Cel-F-6
Ped. + Vehicular
improv.
Waynflete
Campus
Waynflete
School

Attachment 5a

From: Gaylen McDougall
To: Sarah Hopkins
Date: Tue, May 27, 2003 2:09 PM
Subject: Wayneflete

The new loop road meets with the Portland Fire Department requirements.
Mac

Attachment 5b

To: Sarah Hopkins, Development Review Services Manager

From: Jeff Tarling, City Arborist

Date: June 17, 2003

RE: Waynflete School

I have reviewed the plans for the Loop Road as proposed by the Waynflete School and have discussed the landscaping plan with the applicant's consultant.

In order to soften the appearance of the school from the street and to strengthen the residential character of Spring Street between the Hyde and Thomas Houses, I request that up to four additional street trees be installed along the Spring Street frontage of the school.

I would look forward to working with the applicant to select species and exact location for placement during construction.

Attachment 6a

CITY OF PORTLAND, MAINE
HISTORIC PRESERVATION COMMITTEE

June 19, 2001

Jane Begert
Waynflete School
360 Spring Street
Portland, Maine 04101

Re: Pedestrian and Vehicular Circulation Improvements- Waynflete Campus

Dear Ms. Begert:

On June 4, 2003, the City of Portland's Historic Preservation Committee voted 6-0 (Pitman absent) to approve your application for a Certificate of Appropriateness for site improvements at Waynflete School.

The Committee's approval was made with the understanding that the project entails the removal of the 19th century barn between Ruth Cook Hyde House and Morrill House. The Committee made its decision based on the fact that the barn bears no apparent relationship to either of the adjacent residences and is in deteriorated condition.

The Committee's June 4 approval was made subject to one condition:

- That a revised paving scheme for the pedestrian plaza (adjacent to the loop road) be submitted for final review and approval by the Historic Preservation Committee. (The original proposal called for concrete paving.)

On June 18, 2003, the Historic Preservation Committee voted 6-0 (Parker absent) to approve your revised paving scheme for the pedestrian plaza, with no additional conditions.

All improvements shall be carried out as shown on the submitted plans and specifications submitted for the 6/4/03 and 6/18/03 public hearings. Changes to the approved plans and specifications and any additional work that may be undertaken must be reviewed and approved by this office prior to construction, alteration, or demolition. If, during the course of completing the approved work, conditions are encountered which prevent completing the approved work, or which require additional or alternative work, you must apply for and receive a Certificate of Appropriateness or Non-Applicability PRIOR to undertaking additional or alternative work.

This Certificate is granted upon condition that the work authorized herein is commenced within twelve (12) months after the date is issuance. If the work authorized by this Certificate is not commenced within twelve (12) months after the date of issuance or if such work is suspended in significant part for a period of

Attachment 6a

one year after the time the work is commenced, such Certificate shall expire and be of no further effect; provided that, for cause, one or more extensions of time for periods not exceeding ninety (90) days each may be allowed in writing by the Department.

Sincerely,

Stephen Sewall, Chairman
Historic Preservation Committee

cc: Scott Simons Architects
Michael Boucher Landscape Architecture
Portland Planning Board
Deborah G. Andrews, Historic Preservation Program Manager
Approval Letter File
Building Inspections

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

2003-0061
Application I. D. Number

03/26/2003
Application Date

Waynflete School The
Applicant

360 Spring St, Portland, ME 04102
Applicant's Mailing Address

Waynflete Loop Road Improvements
Project Name/Description

Consultant/Agent

360 - 360 Spring St, Portland, Maine
Address of Proposed Site

Agent Ph: Agent Fax:
Applicant or Agent Daytime Telephone, Fax

061 F006001
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) landscaping, driveway

Proposed Building square Feet or # of Units

Acreage of Site

R4
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 $500.00 Subdivision Engineer Review Date 04/02/2003

Engineering Comments

PUBLIC WORKS ENGINEERING REVIEW..5/09/03

I have reviewed the "preliminary" submittal dated 5/5/03 and offer the following comments:

1. The applicant proposes to close some curb cuts on Spring and create a new. As such, the applicant will need to install new granite curb or recycle the existing as much as possible. The plan set needs to specify if new curb will be installed or a combination of installing new/recycled curb.
2. The plans need specify the proposed limits of excavation in Spring Street related to the new curb cut, closing of existing curb cuts, curb installation, and new brick sidewalk construction.
3. According to the City's Sidewalk Materials Policy, sidewalk must remain brick and the plans need to identify the limits of any sidewalk repair associated with this development. The "policy" also requires that within the public right of way, the new driveway apron must be constructed of brick. This needs to be specified on the plans.
4. The plans need to include a complete set of on site and public improvement construction details.
5. The plans need to identify that any curb or sidewalk brick not to be reused within the public right of way, shall remain the property of the City of Portland and shall be delivered to the City's Outer Congress Street stockyard.
6. The applicant is advised to contact Carol Merritt at Public Works regarding the fees and permits associated with this proposal.
7. Upon receiving approval for this develpment application, Public Works requests that a CADD.dwg file be submitted to Jon Giles, GIS Coordinator at Public Works, in support of the City's efforts to compile a complete database.

PUBLIC WORKS ENGINEERING REVIEW...5/16/03

I have reviewed the Stormwater Management Plan dated 5/13/03 and I am in agreement with its results. Thererfore, Public Works has no issues, as it relates to drainage associated with this development application.

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

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

From: Scott Simons <scott@simonsarchitects.com>
To: sarah hopkins <sh@ci.portland.me.us>
Date: Fri, Oct 23, 2082 5:32 PM
Subject: Waynflete Loop Road

Dear Sarah,
There will be no changes in the bus parking procedure as a result of the new Loop Road design. The buses will be parked along Vaughn Street for short periods of time during the day, the same as they are now. For longer periods of time, they will be parked at the athletic fields at Thompson Point, also the same as they are now. They will not be parked in the Loop Road are, except to wait for student pick-ups.
Thank you,
Scott Simons

PINKHAM & GREER

CONSULTING ENGINEERS, INC.

DRAINAGE ANALYSIS
AND
STORMWATER MANAGEMENT REPORT

WAYNFLETE BUS LOOP
May 13, 2003

SITE DESCRIPTION:

The site is located on the Waynflete School campus on the south side of Spring Street between Storer and Fletcher Streets. The project involves reconfiguring parking lots and walkways between Founders Hall and the Thomas and Hyde Houses to create a bus loop using existing curb cuts on Spring Street.

TOPOGRAPHY, SOILS AND GROUND COVER:

The topography of the site is gently sloping from north to south. Spring Street, which runs along the north side of the parcel, is the high ground and intercepts stormwater runoff from areas that drain to it from the north. Little, if any, runoff from offsite drains onto and across the property. The bus loop entrance and exit will be shaped to maintain this pattern.

A series of borings taken in the playfield between Danforth Street and Davies Hall and within 120' of Storer Street for the 2001 project indicate that there are a few inches of topsoil over 3 to 5 feet of brown silty sand fill over dense till in that area. Because ground cover in the area being reshaped to construct the bus loop is pavement, building, lawn or landscaping, for the purpose of this analysis I considered this "Made Land" belonging to hydrologic soil group C.

Ground cover is either impervious or lawn. Ground that isn't covered with buildings, bituminous pavement, stone or concrete is maintained as lawn or planting beds.

COMPUTER MODELING:

The site was modeled using the computer software HydroCAD created by Applied Microcomputer Systems of Chocura, NH. The software is based primarily on hydrology techniques developed by the Soil Conservation Service (SCS TR-20) combined with standard hydraulic calculations for pipes and reservoirs. The program is one of the proprietary programs listed in Appendix C of the DEP publication "STORMWATER MANAGEMENT FOR MAINE: BEST MANAGEMENT PRACTICES" November 1995 and is in common usage by engineers in this area to model stormwater runoff from areas of this size and nature.

Modeling assumptions are given in Appendix A and in the HydroCAD summary sheets for the 25-year rainfall event attached as Appendices B, C and D. The existing conditions were those modeled in March and April 2001 prior to the Davies Hall Expansion and are described in Appendix B. The summary sheets in Appendix C detail the analysis with the site developed for the Davies Hall Expansion. The summary sheets in Appendix D describe the site with the bus loop added. Results for runs of the models for the more frequent 10-year and 2-year storms are given in tabular form following the HydroCAD summary sheets.

The point of analysis (P.O.A.) for the purpose of comparing pre and post development runoff rates for the storm events modeled is the catch basin on Danforth Street at the junction of Fletcher Street. The model ignores other areas that drain to this point that will not be impacted by this project.

RESULTS:

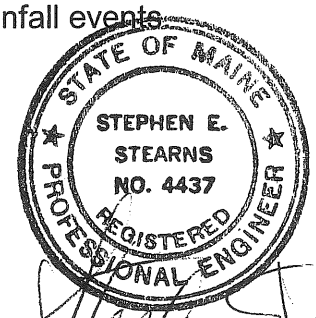
The proposed bus loop construction off Spring Street will not increase the peak rate of runoff onto Danforth Street. The model does show a slight increase in peak flow to the catch basin at the corner of Fletcher and Danforth in the smaller 2-year storm but the catch basin does not surcharge under these conditions. Although reconfiguring the parking lots and walkways between Founders Hall and the Thomas and Hyde Houses to create a bus loop directs runoff from a slightly larger area than now drains to the Sanctuary, there will be no significant increase at the point of analysis. This is because stormwater is captured and

detained in the stormwater management system constructed with the recent expansion of Davies Hall. There will be short term surcharging in the catch basin in the Sanctuary but the peak water level will be more than six feet below the grate (see page 12, Appendix D).

Table 1 – Peak Rate of Runoff at P.O.A. (CFS)			
	Storm Frequency (Years)		
	25	10	2
Existing condition 4-9-01	8.26	6.74	3.61
Developed condition 2002	6.76	5.65	3.31
Developed condition 2003	6.99	5.77	3.24

CONCLUSIONS:

Construction of a bus loop off Spring Street as proposed will have no adverse impact on downstream drainage facilities. The detention basin constructed on the playfield south of Davies Hall with the 2001 - 2002 expansion of Davies Hall mitigates increases in the peak rate of runoff from the site onto Danforth Street due to the proposed improvements during significant rainfall events.



Stephen E. Stearns, P.E.

APPENDIX A

SUPPORTING INFORMATION

Waynflete Arts Center 3-18-01 and Bus Loop 5-12-03

APPENDIX D-1: One Day Precipitation Values (SCS)

Table 3-4 24 Hour Duration Rainfalls For Various Return Periods. Natural Resources Conservation Service County Rainfall Data

		Return Interval or Frequency								
County	Storm Type	1-Yr	2-Yr	5-Yr	10-Yr	25-Yr	100-Yr	500-Yr	Annual	
Androscoggin		2.5	3.0	3.9	4.6	5.4	6.5	7.8	45.3	
Aroostook C		2.1	2.1	3.2	3.6	4.2	5.0	5.9	36.1	(Presque Isle Area)
Aroostook N		2.0	2.3	3.0	3.5	4.0	4.8	5.7	36.1	(Fort Kent Area)
Aroostook S	*S*	2.2	2.5	3.3	3.8	4.4	5.3	6.4	39.0	(Houlton Area)
Cumberland NW	*E*	2.8	3.3	4.3	5.0	5.8	6.9	8.3	43.4	(NW of St. Route 11)
→ Cumberland SE	*E*	2.5	3.0	4.0	4.7	5.5	6.7	8.1	44.4	(SE of St. Route 11)
Franklin		2.4	2.9	3.7	4.2	4.9	5.9	7.0	45.6	
Hancock		2.4	2.7	3.6	4.2	4.9	6.0	7.2	45.2	
Kennebec	*N*	2.4	3.0	3.8	4.4	5.1	6.1	7.2	41.7	
Knox-Lincoln	*O*	2.5	2.9	3.8	4.4	5.1	6.2	7.4	46.1	
Oxford E	*T*	2.5	3.0	4.0	4.6	5.3	6.4	7.6	43.0	(E of St. Route 26)
Oxford W	*E*	3.0	3.5	4.5	5.2	6.0	7.1	8.4	43.8	(W of St. Route 26)
Penobscot N	*S*	2.2	2.5	3.3	3.8	4.4	5.4	6.4	41.5	(N of Can.-Atl. Rwy)
Penobscot S		2.4	2.7	3.5	4.1	4.8	5.8	6.9	39.5	(S of Can.-Atl. Rwy)
Piscataquis N	*1*	2.2	2.5	3.3	3.8	4.4	5.3	6.3	38.5	(N of Can.-Atl. Rwy)
Piscataquis S		2.3	2.6	3.4	4.0	4.6	5.5	6.6	41.0	(S of Can.-Atl Rwy)
Sagadahoc	*A*	2.5	3.0	3.9	4.6	5.4	6.5	7.8	45.3	
Somerset N	*N*	2.2	2.5	3.3	3.8	4.4	5.3	6.3	37.3	(N of Can.-Atl. Rwy)
Somerset S	*D*	2.4	2.7	3.5	4.1	4.7	5.7	6.8	39.5	(S of Can.-Atl. Rwy)
Waldo		2.5	2.8	3.7	4.3	4.9	6.0	7.1	47.2	
Washington	*2*	2.4	2.5	3.4	4.0	4.8	5.9	7.1	44.2	
York		2.5	3.0	4.0	4.6	5.4	6.6	7.8	46.7	

NOTES: REVISED 4/10/92 Lew P. Crosby

24-HR. DURATION RAINFALL

SOURCES: 24-HR. DATA — TP 40

ANNUAL DATA — CDAN

Note 1: [1]Use ***Type II*** for Oxford County (with the exception of towns listed below) and Penobscot County (with the exception of towns listed below) and all Maine counties not listed below.

Note 2: [2]Use ***Type III*** for York, Cumberland, Androscoggin, Sagadahoc, Kennebec, Waldo, Knox, Piscataquis, Somerset, Franklin, Aroostook, Lincoln, Hancock, Washington Counties; the following Oxford County Towns: Porter, Brownfield, Hiram, Denmark, Oxford, Hebron, Buckfield, and Hartford; and the following Penobscot County towns: Dixmont, Newburgh, Hampden, Bangor, Veazie, Orono, Bradley, Clifton, Eddington, Holden, Brewer, Orrington, Plymouth, Etna, Carmel, Hermon, Glenburn, Old Town, Milford, and Greenfield.

Values of the Roughness Coefficient n
(Boldface figures are values generally recommended in design)

Type of channel and description	Minimum	Normal	Maximum
A. CLOSED CONDUITS FLOWING PARTLY FULL			
A-1. Metal			
a. Brass, smooth	0.009	0.010	0.013
b. Steel			
1. Lockbar and welded	0.010	0.012	0.014
2. Riveted and spiral	0.013	0.016	0.017
c. Cast iron			
1. Coated	0.010	0.013	0.014
2. Uncoated	0.011	0.014	0.016
d. Wrought iron			
1. Black	0.012	0.014	0.015
2. Galvanized	0.013	0.016	0.017
e. Corrugated metal			
1. Subdrain	0.017	0.019	0.021
2. Storm drain	0.021	0.024	0.030
A-2. Nonmetal			
a. Lucite	0.008	0.009	0.010
b. Glass	0.009	0.010	0.013
c. Cement			
1. Neat, surface	0.010	0.011	0.013
2. Mortar	0.011	0.013	0.015
d. Concrete			
1. Culvert, straight and free of debris	0.010	0.011	0.013
2. Culvert with bends, connections, and some debris	0.011	0.013	0.014
3. Finished	0.011	0.012	0.014
4. Sewer with manholes, inlet, etc., straight	0.013	0.015	0.017
5. Unfinished, steel form	0.012	0.013	0.014
6. Unfinished, smooth wood form	0.012	0.014	0.016
7. Unfinished, rough wood form	0.015	0.017	0.020
e. Wood			
1. Stave	0.010	0.012	0.014
2. Laminated, treated	0.015	0.017	0.020
f. Clay			
1. Common drainage tile	0.011	0.013	0.017
2. Vitrified sewer	0.011	0.014	0.017
3. Vitrified sewer with manholes, inlet, etc.	0.013	0.015	0.017
4. Vitrified subdrain with open joint	0.014	0.016	0.018
g. Brickwork			
1. Glazed	0.011	0.013	0.015
2. Lined with cement mortar	0.012	0.015	0.017
h. Sanitary sewers coated with sewage slimes, with bends and connections	0.012	0.013	0.016
i. Paved invert, sewer, smooth bottom	0.016	0.019	0.020
j. Rubble masonry, cemented	0.018	0.025	0.030

PVC PIPE .01

Values of the Roughness Coefficient n (continued)

Type of channel and description	Minimum	Normal	Maximum
B. LINED OR BUILT-UP CHANNELS			
B-1. Metal			
a. Smooth steel surface			
1. Unpainted	0.011	0.012	0.014
2. Painted	0.012	0.013	0.017
b. Corrugated	0.021	0.025	0.030
B-2. Nonmetal			
a. Cement			
1. Neat, surface	0.010	0.011	0.013
2. Mortar	0.011	0.013	0.015
b. Wood			
1. Planed, untreated	0.010	0.012	0.014
2. Planed, creosoted	0.011	0.012	0.015
3. Unplaned	0.011	0.013	0.015
4. Plank with battens	0.012	0.015	0.018
5. Lined with roofing paper	0.010	0.014	0.017
c. Concrete			
1. Trowel finish	0.011	0.013	0.015
2. Float finish	0.013	0.015	0.016
3. Finished, with gravel on bottom	0.015	0.017	0.020
4. Unfinished	0.014	0.017	0.020
5. Gunite, good section	0.016	0.019	0.023
6. Gunite, wavy section	0.018	0.022	0.025
7. On good excavated rock	0.017	0.020	
8. On irregular excavated rock	0.022	0.027	
d. Concrete bottom float finished with sides of			
1. Dressed stone in mortar	0.015	0.017	0.020
2. Random stone in mortar	0.017	0.020	0.024
3. Cement rubble masonry, plastered	0.016	0.020	0.024
4. Cement rubble masonry	0.020	0.025	0.030
5. Dry rubble or riprap	0.020	0.030	0.035
e. Gravel bottom with sides of			
1. Formed concrete	0.017	0.020	0.025
2. Random stone in mortar	0.020	0.023	0.026
3. Dry rubble or riprap	0.023	0.033	0.036
f. Brick			
1. Glazed	0.011	0.013	0.015
2. In cement mortar	0.012	0.015	0.018
g. Masonry			
1. Cemented rubble	0.017	0.025	0.030
2. Dry rubble	0.023	0.032	0.035
h. Dressed ashlar	0.013	0.015	0.017
i. Asphalt			
1. Smooth	0.013	0.013	
2. Rough	0.016	0.016	
j. Vegetal lining	0.030	.....	0.500

Waynflete Arts Center
3-18-01
and Bus Loop 5-12-03

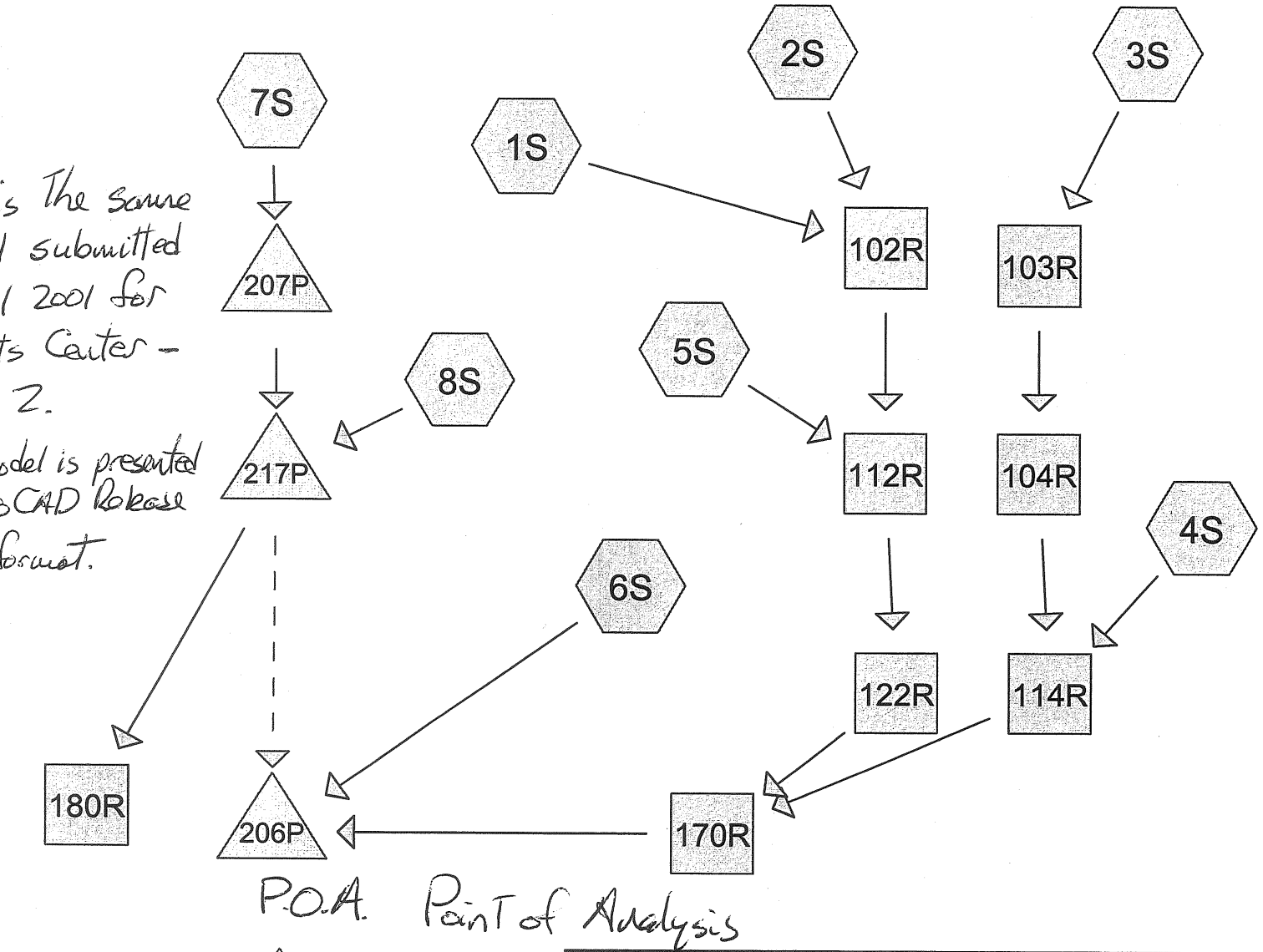
This table reprinted from OPEN CHANNEL HYDRAULICS by Ven Te Chow, Copyright 1959 by McGraw-Hill, with the permission of the publisher.

APPENDIX B

HYDROCAD CALCULATIONS
EXISTING CONDITIONS APRIL 2001

This is the same model submitted in April 2001 for The Arts Center - Phase 2.

This model is presented in HydroCAD Release 6.10 format.



Drainage Diagram for 01126, WYNFLT ARTS CNTR, EX CND, SES, 4-10-01
Prepared by PINKHAM & GREER 5/12/03

Subcatchment 1S: AREA DRAINING TO THE SANCTUARY

Runoff = 1.74 cfs @ 12.13 hrs, Volume= 0.167 af, Depth= 4.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (sf)	CN	Description
6,534	74	LAWN, GOOD CND, HSG C
3,920	98	BLDGS
9,583	98	PVMNT
20,037	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0100	0.1		**Sheet Flow, ACROSS SANCTUARY** Grass: Short n= 0.150 P2= 3.00"

Subcatchment 2S: NE CORNER OF BLOCK

Runoff = 1.20 cfs @ 12.03 hrs, Volume= 0.102 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.050	74	LAWN, GOOD CND, HSG C (GUESS)
0.040	98	BLDGS
0.170	98	PVMNT
0.260	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, EAST TO STORER ST.**

Subcatchment 3S: AREA EAST SIDE STORER @ SPRING

Runoff = 1.98 cfs @ 12.03 hrs, Volume= 0.180 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.120	98	BLDGS
0.290	98	PVMNT
0.410	98	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TO SW TO STORER ST.**

Subcatchment 4S: AREA BTWN STORER & LIBRARY

Runoff = 1.18 cfs @ 12.04 hrs, Volume= 0.094 af, Depth= 3.43"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.240	74	LAWN, GOOD CND, HSG C
0.090	98	PVMNT
0.330	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TO SOUTH TO STORER ST.**

Subcatchment 5S: ENTRANCES ALONG STORER ST.

Runoff = 0.82 cfs @ 12.03 hrs, Volume= 0.075 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.040	98	BLDGS
0.130	98	PVMNT
0.170	98	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TO STORER ST.**

Subcatchment 6S: LAWN/FIELD AREA SOUTH OF SCHOOL

Runoff = 2.66 cfs @ 12.04 hrs, Volume= 0.213 af, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.720	74	LAWN, GOOD CND, HSG C
0.120	98	BLDGS
0.840	77	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TO SOUTH TOWARD DANFORTH ST.**

Subcatchment 7S: AREA BTWN THOMAS & DAVIES HALLS & GYM

Runoff = 4.34 cfs @ 12.01 hrs, Volume= 0.343 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (sf)	CN	Description
2,643	98	DAVIES HALL
1,536	98	THOMAS HALL
7,654	98	GYMNASIUM
6,403	98	WALKS, STEPS & DECK
8,716	98	PRKNG LT & DRIVES
3,027	98	WOODCHIP PLAYGROUNDS
8,248	74	LAWN, GOOD COND, HSG C
38,227	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	40	0.0406	0.2		**Sheet Flow, TO SE OFF LAWN OF THOMAS HALL** Grass: Short n= 0.150 P2= 3.00"
0.7	135	0.0278	3.4		**Shallow Concentrated Flow, TO SOUTH ACROSS PRKNG LT** Paved Kv= 20.3 fps
0.2	110	0.0369	8.6	3.02	**Circular Channel (pipe), PIPE CB W2 TO CB WI** Diam= 8.0" Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010
4.6	285	Total			

Subcatchment 8S: ROOF OF FOUNDERS HALL

Runoff = 0.41 cfs @ 12.03 hrs, Volume= 0.037 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (sf)	CN	Description
3,660	98	ROOF

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, ACROSS ROOF TO ROOF DRAINS**

Reach 102R: GUTTER ALONG WEST SIDE STORER ST.

Inflow Area = 0.720 ac, Inflow Depth = 4.48"
Inflow = 2.73 cfs @ 12.09 hrs, Volume= 0.269 af
Outflow = 2.68 cfs @ 12.10 hrs, Volume= 0.269 af, Atten= 2%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs / 2
Max. Velocity= 3.5 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.4 fps, Avg. Travel Time= 0.8 min

Peak Depth= 0.17'
Capacity at bank full= 46.76 cfs
0.00' x 0.50' deep channel, n= 0.016 Length= 70.0' Slope= 0.0376 '/'
Side Slope Z-value= 50.0 2.5 '/'

Reach 103R: GUTTER EAST SIDE STORER ST.

Inflow Area = 0.410 ac, Inflow Depth = 5.26"
Inflow = 1.98 cfs @ 12.03 hrs, Volume= 0.180 af
Outflow = 1.87 cfs @ 12.06 hrs, Volume= 0.180 af, Atten= 6%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 3.0 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 1.4 min

Peak Depth= 0.16'
Capacity at bank full= 10.53 cfs
0.00' x 0.30' deep channel, n= 0.016 Length= 107.0' Slope= 0.0327 '/'
Side Slope Z-value= 0.0 50.0 '/'

Reach 104R: GUTTER EAST SIDE STORER ST.

Inflow Area = 0.410 ac, Inflow Depth = 5.26"
Inflow = 1.87 cfs @ 12.06 hrs, Volume= 0.180 af
Outflow = 1.87 cfs @ 12.07 hrs, Volume= 0.180 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 4.2 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 0.7 min

Peak Depth= 0.13'
Capacity at bank full= 16.24 cfs
0.00' x 0.30' deep channel, n= 0.016 Length= 75.0' Slope= 0.0779 '/'
Side Slope Z-value= 0.0 50.0 '/'

Reach 112R: GUTTER WEST SIDE STORER ST.

Inflow Area = 0.890 ac, Inflow Depth = 4.63"
Inflow = 3.40 cfs @ 12.08 hrs, Volume= 0.343 af
Outflow = 3.40 cfs @ 12.09 hrs, Volume= 0.343 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 4.9 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 0.6 min

Peak Depth= 0.17'
Capacity at bank full= 16.24 cfs
0.00' x 0.30' deep channel, n= 0.016 Length= 75.0' Slope= 0.0779 '/'
Side Slope Z-value= 50.0 0.0 '/'

Reach 114R: GUTTER EAST SIDE STORER ST.

Inflow Area = 0.740 ac, Inflow Depth = 4.44"
Inflow = 2.98 cfs @ 12.06 hrs, Volume= 0.274 af
Outflow = 2.98 cfs @ 12.07 hrs, Volume= 0.274 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 4.8 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 1.0 min

Peak Depth= 0.16'
Capacity at bank full= 16.53 cfs
0.00' x 0.30' deep channel, n= 0.016 Length= 115.0' Slope= 0.0806 '/'
Side Slope Z-value= 0.0 50.0 '/'

Reach 122R: GUTTER WEST SIDE STORER ST.

Inflow Area = 0.890 ac, Inflow Depth = 4.63"
Inflow = 3.40 cfs @ 12.09 hrs, Volume= 0.343 af
Outflow = 3.39 cfs @ 12.10 hrs, Volume= 0.343 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 5.0 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.0 fps, Avg. Travel Time= 1.0 min

Peak Depth= 0.17'
Capacity at bank full= 16.53 cfs
0.00' x 0.30' deep channel, n= 0.016 Length= 115.0' Slope= 0.0806 '/'
Side Slope Z-value= 50.0 0.0 '/'

Reach 170R: GUTTER ALONG N SIDE DANFORTH

Inflow Area = 1.630 ac, Inflow Depth = 4.54"
Inflow = 6.34 cfs @ 12.09 hrs, Volume= 0.617 af
Outflow = 5.97 cfs @ 12.13 hrs, Volume= 0.616 af, Atten= 6%, Lag= 2.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 4.0 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.6 fps, Avg. Travel Time= 4.0 min

Peak Depth= 0.25'
Capacity at bank full= 21.71 cfs
0.00' x 0.40' deep channel, n= 0.016 Length= 385.0' Slope= 0.0300 '/'
Side Slope Z-value= 50.0 0.0 '/'

Reach 180R: EXISTING COMBINED SEWER IN DANFORTH

Inflow Area = 0.962 ac, Inflow Depth = 4.74"
Inflow = 4.51 cfs @ 12.07 hrs, Volume= 0.380 af
Outflow = 4.44 cfs @ 12.08 hrs, Volume= 0.380 af, Atten= 2%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 6.5 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 1.1 min

Peak Depth= 0.82'
Capacity at bank full= 4.47 cfs
12.0" Diameter Pipe n= 0.015 Length= 150.0' Slope= 0.0209 '/'

Pond 206P: CB AT FLTCHR & DNFRTH

P.O.A.

