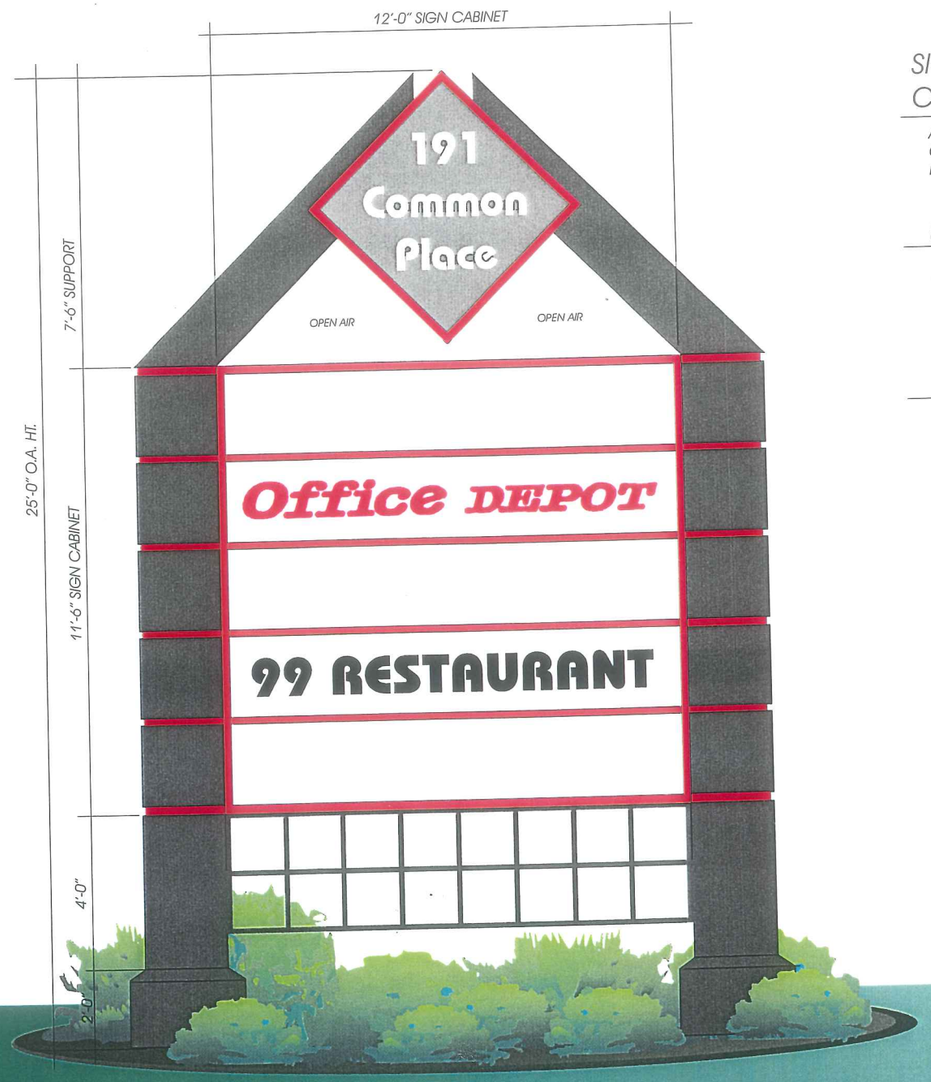
SALESPERSON: B.B. DRAWN BY: L.W.M

ACCEPTANCE SIGNATURE DATE: _____
CLIENT _____

P.S. # D-394 W.O. #

SCALE 1/4"=1' DATE 5/21/99

DRAWING NO: 04095 B
SHEET ___ / ___



SIGNAGE PROPOSED for WEST & EAST ELEVATIONS
CONCEPT DRAWING OF (2) D.F. FREESTANDING PYLONS

ALLUMINUM SUPPORT STRUCTURE & POLE WRAPS
COLOR DISTRIBUTION AS SHOWN _____ DARK GREY, _____ RED, _____ LT. GREY TO BEST MATCH BUILDING
REVEALS & ADDRESS HEADER'S ACCENT RED TRIMMED W/ RED NEON

