1133 Washington
Harriman Assoc
408 D 5
St. Joseph's Manor

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
Planning Department Copy

19980032
I. D. Number

St. Joseph's Manor
Applicant

04/21/1998
Application Date

1133 Washington Ave, Portland, ME 04103
Applicant's Mailing Address

St. Josephs Manor/Parking lot
Project Name/Description

Harriman Assoc./Frank Crabtree
Consultant/Agent

1133 - 1133 Washington Ave
Address of Proposed Site

784-5100 782-3017
Applicant or Agent Daytime Telephone, Fax

408 D005
Assessor's Reference: Chart-Block-Lot

Proposed Development (check all that apply): ☐ New Building ☐ Building Addition ☐ Change Of Use ☐ Residential
☐ Office ☐ Retail ☐ Manufacturing ☐ Warehouse/Distribution ☑ Parking Lot ☐ Other (specify) 38 spaces

Proposed Building square Feet or # of Units | Acreage of Site | Zoning

Check Review Required:

☑ Site Plan (major/minor) ☐ Subdivision # of lots ☐ PAD Review ☐ 14-403 Streets Review
☐ Flood Hazard ☐ Shoreland ☐ HistoricPreservation ☐ DEP Local Certification
☐ Zoning Conditional Use (ZBA/PB) ☐ Zoning Variance ☐ Other

Fees Paid: Site Plan $300.00 Subdivisio Engineer Review $498.00 Date 06/04/1998

Planning Approval Status:

Reviewer Kandi Talbot

☑ **Approved** ☐ **Approved w/Conditions** See Attached ☐ **Denied**

Approval Date 06/11/1998 Approval Expiration 06/11/1999 Extension to ☐ Additional Sheets Attached
☐ OK to Issue Building Permi signature date

Performance Guarantee ☑ **Required*** ☐ **Not Required**

* No building permit may be issued until a performance guarantee has been submitted as indicated below

☐ Performance Guarantee Accepted	date	amount	expiration date
☐ Inspection Fee Paid	date	amount	
☐ Building Permit Issue	date		
☐ Performance Guarantee Reduced	date	remaining balance	signature
☐ Temporary Certificate of Occupancy	date	☐ Conditions (See Attached)	expiration date
☐ Final Inspection	date	signature	
☐ Certificate Of Occupancy	date		
☐ Performance Guarantee Released	date	signature	
☐ Defect Guarantee Submitted	submitted date	amount	expiration date
☐ Defect Guarantee Released	date	signature	

CITY OF PORTLAND, MAINE
DEVELOPMENT REVIEW APPLICATION
PLANNING DEPARTMENT PROCESSING FORM
D.R.C. Copy

19980032
I. D. Number

St. Joseph's Manor
Applicant

04/21/1998
Application Date

1133 Washington Ave, Portland, ME 04103
Applicant's Mailing Address

St. Josephs Manor/Parking lot
Project Name/Description

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☐ Zoning Conditional Use (ZBA/PB) ☐ Zoning Variance ☐ Other

Fees Paid: Site Plan $300.00 Subdivision Engineer Revie $498.00 Date: 06/04/1998

DRC Approval Status:

Reviewer Jim Wendel

☑ **Approved** ☐ **Approved w/Conditions** see attache ☐ **Denied**

Approval Date 06/11/1998 Approval Expiration 06/11/1999 Extension to ☐ Additional Sheets Attached

☐ Condition Compliance _____ signature _____ date _____

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* No building permit may be issued until a performance guarantee has been submitted as indicated below

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☐ Defect Guarantee Submitted	submitted date	amount	expiration date
☐ Defect Guarantee Released	date	signature	

Planning & Urban Development

Joseph E. Gray Jr.
Director

CITY OF PORTLAND

September 15, 1998

Ron Tardiff
St. Joseph's Manor
1133 Washington Avenue
Portland, ME 04103

Re: St. Joseph's Manor Parking Lot, 1133 Washington Avenue

Dear Mr. Tardiff:

On June 11, 1998 the Portland Planning Authority granted minor site plan approval for a 38 space parking lot located at 1133 Washington Avenue.

The approval is based on the submitted site plan. If you need to make any modifications to the approved site plan, you must submit a revised site plan for staff review and approval.

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

1. 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. A one year extension may be granted by this department if requested by the applicant in writing prior to the expiration date of the site plan.

2. A performance guarantee in a form acceptable to the City of Portland and an inspection fee equal to 1.7% of the performance guarantee will have to be posted before beginning any site construction or issuance of a building permit.

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.

O:\PLAN\DEVREVW\WASH1133\APPRVLTR.WPD

DeLUCA-HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

778 MAIN STREET
SUITE 8
SOUTH PORTLAND, MAINE 04106
TEL. 207 775 1121
FAX 207 879 0896

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

MEMORANDUM

TO: Planning Staff

FROM: Jim Wendel, Development Review Coordinator

DATE: August 15, 1998

RE: Saint Joseph's Manor Parking Expansion Site - Erosion Control Progress

---

On August 11,1998 the site was reviewed for compliance with erosion control measures and site progress. My comments are as follows:

- Site is in process of being cleared and grubbed. This appears to be complete or near completion. No activity is currently occurring on the site.
- Silt fence is in place as indicated on site plan.

City of Portland, Maine
Planning Department

City Hall
389 Congress Street, 4th Floor
Portland, Maine 04101
Fax Number: 756-8258

FAX TRANSMISSION COVER SHEET

TO: Ron Tardif

COMPANY: St. Joseph's Manor

FAX #: 797-4168

FROM: Kandi Talbot

OF PAGES: 1 2

DATE: July 15, 1998

RE: ... provided that the applicant will give the City written notice of the expiration of this C.D. at least 90 days prior thereto; otherwise this C.D. shall automatically be rolled over for an additional 90 days after such notice is provided by the applicant. In any event,

If you do not receive all of the pages, please call 874-8721 or 874-8719.

DRAFT

SITE PLAN / PARKING LOT
PERFORMANCE GUARANTEE:
ESCROW ACCOUNT

(Account #)

July 2, 1998

Joseph E. Gray, Jr., Director of Planning and Urban Development
City of Portland
389 Congress Street
Portland, Me 04101

RE: Application of Saint Joseph's Manor for parking lot at 1133 Washington Avenue, Portland, Maine.

Dear Mr. Gray:

This will certify to you that (BANK) will hold the sum of $56,878.00 in a Certificate of Deposit in the name of the City of Portland with interest payable to St. Joseph's Manor on the following conditions:

1. These funds represent the estimated cost of construction for a parking lot as depicted on the site plan and estimated on Attachment 1.

2. The City of Portland may draw against this certificate of deposit by presentation of a draft in the event that Saint Joseph's Manor fails to complete by August 1, 1999 the works as stipulated in Paragraph 1. Said draft shall be accompanied by a written statement to Saint Joseph's Manor from the Director of Parks and Public Works or the Director of Planning and Urban Development that Saint Joseph's Manor has failed to complete such work, with a listing of improvements still to be completed and the estimated cost of completing said improvements still to be completed as determined by the Department of Public Works.

3. Saint Joseph's Manor will notify the City of Portland for inspections.

4. All costs associated with establishing, maintaining and disbursing funds from the certificate of deposit shall be borne by Saint Joseph's Manor.

5. This certificate of deposit expires on July _____, 1999. ~~Upon expiration of the~~ certificate of deposit, it may be rolled over for an amount and an additional period, as required by the City of Portland, to complete said work as outlined in accordance with the City of Portland specifications. Upon completion of the work to the City of Portland's satisfaction, the City of Portland will acknowledge in

Provided that the applicant will give the City written notice of the expiration of this C.D. at least 90 days prior thereto otherwise this C.D shall be automatically rolled over for an additional 90 days after such notice is provided by the applicant in any event

writing to (BANK) and St. Joseph's Manor that the funds may be released to St. Joseph's Manor.

Dated at Portland, Maine this Thursday, July, 1998.

Very truly yours,

(BANK)

By: _____ Date: _____
Title

Seen and Agreed to:

By: _____ Date: _____
Saint Joseph's Manor

Approved pursuant to § 14-501(a) of the Portland City Code:

By: _____ Date: _____
Director of Planning and
Urban Development

By: _____ Date: _____
Corporation Counsel

By: _____ Date: _____ Finance Director

Department of Planning and Urban Development
SUBDIVISION/SITE DEVELOPMENT

COST ESTIMATE OF IMPROVEMENTS TO BE COVERED BY PERFORMANCE GUARANTEE

Date June 3, 1998

Name of Project St. Joseph's Manor Parking Lot

Address/Location 1133 Washington Ave, Portland, Maine

Developer St. Joseph's Manor Residential Care Facility-Ron Tardif, Executive Director

Form of Performance Guarantee

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

TO BE FILLED OUT BY APPLICANT:

	PUBLIC			PRIVATE		
ITEM	Quantity	Unit Cost	Subtotal	Quantity	Unit Cost	Subtotal
STREET SIDEWALK						
Road / Parking				15,400 sf	$1.57	$24,178
Granite Curbing -Sloped				340 lf	$15.00	$ 5,100
Sidewalks						
Esplanades						
Monuments						
Street Lighting						
Other - Guard rail				200 lf	$12.00	$ 2,400
SANITARY SEWER						
Manholes						
Piping						
Connections						
Other						
STORM DRAINAGE						
Manholes						
Catchbasins				2 ea	$1400	$2800
Piping				170 lf	$ 25	$4250
Detention Basin						
Other						
SITE LIGTING				2 poles	$3600	$7200
EROSION CONTROL				1 ls	$3400	$3400
RECREATION AND OPEN SPACE AMENITIES						

	PUBLIC			PRIVATE		
	Quantity	Unit Cost	Subtotal	Quantity	Unit Cost	Subtotal
LANDSCAPING (attach breakdown of plant materials, quantities, and unit costs)				1 ls	$3375	$3375
MISCELLANEOUS - Grass				16,700 sf	0.25	$4175
TOTAL				$56,878		
GRAND TOTAL				$56,878		

SPECTION FEE (to be filled out by City)

	PUBLIC	PRIVATE	TOTAL
1.7% of totals:			
or			
Alternative Assessment:			
ssessed by:	(name)	(name)	

Opinion of Probable Site Costs

PROJECT ___ST. JOSEPHS MANOR PARKING___ Unit Costs Include Subcontr. O&P
DATE ___6-3-98_____

Item	Units	Quantity	Cost/Unit	Total	Subtotal
Tree, Plant, Grndcvr - 02950					
Evergreen Tree (6'-7' Ht)	EA	3	$100.00	$300.00	
Deciduous Tree (2"-2.5"cal)	EA		$250.00	$0.00	
Deciduous Tree(2.5"-3"cal)	EA	7	$300.00	$2,100.00	
Flowering Tree (1"-1.5"cal)	EA		$100.00	$0.00	
Flowering Tree 1.5"-2"cal)	EA		$150.00	$0.00	
Evergreen Shrub (2'-2.5')	EA	9	$50.00	$450.00	
Broadlf Evgrn Shrub (2.5'-3')	EA		$75.00	$0.00	
Deciduous Shrub (2.5'-3')	EA	15	$35.00	$525.00	
Bark Mulch	SF		$0.30	$0.00	
Landscaping Allowance	EA		$0.00	$0.00	
Subtotal=					$3,375.00

Penny -
Please review PG.
Thanks. Kandi

SAINT JOSEPH'S MANOR
FAX TRANSMITTAL SHEET

DATE: July 2, 1998

FROM: SAINT JOSEPH'S MANOR
1133 WASHINGTON AVENUE
PORTLAND, ME 04103

SENDER: Ronald Taldi

TELEPHONE NUMBER (207) 797-0600 FAX NUMBER (207) 797-4168

TO: Kandi Talbot

COMPANY: City of Portland - Planning Dept

CITY: Portland STATE: ME

REPLY BY: (circle one) PHONE FAX LETTER NO REPLY

TOTAL NUMBER OF PAGES INCLUDING THIS COVER SHEET: 6

COMMENTS:

Kandi,

Thanks for your assistance. I'll be waiting for your call after your vacation.

Ron

Architects + Engineers

HARRIMAN ASSOCIATES

One Auburn Business Park
Auburn, Maine 04210

207.784.5100 telephone
207.782.3017 fax
www.harriman.com

Offices in Maine
and Connecticut

TRANSMITTAL

To: Kandice Talbot
City Planning Dept.
Portland, ME

Attention:

Date: 6-3-98

Project name: St. Joseph's Manor - Parking Lot

Project number: 98119

Re: Cost Estimate

We are sending you the following items:

- ☒ Attached
- ☐ Under separate cover via _____
- ☐ Shop drawings
- ☐ Samples
- ☐ Change order
- ☐ Prints
- ☐ Specifications
- ☐ _____
- ☐ Requisitions
- ☒ Copy of letter

Copies	Date	Drawing no.	Specs. sec. no.	Description
1	6-3-98			City Cost Estimate Form

Transmitted for:

- ☒ Approval
- ☐ For use
- ☐ As requested
- ☐ Action as shown
- ☐ Review/comment
- ☐ Resubmission
- ☐ Other
- ☐ Prints returned after loan to us

Remarks:
Thanks for sending this to us. We are returning it completed, in hopes of expediting the process. Let us know if you need other information.

- ☒ Copy to: FLC, AJD
- ☒ Client: Ron Tardif
- ☐ BGS ☐ Clerk ☒ File

Signature: Frank L. Crabtree, PE

If enclosures are not as shown, please notify us at once

Department of Planning and Urban Development
SUBDIVISION/SITE DEVELOPMENT

COST ESTIMATE OF IMPROVEMENTS TO BE COVERED BY PERFORMANCE GUARANTEE

Date June 3, 1998

Name of Project St. Joseph's Manor Parking Lot

Address/Location 1133 Washington Ave, Portland, Maine

Developer St. Joseph's Manor Residential Care Facility-Ron Tardif, Executive Director

Form of Performance Guarantee

Type of Development: _____ Subdivision Minor 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 / Parking				15,400 sf	$1.57	$24,178
Granite Curbing -Sloped				340 lf	$15.00	$ 5,100
Sidewalks						
Esplanades						
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Manholes						
Piping						
Connections						
Other						
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Catchbasins				2 ea	$1400	$2800
Piping				170 lf	$ 25	$4250
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Other						
4. SITE LIGTING				2 poles	$3600	$7200
5. EROSION CONTROL				1 ls	$3400	$3400
6. RECREATION AND OPEN SPACE AMENITIES						

		PUBLIC			PRIVATE		
	Item	Quantity	Unit Cost	Subtotal	Quantity	Unit Cost	Subtotal
	LANDSCAPING (Attach breakdown of plant materials, quantities, and unit costs)				1 ls	$3375	$3375
N	MISCELLANEOUS - Grass				16,700 sf	0.25	$4175
	TOTAL				$56,878		
	GRAND TOTAL:				$56,878		

INSPECTION FEE (to be filled out by City)

	PUBLIC	PRIVATE	TOTAL
A: 1.7% of totals:		966.93	
or			
B: Alternative Assessment:			
Assessed by:	(name)	(name)	

Opinion of Probable Site Costs

PROJECT ___ST. JOSEPHS MANOR PARKING___ Unit Costs Include Subcontr. O&P
DATE ___6-3-98_____

Item	Units	Quantity	Cost/Unit	Total	Subtotal
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Subtotal=					$3,375.00

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Offices in Maine
and Connecticut

June 2, 1998

Ms. Kandice Talbot - Planner
City of Portland Planning Department
389 Congress Street
Portland, ME 04101

Re: St. Joseph's Manor
Parking Lot
Portland, Maine
Project No. 98119

Dear Ms. Talbot:

We have reviewed the comments your office sent on May 14, 1998 regarding the Site Plan Review for the St. Joseph's Manor Parking lot. Enclosed is the additional information you requested. The following are responses to each of the five comments:

1. In order to follow design practices acceptable to the Planning Department, we requested a copy of the City's design manual. In March of this year, we received the Technical and Design Standards and Guidelines, dated July 1994, from the Planning Department. Section V-Stormwater Management Standards, page V-4, lists the 2-year, 10-year, and 25-year one-day precipitation values that should be used in the City of Portland. These are the figures we used. I understand from our recent telephone conversation, that this will be acceptable and we have therefore made no change to the calculations.

2. The level lip spreader will be 15 ft. long, as shown on the enclosed Drawing PB-1, revised dated 6-2-98. The tributary flow is the 25-year outflow from pond P1 plus 20% of the overland flow in Subcatchment 2, (1.61 cfs + 20%x 4.17 cfs = 2.44 cfs). This yields a flow over the 15' spreader of 0.16 cfs/ft., which is less than the allowable maximum.

3. This embankment area will eventually be stabilized by vegetation. The area will be finished with 4" of loam, seeded, mulched with hay or straw, and covered with erosion control mesh. Mesh will be stapled in place. All of these materials are described in the previously submitted construction specifications, Sections 02270 and 02930. An erosion control mesh detail has been added to the detail sheet. The enclosed drawings PB-1 and PB-2, revised dated 6-2-98, show these changes.

4. This area will also be finished with 4" of loam, seeded, mulched with hay or straw, and covered with erosion control mesh, as discussed in Item 3. The enclosed Drawings PB-1 and PB-2, revised dated 6-2-98, show these changes.

5. Enclosed is a check payable to the City of Portland in the amount of $498.00, for the Engineering Fee.

We trust this is sufficient documentation to obtain a permit. St. Joseph's Manor would like to begin the construction as soon as possible. If you need any other information in order to expedite the review, please let us know soon.

Thank you very much.

Sincerely,
Harriman Associates

Frank L. Crabtree, P.E.

Flcra

Enclosures

cc: Ron Tardiff

Architects + Engineers

HARRIMAN ASSOCIATES

One Auburn Business Park
Auburn, Maine 04210

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and Connecticut

June 2, 1998

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City of Portland Planning Department
389 Congress Street
Portland, ME 04101

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Portland, Maine
Project No. 98119

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4. This area will also be finished with 4" of loam, seeded, mulched with hay or straw, and covered with erosion control mesh, as discussed in Item 3. The enclosed Drawings PB-1 and PB-2, revised dated 6-2-98, show these changes.

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Thank you very much.

Sincerely,
Harriman Associates

Frank L. Crabtree, P.E.

Flcra

Enclosures

cc: Ron Tardiff

Engineering fee

ST. JOSEPH'S MANOR
1133 WASHINGTON AVENUE
PORTLAND, ME 04103

KEY BANK
PORTLAND, ME

52-3
112

NO. 023192

DATE
05/26/98

AMOUNT
498.00

VOID AFTER 60 DAYS

PAY TO THE ORDER OF
City of Portland

AUTHORIZED SIGNATURE

⑈023192⑈ ⑆011200035⑆ 355⑈0431 9⑈

PUBLIC WORKS ENGINEERING MEMORANDUM

To: *Kandi Talbot, Planner*
From: *Anthony Lombardo, P.E., Project Engineer*
Date: *May 4, 1998*
Subject: *St. Joseph's Manor.....Parking Lot Expansion.*

The following comments were generated during Public Works Engineering review of the plans and application dated 4/17/98 and received on 4/22/98:

Near the southwest corner of proposed parking area, the side slopes near the silt fence scale at 1:1 and 2:1 slopes. These areas should specify some form of slope stabilization (riprap and/or erosion mesh). Details for slope stabilization should be provided on the Detail Sheet.

The entire southwesterly slope adjacent to the proposed parking area should be reviewed for slope stabilization, since runoff from the entire proposed parking is being directed towards this slope.

Engineer Review and Site Inspection Fee Invoice Worksheet

Address: ***St. Joseph's Manor.....Washington Ave.....DATE: 5/4/98***

Engineering Review

To be filled out by Development Review Coordinator and Public Works at time of application.

Planning	**Public Works**
# of Hours Estimated: (Private Improvements) Improvements)	**# of Hours Estimated: (Public**
Field Work _____	Field Work ***1.0***
Memos/Corresp. _____	Memos/Corresp. ***2.0***
Review/Analysis _____ ***2.0***	Review/Analysis
Meetings/phone calls _____ ***1.0***	Meetings/phone calls
Total Hours _____ at _____ per hour	Total Hours ***6.0*** at ***$35*** per hour
Review Fee (Private): $ _____ ***$210***	Review Fee (Public): $
_____ Development Review Coordinator Signature	Public Works Engineer Signature

Site Inspection

To be filled out by DRC and Public Works at time of Performance Guarantee approval.

Planning	**Public Works**
____ Accept 1.7% of Private Improvements P.G. P.G.	**___ Accept 1.7% of Private Improvements**
$ _____ (dollar amount)	**$ _____ (dollar amount)**
# of Hours Estimated:	**# of Hours Estimated:**
Field Work _____ ***6.0***	Field Work
Memos/Corresp. _____	Memos/Corresp.

_____*1.0*_____

Review/Analysis _____ Review/Analysis

_____

Meetings/phone calls _____ Meetings/phone calls

_____*1.0*_____

Total Hours _____ at _____ per hour Total Hours ___*8.0*___ at ___*$35*___ per hour

Alternate Inspection Fee (Private): $_____ Alternate Inspection Fee (Public): $

____*$280*____

_____

_____

Development Review Coordinator Signature Public Works Engineer Signature

CITY OF PORTLAND, MAINE
ENGINEERING REVIEW FORM

Address of Proposed Site 1133 WASHINGTON AVE Date _____

Project Description PARKING LOT EXPANSION Job # _____

Applicant ST. JOSEPH'S MANOR

Applicant's Mailing Address _____

Site Review (Planning Department)		Right-of-Way Review (Public Works Department)	
Review Engineer:	JIM WEBER	Review Engineer:	
Number of Estimated Hours:	6	Number of Estimated Hours:	
Cost Per Hour:	$ 48.00	Cost Per Hour:	
Total Amount:	$ 288.00	Total Amount:	

An engineering fee has been assessed in the amount of _____ for the review of your project located at _____.