Inflow Area = 2.470 ac, Inflow Depth = 4.03"
Inflow = 8.26 cfs @ 12.10 hrs, Volume= 0.829 af
Outflow = 8.24 cfs @ 12.10 hrs, Volume= 0.828 af, Atten= 0%, Lag= 0.0 min
Primary = 8.24 cfs @ 12.10 hrs, Volume= 0.828 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs / 2

Peak Elev= 107.57' Surf.Area= 13 sf Storage= 32 cf
Plug-Flow detention time= 1.4 min calculated for 0.824 af (99% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
105.00	13	0	0
109.00	13	50	50
109.10	3	1	51
110.90	3	5	56

Primary OutFlow Max=8.20 cfs @ 12.10 hrs HW=107.55' (Free Discharge)
└─**1=Culvert** (Controls 8.20 cfs)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

#	Routing	Invert	Outlet Devices
1	Primary	105.00'	**15.0" x 300.0' long Culvert** Ke= 0.500 Outlet Invert= 90.00' S= 0.0500 '/' n= 0.016 Cc= 0.900
2	Primary	110.80'	**2.0' long Broad-Crested Rectangular Weir X 1.81** Head (feet) 0.50 1.00 Coef. (English) 1.45 1.44

Pond 207P: CB W1

Inflow Area = 0.878 ac, Inflow Depth = 4.69"
Inflow = 4.34 cfs @ 12.01 hrs, Volume= 0.343 af
Outflow = 4.16 cfs @ 12.02 hrs, Volume= 0.343 af, Atten= 4%, Lag= 0.6 min
Primary = 4.16 cfs @ 12.02 hrs, Volume= 0.343 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Peak Elev= 135.38' Surf.Area= 8 sf Storage= 76 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.00	13	0	0
134.00	13	65	65
137.00	3	24	89

Primary OutFlow Max=3.95 cfs @ 12.02 hrs HW=134.85' (Free Discharge)
└─**1=Culvert** (Controls 3.95 cfs)

#	Routing	Invert	Outlet Devices
1	Primary	129.00'	**8.0" x 50.0' long Culvert** Ke= 0.500 Outlet Invert= 121.00' S= 0.1600 '/' n= 0.015 Cc= 0.900

Pond 217P: BURIED TANK SW OF FOUNDERS HALL

Inflow Area =	0.962 ac, Inflow Depth = 4.74"		
Inflow =	4.57 cfs @ 12.02 hrs, Volume=	0.380 af	
Outflow =	4.51 cfs @ 12.07 hrs, Volume=	0.380 af,	Atten= 1%, Lag= 2.9 min
Primary =	4.51 cfs @ 12.07 hrs, Volume=	0.380 af	

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Peak Elev= 128.07' Surf.Area= 3 sf Storage= 262 cf
Plug-Flow detention time= 1.0 min calculated for 0.378 af (100% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	50	0	0
125.00	50	250	250
125.10	3	3	253
127.00	3	6	258

Primary OutFlow Max=3.95 cfs @ 12.07 hrs HW=127.41' (Free Discharge)
├─**1=Culvert** (Controls 3.27 cfs)
└─**2=Orifice/Grate** (Controls 0.68 cfs)

#	Routing	Invert	Outlet Devices
1	Primary	120.00'	**8.0" x 170.0' long Culvert** Ke= 0.500 Outlet Invert= 108.10' S= 0.0700 '/' n= 0.015 Cc= 0.900
2	Primary	126.90'	**6.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Time span=0.00-24.00 hrs, dt=0.10 hrs, 241 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=4.70"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: AREA DRAINING TO THE SANCTUARY Runoff Area=20,037 sf Runoff Depth=3.58"
Length=100' Tc=13.4 min CN=90 Runoff= 1.44 cfs 0.137 af

Subcatchment 2S: NE CORNER OF BLOCK Runoff Area=0.260 ac Runoff Depth=3.90"
Tc=6.0 min CN=93 Runoff= 1.00 cfs 0.085 af

Subcatchment 3S: AREA EAST SIDE STORER @ SPRING Runoff Area=0.410 ac Runoff Depth=4.46"
Tc=6.0 min CN=98 Runoff= 1.69 cfs 0.152 af

Subcatchment 4S: AREA BTWN STORER & LIBRARY Runoff Area=0.330 ac Runoff Depth=2.72"
Tc=6.0 min CN=81 Runoff= 0.93 cfs 0.075 af

Subcatchment 5S: ENTRANCES ALONG STORER ST. Runoff Area=0.170 ac Runoff Depth=4.46"
Tc=6.0 min CN=98 Runoff= 0.70 cfs 0.063 af

Subcatchment 6S: LAWN/FIELD AREA SOUTH OF SCHOOL Runoff Area=0.840 ac Runoff Depth=2.37"
Tc=6.0 min CN=77 Runoff= 2.07 cfs 0.166 af

Subcatchment 7S: AREA BTWN THOMAS & DAVIES HALLS & GYM Runoff Area=38,227 sf Runoff Depth=3.90"
Length=285' Tc=4.6 min CN=93 Runoff= 3.65 cfs 0.285 af

Subcatchment 8S: ROOF OF FOUNDERS HALL Runoff Area=3,660 sf Runoff Depth=4.46"
Tc=6.0 min CN=98 Runoff= 0.35 cfs 0.031 af

Reach 102R: GUTTER ALONG WEST SIDE STORER ST. Peak Depth= 0.16' Max Vel= 3.3 fps Inflow= 2.28 cfs 0.222 af
n=0.016 L=70.0' S=0.0376 '/' Capacity=46.76 cfs Outflow= 2.24 cfs 0.222 af

Reach 103R: GUTTER EAST SIDE STORER ST. Peak Depth= 0.15' Max Vel= 2.9 fps Inflow= 1.69 cfs 0.152 af
n=0.016 L=107.0' S=0.0327 '/' Capacity=10.53 cfs Outflow= 1.59 cfs 0.152 af

Reach 104R: GUTTER EAST SIDE STORER ST. Peak Depth= 0.13' Max Vel= 4.0 fps Inflow= 1.59 cfs 0.152 af
n=0.016 L=75.0' S=0.0779 '/' Capacity=16.24 cfs Outflow= 1.59 cfs 0.152 af

Reach 112R: GUTTER WEST SIDE STORER ST. Peak Depth= 0.16' Max Vel= 4.7 fps Inflow= 2.84 cfs 0.285 af
n=0.016 L=75.0' S=0.0779 '/' Capacity=16.24 cfs Outflow= 2.85 cfs 0.285 af

Reach 114R: GUTTER EAST SIDE STORER ST. Peak Depth= 0.15' Max Vel= 4.6 fps Inflow= 2.48 cfs 0.227 af
n=0.016 L=115.0' S=0.0806 '/' Capacity=16.53 cfs Outflow= 2.47 cfs 0.227 af

Reach 122R: GUTTER WEST SIDE STORER ST. Peak Depth= 0.16' Max Vel= 4.7 fps Inflow= 2.85 cfs 0.285 af
n=0.016 L=115.0' S=0.0806 '/' Capacity=16.53 cfs Outflow= 2.83 cfs 0.285 af

Reach 170R: GUTTER ALONG N SIDE DANFORTH Peak Depth= 0.23' Max Vel= 3.8 fps Inflow= 5.29 cfs 0.512 af
n=0.016 L=385.0' S=0.0300 '/' Capacity=21.71 cfs Outflow= 4.96 cfs 0.512 af

Reach 180R: EXISTING COMBINED SEWER IN DANFORTH Peak Depth=0.71' Max Vel= 6.4 fps Inflow= 3.87 cfs 0.317 af
D=12.0" n=0.015 L=150.0' S=0.0209 '/' Capacity=4.47 cfs Outflow= 3.77 cfs 0.317 af

Pond 206P: CB AT FLTCHR & DNFRTH Peak Storage= 24 cf @ 106.92' Inflow= 6.74 cfs 0.678 af
P.O.A Primary= 6.72 cfs 0.677 af Outflow= 6.72 cfs 0.677 af

Pond 207P: CB W1 Peak Storage= 60 cf @ 133.62' Inflow= 3.65 cfs 0.285 af
Primary= 3.50 cfs 0.285 af Outflow= 3.50 cfs 0.285 af

Pond 217P: BURIED TANK SW OF FOUNDERS HALL Peak Storage= 259 cf @ 127.36' Inflow= 3.85 cfs 0.317 af
Primary= 3.87 cfs 0.317 af Outflow= 3.87 cfs 0.317 af

Total Runoff Area = 3.432 ac Runoff Volume = 0.995 af Average Runoff Depth = 3.48"

Time span=0.00-24.00 hrs, dt=0.10 hrs, 241 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=3.00"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: AREA DRAINING TO THE SANCTUARY Runoff Area=20,037 sf Runoff Depth=1.98"
Length=100' Tc=13.4 min CN=90 Runoff= 0.81 cfs 0.076 af

Subcatchment 2S: NE CORNER OF BLOCK Runoff Area=0.260 ac Runoff Depth=2.25"
Tc=6.0 min CN=93 Runoff= 0.60 cfs 0.049 af

Subcatchment 3S: AREA EAST SIDE STORER @ SPRING Runoff Area=0.410 ac Runoff Depth=2.77"
Tc=6.0 min CN=98 Runoff= 1.07 cfs 0.095 af

Subcatchment 4S: AREA BTWN STORER & LIBRARY Runoff Area=0.330 ac Runoff Depth=1.31"
Tc=6.0 min CN=81 Runoff= 0.44 cfs 0.036 af

Subcatchment 5S: ENTRANCES ALONG STORER ST. Runoff Area=0.170 ac Runoff Depth=2.77"
Tc=6.0 min CN=98 Runoff= 0.44 cfs 0.039 af

Subcatchment 6S: LAWN/FIELD AREA SOUTH OF SCHOOL Runoff Area=0.840 ac Runoff Depth=1.07"
Tc=6.0 min CN=77 Runoff= 0.87 cfs 0.075 af

Subcatchment 7S: AREA BTWN THOMAS & DAVIES HALLS & GYM Runoff Area=38,227 sf Runoff Depth=2.25"
Length=285' Tc=4.6 min CN=93 Runoff= 2.17 cfs 0.165 af

Subcatchment 8S: ROOF OF FOUNDERS HALL Runoff Area=3,660 sf Runoff Depth=2.77"
Tc=6.0 min CN=98 Runoff= 0.22 cfs 0.019 af

Reach 102R: GUTTER ALONG WEST SIDE STORER ST. Peak Depth= 0.13' Max Vel= 2.9 fps Inflow= 1.31 cfs 0.125 af
n=0.016 L=70.0' S=0.0376 '/' Capacity=46.76 cfs Outflow= 1.28 cfs 0.125 af

Reach 103R: GUTTER EAST SIDE STORER ST. Peak Depth= 0.13' Max Vel= 2.6 fps Inflow= 1.07 cfs 0.095 af
n=0.016 L=107.0' S=0.0327 '/' Capacity=10.53 cfs Outflow= 1.01 cfs 0.095 af

Reach 104R: GUTTER EAST SIDE STORER ST. Peak Depth= 0.11' Max Vel= 3.6 fps Inflow= 1.01 cfs 0.095 af
n=0.016 L=75.0' S=0.0779 '/' Capacity=16.24 cfs Outflow= 1.01 cfs 0.095 af

Reach 112R: GUTTER WEST SIDE STORER ST. Peak Depth= 0.13' Max Vel= 4.1 fps Inflow= 1.67 cfs 0.164 af
n=0.016 L=75.0' S=0.0779 '/' Capacity=16.24 cfs Outflow= 1.67 cfs 0.164 af

Reach 114R: GUTTER EAST SIDE STORER ST. Peak Depth= 0.12' Max Vel= 4.0 fps Inflow= 1.43 cfs 0.131 af
n=0.016 L=115.0' S=0.0806 '/' Capacity=16.53 cfs Outflow= 1.43 cfs 0.131 af

Reach 122R: GUTTER WEST SIDE STORER ST. Peak Depth= 0.13' Max Vel= 4.1 fps Inflow= 1.67 cfs 0.164 af
n=0.016 L=115.0' S=0.0806 '/' Capacity=16.53 cfs Outflow= 1.66 cfs 0.164 af

Reach 170R: GUTTER ALONG N SIDE DANFORTH Peak Depth= 0.19' Max Vel= 3.3 fps Inflow= 3.08 cfs 0.295 af
n=0.016 L=385.0' S=0.0300 '/' Capacity=21.71 cfs Outflow= 2.82 cfs 0.294 af

Reach 180R: EXISTING COMBINED SEWER IN DANFORTH Peak Depth=0.50' Max Vel= 5.6 fps Inflow= 2.20 cfs 0.184 af
D=12.0" n=0.015 L=150.0' S=0.0209 '/' Capacity=4.47 cfs Outflow= 2.18 cfs 0.184 af

Pond 206P: CB AT FLTCHR & DNFRTH Peak Storage= 13 cf @ 106.00' Inflow= 3.61 cfs 0.369 af
P.O.A. Primary= 3.61 cfs 0.369 af Outflow= 3.61 cfs 0.369 af

Pond 207P: CB W1 Peak Storage= 25 cf @ 130.89' Inflow= 2.17 cfs 0.165 af
Primary= 2.11 cfs 0.165 af Outflow= 2.11 cfs 0.165 af

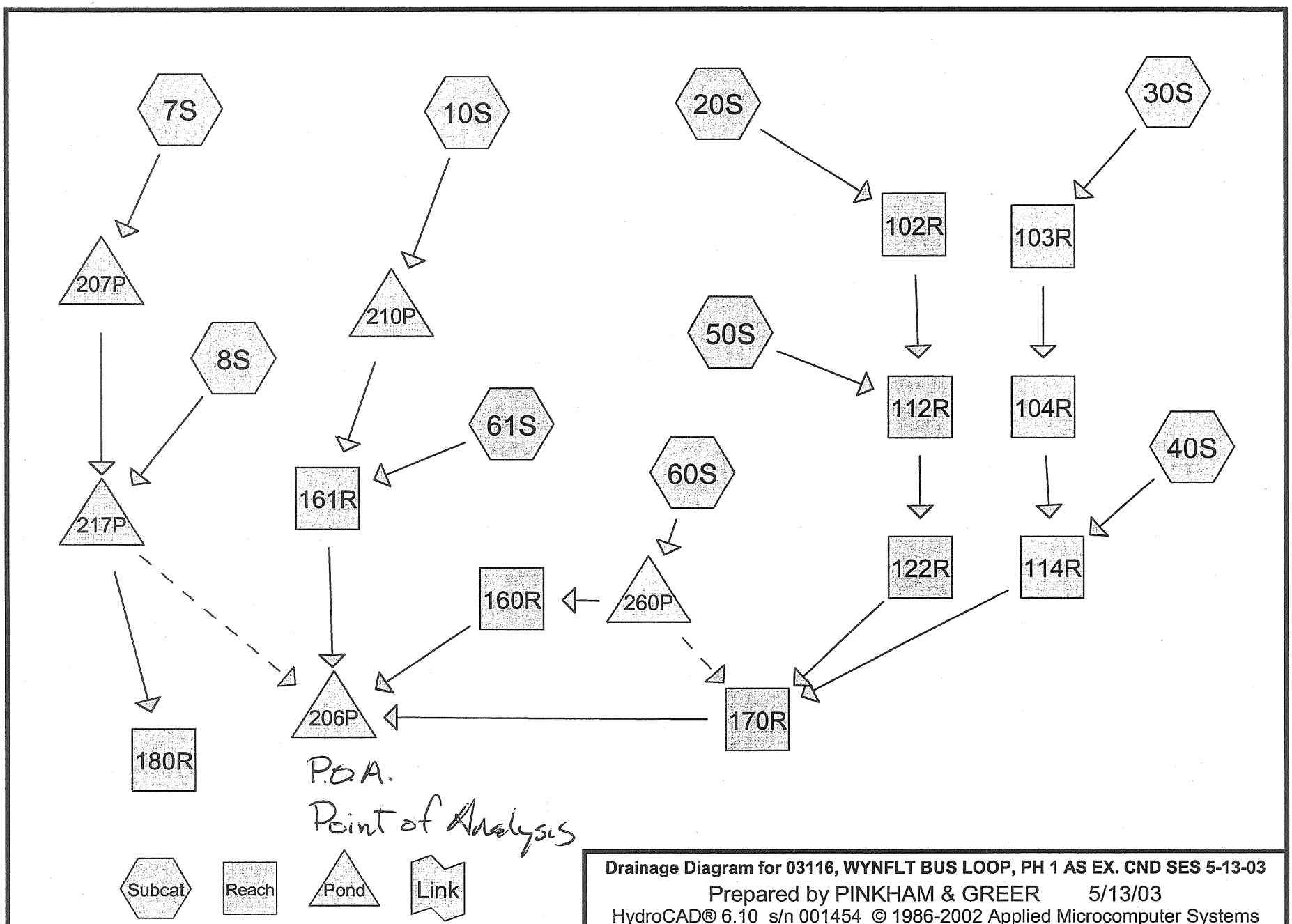
Pond 217P: BURIED TANK SW OF FOUNDERS HALL Peak Storage= 100 cf @ 122.00' Inflow= 2.33 cfs 0.184 af
Primary= 2.20 cfs 0.184 af Outflow= 2.20 cfs 0.184 af

Total Runoff Area = 3.432 ac Runoff Volume = 0.554 af Average Runoff Depth = 1.94"

APPENDIX C

HYDROCAD CALCULATIONS
EXISTING CONDITION 2002

DAVIES HALL EXPANSION COMPLETED



Drainage Diagram for 03116, WYNFLT BUS LOOP, PH 1 AS EX. CND SES 5-13-03

Prepared by PINKHAM & GREER 5/13/03

Subcatchment 7S: AREA BTWN THOMAS & DAVIES HALLS & GYM

Runoff = 4.34 cfs @ 12.01 hrs, Volume= 0.343 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (sf)	CN	Description
2,643	98	DAVIES HALL
1,536	98	THOMAS HALL
7,654	98	GYMNASIUM
6,403	98	WALKS, STEPS & DECK
8,716	98	PRKNG LT & DRIVES
3,027	98	WOODCHIP PLAYGROUNDS
8,248	74	LAWN, GOOD COND, HSG C
38,227	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	40	0.0406	0.2		**Sheet Flow, TO SE OFF LAWN OF THOMAS HALL** Grass: Short n= 0.150 P2= 3.00"
0.7	135	0.0278	3.4		**Shallow Concentrated Flow, TO SOUTH ACROSS PRKNG LT** Paved Kv= 20.3 fps
0.2	110	0.0369	8.6	3.02	**Circular Channel (pipe), PIPE CB W2 TO CB WI** Diam= 8.0" Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010
4.6	285	Total			

Subcatchment 8S: ROOF OF FOUNDERS HALL

Runoff = 0.41 cfs @ 12.03 hrs, Volume= 0.037 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (sf)	CN	Description
3,660	98	ROOF

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, ACROSS ROOF TO ROOF DRAINS**

Subcatchment 10S: AREA DRAINING TO THE SANCTUARY

Runoff = 1.80 cfs @ 12.13 hrs, Volume= 0.175 af, Depth= 4.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (sf)	CN	Description
5,227	74	LAWN, GOOD CND, HSG C
5,227	98	BLDGS
9,583	98	PVMNT
20,037	92	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0100	0.1		**Sheet Flow, ACROSS SANCTUARY** Grass: Short n= 0.150 P2= 3.00"

Subcatchment 20S: NE CORNER OF BLOCK

Runoff = 1.20 cfs @ 12.03 hrs, Volume= 0.102 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.050	74	LAWN, GOOD CND, HSG C (GUESS)
0.040	98	BLDGS
0.170	98	PVMNT
0.260	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, EAST TO STORER ST.**

Subcatchment 30S: AREA EAST SIDE STORER @ SPRING

Runoff = 1.98 cfs @ 12.03 hrs, Volume= 0.180 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.120	98	BLDGS
0.290	98	PVMNT
0.410	98	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TO SW TO STORER ST.**

Subcatchment 40S: AREA BTWN STORER & LIBRARY

Runoff = 1.18 cfs @ 12.04 hrs, Volume= 0.094 af, Depth= 3.43"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.240	74	LAWN, GOOD CND, HSG C
0.090	98	PVMNT
0.330	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TO SOUTH TO STORER ST.**

Subcatchment 50S: ENTRANCES ALONG STORER ST.

Runoff = 0.82 cfs @ 12.03 hrs, Volume= 0.075 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.040	98	BLDGS
0.130	98	PVMNT
0.170	98	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TO STORER ST.**

Subcatchment 60S: LAWN/FIELD AREA SOUTH OF SCHOOL + ADDTN

Runoff = 2.49 cfs @ 12.04 hrs, Volume= 0.200 af, Depth= 3.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.600	74	LAWN, GOOD CND, HSG C
0.070	98	BLDGS INCLDNG ADDTN
0.070	98	PVMNT INCLDNG SRVC ENTRNC
0.740	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TO SOUTH TOWARD DANFORTH ST.**

Subcatchment 61S: AUDITORIUM ROOF

Runoff = 0.48 cfs @ 12.03 hrs, Volume= 0.044 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.100	98	AUDITORIUM ROOF

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, FLOW OFF FLAT ROOF**

Reach 102R: GUTTER ALONG STORER ST.

Inflow Area = 0.260 ac, Inflow Depth = 4.69"
Inflow = 1.20 cfs @ 12.03 hrs, Volume= 0.102 af
Outflow = 1.14 cfs @ 12.05 hrs, Volume= 0.102 af, Atten= 4%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 2.8 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.1 fps, Avg. Travel Time= 1.0 min

Peak Depth= 0.13'
Capacity at bank full= 11.28 cfs
0.00' x 0.30' deep channel, n= 0.016 Length= 70.0' Slope= 0.0376 '/'
Side Slope Z-value= 50.0 0.0 '/'

Reach 103R: GUTTER EAST SIDE STORER ST.

Inflow Area = 0.410 ac, Inflow Depth = 5.26"
Inflow = 1.98 cfs @ 12.03 hrs, Volume= 0.180 af
Outflow = 1.87 cfs @ 12.06 hrs, Volume= 0.180 af, Atten= 6%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 3.0 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 1.4 min

Peak Depth= 0.16'
Capacity at bank full= 10.53 cfs
0.00' x 0.30' deep channel, n= 0.016 Length= 107.0' Slope= 0.0327 '/'
Side Slope Z-value= 0.0 50.0 '/'

Reach 104R: GUTTER EAST SIDE STORER ST.

Inflow Area = 0.410 ac, Inflow Depth = 5.26"
Inflow = 1.87 cfs @ 12.06 hrs, Volume= 0.180 af
Outflow = 1.87 cfs @ 12.07 hrs, Volume= 0.180 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 4.2 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 0.7 min

Peak Depth= 0.13'
Capacity at bank full= 16.24 cfs
0.00' x 0.30' deep channel, n= 0.016 Length= 75.0' Slope= 0.0779 '/'
Side Slope Z-value= 0.0 50.0 '/'

Reach 112R: GUTTER WEST SIDE STORER ST.

Inflow Area = 0.430 ac, Inflow Depth = 4.91"
Inflow = 1.96 cfs @ 12.04 hrs, Volume= 0.176 af
Outflow = 1.91 cfs @ 12.05 hrs, Volume= 0.176 af, Atten= 3%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 4.2 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 0.7 min

Peak Depth= 0.14'
Capacity at bank full= 16.24 cfs
0.00' x 0.30' deep channel, n= 0.016 Length= 75.0' Slope= 0.0779 '/'
Side Slope Z-value= 50.0 0.0 '/'

Reach 114R: GUTTER EAST SIDE STORER ST.

Inflow Area = 0.740 ac, Inflow Depth = 4.44"
Inflow = 2.98 cfs @ 12.06 hrs, Volume= 0.274 af
Outflow = 2.98 cfs @ 12.07 hrs, Volume= 0.274 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 4.8 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 1.0 min

Peak Depth= 0.16'
Capacity at bank full= 16.53 cfs
0.00' x 0.30' deep channel, n= 0.016 Length= 115.0' Slope= 0.0806 '/'
Side Slope Z-value= 0.0 50.0 '/'

Reach 122R: GUTTER WEST SIDE STORER ST.

Inflow Area = 0.430 ac, Inflow Depth = 4.91"
Inflow = 1.91 cfs @ 12.05 hrs, Volume= 0.176 af
Outflow = 1.90 cfs @ 12.07 hrs, Volume= 0.176 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 4.3 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 1.1 min

Peak Depth= 0.13'
Capacity at bank full= 16.53 cfs
0.00' x 0.30' deep channel, n= 0.016 Length= 115.0' Slope= 0.0806 '/'
Side Slope Z-value= 50.0 0.0 '/'

Reach 160R: PIPE FROM DETENTION BASIN TO DMH #1

Inflow Area = 0.740 ac, Inflow Depth = 1.00"
Inflow = 0.05 cfs @ 10.10 hrs, Volume= 0.062 af
Outflow = 0.05 cfs @ 10.20 hrs, Volume= 0.061 af, Atten= 0%, Lag= 6.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 3.0 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.8 fps, Avg. Travel Time= 1.3 min

Peak Depth= 0.06'
Capacity at bank full= 2.72 cfs
8.0" Diameter Pipe n= 0.010 Length= 220.0' Slope= 0.0300 '/'

Reach 161R: PIPE DMH #3 TO DMH #2

Inflow Area = 0.560 ac, Inflow Depth = 4.70"
Inflow = 2.15 cfs @ 12.12 hrs, Volume= 0.219 af
Outflow = 2.13 cfs @ 12.13 hrs, Volume= 0.219 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 8.6 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.1 fps, Avg. Travel Time= 0.6 min

Peak Depth= 0.45'
Capacity at bank full= 2.72 cfs
8.0" Diameter Pipe n= 0.010 Length= 118.0' Slope= 0.0300 '/'

Reach 170R: GUTTER ALONG N SIDE DANFORTH

Inflow Area = 1.170 ac, Inflow Depth = 4.62"
Inflow = 4.88 cfs @ 12.07 hrs, Volume= 0.450 af
Outflow = 4.57 cfs @ 12.12 hrs, Volume= 0.450 af, Atten= 6%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 3.7 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 1.5 fps, Avg. Travel Time= 4.3 min

Peak Depth= 0.23'
Capacity at bank full= 21.71 cfs
0.00' x 0.40' deep channel, n= 0.016 Length= 385.0' Slope= 0.0300 '/'
Side Slope Z-value= 50.0 0.0 '/'

Reach 180R: EXISTING COMBINED SEWER IN DANFORTH

Inflow Area = 0.962 ac, Inflow Depth = 4.74"
Inflow = 4.51 cfs @ 12.07 hrs, Volume= 0.380 af
Outflow = 4.44 cfs @ 12.08 hrs, Volume= 0.380 af, Atten= 2%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 6.5 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.3 fps, Avg. Travel Time= 1.1 min

Peak Depth= 0.82'
Capacity at bank full= 4.47 cfs
12.0" Diameter Pipe n= 0.015 Length= 150.0' Slope= 0.0209 '/'

P.O.4

4

Pond 206P: CB AT FLTCHR & DNFRTH

Inflow Area =	2.470 ac,	Inflow Depth =	3.55"	
Inflow =	6.76 cfs @	12.12 hrs, Volume=	0.730 af	
Outflow =	6.74 cfs @	12.12 hrs, Volume=	0.729 af,	Atten= 0%, Lag= 0.0 min
Primary =	6.74 cfs @	12.12 hrs, Volume=	0.729 af	
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs / 2

Peak Elev= 106.92' Surf.Area= 13 sf Storage= 24 cf
Plug-Flow detention time= 1.1 min calculated for 0.729 af (100% of inflow)
Storage and wetted areas determined by Prismatic sections

does not overtop grate

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
105.00	13	0	0
109.00	13	50	50
109.10	3	1	51
110.90	3	5	56

Primary OutFlow Max=6.56 cfs @ 12.12 hrs HW=106.86' (Free Discharge)
↑—**1=Culvert** (Controls 6.56 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=105.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

#	Routing	Invert	Outlet Devices
1	Primary	105.00'	**15.0" x 300.0' long Culvert** Ke= 0.500 Outlet Invert= 90.00' S= 0.0500 '/' n= 0.016 Cc= 0.900
2	Secondary	110.80'	**2.0' long Broad-Crested Rectangular Weir X 1.81** Head (feet) 0.50 1.00 Coef. (English) 1.45 1.44

Pond 207P: CB W1

Inflow Area =	0.878 ac,	Inflow Depth =	4.69"	
Inflow =	4.34 cfs @	12.01 hrs, Volume=	0.343 af	
Outflow =	4.16 cfs @	12.02 hrs, Volume=	0.343 af,	Atten= 4%, Lag= 0.6 min
Primary =	4.16 cfs @	12.02 hrs, Volume=	0.343 af	

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Peak Elev= 135.38' Surf.Area= 8 sf Storage= 76 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.00	13	0	0
134.00	13	65	65
137.00	3	24	89

Primary OutFlow Max=3.95 cfs @ 12.02 hrs HW=134.85' (Free Discharge)
↑—**1=Culvert** (Controls 3.95 cfs)

#	Routing	Invert	Outlet Devices
1	Primary	129.00'	**8.0" x 50.0' long Culvert** Ke= 0.500 Outlet Invert= 121.00' S= 0.1600 '/' n= 0.015 Cc= 0.900

Pond 210P: IN SANCTUARY, FI #1 & CB #1, 2, 3 & 4

Inflow Area =	0.460 ac, Inflow Depth = 4.57"		
Inflow =	1.80 cfs @ 12.13 hrs, Volume=	0.175 af	
Outflow =	1.78 cfs @ 12.13 hrs, Volume=	0.175 af, Atten= 1%, Lag= 0.1 min	
Primary =	1.78 cfs @ 12.13 hrs, Volume=	0.175 af	
Secondary =	0.00 cfs @ 0.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs / 2

Peak Elev= 131.44' Storage= 18 cf
Plug-Flow detention time= 1.4 min calculated for 0.175 af (100% of inflow)

Slight surcharging
131.44 − 130.00
1.44' − .67 (ID pipe)
= .77' ok

Elevation (feet)	Cum.Store (cubic-feet)
130.00	0
135.00	63
136.70	148
139.00	265
140.00	355
141.00	2,150

Primary OutFlow Max=1.70 cfs @ 12.13 hrs HW=131.36' (Free Discharge)
↑—**1=Culvert** (Controls 1.70 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=130.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

#	Routing	Invert	Outlet Devices
1	Primary	130.00'	**8.0" x 90.0' long Culvert** Ke= 0.500 Outlet Invert= 122.10' S= 0.0878 '/' n= 0.010 Cc= 0.900
2	Secondary	140.80'	**10.0' long Broad-Crested Rectangular Weir X 1.81** Head (feet) 0.50 1.00 1.50 Coef. (English) 1.43 1.47 1.45

Pond 217P: BURIED TANK SW OF FOUNDERS HALL

Inflow Area =	0.962 ac, Inflow Depth = 4.74"		
Inflow =	4.57 cfs @ 12.02 hrs, Volume=	0.380 af	
Outflow =	4.51 cfs @ 12.07 hrs, Volume=	0.380 af, Atten= 1%, Lag= 2.9 min	
Primary =	4.51 cfs @ 12.07 hrs, Volume=	0.380 af	