(2) S.F. INTERNALLY ILLUMINATED ADDRESS HEADER & SUPPORT

COLOR DISTRIBUTION AS SHOWN _____ DARK GREY, _____ RED, _____ LT. GREY TO BEST MATCH BUILDING
COPY JIGGED OUT AND BACKED UP WITH WHITE PLEXI

D.F. 11'-6" X 12'-0" X _____" INTERNALLY ILLUMINATED TENANT CABINET

CABINET / 2 1/4" RETAINER / 2" DIVIDERS: _____ RED TO MATCH BUILDING
FACES: WHITE LEXAN
B/G: WHITE
(5) TENANT PANELS PER SIDE: V.O.S 25 1/8" X 139.5"
CUSTOM ART & COLORS

SQUARE FOOTAGE: 138

NOTES:

DESIGN STATUS:

PRESENTATION PRINT DATE:

PROGRESS PRINT #.:

CONSTRUCTION/MOUNTING: DATE:

PERMIT/SITE PLAN: DATE:

APPROVED MANUFACTURING:

DATE:

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CUSTOMER: THE WATERFORD GROUP

LOCATION: 191 PORTLAND COMMONS
PORTLAND, ME

SALESPERSON: B.B. DRAWN BY: L.W.M

ACCEPTANCE SIGNATURE DATE: _____

CLIENT _____

P.S. # D-394 W.O. #

SCALE 1/4"=1' DATE 5/21/99

DRAWING NO: 04095 A

SHEET ___ / ___

UL® IDA INTERNATIONAL SIGN ASSOCIATION WSA ISSC

SIGNAGE PROPOSED for EAST ELEVATIONS
CONCEPT DRAWING OF (1) D.F. FREESTANDING PYLONS

ALLUMINUM SUPPORT STRUCTURE & POLE WRAPS
COLOR DISTRIBUTION AS SHOWN _____ DARK GREY, _____ RED, _____ LT. GREY TO BEST MATCH BUILDING
REVEALS & ADDRESS HEADER'S ACCENT RED TRIMMED W/ RED NEON

(2) S.F. INTERNALLY ILLUMINATED ADDRESS HEADER & SUPPORT

COLOR DISTRIBUTION AS SHOWN _____ DARK GREY, _____ RED, _____ LT. GREY TO BEST MATCH BUILDING
COPY JIGGED OUT AND BACKED UP WITH WHITE PLEXI

(1) D.F. 8'-0" X 8'-9" X _____" INTERNALLY ILLUMINATED TENANT CABINET

CABINET / 2 1/4" RETAINER / 2" DIVIDERS: _____ RED TO MATCH BUILDING
FACES: WHITE LEXAN
B/G: WHITE
(5) TENANT PANELS PER SIDE: V.O.S 16 3/4" X 100.5"
CUSTOM ART & COLORS

TOTAL SQUARE FOOTAGE: 70

NOTES:

DESIGN STATUS:

PRESENTATION PRINT DATE:

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CUSTOMER:
THE WATERFORD GROUP
LOCATION:
191 PORTLAND COMMON
PORTLAND, ME