Please make check payable to the City of Portland. The check should be submitted along with this form to the Portland Planning Department, City of Portland, 4th Floor, 389 Congress Street, Portland, ME 04101. Attn: _____

Office Use Only

Invoice Date: _____ Received: _____ date

Planning Revenue Code: _____

Public Works Revenue Code: _____

cc: Applicant - white
Planner - blue
Engineer - green
Public Works - yellow
Financial Officer - pink
Review/Inspection Fee File - golden

DeLUCA-HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

778 MAIN STREET
SUITE 8
SOUTH PORTLAND, MAINE 04106
TEL. 207 775 1121
FAX 207 879 0896

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

MEMORANDUM

TO: Kandi Talbot, Planner

FROM: Jim Wendel, Development Review Coordinator

DATE: May 3, 1998

RE: Site Plan Review
St. Joseph's Manor
1133 Washington Avenue

Review of the submitted site plan for the expansion of the parking lot has been completed. I offer the following comments:

1. The stormwater analysis is complete; however some revisions are needed. The rainfall amount used for the three storm events is incorrect. Their analysis used 2.6 inches-2 year event, 4.5 inches-10 year event, 5.4 inches-25 year event. Based on the Maine Stormwater BMP the correct values are 3.0 inches 2 year event, 4.7 inches-10 year event, 5.5 inches-25 year event. Further, the correct 2 year value must be used in the calculation of the sheet flow component for the time of concentration. The approach taken by the applicant's engineer for the analysis is acceptable.

2. The length of the level lip spreader needs to be defined; also based on the new stormwater management law the level lip spreader must not flow more than 0.25 CFS/Ft of spreader with a maximum length of 25 feet. This criteria should be checked.

Should you have any questions please call.

JN1357.10/1350.10disk4/stjoseph.doc

Architects + Engineers

HARRIMAN ASSOCIATES

One Auburn Business Park
Auburn, Maine 04210

207.784.5100 telephone
207.782.3017 fax
www.harriman.com

Offices in Maine
and Connecticut

For The Planner Handling This Site

April 24, 1998

Ms. Marge Schmuckal
Planning and Urban Development
City Hall
389 Congress Street
Portland, ME 04101

Re: St. Joseph's Manor
New Parking Lot
Portland, Maine
Project No. 98119

Dear Ms. Schmuckal:

Enclosed are seven copies of a letter of review from the Maine Historic Preservation Commission, dated April 21, 1998. The Commission concludes that the parking lot addition has no impact on historic sites.

Please include these documents with the plans and narratives for the Minor Site Plan Review for the 38-car parking lot addition for St. Joseph's Manor, submitted earlier this week.

Thank you.

Sincerely,
Harriman Associates

Frank L. Crabtree, P.E.

cc: Ron Tardif

O:\medical\98119\gen004.wpd

MAINE HISTORIC PRESERVATION COMMISSION
55 Capitol Street
65 State House Station
Augusta, Maine 04333

Earle G. Shettleworth, Jr.
Director

Telephone:
207-287-2132

April 21, 1998

Frank L. Crabtree, P.E.
Harriman Associates
One Auburn Business Park
Auburn, Maine 04210

Project: MHPC # 519 - St. Joseph's Manor New Parking Lot (Project No. 98119)
Location: Portland, Maine

Dear Mr. Crabtree:

In response to your recent request, I have reviewed the information received April 15, 1998 on the above referenced project.

I find that there are no properties in the project impact area of historic, architectural, or archaeological significance as defined by the National Historic Preservation Act of 1966 (as amended).

Please contact Dana R. Vaillancourt of my staff if you require further assistance in this matter.

Sincerely,

Earle G. Shettleworth, Jr.
State Historic Preservation Officer

EGS/drv

98119/G

Architects + Engineers

HARRIMAN ASSOCIATES

One Auburn Business Park
Auburn, Maine 04210

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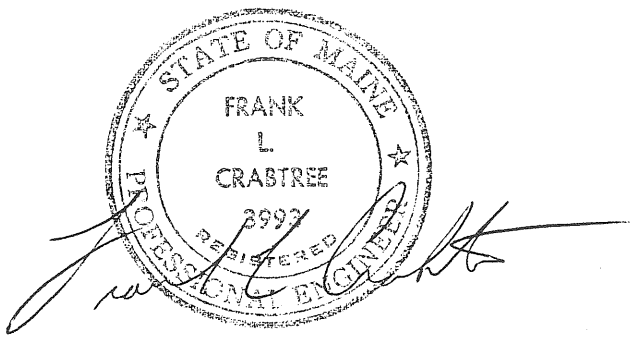
Offices in Maine
and Connecticut

CITY OF PORTLAND PLANNING DEPARTMENT

SITE PLAN REVIEW - MINOR DEVELOPMENT

ST. JOSEPH'S MANOR - PARKING LOT

April 21, 1998

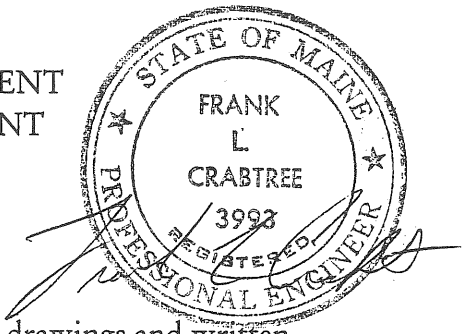


Owner:
St. Joseph's Manor

Architect/Engineer
Harriman Associates

O:\MEDICAL\98119\site-cov.wpd

CITY OF PORTLAND PLANNING DEPARTMENT
SITE PLAN REVIEW - MINOR DEVELOPMENT
ST. JOSEPH'S MANOR - PARKING LOT
April 21, 1998



As required by Section 14-525 of the Land Use Ordinance, the attached drawings and written statements describe the proposed parking lot addition for St. Joseph's Manor Residential Care Facility.

The owner is St. Joseph's Manor, 1133 Washington Avenue, Portland, ME 04103; and the contact person is Ron Tardif, Executive Director, tel. 797-0600.

The construction cost of the proposed 38-car expansion of the existing 38-car paved parking lot is expected to be approximately $57,000.

Plans:

PB-1	Parking Lot Expansion Layout Plan
PB-2	Site Details
PB-3	Parking Lot Pre-development Drainage Plan
PB-4	Parking Lot Post-development Drainage Plan
PB-5	Standard Boundary Survey - Plan of Land
PB-6	Existing Site Plan

Specifications:

02200	Earthwork
02270	Slope Protection and Erosion Control
02500	Paving and Surfacing
02700	Storm Drainage
02930	Lawns and Grasses
02950	Trees, Plants, and Ground Covers

Written Statements:

1. Description: The existing parking lot and driveways were constructed in 1975 as part of the development of a 200-bed nursing home facility. The residential population has not changed, but the additional parking is needed to accommodate overflow parking of staff and visitors, which occurs frequently. An anticipated re-

arrangement of building entrances and drop-off areas may displace some existing parking, which will also be accommodated in this new addition.

2. Land Area: The total land area of the site is approximately 23.3 acres. The existing buildings occupy approximately 77,310 sq. ft., or 1.78 acres. Existing paved parking, drives, and walks total approximately 2.4 acres. The proposed parking lot expansion will add approximately 15,000 sq. ft. of impervious surface. The total impervious surface of the property after development will then be 4.52 acres.

3. Easements: An existing 60' wide sewer line easement runs parallel with Washington Avenue along the west boundary of the site. The proposed parking lot is outside of the easement, except for a small corner of the access drive. Another easement, located on a separate parcel just to the south, is a 30' wide drainage easement conveyed to the City of Portland in 1997. No new easements related to this parking lot are anticipated.

4. Solid Waste: The primary construction debris from this project is trees and stumps. The disposal location for stumps is Shaw Brothers' disposal site on Route 237 in Gorham, ME; and will be hauled by the contractor.

5. Off-Site Facilities: There will be no increase in vehicular traffic due to this project. There will be no increase in sewer or water use due to this project. An existing parking lot light circuit will be extended to two new light poles, which will replace two existing poles.

6. Stormwater Management: Currently, the site of the proposed parking lot addition consists of approximately 1.45 acres draining southwesterly directly into the drainage channel known as Fall Brook. Fall Brook flows southerly one mile to confluence with the Atlantic Ocean at Back Cove. The stormwater runoff has been computed for both pre-development and post-development conditions for 2-year, 10-year, and 25-year frequencies, using a Hydrocad computer model, which utilizes SCS TR-55 and TR-20 methods.

Pre-Development: Subcatchment 1 is a small 0.27 acre wooded and grassed area which contributes runoff to the existing culvert beneath the existing parking lot. Runoff flows through the woods 100 feet and enters Fall Brook in non-point sheet flow. Subcatchment 2 is the 1.18 acre wooded area between the parking lot and Fall Brook. Most of the runoff currently flows to the south as sheet and shallow concentrated flow. A natural retention basin approximately 30' long, 10' wide, and 1' deep collects the water along a bend in the brook, where it appears to spread the

overflow across the bank into the brook as sheet flow. Calculations show the 25-year peak runoff rate from the two on-site subcatchments totals approximately 3.8 cubic feet per second(CFS), between 12.10 hours and 12.24 hours into the 24-hour storm.

Off-Site Subcatchment 3: Adjacent to the parking lot, Fall Brook has an upstream watershed of approximately 300 acres of residential neighborhoods and schools. This brook has been observed to be virtually dry most of the time, flowing only during storm events and snow melting season. The 25-year peak rate at this point in the brook, designated as Watershed Analysis Point 'A'(Reach 1), is computed at 495 CFS, which is several orders of magnitude greater than the small contribution from the proposed parking lot area. The time of the brook's peak is 12.61 hours, which is significantly later than the existing on-site runoff peak. The on-site runoff does not, therefor, effect the flow in the brook significantly.

Post-Development: Since a catch basin will intercept the existing parking lot runoff and channel it into a storm drain, Subcatchment 1 has been enlarged to 0.42 acres; the total area tributary to the new culvert outlet. The culvert will discharge into a stone plunge pool with a level spreader overflow, which will allow the water to sheet through the woods to the brook bank as it does today. The proposed parking lot will be placed in Subcatchment 2, and much of the wooded area to the east will be re-graded and grassed. Runoff will sheet off the new pavement into the grassed side slope and flow through the remaining woods toward Fall Brook. The water will be directed toward the natural retention basin along the brook edge for dispersion as it presently does. The 25-year post-development peak runoff rate will increase to approximately 5.7 CFS, but will occur earlier than presently(12.03 to 12.09 hours). The result is a very slight decrease in the peak flow rates of Fall Brook at Watershed Analysis Point 'A', since the post-development paved runoff occurs earlier than the pre-development wooded runoff.

Conclusion: Since the runoff from the proposed parking lot addition will impact no other properties before entering Fall Brook, it is appropriate to consider the effect on the pre-development and post-development flow rates in the brook only. The effect of the parking lot on Fall Brook is negligible, particularly since the timing of the peak rates does not coincide. Computationally, the peak rate of flow in Fall Brook(Reach 1) will decrease by 0.7 CFS, and the flow depth will decrease by 0.01 foot(1/8-inch) for the 25-year storm. Similar negligible changes in the 10-year and 2-year storms can also be seen in the summary below.

Drainage Summary				
Watershed Analysis Point	Pre-Development	Post-Development	Peak Flow Change	Peak Depth Change
A	Including Outflow of R1 1.45 Acres On-site 300 Acres Off-site 25 Year = 495.0 cfs 10 Year = 372.7 2 Year = 135.6	Including Outflow of R1 1.45 Acres On-site 300 Acres Off-site 25 Year = 494.3 cfs 10 Year = 372.2 2 Year = 135.5	- 0.7 cfs - 0.5 - 0.1	- 0.01 ft. 0.00 0.00

7. Construction Plan:

The proposed schedule for project construction and for installation of erosion control and storm water management measures is as follows:

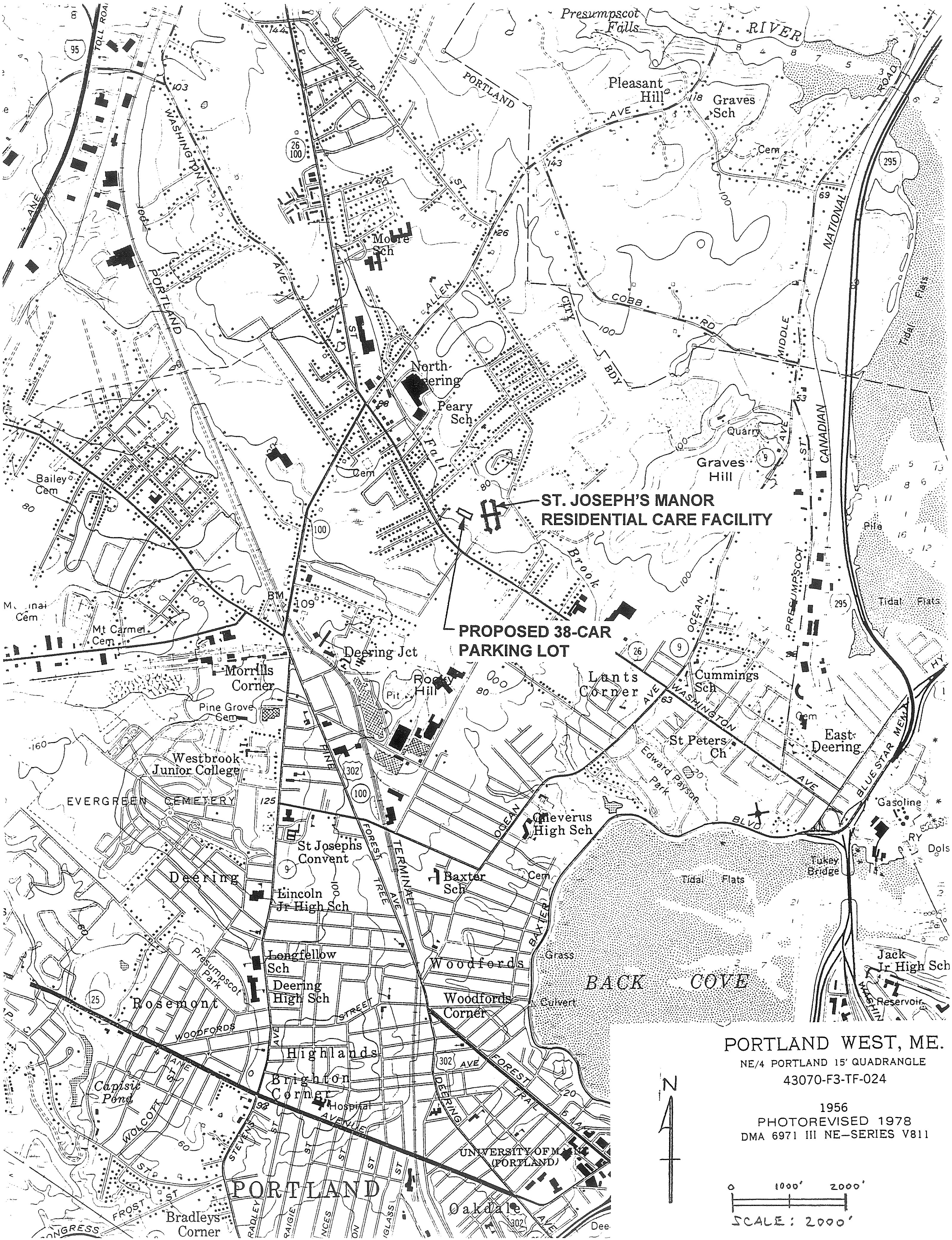
June 1, 1998:	Check and maintain existing silt fence along down-slope side of construction site. Continue removing trees and grubbing stumps and roots from the parking lot area.
June 8, 1998:	Strip topsoil from the parking lot area, and stockpile for use in finish grading. Begin general cut and fill earthwork including moving fill soil in from the nearby City stockpile.
July 1, 1998:	Construct gravel surface parking lot; re-grade and stabilize the adjacent earth embankment with permanent loam, seed, and erosion control mulch. Install drainage catch basin and piping and underground wiring. Construct rip-rap plunge pool and level-lip spreader.
August 15, 1998:	Install light pole concrete bases and guardrail. Finish grade all remaining earthwork areas with permanent loam, seed, and mulch.
Sept. 30, 1998:	Clean and maintain silt fence, plunge pool, catch basin, and storm drain pipe.
June 1, 1999:	Place bituminous pavement and curbing, place landscape plants, install light poles and fixtures, and remove existing wooden light poles.
August 1, 1999:	Remove silt fence and accumulated silt after earth embankment is stabilized with full growth of grass.

8. Regulatory Approvals: St. Joseph's Manor received a Site Location permit from the Maine Department of Environmental Protection(DEP)for the initial construction on July 10, 1974; project #69-1303-05170. Later, on July 22, 1982, they received a Site Location permit for building additions. This current parking lot addition is expected to be processed by the City of Portland, instead of the DEP office. No federal permits are required.

9. Financial and Technical Capacity: Attached is a letter of financial commitment from St. Joseph's Manor for this fairly small expenditure. Harriman Associates has been retained to design the facilities, and is very experienced in earthwork, pavement, and erosion control design. St. Joseph's Manor personnel are experienced in operating facilities such as this, and will be responsible for the maintenance.

10. Title: Attached is a copy of the property deed and easements.

11. Unusual Areas, Wildlife, Fisheries, Historic Sites: There are no areas of special significance on or adjacent to the project site. The site is surrounded by fairly dense residential neighborhoods. The drainage channel known as Fall Brook is dry most of the year, only flowing during storm events. A letter of request has been sent to the Maine Historic Preservation Commission for an assessment of nearby sites. When the response is received it will be forwarded to the City.



ST. JOSEPH'S MANOR
RESIDENTIAL CARE FACILITY
PROPOSED 38-CAR
PARKING LOT
PORTLAND WEST, ME.
NE/4 PORTLAND 15' QUADRANGLE
43070-F3-TF-024
1956
PHOTOREVISED 1978
DMA 6971 III NE–SERIES V811
N
0
1000'
2000'
SCALE: 2000'
Presumpscot Falls
RIVER
Pleasant Hill
Graves Sch
Moore Sch
North Deering
Peary Sch
Graves Hill
Quarry
Bailey Cem
Mt Carmel Cem
Deering Jct
Rocky Hill
Morrills Corner
Pine Grove Cem
Lunts Corner
Cummings Sch
Westbrook Junior College
EVERGREEN CEMETERY
St Peters Ch
East Deering
Edward Payson Park
Cheverus High Sch
St Josephs Convent
Baxter Sch
Deering
Lincoln Jr High Sch
Tidal Flats
Tukey Bridge
Longfellow Sch
Deering High Sch
Woodfords
Woodfords Corner
BACK COVE
Rosemont
Presumpscot Park
Highlands
Brighton Corner
Hospital
Capisic Pond
Jack Jr High Sch
Reservoir
UNIVERSITY OF MAINE (PORTLAND)
PORTLAND
Oakdale
Bradleys Corner

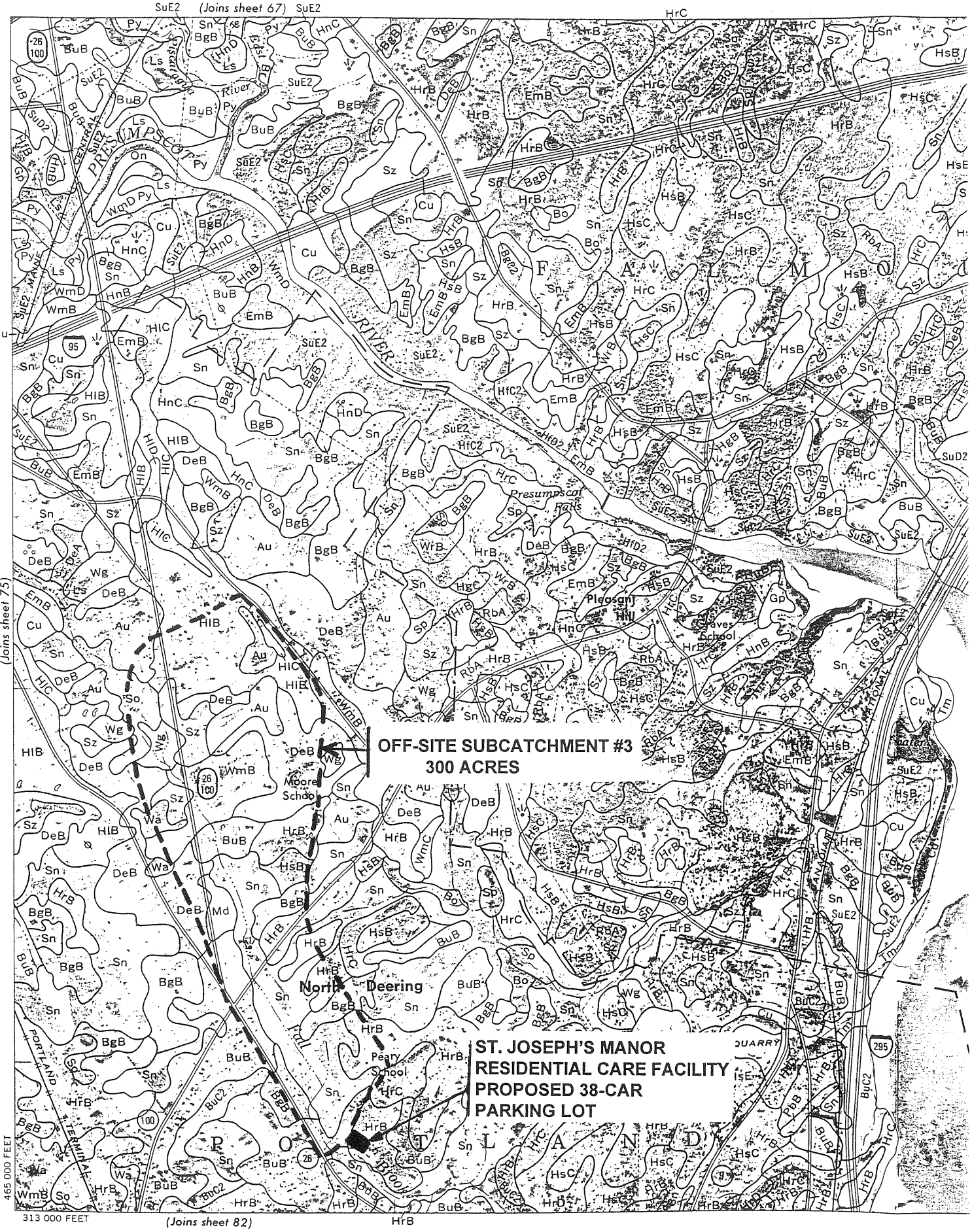
(6)