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Peak Elev= 128.07' Surf.Area= 3 sf Storage= 262 cf
Plug-Flow detention time= 1.0 min calculated for 0.378 af (100% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	50	0	0
125.00	50	250	250
125.10	3	3	253
127.00	3	6	258

Primary OutFlow Max=3.95 cfs @ 12.07 hrs HW=127.41' (Free Discharge)
1=Culvert (Controls 3.27 cfs)
2=Orifice/Grate (Controls 0.68 cfs)

#	Routing	Invert	Outlet Devices
1	Primary	120.00'	**8.0" x 170.0' long Culvert** Ke= 0.500
			Outlet Invert= 108.10' S= 0.0700 '/' n= 0.015 Cc= 0.900
2	Primary	126.90'	**6.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Pond 260P: DETENTION POND

Inflow Area =	0.740 ac, Inflow Depth = 3.24"		
Inflow =	2.49 cfs @ 12.04 hrs, Volume=	0.200 af	
Outflow =	0.05 cfs @ 10.10 hrs, Volume=	0.062 af, Atten= 98%, Lag= 0.0 min	
Primary =	0.05 cfs @ 10.10 hrs, Volume=	0.062 af	
Secondary =	0.00 cfs @ 0.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Peak Elev= 126.15' Surf.Area= 10,281 sf Storage= 6,182 cf
Plug-Flow detention time= 308.6 min calculated for 0.062 af (31% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	300	0	0
126.00	8,941	4,621	4,621
126.30	11,584	3,079	7,699

Primary OutFlow Max=0.05 cfs @ 10.10 hrs HW=125.01' (Free Discharge)
└**1=Exfiltration** (Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

#	Routing	Invert	Outlet Devices
1	Primary	125.00'	**0.05 cfs Exfiltration when above invert**
2	Secondary	126.20'	**100.0' long Broad-Crested Rectangular Weir X 1.81**
			Head (feet) 0.50 1.00
			Coef. (English) 1.43 1.47

Time span=0.00-24.00 hrs, dt=0.10 hrs, 241 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=4.70"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 7S: AREA BTWN THOMAS & DAVIES HALLS & GYM Runoff Area=38,227 sf Runoff Depth=3.90"
Length=285' Tc=4.6 min CN=93 Runoff= 3.65 cfs 0.285 af

Subcatchment 8S: ROOF OF FOUNDERS HALL Runoff Area=3,660 sf Runoff Depth=4.46"
Tc=6.0 min CN=98 Runoff= 0.35 cfs 0.031 af

Subcatchment 10S: AREA DRAINING TO THE SANCTUARY Runoff Area=20,037 sf Runoff Depth=3.79"
Length=100' Tc=13.4 min CN=92 Runoff= 1.50 cfs 0.145 af

Subcatchment 20S: NE CORNER OF BLOCK Runoff Area=0.260 ac Runoff Depth=3.90"
Tc=6.0 min CN=93 Runoff= 1.00 cfs 0.085 af

Subcatchment 30S: AREA EAST SIDE STORER @ SPRING Runoff Area=0.410 ac Runoff Depth=4.46"
Tc=6.0 min CN=98 Runoff= 1.69 cfs 0.152 af

Subcatchment 40S: AREA BTWN STORER & LIBRARY Runoff Area=0.330 ac Runoff Depth=2.72"
Tc=6.0 min CN=81 Runoff= 0.93 cfs 0.075 af

Subcatchment 50S: ENTRANCES ALONG STORER ST. Runoff Area=0.170 ac Runoff Depth=4.46"
Tc=6.0 min CN=98 Runoff= 0.70 cfs 0.063 af

Subcatchment 60S: LAWN/FIELD AREA SOUTH OF SCHOOL + ADDTN Runoff Area=0.740 ac Runoff Depth=2.54"
Tc=6.0 min CN=79 Runoff= 1.96 cfs 0.157 af

Subcatchment 61S: AUDITORIUM ROOF Runoff Area=0.100 ac Runoff Depth=4.46"
Tc=6.0 min CN=98 Runoff= 0.41 cfs 0.037 af

Reach 102R: GUTTER ALONG STORER ST. Peak Depth= 0.12' Max Vel= 2.7 fps Inflow= 1.00 cfs 0.085 af
n=0.016 L=70.0' S=0.0376 '/' Capacity=11.28 cfs Outflow= 0.95 cfs 0.085 af

Reach 103R: GUTTER EAST SIDE STORER ST Peak Depth= 0.15' Max Vel= 2.9 fps Inflow= 1.69 cfs 0.152 af
n=0.016 L=107.0' S=0.0327 '/' Capacity=10.53 cfs Outflow= 1.59 cfs 0.152 af

Reach 104R: GUTTER EAST SIDE STORER ST Peak Depth= 0.13' Max Vel= 4.0 fps Inflow= 1.59 cfs 0.152 af
n=0.016 L=75.0' S=0.0779 '/' Capacity=16.24 cfs Outflow= 1.59 cfs 0.152 af

Reach 112R: GUTTER WEST SIDE STORER ST Peak Depth= 0.13' Max Vel= 4.0 fps Inflow= 1.66 cfs 0.148 af
n=0.016 L=75.0' S=0.0779 '/' Capacity=16.24 cfs Outflow= 1.61 cfs 0.148 af

Reach 114R: GUTTER EAST SIDE STORER ST Peak Depth= 0.15' Max Vel= 4.6 fps Inflow= 2.48 cfs 0.227 af
n=0.016 L=115.0' S=0.0806 '/' Capacity=16.53 cfs Outflow= 2.47 cfs 0.227 af

Reach 122R: GUTTER WEST SIDE STORER ST Peak Depth= 0.13' Max Vel= 4.1 fps Inflow= 1.61 cfs 0.148 af
n=0.016 L=115.0' S=0.0806 '/' Capacity=16.53 cfs Outflow= 1.61 cfs 0.148 af

Reach 160R: PIPE FROM DETENTION BASIN TO DMH #1 Peak Depth= 0.06' Max Vel= 3.0 fps Inflow= 0.05 cfs 0.059 af
D=8.0" n=0.010 L=220.0' S=0.0300 '/' Capacity=2.72 cfs Outflow= 0.05 cfs 0.059 af

Reach 161R: PIPE DMH #3 TO DMH #2 Peak Depth= 0.40' Max Vel= 8.3 fps Inflow= 1.82 cfs 0.182 af
D=8.0" n=0.010 L=118.0' S=0.0300 '/' Capacity=2.72 cfs Outflow= 1.80 cfs 0.182 af

Reach 170R: GUTTER ALONG N SIDE DANFORTH Peak Depth= 0.21' Max Vel= 3.6 fps Inflow= 4.08 cfs 0.375 af
n=0.016 L=385.0' S=0.0300 '/' Capacity=21.71 cfs Outflow= 3.80 cfs 0.374 af

Reach 180R: EXISTING COMBINED SEWER IN DANFORTH Peak Depth= 0.71' Max Vel= 6.4 fps Inflow= 3.87 cfs 0.317 af
D=12.0" n=0.015 L=150.0' S=0.0209 '/' Capacity=4.47 cfs Outflow= 3.77 cfs 0.317 af

Pond 206P: CB AT FLTCHR & DNFRTH P.O.A. Peak Storage= 19 cf @ 106.53' Inflow= 5.65 cfs 0.616 af
Primary= 5.65 cfs 0.615 af Secondary= 0.00 cfs 0.000 af Outflow= 5.65 cfs 0.615 af

Pond 207P: CB W1 Peak Storage= 60 cf @ 133.62' Inflow= 3.65 cfs 0.285 af
Primary= 3.50 cfs 0.285 af Outflow= 3.50 cfs 0.285 af

Pond 210P: IN SANCTUARY, FI #1 & CB #1, 2, 3 & 4 Peak Storage= 14 cf @ 131.11' Inflow= 1.50 cfs 0.145 af
Primary= 1.49 cfs 0.145 af Secondary= 0.00 cfs 0.000 af Outflow= 1.49 cfs 0.145 af

Pond 217P: BURIED TANK SW OF FOUNDERS HALL Peak Storage= 259 cf @ 127.36' Inflow= 3.85 cfs 0.317 af
Primary= 3.87 cfs 0.317 af Outflow= 3.87 cfs 0.317 af

Pond 260P: DETENTION POND Peak Storage= 4,578 cf @ 125.99' Inflow= 1.96 cfs 0.157 af
Primary= 0.05 cfs 0.059 af Secondary= 0.00 cfs 0.000 af Outflow= 0.05 cfs 0.059 af

Total Runoff Area = 3.432 ac Runoff Volume = 1.031 af Average Runoff Depth = 3.61"

Time span=0.00-24.00 hrs, dt=0.10 hrs, 241 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=3.00"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 7S: AREA BTWN THOMAS & DAVIES HALLS & GYM Runoff Area=38,227 sf Runoff Depth=2.25"
Length=285' Tc=4.6 min CN=93 Runoff= 2.17 cfs 0.165 af

Subcatchment 8S: ROOF OF FOUNDERS HALL Runoff Area=3,660 sf Runoff Depth=2.77"
Tc=6.0 min CN=98 Runoff= 0.22 cfs 0.019 af

Subcatchment 10S: AREA DRAINING TO THE SANCTUARY Runoff Area=20,037 sf Runoff Depth=2.16"
Length=100' Tc=13.4 min CN=92 Runoff= 0.88 cfs 0.083 af

Subcatchment 20S: NE CORNER OF BLOCK Runoff Area=0.260 ac Runoff Depth=2.25"
Tc=6.0 min CN=93 Runoff= 0.60 cfs 0.049 af

Subcatchment 30S: AREA EAST SIDE STORER @ SPRING Runoff Area=0.410 ac Runoff Depth=2.77"
Tc=6.0 min CN=98 Runoff= 1.07 cfs 0.095 af

Subcatchment 40S: AREA BTWN STORER & LIBRARY Runoff Area=0.330 ac Runoff Depth=1.31"
Tc=6.0 min CN=81 Runoff= 0.44 cfs 0.036 af

Subcatchment 50S: ENTRANCES ALONG STORER ST. Runoff Area=0.170 ac Runoff Depth=2.77"
Tc=6.0 min CN=98 Runoff= 0.44 cfs 0.039 af

Subcatchment 60S: LAWN/FIELD AREA SOUTH OF SCHOOL + ADDTN Runoff Area=0.740 ac Runoff Depth=1.19"
Tc=6.0 min CN=79 Runoff= 0.89 cfs 0.073 af

Subcatchment 61S: AUDITORIUM ROOF Runoff Area=0.100 ac Runoff Depth=2.77"
Tc=6.0 min CN=98 Runoff= 0.26 cfs 0.023 af

Reach 102R: GUTTER ALONG STORER ST. Peak Depth= 0.10' Max Vel= 2.4 fps Inflow= 0.60 cfs 0.049 af
n=0.016 L=70.0' S=0.0376 '/' Capacity=11.28 cfs Outflow= 0.57 cfs 0.049 af

Reach 103R: GUTTER EAST SIDE STORER ST Peak Depth= 0.13' Max Vel= 2.6 fps Inflow= 1.07 cfs 0.095 af
n=0.016 L=107.0' S=0.0327 '/' Capacity=10.53 cfs Outflow= 1.01 cfs 0.095 af

Reach 104R: GUTTER EAST SIDE STORER ST Peak Depth= 0.11' Max Vel= 3.6 fps Inflow= 1.01 cfs 0.095 af
n=0.016 L=75.0' S=0.0779 '/' Capacity=16.24 cfs Outflow= 1.01 cfs 0.095 af

Reach 112R: GUTTER WEST SIDE STORER ST Peak Depth= 0.11' Max Vel= 3.6 fps Inflow= 1.01 cfs 0.088 af
n=0.016 L=75.0' S=0.0779 '/' Capacity=16.24 cfs Outflow= 0.98 cfs 0.088 af

Reach 114R: GUTTER EAST SIDE STORER ST Peak Depth= 0.12' Max Vel= 4.0 fps Inflow= 1.43 cfs 0.131 af
n=0.016 L=115.0' S=0.0806 '/' Capacity=16.53 cfs Outflow= 1.43 cfs 0.131 af

Reach 122R: GUTTER WEST SIDE STORER ST Peak Depth= 0.10' Max Vel= 3.6 fps Inflow= 0.98 cfs 0.088 af
n=0.016 L=115.0' S=0.0806 '/' Capacity=16.53 cfs Outflow= 0.98 cfs 0.088 af

Reach 160R: PIPE FROM DETENTION BASIN TO DMH #1 Peak Depth= 0.06' Max Vel= 3.0 fps Inflow= 0.05 cfs 0.053 af
D=8.0" n=0.010 L=220.0' S=0.0300 '/' Capacity=2.72 cfs Outflow= 0.05 cfs 0.053 af

Reach 161R: PIPE DMH #3 TO DMH #2 Peak Depth= 0.29' Max Vel= 7.3 fps Inflow= 1.08 cfs 0.106 af
D=8.0" n=0.010 L=118.0' S=0.0300 '/' Capacity=2.72 cfs Outflow= 1.07 cfs 0.106 af

Reach 170R: GUTTER ALONG N SIDE DANFORTH Peak Depth= 0.17' Max Vel= 3.1 fps Inflow= 2.40 cfs 0.219 af
n=0.016 L=385.0' S=0.0300 '/' Capacity=21.71 cfs Outflow= 2.19 cfs 0.218 af

Reach 180R: EXISTING COMBINED SEWER IN DANFORTH Peak Depth=0.50' Max Vel= 5.6 fps Inflow= 2.20 cfs 0.184 af
D=12.0" n=0.015 L=150.0' S=0.0209 '/' Capacity=4.47 cfs Outflow= 2.18 cfs 0.184 af

Pond 206P: CB AT FLTCHR & DNFRTH P.O.A. Peak Storage= 12 cf @ 105.95' Inflow= 3.31 cfs 0.377 af
Primary= 3.31 cfs 0.377 af Secondary= 0.00 cfs 0.000 af Outflow= 3.31 cfs 0.377 af

Pond 207P: CB W1 Peak Storage= 25 cf @ 130.89' Inflow= 2.17 cfs 0.165 af
Primary= 2.11 cfs 0.165 af Outflow= 2.11 cfs 0.165 af

Pond 210P: IN SANCTUARY, FI #1 & CB #1, 2, 3 & 4 Peak Storage= 8 cf @ 130.60' Inflow= 0.88 cfs 0.083 af
Primary= 0.87 cfs 0.083 af Secondary= 0.00 cfs 0.000 af Outflow= 0.87 cfs 0.083 af

Pond 217P: BURIED TANK SW OF FOUNDERS HALL Peak Storage= 100 cf @ 122.00' Inflow= 2.33 cfs 0.184 af
Primary= 2.20 cfs 0.184 af Outflow= 2.20 cfs 0.184 af

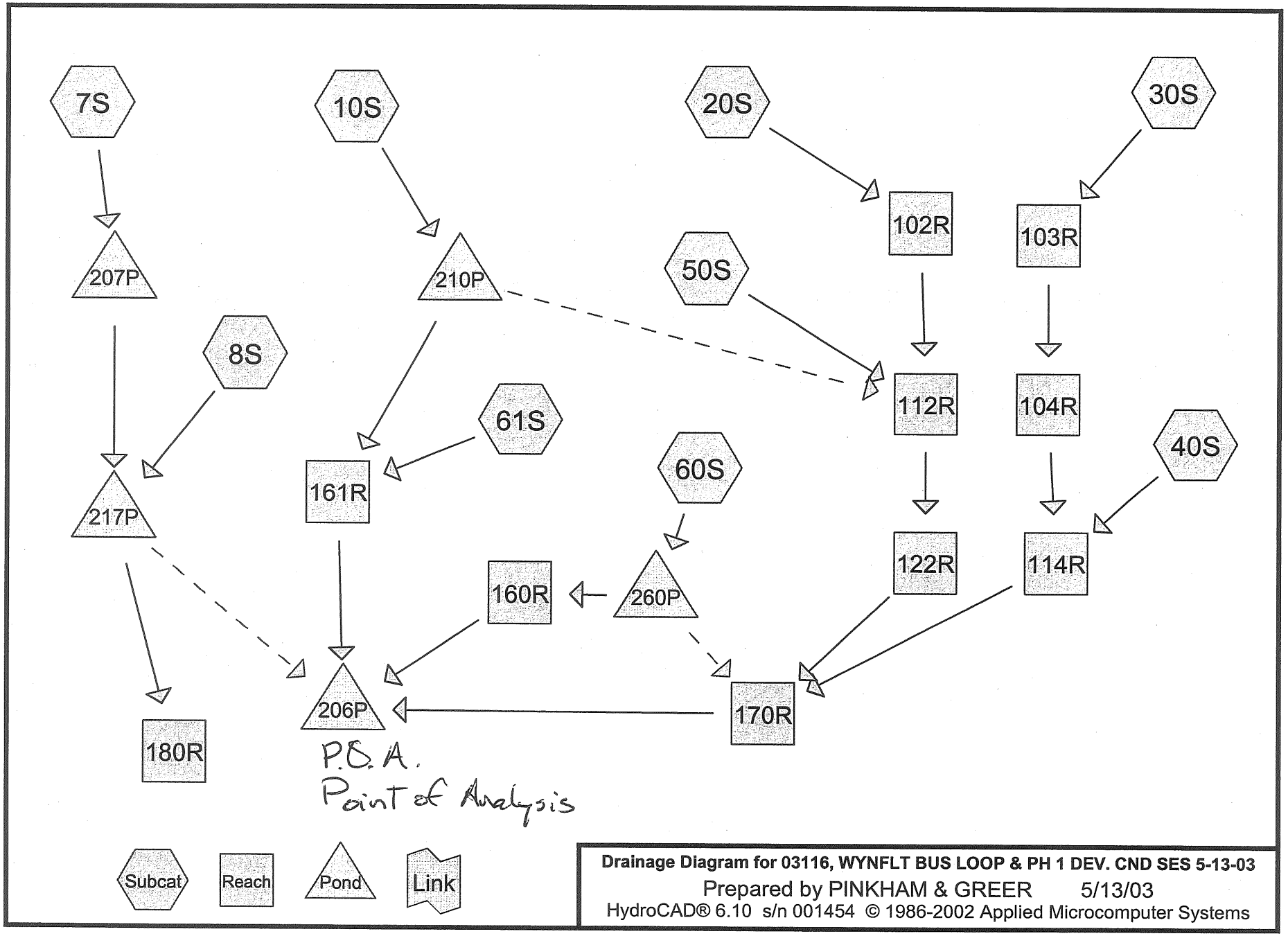
Pond 260P: DETENTION POND Peak Storage= 1,669 cf @ 125.36' Inflow= 0.89 cfs 0.073 af
Primary= 0.05 cfs 0.053 af Secondary= 0.00 cfs 0.000 af Outflow= 0.05 cfs 0.053 af

Total Runoff Area = 3.432 ac Runoff Volume = 0.582 af Average Runoff Depth = 2.04"

APPENDIX D

HYDROCAD CALCULATIONS
DEVELOPED CONDITION

DAVIES HALL EXPANSION COMPLETED
BUS LOOP PROPOSED


7S
10S
20S
30S
207P
210P
102R
103R
50S
8S
112R
104R
61S
60S
40S
217P
161R
122R
114R
160R
260P
206P
170R
180R
P.O.A.
Point of Analysis
Subcat
Reach
Pond
Link
Drainage Diagram for 03116, WYNFLT BUS LOOP & PH 1 DEV. CND SES 5-13-03
Prepared by PINKHAM & GREER 5/13/03
HydroCAD® 6.10 s/n 001454 © 1986-2002 Applied Microcomputer Systems

Subcatchment 7S: AREA BTWN THOMAS & DAVIES HALLS & GYM

Runoff = 3.73 cfs @ 12.01 hrs, Volume= 0.295 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (sf)	CN	Description
2,643	98	DAVIES HALL
1,536	98	THOMAS HALL
7,654	98	GYMNASIUM
6,328	98	WALKS, STEPS & DECK
5,499	98	PRKNG LT & DRIVES
3,027	98	WOODCHIP PLAYGROUNDS
6,224	74	LAWN, GOOD COND, HSG C
32,911	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	40	0.0406	0.2		**Sheet Flow, TO SE OFF LAWN OF THOMAS HALL** Grass: Short n= 0.150 P2= 3.00"
0.7	135	0.0278	3.4		**Shallow Concentrated Flow, TO SOUTH ACROSS PRKNG LT** Paved Kv= 20.3 fps
0.2	110	0.0369	8.6	3.02	**Circular Channel (pipe), PIPE CB W2 TO CB W1** Diam= 8.0" Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010
4.6	285	Total			

Subcatchment 8S: ROOF OF FOUNDERS HALL

Runoff = 0.41 cfs @ 12.03 hrs, Volume= 0.037 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (sf)	CN	Description
3,660	98	ROOF

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, ACROSS ROOF TO ROOF DRAINS**

Subcatchment 10S: AREA DRAINING TO THE SANCTUARY

Runoff = 2.19 cfs @ 12.03 hrs, Volume= 0.176 af, Depth= 3.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (sf)	CN	Description
6,461	39	LAWN, GOOD CND, HSG A
5,227	98	BLDGS
13,665	98	PVMNT
25,353	83	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Segment ID:**

Subcatchment 20S: NE CORNER OF BLOCK

Runoff = 1.20 cfs @ 12.03 hrs, Volume= 0.102 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.050	74	LAWN, GOOD CND, HSG C (GUESS)
0.040	98	BLDGS
0.170	98	PVMNT
0.260	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, EAST TO STORER ST.**

Subcatchment 30S: AREA EAST SIDE STORER @ SPRING

Runoff = 1.98 cfs @ 12.03 hrs, Volume= 0.180 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.120	98	BLDGS
0.290	98	PVMNT
0.410	98	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TO SW TO STORER ST.**

Subcatchment 40S: AREA BTWN STORER & LIBRARY

Runoff = 1.18 cfs @ 12.04 hrs, Volume= 0.094 af, Depth= 3.43"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.240	74	LAWN, GOOD CND, HSG C
0.090	98	PVMNT
0.330	81	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TO SOUTH TO STORER ST.**

Subcatchment 50S: ENTRANCES ALONG STORER ST.

Runoff = 0.82 cfs @ 12.03 hrs, Volume= 0.075 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.040	98	BLDGS
0.130	98	PVMNT
0.170	98	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TO STORER ST.**

Subcatchment 60S: LAWN/FIELD AREA SOUTH OF SCHOOL + ADDTN

Runoff = 2.49 cfs @ 12.04 hrs, Volume= 0.200 af, Depth= 3.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.600	74	LAWN, GOOD CND, HSG C
0.070	98	BLDGS INCLDNG ADDTN
0.070	98	PVMNT INCLDNG SRVC ENTRNC
0.740	79	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TO SOUTH TOWARD DANFORTH ST.**

Subcatchment 61S: AUDITORIUM ROOF

Runoff = 0.48 cfs @ 12.03 hrs, Volume= 0.044 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type III 24-hr Rainfall=5.50"

Area (ac)	CN	Description
0.100	98	AUDITORIUM ROOF

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, FLOW OFF FLAT ROOF**

Reach 102R: GUTTER ALONG STORER ST.

Inflow Area = 0.260 ac, Inflow Depth = 4.69"
Inflow = 1.20 cfs @ 12.03 hrs, Volume= 0.102 af
Outflow = 1.14 cfs @ 12.05 hrs, Volume= 0.102 af, Atten= 4%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 2.8 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.1 fps, Avg. Travel Time= 1.0 min

Peak Depth= 0.13'
Capacity at bank full= 11.28 cfs
0.00' x 0.30' deep channel, n= 0.016 Length= 70.0' Slope= 0.0376 '/'
Side Slope Z-value= 50.0 0.0 '/'

Reach 103R: GUTTER EAST SIDE STORER ST.

Inflow Area = 0.410 ac, Inflow Depth = 5.26"
Inflow = 1.98 cfs @ 12.03 hrs, Volume= 0.180 af
Outflow = 1.87 cfs @ 12.06 hrs, Volume= 0.180 af, Atten= 6%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 3.0 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.2 fps, Avg. Travel Time= 1.4 min

Peak Depth= 0.16'
Capacity at bank full= 10.53 cfs
0.00' x 0.30' deep channel, n= 0.016 Length= 107.0' Slope= 0.0327 '/'
Side Slope Z-value= 0.0 50.0 '/'

Reach 104R: GUTTER EAST SIDE STORER ST.

Inflow Area = 0.410 ac, Inflow Depth = 5.26"
Inflow = 1.87 cfs @ 12.06 hrs, Volume= 0.180 af
Outflow = 1.87 cfs @ 12.07 hrs, Volume= 0.180 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 4.2 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 0.7 min

Peak Depth= 0.13'
Capacity at bank full= 16.24 cfs
0.00' x 0.30' deep channel, n= 0.016 Length= 75.0' Slope= 0.0779 '/'
Side Slope Z-value= 0.0 50.0 '/'

Reach 112R: GUTTER WEST SIDE STORER ST.

Inflow Area = 0.430 ac, Inflow Depth = 4.91"
Inflow = 1.96 cfs @ 12.04 hrs, Volume= 0.176 af
Outflow = 1.91 cfs @ 12.05 hrs, Volume= 0.176 af, Atten= 3%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 4.2 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 0.7 min

Peak Depth= 0.14'
Capacity at bank full= 16.24 cfs
0.00' x 0.30' deep channel, n= 0.016 Length= 75.0' Slope= 0.0779 '/'
Side Slope Z-value= 50.0 0.0 '/'

Reach 114R: GUTTER EAST SIDE STORER ST.

Inflow Area = 0.740 ac, Inflow Depth = 4.44"
Inflow = 2.98 cfs @ 12.06 hrs, Volume= 0.274 af
Outflow = 2.98 cfs @ 12.07 hrs, Volume= 0.274 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 4.8 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.9 fps, Avg. Travel Time= 1.0 min

Peak Depth= 0.16'
Capacity at bank full= 16.53 cfs
0.00' x 0.30' deep channel, n= 0.016 Length= 115.0' Slope= 0.0806 '/'
Side Slope Z-value= 0.0 50.0 '/'

Reach 122R: GUTTER WEST SIDE STORER ST.

Inflow Area = 0.430 ac, Inflow Depth = 4.91"
Inflow = 1.91 cfs @ 12.05 hrs, Volume= 0.176 af
Outflow = 1.90 cfs @ 12.07 hrs, Volume= 0.176 af, Atten= 0%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 4.3 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.7 fps, Avg. Travel Time= 1.1 min

Peak Depth= 0.13'
Capacity at bank full= 16.53 cfs
0.00' x 0.30' deep channel, n= 0.016 Length= 115.0' Slope= 0.0806 '/'
Side Slope Z-value= 50.0 0.0 '/'

Reach 160R: PIPE FROM DETENTION BASIN TO DMH #1

Inflow Area = 0.740 ac, Inflow Depth = 1.00"
Inflow = 0.05 cfs @ 10.10 hrs, Volume= 0.062 af
Outflow = 0.05 cfs @ 10.20 hrs, Volume= 0.061 af, Atten= 0%, Lag= 6.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 3.0 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.8 fps, Avg. Travel Time= 1.3 min

Peak Depth= 0.06'
Capacity at bank full= 2.72 cfs
8.0" Diameter Pipe n= 0.010 Length= 220.0' Slope= 0.0300 '/'

Reach 161R: PIPE DMH #3 TO DMH #2

Inflow Area = 0.682 ac, Inflow Depth = 3.86"
Inflow = 2.63 cfs @ 12.03 hrs, Volume= 0.219 af
Outflow = 2.57 cfs @ 12.05 hrs, Volume= 0.219 af, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 8.8 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.0 fps, Avg. Travel Time= 0.6 min

Peak Depth= 0.52'
Capacity at bank full= 2.72 cfs
8.0" Diameter Pipe n= 0.010 Length= 118.0' Slope= 0.0300 '/'

Reach 170R: GUTTER ALONG N SIDE DANFORTH

Inflow Area = 1.170 ac, Inflow Depth = 4.62"
Inflow = 4.88 cfs @ 12.07 hrs, Volume= 0.450 af
Outflow = 4.57 cfs @ 12.12 hrs, Volume= 0.450 af, Atten= 6%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 3.7 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 1.5 fps, Avg. Travel Time= 4.3 min

Peak Depth= 0.23'
Capacity at bank full= 21.71 cfs
0.00' x 0.40' deep channel, n= 0.016 Length= 385.0' Slope= 0.0300 '/'
Side Slope Z-value= 50.0 0.0 '/'

Reach 180R: EXISTING COMBINED SEWER IN DANFORTH

Inflow Area = 0.840 ac, Inflow Depth = 4.75"
Inflow = 4.11 cfs @ 12.08 hrs, Volume= 0.332 af
Outflow = 3.98 cfs @ 12.09 hrs, Volume= 0.332 af, Atten= 3%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Max. Velocity= 6.4 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 2.2 fps, Avg. Travel Time= 1.1 min

Peak Depth= 0.75'
Capacity at bank full= 4.47 cfs
12.0" Diameter Pipe n= 0.015 Length= 150.0' Slope= 0.0209 '/'

Pond 206P: CB AT FLTCHR & DNFRTH

P.O.A.