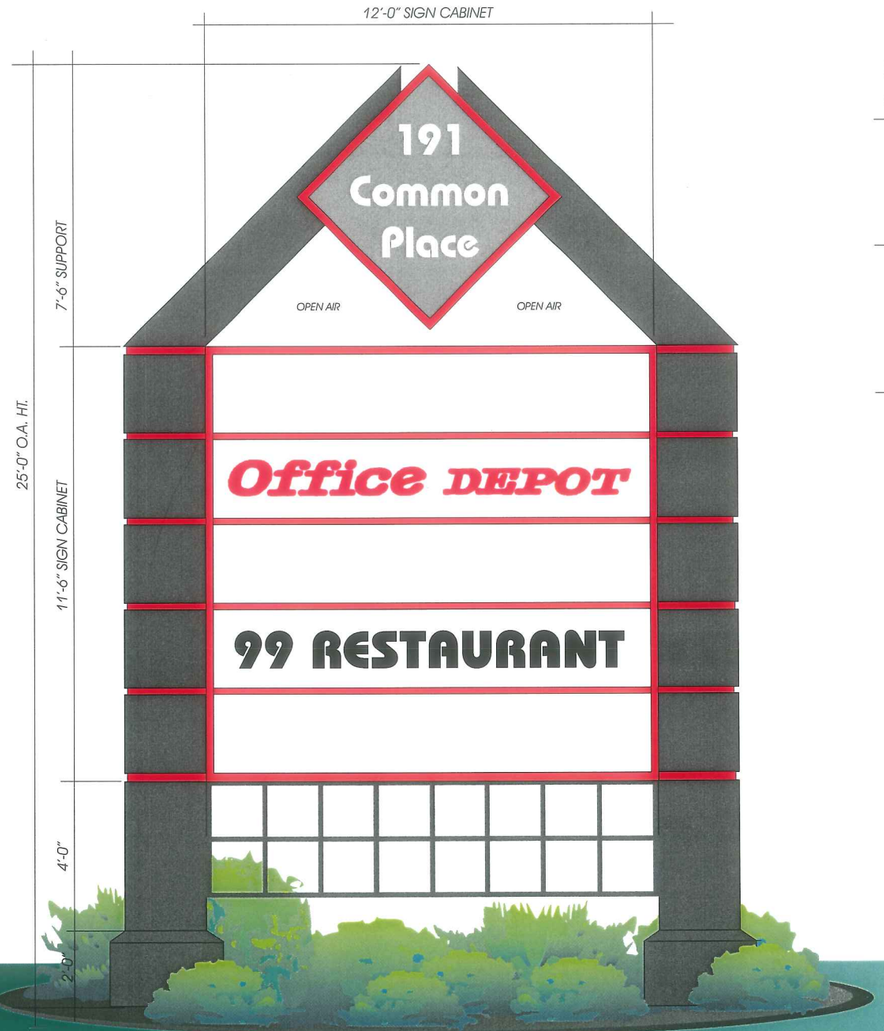
SALESPERSON: B.B. DRAWN BY: L.W.M.

ACCEPTANCE SIGNATURE DATE: _____
CLIENT _____

P.S. # D-394 W.O. #

SCALE 1/4"=1' DATE 5/21/99

DRAWING NO: 04095 B
SHEET ___ / ___



NOTES:

SIGNAGE PROPOSED for WEST & EAST ELEVATIONS
CONCEPT DRAWING OF (2) D.F. FREESTANDING PYLONS

ALLUMINUM SUPPORT STRUCTURE & POLE WRAPS
COLOR DISTRIBUTION AS SHOWN _____ DARK GREY, _____ RED, _____ LT. GREY TO BEST MATCH BUILDING
REVEALS & ADDRESS HEADER'S ACCENT RED TRIMMED W/ RED NEON

(2) S.F. INTERNALLY ILLUMINATED ADDRESS HEADER & SUPPORT

COLOR DISTRIBUTION AS SHOWN _____ DARK GREY, _____ RED, _____ LT. GREY TO BEST MATCH BUILDING
COPY JIGGED OUT AND BACKED UP WITH WHITE PLEXI

D.F. 11'-6" X 12'-0" X _____" INTERNALLY ILLUMINATED TENANT CABINET

CABINET / 2 1/4" RETAINER / 2" DIVIDERS: _____ RED TO MATCH BUILDING
FACES: WHITE LEXAN
B/G: WHITE
(5) TENANT PANELS PER SIDE: V.O.S 25 1/8" X 139.5"
CUSTOM ART & COLORS

SQUARE FOOTAGE: 138

DESIGN STATUS:

PRESENTATION PRINT DATE:

PROGRESS PRINT #.:

CONSTRUCTION/MOUNTING: DATE:

PERMIT/SITE PLAN: DATE:

APPROVED MANUFACTURING:

DATE:

VOLTAGE:

REVISIONS:

Bailey sign incorporated
9 Thomas Drive
Col. Westbrook Executive Park
Westbrook, ME 04092
207-774-2843 / 1-800-539-SIGN
Fax: 774-1193
E-Mail: newsign@baileysign.com
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CUSTOMER:
THE WATERFORD GROUP
LOCATION:
191 PORTLAND COMMONS
PORTLAND, ME

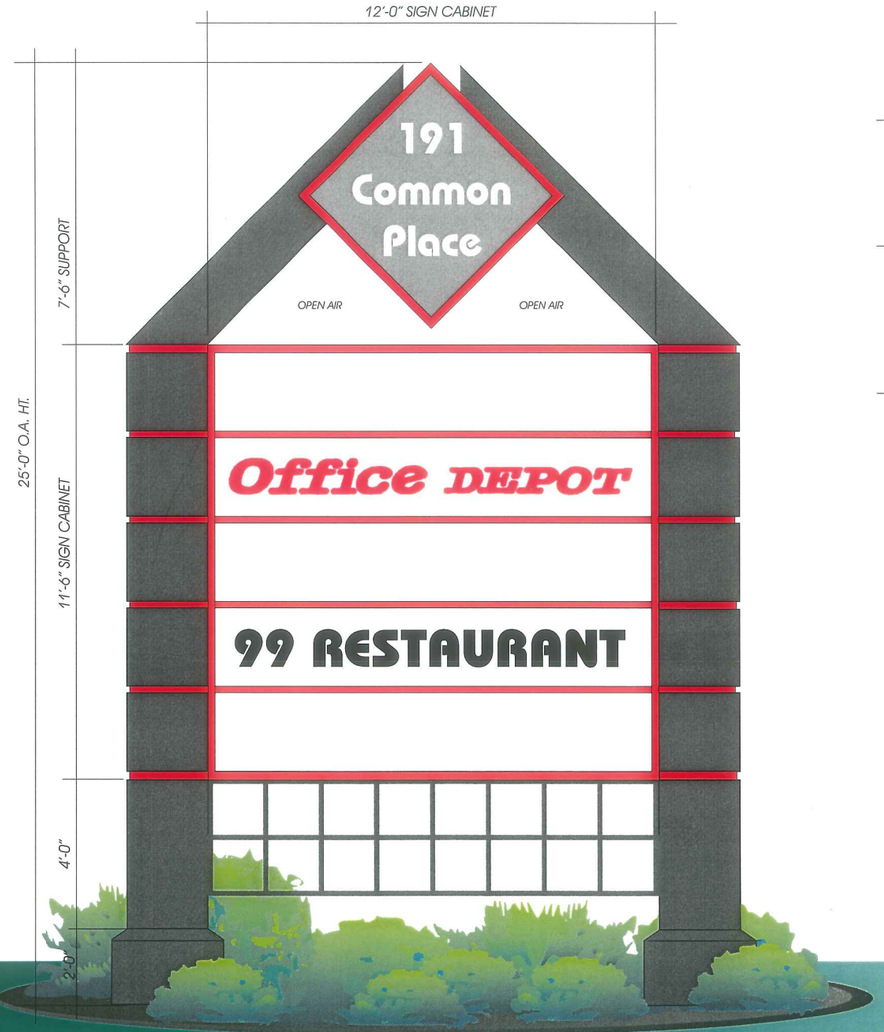
SALESPERSON: B.B. DRAWN BY: L.W.M.