SOIL CONSERVATION SERVICE

Hr = Hollis fine sandy loam Bu = Buxton silt loam

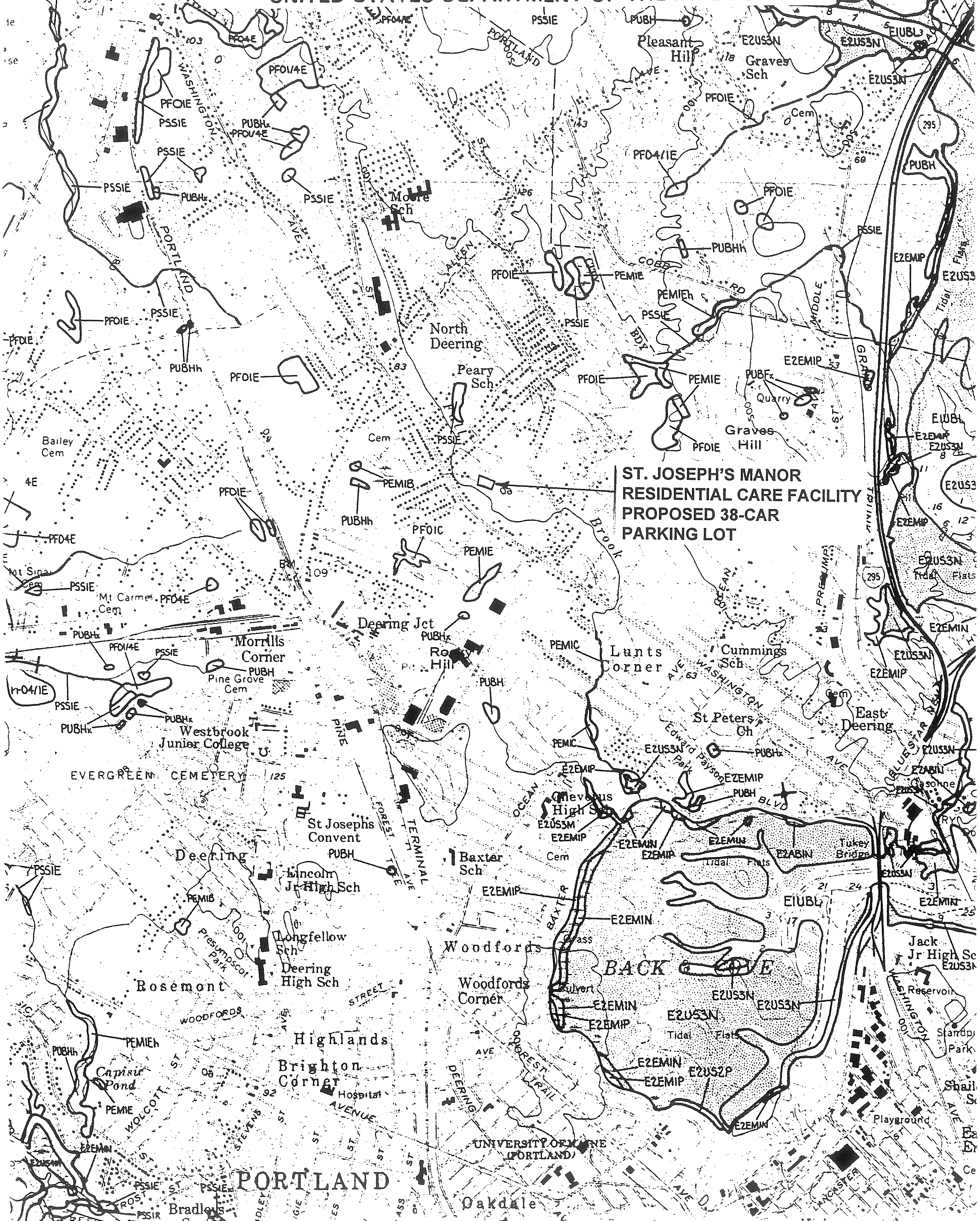
Sn = Scantic silt loam (Hydric)

CUMBERLAND COUNTY, MAINE



NATIONAL WETLANDS INVENTORY

UNITED STATES DEPARTMENT OF THE INTERIOR



to the FLOOD INSURANCE RATE MAP EFFECTIVE date
ı on this map to determine when actuarial rates apply to
ures in the zones where elevations or depths have been estab-

.

etermine if flood insurance is available in this community,
ct your insurance agent, or call the National Flood Insurance
ım, at (800) 638-6620.

APPROXIMATE SCALE

400 0 400 FEET

NATIONAL FLOOD INSURANCE PROGRAM

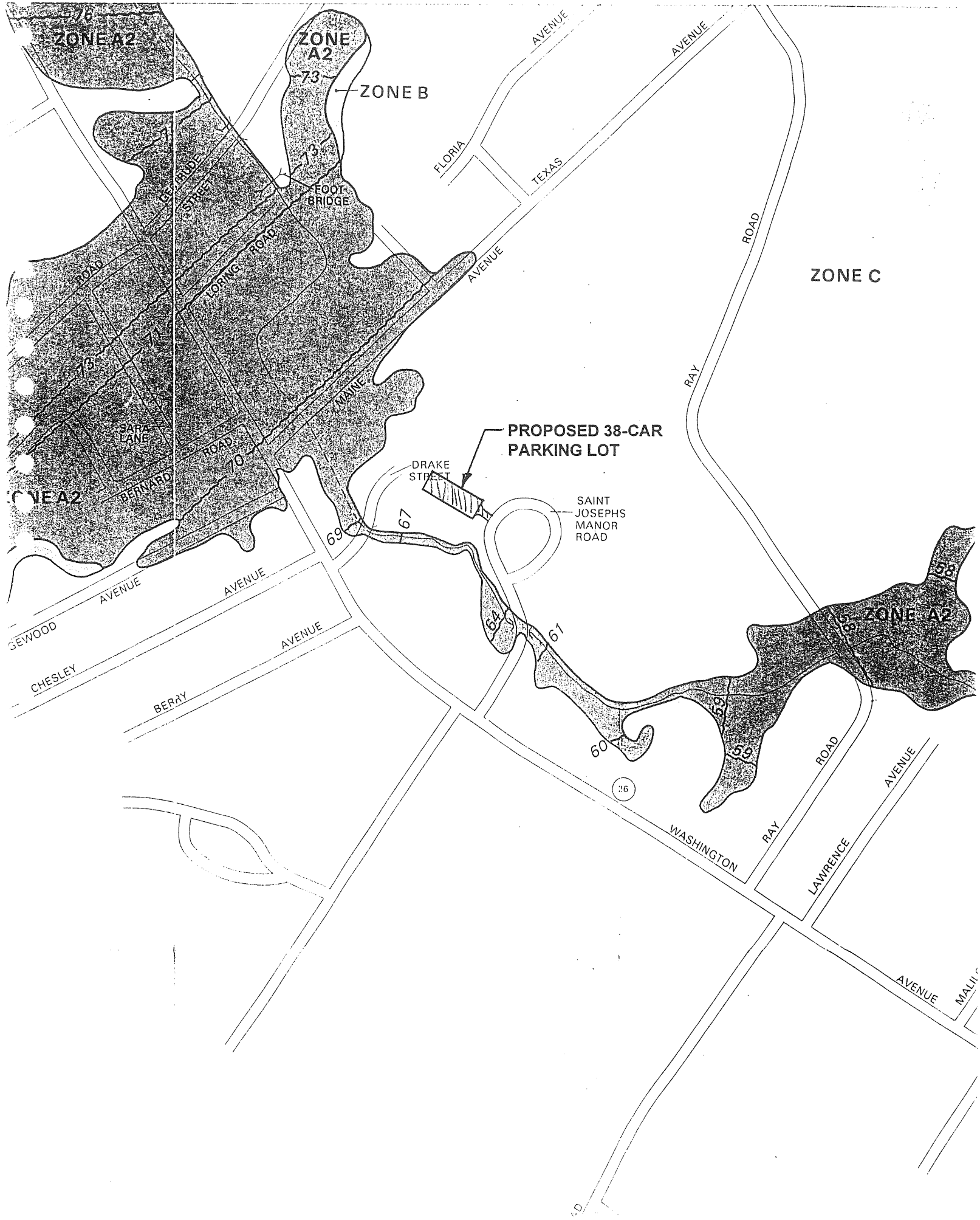
FIRM
FLOOD INSURANCE RATE MAP

CITY OF
PORTLAND, MAINE
CUMBERLAND COUNTY

PANEL 7 OF 17
(SEE MAP INDEX FOR PANELS NOT PRINTED)

There are some individual
MAP revisions
to this MAP attached

COMMUNITY-PANEL NUMBER
230051 0007 B


ZONE A2
ZONE A2
ZONE B
ZONE C
PROPOSED 38-CAR PARKING LOT
DRAKE STREET
SAINT JOSEPHS MANOR ROAD
FOOT BRIDGE
GERTRUDE STREET
LORING ROAD
SARA LANE
BERNARD ROAD
MAINE
FLORIA AVENUE
TEXAS AVENUE
RAY ROAD
CHESLEY AVENUE
BERRY AVENUE
WASHINGTON
LAWRENCE AVENUE
76
73
71
13
11
10
69
67
64
61
60
59
58
26

OWEN HASKELL, INC. Professional Land Surveyors

16 Casco Street • Portland, Maine 04101 - 2979 • 207/774-0424 • FAX 774-0511

July 10, 1997

DESCRIPTION OF PERMANENT EASEMENT
ST. JOSEPH'S MANOR
TO
CITY OF PORTLAND

A 30 foot wide easement extending easterly from the easterly sideline of said Washington Avenue to Fall Brook in the City of Portland, County of Cumberland, and State of Maine the southerly sideline of said easement being described as follows:

Beginning on the easterly sideline of said Washington Avenue at the northwesterly corner of land formerly of Richard D. Sawyer et. al. as described in Deed Book 3332, Page 122 in the Cumberland County Registry of Deeds;

Thence N 53° 38' 30" E along the northerly line of land formerly of said Richard D. Sawyer et. al 260 feet;

Thence N 89° 52' 50" E across land formerly of said Richard D. Sawyer et. al. 55 feet more or less to the centerline of Fall Brook;

Meaning and intending to convey and hereby conveying a 30 foot wide easement lying northerly of, and adjacent to the above described sideline;

All bearings are magnetic in the year 1956.

[illegible]

BRANCH OFFICE: 10 Wilson Street • Chelmsford, MA 01824 • [illegible] • FAX 508/250-9809

KNOW ALL MEN BY THESE PRESENTS,

THAT the Roman Catholic Bishop of Portland, a body politic and corporation sole, created and existing under the laws of the State of Maine and having its chancery in Portland, County of Cumberland and State of Maine, in consideration of One Dollar ($1.00) and other valuable considerations paid by Saint Joseph's Manor, a not for profit organization, duly organized and existing under the laws of the State of Maine, and having its principal office on Washington Avenue, in the City of Portland, County of Cumberland and State of Maine, the receipt whereof it does hereby acknowledge, does hereby remise, release, bargain, sell and convey, and forever quit-claim unto the said Saint Joseph's Manor, its Successors and Assigns forever.

A certain parcel or tract of land situated on the Easterly side of Washington Avenue and the Westerly side of Ray Street in the City of Portland, County of Cumberland and State of Maine, being bounded and described as follows:

Beginning at the Easterly side of Washington Avenue at an iron S 35° 50' E and distant 125 feet from the most Southerly corner of land conveyed by Willis R. Sawyer to Edward S. Colburn by deed dated November 28, 1960 and recorded in Cumberland County Registry of Deeds in Book 2577, Page 147;

Thence by said Washington Avenue N 35° 50' W a distance of sixty feet to other land of Roman Catholic Bishop of Portland;

Thence by land of said Roman Catholic Bishop of Portland N 53° 38' 30" E a distance of 150 feet to a point;

Thence by land of said Roman Catholic Bishop of Portland N 35° 50' W a distance of 65 feet to an iron marking the Easterly corner of land conveyed by Willis R. Sawyer to Edward S. Colburn by deed dated November 28, 1960 and recorded in said Registry of Deeds in Book 2577 at Page 147;

Thence by land of said Edward S. Colburn N 35° 50' W a distance of 100 feet to an iron on the Southerly line of land conveyed by Albert D. Robinson to Edward T. Silver by deed dated August 30, 1926 and recorded in said Registry of Deeds in Book 1246 at Page 256;

Thence by said Silver land N 53° 38' 30" E a distance of 187.3 feet, more or less, to the center line of Fall Brook;

Thence by land of said Silver and said Fall Brook center line Northerly a distance of 69 feet, more or less, to the most Northerly corner of land of said Silver;

Thence by said Fall Brook center line, Northeasterly a distance of 140 feet, more or less, and Westerly a distance of 40 feet, more or less, to Easterly corner of land conveyed by William F. H. Folwartshhy to James F. Hatch by deed dated September 26, 1949 and recorded in said Registry of Deeds in Book 1973 at Page 374;

Thence by land of said Hatch and said Fall Brook center line Northwesterly a distance of 100 feet, more or less, to the Westerly sideline of the Fall Brook Branch Sewer Right of Way;

Thence by Westerly line of said Fall Brook Branch Sewer Right of Way and land of James Hatch and land of Vincent Montefusco N 6° 30' 30" W a distance of 85.49 feet, more or less, to land conveyed by Jacques A. Cauchy et al to Ortavio DiMatteo et al by deed dated December 31, 1957 and recorded in said Registry of Deeds in Book 2390, Page 110;

Thence by land of said DiMatteo N 6° 30' 30" W a distance of 154.84 feet to Drake Street so-called;

Thence by said Drake Street N 6° 30' 30" W a distance of 1.92 feet to an angle point, marked by an iron;

Thence by said Drake Street and by land conveyed by Joseph Montefusco et al to Vincent Montefusco by deed dated April 11, 1960 and recorded in said Registry of Deeds in Book 2532, Page 367, N 25° 36' W a distance of 233.77 feet to the Southeasterly corner of Lot #184 as shown on a plan of the Pines owned by A. H. Chapman Land Co. dated April 1925 and recorded in said Registry of Deeds in Plan Book 16, Page 29, and as marked by an iron;

Thence by Easterly sideline of Lot #184 on course of N 25° 36' W a distance of 100 feet to Maine Avenue;

Thence by said Maine Avenue N 64° 24' E a distance of 60 feet to Northwesterly corner of Lot #187;

Thence by the Westerly side of Lot #187 S 25° 36' E a distance of 100 feet to Southwesterly corner of Lot #187, as marked by an iron;

Thence by the rear lines of Lots #187 through #200 and part of #201 as shown on said recorded plan N 64° 24' E a distance of 508.15 feet to Southwesterly corner of Lot #285, as marked by an iron;

Thence by the rear lines of Lots #285 through #292 on a course of S 51° 10' E a distance of 312.03 feet to the Southeasterly corner of Lot #292, as marked by an iron;

Thence by Lot #292 on a course of N 38° 50' E a distance of 100 feet, more or less, to Idaho Street as shown on said recorded plan;

Thence by said Idaho Street S 51° 10' E a distance of 60 feet to the Northwesterly corner of Lot #295;

Thence by Lot #295 on a course of S 38° 50' W a distance of 100 feet to the Southwesterly corner of Lot #295, as marked by an iron;

Thence by Lot #295 through #306 on a course of S 51° 10' E a distance of 346.75 feet to land conveyed by Mary A. Holdorf to Wilma W. Wildes by deed dated January 13, 1937 and recorded in said Registry of Deeds in Book 1514, Page 178;

Thence by land of said Wildes S 51° 10' E a distance of 106.84 feet to Ray Street;

Thence by said Ray Street Southerly by a curve to the left having a radius of 218.02 feet a distance of 165.96 feet to a point of tangency;

Thence by said Ray Street S 16° 59' 30" E a distance of 120.84 feet to land conveyed by Federal Loan and Building Association to Charles W. and Vivian M. Hanson by deed dated June 17, 1933 and recorded in said Registry of Deeds in Book 1415, Page 270;

Thence by land of said Hanson S 51° 45' 30" W a distance of 830 feet, more or less, to said Fall Brook center line and land conveyed by Theodora L. Sawyer to Willis R. Sawyer by deed dated February 8, 1945 and recorded in said Registry of Deeds in Book 1771, Page 100;

Thence by land of Willis R. Sawyer et al and by said Fall Brook center line Northwesterly a distance of 127 feet, more or less, to land conveyed by F. S. Plummer Co. to Richard D. Sawyer et al by deed dated November 29, 1972 and recorded in said Registry of Deeds in Book 3332, Page 122;

Thence by land of said Richard D. Sawyer et al and by said Fall Brook center line Northwesterly a distance of 75 feet, more or less, until intersected by a line on a course of N 53° 38' 30" E from the iron marking the point of beginning of the parcel being described;

Thence by land of said Richard D. Sawyer et al S 53° 38-1/2' W a distance of 304 feet to Washington Avenue and the point of beginning.

This conveyance is made subject, however, to the reservation of a burying lot as set forth in deed from Albert D. Robinson to Eugene W. Sawyer dated July 16, 1887 and recorded in said Registry of Deeds in Book 533, Page 302 being bounded and described as follows:

Beginning at an iron marking the most Southerly corner of said burying lot, said point of beginning being found as follows:

Beginning on the Easterly side of Washington Avenue at an iron marking the most Southerly corner of the parcel above described;

Thence by land of said Richard D. Sawyer et al N 53° 38' 30" E a distance of 298.07 feet to an iron;

Thence through land above described N 10° 04' 30" E a distance of 130.74 feet to the iron marking the point of beginning of the burying lot being described;

Thence by land formerly of the Roman Catholic Bishop of Portland on the following courses:

N 22° 15' 30" W a distance of 64 feet to an iron;

Thence N 67° 44' 30" E a distance of 54 feet to an iron;

Thence S 22° 15' 30" E a distance of 64 feet to an iron;

Thence S 67° 44' 30" W a distance of 54 feet to an iron and the point of beginning.

This conveyance is made subject to the reservations as contained in a deed from Willis R. Sawyer to the Grantor in his deed dated December 21, 1973 and recorded in said Registry in Book 3495, Page 123; and conveying the right-of-way as described therein.

This conveyance is made subject to the sewer rights acquired by the City of Portland by instrument not recorded in the Registry of Deeds.

This conveyance is also made subject to setback requirements as set forth in a deed from A. H. Chapman Land Company to Keith S. Davis dated August 8, 1929 and recorded in the said Registry in Book 1352, Page 123 and in a deed from A. H. Chapman Land Company to Jason H. Woodward dated May 11, 1931 and recorded in said Registry in Book 1381, Page 80.

Courses are magnetic and of the date of 1956.

The area of the above parcel constitutes 875,556 square feet, more or less, equaling 20.1 acres, more or less.

This is a corrective deed for one executed by the Grantor, dated September 20, 1974, and recorded in said Registry in Book 3602, at Page 294.

312

To have and to hold the same, together with all the privileges and appurtenances thereunto belonging to the said Saint Joseph's Manor, its Successors and Assigns forever.

AND the Roman Catholic Bishop of Portland does covenant with the said Grantee, its Successors and Assigns, that it will Warrant and forever Defend the premises to the said Grantee, its Successors and Assigns forever, against the lawful claims and demands of all persons claiming by, through, or under said Roman Catholic Bishop of Portland, corporation sole.

IN WITNESS WHEREOF, the said Roman Catholic Bishop of Portland, a body politic and corporation sole, has caused this instrument to be sealed with its corporate seal and signed in its corporate name by Edward C. O'Leary, Episcopal Administrator of the Diocese of Portland, thereunto duly authorized, according to the discipline and government of the Roman Catholic Church and the laws of the State of Maine, this 25th day of October in the year of our Lord one thousand nine hundred and seventy-four.

Signed, Sealed and Delivered in presence of

ROMAN CATHOLIC BISHOP OF PORTLAND

By: Edward C. O'Leary
Episcopal Administrator

Seal

STATE OF MAINE

Cumberland, ss. Oct. 25, 1974

Personally appeared the above named Edward C. O'Leary, Episcopal Administrator, and acknowledge the above instrument to be his free act and deed in his said capacity, and the free act and deed of said corporation sole.