Inflow Area =	2.592 ac,	Inflow Depth =	3.38"	
Inflow =	6.99 cfs @	12.09 hrs,	Volume=	0.730 af
Outflow =	6.97 cfs @	12.09 hrs,	Volume=	0.729 af, Atten= 0%, Lag= 0.0 min
Primary =	6.97 cfs @	12.09 hrs,	Volume=	0.729 af
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs / 2

Peak Elev= 107.02' Surf.Area= 13 sf Storage= 25 cf
Plug-Flow detention time= 1.3 min calculated for 0.726 af (99% of inflow)
Storage and wetted areas determined by Prismatic sections

does not overtop grate

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
105.00	13	0	0
109.00	13	50	50
109.10	3	1	51
110.90	3	5	56

Primary OutFlow Max=6.90 cfs @ 12.09 hrs HW=106.99' (Free Discharge)
└**1=Culvert** (Controls 6.90 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=105.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

#	Routing	Invert	Outlet Devices
1	Primary	105.00'	**15.0" x 300.0' long Culvert** Ke= 0.500 Outlet Invert= 90.00' S= 0.0500 '/' n= 0.016 Cc= 0.900
2	Secondary	110.80'	**2.0' long Broad-Crested Rectangular Weir X 1.81** Head (feet) 0.50 1.00 Coef. (English) 1.45 1.44

Pond 207P: CB W1

Inflow Area =	0.756 ac,	Inflow Depth =	4.69"	
Inflow =	3.73 cfs @	12.01 hrs,	Volume=	0.295 af
Outflow =	3.58 cfs @	12.02 hrs,	Volume=	0.295 af, Atten= 4%, Lag= 0.6 min
Primary =	3.58 cfs @	12.02 hrs,	Volume=	0.295 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Peak Elev= 133.82' Surf.Area= 13 sf Storage= 63 cf
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
129.00	13	0	0
134.00	13	65	65
137.00	3	24	89

Primary OutFlow Max=3.40 cfs @ 12.02 hrs HW=133.43' (Free Discharge)
└**1=Culvert** (Controls 3.40 cfs)

#	Routing	Invert	Outlet Devices
1	Primary	129.00'	**8.0" x 50.0' long Culvert** Ke= 0.500 Outlet Invert= 121.00' S= 0.1600 '/' n= 0.015 Cc= 0.900

Pond 210P: IN SANCTUARY, FI #1 & CB #1, 2, 3 & 4

Inflow Area =	0.582 ac,	Inflow Depth =	3.63"
Inflow =	2.19 cfs @	12.03 hrs, Volume=	0.176 af
Outflow =	2.15 cfs @	12.04 hrs, Volume=	0.175 af, Atten= 2%, Lag= 0.1 min
Primary =	2.15 cfs @	12.04 hrs, Volume=	0.175 af
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs / 2

Peak Elev= 131.93' Storage= 24 cf
Plug-Flow detention time= 2.3 min calculated for 0.175 af (99% of inflow)

Slightly more Surcharging than in ex. condition:
131.93 − 131.44 = .49' ok

Elevation (feet)	Cum.Store (cubic-feet)
130.00	0
135.00	63
136.70	148
139.00	265
140.00	355
141.00	2,150

Primary OutFlow Max=2.02 cfs @ 12.04 hrs HW=131.77' (Free Discharge)
└**1=Culvert** (Controls 2.02 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=130.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

#	Routing	Invert	Outlet Devices
1	Primary	130.00'	**8.0" x 90.0' long Culvert** Ke= 0.500 Outlet Invert= 122.10' S= 0.0878 '/' n= 0.010 Cc= 0.900
2	Secondary	140.80'	**10.0' long Broad-Crested Rectangular Weir X 1.81** Head (feet) 0.50 1.00 1.50 Coef. (English) 1.43 1.47 1.45

Pond 217P: BURIED TANK SW OF FOUNDERS HALL

Inflow Area =	0.840 ac, Inflow Depth = 4.75"		
Inflow =	3.99 cfs @ 12.02 hrs, Volume=	0.332 af	
Outflow =	4.11 cfs @ 12.08 hrs, Volume=	0.332 af, Atten= 0%, Lag= 3.4 min	
Primary =	4.11 cfs @ 12.08 hrs, Volume=	0.332 af	

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Peak Elev= 127.64' Surf.Area= 3 sf Storage= 260 cf
Plug-Flow detention time= 1.1 min calculated for 0.332 af (100% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.00	50	0	0
125.00	50	250	250
125.10	3	3	253
127.00	3	6	258

Primary OutFlow Max=3.53 cfs @ 12.08 hrs HW=127.05' (Free Discharge)
└**1=Culvert** (Controls 3.24 cfs)
└**2=Orifice/Grate** (Controls 0.29 cfs)

#	Routing	Invert	Outlet Devices
1	Primary	120.00'	**8.0" x 170.0' long Culvert** Ke= 0.500 Outlet Invert= 108.10' S= 0.0700 '/' n= 0.015 Cc= 0.900
2	Primary	126.90'	**6.0" Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Pond 260P: DETENTION POND

Inflow Area =	0.740 ac, Inflow Depth = 3.24"		
Inflow =	2.49 cfs @ 12.04 hrs, Volume=	0.200 af	
Outflow =	0.05 cfs @ 10.10 hrs, Volume=	0.062 af, Atten= 98%, Lag= 0.0 min	
Primary =	0.05 cfs @ 10.10 hrs, Volume=	0.062 af	
Secondary =	0.00 cfs @ 0.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs

Peak Elev= 126.15' Surf.Area= 10,281 sf Storage= 6,182 cf
Plug-Flow detention time= 308.6 min calculated for 0.062 af (31% of inflow)
Storage and wetted areas determined by Prismatic sections

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	300	0	0
126.00	8,941	4,621	4,621
126.30	11,584	3,079	7,699

Primary OutFlow Max=0.05 cfs @ 10.10 hrs HW=125.01' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

#	Routing	Invert	Outlet Devices
1	Primary	125.00'	**0.05 cfs Exfiltration when above invert**
2	Secondary	126.20'	**100.0' long Broad-Crested Rectangular Weir X 1.81**
			Head (feet) 0.50 1.00
			Coef. (English) 1.43 1.47

Time span=0.00-24.00 hrs, dt=0.10 hrs, 241 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=4.70"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 7S: AREA BTWN THOMAS & DAVIES HALLS & GYM Runoff Area=32,911 sf Runoff Depth=3.90"
Length=285' Tc=4.6 min CN=93 Runoff= 3.14 cfs 0.246 af

Subcatchment 8S: ROOF OF FOUNDERS HALL Runoff Area=3,660 sf Runoff Depth=4.46"
Tc=6.0 min CN=98 Runoff= 0.35 cfs 0.031 af

Subcatchment 10S: AREA DRAINING TO THE SANCTUARY Runoff Area=25,353 sf Runoff Depth=2.90"
Tc=6.0 min CN=83 Runoff= 1.76 cfs 0.141 af

Subcatchment 20S: NE CORNER OF BLOCK Runoff Area=0.260 ac Runoff Depth=3.90"
Tc=6.0 min CN=93 Runoff= 1.00 cfs 0.085 af

Subcatchment 30S: AREA EAST SIDE STORER @ SPRING Runoff Area=0.410 ac Runoff Depth=4.46"
Tc=6.0 min CN=98 Runoff= 1.69 cfs 0.152 af

Subcatchment 40S: AREA BTWN STORER & LIBRARY Runoff Area=0.330 ac Runoff Depth=2.72"
Tc=6.0 min CN=81 Runoff= 0.93 cfs 0.075 af

Subcatchment 50S: ENTRANCES ALONG STORER ST. Runoff Area=0.170 ac Runoff Depth=4.46"
Tc=6.0 min CN=98 Runoff= 0.70 cfs 0.063 af

Subcatchment 60S: LAWN/FIELD AREA SOUTH OF SCHOOL + ADDTN Runoff Area=0.740 ac Runoff Depth=2.54"
Tc=6.0 min CN=79 Runoff= 1.96 cfs 0.157 af

Subcatchment 61S: AUDITORIUM ROOF Runoff Area=0.100 ac Runoff Depth=4.46"
Tc=6.0 min CN=98 Runoff= 0.41 cfs 0.037 af

Reach 102R: GUTTER ALONG STORER ST. Peak Depth= 0.12' Max Vel= 2.7 fps Inflow= 1.00 cfs 0.085 af
n=0.016 L=70.0' S=0.0376 '/' Capacity=11.28 cfs Outflow= 0.95 cfs 0.085 af

Reach 103R: GUTTER EAST SIDE STORER ST Peak Depth= 0.15' Max Vel= 2.9 fps Inflow= 1.69 cfs 0.152 af
n=0.016 L=107.0' S=0.0327 '/' Capacity=10.53 cfs Outflow= 1.59 cfs 0.152 af

Reach 104R: GUTTER EAST SIDE STORER ST Peak Depth= 0.13' Max Vel= 4.0 fps Inflow= 1.59 cfs 0.152 af
n=0.016 L=75.0' S=0.0779 '/' Capacity=16.24 cfs Outflow= 1.59 cfs 0.152 af

Reach 112R: GUTTER WEST SIDE STORER ST. Peak Depth= 0.13' Max Vel= 4.0 fps Inflow= 1.66 cfs 0.148 af
n=0.016 L=75.0' S=0.0779 '/' Capacity=16.24 cfs Outflow= 1.61 cfs 0.148 af

Reach 114R: GUTTER EAST SIDE STORER ST Peak Depth= 0.15' Max Vel= 4.6 fps Inflow= 2.48 cfs 0.227 af
n=0.016 L=115.0' S=0.0806 '/' Capacity=16.53 cfs Outflow= 2.47 cfs 0.227 af

Reach 122R: GUTTER WEST SIDE STORER ST. Peak Depth= 0.13' Max Vel= 4.1 fps Inflow= 1.61 cfs 0.148 af
n=0.016 L=115.0' S=0.0806 '/' Capacity=16.53 cfs Outflow= 1.61 cfs 0.148 af

Reach 160R: PIPE FROM DETENTION BASIN TO DMH #1 Peak Depth= 0.06' Max Vel= 3.0 fps Inflow= 0.05 cfs 0.059 af
D=8.0" n=0.010 L=220.0' S=0.0300 '/' Capacity=2.72 cfs Outflow= 0.05 cfs 0.059 af

Reach 161R: PIPE DMH #3 TO DMH #2 Peak Depth= 0.44' Max Vel= 8.5 fps Inflow= 2.14 cfs 0.178 af
D=8.0" n=0.010 L=118.0' S=0.0300 '/' Capacity=2.72 cfs Outflow= 2.09 cfs 0.178 af

Reach 170R: GUTTER ALONG N SIDE DANFORTH Peak Depth= 0.21' Max Vel= 3.6 fps Inflow= 4.08 cfs 0.375 af
n=0.016 L=385.0' S=0.0300 '/' Capacity=21.71 cfs Outflow= 3.80 cfs 0.374 af

Reach 180R: EXISTING COMBINED SEWER IN DANFORTH Peak Depth= 0.61' Max Vel= 6.1 fps Inflow= 3.07 cfs 0.277 af
D=12.0" n=0.015 L=150.0' S=0.0209 '/' Capacity=4.47 cfs Outflow= 3.05 cfs 0.277 af

Pond 206P: CB AT FLTCHR & DNFRTH P.O.A Peak Storage= 20 cf @ 106.57' Inflow= 5.77 cfs 0.611 af
Primary= 5.76 cfs 0.610 af Secondary= 0.00 cfs 0.000 af Outflow= 5.76 cfs 0.610 af

Pond 207P: CB W1 Peak Storage= 46 cf @ 132.54' Inflow= 3.14 cfs 0.246 af
Primary= 3.03 cfs 0.246 af Outflow= 3.03 cfs 0.246 af

Pond 210P: IN SANCTUARY, FI #1 & CB #1, 2, 3 & 4 Peak Storage= 17 cf @ 131.37' Inflow= 1.76 cfs 0.141 af
Primary= 1.73 cfs 0.140 af Secondary= 0.00 cfs 0.000 af Outflow= 1.73 cfs 0.140 af

Pond 217P: BURIED TANK SW OF FOUNDERS HALL Peak Storage= 210 cf @ 124.20' Inflow= 3.38 cfs 0.277 af
Primary= 3.07 cfs 0.277 af Outflow= 3.07 cfs 0.277 af

Pond 260P: DETENTION POND Peak Storage= 4,578 cf @ 125.99' Inflow= 1.96 cfs 0.157 af
Primary= 0.05 cfs 0.059 af Secondary= 0.00 cfs 0.000 af Outflow= 0.05 cfs 0.059 af

Total Runoff Area = 3.432 ac Runoff Volume = 0.987 af Average Runoff Depth = 3.45"

Time span=0.00-24.00 hrs, dt=0.10 hrs, 241 points
Runoff by SCS TR-20 method, UH=SCS, Type III 24-hr Rainfall=3.00"
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 7S: AREA BTWN THOMAS & DAVIES HALLS & GYM Runoff Area=32,911 sf Runoff Depth=2.25"
Length=285' Tc=4.6 min CN=93 Runoff= 1.86 cfs 0.142 af

Subcatchment 8S: ROOF OF FOUNDERS HALL Runoff Area=3,660 sf Runoff Depth=2.77"
Tc=6.0 min CN=98 Runoff= 0.22 cfs 0.019 af

Subcatchment 10S: AREA DRAINING TO THE SANCTUARY Runoff Area=25,353 sf Runoff Depth=1.45"
Tc=6.0 min CN=83 Runoff= 0.87 cfs 0.070 af

Subcatchment 20S: NE CORNER OF BLOCK Runoff Area=0.260 ac Runoff Depth=2.25"
Tc=6.0 min CN=93 Runoff= 0.60 cfs 0.049 af

Subcatchment 30S: AREA EAST SIDE STORER @ SPRING Runoff Area=0.410 ac Runoff Depth=2.77"
Tc=6.0 min CN=98 Runoff= 1.07 cfs 0.095 af

Subcatchment 40S: AREA BTWN STORER & LIBRARY Runoff Area=0.330 ac Runoff Depth=1.31"
Tc=6.0 min CN=81 Runoff= 0.44 cfs 0.036 af

Subcatchment 50S: ENTRANCES ALONG STORER ST. Runoff Area=0.170 ac Runoff Depth=2.77"
Tc=6.0 min CN=98 Runoff= 0.44 cfs 0.039 af

Subcatchment 60S: LAWN/FIELD AREA SOUTH OF SCHOOL + ADDTN Runoff Area=0.740 ac Runoff Depth=1.19"
Tc=6.0 min CN=79 Runoff= 0.89 cfs 0.073 af

Subcatchment 61S: AUDITORIUM ROOF Runoff Area=0.100 ac Runoff Depth=2.77"
Tc=6.0 min CN=98 Runoff= 0.26 cfs 0.023 af

Reach 102R: GUTTER ALONG STORER ST. Peak Depth= 0.10' Max Vel= 2.4 fps Inflow= 0.60 cfs 0.049 af
n=0.016 L=70.0' S=0.0376 '/' Capacity=11.28 cfs Outflow= 0.57 cfs 0.049 af

Reach 103R: GUTTER EAST SIDE STORER ST. Peak Depth= 0.13' Max Vel= 2.6 fps Inflow= 1.07 cfs 0.095 af
n=0.016 L=107.0' S=0.0327 '/' Capacity=10.53 cfs Outflow= 1.01 cfs 0.095 af

Reach 104R: GUTTER EAST SIDE STORER ST. Peak Depth= 0.11' Max Vel= 3.6 fps Inflow= 1.01 cfs 0.095 af
n=0.016 L=75.0' S=0.0779 '/' Capacity=16.24 cfs Outflow= 1.01 cfs 0.095 af

Reach 112R: GUTTER WEST SIDE STORER ST. Peak Depth= 0.11' Max Vel= 3.6 fps Inflow= 1.01 cfs 0.088 af
n=0.016 L=75.0' S=0.0779 '/' Capacity=16.24 cfs Outflow= 0.98 cfs 0.088 af

Reach 114R: GUTTER EAST SIDE STORER ST. Peak Depth= 0.12' Max Vel= 4.0 fps Inflow= 1.43 cfs 0.131 af
n=0.016 L=115.0' S=0.0806 '/' Capacity=16.53 cfs Outflow= 1.43 cfs 0.131 af

Reach 122R: GUTTER WEST SIDE STORER ST. Peak Depth= 0.10' Max Vel= 3.6 fps Inflow= 0.98 cfs 0.088 af
n=0.016 L=115.0' S=0.0806 '/' Capacity=16.53 cfs Outflow= 0.98 cfs 0.088 af

Reach 160R: PIPE FROM DETENTION BASIN TO DMH #1 Peak Depth= 0.06' Max Vel= 3.0 fps Inflow= 0.05 cfs 0.053 af
D=8.0" n=0.010 L=220.0' S=0.0300 '/' Capacity=2.72 cfs Outflow= 0.05 cfs 0.053 af

Reach 161R: PIPE DMH #3 TO DMH #2 Peak Depth= 0.30' Max Vel= 7.3 fps Inflow= 1.13 cfs 0.093 af
D=8.0" n=0.010 L=118.0' S=0.0300 '/' Capacity=2.72 cfs Outflow= 1.08 cfs 0.093 af

Reach 170R: GUTTER ALONG N SIDE DANFORTH Peak Depth= 0.17' Max Vel= 3.1 fps Inflow= 2.40 cfs 0.219 af
n=0.016 L=385.0' S=0.0300 '/' Capacity=21.71 cfs Outflow= 2.19 cfs 0.218 af

Reach 180R: EXISTING COMBINED SEWER IN DANFORTH Peak Depth=0.46' Max Vel= 5.4 fps Inflow= 1.92 cfs 0.161 af
D=12.0" n=0.015 L=150.0' S=0.0209 '/' Capacity=4.47 cfs Outflow= 1.91 cfs 0.161 af

Pond 206P: CB AT FLTCHR & DNFRTH P.O.A Peak Storage= 12 cf @ 105.93' Inflow= 3.24 cfs 0.365 af
Primary= 3.24 cfs 0.365 af Secondary= 0.00 cfs 0.000 af Outflow= 3.24 cfs 0.365 af

Pond 207P: CB W1 Peak Storage= 19 cf @ 130.50' Inflow= 1.86 cfs 0.142 af
Primary= 1.82 cfs 0.142 af Outflow= 1.82 cfs 0.142 af

Pond 210P: IN SANCTUARY, FI #1 & CB #1, 2, 3 & 4 Peak Storage= 8 cf @ 130.60' Inflow= 0.87 cfs 0.070 af
Primary= 0.87 cfs 0.070 af Secondary= 0.00 cfs 0.000 af Outflow= 0.87 cfs 0.070 af

Pond 217P: BURIED TANK SW OF FOUNDERS HALL Peak Storage= 80 cf @ 121.61' Inflow= 2.04 cfs 0.161 af
Primary= 1.92 cfs 0.161 af Outflow= 1.92 cfs 0.161 af

Pond 260P: DETENTION POND Peak Storage= 1,669 cf @ 125.36' Inflow= 0.89 cfs 0.073 af
Primary= 0.05 cfs 0.053 af Secondary= 0.00 cfs 0.000 af Outflow= 0.05 cfs 0.053 af

Total Runoff Area = 3.432 ac Runoff Volume = 0.547 af Average Runoff Depth = 1.91"

GPL's TESTIMONY AT MAY 19 PUBLIC HEARING

ATT. 96.

My name is Marjorie Shaw. I am Vice President of Greater Portland Landmarks. Our Director, Martha DePrez, could not be here tonight, so I have been asked to make this statement on behalf of Landmarks:

Landmarks shares the concerns about bringing an institutional scale to this residential neighborhood. However, we are also cognizant of the careful balancing required to promote continued viability of existing institutional uses without allowing them to overwhelm their residential neighbors. In this balancing, it has always been the policy of the City to encourage institutions to optimize the utility of structures within their campus. This has generally been viewed as much preferable to trying to expand into adjacent residential areas.

Waynflete's proposal is consistent with that policy of optimizing use of existing structures within its campus. However, <u>if</u> this connector is going to be allowed, it's impact should be minimized as much as possible. The goal should be to have the two buildings continue to be perceived as separate entities, in keeping with the scale of the surrounding structures.

The setback accomplishes this in part. Aggressive landscaping may help hide this connector even more.

But even given the setback and landscaping, the third floor remains problematic. At least from the Thomas Street perspective, it will change the skyline and merge the buildings into one mass. It would seem relevant for the Committee to focus on how necessary this third floor connector really is. Could a major portion of Waynflete's programmatic needs be met without this most intrusive part? What would be lost if the third floor of the connector was eliminated entirely? How far would that go in making the proposed addition more appropriate under the historic standards? Short of eliminating the third floor entirely, the Committee could also ask the applicant to explore the use of different materials for this portion. Would a transparent glass "skywalk" work? Could it be designed to reinforce the sense of two separate buildings?

While we believe that Waynflete has done a good job of minimizing the footprint of the connector and pulling it back from Spring Street, we believe unresolved issues remain with regard to the necessity of the third floor and the exterior materials, particularly on the Spring Street elevation.

299 Danforth Street
Portland, ME 04102

May 23, 1999

Joseph E. Gray, Jr.
Director of Planning and Urban Development
City Hall, 4th Floor
389 Congress Street
Portland, ME 04101

Dear Mr. Gray:

As a neighbor and abutter of Waynflete School, I am directly impacted by the school's proposed expansion plans and would appreciate your considering my input. While I fully understand the school's need to meet the challenges of growth, changing space needs and public access, I think they could accomplish these objectives with more sensitivity toward the historic character of the neighborhood.

Below are my comments about each of the two proposed projects:

Building Addition to Connect 338 and 342 Spring Street

- The proposed design creates a dark void between the two properties. The new connector building will block any southern light into this area. The landscaping solutions to soften or screen the new construction that were proposed by the school need to be considered realistically given the lack of sun and northern exposure.
- The two square windows on the north elevation, while clearly modern, do not in my opinion respect the scale and pattern of the existing properties and, in turn, only call attention to themselves. Rather than a simple "hyphen" connector, this façade becomes a "bulls eye" target at the end of Thomas Street.
- The connection of these buildings and future buildings will impact the historically residential character of this neighborhood forever.
- I would suggest that a design that incorporates the use of a glass curtain wall would be more appropriate, and would accomplish most of the school's objectives

Building Addition at 64-66 Emery Street

- The proposed addition is extremely large and seriously encroaches on very limited campus green space.
- The 45-degree rotation of the building will cause the massing to look even larger than it really is and disrupt the landscape more than necessary. The presentation drawings to date have not accurately represented the effect this building will have on its immediate environment. While this location seems to be back and behind the

building, it will be very visible from Emery, Danforth and Storer Streets. The fence between the Headmaster's house and this addition will need to come down to accommodate campus circulation. Drainage due to the roof gables will be problematic. The historic campus passageway and green space from Emery Street will be lost.

- The proposed elevation designs are not harmonious with the original design in scale or proportion and do not allow the older building to predominate. Again, the 45-degree rotation is calling attention to itself.
- The Science Addition Study - Schemes A-F, dated 4/30/99, is an attempt by the school to demonstrate why Scheme A (45-degree rotation design) is the best solution when compared to the alternatives. I'd like to suggest that the School explore a more compatible design with existing buildings and one that does not consume the bulk of the campus passageway.
  - Could there be a Scheme G, where the courtyard is filled in and an additional floor(s) is added above the library? The John Calvin Stevens addition would remain untouched.
  - Or a Scheme H, where the height ordinance, which is causing the multi-gabled roof form, could be lifted to allow for a 4th floor meeting room to occur, without all of the acrobatics to accomplish the same goal. The multi-gable feature of the proposed design, which I don't find to be sensitive to the existing building structures, seems to be a high cost to pay for an additional meeting room.

Thank you for your consideration and please feel free to call me at 871-8239 if you have questions about my comments.

Sincerely,

Monty Q. Hagen

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465 Congress Street
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Ann M. Murray*
Frederick F. Costlow*
John B. Lucy*
Anne H. Cressey
Thomas R. McKeon
Carol I. Eisenberg
Paul R. Johnson

*Resident in Bangor Office

In Reply Refer To:

June 4, 1999

Karen Geraghty, City Councilor
City Hall
389 Congress Street
Portland, ME 04101

Re: Renovations at Waynflete School

Dear Karen:

I am writing in support of Waynflete School's plans to connect Ruth Cook Hyde and Morrill House, and to build an extension to the Emery Street building.

I have looked at the plans and attended the neighborhood meeting. I am convinced that Waynflete School is doing everything it can to reduce the effect of these changes on our neighborhood.

The connection between Ruth Cook Hyde and Morrill House is sufficiently back from the facades as to leave the impression of two older houses on Spring Street. With appropriate plantings, I don't think this connector is going to make that much of a difference. As a practical matter, the view between the two buildings is not that attractive.

I understand there is some thought of having a connector of aluminum and glass. I think that would be far less appropriate than what is being suggested. With the exception of a greenhouse or two, I cannot think of another aluminum and glass structure anywhere in the neighborhood.

The additions to the Emery Street building will have almost no impact on the neighborhood. The additional structure is entirely contained within the Waynflete School property, and will be visible from very few angles. While I initially had reservations

about adding a four-story structure to the existing building, but I now believe the extension and planned renovations are not only necessary to the school's programs but will improve the overall appearance of the building. Again, I think the school has done everything that it can to make sure that the street scape is as little changed as possible.

I am concerned that Waynflete School stay in its charming, century-old buildings and remain as a member of our neighborhood. I think we have to be flexible to allow the changes necessary to let the school make the necessary improvements to carry on its programs. I do not believe that the proposed changes will have any significant adverse impact on the neighborhood.

Thank you for your consideration.

Sincerely,

Wendell G. Large (117 Vaughan St.)

WGL:bcd
cc: Joseph E. Gray, Jr., Director of Planning ✓
98902

116 Pine Street
Portland, Maine 04102
May 30, 1999

Mr. Joseph E. Gray, Jr.
Director of Planning
City Hall, 4th Floor
389 Congress Street
Portland, Maine 04101

Dear Mr. Gray,

I am writing to support the expansion/renovation plans proposed by Waynflete School. I have viewed the school's plans and consider them to be sensitive to the historic nature of the West End. The proposed plans respect the residential needs of this neighborhood by striking to preserve the maximum "green" area, which has always been accessible to residents of this area. I understand that the school is responding to their internal program goals, but the size, design and choice of materials is tasteful and appropriate.

Waynflete School is an asset to this neighborhood. I have lived at this address for twenty-one years. The school maintains the campus beautifully. They welcome nearby neighbors to use their facilities appropriately -

i.e. parking during snow storms, playing on their playgrounds, peddling on their hills and perhaps walking through the campus.

The West End as a multi-use neighborhood. My experience is that Washington School has always been a responsive, responsible part of my neighborhood and I hope that their proposal is accepted.

yours truly
Michele Bedard

CHRISTOPHER M. HARTE
564 SPRING STREET
PORTLAND, MAINE 04102

June 1, 1999

Mr. Joseph E. Gray, Jr.
Director of Planning
City Hall, 4th Floor
389 Congress Street
Portland, Maine 04101

Dear Mr. Gray,

I am writing to express my support for Waynflete School's proposed plans to connect the Ruth Cook Hyde and Morrill houses, and build an extension on the Emery Street building.

As a next door neighbor of Waynflete School, I am very impressed with the school's willingness to address the neighborhood's concerns with these projects. I believe Waynflete has made every effort to minimize the footprint of the new construction while making better use of interior space through extensive renovations. These renovations not only meet all appropriate and necessary safety codes, but they are also working to ensure that the school is accessible to all persons with disabilities. I am especially impressed by Waynflete's maintaining as much green space on campus as possible, and using brick and similar materials that I believe will reflect the surrounding neighborhood.

My son attends Waynflete and I am a trustee of the school and, as a result, I have visited many classes in lower, middle and upper schools. Waynflete clearly needs a major upgrade of its science facilities, and it also needs a major renovation of its middle school classrooms and facilities. I believe the school has done as good a job as is possible without expending millions of additional, unproductive dollars to comply with the ADA and with city historic preservation ordinances.

I also write as an owner of an historic house that is next door to the school's administration building on Spring Street. I know firsthand what is required to keep the neighborhood viable and maintain its historic character. I believe Waynflete is an important asset to Portland and the West End and that its plan should be approved.

If you would like to talk with me further, please do not hesitate to contact me at my office, 772-2717.

Sincerely,

Christopher M. Harte

cc: Karen Geraghty, City Councilor, City of Portland
Anne C. Hagstrom, Assistant to the Headmaster, Waynflete School

1 June 1999

Mr. Joseph Gray, Jr.
Director of Planning
City Hall, 4th Floor
Portland, Maine 04101

Dear Mr. Gray:

I am writing on behalf of the building proposal initiated by Waynflete School. I am a resident of Portland and have been living with my husband on Carroll Street in the West End for seventeen years. In addition, I have two children who attend Waynflete.

Several days ago I reviewed the plans to connect Ruth Cook Hyde and Morrill House and build an extension on the Emery Street building. These construction plans appear to fulfill a need for the schoolchildren with disabilities to have access to the classrooms on the upperfloors of these old buildings. It is important that all Waynflete students have safe entry and exists to the learning spaces and these modifications would allow increased use of the upperfloors.

It can be a difficult balance to harmoniously combine the old with the new and I applaud Waynflete's sensitivity to the architectural integrity of these stately buildings with the intended use of compatible materials. I believe that the design and materials have been thoughtfully considered by the school so as to cause as little disruption as possible to the appearance of the existing structures, while fulfilling necessary modifications.

In my years of association with Waynflete School, I have found them to be a responsive and responsible neighbor. I would support the School's proposal to construct the needed additions. With kind regards, I am

Very truly yours,

Margaret A Coit

cc: Karen Geraghty, City Councilor
Ann C. Hagstrom, Assistant to the Headmaster Waynflete School

SETH AND LAURA F. SPRAGUE

June 1, 1999

Historic Preservation Committee
Planning Department
City Hall, Fourth Floor
389 Congress Street
Portland, ME 04101

BY FAX TRANSMISSION 756-8258

Dear Members of the Committee:

RE: WAYNFLETE SCHOOL APPLICATION

We are writing to urge that the Historic Preservation Committee approve proposed renovations at Waynflete School. We have lived on Orchard Street next to Waynflete for eighteen years. Our child is a student there. We are supporters of the Historic Preservation Ordinance.

At a Waynflete neighborhood meeting, we heard a presentation by the School, viewed the plans for construction and renovations, and heard concerns of various neighbors. Waynflete has carefully planned its improvements to have the least impact on the neighborhood. While the Historic Preservation Committee may have suggestions regarding exterior details, we believe the application should be approved. The Historic Preservation Ordinance should not be allowed to be used to thwart the School's improvement efforts when Waynflete has clearly tried to conform to the Ordinance's requirements.

Thank you for your kind consideration.

Sincerely,

28 ORCHARD STREET • PORTLAND, ME • 04102
PHONE: 207 773-6068 • FAX: 207 773-6068

188 Pine Street
Portland, Maine 04102
May 26, 1999

Mr. Joseph Gray, Jr.
Director of Planning
389 Congress Street
Portland, Maine 04101

Dear Joe,

When I went to vote for city elections in early May at the Waynflete gym, I ran into a friend of mine who works at Waynflete. She gave me a impromptu tour of the school to show me where planned changes would be to Hyde and Cook Houses and to the Emery building.

Several things struck me as I walked around the small campus. One, how much more polite the students were than when we first came to town 25 years ago. Two, how very much better the campus looked—buildings and grounds—since Mark Segar has been Headmaster. These changes represent real progress and real pride in place. Three, the changes Mrs. Stockmeyer pointed out made sense for the school, particularly one committed to the neighborhood and to using its buildings well.

Even though I didn't know the furor the planned changes had caused among certain neighbors, I spontaneously called my Councilperson, Karen Geraghty, to tell her that I believed Waynflete had made substantial progress in becoming a good neighbor in act, in deed and in appearance to the West End. She filled me about how some neighbors had not liked the plan, particularly in regards to Historic Preservation issues.

I then asked around the neighborhood and talked to people at the school. Several issues stood out.

One, some neighbors continue to complain about the neighbor Waynflete used to be—the school has changed, and these neighbors should recognize this.

Two, the changes Waynflete suggests appear to be tasteful in observing its neighboring buildings—small footprint, appropriate materials, upgrading greenspace, a space open to all.

Three, the changes are changes a school should make to use existing buildings fully, to make the school handicap accessible, to improve its programs such as science.

In the 1970's I served on the Greater Portland Landmarks board which was learning to be a good neighbor as it helped Portland make important changes to preserve its historic buildings and neighborhoods. But I found the way some members would suggest changes to be inappropriate and embarrassing for GPL. I hope neighbors are now not making the same mistakes in regards to Waynflete.

The school adds to the West End and the City in several important ways. Children, whether attending Reiche or King or Waynflete, help a neighborhood stay in touch with the younger generation. We all know why this is important. The Waynflete school buildings preserve an area green and treed within an relatively congested area of the West End, a space that is open to the community. Would the public schools' grounds looked as well.

A good independent school serves to support all of Portland by influencing positively higher standards at public schools, by modeling educational practices that may take longer for public school bureaucracy to adopt, by being a school for the whole region.