ACCEPTANCE SIGNATURE DATE: _____
CLIENT _____

P.S. # D-394 W.O. #

SCALE 1/4"=1' DATE 5/21/99

DRAWING NO:
SHEET ___ / ___ 04095 A



SIGNAGE PROPOSED for WEST & EAST ELEVATIONS
CONCEPT DRAWING OF (2) D.F. FREESTANDING PYLONS

ALLUMINUM SUPPORT STRUCTURE & POLE WRAPS
COLOR DISTRIBUTION AS SHOWN _____ DARK GREY, _____ RED, _____ LT. GREY TO BEST MATCH BUILDING
REVEALS & ADDRESS HEADER'S ACCENT RED TRIMMED W/ RED NEON

(2) S.F. INTERNALLY ILLUMINATED ADDRESS HEADER & SUPPORT

COLOR DISTRIBUTION AS SHOWN _____ DARK GREY, _____ RED, _____ LT. GREY TO BEST MATCH BUILDING
COPY JIGGED OUT AND BACKED UP WITH WHITE PLEXI

D.F. 11'-6" X 12'-0" X _____" INTERNALLY ILLUMINATED TENANT CABINET

CABINET / 2 1/4" RETAINER / 2" DIVIDERS: _____ RED TO MATCH BUILDING
FACES: WHITE LEXAN
B/G: WHITE
(5) TENANT PANELS PER SIDE: V.O.S 25 1/8" X 139.5"
CUSTOM ART & COLORS

SQUARE FOOTAGE: 138

NOTES:

DESIGN STATUS:

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CUSTOMER: THE WATERFORD GROUP
LOCATION: 191 PORTLAND COMMONS PORTLAND, ME

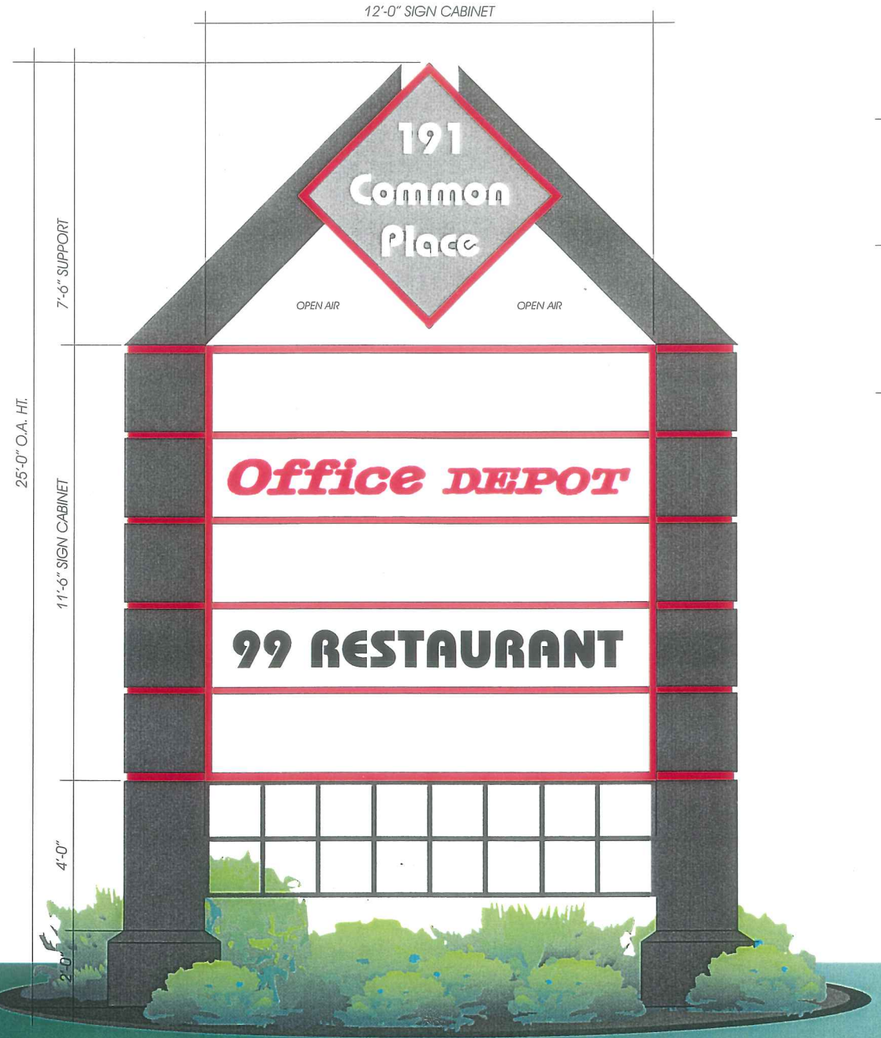
SALESPERSON: B.B. DRAWN BY: L.W.M.