Before me,

Notary Public
~~Justice of the Peace~~

OCT 25 1974
REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE
Received at 2 P 08 M PM, and recorded in
BOOK 3614 PAGE 309 Register

SJM
Saint Joseph's Manor
1133 Washington Avenue
Portland, ME 04103
207-797-0600

April 16, 1998

City of Portland
Planning Department

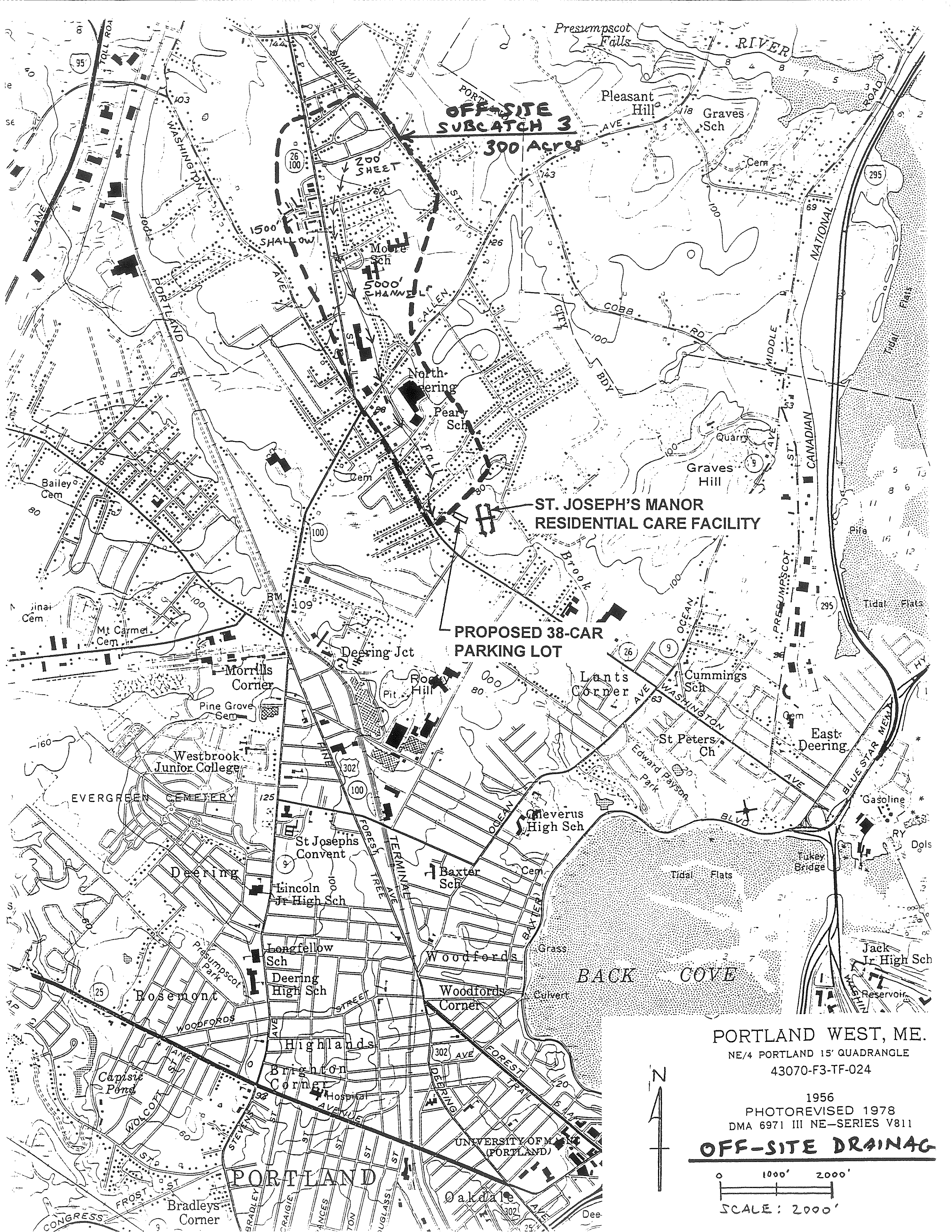
To Whom This May Concern:

The anticipated cost of $57,000.00 to construct the new parking lot will be funded from our own internal funds.

Sincerely,

Ron Tardif
Executive Director

RT/hlb


OFF-SITE SUBCATCH 3
300 Acres
200' SHEET
1500' SHALLOW
5000' CHANNEL
ST. JOSEPH'S MANOR
RESIDENTIAL CARE FACILITY
PROPOSED 38-CAR
PARKING LOT
Presumpscot Falls
RIVER
Pleasant Hill
Graves Sch
Moore Sch
North Deering
Peary Sch
Graves Hill
Quarry
Bailey Cem
Mt Carmel Cem
Deering Jct
Morrills Corner
Pine Grove Cem
Rocky Hill
Lunts Corner
Cummings Sch
St Peters Ch
East Deering
Westbrook Junior College
EVERGREEN CEMETERY
Edward Payson Park
Cheverus High Sch
St Josephs Convent
Baxter Sch
Deering
Lincoln Jr High Sch
Tidal Flats
Tukey Bridge
Longfellow Sch
Deering High Sch
Woodfords
Woodfords Corner
BACK COVE
Rosemont
Presumpscot Park
Highlands
Brighton Corner
Hospital
Capisic Pond
UNIVERSITY OF MAINE (PORTLAND)
PORTLAND
Bradleys Corner
Oakdale
Jack Jr High Sch
Reservoir
PORTLAND WEST, ME.
NE/4 PORTLAND 15' QUADRANGLE
43070-F3-TF-024
1956
PHOTOREVISED 1978
DMA 6971 III NE–SERIES V811
OFF-SITE DRAINAG
N
0
1000'
2000'
SCALE: 2000'

ST. JOSEPH'S MANOR - PARKING

'Hollis' fine sandy loam

SUBCATCHMENT 1 — AREA 0.27 Ac. — SOIL GROUP C/D

PRE- POST-

RUNOFF:

		CN
0.03	Paved/Ledge	98
0.16	Grass	81
0.08	Woods	76

FLOW PATH:

50' sheet woods 0.12 +
30' sheet grass 0.10 +
50' shallow grass 0.05

"Hollis" fine sandy loam

SUBCATCHMENT 2 — AREA 1.18 Ac. — SOIL GROUP C/D

PRE- POST-

RUNOFF:

0.19	Paved	98
0.19	Grass	81
0.80	Woods	76

FLOW PATH:

120' sheet woods 0.046 +
100' shallow 0.08

OFF-SITE
SUBCATCHMENT 3 — AREA 300 Ac. — SOIL GROUP C

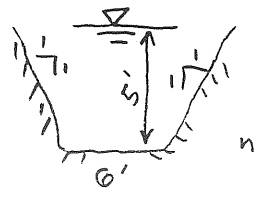
PRE- POST-

RUNOFF:

North Deering Residential Area
Assume 1.0 Acre lots
Average.

CN = 79

FLOW PATH:



200' sheet grass 0.01 +
1500' shallow unpaved 0.027 +
5000' Fall Brook channel 0.007

ST. JOSEPH'S MANOR - PARKING

SUBCATCHMENT 1 — AREA 0.42 Ac. — SOIL GROUP C/D

PRE- (POST-)

RUNOFF:

0.18	Paved / Ledge	98
0.16	Grass	81
0.08	Woods	76

FLOW PATH:

SAME AS PRE-

SUBCATCHMENT 2 — AREA 1.03 Ac — SOIL GROUP C/D

PRE- (POST-)

RUNOFF:

0.36	Paved	98
0.38	Grass	81
0.29	Woods	76

FLOW PATH:

70' sheet paved 0.03 +
30' sheet grass 0.09 +
140' shallow grass 0.065

OFF-SITE SUBCATCHMENT 3 — AREA 300 Ac. — SOIL GROUP C

PRE- (POST-)

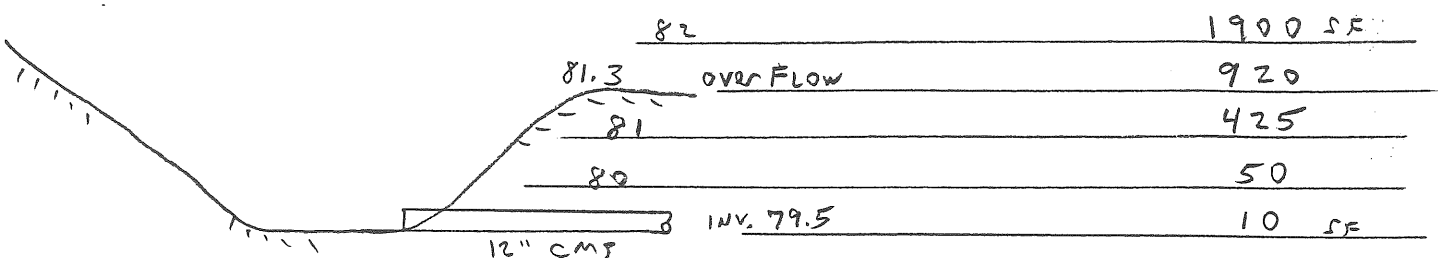
RUNOFF:

SAME

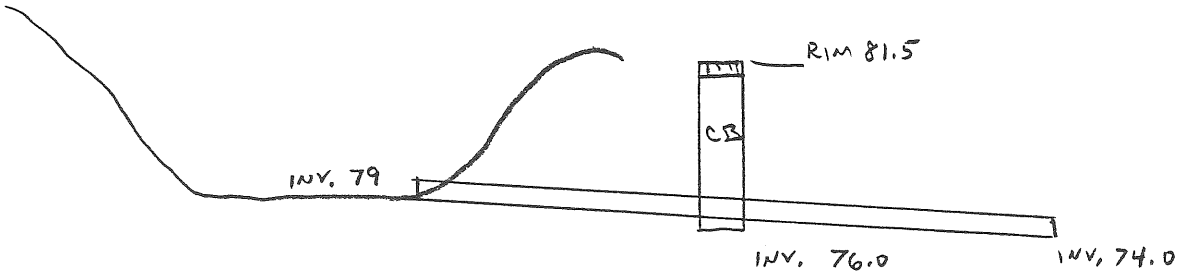
FLOW PATH:

POND 1 EXISTING CULVERT

AREAS

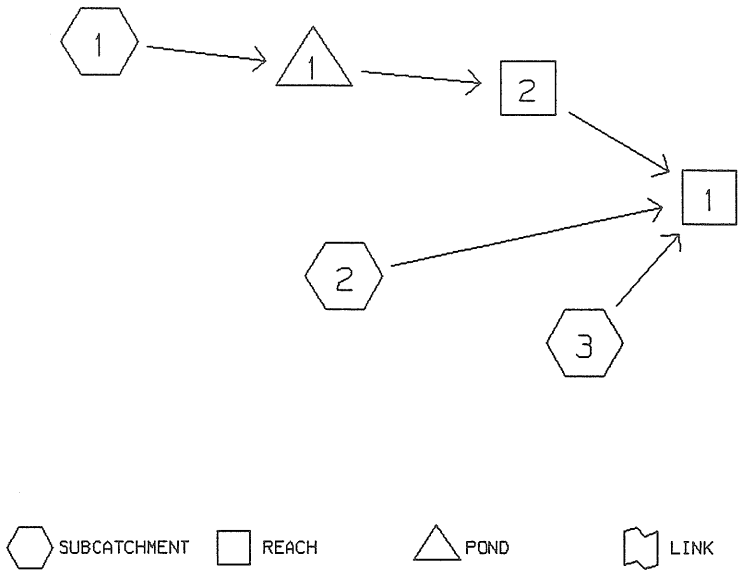


REVISED POST-DEVELOPMENT



25-YEAR

WATERSHED ROUTING ==========



SUBCATCHMENT 1

PEAK= .89 CFS @ 12.10 HRS, VOLUME= .07 AF

ACRES	CN		
.03	98	PAVED/LEDGE	SCS TR-20 METHOD
.16	81	GRASS	TYPE III 24-HOUR
.08	76	WOODS	RAINFALL= 5.4 IN
.27	81		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	6.7
Woods: Light underbrush n=.4 L=50' P2=2.6 in s=.12 '/'		
TR-55 SHEET FLOW	**Segment ID:**	2.2
Grass: Short n=.15 L=30' P2=2.6 in s=.1 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	.5
Short Grass Pasture Kv=7 L=50' s=.05 '/' V=1.57 fps		
	Total Length= 130 ft Total Tc=	9.4

SUBCATCHMENT 2

PEAK= 2.94 CFS @ 12.24 HRS, VOLUME= .29 AF

ACRES	CN		
.19	98	PAVED	SCS TR-20 METHOD
.19	81	GRASS	TYPE III 24-HOUR
.80	76	WOODS	RAINFALL= 5.4 IN
1.18	80		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	19.8
Woods: Light underbrush n=.4 L=120' P2=2.6 in s=.046 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	1.2
Woodland Kv=5 L=100' s=.08 '/' V=1.41 fps		
	Total Length= 220 ft Total Tc=	21.0

SUBCATCHMENT 3 **OFF-SITE FALL BROOK WATERSHED**

PEAK= 493.6 CFS @ 12.61 HRS, VOLUME= 71.77 AF

ACRES	CN		
300.00	79	RESIDENTL 1 ACRE LOTS	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.4 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**OFF-SITE LAWN**	25.0
Grass: Short n=.15 L=200' P2=2.6 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	9.4
Unpaved Kv=16.1345 L=1500' s=.027 '/' V=2.65 fps		
CHANNEL FLOW	**FALL BROOK**	13.7
a=55 sq-ft Pw=20' r=2.75'		
s=.007 '/' n=.04 V=6.1 fps L=5000' Capacity=335.6 cfs		
	Total Length= 6700 ft Total Tc=	48.1

REACH 1 **FALL BROOK**

Qin = 495.2 CFS @ 12.61 HRS, VOLUME= 72.13 AF
Qout= 495.0 CFS @ 12.61 HRS, VOLUME= 72.13 AF, ATTEN= 0%, LAG= .2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	4.0	13.36
1.2	8.6	42.93
1.8	14.0	86.32
2.6	22.1	163.36
3.6	34.6	301.12
4.8	51.8	521.31
6.0	72.0	810.18

6' x 6' CHANNEL
SIDE SLOPE= 1 '/'
n= .04
LENGTH= 50 FT
SLOPE= .02 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 4.66 FT
PEAK VELOCITY= 9.9 FPS
TRAVEL TIME = .1 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 2 **CULVERT DISCHARGE SWALE**

Qin = .86 CFS @ 12.11 HRS, VOLUME= .07 AF
Qout= .82 CFS @ 12.15 HRS, VOLUME= .07 AF, ATTEN= 5%, LAG= 2.2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.7	1.07
.2	1.8	4.05
.3	3.3	9.29
.4	5.8	20.19
.6	10.2	42.69
.8	16.8	83.37
1.0	25.0	141.92

5' x 1' CHANNEL
SIDE SLOPE= .05 '/'
n= .05
LENGTH= 100 FT
SLOPE= .08 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .08 FT
PEAK VELOCITY= 1.5 FPS
TRAVEL TIME = 1.1 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 **EXISTING CULVERT**

Qin = .89 CFS @ 12.10 HRS, VOLUME= .07 AF
Qout= .86 CFS @ 12.11 HRS, VOLUME= .07 AF, ATTEN= 4%, LAG= .8 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
79.5	10	0	0
80.0	50	15	15
81.0	425	238	253
81.3	920	202	454
82.0	1900	987	1441

STOR-IND METHOD
PEAK STORAGE = 23 CF
PEAK ELEVATION= 80.0 FT
FLOOD ELEVATION= 82.0 FT
START ELEVATION= 79.5 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .8 MIN (.07 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	79.5'	**12" CULVERT**
			n=.024 L=70' S=.018'/' Ke=.5 Cc=.9 Cd=.6 TW=78'
2	P	81.3'	**10' BROAD-CRESTED RECTANGULAR WEIR**
			Q=C L H^1.5 C=2.7, 2.6, 2.6, 0, 0, 0, 0, 0

10-YEAR

SUBCATCHMENT 1

PEAK= .68 CFS @ 12.10 HRS, VOLUME= .05 AF

ACRES	CN		
.03	98	PAVED/LEDGE	SCS TR-20 METHOD
.16	81	GRASS	TYPE III 24-HOUR
.08	76	WOODS	RAINFALL= 4.5 IN
.27	81		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	6.7
Woods: Light underbrush n=.4 L=50' P2=2.6 in s=.12 '/'		
TR-55 SHEET FLOW	**Segment ID:**	2.2
Grass: Short n=.15 L=30' P2=2.6 in s=.1 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	.5
Short Grass Pasture Kv=7 L=50' s=.05 '/' V=1.57 fps		
	Total Length= 130 ft Total Tc=	9.4

SUBCATCHMENT 2

PEAK= 2.23 CFS @ 12.25 HRS, VOLUME= .22 AF

ACRES	CN		
.19	98	PAVED	SCS TR-20 METHOD
.19	81	GRASS	TYPE III 24-HOUR
.80	76	WOODS	RAINFALL= 4.5 IN
1.18	80		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	19.8
Woods: Light underbrush n=.4 L=120' P2=2.6 in s=.046 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	1.2
Woodland Kv=5 L=100' s=.08 '/' V=1.41 fps		
	Total Length= 220 ft Total Tc=	21.0

SUBCATCHMENT 3 OFF-SITE FALL BROOK WATERSHED

PEAK= 371.9 CFS @ 12.62 HRS, VOLUME= 54.26 AF

ACRES	CN		
300.00	79	RESIDENTL 1 ACRE LOTS	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.5 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**OFF-SITE LAWN**	25.0
Grass: Short n=.15 L=200' P2=2.6 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	9.4
Unpaved Kv=16.1345 L=1500' s=.027 '/' V=2.65 fps		
CHANNEL FLOW	**FALL BROOK**	13.7
a=55 sq-ft Pw=20' r=2.75'		
s=.007 '/' n=.04 V=6.1 fps L=5000' Capacity=335.6 cfs		
	Total Length= 6700 ft Total Tc=	48.1

REACH 1 **FALL BROOK**

Qin = 373.1 CFS @ 12.62 HRS, VOLUME= 54.54 AF
Qout= 372.7 CFS @ 12.62 HRS, VOLUME= 54.53 AF, ATTEN= 0%, LAG= .2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	4.0	13.36
1.2	8.6	42.93
1.8	14.0	86.32
2.6	22.1	163.36
3.6	34.6	301.12
4.8	51.8	521.31
6.0	72.0	810.18

6' x 6' CHANNEL
SIDE SLOPE= 1 '/'
n= .04
LENGTH= 50 FT
SLOPE= .02 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 3.99 FT
PEAK VELOCITY= 9.3 FPS
TRAVEL TIME = .1 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 2 **CULVERT DISCHARGE SWALE**

Qin = .68 CFS @ 12.10 HRS, VOLUME= .05 AF
Qout= .64 CFS @ 12.14 HRS, VOLUME= .05 AF, ATTEN= 7%, LAG= 2.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.7	1.07
.2	1.8	4.05
.3	3.3	9.29
.4	5.8	20.19
.6	10.2	42.69
.8	16.8	83.37
1.0	25.0	141.92

5' x 1' CHANNEL
SIDE SLOPE= .05 '/'
n= .05
LENGTH= 100 FT
SLOPE= .08 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .06 FT
PEAK VELOCITY= 1.5 FPS
TRAVEL TIME = 1.1 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 **EXISTING CULVERT**

Qin = .68 CFS @ 12.10 HRS, VOLUME= .05 AF
Qout= .68 CFS @ 12.10 HRS, VOLUME= .05 AF, ATTEN= 0%, LAG= .2 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
79.5	10	0	0
80.0	50	15	15
81.0	425	238	253
81.3	920	202	454
82.0	1900	987	1441

STOR-IND METHOD
PEAK STORAGE = 14 CF
PEAK ELEVATION= 80.0 FT
FLOOD ELEVATION= 82.0 FT
START ELEVATION= 79.5 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .9 MIN (.05 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	79.5'	**12" CULVERT**
			n=.024 L=70' S=.018'/' Ke=.5 Cc=.9 Cd=.6 TW=78'
2	P	81.3'	**10' BROAD-CRESTED RECTANGULAR WEIR**
			Q=C L H^1.5 C=2.7, 2.6, 2.6, 0, 0, 0, 0, 0

2-YEAR

SUBCATCHMENT 1

PEAK= .27 CFS @ 12.11 HRS, VOLUME= .02 AF

ACRES	CN	
.03	98	PAVED/LEDGE
.16	81	GRASS
.08	76	WOODS
.27	81	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 2.6 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	6.7
Woods: Light underbrush n=.4 L=50' P2=2.6 in s=.12 '/'		
TR-55 SHEET FLOW	**Segment ID:**	2.2
Grass: Short n=.15 L=30' P2=2.6 in s=.1 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	.5
Short Grass Pasture Kv=7 L=50' s=.05 '/' V=1.57 fps		
	Total Length= 130 ft Total Tc=	9.4

SUBCATCHMENT 2

PEAK= .83 CFS @ 12.27 HRS, VOLUME= .09 AF

ACRES	CN	
.19	98	PAVED
.19	81	GRASS
.80	76	WOODS
1.18	80	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 2.6 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	19.8
Woods: Light underbrush n=.4 L=120' P2=2.6 in s=.046 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	1.2
Woodland Kv=5 L=100' s=.08 '/' V=1.41 fps		
	Total Length= 220 ft Total Tc=	21.0

SUBCATCHMENT 3 **OFF-SITE FALL BROOK WATERSHED**

PEAK= 135.3 CFS @ 12.65 HRS, VOLUME= 20.36 AF

ACRES	CN	
300.00	79	RESIDENTL 1 ACRE LOTS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 2.6 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**OFF-SITE LAWN**	25.0
Grass: Short n=.15 L=200' P2=2.6 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	9.4
Unpaved Kv=16.1345 L=1500' s=.027 '/' V=2.65 fps		
CHANNEL FLOW	**FALL BROOK**	13.7
a=55 sq-ft Pw=20' r=2.75'		
s=.007 '/' n=.04 V=6.1 fps L=5000' Capacity=335.6 cfs		
	Total Length= 6700 ft Total Tc=	48.1

REACH 1 **FALL BROOK**

Qin = 135.8 CFS @ 12.65 HRS, VOLUME= 20.46 AF
Qout= 135.6 CFS @ 12.66 HRS, VOLUME= 20.46 AF, ATTEN= 0%, LAG= .2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	4.0	13.36
1.2	8.6	42.93
1.8	14.0	86.32
2.6	22.1	163.36
3.6	34.6	301.12
4.8	51.8	521.31
6.0	72.0	810.18

6' x 6' CHANNEL
SIDE SLOPE= 1 '/'
n= .04
LENGTH= 50 FT
SLOPE= .02 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 2.29 FT
PEAK VELOCITY= 7.0 FPS
TRAVEL TIME = .1 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 2 **CULVERT DISCHARGE SWALE**

Qin = .27 CFS @ 12.11 HRS, VOLUME= .02 AF
Qout= .25 CFS @ 12.15 HRS, VOLUME= .02 AF, ATTEN= 8%, LAG= 2.3 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.7	1.07
.2	1.8	4.05
.3	3.3	9.29
.4	5.8	20.19
.6	10.2	42.69
.8	16.8	83.37
1.0	25.0	141.92

5' x 1' CHANNEL
SIDE SLOPE= .05 '/'
n= .05
LENGTH= 100 FT
SLOPE= .08 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .02 FT
PEAK VELOCITY= 1.5 FPS
TRAVEL TIME = 1.1 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 **EXISTING CULVERT**