I hope the several West End neighbors in disagreement with the school will start to work with the the whole neighborhood which includes Waynflete.

Sincerely,

Joan Amory

Cc Karen Geraghty
Anne Hagstrom

Alison P. Smith 43 Carleton Street Portland, ME 04102

Tuesday, May 25, 1999

Joseph Gray, Jr.
Director of Planning, City of Portland
389 Congress Street, 4th Floor
Portland, ME 04101

Dear Mr. Gray,

I write today in support of the proposed improvements to Waynflete School.

In planning for the current and future needs of the school, Waynflete has made several decisions that benefit our community. One is the decision not to increase the number of students. Another is the decision to remain in downtown Portland. The third is Waynflete's decision to meet the evolving needs of the school by developing a comprehensive master plan that preserves historic buildings and open space, minimizes the intrusion of necessary new construction and uses design and materials that fit comfortably with the architecture and atmosphere of the neighborhood.

As a resident of Portland's historic West End, I am well aware of the value of various land uses coexisting in harmony. Along with many single and multi-family residences, the neighborhood is home to hospitals, medical offices, retail stores, churches, playgrounds, inns and schools. This diversity of uses gives the neighborhood much of its character.

As an owner of one of the neighborhood's old homes, I am also aware of the tremendous responsibility that such ownership entails. Maintenance, renovation and restoration are costly, often inconvenient and never-ending. It takes a real commitment.

Waynflete has made such a commitment , and has undertaken a systematic effort to maintain and improve its buildings, including raising significant funds to do this. The community benefits greatly from this effort. Waynflete's investment in the property ensures that development is not haphazard, that surrounding property values do not suffer and that traditional public use of the property can continue.

Waynflete has not shirked its obligation to be accountable to the neighborhood, the City of Portland and the school community in any phase of the recent planning. On the contrary, the entire process has been open, with ample opportunity for public input. The result, I believe, is a design that satisfies both the school's and the neighborhood's needs.

Waynflete is a good neighbor and has made every effort to create an attractive proposal that will enhance the school and the neighborhood. I urge you to allow their plans to move forward.

Sincerely,

Alison P. Smith

Alison P. Smith

Daniel A. ZILKHA
150 Vaughan Street
Portland, Maine 04102
(207) 879 0190

May 25, 1999

Mr. Joseph E. Gray, Jr.,
Director of Planning
City Hall, 4th. Floor,
389 Congress Street,
Portland, Maine 04101

Dear Mr. Gray,

I am writing to you as a resident of Vaughan Street, and as a neighbor of the Waynflete School, in support of Waynflete's plans to rationalize and improve their campus.

Having had four children at Waynflete, I am keenly aware of the various infrastructure needs of the School. I also know from these years of involvement that it has been Waynflete's practice to make every attempt to be a good and responsible neighbor. The proposed plans to connect the two houses (Hyde and Morrill), and the extension of the Emery Street building, have sought to address these needs, but with very much the residential character of our neighborhood in mind: the architecture is pleasant, the use of materials judicious and elegant, and the footprint of the construction seems to have reached a good balance between need and discretion. This design is to my mind an example of the School's thoughtfulness towards our neighborhood.

I regularly stroll through the School grounds, and enjoy doing so a great deal. The various functions held there, whether social or civic, are made all the more pleasant by the open spaces and landscaping. My wife and I feel that improvements such as the ones contemplated at this time by the School will not deter in any way from this enjoyment, and will only help the School be a better and safer environment. We support them wholeheartedly.

With kind regards,

Yours sincerely,

Rosa W. Scarcelli
71 Bowdoin Street
Portland, Maine 04102

Mr. Joseph E. Gray, Jr.
Director of Planning
City Hall, 4th Floor
389 Congress Street
Portland, Maine 04101

Via Fax 756-8258

Dear Mr. Gray;

I am a resident of the West End and a neighbor to Waynflete School. Waynflete has been a significant part of my experience living in Portland for more than twenty years. It is a wonderful environment that blends seamlessly into the West End and has for many years. I have used the school property in many ways and have always felt it was an available resource for me as a West End resident.

I support the building plans to connect Ruth Cook Hyde and Morrill House and to build an extension to the Emery Street building. I hope that the small footprint of the additions, preservation of green space, and especially the use of traditional and like materials will be considered in the approval of these additions.

Sincerely,

Rosa W. Scarcelli

Cc: Karen Geraghty, via fax 874-8669
Anne Hagstrom, via fax 772-4782

Jesse Deupree
314 Danforth St.
Portland, ME 04102

May 26, 1999

Mr. Joseph E. Gray, Jr.
Director of Planning
City Hall, Fourth Floor
Portland, ME 04101

Dear Mr. Gray,

I'm writing with regards to the project Waynflete School is proposing for 338-342 Spring Street. This project is currently under city review, by both the Historic Preservation Committee and the Planning Board.

I am writing in favor of this project as Waynflete has proposed it. I am a direct neighbor to the school, living across Danforth Street from the campus. I first became aware of this project when Waynflete began soliciting neighborhood input as part of preparing the Master Plan for the campus that they submitted to the Planning Board 4-5 years ago, when the non-residential use of these buildings was approved. At the time, I, and a number of other neighbors, came to agree that preserving green space and the residential appearance of much of the campus would be best achieved by making selected additions to existing buildings and minimizing additional parking lots. This Master Plan showed the currently proposed addition at 338-342 Spring Street.

Nothing has caused me to change my mind since that time. Waynflete has put a lot of work into controling parking- the major impact the school has on the neighborhood- and their efforts have been successful. I understand this current addition and the others proposed for the campus will not result in any increase in students or staff. I have attended the meetings Waynflete has held for the neighborhood and seen the drawings for this proposed addition and think the approach of a small addition and a discreet design using historical materials is the correct one for this situation.

I have also attended the workshops and the Public Hearing held by the Historic Preservation Committee, and have been astonished by their discussions of sheet aluminum and glass curtain walls for this proposed addition. Waynflete has made a committed effort for a number of years to blend its campus into the neighborhood, an approach that has had the support of the vast majority of those of us that live near the school. For the Historic Preservation Committee to try and impose its own architectural vision on the school is an extraordinary betrayal of that Committee's purpose, and an absurd distortion of the standards under which it is operating.

I urge you to approve Waynflete's proposal, and I urge you as well to review the conduct of the Historic Preservation Committee in this matter.

Sincerely,

Jesse Deupree

cc: Karen Geraghty

32 Orchard Street
Portland, ME 04102

(207) 774-3968

May 25, 1999

BY FAX

Joseph E. Gray, Jr.
Director of Planning
City of Portland
389 Congress Street, 4th Floor
Portland, ME 04101

Dear Mr. Gray,

Re: WAYNFLETE SCHOOL

I write in support of Waynflete School's plans for construction and renovations at its campus in the West End. I am in favor of the plans both to connect two buildings on Spring Street, and to construct an extension behind the school building on Emery Street.

I am a neighbor of the school, a parent of both a current student, and a recently-graduated student, of the school, and a frequent user of its facilities. I am also a member of the board of Greater Portland Landmarks, and so am well aware of the issues of working within the constraints imposed by an historic environment.

It seems to me that the school has worked very hard to minimize the impact of the proposed building plans as far as is realistically possible, and has expressed an extraordinary willingness to work with the neighborhood and with the Historic Preservation Committee over details of its plans. Indeed, I believe that, overall, the school has in recent years done an excellent job as a neighbor, and, it seems to me, leans over backwards to address in a constructive fashion the various irritations which are inevitable when an institution such as this is located in a residential area. I wish that it was given more credit for this.

But I also believe that the school has a pressing need to upgrade its facilities, to bring them up to code, and to make them accessible to people with disabilities. No institution, let alone a school, can afford to rest on its laurels, and Waynflete is at a decisive turning point in its history which does, unfortunately, mandate attention to its fabric.

Thank you for your attention.

Sincerely,

John C. Watson
EMail: jcwcip@gwi.net

cc By Fax - Karen Geraghty, City Council

Alan McIlhenny, Jr.
22 Neal Street
Portland, ME 04102-3527
Ph./fax 207-775-7346

May 24, 1999

Mr. Joseph E. Gray, Jr.
Director of Planning
City Hall, 4th Floor
389 Congress Street
Portland, ME 04101

RE: Waynflete School building projects

Dear Mr. Gray:

I am a neighbor of Waynflete School and I strongly support the school's plans to build a connector between Ruth Cook Hyde House and Morrill House, and an extension to the Emery Street building. I think both designs show a strong degree of sensitivity to the visual integrity of the neighborhood. The buildings proposed have been sited and sized to minimize their impacts and preserve greenspace, and the materials proposed, predominately brick, are fully in keeping with their surroundings. I sincerely hope that the Historic Preservation Committee and the Planning Board will show good judgment and approve the two designs as presented. I sincerely fear that the Historic Preservation Committee's suggestion that aluminum might be preferable to brick would create a eyesore that no one would want, especially the Committee!

Waynflete is a school in an otherwise residential neighborhood and there will inevitably be conflicts. But the school is a good neighbor. I know that many families, mine included, live in the West End precisely because the school is located here. Further, I believe there has been a very genuine, thorough and good-faith effort made by Waynflete to inform the neighborhood of the school's needs and plans, and to listen and respond to the views, concerns and complaints of a few neighbors. I think the school is working hard to minimize the traffic and parking issues that are an occasional source of irritation to some, and it should be noted that these two building projects will not lead to an increase in the number of students and related traffic.

Institutions must be allowed to evolve and change to meet changing needs, otherwise they will perish. These two building projects will provide Waynflete with modern science labs, much needed meeting spaces and permit access for students with disabilities. None of these are possible without new construction. The two buildings proposed have been thoughtfully and creatively designed to meet the needs of the school and to fit into this beautiful neighborhood. I am sure they will both be viewed in the years ahead as worthy additions to the area.

I know your department will thoroughly review these two projects, and that the opinions of both sides that are relevant to the questions at hand will be carefully heard. These are well thought-out designs that serve the school and the neighborhood well. I strongly urge your department to accept these projects as presented and issue Waynflete the permits it requires.

Sincerely,

Alan McIlhenny, Jr.
Waynflete Trustee

Cc: Councilor Karen Geraghty

May 6, 1999

Dear Mr. Gray,

We are writing to share our thoughts about the Waynflete School's Master Plan and the effects of the proposed projects on the immediate neighborhood. We live on the corner of Spring and Storer St. and abut the school. We have lived here for twenty years and have been Waynflete parents for only five of those years. Subsequently we have equal concerns and commitments to both the school and the surrounding neighborhood.

We'd first like to say that living near a school, any school, has both rewards and challenges. Part of our initial attraction to this neighborhood, prior to having a family, was both Waynflete and Reiche, where our daughter attended elementary school. Children and young people bring vibrancy to a neighborhood that many value and to our way of thinking far outweigh the ½ hour line-up of cars at the end of the school day. All neighborhoods that encompass schools must accept this to a certain degree. We personally find the 3 PM cacaophony pleasurable. In regards to Waynflete, in particular, we also feel the benefit of lovely and well-maintained grounds near our home.

It has also been our experience that Waynflete has been an exceptionally responsible neighbor. Over the past twenty years we have been alerted to any and all changes, events, and discussions as neighbors, and more recently as parents as well. The changes to the physical grounds have always appeared to be undertaken with a commitment to maintaining the feel, the intimacy and the aesthetics of the neighborhood. It is our understanding that the Master Plan will take these issues into consideration. Based on both what we know of the plan and on past experience we have no reason to doubt or worry about this. It is also our understanding that the changes will not lead to an increase in enrollment or an alteration in foot or car traffic as it exists today.

Having said this we sympathize with those who feel put upon by parking difficulties. However, it's not clear that blocking Waynflete's plan will provide relief or any insurance against further changes. Portland itself is a changing city. We live in a time where cars are a part of many people's daily experience. To suggest that Waynflete is uniquely or individually responsible for parking inconveniences in the neighborhood seems inappropriate. Schools, all schools, bring value to our neighborhoods and deserve thoughtful support.

Thank you,

Len Keilson
Bobbie Keilson

Dr. Leonard and Bobbie Keilson
330 Spring St.
Portland, Maine 04102

34 Taylor Street
Portland, Maine 04102
May 10, 1999

City of Portland Maine
Historic Preservation Committee
City Hall
389 Congress Street
Portland, Maine 04101

Dear Mr. Gray,

As residents and property owners on Taylor Street, we have over the years had to contend with the students from Waynflete School parking on this street, thus using the already limited parking available to residents. Several of the buildings on this street have no off street parking and most have an average of three other cars belonging to the tenants in the buildings.

The school's policy is that students are not to park on Taylor Street, but this is not a deterrent; and calling the school to complain has limited and only short term success. Our concern then, with any expansion proposals by the school at either location, is how it will impact an already difficult situation with parking by students in this neighborhood.

Thank you for your interest in the comments and concerns of the neighbors of Waynflete School.

Sincerely yours,

Carl D. and Donna E. Pabst

Hilary Bassett
27 Storer Street
Portland, Maine 04102
(207) 772-1254
basoleary@mail.gwi.net

May 18, 1999

Mr. Joseph E. Gray, Jr.
Director of Planning and Urban Development
City Hall, 4th Floor, 389 Congress Street
Portland, ME 04101

Dear Mr. Gray:

I write to register my concern about Waynflete School's proposal to connect the buildings at 338 and 342 Spring Street. I live adjacent to the school at 27 Storer Street, and have walked the site and considered the impact of the proposed changes on the historic and residential character of the neighborhood.

By creating an institutional scale building and losing the space between houses that typifies Spring Street, the proposed project damages a historic streetscape that has remained intact for nearly 100 years. Spring Street from Vaughan to Emery is an exceptional representation of how Portland looked at the turn of the century. Most of the buildings are intact and one gets a sense of how the growing City of Portland might have been 100 years ago. My major concern with the proposed joining of the buildings is that the joined buildings will change the residential nature of the two houses to an institutional/atypical building.

By setting separate, possibly less rigorous, standards for institutions, as opposed to residences, the City will set harmful precedents for other institutions that exist within the boundaries of historic districts. Homeowners must comply with historic district guidelines and rigorous review for changes and additions to the exterior of their houses, fences, out-buildings, and grounds -- why shouldn't institutions?

I am sympathetic to the need to bring buildings up to code for educational use, but question whether all options have been explored. Morrill House is already usable as it is, yet the proposed structure insists on placing a "stair tower" to the third floor level of Hyde that stretches across the Morrill, when possibly an internal lift/elevator would allow compliance. That third floor hallway adds volume and height to the project, that frankly, may not be necessary. Could larger meeting rooms be focused on the interior building at the center of the Waynflete campus, rather than on the Spring Street buildings.

I'd like to see Spring Street retain its residential quality -- blending with the neighborhood. I am less concerned with developments on the interior of the campus which do not impact on the residential character of the neighborhood streetscape. The view of the campus from our front porch -- the garage/locker room and driveway off Storer Street, the new paved "basketball court," and the back of Morrill and Hyde is already quite institutional. I do not support an increase in the institutional nature of the most publicly visible part of the campus in this residential neighborhood.

Lastly, I applaud the public process conducted by the City of Portland and the neighborhood meetings sponsored by Waynflete to promote public discussion of the proposed project.

Thank you very much for your consideration.

Yours sincerely,

Hilary Bassett

cc: Margaret Morfit and Nancy Brain, Waynflete trustees

1 Thomas Street
Portland, ME 04102
May 16, 1999

Joseph E. Gray, Jr., Director of Planning and Urban Development
and
Susan Wroth, Chair of Historic Preservation Committee
City Hall
389 Congress Street
Portland, ME 04101

Members of the Planning Board and Historic Preservation Committee,

We are writing regarding Waynflete School's proposed plan to connect two of its houses located at 338 and 342 Spring Street. We are the closest neighbors of these two buildings and we would be impacted the most by this proposal, since we would have to see this connecting structure from our windows. Our home is on the corner of Spring and Thomas Streets.

We are dismayed that this proposal is even being considered by the Planning Board and the Historic Preservation Committee. Just a glance at the architect's drawing--which is usually more appealing than reality--shows how incongruous and ugly this connection would be. The two existing buildings have brick of different colors, the roof styles are sharply divergent, the foundations are of unequal height, the window styles have little in common. The proposed connection would add brick of a third color, a third roof style, different windows still, etc. The two existing houses would totally and permanently lose their look of historical residential buildings and this ungainly and very visible wall-like structure would destroy the architectual integrity and residential appearance of this part of Spring and Thomas Streets, which are currently lined on both sides with graceful residential facades. The planned connection goes directly against the goals of the Historic Preservation Ordinance (especially numbers 1 and 2) and adversely affects the aesthetics and potentially the property values of this neighborhood. This would be the first serious breach of the Historic Preservation Ordinance here and we fear it would serve as the proverbial "foot in the door" which would lead to further architectual degradation of this area. Waynflete School has already forgotten that in 1987 it promised the neighborhood that the house at 342 Spring Street would be used for offices and faculty residences, and <u>not</u> for classrooms which necessitate serious modifications.

We appeal to the Planning Board and the Historic Preservation Committee to enforce the standards in a fair and equitable manner and hold Waynflete School to the same requirements that individual homes are being held to. Would any of us be allowed to build such an addition? We are required to make historically appropriate constructions, even if this causes extra expense for us. Why should Waynflete School not be asked to make the same commitment to its neighborhood? At a recent neighborgood meeting the headmaster of Waynflete conceded that it would be possible to build a separate addition to the rear of each building, but that that would be more expensive. This solution would save the facades facing Spring Street. We think it is time Waynflete School should be asked to live up to its repeatedly stated pronouncement that it values its location in a historic

neighborgood instead of again being permitted to undermine it.

Please do not allow this tax-exempt institution to ruin the neighborgood for those of us who live here, who support it with our taxes, with our careful renovations and with our commitment to the Historic Preservation Ordinance.

Sincerely,

Juris Ubans

Mara Ubans

Mara Ubans

S. MASON PRATT, JR.
ONE MONUMENT SQUARE
PORTLAND, MAINE 04101
207-773-6411

May 17, 1999

Joseph E. Gray, Jr.
Director of Planning and
Urban Development
City Hall, 4th Floor
389 Congress Street
Portland, ME 04101

RE: *Waynflete School*

Dear Joe:

I am writing to you to comment on the plans by Waynflete School to make certain improvements in connection with their master plan as amended and as presented to and discussed with neighbors this last Wednesday evening, May 12.

I understand that their plans will come to both the Historic Preservation Committee and the Portland Planning Board for approval.

My wife, Carol, and I would like to express our support for Waynflete's new plans. Waynflete should be commended, just as I told them last Wednesday evening, for their thoughtfulness and sensitivity to our concerns as neighbors. Their new plans have taken our concerns into account, and we are very satisfied and pleased with them, and we encourage you to approve them without further delay.

We are aware that other immediate neighbors to the School are similarly pleased with Waynflete's new plans. We heard some opposition by neighbors further removed from the School property last Wednesday evening, but, quite frankly, those concerns that were voiced would have been louder and more forceful had Waynflete not changed their earlier master plan. In short, Waynflete has taken major steps to address the neighbors concerns. In this regard, they have sought to preserve green or open space within the campus, especially in areas adjacent to neighbors like ourselves. They have reduced the intrusiveness of the new additions, and, in many cases, for example, in the changes to Morrill and Ruth Cook Hyde houses, their changes greatly diminish the visibility of the addition there. Their proposed changes to fill in the space between existing library space and the old Home for Aged Women building now housing their high school, are sensitive to sightlines and existing architecture. We realize that their plans are less far along when it comes to the modest expansions to Sills Hall. There again, there is a clear

need and justification for that change as well, and it provides an opportunity for improvement to the appearance of Sills Hall on the side that fronts Danforth Street.

All in all, the plans as amended are a great improvement and should be approved.

Finally, let me comment that Waynflete has done a Herculean job of administering and enforcing parking rules and regulations for their students, faculty and visitors in a way that substantially lessens any parking impact the School may have on the neighbors. We completely agree with Waynflete's current approach which is not to create additional interior parking spaces by converting and/or eliminating existing green space and by paving over areas so as to alter the nature of the School and its residential character.

Thank you for the opportunity to comment.

Sincerely yours,

S. Mason Pratt, Jr.

SMP/jeb

cc: Headmaster Mark Segar
Jesse Deupree, Trustee, Neighbor

2 THOMAS STREET
PORTLAND, MAINE
04102

Joseph E. Gray, JR.
Director of Urban Planning & Development
City Hall
Portland, ME

May 16, 1999

Dear Mr. Gray:

I want to express my concerns regarding Waynflete School's proposal to build an addition connecting two of its buildings on Spring Street, No. 338 (Morill House) and No. 342 (Hyde House).

In 1987 the school was granted a conditional use permit allowing it to convert the 1ST floor of Hyde House (a residential home) to institutional use. The remaining two floors retained residential status.

Then in 1997 the remainder of the house fell to the same process and came under institutional use.

Now the school would like to connect this house to an adjoining building (also a former residence) thereby creating a single unit and massive structure at the head of Thomas Street.

Both buildings are in the city's R-4 residential zone. Section 14-101 of the city code for this zone states that its purpose is: "to preserve the unique character of the Western Promenade area of the city..."

In addition these two buildings with very different architectural styles, are in a historic district, a district whose aim is to minimize:

2 THOMAS STREET
PORTLAND, MAINE
04102

"alterations to the character-defining features of the structure, object or site and its environment."

Such an addition appears to be at cross purposes with both the city code and the historic ordinance.

While Waynflete claims sensitivity to its residential and historic location, at the same time it is asking to change the very nature of its surroundings.

This proposal is not a compatible development, but a project that would drastically alter the residential appearance of the Thomas and Spring Street area; one that I urge the Board to reject.

Sincerely

Norma Ware

(NORMA WARE)

c/ Susan Wroth, Chair
Historic Preservation Committee

Ms. Susan Wroth, Chair 13 May, 1999
City of Portland Historic Preservation Committee
C/0 Ms. Deborah Andrews, Senior Planner, Planning Department
City Hall, 389 Congress Street, Portland Maine, 04101

Dear Ms. Wroth and Members of the Historic Preservation Committee,

As an interested neighbor of Waynflete School, I am writing to express concerns and opposition to the current proposal made by the school to connect the historic Morrill and Ruth Cook Hyde Houses on Spring Street, (338-342 Spring Street). This proposal erodes and degrades the residential character of the surrounding historic neighborhood by creating a barrier wall of institutional mass at the foot of Thomas Street which will forever close the sky vista enjoyed for over a century as the processional termination to Thomas Street.

The current proposal challenges Portland's Historic Preservation Ordinance in large and in small ways. The primary conceptual issue is the proposed creation of an opaque linkage between two existing historic houses which will result in institutional massing with substantial change to the residential streetscape. The related issue is the proposal to use opaque materials instead of creatively using glass curtain walls to preserve the appearance of structural separation. Using engineered glass curtain walls would preserve and celebrate the open sky vista at the foot of Thomas Street which is part of the public domain, not something to be given away without the thoughtful consideration of other design solutions.

Consider the design choices/solutions proposed by Waynflete School to meet its important program needs. No one proposes stopping work needed to improve life safety issues or accessibility demands. The question before the community is the design choices being made. The choices proposed are not, in my opinion, good enough for the neighborhood, the Historic Preservation Ordinance or the tax-exempt educational role of this private school.

What double standards appear to exist when the owners of the apartment house at the corner of Emery and Spring Streets are required to replace their entry door details while just a block away Waynflete is allowed to remove the original cast iron fence running along Spring Street in front of Morrill House, the same house which appears as the logo for the school on its stationery, the same house at risk of being forever linked to its neighbor, the Ruth Cook Hyde House.

What does this fence removal say about the applicant's sensitivity to the neighborhood, its character, and the trusteeship one expects from an educational institution which benefits from public property tax exemptions and is located in the heart of one of Maine's most significant historic districts?

Help me to understand how the linkage proposed by Waynflete School meets Standard #1 which seeks "…compatible use for a property that requires minimal alteration of the structure…" Is creating a massive institutional wall of masonry which blocks the vista at the end of Thomas Street a minimal alteration?

Please help me understand how the linkage proposed by Waynflete School meets Standard #2 which seeks that "…distinguishing original qualities or character of a structure, object or site and its environment shall not be destroyed." How does the opaque linking of two domestic structures creating a dark institutional mass preserve original qualities, sites, or environments?

I urge the Committee to reflect on this project and to consider the potential it presents for the creation of a double standard under Portland's Historic Preservation Ordinance - one standard for individual property owners, another for entitled institutional owners.
I know the political realities Waynflete expects to exert on the Planning Board which can override your conclusions in this matter. But I urge the members of this important committee to stand up for the word and for the intent of Portland's Historic Preservation Ordinance. If you do not, you run the risk of making a mockery of your public trust, your credibility, and the work achieved by so many over the years since the demolition of Union Station.

Sincerely,

John Holverson

John Holverson
292 Spring Street
Portland, Maine, 04102

ATT. 10

DeLUCA-HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

778 MAIN STREET
SUITE 6
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: Deb Andrews, Planner

FROM: Jim Wendel, PE, Development Review Coordinator

DATE: June 18, 1999

RE: Site Plan Review
Waynefiete School
360 Spring Street

Review of the submitted site plan and a site visit have been completed. We offer the following comments:

1. We agree with the conclusions presented by Dave Kamila of LUC that no adverse impacts will occur due to drainage from this development project. The level of detail for existing topography along Spring Street is not fully clear. However, the site visit clearly indicates that runoff will drain to Spring Street and no ponding against the new building will occur. Therefore, no extraordinary foundation drain design is warranted beyond the typical footing drain installations.

2. No other comments can be made.

Should you have any questions, please call.

JN1350.10/Memo6-18-360Spring

ATT. 11

CITY OF PORTLAND

MEMORANDUM

TO: Deb Andrews, Planner
FROM: John Peverada, Parking Manager J.P.
DATE: June 16, 1999
RE: Waynflete School

It is my understanding that Waynflete School is requesting City approvals to expand and improve existing buildings on campus; however, they will not be increasing student enrollment, faculty or staff as a result of these improvements.

Currently, I receive very few parking complaints in this area, and when I do they are usually related to people parked legally, but yet not considerately. An example is in the winter, on streets that have parking allowed on both sides of the street, the road width is reduced by snow bankings; therefore, when cars are parked on both sides of the street, the travel lane is significantly reduced.

If I can provide any further assistance, please let me know.

cc: Gloria Thomas, Department Head

6-16m.wps

AT. 12

From: Larry Ash
To: Deb Andrews
Date: Fri, Jun 18, 1999 7:22 AM
Subject: Wayneflete School

Deb: I have reviewed the proposed changes to the school and find no evidence that traffic would be adversely affected in this neighborhood. In fact, in the review process I have had an opportunity to observe traffic at the school upon dropoff and pickup times. Traffic is orderly, considerate and very well managed by all concerned.

Should you have any questions please call.

ATT. 6

HISTORIC PRESERVATION COMMITTEE
CITY OF PORTLAND, MAINE

PUBLIC HEARING
338 & 342 SPRING STREET

TO: Chair Wroth and Members of the Historic Preservation Committee

FROM: Deborah Andrews, Senior Planner

DATE: June 4, 1999

RE: June 7, 1999 - Unfinished Business

Application For: Certificate of Appropriateness - Building Addition Linking Two Structures

Address: 338 and 342 Spring Street
Cook Hyde House and Morrill House

Applicant: Waynflete School
represented by project architect, Robert Howe, HKTA Architects

Background:

On May 19th, the Historic Preservation Committee held a public hearing and began final deliberations on a proposal by Waynflete School to construct a building addition connecting the Cook Hyde and Morrill houses at 338 and 342 Spring Street. Following extensive discussion of the proposal and a series of preliminary votes on aspects of plan, the Committee voted unanimously to table final action on the application. The tabling action was taken in order for the project architect to submit for consideration alternative sheathing materials for the lower stories and to reconsider and/or redesign the third floor component. The Committee also requested that the Maine Historic Preservation Commission be asked to review and comment on the proposal with respect to its conformance with the Secretary of the Interior's Standards for Rehabilitation.

On Monday, June 7, the Committee will resume its deliberations and, presumably, vote on the project. As noted in previous memos, the Committee's action will be in the form of a recommendation to the Planning Board, which will make the final decision on the applicant's request for a Certificate of Appropriateness in conjunction with their site plan review.

Recap of May 19th Meeting:

Public comment on the proposed connector was sharply divided. Several area residents and Waynflete parents or trustees expressed support for the connector as presented, stating that it met both Waynflete's programmatic needs and the ordinance's requirements for compatibility. They supported the use of brick and architectural shingles for the third floor, citing that they are materials characteristic of the neighborhood. Several of the immediate neighbors and other residents of the neighborhood expressed opposition to the concept of a connector, arguing that by joining the two residential scale structures, an institutional scale structure would be created, which would be at odds with the prevailing development pattern in the area. Still others expressed the view that a connector, if sensitively designed, could be compatible with the character of the neighborhood, but that the design and materials as presented failed to meet the test of compatibility. It should be noted that most of the debate focused on the north elevation which faces Spring Street. There appeared to be less concern about the campus-facing facade, which is also visible from a public way.

The Committee's deliberations concentrated on the north elevation as well, as there appeared to be general support for the south elevation. Committee members expressed concern about the opaque nature of north elevation, which featured a jumbo brick facade with a centered pair of windows for the two lower stories and fiber cement shingles for the vertical face of the third floor. Regarding the jumbo brick, Committee members also felt that it was not sufficiently distinct from the material of the adjoining buildings and did not meet the ordinance requirement that there be a clear differentiation between the new and old. Several members reiterated their earlier suggestions that a more transparent treatment for these floors be explored. As for the third floor, its very presence was opposed by some members as it is at this level that the connections between the buildings became most awkward and visually distracting. Other members expressed that view that a third floor, if more transparent in treatment, could be successful. However, they could not support the third floor in its proposed form, which featured opaque cladding and awkward connections to the adjoining buildings.

Following this discussion, the Committee took two preliminary votes in order to assess whether there was a consensus on various aspects of the plan and to give guidance to the applicant. By a vote of 5-2 (Wroth, Romano opposed) the Committee approved the concept of a connector between the buildings. By a vote of 0-7, the Committee failed to approve the third floor as presented. The Committee encouraged the project architect to explore whether the third floor could be eliminated and/or develop an alternative treatment which was more transparent and which would have less visual impact. The Committee also asked that alternative cladding materials be presented for the lower two floors which would provide a clearer distinction between the old and the new. A more transparent treatment was encouraged for this component as well.

Review and Comment from the Maine Historic Preservation Commission

As the Committee requested, staff asked the Maine Historic Preservation Commission to review the proposed plan and to evaluate its conformance with the Secretary of the Interior's Standards

for Rehabilitation. (It should be noted that Portland's review standards are based on the Secretary's Standards.) The Commission was also asked to suggest appropriate treatments that meet the standards. A site visit was also arranged to better assess the project's impact. In attendance at the June 1st site visit were project architect Bob Howe, Kirk Mohney of the Maine Historic Preservation Commission and Deb Andrews, staff to the Historic Preservation Committee.