CLIENT ACCEPTANCE SIGNATURE DATE: _____

P.S. # D-394 W.O. #

SCALE 1/4"=1' DATE 5/21/99

DRAWING NO: 04095 A
SHEET ___ / ___



NOTES:

SIGNAGE PROPOSED for WEST & EAST ELEVATIONS
CONCEPT DRAWING OF (2) D.F. FREESTANDING PYLONS

ALLUMINUM SUPPORT STRUCTURE & POLE WRAPS
COLOR DISTRIBUTION AS SHOWN _____ DARK GREY, _____ RED, _____ LT. GREY TO BEST MATCH BUILDING
REVEALS & ADDRESS HEADER'S ACCENT RED TRIMMED W/ RED NEON

(2) S.F. INTERNALLY ILLUMINATED ADDRESS HEADER & SUPPORT

COLOR DISTRIBUTION AS SHOWN _____ DARK GREY, _____ RED, _____ LT. GREY TO BEST MATCH BUILDING
COPY JIGGED OUT AND BACKED UP WITH WHITE PLEXI

D.F. 11'-6" X 12'-0" X _____" INTERNALLY ILLUMINATED TENANT CABINET

CABINET / 2 1/4" RETAINER / 2" DIVIDERS: _____ RED TO MATCH BUILDING
FACES: WHITE LEXAN
B/G: WHITE
(5) TENANT PANELS PER SIDE: V.O.S 25 1/8" X 139.5"
CUSTOM ART & COLORS

SQUARE FOOTAGE: 138

DESIGN STATUS:

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CUSTOMER: *THE WATERFORD GROUP*
LOCATION: *191 PORTLAND COMMONS PORTLAND, ME*

SALESPERSON: *B.B.* DRAWN BY: *L.W.M.*

ACCEPTANCE SIGNATURE DATE: _____
CLIENT _____

P.S. # *D-394* W.O. #

SCALE *1/4"=1'* DATE *5/21/99*

DRAWING NO: *04095 A*
SHEET ___ / ___

SIGNAGE PROPOSED for EAST ELEVATIONS
CONCEPT DRAWING OF (1) D.F. FREESTANDING PYLONS

ALLUMINUM SUPPORT STRUCTURE & POLE WRAPS
COLOR DISTRIBUTION AS SHOWN _____ DARK GREY, _____ RED, _____ LT. GREY TO BEST MATCH BUILDING
REVEALS & ADDRESS HEADER'S ACCENT RED TRIMMED W/ RED NEON

(2) S.F. INTERNALLY ILLUMINATED ADDRESS HEADER & SUPPORT

COLOR DISTRIBUTION AS SHOWN _____ DARK GREY, _____ RED, _____ LT. GREY TO BEST MATCH BUILDING
COPY JIGGED OUT AND BACKED UP WITH WHITE PLEXI

(1) D.F. 8'-0" X 8'-9" X _____" INTERNALLY ILLUMINATED TENANT CABINET

CABINET / 2 1/4" RETAINER / 2" DIVIDERS: _____ RED TO MATCH BUILDING
FACES: WHITE LEXAN
B/G: WHITE
(5) TENANT PANELS PER SIDE: V.O.S 16 3/4" X 100.5"
CUSTOM ART & COLORS

TOTAL SQUARE FOOTAGE: 70

NOTES:

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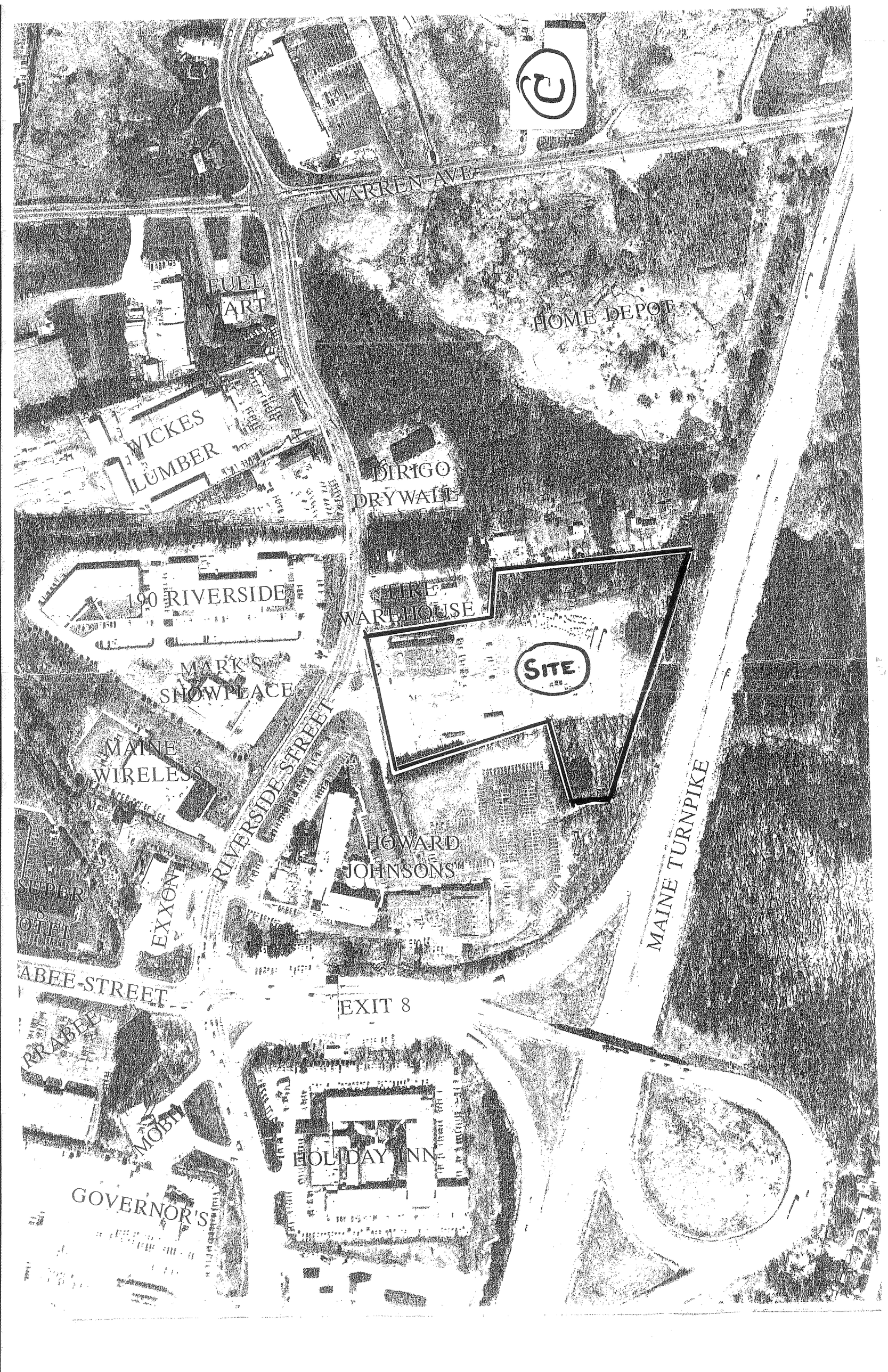
WARREN AVE
FUEL MART
HOME DEPOT
WICKES LUMBER
DIRIGO DRYWALL
190 RIVERSIDE
TIRE WAREHOUSE
SITE
MARK'S SHOWPLACE
MAINE WIRELESS
RIVERSIDE STREET
HOWARD JOHNSONS
EXXON
MAINE TURNPIKE
EXIT 8
MOBIL
HOLIDAY INN
GOVERNOR'S