Qin = .27 CFS @ 12.11 HRS, VOLUME= .02 AF
Qout= .27 CFS @ 12.11 HRS, VOLUME= .02 AF, ATTEN= 0%, LAG= .3 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
79.5	10	0	0
80.0	50	15	15
81.0	425	238	253
81.3	920	202	454
82.0	1900	987	1441

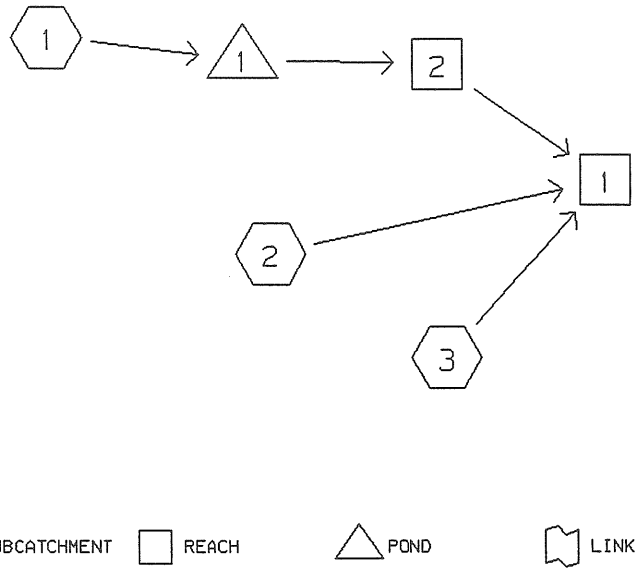
STOR-IND METHOD
PEAK STORAGE = 9 CF
PEAK ELEVATION= 79.8 FT
FLOOD ELEVATION= 82.0 FT
START ELEVATION= 79.5 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 1.2 MIN (.02 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	79.5'	**12" CULVERT**
			n=.024 L=70' S=.018'/' Ke=.5 Cc=.9 Cd=.6 TW=78'
2	P	81.3'	**10' BROAD-CRESTED RECTANGULAR WEIR**
			Q=C L H^1.5 C=2.7, 2.6, 2.6, 0, 0, 0, 0, 0

25-YEAR

Data for **ST. JOSEPHS MANOR PARKING - POSTDEVELOPMT.** Page 1
TYPE III 24-HOUR RAINFALL= 5.4 IN
Prepared by Harriman Associates 15 Apr 98
HydroCAD 4.52 000770 (c) 1986-1996 Applied Microcomputer Systems

WATERSHED ROUTING ==========



SUBCATCHMENT 1

PEAK= 1.61 CFS @ 12.09 HRS, VOLUME= .12 AF

ACRES	CN		
.18	98	PAVED/LEDGE	SCS TR-20 METHOD
.16	81	GRASS	TYPE III 24-HOUR
.08	76	WOODS	RAINFALL= 5.4 IN
.42	87		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	6.7
Woods: Light underbrush n=.4 L=50' P2=2.6 in s=.12 '/'		
TR-55 SHEET FLOW	**Segment ID:**	2.2
Grass: Short n=.15 L=30' P2=2.6 in s=.1 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	.5
Short Grass Pasture Kv=7 L=50' s=.05 '/' V=1.57 fps		
	Total Length= 130 ft Total Tc=	9.4

SUBCATCHMENT 2

PEAK= 4.17 CFS @ 12.03 HRS, VOLUME= .29 AF

ACRES	CN		
.36	98	PAVED	SCS TR-20 METHOD
.38	81	GRASS	TYPE III 24-HOUR
.29	76	WOODS	RAINFALL= 5.4 IN
1.03	86		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	1.3
Smooth surfaces n=.011 L=65' P2=2.6 in s=.01 '/'		
TR-55 SHEET FLOW	**Segment ID:**	2.9
Grass: Short n=.15 L=40' P2=2.6 in s=.09 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	1.3
Short Grass Pasture Kv=7 L=140' s=.065 '/' V=1.78 fps		
	Total Length= 245 ft Total Tc=	5.5

SUBCATCHMENT 3 **OFF-SITE FALL BROOK WATERSHED**

PEAK= 493.6 CFS @ 12.61 HRS, VOLUME= 71.77 AF

ACRES	CN		
300.00	79	RESIDENTL 1 ACRE LOTS	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 5.4 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**OFF-SITE LAWN**	25.0
Grass: Short n=.15 L=200' P2=2.6 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	9.4
Unpaved Kv=16.1345 L=1500' s=.027 '/' V=2.65 fps		
CHANNEL FLOW	**FALL BROOK**	13.7
a=55 sq-ft Pw=20' r=2.75'		
s=.007 '/' n=.04 V=6.1 fps L=5000' Capacity=335.6 cfs		
	Total Length= 6700 ft Total Tc=	48.1

REACH 1 **FALL BROOK**

Qin = 494.5 CFS @ 12.61 HRS, VOLUME= 72.19 AF
Qout= 494.3 CFS @ 12.61 HRS, VOLUME= 72.18 AF, ATTEN= 0%, LAG= .2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	4.0	13.36
1.2	8.6	42.93
1.8	14.0	86.32
2.6	22.1	163.36
3.6	34.6	301.12
4.8	51.8	521.31
6.0	72.0	810.18

6' x 6' CHANNEL
SIDE SLOPE= 1 '/'
n= .04
LENGTH= 50 FT
SLOPE= .02 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 4.65 FT
PEAK VELOCITY= 9.9 FPS
TRAVEL TIME = .1 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 2 **CULVERT DISCHARGE SWALE**

Qin = 1.61 CFS @ 12.09 HRS, VOLUME= .12 AF
Qout= 1.56 CFS @ 12.11 HRS, VOLUME= .12 AF, ATTEN= 3%, LAG= 1.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.7	.90
.2	1.8	3.42
.3	3.3	7.85
.4	5.8	17.04
.6	10.2	36.04
.8	16.8	70.37
1.0	25.0	119.79

5' x 1' CHANNEL
SIDE SLOPE= .05 '/'
n= .05
LENGTH= 70 FT
SLOPE= .057 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .13 FT
PEAK VELOCITY= 1.6 FPS
TRAVEL TIME = .7 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 **NEW CULVERT AND CATCH BASIN**

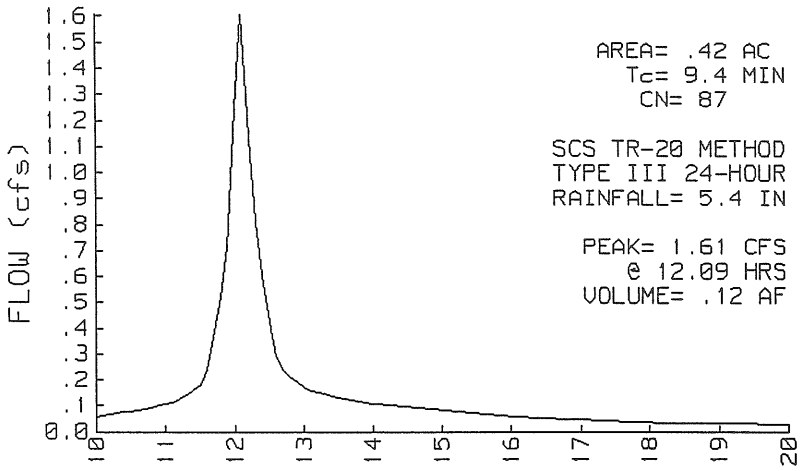
Qin = 1.61 CFS @ 12.09 HRS, VOLUME= .12 AF
Qout= 1.61 CFS @ 12.09 HRS, VOLUME= .12 AF, ATTEN= 0%, LAG= .1 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
76.0	13	0	0
79.0	10	35	35
80.0	50	30	65
81.0	425	238	302
81.3	920	202	504
82.0	1900	987	1491

STOR-IND METHOD
PEAK STORAGE = 8 CF
PEAK ELEVATION= 76.7 FT
FLOOD ELEVATION= 82.0 FT
START ELEVATION= 76.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .2 MIN (.12 AF)

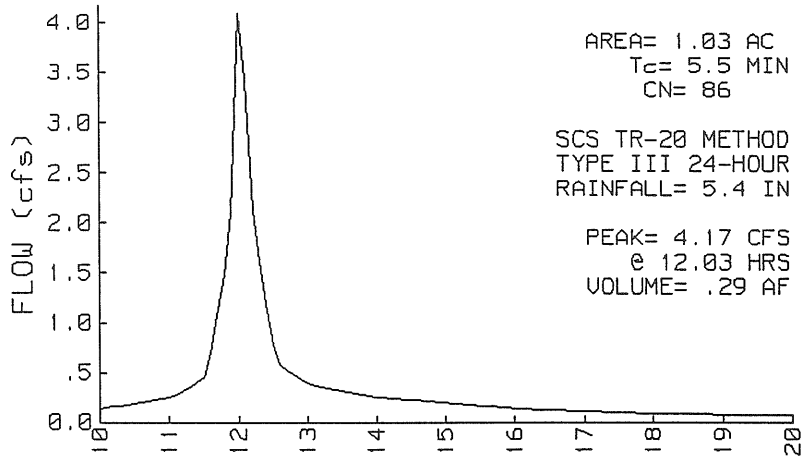
#	ROUTE	INVERT	OUTLET DEVICES
1	P	76.0'	**12" CULVERT**
			n=.01 L=90' S=.02'/' Ke=.5 Cc=.9 Cd=.6 TW=74'
2	P	81.3'	**10' BROAD-CRESTED RECTANGULAR WEIR**
			Q=C L H^1.5 C=2.7, 2.6, 2.6, 0, 0, 0, 0, 0

SUBCATCHMENT 1 RUNOFF



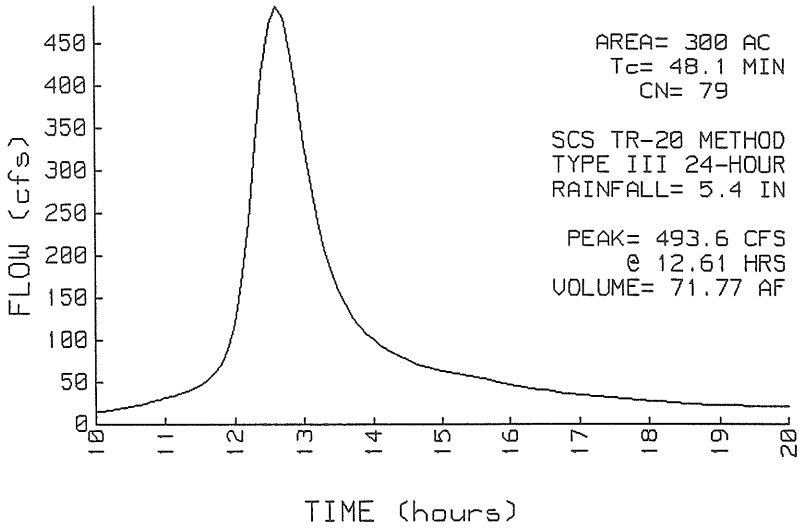
TIME (hours)

SUBCATCHMENT 2 RUNOFF

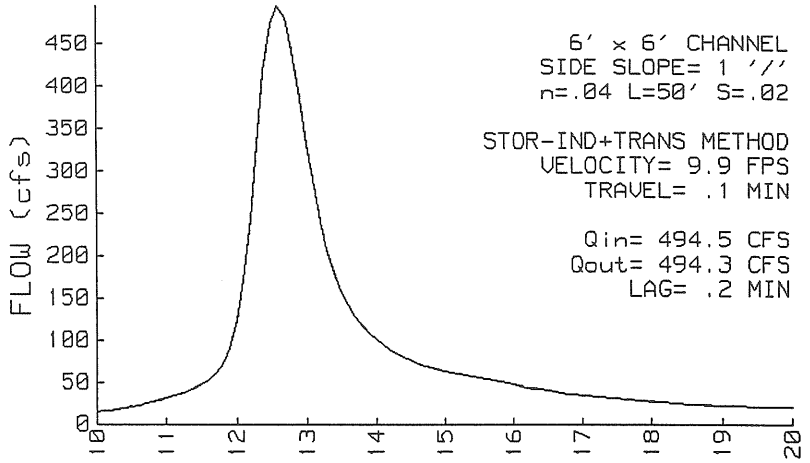


TIME (hours)

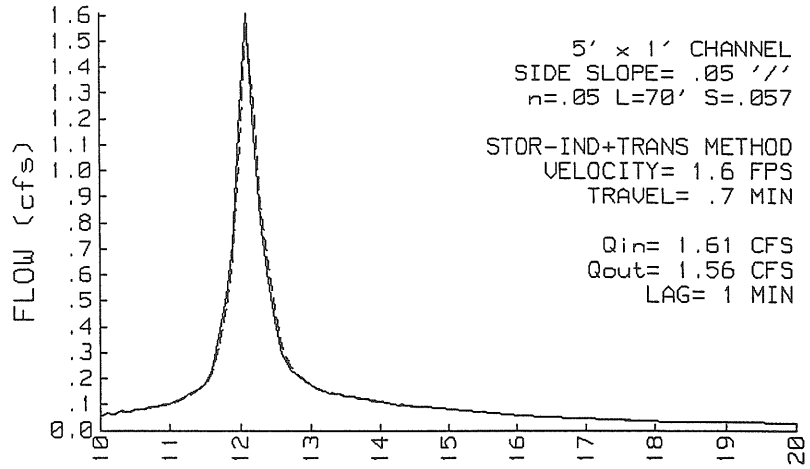
SUBCATCHMENT 3 RUNOFF
OFF-SITE FALL BROOK WATERSHED



REACH 1 INFLOW & OUTFLOW
FALL BROOK



REACH 2 INFLOW & OUTFLOW
CULVERT DISCHARGE SWALE



10-YEAR

SUBCATCHMENT 1

PEAK= 1.28 CFS @ 12.09 HRS, VOLUME= .10 AF

ACRES	CN		
.18	98	PAVED/LEDGE	SCS TR-20 METHOD
.16	81	GRASS	TYPE III 24-HOUR
.08	76	WOODS	RAINFALL= 4.5 IN
.42	87		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	6.7
Woods: Light underbrush n=.4 L=50' P2=2.6 in s=.12 '/'		
TR-55 SHEET FLOW	**Segment ID:**	2.2
Grass: Short n=.15 L=30' P2=2.6 in s=.1 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	.5
Short Grass Pasture Kv=7 L=50' s=.05 '/' V=1.57 fps		
	Total Length= 130 ft Total Tc=	9.4

SUBCATCHMENT 2

PEAK= 3.29 CFS @ 12.03 HRS, VOLUME= .23 AF

ACRES	CN		
.36	98	PAVED	SCS TR-20 METHOD
.38	81	GRASS	TYPE III 24-HOUR
.29	76	WOODS	RAINFALL= 4.5 IN
1.03	86		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	1.3
Smooth surfaces n=.011 L=65' P2=2.6 in s=.01 '/'		
TR-55 SHEET FLOW	**Segment ID:**	2.9
Grass: Short n=.15 L=40' P2=2.6 in s=.09 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	1.3
Short Grass Pasture Kv=7 L=140' s=.065 '/' V=1.78 fps		
	Total Length= 245 ft Total Tc=	5.5

SUBCATCHMENT 3 **OFF-SITE FALL BROOK WATERSHED**

PEAK= 371.9 CFS @ 12.62 HRS, VOLUME= 54.26 AF

ACRES	CN		
300.00	79	RESIDENTL 1 ACRE LOTS	

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 4.5 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**OFF-SITE LAWN**	25.0
Grass: Short n=.15 L=200' P2=2.6 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	9.4
Unpaved Kv=16.1345 L=1500' s=.027 '/' V=2.65 fps		
CHANNEL FLOW	**FALL BROOK**	13.7
a=55 sq-ft Pw=20' r=2.75'		
s=.007 '/' n=.04 V=6.1 fps L=5000' Capacity=335.6 cfs		
	Total Length= 6700 ft Total Tc=	48.1

REACH 1 **FALL BROOK**

Qin = 372.6 CFS @ 12.62 HRS, VOLUME= 54.59 AF
Qout= 372.2 CFS @ 12.62 HRS, VOLUME= 54.59 AF, ATTEN= 0%, LAG= .2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	4.0	13.36
1.2	8.6	42.93
1.8	14.0	86.32
2.6	22.1	163.36
3.6	34.6	301.12
4.8	51.8	521.31
6.0	72.0	810.18

6' x 6' CHANNEL
SIDE SLOPE= 1 '/'
n= .04
LENGTH= 50 FT
SLOPE= .02 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 3.99 FT
PEAK VELOCITY= 9.3 FPS
TRAVEL TIME = .1 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 2 **CULVERT DISCHARGE SWALE**

Qin = 1.28 CFS @ 12.10 HRS, VOLUME= .10 AF
Qout= 1.24 CFS @ 12.11 HRS, VOLUME= .10 AF, ATTEN= 3%, LAG= 1.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.7	.90
.2	1.8	3.42
.3	3.3	7.85
.4	5.8	17.04
.6	10.2	36.04
.8	16.8	70.37
1.0	25.0	119.79

5' x 1' CHANNEL
SIDE SLOPE= .05 '/'
n= .05
LENGTH= 70 FT
SLOPE= .057 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .12 FT
PEAK VELOCITY= 1.5 FPS
TRAVEL TIME = .8 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 **NEW CULVERT AND CATCH BASIN**

Qin = 1.28 CFS @ 12.09 HRS, VOLUME= .10 AF
Qout= 1.28 CFS @ 12.10 HRS, VOLUME= .10 AF, ATTEN= 0%, LAG= .1 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
76.0	13	0	0
79.0	10	35	35
80.0	50	30	65
81.0	425	238	302
81.3	920	202	504
82.0	1900	987	1491

STOR-IND METHOD
PEAK STORAGE = 7 CF
PEAK ELEVATION= 76.6 FT
FLOOD ELEVATION= 82.0 FT
START ELEVATION= 76.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .2 MIN (.1 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	76.0'	**12" CULVERT**
			n=.01 L=90' S=.02'/' Ke=.5 Cc=.9 Cd=.6 TW=74'
2	P	81.3'	**10' BROAD-CRESTED RECTANGULAR WEIR**
			Q=C L H^1.5 C=2.7, 2.6, 2.6, 0, 0, 0, 0, 0

2-YEAR

SUBCATCHMENT 1

PEAK= .58 CFS @ 12.10 HRS, VOLUME= .04 AF

ACRES	CN		
.18	98	PAVED/LEDGE	SCS TR-20 METHOD
.16	81	GRASS	TYPE III 24-HOUR
.08	76	WOODS	RAINFALL= 2.6 IN
.42	87		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	6.7
Woods: Light underbrush n=.4 L=50' P2=2.6 in s=.12 '/'		
TR-55 SHEET FLOW	**Segment ID:**	2.2
Grass: Short n=.15 L=30' P2=2.6 in s=.1 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	.5
Short Grass Pasture Kv=7 L=50' s=.05 '/' V=1.57 fps		
	Total Length= 130 ft Total Tc=	9.4

SUBCATCHMENT 2

PEAK= 1.45 CFS @ 12.03 HRS, VOLUME= .10 AF

ACRES	CN		
.36	98	PAVED	SCS TR-20 METHOD
.38	81	GRASS	TYPE III 24-HOUR
.29	76	WOODS	RAINFALL= 2.6 IN
1.03	86		SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**Segment ID:**	1.3
Smooth surfaces n=.011 L=65' P2=2.6 in s=.01 '/'		
TR-55 SHEET FLOW	**Segment ID:**	2.9
Grass: Short n=.15 L=40' P2=2.6 in s=.09 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	1.3
Short Grass Pasture Kv=7 L=140' s=.065 '/' V=1.78 fps		
	Total Length= 245 ft Total Tc=	5.5

SUBCATCHMENT 3 **OFF-SITE FALL BROOK WATERSHED**

PEAK= 135.3 CFS @ 12.65 HRS, VOLUME= 20.36 AF

ACRES	CN	
300.00	79	RESIDENTL 1 ACRE LOTS

SCS TR-20 METHOD
TYPE III 24-HOUR
RAINFALL= 2.6 IN
SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**OFF-SITE LAWN**	25.0
Grass: Short n=.15 L=200' P2=2.6 in s=.01 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**Segment ID:**	9.4
Unpaved Kv=16.1345 L=1500' s=.027 '/' V=2.65 fps		
CHANNEL FLOW	**FALL BROOK**	13.7
a=55 sq-ft Pw=20' r=2.75'		
s=.007 '/' n=.04 V=6.1 fps L=5000' Capacity=335.6 cfs		
	Total Length= 6700 ft Total Tc=	48.1

REACH 1 **FALL BROOK**

Qin = 135.6 CFS @ 12.65 HRS, VOLUME= 20.51 AF
Qout= 135.5 CFS @ 12.66 HRS, VOLUME= 20.50 AF, ATTEN= 0%, LAG= .2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.6	4.0	13.36
1.2	8.6	42.93
1.8	14.0	86.32
2.6	22.1	163.36
3.6	34.6	301.12
4.8	51.8	521.31
6.0	72.0	810.18

6' x 6' CHANNEL
SIDE SLOPE= 1 '/'
n= .04
LENGTH= 50 FT
SLOPE= .02 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 2.29 FT
PEAK VELOCITY= 7.0 FPS
TRAVEL TIME = .1 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 2 **CULVERT DISCHARGE SWALE**

Qin = .58 CFS @ 12.10 HRS, VOLUME= .04 AF
Qout= .55 CFS @ 12.13 HRS, VOLUME= .04 AF, ATTEN= 6%, LAG= 1.6 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.7	.90
.2	1.8	3.42
.3	3.3	7.85
.4	5.8	17.04
.6	10.2	36.04
.8	16.8	70.37
1.0	25.0	119.79

5' x 1' CHANNEL
SIDE SLOPE= .05 '/'
n= .05
LENGTH= 70 FT
SLOPE= .057 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .06 FT
PEAK VELOCITY= 1.3 FPS
TRAVEL TIME = .9 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 **NEW CULVERT AND CATCH BASIN**

Qin = .58 CFS @ 12.10 HRS, VOLUME= .04 AF
Qout= .58 CFS @ 12.10 HRS, VOLUME= .04 AF, ATTEN= 0%, LAG= .1 MIN

ELEVATION (FT)	AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)
76.0	13	0	0
79.0	10	35	35
80.0	50	30	65
81.0	425	238	302
81.3	920	202	504
82.0	1900	987	1491

STOR-IND METHOD
PEAK STORAGE = 4 CF
PEAK ELEVATION= 76.4 FT
FLOOD ELEVATION= 82.0 FT
START ELEVATION= 76.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .3 MIN (.04 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	76.0'	**12" CULVERT**
			n=.01 L=90' S=.02'/' Ke=.5 Cc=.9 Cd=.6 TW=74'
2	P	81.3'	**10' BROAD-CRESTED RECTANGULAR WEIR**
			Q=C L H^1.5 C=2.7, 2.6, 2.6, 0, 0, 0, 0, 0

SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Provide labor and materials to complete the earthwork within the limit of work as shown on the Drawings and/or herein specified.
   1. Clearing and preparation of site.
   2. Stripping of topsoil
   3. Protection.
   4. Excavation:
      a. General excavation to lines and grades indicated.
      b. Excavation for buried structures, pipes, wires and conduits.
   5. General rough grading, cutting and filling as required.
   6. Filling and backfilling for excavations, including furnishing of extra material required.
   7. Compacted gravel for roadways, drives and walks.
   8. Shoring, bracing, sheathing, and cribbing as required and removal of the same.
   9. Pumping of excavation as may be required.
   10. Crushed stone.
   11. Rip rap.