The analysis and comments of the Commission are enclosed as Attachment 2. As the letter indicates, during the June 1st site visit there was discussion of an alternative treatment which in the view of City staff and Mr. Mohney could address some of the problems identified in earlier proposals and meet the intent and standards of the ordinance as regards new additions. This treatment would incorporate large expanses of glass within a relatively minimal brick frame and would feature a consistent treatment for all three floor, creating a neutral "hyphen" for the adjoining buildings.

Note that the letter from the Maine Historic Preservation Commission was written prior to receipt of the final revised design and therefore does not specifically address the latest proposal. (Staff has sent a copy of the revised design to the Commission and hopes to have a response by Monday's meeting.) In reading Mr. Shettleworth's comments on the alternative approach discussed during the site visit, the Committee should bear in mind that the final design incorporates more glass and a deeper setback for the third floor than was anticipated at the June 1st meeting.

Revised Design for North Elevation

Attachments 3 -5 show a substantially revised design proposal for the connector's north elevation. The new design reflects changes in both the plan and the elevations. At the third floor level, the connector has been set back an additional 3 feet (now a total of 18 feet) from the front facade of the lower stories. (See enclosed third floor plan.) This change allows for a true separation from the cornices of the adjoining buildings and eliminates the need to return directly into them. The visibility of the third floor is also reduced by the increased setback. The third floor now features continuous glazing on both the north and south sides, creating a more transparent connector.

The lower two stories now show continuous glazing as well, set off by a darker brick. The applicant proposes to use Morin's "All Black" Old Port blend, which will be clearly differentiated from the adjoining red brick structures. (A sample will be provided on Monday.) In this treatment, the glazing is dominant with the brick providing a secondary framework. Other architectural details include:

* The foundation level projects 2" beyond the principal facade, echoing the foundation lines of the adjoining buildings

* The "storefront" glazing system features an aluminum frame and mullions. The finish is to be a black baked enamel painted finish. The window frames will be

set back 3 inches from the face of the brick and the mullions will project 2 inches from the glass. This will provide a level of depth and relief to the facade.

* Rowlock brick sills are shown under the windows, with a soldier course above the windows.

* Clear glass is proposed for the windows.

Note that where earlier designs featured different fenestration treatments and materials for the lower floors and the third floor, now all three levels are consistent in design. This creates a more cohesive, neutral, and clearly contemporary foil for the adjoining historic buildings.

Standards for Review

As with the previous design proposals, the Committee is instructed to evaluate the new proposal based on the ordinance standards. The National Park Service's Preservation Brief #14, *New Exterior Additions to Historic Buildings: Preservation Concerns* should also be consulted in reviewing the proposal. See especially page 11 of the Brief, which summarizes the goals and factors to be considered in assessing the compatibility of new additions.

Attachments:

1. Letter to Maine Historic Preservation Commission
2. Response from the Maine Historic Preservation Commission
3. Perspective drawing of revised north elevation
4. Elevation of north facade
5. Section of north facade
6. Previous proposed elevations (north and south)
7. Preservation Brief #14
8. Letters from the public

TY OF PORTLAND, MAINE
STORIC PRESERVATION COMMITTEE

May 26, 1999

Earle G. Shettleworth, Director
Maine Historic Preservation Commission
55 Capitol Street
Augusta, Maine 04330

Dear Earle,

The City of Portland's Historic Preservation Committee is currently reviewing proposals for two significant building additions on the Waynflete School campus, which is located within the Western Promenade Historic District. The projects include a 10,000 sq. ft. building addition to the Upper School building at 64 Emery Street (the former Home for Aged Women) and an addition which will connect the Ruth Cook Hyde and Morrill Houses at 338 and 342 Spring Street.

During the the Historic Preservation Committee's last meeting on these proposals, it was suggested that the Maine Historic Preservation Commission be asked to serve as a resource in evaluating the visual impact and compatibility of the proposed building additions, given the Commission's recognized expertise in assessing new additions to historic buildings for their conformance with the Secretary of the Interior's Standards for Rehabilitation.

Enclosed are plans and elevations for the two projects. The Committee respectfully requests that your staff review the enclosed materials and provide comments and any suggestions for the Committee's consideration. The Historic Preservation Committee is scheduled to meet again on June 7th; if it is feasible to respond prior to this date it would be most appreciated.

Thank you for your assistance. If you have any questions about the enclosed material, please do not hesitate to call.

Sincerely,

Deb Andrews

Deborah G. Andrews
Historic Preservation Program Coordinator

cc: Susan Wroth, Chair, Historic Preservation Committee
Hymie Gulak, Waynflete School

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

ANGUS S. KING, JR.
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

June 3, 1999

Deborah G. Andrews
Historic Preservation Program Coordinator
City of Portland
389 Congress Street
Portland, Maine 04101-3503

Re: Proposed Connector Between 338 and 342 Spring Street, Portland

Dear Deb:

Pursuant to your May 26, 1999, letter in which you requested the Maine Historic Preservation Commission's opinion on the subject project, I am writing to advise you of our assessment of the design. Our review of this proposal has been made within the framework of the *Secretary of the Interior's Standards for Rehabilitation*, and is based on drawings prepared by HKTA/architects as well as Tuesday's on-site discussion between Bob Howe, Kirk Mohney of my staff, and you.

The two buildings that are involved with this project are the Italianate style Seth C. Dyer House (338 Spring St.) of 1867-68, and the neighboring John Randall House (342 Spring St.), a Second Empire style building constructed about 1860-62. The Dyer and Randall houses are contributing buildings to the Western Promenade Historic District, which is both a designated local and National Register district. Both of these former residences are two-and-a-half story brick buildings that are distinguished by their high degree of historic integrity, common material palettes and massing, and shared site features that include common setbacks, granite stoops, and low granite boundary walls. Surrounding buildings share many of these same characteristics with the result that the immediate environment of which the subject buildings are a part is an important consideration.

As shown in the North Elevation Study drawings, the proposed project seeks to join the existing freestanding buildings with a three-story connector that expands on the south side to include a new entrance and a science classroom. The connection point on the opposing side elevations of the two buildings will result in the displacement of the first and second story windows that are located near the rear corners. Further alterations will be made to both rear elevations. We believe that five of the Standards for Rehabilitation are relevant for consideration in reviewing this project.

Standard 1 states that: "A property will be used as it was historically or be given a new use

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Augusta, Maine 04333

that requires minimal change to its distinctive materials, features, spaces, and spatial relationships." Although Waynflete School presently uses both of the buildings for offices and classrooms, it has incorporated this new use in a manner that has not materially altered the historic properties. Its proposal to fully utilize the interior space results in a requirement to meet increased life-safety and accessibility codes, and it has chosen an alternative that clearly alters "distinctive materials, features, spaces, and spatial relationships." We recognize that the continued viability of these two buildings may depend on Waynflete's ability to incorporate the necessary code and accessibility upgrades into a single addition. In that case, it becomes especially important to design the addition in a manner that minimizes the impact on the historic properties.

Standard 2 states that: "The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided." This Standard underscores the importance of identifying character defining features, in order to be able to determine how a project will or will not impact them. In this case, important character defining features of both buildings include their free standing relationship to each other, their brick construction (although the type of brick and quality of finish varies between them), and their architectural detailing such as brackets, window hoods, etc. As noted in the discussion of Standard 1, the proposed undertaking alters the historic relationship between these two properties, and it results in the removal of windows on the side elevations.

Standard 5 states that: "Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved." Although the proposed connector alters several windows on the side elevations, it preserves the distinctive cornice treatments of the two buildings. These are features which are "examples of craftsmanship" that characterize the two properties. So too, is the method and type of brickwork that is exhibited on the exterior walls.

Standard 9 states that: "New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize a property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment." The discussion of Standards 1 and 2 highlighted the fact that the proposed project will have an impact on distinctive features of these two properties. Standard 9 reiterates the point that new construction should not destroy these characteristics. It also describes the fundamental approach in designing for new construction, namely that the new work shall be clearly modern yet compatible with the old. Thus, if the proposed addition is judged to be the only feasible alternative to addressing the project needs, then the challenge is to design a connector that satisfies Standard 9.

Standard 10 states that: "New additions and adjacent or related new construction will be

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undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired." Although the proposed addition will impact windows on the side elevations of both buildings, we believe that the essential form of these buildings would be relatively unimpaired if the connector were to be removed in the future.

During Tuesday's on-site meeting, the initial design for this project was briefly discussed. This proposal incorporated a first story window which mimicked one on the facade of 338 Spring Street and utilized third story dormers that borrowed from the roof treatment of 342 Spring Street. It is our understanding that the third story in this scheme was not recessed from the front wall plane to the extent that it is shown in subsequent designs. Although designing new construction to closely match historic buildings is often considered to be an appropriate treatment, Standard 9 emphasizes that a clear distinction should be made between the old and the new in order to avoid confusion between historic and contemporary fabric. In this context, the initial design would not satisfy the Standards.

The present proposal for the design of the north elevation (which was reviewed at the Historic Preservation Committee's May 19th meeting) consists of a two-story connector that is physically linked to the historic buildings below their respective cornices. A third story corridor is set back about fifteen feet from the north plane of the connector. Several treatments for the facade of the connector's lower two stories have been discussed that include the use of paired double hung sash windows and surface materials which vary from standard brick, jumbo brick, masonry units that imitate ashlar granite, and wooden matchboard. In contrast, the third story is shown with a bank of so-called "storefront" windows and architectural shingles.

The Standards place great emphasis on the preservation of distinctive character defining features of historic properties, and the existing free standing relationship of the subject buildings is an important characteristic that should be preserved. When reviewing proposed additions to historic buildings, we often recommend the use of a transparent connector between the old and new in order to make a clear distinction between the two blocks. Typically, this transparency is achieved through the use of glass, a solution that also avoids the problem encountered with masonry buildings when trying to match new materials and workmanship with the existing conditions. Standard 9 also underscores the fact that new additions should be clearly modern yet compatible in scale, materials, and massing to the historic property.

The present proposals do not appear to satisfy the Standards. First, the connector links the two free standing buildings with a relatively solid two-story wall that is punctuated with small residential scale double hung windows. Second, the mass of this connector is increased by the third floor corridor which -- despite its setback from the north plane -- further compromises the separation

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of the two historic buildings. Finally, it does not appear that the various surface materials which have been explored to date will minimize the project's impact due to the fact that all of these materials are opaque. Although the connector is set back considerably from the front plane of the two buildings, it does not change the fact that its presence fundamentally alters the historic relationship between them.

During the on-site meeting, there was some discussion about an approach that would substantially increase the number of windows on the first and second stories of the connector in a pattern that matched those proposed for the third story and then use a dark brick on the balance of the wall surface. Such an approach would reduce the connector's mass and would unify the fenestration pattern on all three levels with windows that are clearly distinctive from those on either of the two existing buildings. The use of dark brick would further distinguish the old from the new. It is our understanding that this option is being explored, but we have not as yet reviewed a conceptual design. While this approach represents an improvement on the other alternatives, it will not provide a fully transparent link between the historic properties. To our knowledge, such an option has not been explored by Waynflete, and we urge the school to do so.

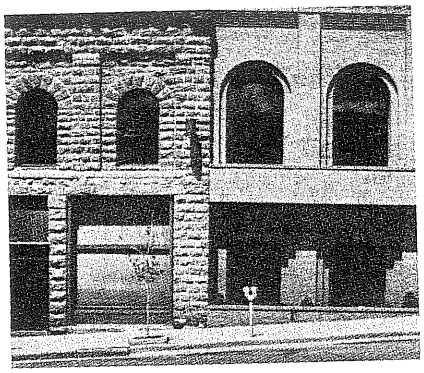
The design challenge posed by this project is a substantial one, and although we believe that it can be solved in a manner that preserves the important characteristics of the two historic buildings, it will require further consideration on the part of Waynflete to do so. Please do not hesitate to contact me if the Commission may be of further assistance in this matter.

Sincerely,

Earle G. Shettleworth, Jr.
Director

14 PRESERVATION BRIEFS

New Exterior Additions to Historic Buildings: Preservation Concerns



Kay D. Weeks

U.S. Department of the Interior
National Park Service
Cultural Resources

Heritage Preservation Services

Because a new exterior addition to a historic building can damage or destroy significant materials and can change the building's character, an addition should be considered only after it has been determined that the new use cannot be met by altering nonsignificant, or secondary, interior spaces. If the new use cannot be met in this way, then an attached addition may be an acceptable alternative if carefully planned. A new addition should be constructed in a manner that preserves significant materials and features and preserves the historic character. Finally, an addition should be differentiated from the historic building so that the new work is not confused with what is genuinely part of the past.

Change is as inevitable in buildings and neighborhoods as it is in individuals and families. Never static, buildings and neighborhoods grow, diminish, and continue to evolve as each era's technological advances bring conveniences such as heating, street paving, electricity, and air conditioning; as the effects of violent weather, uncontrolled fire, or slow unchecked deterioration destroy vulnerable material; as businesses expand, change hands, become obsolete; as building codes are established to enhance life safety and health; or as additional family living space is alternately needed and abandonded.

Preservationists generally agree that the history of a building, together with its site and setting, includes not only the period of original construction but frequently later alterations and additions. While each change to a building or neighborhood is undeniably part of its history—much like events in human life—not every change is equally important. For example, when a later, clearly nonsignificant addition is removed to reveal the original form, materials, and craftsmanship, there is little complaint about a loss to history.

When the subject of *new* exterior additions is introduced, however, areas of agreement usually tend to diminish. This is understandable because the subject raises some serious questions. Can a historic building be enlarged for a new use without destroying what is historically significant? And just what *is* significant about each particular historic building that should be preserved? Finally, what new construction is appropriate to the old building?

The vast amount of literature on the subject of change to America's built environment reflects widespread interest as well as divergence of opinion. New additions have been discussed by historians within a social and political, framework; by architectural historians in terms of construction technology and style; and by urban planners as successful or unsuccessful contextual design. Within the historic preservation programs of the National Park Service, however, the focus has been and will continue to be the protection of those resources identified as worthy of listing in the National Register of Historic Places.

National Register Listing—Acknowledging Change While Protecting Historical Significance

Entire districts or neighborhoods may be listed in the National Register of Historic Places for their significance to a certain period of American history (e.g., activities in a commercial district between 1870 and 1910). This "framing" of historic districts has led to a concern that listing in the National Register may discourage any physical change beyond a certain historical period—particularly in the form of attached exterior additions. This is not the case. National Register listing does *not* mean that an entire building or district is frozen in time and that no change can be made without compromising the historical significance. It also does not mean that each portion of a historic building is equally significant and must be retained intact and without change. Admittedly, whether an attached new addition is small or large, there will always be *some* loss of material and *some* change in the form of the historic building. There will also generally be some change in the relationship between the buildings and its site, neighborhood or district. Some change is thus anticipated within each rehabilitation of a building for a contemporary use.

Scope of National Park Service Interest in New Exterior Additions

The National Park Service interest in new additions is simply this—a new addition to a historic building has the potential to damage and destroy significant historic material and features and to change its historic character. A new addition also has the potential to change how one perceives what is genuinely historic and thus to diminish those qualities that make the building eligible for listing in the National Register of Historic Places. Once these basic preservation issues have been addressed, all other aspects of designing and constructing a new addition to extend the useful life of the historic building rest with the creative skills of the architect.

The intent of this Brief, then, is to provide guidance to owners and developers planning additions to their historic

buildings. A project involving a new addition to a historic building is considered acceptable within the framework of the National Park Service's standards if it:

1. **Preserves significant historic materials and features; and**
2. **Preserves the historic character; and**
3. **Protects the historical significance by making a visual distinction between old and new.**

Paralleling these key points, the Brief is organized into three sections. Case study examples are provided to point out acceptable and unacceptable preservation approaches where new use requirements were met through construction of an exterior addition. These examples are included to suggest ways that change to historic buildings can be sensitively accomplished, not to provide indepth project analyses, endorse or critique particular architectural design, or offer cost and construction data.

1. Preserving Significant Historic Materials and Features

Connecting a new exterior addition always involves some degree of material loss to an external wall of a historic building and, although this is to be expected, it can be minimized. On the other hand, damage or destruction of *significant* materials and craftsmanship such as pressed brick, decorative marble, cast stone, terra-cotta, or architectural metal should be avoided, when possible.

Generally speaking, preservation of historic buildings is enhanced by avoiding all but minor changes to primary or "public" elevations. Historically, features that distinguish one building or a row of buildings and can be seen from the streets or sidewalks are most likely to be the significant ones. This can include window patterns, window hoods, or shutters; porticoes, entrances, and doorways; roof shapes, cornices, and decorative moldings; or commercial storefronts with their special detailing, signs, and glazing. Beyond a single building, entire blocks of urban or residential structures are often closely related architecturally by their materials, detailing, form, and alignment. Because significant materials and features should be *preserved*, not damaged or hidden, the first place to consider constructing a new addition is where such material loss will be minimized. This will frequently be on a secondary side or rear elevation. For both economic and social reasons, secondary elevations were often constructed of "common" material and were less architecturally ornate or detailed.

In constructing the new addition, one way to minimize overall material loss is simply to reduce the size of the new addition in relationship to the historic building. If a new addition will abut the historic building along one elevation or wrap around a side and rear elevation, the integration of historic and new interiors may result in a high degree of loss—exterior walls as well as significant interior spaces and features. Another way to minimize loss is to limit the size and number of openings between old and new. A particularly successful method to reduce damage is to link the new addition to the historic block by means of a hyphen or connector. In this way, only the connecting passageway penetrates a historic side wall; the new addition can be visually and functionally related while historic materials remain essentially intact and historic exteriors remain uncovered.

Although a general recommendation is to construct a new addition on a secondary elevation, there are several exceptions. First, there may simply be no secondary elevation—some important freestanding buildings have signil cant materials and features on all sides, making any aboveground addition too destructive to be considered. Second, a structure or group of structures together with their setting (for example, in a National Historic Park) may be of such significance in American history that any new addition would not only damage materials and alter the buildings' relationship to each other and the setting, but seriously diminish the public's ability to appreciate a historic event or place. Finally, there are other cases where an existing side or rear elevation was historically intended to be highly visible, is of special cultural importance to the neighborhood, or possesses associative historical value. Then, too, a secondary elevation should be treated as if it were a primary elevation and a new addition should be avoided.

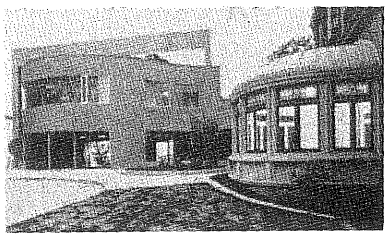
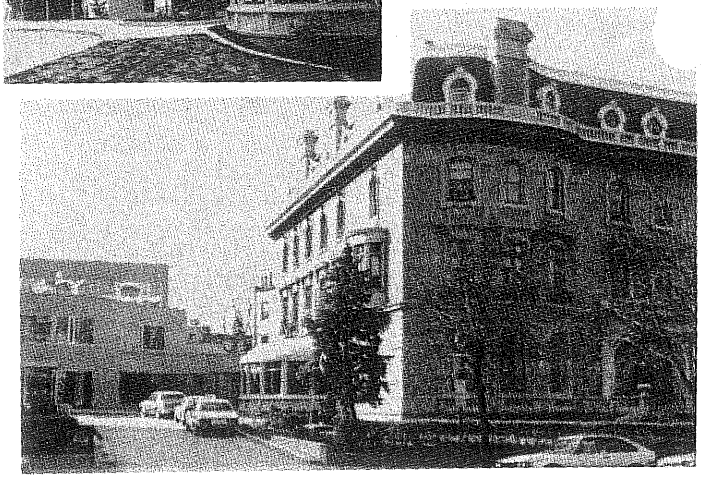


Photo: Maxwell Mackenzie

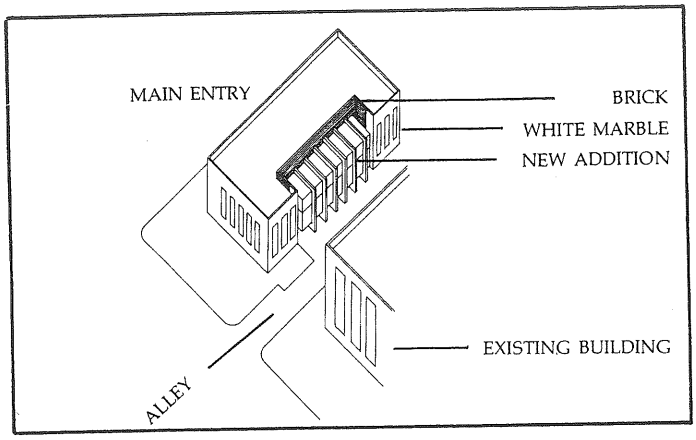
Photo: Gary L. Hume



Historic residential structure with new office addition. This approach preserves significant historic materials and features.

Built in 1903 as the private residence of a wealthy mine owner, the 3½ story building utilizes a variety of materials, including granite, limestone, marble, and cast iron. Of special interest is the projecting conservatory on a prominent side elevation. The Walsh-McLean House in Washington, D.C., has been used as the Indonesian Embassy since 1954. When additional administrative space was required for the embassy in 1981, loss of significant exterior materials was minimized by utilizing a narrow hyphen connector that cuts through a side wall behind the distinctive conservatory. Finally, the modestly scaled addition is well se back on the adjoining site, thus preserving the historic charac of this individually-listed property.

Photo: David Nystuen



Drawing: Christina Henry

Historic bank structure with new drive-in bank addition. This approach preserves significant materials and features.

The bank building in Winona, Minnesota, (Purcell, Feick, and Elmslie, 1911-1912) is a noteworthy example of Prairie School architecture. Of particular significance is the ornamental work in terra-cotta and stained glass. In 1969-70 a brick addition was joined to the historic structure on the unoramented north and east party walls. This responsible approach successfully met additional square footage requirements for bank operations while retaining the historic banking room with its stained glass panels and skylighted space.

Historic library with new reading room addition. This approach preserves significant historic materials and features.

When Washington, D.C.'s Folger Shakespeare Library (Paul P. Cret, 1929) required additional space for a new reading room in 1983, significant exterior materials and interior spaces were respected. This expansion was successfully accomplished by filling-in a nonsignificant, common brick, U-shaped service area on the building's rear elevation, thus permitting almost total savings of the historic decorative marble on significant front and side facades. The new reading room addition was sensitively joined to the historic library by a limited number of doorways, further enhancing overall preservation of historic materials.

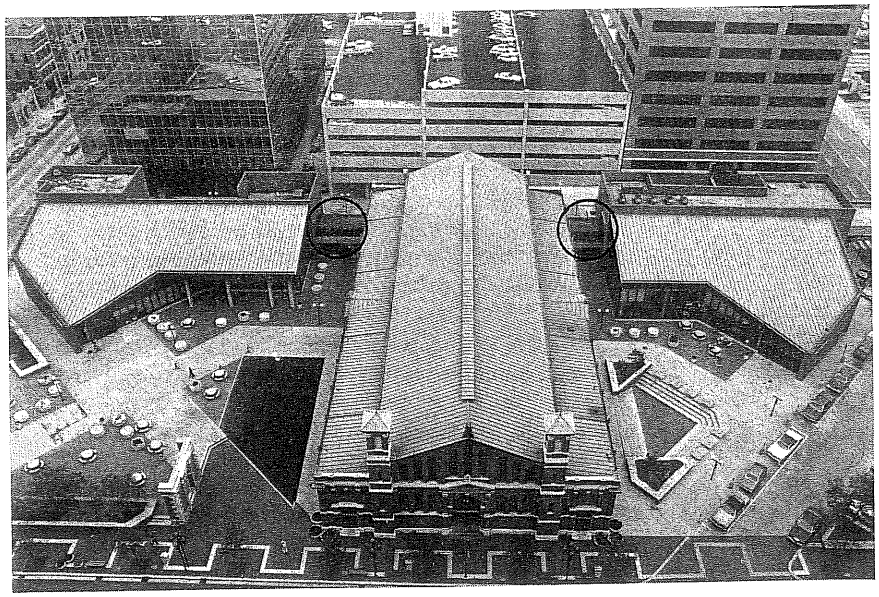


Photo: Alan Conant

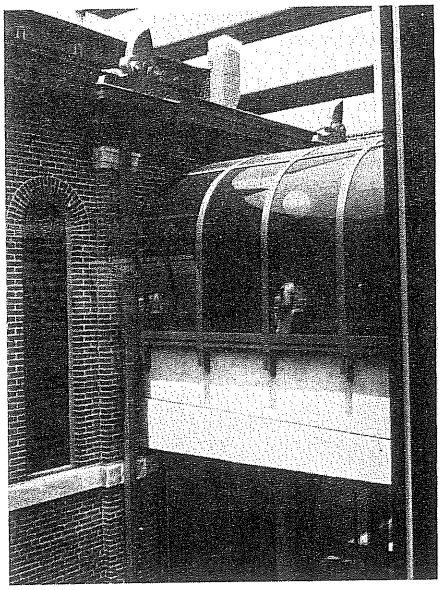


Photo: Jim Vaseff

Historic city market with flanking new retail additions. This approach preserves significant historic materials and features.

The aerial view shows the two-level connectors (circled) between Indianapolis' 1886 City Market and the new retail business wings. Historic openings on both levels at the rear of the building have been utilized for entrance and egress to the new additions, requiring minimal intrusion in the historic fabric of the side walls. A detail photograph shows how the glass and metal connectors parallel the form of the historic round-headed window openings. Finally, because the new additions are essentially detached from the original market building, the external form and the interior plan, with its significant cast-iron roofing system, have been retained and preserved.

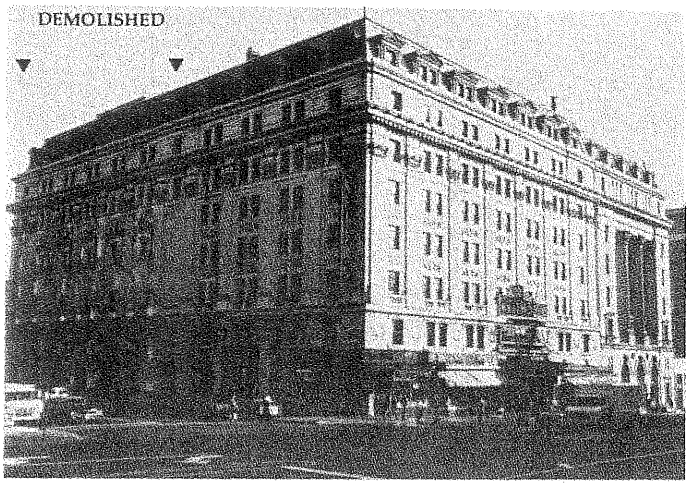


Photo: A. Pierce Bounds

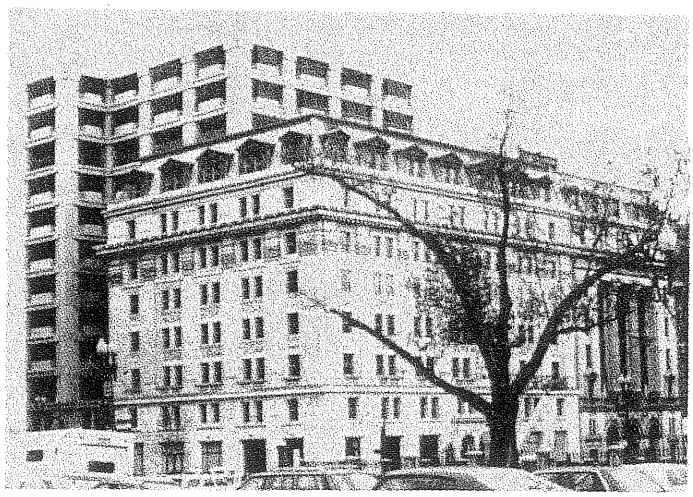


Photo: Michael J. Auer

Historic theater and office building with new office addition. This approach results in the destruction of significant materials and features.

Materials and features comprise the life history of a building from its initial construction to its present configuration; their destruction thus represents an equivalent and unfortunate loss to history. Chase's Theater and Riggs Building were constructed in Washington, D.C. in 1911-1912 as one architectural unit. Originally 11 bays wide, it featured elaborate granite, terra-cotta and marble ornamentation (see "before" above). As part of a plan to increase office space in a prime downtown location, 6 side bays and the significant theater space of the historic structure were demolished to make way for a major new addition (see "after" below).

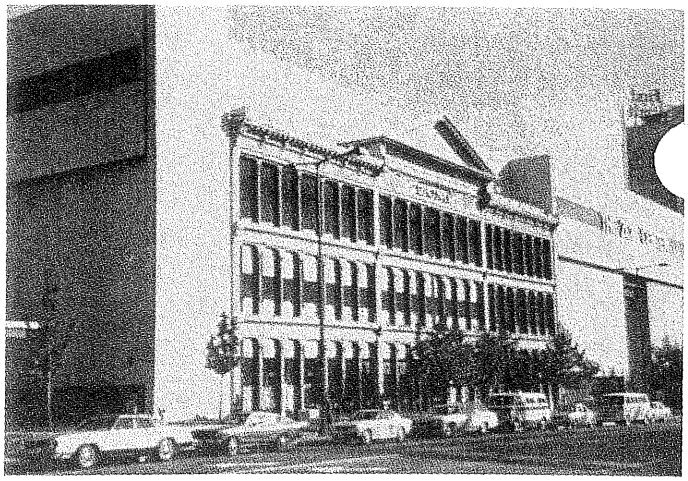


Photo: Lee H. Nelson, FAIA

Historic cast-iron storefront re-installed as facade on modern department store. This approach results in the destruction of significant materials and features.

Where there is need for a substantially larger building, the most destructive approach is to demolish everything but the facade of the historic building. In the example above, the 3-story-cast-iron front was originally the facade of a large, 19th century department store. In the 1970s, when the rest of the building was demolished, the metal facade was dismantled, then re-assembled on a new site where it has become the ornamental entrance to a modern department store.

2. Preserving the Historic Character

The second, equally important, consideration is whether or not the new addition will preserve the resource's historic character. The historic character of each building may differ, but a methodology of establishing it remains the same. Knowing the uses and functions a building has served over time will assist in making what is essentially a physical evaluation. But while written and pictorial documentation can provide a framework for establishing the building's history, *the historic character, to a large extent, is embodied in the physical aspects of the historic building itself—its shape, its materials, its features, its craftsmanship, its window arrangements, its colors, its setting, and its interiors.* It is only after the historic character has been correctly identified that reasonable decisions about the extent—or limitations—of change can be made.

To meet National Park Service preservation standards, a new addition must be "compatible with the size, scale, color, material, and character" of the building to which it is attached or its particular neighborhood or district. A new addition will always change the size or actual bulk of the historic building. But an addition that bears no relationship to the proportions and massing of the historic building—in other words, one that overpowers the historic form and changes the scale will usually compromise the historic character as well. The appropriate size for a new addition varies from building to building; it could never be stated in a tidy square or cubic footage ratio, but the historic building's existing proportions, s and setting can help set some general parameters for enlargement. To some extent, there is a predictable relationship between the size of the historic resource and the degree of change a new addition will impose.