1.02 SUBMITTALS

A. Submit manufacturer's product literature and test results for approval on all materials in accordance with Section 01300.

1.03 PROTECTION

A. Excavation, sidewalks, trenches, etc., shall be kept properly fenced and guarded. Lights shall be provided and maintained wherever and whenever necessary. Trees which are within the area of operations (and are to remain) shall be protected with suitable boarding or fencing.

B. Shoring: Do shoring, bracing, etc., necessary to support soil adjoining the excavation. The same shall be removed when directed.

C. Protect newly filled areas from traffic and erosion. Repair and re-establish grades to the specified tolerances in settled, eroded and rutted areas. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, re-shape and compact to the required density prior to further construction.

1.04 QUALITY ASSURANCE

A. Compaction Control: Wherever a percentage of compaction for backfill is indicated or specified, it shall be the in-place dry density divided by the maximum dry density and multiplied by 100.

B. The maximum dry density shall be the dry density at optimum moisture as determined by ASTM D 1557-91 "Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort," latest revision. Method A, B or C shall be selected by the testing agency based on the gradation results of the sample taken. Adjustments to the laboratory density for oversize aggregate shall be made (if required) as specified in ASTM D 1557-91. These adjustments shall be made in accordance with ASTM D 4718-87, latest revision.

C. The in-place density shall be determined in accordance with ASTM Standard Method of Test for Density of Soil in Place by the Sand Cone Method, Designation D 1556; or density of soil and soil aggregate in-place by nuclear methods (shallow depth), Designation D2922.

D. Materials used on-site are subject to the approval of the Architect and Geotechnical Engineer and unsuitable materials shall be removed from the site.

1.05 MEASUREMENTS AND CLASSIFICATION

A. Measurements: Measurements used for calculating amounts of excavation shall be within a vertical line placed 2'-0" outside the wall or 1'-0" outside footing, whichever is greater, and to the depth indicated. Trench excavation for underground utilities shall be based on a trench width 2'-6" greater than the diameter of the pipe with vertical walls, and the depth of 4" below the pipe. All excavation shall be taken to a minimum of 1'-0" below finish floor, and slabs on grade.

B. Classification:
1. Earth excavation includes any and all material not having the qualities to classify as rock excavation.
2. Rock excavation includes the satisfactory removal and disposal of solid rock material which cannot be removed without systematic drilling and blasting. This includes rock material which is in ledges, bedded deposits, unstratified masses, and conglomerate deposits which are so firmly cemented that they possess the characteristics of solid rock. Fragmented "weathered" rock which can be removed by excavation equipment with "ripper" teeth will be considered earth. Boulders will be included only if each is two (2) cubic yard size or greater and cannot be excavated without drilling and blasting or pneumatic splitting. When, during the progress of excavation, ledge is encountered, the Architect shall be notified. Adjustments will be by unit price. The Architect shall determine the extent of rock excavation and classification.
3. The unit price for rock excavation is net and is not subject to credit for any other material which it may replace.
4. Excavation which measures 6'-0" or less in width, regardless of length, shall be classified as trench excavation. Measurements to be determined as outlined herein.
5. Excavation which does not meet the above requirements for trench excavation shall be classified as open excavation.
6. The Owner will take credit for excavation omitted through changes in the Plans and/or Specifications at the unit price stated.

C. Rock excavation shall not be included under the basic Contract Price. Rock excavation required for the project will be paid for on the basis of unit prices set forth in the Bid Form. The extent of such rock will be determined by the Architect, with rock contour survey provided by the Contractor.

1.06 SOIL TESTING

A. Soil compaction control including laboratory testing, on site testing, and geotechnical inspection will be done by a testing agency hired by the Owner.

B. Provide samples of each fill material from the proposed source of supply. Allow sufficient time for testing and evaluation of results before material is needed. Submit samples from alternate sources if proposed material does not meet the specifications. Submit test results to the Architect.

C. Tests of soil as delivered may be performed from time to time. Materials in question may not be used, pending test results. Remove rejected material and replace with new, approved soil.

D. Cooperate with the laboratory in obtaining field samples of in-place, bank-run, or stockpiled materials. Samples should be obtained by laboratory personnel from various suppliers, but other individuals may obtain and deliver samples if approved by the Architect.

E. Coordinate schedule with testing agency and Architect to allow testing agency representative to be on site prior to foundation formwork and at the start of filling operations.

F. The Contractor shall bear cost of retesting when initial test results indicate non-compliance with specifications, or when alternate sources are submitted.

G. In-place Compaction Test Frequency for Each Layer Placed:
1. Subgrade, proof-compact paved areas: 1 test per 1,000 sq. ft.
2. Parking, roads and walks: 1 test per 1000 sq. ft.
3. Trench - utilities: 1 test per 50 lin. ft.

PART 2 - PRODUCTS

2.01 GRAVEL BASE AND SUB-BASE

A. Clean screened or crushed gravel free from organic material or clay. The portion that passes a 3" sieve shall conform to the following gradation requirements:

Sieve Size	% Passing Base	Sub-Base
2"	100	-
1"	80 - 100	50 - 100
1/2"	35 - 75	-
1/4"	25 - 60	25 - 70
#40	0 - 25	0 - 30
#200	0 - 5	0 - 7

B. Maximum size stone for sub-base passes 6" sieve.

C. Gradations in the table represent the limits which shall determine suitability of gravel for use from the sources of supply. The gradations shall be uniformly graded from course to fine within the limits designated in the table and shall not vary from the low limit on one sieve to the high limit on the adjacent sieves, or vice versa.

2.02 GRANULAR BORROW

A. Uniformly graded bank-run gravel which can be compacted to the required density, free of debris, roots, topsoil, vegetable matter, frozen material, and any other deleterious material. The portion that passes a 3" sieve shall meet the following gradation requirements:

Sieve Size	Percent Passing
#40	0-50
#200	0-15

B. Maximum size stone passes 6" sieve.

2.03 GRANULAR BEDDING MATERIAL

A. Clean Sand or Gravel Free from Organic Material or Clay Conforming to the Following Gradation:

Sieve Size	Percent Passing
2"	100
1/4"	25 - 100
#40	0 - 30
#200	0 - 7

2.04 COMMON BORROW

A. Soil which is free from vegetable matter, lumps of clay, perishable rubbish or peat, or frozen material, which can be placed and compacted to the required densities. 8-inch maximum stone size.

2.05 BEDDING SAND

A. Clean, Coarse, Sharp, Durable Particles Free from Organic Material or Clay Conforming to the Following Gradations:

Sieve Size	Percent Passing
3/8"	100%
4	95-100
#16	50-85
#50	10-30
#100	2-10
#200	0-5

2.06 STONES FOR RIP-RAP

A. Size the stone mixture such that 50% of the stones, by weight, are larger than the specified d50 size. Stones shall not be schistosic.

B. Plain Rip-Rap: 4" to 12" diameter, hard, sound angular stones, d50 = 6".

2.07 CRUSHED STONE

A. Angular crushed natural stone, free from shale, organic matter and debris conforming to the following gradation: (ASTM C-33 Size No. 56)

Sieve Size	Percent Passing
1-1/2"	100%
1"	90-100
3/4"	40-85
1/2"	10-40
3/8"	0-15
#4	0-5

PART 3 - EXECUTION

3.01 CLEARING AND SITE PREPARATION

A. Trees, brush, boulders, etc., within the limits of grading shall be removed from the site (except trees indicated as remaining or undisturbed) including grubbing and removal of organic material, stumps and roots.

B. Debris shall be removed from the site and deposited in suitable disposal areas obtained by the Contractor at his expense. Conform to all Federal, State and local solid waste disposal regulations.

C. Remove fences, culverts, wires, light poles, signs, and other site features to be salvaged and stock-piled for later installation, or disposed of, as directed by the Owner.

3.02 STRIPPING OF TOPSOIL

A. Topsoil within areas where excavation or filling will occur shall be stripped, cleaned of all rocks and debris and stockpiled on site for use in finish grading.

B. Prior to re-use, topsoil must conform to the requirements of Section 02930. Soil which does not meet these requirements, either naturally, or by additives supplied by the Contractor, shall be considered common excavated material.

3.03 ROUGH GRADING

A. Rough grade the area within the limits of work to conform to grades indicated, including necessary cutting and filling. Additional material necessary to complete the rough grading shall be furnished by Contractor.

3.04 DISPOSAL

A. Dispose of unsuitable material, organic material, wood waste, rock material, and surplus excavated soil in excess of that required for rough grading off the site in a disposal area obtained by the Contractor. Conform to Federal, State and local solid waste disposal regulations.

B. If hazardous waste or special waste as defined by the U. S. Environmental Protection Agency or State Department of Environmental Protection is encountered during excavation, the Contractor shall avoid disturbance of that material, and shall notify the Owner immediately. The State Bureau of Oil and Hazardous Waste Control must be notified and consulted prior to disturbance of the waste or contaminated soil. Removal and disposal of contaminated materials is not included in the Contract Bid, since it must be handled as directed by the regulatory agencies on a case-by-case basis.

3.05 REMOVAL OF EXISTING BITUMINOUS PAVEMENT

A. Where it is necessary to excavate and make cuts in bituminous pavement, the Contractor shall saw cut paving along neat straight lines where new pavement meets existing pavement.

B. Dispose of excavated pavement in suitable off-site disposal area obtained by the Contractor.

3.06 EXCAVATION

A. Excavation shall be made to the proper depths with the proper allowance for forms, etc. Excavation shall be approximately level, clean and clear of loose material. Debris, rock material, organic material or unsuitable material encountered in the excavation shall be removed and disposed of as specified above. Excavation shall be carried to depth required by design. Over-excavation beyond the design limits, made without authorization from the Owner or Geotechnical Engineer, will be refilled with granular borrow material compacted to 95% maximum dry density at the Contractor's expense.

B. Prior to ledge rock blasting, the Contractor shall perform a "pre-blast survey" of all off-site structures and wells within 500 ft. of blasting locations. For the survey, the Contractor shall interview the land owner of the buildings and wells, obtain a certified water test of each well, and videotape concrete foundations and other masonry components of the structure. When explosives are used for rock removal, the work shall be done by experienced powdermen, using small charges to minimize particle velocity in strict accordance with regulations covering this type of work. Blasts shall be properly covered, using blasting mats. Damage to the structure caused by improper use of explosives shall be corrected at the Contractor's expense. No blasting work is allowed without written approval of the Owner.

C. If bearing is not suitable at levels shown on the Drawings, the Architect or Geotechnical Engineer shall be notified so that adjustments in level or changes may be made immediately. The Geotechnical Engineer will set the limits of excavation of unsuitable material. Allowance for over-excavation of unsuitable material and replacement with granular borrow will be made under the unit price listed in

the Bid Form, when the over-excavation has received prior approval from the Owner or Geotechnical Engineer.

D. Draining of Excavation: The Contractor shall, by use of pumps, or other approved means as may be necessary, prevent the accumulation of water in the excavated areas.

E. Prior to excavation, obtain confirmation from the Owner and Utility Company that all buried utilities are located accurately on the Drawings and in the field.

3.07 FILLING AND COMPACTION

A. General:
1. Fill shall be compacted in 6" to 12" layers to avoid settlement. In filling against pipelines, the fill shall be placed and compacted on both sides at the same time to avoid undue strain.
2. Compact fill under pavements to 95% of maximum dry density and under grass or mulch areas to 90% of maximum dry density.
3. Additional material necessary to complete the filling shall be furnished by the Contractor.

B. Roads, Parking Lots and Walks:
1. Prepare subgrade to proper grade and proof-roll to 95% maximum dry density. Place fill in 6" to 12" layers compacted to 95% maximum dry density.
2. Place gravel sub-base and gravel base courses in 6" to 12" layers compacted to 95% maximum dry density.
3. Do no work when subgrade is muddy or frozen.

C. Storm Drain Lines :
1. Bed plastic, metal, or concrete pipes on 4-inch layer of granular bedding material compacted to 95% maximum dry density. Fill to 12 inches over the top of pipe with granular bedding material compacted to 95% maximum dry density. Fill remainder of trench with excavated materials compacted to 95% maximum dry density beneath building slabs, slabs on grade and paved areas; or compacted to 90% maximum dry density beneath grassed or mulched areas.
2. Provide an 8-inch bedding layer between pipes and ledge rock.

E. Site Utility Lines:
1. Electrical Conduits: Bury beneath finish grade a minimum of 29 inches to top of conduit, or as required by the National Electrical Code or local utility company, whichever is deeper. Surround conduits by a minimum of 6 inches of sand or bedding material, compacted to 95% maximum dry density.

3.08 RIP-RAP

A. The stones shall be placed with their beds at right angles to the slope, the larger stones being used in bottom courses. They shall be laid in close contact so as to break joints, and in such manner that the weight of the stone is carried by the earth and not the adjacent stones.

B. The spaces between the larger stones shall be filled with spalls securely rammed into place. The finished work shall present an even, tight and reasonably smooth surface conforming to the required contour, and have a neat orderly appearance without scattered stones.

END OF SECTION

SECTION 02270

SLOPE PROTECTION AND EROSION CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Provide temporary erosion control for entire duration of project.

B. Provide permanent erosion control measures.

1.02 SCHEDULING

A. Provide to the Architect, in writing, a time schedule outlining the sequence of construction for site work.

B. Plan the sequence of construction so that the smallest practical area of land is exposed at any one time during construction.

1.03 SITE CONDITIONS

A. Take necessary steps to prevent soil erosion. Refer to publications of the Maine DEP and the Maine Soil and Water Conservation Commission for additional prevention measures to stop soil erosion and follow DEP "Best Management Practices." Erosion control measures shown on the Plans are minimum only and are not intended to be complete. Satisfy the current requirements of the regulatory agencies.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Erosion Control Mesh: Open weave, single jute yarn of loosely twisted construction, not varying in thickness by more than 1/2 its normal diameter. The woven material shall weigh 0.9 pounds per square yard.

B. Synthetic mesh material may be used as approved by the Architect.

C. Staples: No. 11 (or heavier) plain iron wire, made 6 inches in length.

D. Mulch: Cured hay free from primary noxious weed seeds and rough or woody materials.

E. Erosion Control Seed :

Type	% by weight	% purity	% germination
Domestic Rye Grass	70	69.75	90
Perennial Rye Grass	30	28.00	85

F. Silt Fence:
1. Support Fence: 30 inch high livestock fence, or high strength plastic mesh.
2. Post: Rolled steel manufactured line post or 2 inch diameter hardwood post, 4.5 feet in length.
3. Fabric: Pervious sheet of synthetic polymer meeting the following minimum requirements.

Weight	2.5 oz/sy
Width	36 inch
Thickness	12 mils
Equiv. Opening Size	20-50 sieve
Tear Strength	50 lb.
Ultraviolet stability	80%

a. Mirafi 100X; Terra Tex-SC, or approved equal.
4. Pre-Manufactured Silt Fencing Systems: Separate support fence may be eliminated if fabric is manufactured with rein- forcement, including top cord.
a. Amoco Propex; AEF Silt Fence-III; or approved equal.

G. Erosion Control Mix: Erosion control mix shall consist of a composted bark mix of recycled composted bark flume grit and fragmented wood generated from water-flume log handling systems. The mix shall conform to the following:
1. pH - 5.0 to 6.0.
2. Screen size - 6 inch minus.
3. No less than 25 percent organic material.
4. No stones larger than 2 inches in diameter.
5. Approved by Maine Department of Environmental Protection for use in wetlands and near waterways.

H. Filter Berm: A windrow of erosion control mix 2ft. high by 3 ft. wide.

I. Hay Bales: Bales shall be at least 14" x 18" x 30" in size, staked twice per bale. Stakes shall be 1" x 1" x 36" wooden. Place bales with twine on sides of bale, not top and bottom.

J. Water, calcium chloride, or crushed stone for prevention of airborne dust.

PART 3 - EXECUTION

3.01 EROSION CONTROL BARRIER

A. Before earthwork is started, a silt fence or filter berm shall be installed along the down-slope side of the construction site, as necessary, to prevent soil sediment migration away from the site. Install along the down-slope side of all top-soil and subsoil stockpiles.

B. Barrier shall not be removed until finish grading, final seeding, and mulching has been completed and the established grass is approved by the Architect. Maintain barrier in good condition until removed.

C. Remove silt deposits from the site, place in an area of low erosion potential, seed with erosion control mix, and mulch.

D. Silt Fence: Set fence post 8 feet O.C. to a depth of 2 feet. Attach support fence to post with fencing staples or appropriate wire ties. Overlap joints in support fence 12 inches. Apply fabric to full height of support fence and secure to prevent sagging, blow off, and loss. A 12-inch overlap of fabric for vertical piecing shall be maintained, folded to a 3 inch width and securely attached to supports. No horizontal joints will be allowed. The bottom of the fabric shall be trenched into the existing ground a minimum of 6 inches. In addition, hay bales or ditch checks shall be installed along the silt fence to create sedimentation pools in low areas where run-off concentrates.

E. Filter Berm: Place uncompacted erosion control mix in a windrow at locations shown on the plan or as directed by the Architect. At a minimum the berm shall be 3 feet wide at the base and 2 feet high at the center of all points along its length. Berm material, where the berm is still required, which has decomposed, clogged with sediment, eroded, or becomes ineffective, shall be replaced. The berm shall be removed from the site when no longer required, as determined by the Architect.

3.02 TEMPORARY SEEDING AND MULCHING

A. Topsoil stripped and stockpiled on site shall be immediately seeded with erosion control seed mix and mulched with hay.

B. Exposed earthwork areas, which will not be worked on for one week, shall be hay mulched. Unfinished areas which are not to be worked on for one month, or will be wintered, shall be seeded with erosion control mix at a rate of 4 pounds of seed per 1000 sq. ft. and mulched with hay. Apply hay mulch at the rate of 3 tons per acre such that no soil is exposed. Anchor mulch to prevent wind blown movement.

C. If the catch of grass is 10% or less by November 1, apply additional hay mulch to achieve a protective layer of 5 tons per acre.

D. No fill shall be placed on hay mulch. Dispose of used hay mulch off site.

3.03 DRAINAGE DITCHES AND EMBANKMENTS

A. Drainage ditches shall be provided with filter berm silt dams or rock check dams spaced no greater than 100 feet apart.

1. Temporary ditch dams shall be constructed where indicated, using composted bark or rocks in the configurations shown. Additional temporary ditch dams shall be installed from time to time during the construction where necessary to prevent soil particle migration from the work area. Where necessary due to terrain configuration, earth berms shall be constructed at one or both ends of the ditch check so as to contain runoff. The tops of earth berms shall be higher than the tops of the dams so that runoff will occur only over the dams. Sand bags may be used instead of earth berms at the Contractor's option but shall be faced with earth placed against the upstream face.

B. Drainage ditches shall be lined with a continuous matt of erosion control mesh for full bottom width and side slopes 12" above bottom in addition to erosion.

C. Erosion control mesh shall be installed on slopes steeper than 3 horizontal to one vertical and in conformance to MDOT Standard Specifications, latest Edition, Section 613, paragraphs 613.03 through 613.06. Anchor mesh as recommended by manufacturer.

D. Permanently rip-rap inlets and outlets of culverts and pipe outfalls as specified in Section 02200, Earthwork, and as shown on the Drawings.

3.04 PARKING AND DRIVES

A. As soon as possible after roads and parking areas are cleared, grubbed and graded to the required subgrade, the gravel base shall be placed.

3.05 DUST CONTROL

A. Use traffic control to restrict traffic to predetermined routes. Maintain as much natural vegetation as is practicable. Use phasing of construction to reduce the area of land disturbed at any one time. The use of temporary mulching, permanent mulching, temporary vegetative cover, permanent vegetative cover, or sodding will reduce the need for dust control. Use mechanical sweepers on paved surfaces where necessary to prevent dust buildup. Stationary sources of dust, i.e., rock crushers, should utilize fine water sprays to control dust.

B. The exposed soil surface should be moistened periodically with adequate water to control dust.

C. Calcium chloride shall be either loose dry granules or flakes fine enough to feed through a spreader at a rate that will keep surface moist but not cause pollution or plant damage. Liquid calcium chloride can also be used. To reduce potential for environmental degradation, use only when other methods are not practical.

D. Cover surface with crushed stone or coarse gravel. In areas adjacent to waterways, use chemically stable aggregate.

E. When temporary dust control measures are used, repetitive treatment shall be applied as needed to accomplish control.

3.06 ADDITIONAL MEASURES

A. Areas outside the Contract work limits shall be protected from lubricants, fuel, sediment and other pollutants.

B. Catchbasin inlets in gravel or paved areas shall be surrounded by a sediment barrier of hollow concrete blocks 12" to 24" high covered with wire mesh of ½" opening. Pile well graded crushed stone of 1" to 3" size around the mesh to the top of the blocks.

C. Catchbasin inlets in grassed areas shall be protected by hay bales or block and gravel sediment filter until permanent soil stabilization has been achieved.

D. Inspect erosion and sedimentation control weekly and after every storm and maintain in good working condition for project duration.

3.07 REMOVAL AND DISPOSAL

A. When permanent soil stabilization has been achieved, temporary materials and devices that are not readily degradable shall be removed and disposed of off site. Re-usable materials are and shall remain the property of the Contractor.

B. Remove silt and sediment from catchbasins, drainage ways, silt ponds and other silted areas and dispose off site. Place the silt in an area of low erosion potential, and seed and mulch it for stability.

END OF SECTION

SECTION 02500

PAVING AND SURFACING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Provide materials and labor for drive, parking and walkway; paving, pavement markings, and curbings.

1.02 STANDARD REFERENCE

A. Reference is made to the 1995 revision of "Standard Specifications for Highways and Bridges" of the State of Maine Department of Transportation (MDOT).

1.03 SUBMITTALS

A. Submit pavement mix design of each grade.

B. Submit field density test results of one test for each 100 tons of bituminous paving.

C. Submit curbing manufacturer's literature.

PART 2 - - PRODUCTS

2.01 BITUMINOUS CONCRETE MATERIALS

A. Hot bituminous pavement, MDOT, Section 403. Composition, pre- paration and transportation of bituminous concrete, including plant and equipment shall meet applicable portions of MDOT, Section 401, PLANT MIX PAVEMENTS - GENERAL.

B. Binder course aggregate conforming to MDOT, Section 703.09, Grade B. Surface course aggregate conforming to MDOT, Section 703.09, Grade C.

2.02 TACK COAT

A. A low viscosity liquid bituminous coating sprayed on an existing course prior to placing a new bituminous concrete course. Emulsified asphalt conforming to MDOT 702.04, Grade RS-1 or HFMS-1.

2.03 CURBING

A. Sloped Granite Curb: MDOT Type 5, 5" x 12" with sawn top, split face and saw-cut jointed ends on each section. Minimum length of 2 feet For curve radius less than six feet, use bullnose curved curbing sections, each piece curved on a slope, MDOT Type 5-circular curb. .

2.04 PAVEMENT MARKINGS

A. Latex paint designated for traffic use; meeting the requirements of AASHTO M248. Cosmicoat Traffic Paint, Sherwin-Williams Waterborne Traffic Paint, or approved equal. Color white .

PART 3 - EXECUTION

3.01 CONSTRUCTION OF PAVEMENT

A. Hot bituminous concrete pavement shall be constructed over gravel drive and walks in accordance with CONSTRUCTION REQUIREMENTS of MDOT, Section 401, except as modified herein. Exclude paragraphs 401.21 METHOD OF MEASUREMENT and 401.22 BASIS OF PAYMENT. .

B. Do not place pavement over frozen gravel.

B. Replace existing pavement disturbed by the work of this Contract with new bituminous pavement of the thicknesses shown on the Drawings or match existing, whichever is greater.

C. Where new and existing pavement join, saw-cut square and form a smooth transition of grades.

D. Treat exposed existing pavement with sprayed bituminous tack coat prior to placing new adjacent or overlaying bituminous pavement. Pavement which has been in place longer than 30 days shall be considered existing. Conform to MDOT Section 409, excluding paragraphs 409.08 and 409.09.

E. Prior to placing surface course or tack coat, thoroughly clean the paved surface of soil, loose material, and other objectionable material, to the approval of the Architect.

3.02 PAVEMENT MARKINGS

A. Apply lining paint in strict accordance with manufacturer's printed instructions after pavement has cured sufficiently to prevent bleeding or lifting (at least three weeks). Line width, 4" unless otherwise noted.

B. Apply handicap symbols in accordance with ANSI A117.1, Section 4.28.

C. Perform work in accordance with the U. S. Department of Transportation Manual of Uniform Traffic Control Devices.

D. Finished lines and markings shall be straight, uniform, and well-defined without excessive overspray. Wet thickness of paint at least 15 mils. Symbols shall be painted using appropriate templates.

3.03 CURBING INSTALLATION

A. Granite or concrete curb shall be adjusted to grade and alignment on a well compacted gravel foundation so that the front line conforms to the line and grade required. The foundation shall be prepared in advance of setting the curb by grading the gravel to the proper elevation. The sections shall be fitted together to form an open joint no greater than 1/4 of an inch. Fill the back of vertical curb joints with concrete mortar for a depth of one inch and a height of 12 inches to prevent soil washout. Behind sloped granite curb joints place a 12" wide layer of non-woven geotextile.

B. Provide tapered end sections at handicap ramps, curb openings and ends of curbing.

END OF SECTION

SECTION 02700

STORM DRAINAGE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Provide labor and materials to complete the storm drainage as shown on the Drawings and/or herein specified.
   1. Storm drain lines.
   2. Catchbasins.

1.02 SUBMITTALS

A. Submit manufacturer's product literature and Shop Drawings for approval on materials in accordance with Section 01340.

PART 2 - PRODUCTS

2.01 STORM DRAINS

A. Unless otherwise noted use any of the following pipe materials:
   1. Polyvinylchloride (PVC), Type PS-46, conforming to ASTM F789 ; or Type PSM conforming to ASTM D3034, maximum ratio of outside diameter to wall thickness of 35 (SDR-35). Watertight push-on couplings with flexible O-ring gasket.
   2. High density polyethylene pipe (HDPE), conforming to ASTM D3350 and AASHTO M294 with corrugated exterior and smooth interior. Couplings and fittings of same material conform to AASHTO M294.

B. Provide precast reinforced concrete flared pipe ends or concrete pipe sections for drainage piping inlets and outlets, with appropriate flexible couplings to connect the PVC or HDPE pipe, such that no plastic pipe is exposed at the ground surface.

2.02 CATCHBASINS

A. Precast reinforced concrete 4000 psi base and barrel sections of dimensions shown on the Drawings, haunched concentric cone sections conforming to ASTM C478, constructed to support HS-20 wheel loading.

B. Where required by shallow installations or directed by the Architect, provide a flat slab top constructed to support HS-20 wheel loading.

C. Joints sealed watertight with flexible strips of butyl rubber joint sealant. Pipe openings precast into units, using cast-in EPDM flexible sleeves meeting ASTM C-923 with stainless steel coupling bands.

D. Provide a 24-inch deep sump in catchbasins, unless otherwise noted.

2.03 CATCHBASIN FRAMES AND GRATES

A. Cast iron conforming to ASTM A48, heavy-duty of 450 pounds minimum weight to support HS-20 wheel loading, with machined bearing surfaces. Square frame and grate of 24-inch dimensions with bicycle-safe grate grid of 225 square inch minimum flow area.

2.04 GEOTEXTILE DRAINAGE FABRIC

A. Polypropylene or polyester non-woven, needle-punched drainage fabric with the following minimum properties:

Weight	4.5 oz/sy	Water Flow Rate	280 gpm/sf
Thickness	60 mils	Coef of Permeability	0.2 cm/sec
Tear Strength	50 lbs	Equiv. Opening Size	70-100 sieve

B. Mirafi 140N, Terra Tex - SD, Trevira 1115, AEF 480, or approved equal.

PART 3 - EXECUTION

3.01 EXCAVATION AND BACKFILL

A. Conforming to the appropriate portions of Section 02200, Earthwork.

3.02 STORM PIPING

A. Lay pipe on stable bedding beginning at the downstream end and proceeding upstream with the bell end of the pipe upstream. Provide adequate trench drainage to prevent pipe floatation and insure proper bedding compaction.

B. Where continuous bedding material is used and pipe slope exceeds 3%, construct trench dams along the trench to hinder the flow of ground water through the bedding material. Construct trench dams of relatively impervious clayey or silty material excavated from the trench, extending 1 foot above the pipe embedment zone, and spaced within 25 feet upstream of each manhole, and whenever the trench grade rises 10 feet.

C. Coordinate work on municipal utility lines and within street right-of-way with municipal sewer department and public works department.

3.03 CATCHBASINS

A. Place precast base section level on 8-inch layer of compacted granular bedding material to proper invert elevation. Construct precast sections plumb and with watertight joints and pipe connections. Manhole steps must be in vertical alignment.

B. Fill lifting holes and voids with cement mortar.

C. Adjust catchbasin frame to proper grade to receive drainage by use of brick masonry. Use a minimum of 4" of risers and a maximum of 12". Encase frame in full bed of cement mortar.

END OF SECTION

SECTION 02800

SITE IMPROVEMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Provide Labor, Materials, and Equipment for Site Improvements Shown on the Drawings or Specified Herein, Including:
   1. Pressure-treated timber.
   2. Precast concrete light pole bases.

1.02 SUBMITTALS

A. Submit manufacturer's product literature and Shop Drawings for approval on materials in accordance with Section 01300.

1.03 DELIVERY, STORAGE AND PROTECTION

A. Deliver materials to the site in an undamaged condition. Carefully store materials off the ground to provide proper protection against oxidation, and other damage caused by ground contact.

PART 2 - PRODUCTS

2.01 PRESSURE TREATED TIMBER

A. CCA pressure treated #2 and better, Southern Pine kiln-dried or air-seasoned to an average moisture content of 16% or less and planed on all sides. The amount of CCA preservation injected into timber shall be .40 pounds per cubic foot of wood.

B. Exposed edges shall be chamfered 3/4".

C. Fasteners shall be hot-dipped galvanized, unless otherwise noted.

2.02 PRECAST CONCRETE

A. Concrete for precast items shall be 5000 psi, air-entrained, 0.40 w/c ratio, with smooth form finish.

B. Light Pole Base: Conform to the details shown on the Drawings. Coordinate bolt circle with the light pole base.

END OF SECTION

SECTION 02930

LAWNS AND GRASSES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Provide labor, materials and equipment required to complete loaming, fine grading, liming, fertilizing, and seeding.

1.02 QUALITY ASSURANCE

A. Qualifications of Workmen: Provide at least one person who shall be present during execution of this portion of the Work, be thoroughly familiar with the type of materials being installed and the best methods for their installation, and direct work performed under this Section.

B. Standards:
1. Planting material shall meet or exceed the specifications of Federal and State laws requiring inspection for plant disease and insect control.
2. Quality shall conform with the current edition of "Horticultural Standards" for number one grade nursery stock, as adopted by the American Association of Nurserymen.

1.03 SUBMITTALS

A. Materials List: Before seeding materials are delivered to the job site, submit to the Architect a complete list of seeding and other items proposed to be installed.
1. Include complete data on source, size and quality.
2. Demonstrate complete conformance with the requirements of this Section.
3. This shall in no way be construed as permitting substitution for specific items described in the Drawings or these Specifications unless the substitution has been approved in advance by the Architect.

B. Certificates:
1. Certificates required by law shall accompany shipments.
2. Prior to installation, deliver certificates to the Architect.

1.04 PRODUCT HANDLING

A. Delivery and Storage:
1. Deliver items to the site in their original containers with labels intact and legible at time of Architect's inspection.
2. Immediately remove from the site seeding materials which are not true to name and materials which do not comply with the provisions of this Section of these Specifications.
3. Protect seeding materials before, during and after installation and to protect the installed work and materials of other trades.

B. Replacements: In the event of damage or rejection, immediately make repairs and replacements necessary to the approval of the Architect, at no additional cost to the Owner.

1.05 PLANTING TIME

A. Seeding: Seeding shall be done between August 15th to September 15th and/or April 15th to June 15th.

B. Variance: If special conditions exist which may warrant a variance in the above planting dates, a written request shall be submitted to the Architect stating the special conditions for the proposed variance. Permission for the variance will be given if warranted in the opinion of the Architect. Regardless of the time of seeding, the Contractor shall be responsible for a full growth of grass.

C. Place permanent soil stabilization within 15 days of final grading.

PART 2 - PRODUCTS

2.01 TOPSOIL

A. General: Topsoil, except that existing on the site, will not be made available by the Owner. The Contractor shall be responsible for supplying any additional topsoil needed and hauling it to the site. It shall be obtained from naturally well-drained areas. The topsoil shall be a fertile, friable natural loam containing no less than 6% nor more than 20% organic matter. The pH of the soil shall be between 5 and 7.5 and shall not contain soluble salts greater than 500 parts per million. It shall not contain toxic substances which may be harmful to plant growth. Topsoil shall be without admixture of subsoil and shall be cleaned and free from clay lumps, stones, stumps, roots, or similar substances one inch or more in diameter, debris, or other objects which might be a hindrance to planting operations. Soil shall not be used for planting while in frozen or muddy condition. Furnish all topsoil required to complete the work. Materials removed shall be disposed of by the Contractor.

B. Testing: The Contractor shall take representative samples of topsoil from the site and from borrow sources and shall submit samples to a Soil Testing Laboratory for chemical and physical analysis. The Contractor shall indicate to the testing agencies that turf is to be planted and the name of the Owner. The Contractor shall forward to the Architect two copies of analysis and recommendations of the testing agencies.

2.02 FERTILIZER

A. General: Fertilizer shall be a commercial balanced, 10-6-4 fertilizer delivered to the site in bags labeled with the manufacturer's guaranteed analysis. 35% to 80% of the fertilizer shall be in a slowly available form (water insoluble nitrogen urea form).

B. Commercial Fertilizer: Commercial fertilizer shall be a complete fertilizer in which 50-70 percent of the introgenous elements shall be derived from organic sources; phosphate shall be derived from superphosphate containing 16-20 percent phosphoric acid or bonemeal containing 25-30 percent phosphoric acid and 2-3 percent nitrogen; and potash shall be derived from muriate of potash containing 55-60 percent potash. It shall contain the following percentages by weight.

10% Nitrogen - 6% Phosphoric Acid - 4% Potash

C. Fertilizer shall be mixed, as specified, and delivered to the site in standard, unopened containers showing weight, guaranteed analysis, and name of manufacturer.

D. Special Protection: If stored at the site, protect fertilizer from the elements.

2.03 SOIL AMENDMENTS

A. Peat: Peat shall be moist. It shall be finely shredded, consist of 90 percent organic moss peat, be brown in color, and suitable for horticultural purposes. Shredded particles shall not exceed one (1)

inch in diameter. Peat shall be measured in air dry condition, containing not more than 35 percent moisture by weight. Ash content shall not exceed 10 percent.

B. Limestone: Ground dolomitic limestone shall be an approved agri- cultural limestone and shall contain not less than 85 percent of total carbonates with a minimum of 30% magnesium carbonates. Limestone shall be ground to such fineness that 50 percent will pass a 100 mesh sieve, and 90 percent will pass a 20 mesh sieve.

2.04 GRASS SEED

A. General: Grass seed shall be:
1. Free from noxious weed seeds and recleaned.
2. Grade A recent crop seed.
3. Treated with appropriate fungicide at time of mixing.
4. Delivered to the site in sealed containers with dealer's guaranteed analysis.
5. Each variety of seed shall have percentages of germination of not less than 80%, and a percentage of purity of not less than 85%.

B. Seed Mix Proportions by Weight:

Kind of Grass	Proportion by Weight
Chewing Fescue "Dignity"	35%
Pennlawn Creeping Red Fescue	35%
Perennial Rye "Tourstar" (Nutrite)	30%

C. Weed seed content shall not exceed 0.25 percent. Wet, moldy, or otherwise damaged seed will be rejected.

2.05 MULCH

A. Mulch shall consist of long fibered hay or straw, reasonably free from noxious weeds or other undesirable material. No material shall be used which is so wet, decayed, or compacted as to inhibit even and uniform spreading. No chopped hay, grass clippings or other short fibered material shall be used unless directed.

2.06 EROSION CONTROL MESH

A. Open weave jute mesh of loosely twisted construction averaging 1.22 pounds per linear yard, or excelsior blanket material.

B. Other synthetic mesh and mulch blankets may be used if approved by the Architect.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection:
1. Prior to work of this Section, carefully inspect the installed work of other trades, and verify that such work is complete to the point where this installation may properly commence.
2. Verify that seeding may be completed in accordance with the original design and the referenced standards.

3.02 SUBGRADE PREPARATION

A. The Contractor shall do whatever grading is necessary to bring the subgrade to a true, smooth slope, parallel and at the depth shown on the Drawings below finished grade, for seed bed areas.

B. There must be sufficient grade staked, as determined by the Architect, to insure correct line and grade of subgrade and of finished grade.

C. Immediately prior to being covered with topsoil, the top 3" to 6" of the subgrade shall be raked or otherwise loosened and shall be free of stones, rock and other foreign material 1-1/2" or greater in dimensions.

3.03 FINISH GRADE PREPARATION

A. Topsoil shall not be delivered or worked in a frozen or muddy condition.

B. Place and spread topsoil over approved areas to a depth sufficiently greater than shown on the Drawings in "loam and seed" lawn areas and in plant bed areas so that after natural settlement and light rolling, the completed work will conform to the lines, grades, and elevations indicated.

C. After topsoil has been spread in approved areas, it shall be carefully prepared by scarifying or harrowing, and stones over one inch in diameter shall be removed from the topsoil. It shall be free of smaller stones in excessive quantities, as determined by the Architect.

D. The whole surface shall then be rolled with a roller which weighs not more than 100 pounds per foot of width. During the rolling, all depressions caused by settlement of rolling shall be filled with additional topsoil, and the surface shall be regraded and rolled until presenting a smooth and even finish to the required grade.

3.04 SEED BED PREPARATION

A. After the areas to be seeded have been brought to the grades specified, spread limestone at a rate of 30 pounds minimum per 1,000 square feet, or as recommended by soil testing agencies.

B. Apply the 10-6-4 fertilizer at a rate of 30 pounds per 1,000 square feet within 10 days prior to seeding. Thoroughly and evenly incorporate fertilizer and lime with the soil to a depth of 3" by discing or other approved method. In areas inaccessible to power equipment, use hand tools. Adjacent to trees and shrubs, use hand tools to avoid disturbances of the roots.

C. Reconstitute the soil, as may be recommended by a soil testing agency, prior to use as planting soil. Any deficiencies in the topsoil shall be corrected by the Contractor, as recommended, at no expense to the Owner.

D. After incorporation of fertilizer and lime into the soil, the seed bed shall be fine graded to remove all ridges and depressions and the surface cleared of all debris and of all stones one inch or more in diameter.

3.05 SEEDING

A. Immediately before seeding, the ground shall be restored, as necessary, to a loose friable condition by discing or other approved method to a depth of not less than 2". The surface shall be cleared of all debris and of all stones 1" or more in diameter.

B. Seed with specified grass seed, sowing evenly with an approved mechanical seeder at the rate of 6 pounds per 1,000 square feet. Sow 3 pounds per 1,000 square feet in one direction and 3 pounds per 1,000 square feet at right angles to the first seeding. Spread seed when soil is moist. Cultipacker, or approved similar equipment, may be used to cover the seed and to firm the seed bed in one operation. In areas inaccessible to cultipacker, the seeded ground shall be lightly raked and rolled in two directions with a water ballast roller. Extreme care shall be taken during seeding and raking to insure that no change shall occur in the finished grades and that the seed is not raked from one spot to another.

C. Hydro-seeding is an acceptable manner of seeding, providing the Contractor certifies in writing that the hydro-seed fertilizer mix is as herein specified and applied at the equivalent rate of 6 pounds per 1,000 square feet.

D. Promptly after seeding, wet the seed bed thoroughly, keeping all areas moist throughout the germination period.

E. Mulch shall be placed immediately after seeding. Hay that has been thoroughly fluffed shall be spread evenly and uniformly at the rate of two to three tons per acre. Lumps and thick mulch materials shall be thinned. Anchor hay mulch with erosion control mesh on slopes steeper than 3 horizontal to one vertical and as necessary to prevent movement. Anchor mesh as recommended by manufacturer. Hydromulching is an acceptable method of mulching. The mulch shall consist of natural cellulose wood fibre containing no materials which will inhibit seed germination or plant growth. Sufficient non-toxic water soluble green dye shall be added to provide a definite color contrast to the ground surface to aid in even distribution. Wood fibre mulch shall be supplied in uniform packages not exceeding 100 pounds each. Each package shall be marked to show the air dry weight.

F. Take whatever measures are necessary to protect the seeded area while it is germinating. These measures shall include furnishing warnings signs, barriers, and other needed measures of protection.

3.06 MAINTENANCE

A. Maintenance shall begin immediately after seeding operations and shall continue until Provisional Acceptance or for a minimum of 60 days, whichever is longer.

B. Maintenance of seed areas shall consist of watering, weeding, curing, repair of all erosion, and reseeding as necessary to establish a uniform stand of grass. Lawns shall be watered in a satisfactory manner during and immediately after planting, and not less than twice per week until final acceptance. Areas which fail to show a uniform stand of grass for any reason shall be reseeded repeatedly until a uniform stand is attained. Scattered bare spots, evenly distributed and not exceeding 8" square of any lawn area, will be allowed at the discretion of the Architect.

C. At the time of the first cutting, there shall be a uniform stand between 3 and 3-1/2" high, and mower blades shall be set between 2-1/2" and 3" high. Provide at least 3 cuttings of grass in lawn areas not closer than 10 days apart. Catch shall be representative of seed specified.

D. Correct graded areas which settle during the first 12 months after Provisional Acceptance in lawn areas, including loaming and seeding. Reseeding shall be done as hereinbefore specified.

3.07 PROVISIONAL ACCEPTANCE

A. The Architect shall inspect the work for Provisional Acceptance upon written request of the Contractor. The request shall be received at least 10 calendar days before the anticipated date of inspection. Upon completion and reinspection of repairs or renewals necessary in the judgement of the Architect, he shall certify in writing to the Contractor as to the Provisional Acceptance of the work.

3.08 CLEAN-UP

A. When this work is done while buildings are occupied, pavements shall be kept broom cleaned to prevent tracking dirt into buildings.

B. After completion of planting operations, dispose of debris and excess material to the satisfaction of the Architect. Pavements shall be broomed and hosed clean.

3.09 FINAL INSPECTION AND ACCEPTANCE

A. At the end of the guarantee period, the Architect will inspect guaranteed work for the Final Acceptance upon written request of the Contractor. The request shall be received at least 10 calendar days before the anticipated date for final inspection.