For example, in the case of relatively low buildings (small-scale residential or commercial structures) it is difficult, if not impossible, to minimize the impact of adding an entire new floor even if the new addition is set back from the plane of the facade. Alteration of the historic proportions and profile will likely change the building's character. On the other hand, a rooftop addition to an eight story building in a historic district of other tall buildings might not affect the historic character simply because the new work would not be visible from major streets. A number of methods have been used to help predict the effect of a proposed rooftop addition on the historic building and district, including pedestrian sight lines, three-dimensional schematics and computer-assisted design (CAD). Sometimes a rough full-size mock up of a section or bay of the proposed addition can be constructed using temporary material; the mock-up can then be photographed and evaluated from critical vantage points.

In the case of freestanding residential structures, the preservation considerations are generally twofold. First, a large addition built out on a highly visible elevation can radically alter the historic form or obscure features such as a decorative cornice or window ornamentation. Second, an addition that fills in a planned void on a highly visible elevation (such as a "U" shaped plan or feature such as a porch) may also alter the historic form and, as a result, change the historic character.

Some historic structures such as government buildings, metropolitan museums, or libraries may be so massive in size that a large-scale addition may not compromise the historic character. Yet similar expansion of smaller buildings would be dramatically out of scale. In summary, where any new addition is proposed, correctly assessing the *relationship* between actual size and relative scale will be a key to preserving the character of the historic building.

Constructing the new addition on a secondary side or rear elevation—in addition to material preservation—will also address preservation of the historic character. Primarily, such placement will help to preserve the building's historic form and relationship to its site and setting. Historic landscape features, including distinctive grade variations, need to be respected; and any new landscape features such as plants and trees kept at a scale and density that would not interfere with appreciation of the historic resource itself.

In highly developed urban areas, locating a new addition on a less visible side or rear elevation may be impossible simply because there is no available space. In this instance, there may be alternative ways to help preserve the historic character. If a new addition is being connected to the adjacent historic building on a primary elevation, the addition may be set back from the front wall plane so the corner edges defining the historic form are still apparent. In still other cases, some variation in material, detailing, and color may provide the degree of differentiation necessary to avoid changing the essential proportions and character of the historic building.

Photo: Michael J. Auer

Historic townhouse with compatible new stairtower addition. This approach preserves the historic character.

Creating two separate means of egress from the upper floors may be a fire code requirement in certain types of rehabilitation projects. This may involve a second stair within the historic building or an exterior fire stair. To meet preservation concerns, an exterior fire stair should always be subordinate to the historic structure in size and scale, and preferably, placed on a secondary side or rear elevation. Finally, as in any other type of addition, the material and color should be compatible with the historic character of the building. Because this modest brick stairtower has been placed on a rear elevation as a subsidiary unit, the form, features and detailing of the historic building have been preserved.

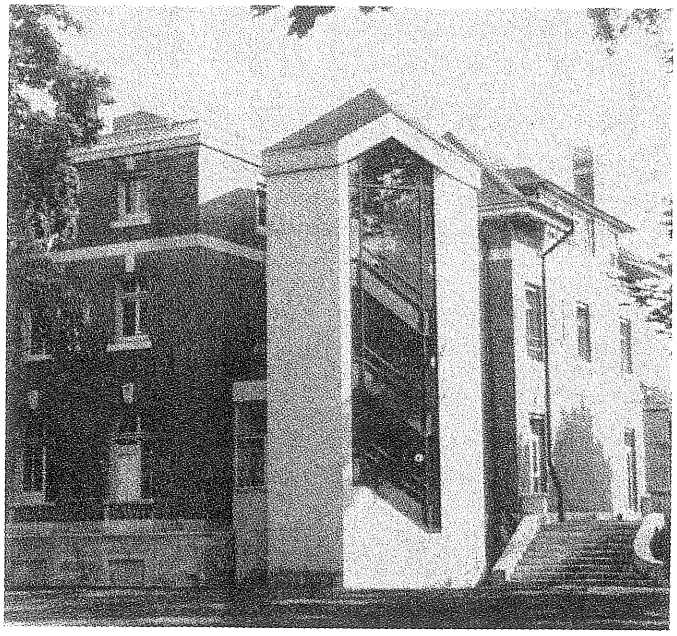


Photo: Martha L. Werenfels

Historic university building with incompatible new stairtower addition. This approach changes the historic character.

In contrast, this stairtower has been constructed on a highly visible side elevation and, together with its width and height, has obscured the historic form and roofline. The materials and color of the addition further enhance its prominence.

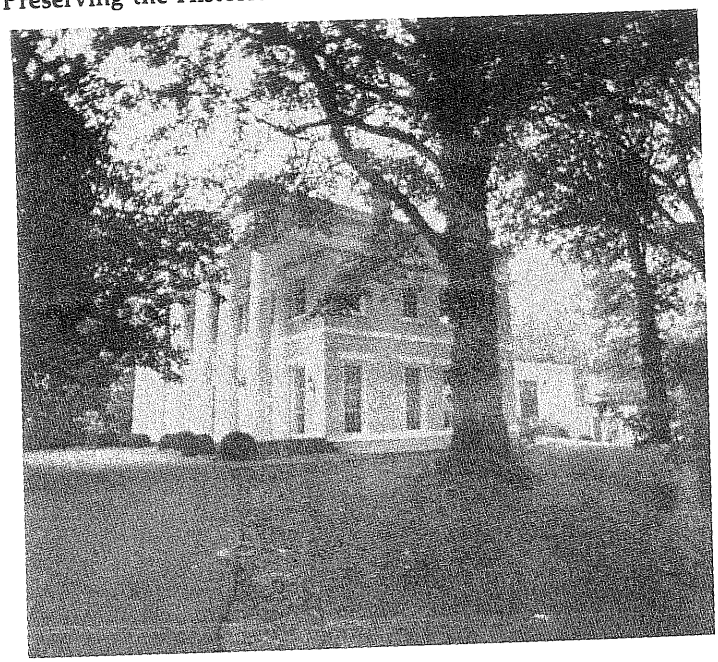


Photo: Rodney Gary

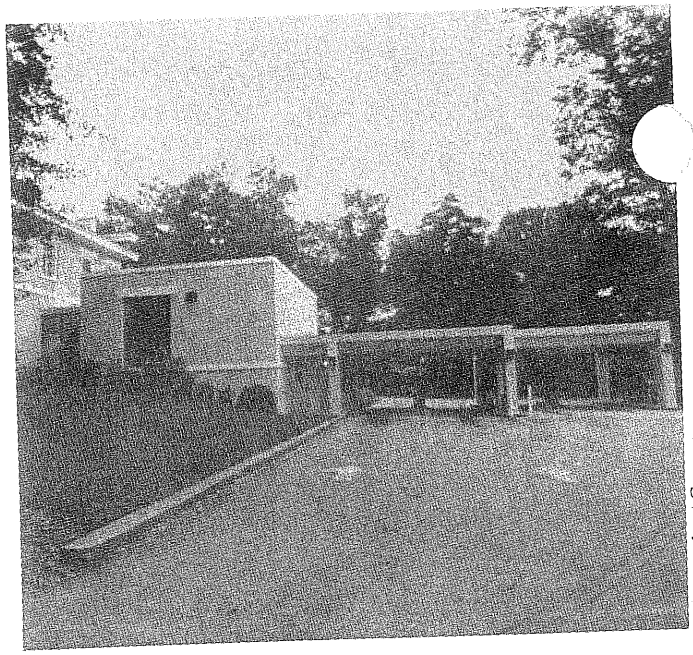
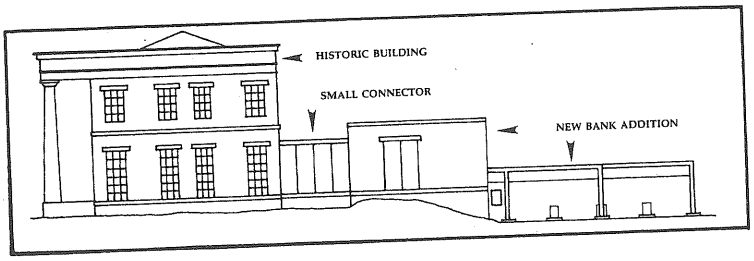


Photo: Rodney Gary

Historic residential structure with new drive-in bank addition. This approach preserves the historic character.

Built in 1847 and individually listed in the National Register in 1973, the Stephen Upson House in Athens, Georgia, is a two-story, five-bay structure featuring a distinctive columned portico. Of particular importance in its successful conversion from residential to commercial use in 1984 was the sensitive utilization of a sloping, tree-shaded historic site consisting of over 6 acres. A low-scale office and drive-in bank addition have been attached by a small glass connector at the rear of the historic building. A drawing, below, shows how the three-unit addition has been stepped down the hill, each unit set further back from the historic structure as it extends horizontally. As a result, the new addition is only partially visible from the historic "approach;" it can, however, be seen at full size from a new service road on the rear elevation (see photos, above).



Drawing: Christina Henry

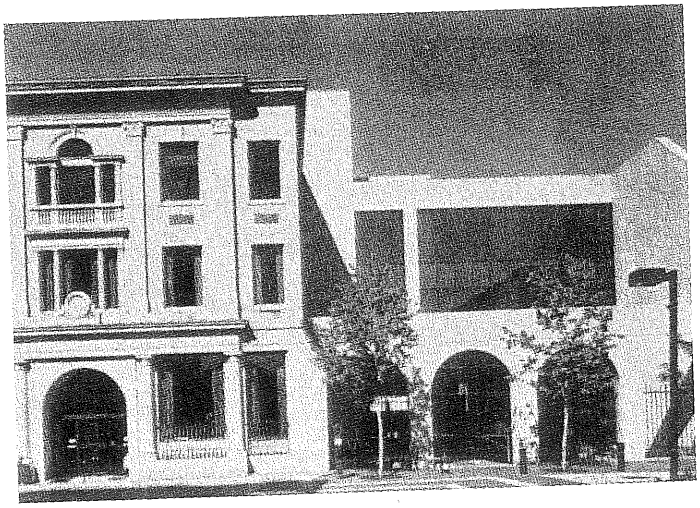


Photo: Joseph Borysthen Tcacz.

Historic bank with compatible new bank addition. This approach preserves the historic character.

The overall size of an 1893 bank in Salem, Massachusetts, was nearly doubled in 1974 when a new addition was constructed on an adjacent lot, yet the addition is compatible with the historic character. A deep set-back and similarity in scale permit the historic form to be appreciated; the addition is also compatible in materials and color. Finally, the pattern of arched and rectangular openings of the historic building is suggested in the new work.

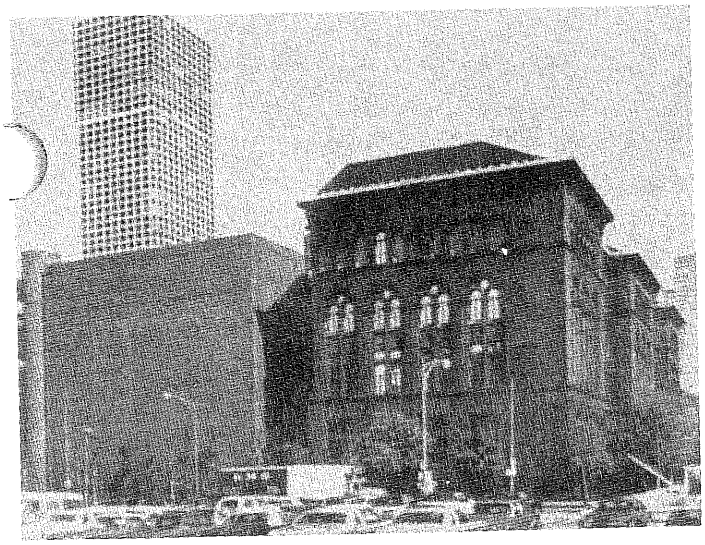


Photo: Harry Weese & Associates

Historic library with new addition for "uncommon" and rare books. This approach preserves the historic character.

Designed by architect Henry Ives Cobbs and completed in 1892, the Newberry Library in downtown Chicago extends the length of a city block and features a series of elongated, arch-headed windows. In 1981, when additional space was required with light and humidity control for storage of the rare book collection, a 10-story, windowless brick addition was linked to the historic block on side and rear elevations. Although constituting major expansion, the new wing still reads as a subsidiary unit to the substantially larger historic library complex. Its simple rectangular shape and lack of ornamentation stand in contrast with the highly articulated historic library complex; the rhythm of the historic windows is suggested in the windowless addition through series of recessed square and arched bands. This is one example of a solution that is considered compatible with the historic character.

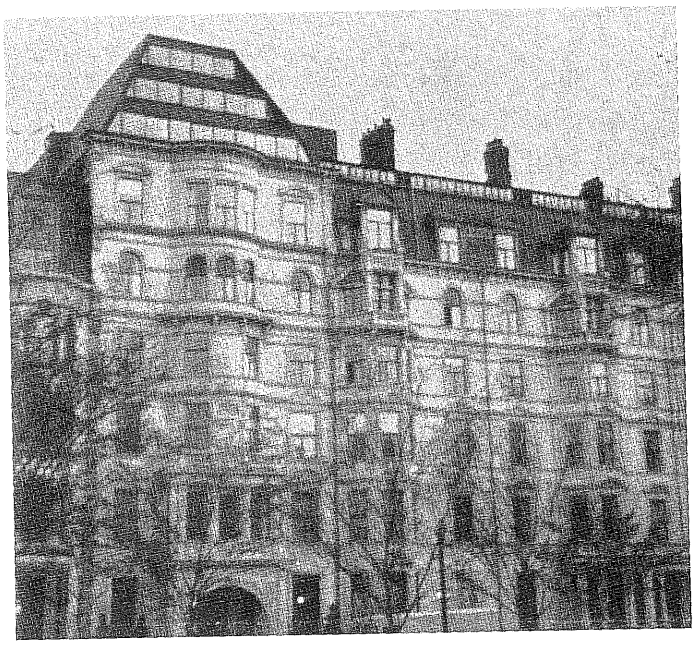


Photo: Baird M. Smith, AIA

Historic residential buildings with incompatible three-story rooftop addition. This approach changes the historic character.

The historic character of one building or an entire row of buildings may be radically altered by even one highly visible, inappropriately scaled rooftop addition. This is partly because the proportions or dimensions of a historic building play such a major role in determining its identity. Major expansion at the roofline alters the proportions and profile of the building—a change that is particularly noticeable when seen in outline against the sky. A modest clerestory addition (extending across townhouses to the right) is almost overlooked because the focal point of the row is a three-story, pyramidally-shaped glass and metal addition whose mass, size, and scale overpowers the block's residential character.

Photo: David Kroll

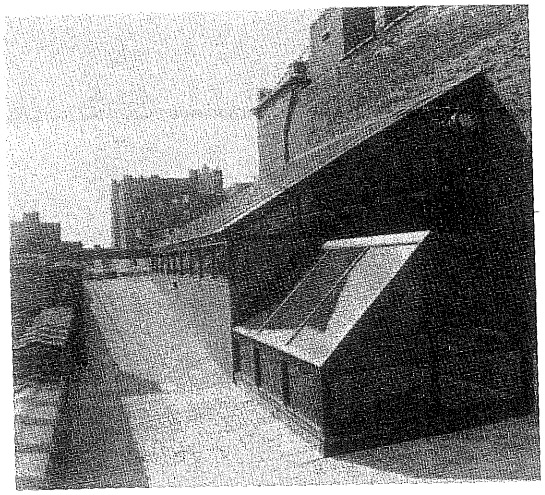


Photo: David Kroll

Historic commercial building with compatible new, one-story rooftop addition. This approach preserves the historic character.

This rooftop addition—sharing a similarity to the example above in its use of glass and metal and an angular shape—has been set back from both the front and side roof edges against a party wall, thus preserving the character of the historic building as well as the district. Although the addition appears to be very small from a street perspective, in actuality it is spacious enough to be used as a business conference room and employee lounge.

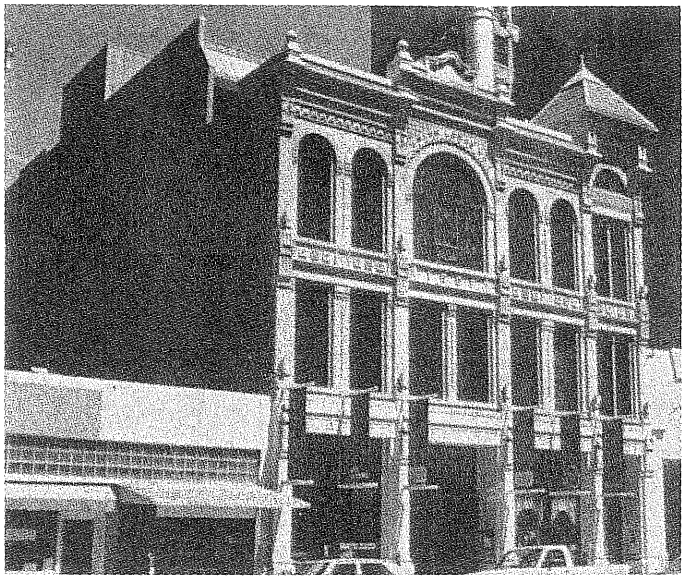


Photo: Noré V. Winter

Historic commercial building with compatible new 2-story rooftop addition. This approach preserves the historic character.

Small-scale residential or commercial buildings are extremely difficult to expand at the roofline. An additional story will usually result in a radical change to the historic building's proportions and profile, even when the addition is set back from the roof edge. In this particular case, however, the prominence of the resource's parapet and corner tower together with the deep setback made it possible to successfully add two new stories to a small-scale historic building.

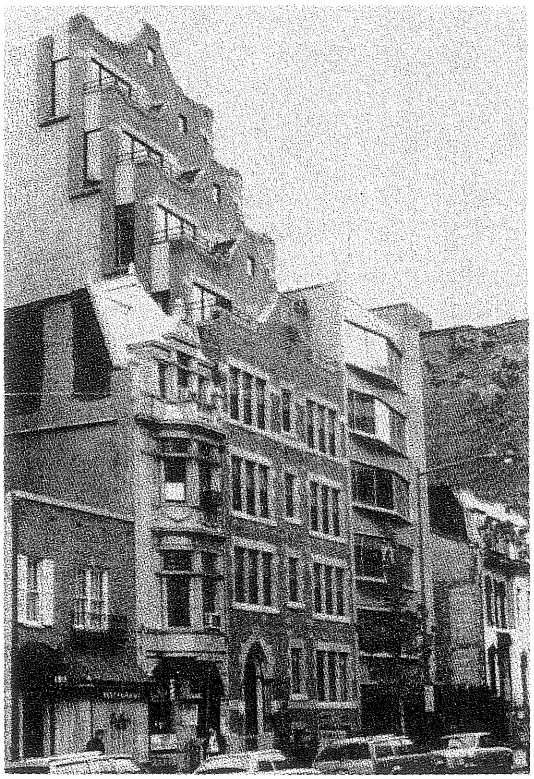


Photo: Michael J. Auer

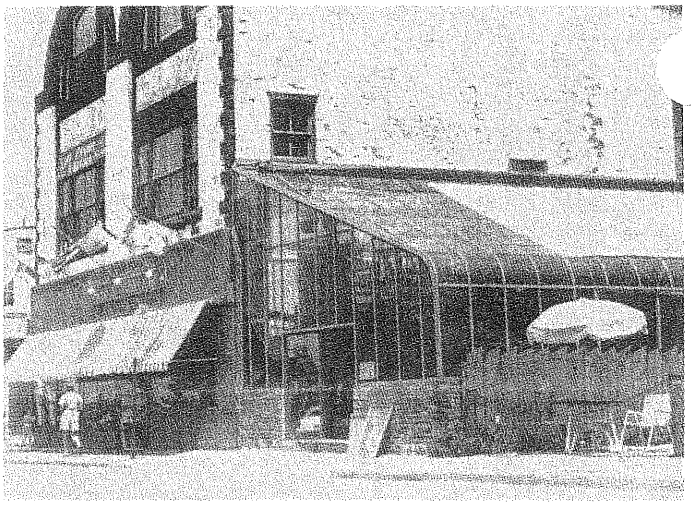
Historic office building with incompatible new 4-story rooftop addition. This approach changes the historic character.

In this example, the historic character of a similarly-scaled commercial building has been radically changed by the addition of four stories that intentionally repeat the distinctive historic parapet feature at each level. The net effect is to have created a new four-story building atop a four-story historic building.

Photo: Martha L. Werenfels

Private residence with incompatible new office addition. This approach changes the historic character.

Successfully introducing a new addition into a residential neighborhood depends in large measure on the degree of visibility from the streets and sidewalks. In a neighborhood where lots were historically small, but deep, and houses were constructed close together, adding a new room to a secondary elevation may often be undertaken without changing the historic character. The historic character of this late 19th/early 20th century wood-frame residential structure was compromised when a masonry wrap-around addition was constructed on highly visible elevations within the district. Historic features were also destroyed in making changes necessary for office use.



Photos: Martha L. Werenfels

Historic commercial structure with incompatible new greenhouse addition. This approach changes the historic character.

Glass—particularly in conjunction with inappropriate location, scale, and form—can be an exceedingly troublesome material. In theory, glass would seem to be the perfect material for a new addition because the historic building's materials and features can be "read" through the transparent material. But glass is never fully invisible during the day because of its reflective nature; at night, the bright light in a glass addition may become a somewhat disturbing aspect that competes with the historic building. This large greenhouse restaurant addition, constructed on a highly visible side elevation within the district, is also flus' with the historic facade. Inappropriate scale and high visibility coupled with the amount of glass used in this particular addition have radically altered the character of a modest freestanding structure and its setting.

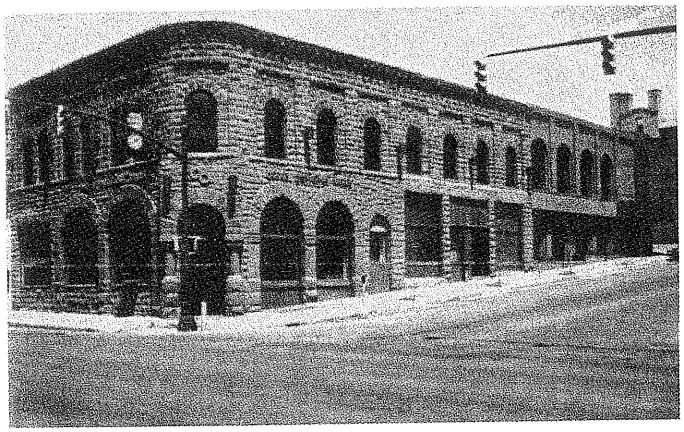
3. Protecting the Historical Significance—Making a Visual Distinction Between Old and New

The following statement of approach could be applied equally to the preservation of districts, sites, buildings, structures, and objects of National Register significance: "A conservator works within a conservation ethic so that the integrity of the object as an historic entity is maintained. The concern is not just with the original state of the object, but the way in which it has been changed and used over the centuries. Where a new intervention must be made to save the object, either to stabilize it or to consolidate it, it is generally accepted that those interventions must be *clear, obvious, and reversible*. It is this same attitude to change that is relevant to conservation policies and attitudes to historic towns . . . "[1]

Rather than establishing a clear and obvious difference between old and new, it might seem more in keeping with the historic character simply to repeat the historic form, material, features, and detailing in a new addition. But when the new work is indistinguishable from the old in appearance, then the "real" National Register property may no longer be perceived and appreciated by the public. Thus, the third consideration in planning a new addition is to be sure that it will protect those visual qualities that made the building eligible for listing in the National Register of Historic Places.

A question often asked is what if the historic character is *not* compromised by an addition that appears to have been built in the same period? A small porch or a wing that copied the historic materials and detailing placed on a rear elevation might not alter the public perception of the historic form and massing. Therefore, it is conceivable that a modest addition could be replicative without changing the resource's historic character; generally, however, this approach is not recommended because using the same wall plane, roof line, cornice height, materials, siding lap, and window type in an addition can easily make the new work appear to be part of the historic building. If this happens on a visible elevation, it becomes unclear as to which features are historic and which are new, thus confusing the authenticity of the historic resource itself.

The National Park Service policy on new additions, adopted in 1967, is an outgrowth and continuation of a general philosophical approach to change first expressed by John Ruskin in England in the 1850s, formalized by William Morris in the founding of the Society for the Protection of Ancient Buildings in 1877, expanded by the Society in 1924 and, finally, reiterated in the 1964 Venice Charter—a document that continues to be followed by 64 national committees of the International Council on Monuments and Sites (ICOMOS). The 1967 *Administrative Policies for Historical Areas of the National Park System* thus states, " . . . a modern addition should be readily distinguishable from the older work; however, the new work should be harmonious with the old in scale, proportion, materials, and color. Such additions should be as inconspicuous as possible from the public view." Similarly, the Secretary of the Interior's 1977 "Standards for Rehabilitation" call for the new work to be "compatible with the size, scale, color, material, and character of the property, neighborhood, or environment."



Photos: Noré V. Winter

Historic bank with new bank addition. This approach protects the historical significance of the resource by making a visual distinction between what is old and what is new.

Constructed in the early 1890s in Durango, Colorado, the split-faced ashlar bank structure is characterized by its flat roof, rounded form at the main entrance, a series of large arched window and door openings, and heavily textured surfaces. When additional office space was needed in 1978 to serve a commercially revitalized historic district, the new work was respectful of the historic structure through its proportional similarities, and alignment of openings and cornice. While echoing the historic bank's arched and rectangular shapes, the addition features a contrasting, smooth-faced brick that—together with the variation in window size, recessed detailing, and exaggerated verticality of the pilasters—places the new work in a clearly contemporary idiom and also permits the historic building to predominate.

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[1] Roy Worskett, RIBA, MRTIP, "Improvemment of Urban Design in Europe and the United States: New Buildings in Old Settings." Background Report (prepared July, 1984) for Seminar at Strasbourg, France, October, 1984.

Protecting the Historical Significance—Making a Visual Distinction Between Old and New

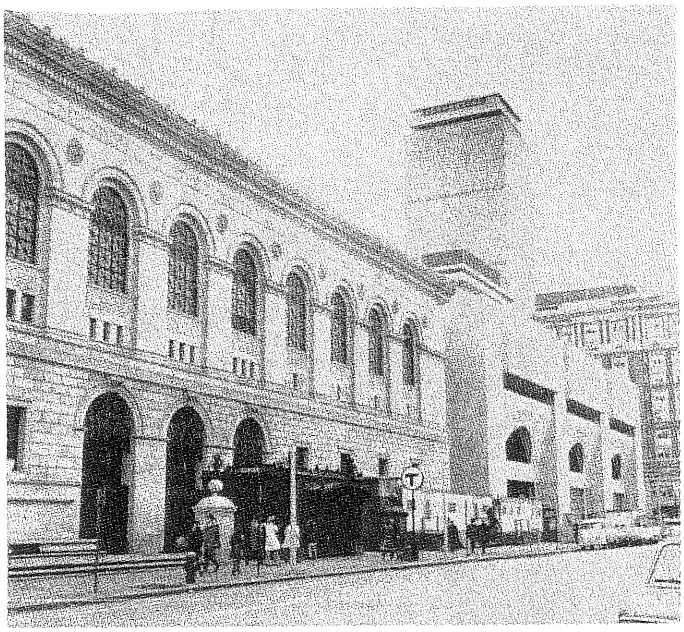


Photo: Carleton Knight, III

Historic library with new library wing. This approach protects the historical significance of the resource by making a visual distinction between what is old and what is new.

Charles Follen McKim's Boston Public Library, a 3 story, granite-faced, rectangular structure built between 1888-1895, was significantly expanded in 1973 by Phillip Johnson's new library addition on highly visible side and rear elevations. While the new addition is closely related to the historic block in its basic proportions, Johnson's bold use of material and detailing—juxtaposed to McKim's delicately patterned facade—provide clear differentiation between old and new and result in an addition that is unequivocally a product of its own time.

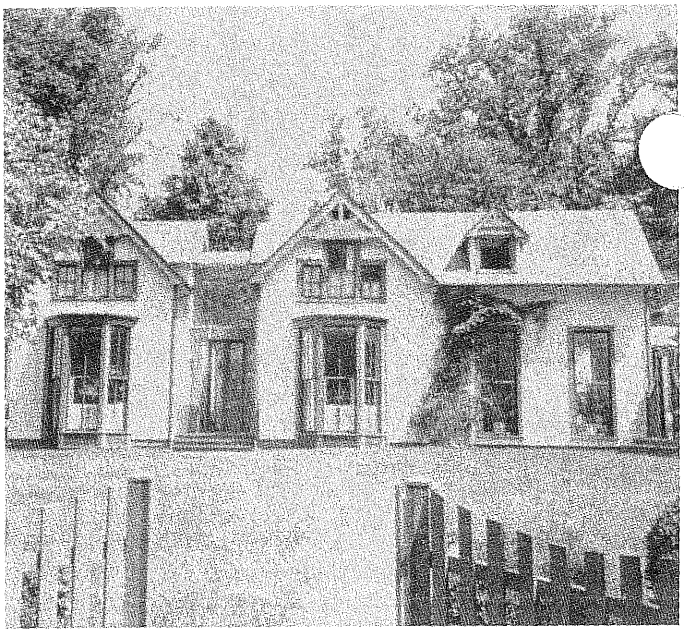
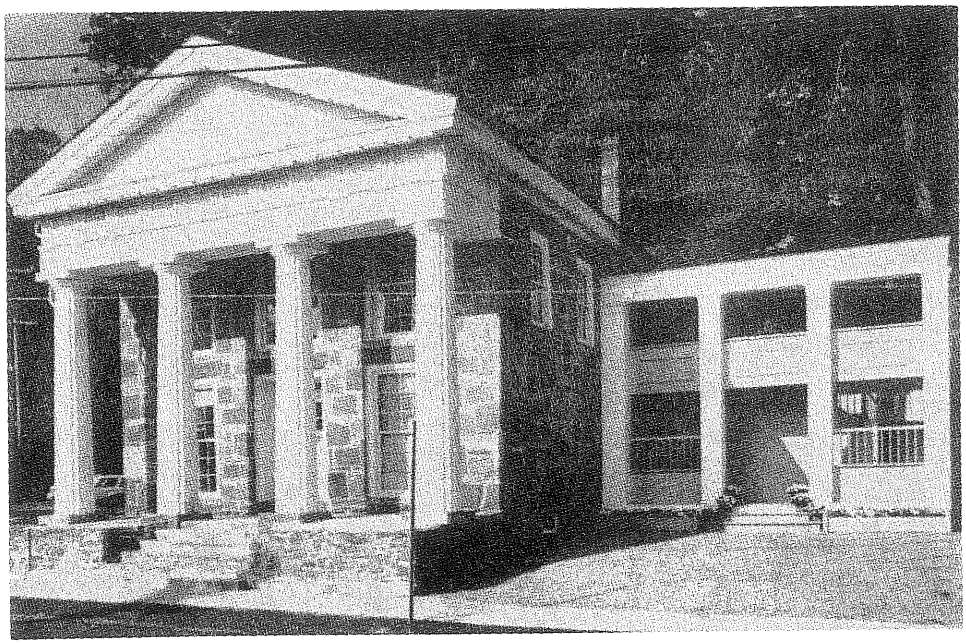
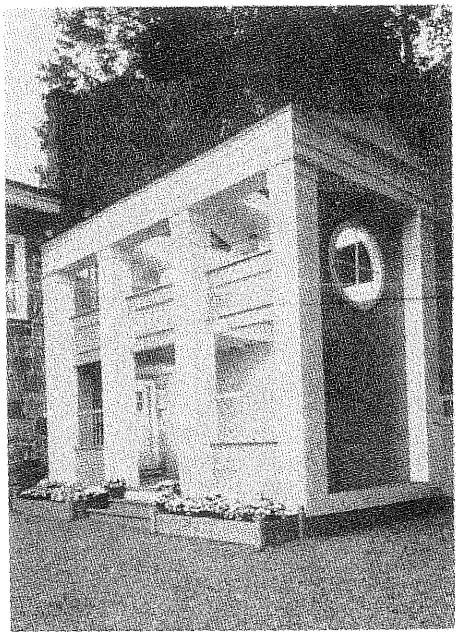


Photo: Kay D. Weeks

Private residence with new addition. This approach does not protect the historical significance of the resource because it fails to make a visual distinction between what is old and what is new.