B. Upon completion and reinspection of repairs or renewals necessary in the judgement of the Architect at that time, he shall certify in writing to the Contractor as to the Final Acceptance of the project.

END OF SECTION

SECTION 02950

TREES, PLANTS, AND GROUND COVERS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Planting required for the Work is indicated on the Drawings and, in general, includes planting of trees and shrubs throughout the Work including furnishing all materials, equipment, and labor necessary for root protection, and tree guards where applicable.

1.02 QUALITY ASSURANCE

A. Qualifications of Workmen: Provide at least one person who shall be present at all times during execution of this portion of the Work, thoroughly familiar with the type of materials being installed and the best methods of their installation, and direct all work performed under this Section.

B. Standards:
1. Plants and planting material shall meet or exceed the specifications of Federal and State laws requiring inspection for plant disease and insect control.
2. Quality and size shall conform with the current edition of "Horticultural Standards" for number one grade nursery stock, as adopted by the American Association of Nurserymen.
3. Plants shall be true to name and one of each bundle or lot shall be tagged with the name and size of the plants, in accordance with the standards of practice of the American Association of Nurserymen. Botanical names shall take precedence over common names.
4. Substitutions:
   a. In the event that trees, shrubs, or other plant material specified in the drawings are in the opinion of the Contractor, impossible or unreasonably difficult to obtain, the Contractor shall immediately notify the Owner's Representative to discuss appropriate substitutions in writing. No substitutions of plant material may be made without the prior written approval of the Owner's Representative.
   b. Contractor shall notify the Owner's Representative in writing of any plant material that is inappropriate for the proposed site conditions in the opinion of the Contractor. Substitutions shall be processed as per paragraph 4a. above.

1.03 SUBMITTALS

A. Materials List: Thirty days before any planting materials are delivered to the job site, submit to the Architect a complete list of plants and other items proposed to be installed:
1. Include a complete data on source, size and quality.
2. Demonstrate complete conformance with the requirements of this section.
3. This shall in no way be construed as permitting substitution for specific items described in the Drawings or these Specifications, unless the substitution has been approved in advance by the Architect.

B. Record Drawings: During the course of the installation, carefully record, in red line, changes made to the planting system layout during installation on a print of the planting Drawings.

C. Certificates:
   1. Certificates required by law shall accompany shipments.
   2. Upon completion of the installation, deliver certificates to the Architect.

D. Contractor shall submit sample of shredded bark mulch to be used for Architect approval prior to delivery to site.

1.04 PRODUCT HANDLING

A. Delivery and Storage:
   1. Deliver items to the site in their original containers with labels intact and legible at time of Architect's inspection.
   2. Immediately remove from the site plants which are not true to name and materials which do not comply with the provisions of this Section of these Specifications.
   3. Protect plant materials before, during and after installation and to protect the installed work and materials of other trades.
   4. Provide container grown or freshly dug plant materials. Plant materials which have been in cold storage or heeled- in may be rejected. Do not bend or bind-tie trees or shrubs in such manner as to damage bark, break branches or destroy natural shape. Provide protective covering during delivery.

B. Replacements: In the event of damage or rejection, immediately make repairs and replacements necessary to the approval of the Architect, at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 PLANTING SOIL

A. Shall be a natural fertile, friable natural loam of the following types: sandy loam, clay loam, loam, silt loam, sandy dry loam or other soil approved by Owner's representatives. Soil shall contain from 6 to 20 percent organic matter as determined by the Organic Carbon, 6A, Chemical Analysis Method. Topsoil shall be tested by a recognized laboratory for pH and soluble salts. A pH of between 5 and 7.5 is required and shall not contain soluble salts greater than 500 parts per million. It shall be obtained from naturally well-drained areas. It shall not contain toxic substances which may be harmful to plant growth. Topsoil shall be without admixture of subsoil and shall be cleaned and reasonably free from clay lumps, stones, stumps, roots, or similar substances over 1" in diameter, debris, or other objects which might be a hindrance to planting operations. Soil shall not be used for planting while in a frozen or muddy condition.

2.02 MANURE

A. Well rotted, unleached, stable or cattle manure which is reasonably free of wood shavings, sawdust or other undesirable liter and contains no chemical or other ingredients harmful to plants.

2.03 COMMERCIAL FERTILIZER

A. Complete fertilizer with minimum analysis of 10%N, 8%P, 4%K and shall conform to the applicable State fertilizer laws. It shall be uniform in composition, dry and free flowing, and shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Fertilizer which becomes caked or otherwise damaged, making it unsuitable for use, will not be accepted.

2.04 SOIL AMENDMENT

A. Shall be peat; a domestic product consisting of partially decomposed vegetable matter of natural occurrence. It shall be brown, clean, low in content of mineral and woody material, mildly acid and granulated or shredded and fortified with organic nitrogen, or an equal commercial soil amendment approved in advance by Architect.

2.05 MOSS PEAT

A. Brown; acid reaction about 4 to 5 pH; low in content of wood material and free of mineral matter harmful to plant life; water absorbing capacity, 1100 to 2000 percent; moisture content 30 percent natural, shredded or granulated.

2.06 WATER

A. Contractor shall make, at his expense, whatever arrangements may be necessary to ensure an adequate supply of water to meet the needs of this contract. He shall also furnish necessary hose, equipment, attachments, and accessories for the adequate irrigation of lawns and planted areas as may be required to complete the work as specified.

2.07 BARK MULCH

A. Shredded bark mulch shall be uniform in size, free of chunks and pieces of wood thicker than 1/4" or longer than 4" and approved by Architect. Mulch must be partially decomposed and of a consistent dark brown color.

2.08 TREE STAKES

A. Unless otherwise indicated on the Drawings, tree stakes shall be Spruce or Fir, construction grade, rough-sawn, 2" x 2" x 8' long.

2.09 PLANT MATERIALS

A. Plant materials shall be true to species and variety specified and shall be nursery grown in accordance with good horticultural practice under climatic conditions similar to those in the locality of the project for at least two years. They shall have been root-pruned within the last two years and shall be freshly dug. No heeled-in plants or plants from cold storage will be accepted.

B. Unless specifically noted otherwise, plants shall be of specimen quality; exceptionally heavy; and symmetrical, so trained or favored in development and appearance as to be unquestionable and outstandingly superior in form, compactness and symmetry. They shall be sound; healthy; vigorous; well-branched and densely foliated when in leaf; free of disease; insects; eggs or larvae; and shall be free from physical damage or conditions that would prevent thriving growth.

C. Plants shall not be pruned before delivery. Trees with multiple leaders, unless specified, will be rejected. Trees with a damaged or crooked leader, abrasion of bark, sunscalds, disfiguring knots, insect damage, or cuts of limbs over 3/4" in diameter, not completely calloused, will be rejected.

D. Plants shall conform to measurements specified in the Plant Lists, except that plants larger than specified may be used if approved by the Architect. Use of such plants shall not increase the Contract price. If larger plants are approved, the root ball shall be increased in proportion to the size of the plant.

E. Caliper measurement shall be taken on the trunk 6" above natural ground line for trees up to 4" in caliper and 12" above the natural ground line for trees over 4" in caliper. Height and spread dimensions specified refer to the main body of the plant and not from branch tip to tip. Plants shall be measured when branches are in their normal position. If a range of size is given, no plant shall be less than the minimum size, and not less than 50 percent of the plants shall be as large as the maximum size specified. Measurements specified are minimum size, acceptable after pruning where pruning is required. Plants that meet measurements but do not possess a normal balance between height and spread shall be rejected.

F. Plants shall be labeled with correct plant name and size. Labels shall be attached securely to all plants, bundles and containers of plant materials delivered with care that those attached directly to plants will not restrict growth.

G. Substitutions of plant materials will not be permitted, unless authorized in writing by the Architect. If proof is submitted and substantiated in writing that any plant specified is not obtainable, a proposal will be considered for use of the nearest available size or similar variety with a corresponding adjustment of Contract price.

H. Type of Protection to Roots:
   1. Balled and Burlapped Plants: Plants designated "B&B" in the Plant List shall be balled and burlapped. They shall be dug with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Balls shall be firmly wrapped with burlap or similar material and bound with twine, cord, or wire mesh. Where necessary to prevent breaking or cracking of the ball during the process of planting, the ball may be secured to a platform.
   2. Bare-Root Plants: Plant designated "bare-root" in the Plant List shall be dug and the earth removed without injury to the fibrous root system necessary for the full recovery of the plant. Roots shall be covered with a thick coating of mud by puddling or wrapped in wet straw, moss, or other suitable packing material immediately after they are dug, for protection until delivered.
   3. Protection After Delivery: The balls of "B&B" plants which cannot be planted immediately on delivery shall be covered with moist soil or mulch, or other protection from drying winds and sun. Bare-rooted plants shall be planted or heeled-in immediately upon delivery. Plants shall be watered as necessary until planted.

2.10 INSPECTIONS

A. Certificates of inspection shall accompany invoices for plants as may be required by law for transportation. File certificates with the Architect prior to acceptance of the material. Inspection by Federal or State Governments at place of growth does not preclude rejection of plants at the work site.

2.11 SELECTION AND TAGGING

A. Plants shall be subject to inspection and approval by the Architect at their place of growth and upon delivery for conformity to specification requirement. Such approval shall not impair the right of inspection and rejection during the progress of the work. A Contractor's representative shall be present at inspections.

B. Written requests for inspection of plant material at their place of growth shall be submitted to the Architect at least 10 calendar days prior to digging. Written requests shall state the place of growth and quantity of plants to be inspected. The Architect may refuse inspection at this time if, in his judgement, a sufficient quantity of plants are not available for inspection.

C. Plants identified as "selection specimen" shall be approved and tagged at their place of growth. For distant material, submit photographs for pre-inspection review.

2.12 PLANT LABELS

A. Plant labels shall be durable, legible stating the correct plant name and size in weather-resistant ink or embossed process lettering.

2.13 GUYING, STAKING AND WRAPPING MATERIALS

A. Ground anchors shall be castings, stamped steel, or deadmen of wood or other material approved by the Architect. Width across top span and length, exclusive of pin from top to arrowed tip, shall conform to the following list. Assemblies for anchors shall also conform to the following list:

Tree Caliper	2 - 5 inches
Type	wire
Capacity	3,500 lbs.

B. Guying cable shall be five strand, 3/16" diameter galvanized steel cable. Turnbuckles shall be galvanized or dip-painted, having a 3" minimum lengthwise opening fitted with screw eyes. Eyebolts shall be galvanized, having a 1" opening fitted with screw length of 1". Hose shall be suitable lengths of two-ply, reinforced, black rubber hose, 3/4" in diameter.

C. Stakes for supporting trees shall be 2 inches square or 2-1/2" round, by 8 feet sound wood, treated for one-half their length with creosote or equal.

D. Wrapping material for tree trunks, shall be standard burlap, heavy crepe paper, or other suitable material, in strips 6 to 10 inches wide.

2.14 TREE PAINT

A. Tree paint shall be "Cabot Tree Paint," or approved equal.

2.15 ANTI-DESICCANT

A. Anti-desiccant shall be an emulsion which provides a protective film over plant surface, permeable enough to permit transpiration. It shall be delivered in containers of the manufacturer and mixed according to the manufacturer's directions ("Wiltpruf" manufactured by Nursery Specialty Products Inc., Stubbings Road, Groton Falls, New York, or approved equal.)

PART 3 - EXECUTION

3.01 SITE CONDITIONS

A. Contractor must examine the subgrade, observe the conditions under which work is to be performed, and notify the Owner's Representative of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Owner's Representative and the Contractor. Commencement of work by Contractor shall signify Contractor's acceptance of conditions as satisfactory.

B. Determine location of underground utilities and perform work in a manner which will avoid possible damage. If necessary, call Dig-Safe at 1-800-225-4977 (in ME, NH, VT, RI) or 1-800-322-4844 (in MA). Hand excavate, as required, to minimize possibility of damage to underground utilities. Maintain grade stakes set by others unless removal is mutually agreed upon by all parties concerned.

C. Owner's Representative shall be contacted in the event that rock, underground construction work, adverse drainage conditions, or other obstructions are encountered in any plant pit or excavation work as specified in this contract. Alternate locations may be selected by the Owner's Representative at no additional cost to the Owner provided that work has not been initiated. Additional charges incurred by concealed contingencies shall be set at a standard time and materials rate agreed upon by both parties prior to initiation of contract.

D. Where locations cannot be changed, the obstruction shall be removed, or altered, subject to the Owner's Representative's written authorization, to a depth of not greater than 3 feet below grade, or no less than 6 inches below bottom of ball or roots when plant is properly set at the required grade. Contractor shall be paid extra as defined above.

3.02 PLANTING TIME

A. Planting shall be done with the following dates:

April 1st to November 15th

B. Coordination with Lawns: Plant trees and shrubs after final grades are established and prior to planting of lawns, unless otherwise acceptable to the Owner's Representative. If planting of trees and shrubs occurs after lawn work, protect lawn areas and promptly repair damage to lawns resulting from planting operations.

3.03 EXCAVATION OF PLANTING AREAS

A. Stake out the ground locations for plants and outlines of planting beds and obtain approval of the Landscape Architect before excavation is begun. A minimum of 30 percent of total planting must be staked before inspection will be made. Locations as shown on drawings are approximate. Final positioning of plant material shall be made under supervision of Landscape Architect.

B. Excavate tree and shrub pits as shown on the Drawings.

C. Separate subgrade soils from the upper topsoil portions and remove immediately wherever encountered during planting operations.

D. Notify the Architect in writing of soil or drainage conditions which the Contractor considers detrimental to growth of plant material. State condition and submit proposal in writing to the Architect for correcting condition.

E. Test drainage of suspect plant beds and pits by filling with water twice in succession. Conditions permitting the retention of water in planting beds for more than 12 hours shall be brought to the attention of the Architect.

F. No planting except ground cover and vines shall be placed closer than 2 feet to pavement or structures.

3.04 PLANTING OPERATIONS

A. Digging and Handling of Plant Materials to be Relocated:
   1. Plants shall not be bound with wire or rope at any time so as to damage the bark or break branches. Plants shall be lifted and handled from the bottom of the ball only.

B. Planting Trees and Shrubs:
   1. Excavate pits in accordance with Typical Planting Details with vertical sides and scarify sides of pit to insure against glazing.
   2. Protect plants from sun or drying winds. Plants that cannot be planted immediately on delivery shall be kept in the shade, well protected with soil, wet moss, or other acceptable material and shall be kept well watered. Plants shall not be bound with wire or rope at any time so as to damage the bark or break branches. Plants shall be lifted and handled from the bottom of the ball only.
   3. Set plants at same relationship to finished grade as they bore to the ground from which they were dug. Set plant plumb and brace rigidly in position until prepared topsoil has been tamped solidly around ball and roots.
   4. Cut and remove ropes, strings and wrappings from top 1/3 of ball after plant has been set. Leave balance of wrappings intact around ball. If wrapping is plastic, remove top 2/3.
   5. Backfill plant pits with prepared planting soil. When plant pits have been backfilled approximately 2/3 full, water thoroughly, eliminating air pockets. After watering, install planting soil to top of pit and repeat watering.
   6. Form shallow saucer around tree as indicated on the Drawings.
   7. Finish grade planting areas to conform to grades on Drawings.
   8. Mulch all pits and beds with a 4" layer of approved shredded bark mulch immediately after planting.
   9. Immediately after planting, water plants thoroughly.

C. Guying, Staking, Wrapping and Pruning:

1. Guying shall be completed immediately after planting. Drive ground anchors into ground by manual or machine method at approximately 45 degree angle to ground plane and distributed at 120 degree intervals around trunk of tree. Preload anchors after driving until anchor turns in the ground at 90 degree angle to line of driving force. Anchor assembly will rise 2 to 6 inches during pre-loading. Attach guying cables, turnbuckles and hose, and secure until tree is rigidly guyed. On all guys, 1/3 distance up from ground to trunk, secure white plastic flagging 1" wide x 18", tied securely
   a. Trees 3" in caliper or greater shall be guyed using the 120 degree, three-guy method, or as shown on the Drawings.
   b. Trees less than 3" in caliper shall be staked using the 180 degree, two-stake method.
   c. Maintain supports in place during entire guarantee period.
2. Wrap trunks of deciduous trees of 1-1/2" or more caliper with a spiral overlapping wrapping to minimum height of third branch. Wrap from bottom and tie-wrapping securely in place. Remove wrapping at end of guarantee period.
3. Prune plants only at time of planting and according to standard horticultural practice to preserve the natural character of the plant. Pruning to be done under supervision of the Project Architect. Pruning and trimming shall include the following:
   a. Remove dead wood, suckers, and broken or badly bruised branches. Contractor shall not cut main leader of tree. Required shrub sizes are the sizes after pruning.
   b. Use only clean sharp tools.
   c. Paint cuts over 3/4" diameter, covering all exposed, living tissue.

3.05 MAINTENANCE OF TREES AND SHRUBS

A. Maintenance shall begin immediately after each plant is planted and shall continue until acceptance of the project by the Owner after final inspection or 60 days, whichever is longer.

B. Maintenance shall consist of pruning, watering, cultivating, weeding, mulching, tightening and repairing guys, resetting plants to proper grades or upright position, restoration of the planting saucer, and furnishing and applying such sprays or other items as are necessary to keep the planting free of insects and disease and in thriving condition.

C. Planting areas and plants shall be protected against trespassing and damage for the duration of the maintenance period. If plants become damaged or injured, they shall be treated or replaced as directed by the Architect at no additional cost to the Owner.

D. Provide equipment and means for proper application of water to those planted areas not equipped with an irrigation system.

E. Restoration: Pavements, sodded and planted areas, structures and substructures not specifically provided for in the contract, disturbed by the Contractor during the execution of the work shall be restored by the Contractor, in a manner satisfactory to the Owner's Representative, to their original condition at no cost to the Owner.

3.06 INSPECTION

A. In addition to normal progress inspection, schedule and conduct the following formal inspections, giving the Architect at least 3 working days prior notice of readiness for inspection:
   1. Inspection of plants in containers prior to planting.

2. Inspection of plant locations to verify compliance with the Drawings.
3. Schedule the final inspection sufficiently in advance and in cooperation with the Architect so that the final inspection may be conducted within 24 hours after completion of planting.
4. Provisional inspection will be at the end of the maintenance period, provided that previous deficiencies have been corrected.

3.07 PROVISIONAL ACCEPTANCE

A. The Architect will inspect the work for provisional acceptance upon written request of the Contractor. The request shall be received at least 10 calendar days before the anticipated date of inspection.
1. Acceptance of plant material by the Architect shall be for general conformance to specified size, character, and quality and shall not relieve the Contractor of responsibility for full conformance to the contract documents, including correct species.
2. Upon completion and reinspection of repairs or renewals necessary in the judgement of the Architect, he will certify in writing to the Contractor as to the acceptance of the work.
3. At the issuance of provisional acceptance, the Owner will take over maintenance of the planting, the guarantee of plant material shall remain the responsibility of the Contractor. The Contractor shall ascertain that the Owner properly waters and maintains planting during the one-year guarantee period. The Contractor shall make inspection of plant materials during this period at intervals of not over 30 days during growing season. Contractor shall report in writing to Owner's Representative any deficiencies as identified or change in maintenance as needed. Report within ten days after inspection. The Contractor shall furnish written instructions for maintenance of the plantings to the Owner at the time of provisional acceptance.

3.08 GUARANTEE PERIOD AND REPLACEMENTS

A. The guarantee period for trees and shrubs shall begin at the date of Provisional Acceptance.

B. Plant material shall be guaranteed by the Contractor for a period of one year from the date of Provisional Acceptance to be in good, healthy and flourishing condition.

C. When work is accepted in parts, the guarantee periods extend from each of the partial acceptances to the terminal date of the last guarantee period. Thus, all guarantee periods terminate at one time.

D. The Contractor shall replace, without cost to the Owner and as soon as possible, as weather conditions permit and within a specified planting period, dead plants and plants not in a vigorous thriving condition, as determined by the Architect during and at the end of the guarantee period. Plants shall be free of dead or dying branches and branch tips and shall bear foliage of a normal density, size and color. Replacements shall closely match adjacent specimens of the same species. Replacements shall be subject to the requirements stated in this Specification. Replacements required because of vandalism or other causes beyond control of the Contractor are not part of the Contract.

E. The guarantee of replacement plants shall extend for an additional period of one year from the date of their acceptance after replacement. In the event that a replacement plant is not acceptable during or at the end of the said extended guarantee period, the Owner may elect subsequent replacement or credit for each item.

F. The Contractor shall make periodic inspection at no extra cost to the Owner during the guarantee period to determine what changes, if any, should be made to the Owner's maintenance program. Submit in writing to the Architect recommended changes.

3.09 CARE OF EXISTING TREES

A. Upon completion of the work under this Section, existing trees within the work limits, unless indicated otherwise, shall be pruned and injuries repaired. The amount of pruning shall be limited to the minimum necessary to remove dead or injured twigs and branches and to compensate for the loss of roots as a result of construction operations. Roots greater than 2" shall be hand-cut to provide clean, concise, cutting and removal. Pruning shall be done in such a manner as not to change the natural habit or shape of the plant. Cuts shall be made flush, leaving no stubs. On cuts over 3/4" diameter and bruises or scars on the bark, the injured cambium shall be traced back to living tissue and removed; wounds shall be smoothed and shaped so as not to retain water, and the treated area shall be coated with an approved tree paint.

3.10 CLEAN-UP

A. When of this work is done while buildings are occupied, pavements shall be kept clear, broom cleaned to prevent tracking dirt into buildings.

B. After completion of planting operations, dispose of debris and excess material to the satisfaction of the Architect. Pavements shall be broomed and hosed clean.

3.11 FINAL INSPECTION AND ACCEPTANCE

A. At the end of the guarantee period, the Architect will inspect guaranteed work for final acceptance upon written request of the Contractor. The request shall be received at least 10 calendar days before the anticipated date for final inspection.

B. Upon completion and reinspection of repairs or renewals necessary in the judgement of the Architect at that time, the Architect will certify in writing to the Contractor as to the final acceptance of the Planting.

END OF SECTION