The most distinctive portion of this c. 1900 wood-frame residence—the decorative gable and three-part window—was repeated in a new addition to the left. As a result of copying the form, features and detailing of the new addition on the front elevation, the historic building and the new addition are virtually indistinguishable.

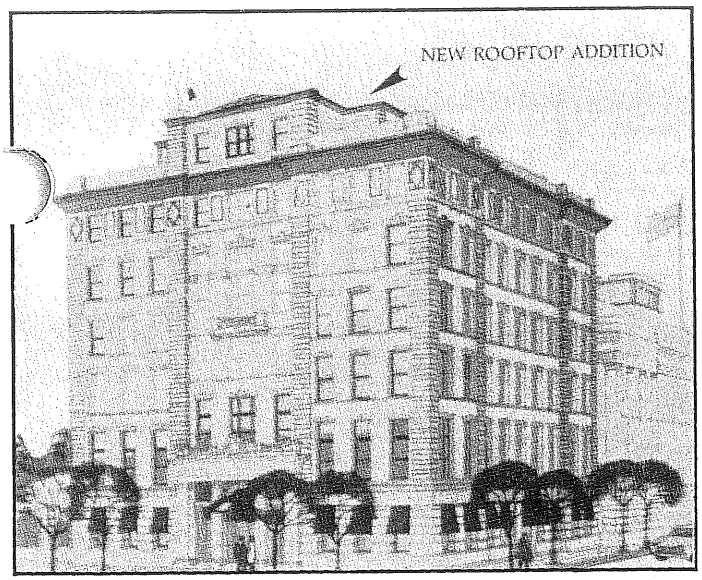




Photos: Jerry Liebman

Historic post office with new commercial entrance addition. This approach protects the historical significance of the resource by making a visual distinction between what is old and what is new.

An 1810 granite and wood structure in Chester, Connecticut has been used over its long history as a post office, a school, and most recently, for two businesses—one downstairs and one upstairs. In 1985, as part of the conversion of the second floor into a graphic a: studio, an extensively deteriorated straight-run wooden stair was replaced by this small new entrance and stairtower addition. Because of the addition's deep set-back and restrained size, the form, features, and detailing of the historic structure continue to dominate both site and streetscape; moreover, the new work has a separate identity and could not be mistaken as part of the historic building.



Drawing: National Register files

Historic city hall with new rooftop office addition. This approach does not protect the historical significance of the resource because it fails to make a visual distinction between what is old and what is new.

The drawing shows a proposed penthouse addition to a former municipal building. Originally a flat-roofed structure with a modestly detailed cornice, the proposed new addition has changed the proportions and profile, creating a verticality and degree of ornamentation that never existed historically. These changes have effectively *re-defined* the historic character. With its highly replicative ornamentation, the addition has become an integral component of the historic design. The result is that a passerby would probably not be able to tell that the rooftop addition is new and not part of the original construction.

NEW EXTERIOR ADDITIONS TO HISTORIC BUILDINGS

Preserve Significant Historic Materials and Features

Avoid constructing an addition on a primary or other character-defining elevation to ensure preservation of significant materials and features.

Minimize loss of historic material comprising external walls and internal partitions and floor plans.

Preserve the Historic Character

Make the size, scale, massing, and proportions of the new addition compatible with the historic building to ensure that the historic form is not expanded or changed to an unacceptable degree.

Place the new addition on an inconspicuous side or rear elevation so that the new work does not result in a radical change to the form and character of the historic building.

Consider setting an infill addition or connector back from the historic building's wall plane so that the form of the historic building–or buildings– can be distinguished from the new work.

Set an additional story well back from the roof edge to ensure that the historic building's proportions and profile are not radically changed.

Protect the Historic Significance–Make a Visual Distinction Between Old and New

Plan the new addition in a manner that provides some differentiation in material, color, and detailing so that the new work does not appear to be part of the historic building. The character of the historic resource should be identifiable after the addition is constructed.

Conclusion

A major goal of our technical assistance program is a heightened awareness of significant materials and the historic character *prior* to construction of a new exterior addition so that essential change may be effected within a responsible preservation context. In summary, then, these are the three important preservation questions to ask when planning a new exterior addition to a historic resource:

1. **Does the proposed addition preserve significant historic materials and features?**
2. **Does the proposed addition preserve the historic character?**
3. **Does the proposed addition protect the historical significance by making a visual distinction between old and new?**

If the answer is YES to all three questions, then the new addition will protect significant historic materials and the historic character and, in doing so, will have satisfactorily addressed those concerns generally held to be fundamental to historic preservation.

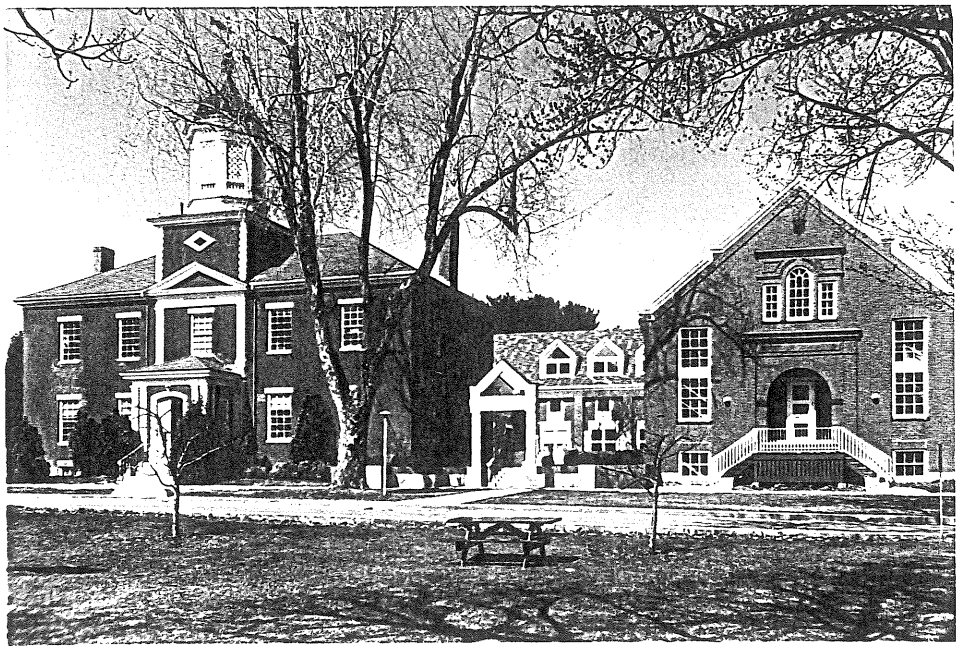
AT. 8

Standard #9

CONTEMPORARY DESIGN FOR ALTERATIONS AND ADDITIONS TO EXISTING PROPERTIES SHALL NOT BE DISCOURAGED WHEN SUCH ALTERATIONS AND ADDITIONS DO NOT DESTROY SIGNIFICANT CULTURAL, HISTORICAL, ARCHITECTURAL, OR ARCHAEOLOGICAL MATERIAL AND SUCH DESIGN IS COMPATIBLE WITH THE SIZE, SCALE, COLOR, MATERIAL AND CHARACTER OF THE PROPERTY, NEIGHBORHOOD OR ENVIRONMENT.

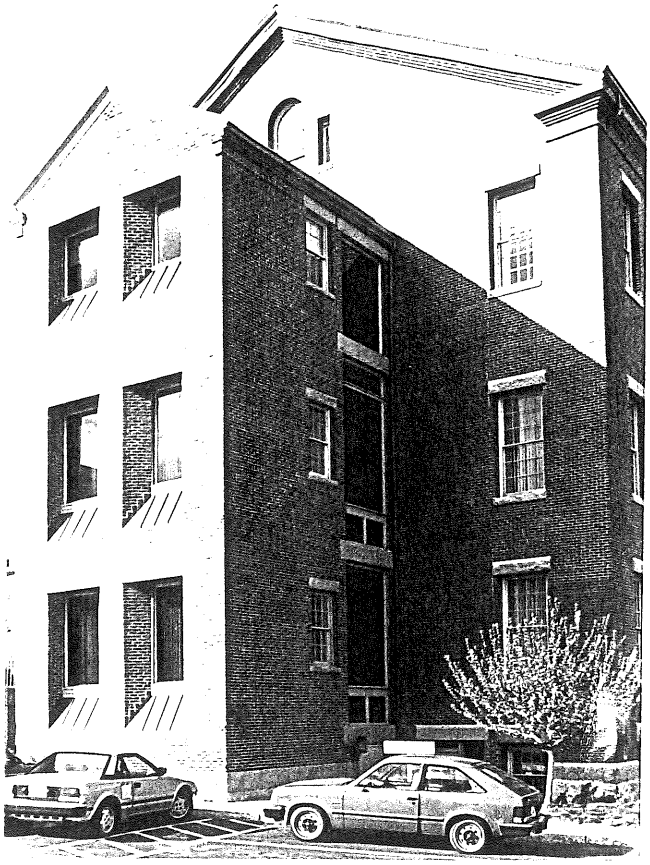
Recognizing the fact that buildings are continually evolving in response to changes in use, Standard #9 provides guidance for designing and evaluating proposed additions or alterations to historic buildings. Of critical importance in evaluating a new addition or alteration is its impact on the historic building in terms of scale, materials, design elements, visibility, and its visual distinction from the historic building. Additions or alterations should be products of their own time and not seek to duplicate the historic structure. However, these new additions/alterations should be compatible with the original building.

The design standards for new construction (see following section) are applicable for building additions as well and will help to explain how an addition may be compatible yet distinct.

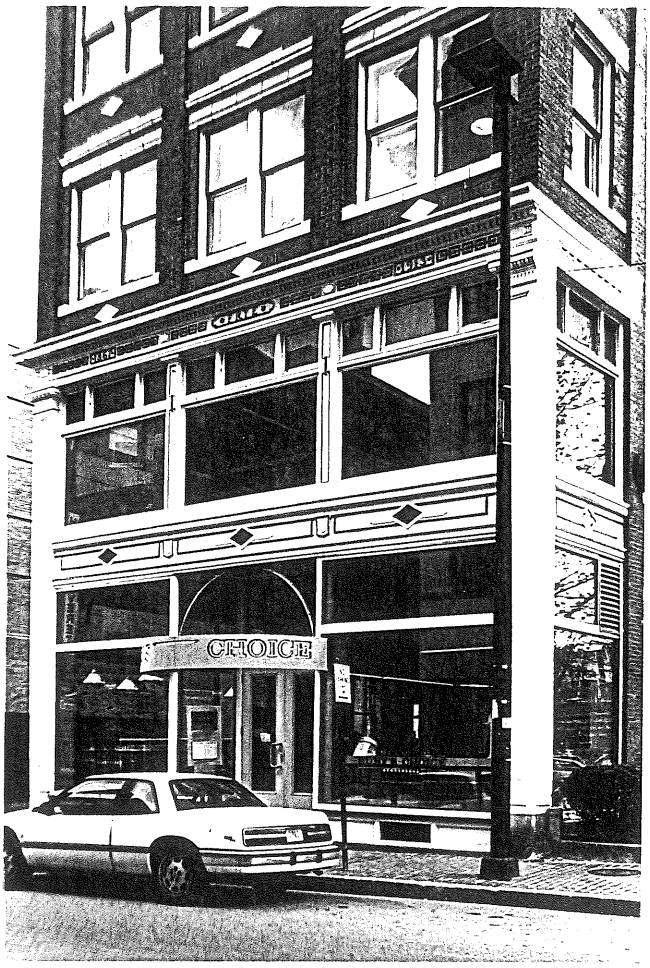


Contemporary additions or alterations to historic buildings should generally be made on a side or rear elevation, not on the primary facade. The scale and materials should be compatible with the historic fabric, as illustrated in this addition to the Josephine S. Abplanalp Library at Westbrook College. It is important to note, however, that compatibility need not and should not mean exact replication. There should be a clear differentiation between the new and old, through detailing or materials, so the addition will not appear to be a part of the original building. Here, the addition respects the scale and designs of the two buildings it connects and at the same time makes its own contemporary design statement.

To be compatible with a historic building, a contemporary addition may echo some of the building's original features or details. The kitchen addition on the rear of this house resembles the original bay on the left in its five-sided shape, its window proportions, and its flat roof surmounted by a rail. Nevertheless, it "reads" as contemporary.

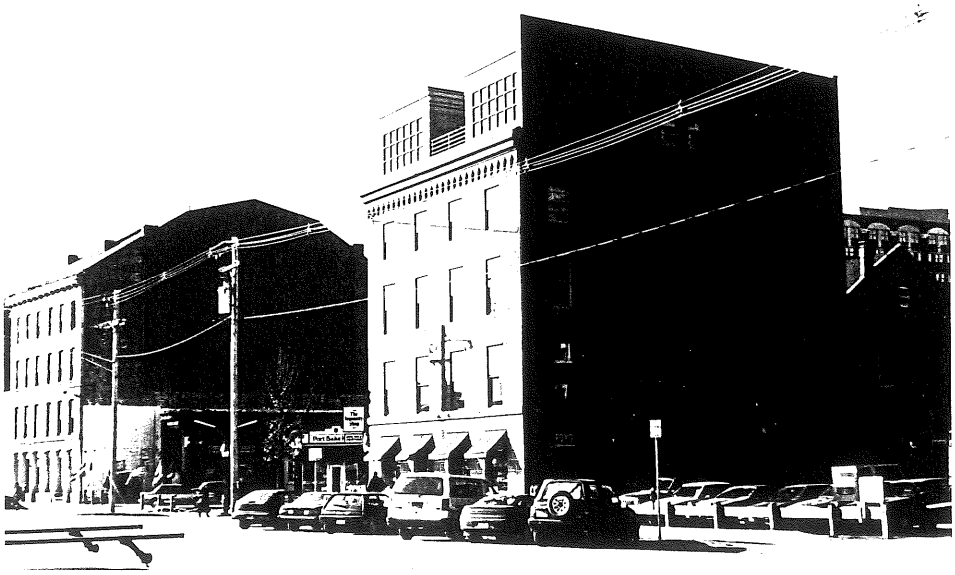


When a second stairway or an elevator cannot be accommodated within a historic building, a contemporary addition may be built for this purpose. Here the roofline, mass and fenestration pattern of the new Staples School stair tower compliments that of the main building. The point of connection where the addition meets the original building is clearly defined by an almost continuous wall of glass.



A contemporary design for a storefront in a historic building will be compatible if it follows the spatial organization of traditional storefront design. The proportions of the new storefront at the Frye Building were determined by the existing lower cornice and the vertical divisions in the upper stories.

Note the predominance of the gambrel roofs in this Commercial Street streetscape.



The roofline is often an important character defining feature that should be respected. Here, the once prominent gambrel roof, typical of warehouses in the waterfront district, has been irreversibly altered by this rooftop addition which sits flush with the plane of the perimeter walls. The change is brick on the extended side wall is the only indication of the original roofline. Were the addition pulled back from the perimeter walls and integrated within the gambrel roof form, a more successul solution would have resulted.

By constructing inverted dormers in this gambrel roof, the developers gained usable space in the former attic. The shape of the roof, a distinctive architectural feature, has been retained and conveys a sense of the building's original character.

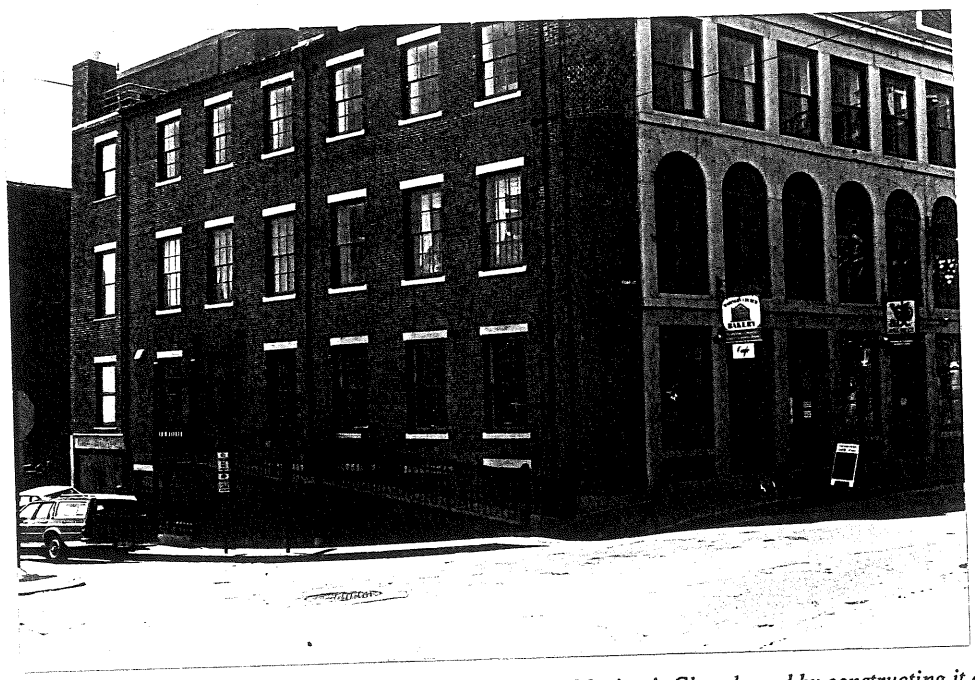
By locating the rooftop addition back from the streetwall, the original architectural integrity of the building is retained.

Standard #10

WHEREVER POSSIBLE, NEW ADDITIONS OR ALTERATIONS TO STRUCTURES AND OBJECTS SHALL BE DONE IN SUCH A MANNER THAT IF SUCH ADDITIONS OR ALTERATIONS WERE TO BE REMOVED IN THE FUTURE, THE ESSENTIAL FORM AND INTEGRITY OF THE STRUCTURE WOULD BE UNIMPAIRED.

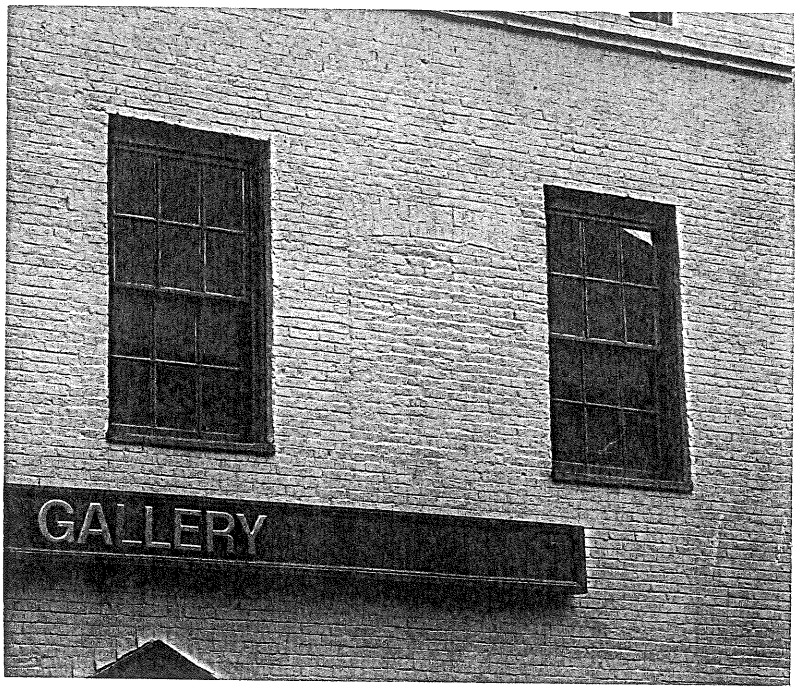
In all cases, effort should be made to ensure that alterations can be reversed. "Reversibility" is an idea borrowed from Fine Arts conservation, the intention being that any addition made to a piece of art (paint, chemicals, finishes, etc.), should be reversible if it is causing damage or better treatments are developed in the future. Every consideration should be given in project planning to this concept so that historic material is not permanently sacrificed for what may ultimately be a temporary need.

When a new air-lock entry was needed at this historic building, it was constructed <u>inside</u> the building, leaving the original handsome wood paneled doors intact. The wood doors are pulled shut after business hours. This is a good solution for accommodating modern needs.

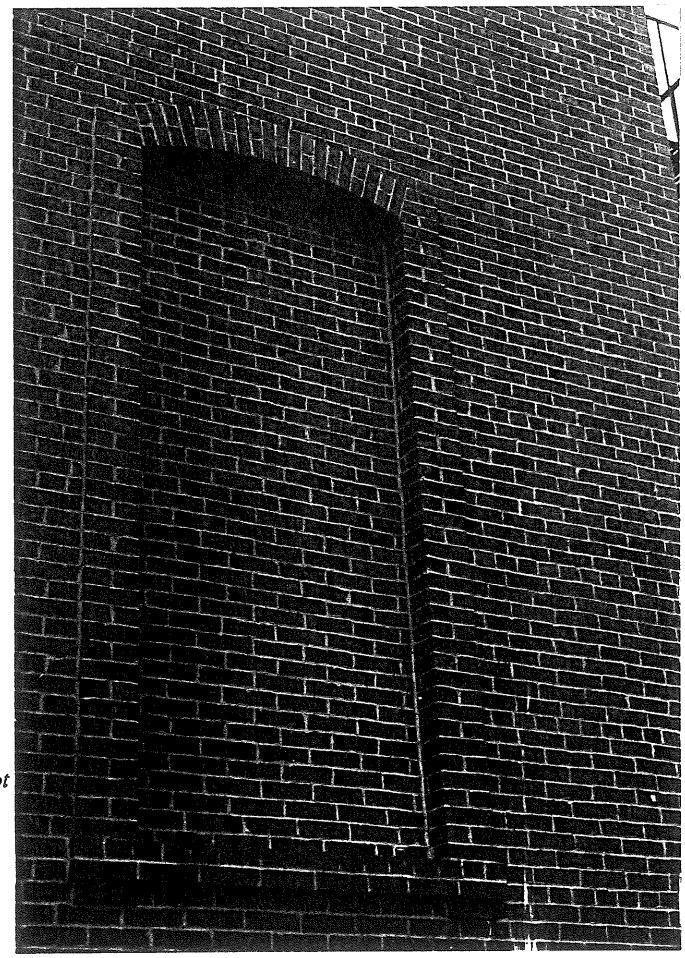


By placing the handicapped access ramp on a secondary elevation of the Mariner's Church, and by constructing it of high quality materials, the form and integrity of the historic building is retained. It is also constructed in such a way that it could be removed in the future, leaving the original building intact.

When a major addition was made to the facade of this building, the original facade was destroyed, making the possibility of future reversal inordinately expensive.



When the current owners want privacy in an upper story room, the windows were blocked from within, leaving the original features intact. This change can be easily and inexpensively reversed.



A permanent solution for what may be a temporary need is not advisable.

9a.

2 THOMAS STREET
PORTLAND, MAINE
04102

June 6, 1999

Susan Wroth, Chair
Historic Preservation Committee

Dear Mrs. Wroth,

I'm enclosing a copy of the petition that Mara Ubans and I circulated in the neighborhood concerning the Waynflete addition/connection at 338-342 Spring Street. The original has been delivered to the Planning Office.

I know that you've received letters from Waynflete parents supporting this plan. We would like to support it too but not at the expense of changing the nature of the neighborhood.

The proposal creates a wall of buildings at the head of Thomas Street and presents an institutional appearance to the streetscape. Many neighbors agree with this fact.

We've kept the petition-signing focused on the residents close to the school since they are the most affected and also because the school seemed to feel they were satisfied with the proposal. Their signatures on this petition indicate otherwise.

Those neighbors on the periphery of the enclosed map (Pine, Spruce and Carroll) wanted to sign and also sent us to neighbors who they knew felt similarly. It was our intent, however, to stay within the Waynflete area, as most of the signatures will attest.

Mainly, we would like Waynflete to explore other options rather than connecting two historic buildings.

I've asked the school to mail their Master Plan to neighbors so that there would be something tangible to go by.

Thank you for reviewing this material.

If you have any questions, please call me at 773-6692.

Sincerely,

Norma Ware

cc: Karen Geraghty

We, the undersigned West End residents and Waynflete School neighbors, request that the Historic Preservation Committee/Planning Board deny Waynflete's proposal for an addition/connection between nos. 338 and 342 Spring Street--two architecturally distinct buildings. We feel that the proposal is inappropriate for the area and sets an undesirable precedent for this historic residential district.

Date	SIGNATURE	NAME	ADDRESS	PHONE
5/26/99	Juris Ubans	JURIS UBANS,	ONE THOMAS ST. P.	774-9184
5/29/99	Mara Ubans	MARA UBANS	1 Thomas St, Portl.	774-9184
	John Holverson	JOHN HOLVERSON	292 SPRING ST,	7750094
5/31/99	Daniel E. O'Leary	Daniel E. O'Leary	27 Storer St.	772-1254
5/31/99	Hilary D. Bassett	HILARY D BASSETT	27 STORER ST	772-1254
5/31/99	Barbara M. Briggs	BARBARA BRIGGS	14 BOWDOIN ST	761-1593
5/31/99	Victoria A. Murphy	Victoria Murphy	6 Bowdoin St	774-0161
5/31/99	Donald K. Chappell	Donald Chappell	10 Pine St.	772-9957
5/31/99	Jane Kolkhorst	JANE KOLKHORST	25 VAUGHAN	774-8366
"	Barbara Davisson	BARBARA DAVISSON	395 DANFORTH	780-0181
"	William Davisson	WILLIAM DAVISSON	395 DANFORTH	780-0181
"	Sandra Falvey	Sandra Falvey	395 Danforth	879-0752
"	Lolly Webber	Lolly Webber	11 Fletcher St	774-9119
	Diane Worthington	Diane Worthington	27 Thomas St.	761-4371
	Daniel Kennedy	Daniel Kennedy	126 Pine St. Portland	
	Lucille E Hatcher	Lucille E Hatcher	126 Pine	
	Norman H. Morse	NORMAN H. MORSE	387 Spring St.	
	Marta Morse	MARTA MORSE	387 Spring	879-1887
	J. Michael Taylor	J. Michael Taylor	395 Spring	774-5744
	Wendy L. Taylor	WENDY TAYLOR	395 SPRING	774-5744
	Ronald Rovner	Ronald Rovner	375 Spring St	879-7707
	Elaine Rovner	Elaine Rovner	375 Spring St.	

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	SIGNATURE	NAME	ADDRESS	PHONE
5/29/99	Norma Ware	NORMA WARE	2 THOMAS ST	773-6692
5/29/99	Roland G. Ware Jr	ROLAND G. WARE, JR	2 Thomas St	7736692
5-29-99	Robert F. Savadove	ROBERT F. SAVADOVE	321 SPRING ST.	780-0148
5/31/99	Wilmont Schmuck	Wilmont Schmuck	354 Spring St	871-7649
6/1/99	Walter J Pooler	WALTER J. POOLER	335 Spring	773-0602
6/1/99	Mary J Pooler	MARY J POOLER	335 SPRING ST	7730602
6/1/99	Dorothy S. Clark	Dorothy S Clark	5 Clifford St	774-040
6/1/99	Eliza H Wroth	Eliza H. Wroth	19 Thomas St	773-7797
6-1-99	Marianna V. Horr	Marianna V. Horr	25 Thomas St	774-5352
6-1-99	Richard S. Horr	Richard S. Horr	25 Thomas St	774-5352
6-1-99	Doris Stevens	DORIS S. STEVENS	21 THOMAS ST	773-4315
6/1/99	Carlyle Vosse	Carlyle Vossus	366 Spring St	871-2185
	Patricia Z Voss	Patricia Z. Voss	366 Spring St.	871-2185
	Matthew J. Voss	Matthew J. Voss	366 Spring St	871-2685
	Hui Ping Voss	Hui Ping Voss	366 Spring St	871-2685
6/1/99	Carl Pabst	Carl Pabst	34 Taylor St.	773-1902
	David C Wolfe	DAVID C. Wolfe	31 Taylor St.	871-1488
	Samuel J. D'Amico	SAMUEL J. D'AMICO	17 Thomas St	7739063
6-1-99	Judith D'Amico	Judith D'Amico	17 Thomas St.	773-9003
	Jerry W West	JERRY W. WEST	27 THOMAS	761-4368
	Norma J. Balser	NORMA BALSER	15 Thomas	774-9385
	Richard M. Balser	Richard M. Balser	15 Thomas	774-9385

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DATE	SIGNATURE	NAME	ADDRESS	PHONE
6/3/99	Kenneth P. Ciuto	KENNETH P. CIUTO	365 SPRING ST	761-1884
"	Lisa M Brunelle	LISA M. BRUNELLE	81 SPRUCE ST.	775-6243
"	Donna E Pabst	DONNA E. PABST	34 Taylor St.	773-3170
"	Catherine M Scanlon	CATHERINE M SCANL.	36 TAYLOR ST	774-5371
	Anne E Scanlon	ANNE E. SCANLON	36 TAYLOR ST.	774-5371
"	Kathleen F Mott	KATHLEEN F. MOTT	1 BOWDOIN	775-0072
"	Robert G Nielsen	ROBERT A. NIELSEN JR.	15 CLIFFORD ST.	772-4552 774-5626
"	Susan E. Nielsen	SUSAN Nielsen	15 Clifford St	772-1352
"	J.L.K. Jones	JOHN K. JONES	40 TAILOR ST	775 3773
"	Elaine Benedetti Jones	ELAINE BENEDETTI JONES	40 TAYLOR ST	" "
"	Elizabeth W Begin	Elizabeth W Begin	5 Orchard St	773-3750
"	John Hatcher	John Hatcher	126 Pine Street - Port.	772-7995
"	Susan Hamill	Susan Hamill	143 Vaughan Portland	7734189
"	Susan Arnold	Susan Arnold	138 Vaughan	774-2184
"	Isabel Smiles	ISABEL Smiles	49 Neal St.	772-1006
"	Lori Simonds	Lori Simonds	104 WEST	874-6666
"	Gordon Simonds	GORDON SIMONDS	104 WEST	874-6666
"	Ruth H Allison Lord	RUTH ALLISON LORD	3 Carroll St	773-6659
6/4/99	Mary N. Flagg	MARY N. FLAGG	383 Spring St	773-5025
	Mary M. Horn	Mary M. Horn	46 Clifford St	
"	Kathleen H. Nowicki	KATHLEEN H. NOWICKI	384 Spring St.	773-8810
	Elfriede R. Holmes	ELFRIEDE R HOLMES	"	