

**45-E-42
40-44 Pine Street
West End Place
Redfern**

#2012-612



P.O. Box 8816
Portland, ME 04104
Office: 207-221-5746
Fax: 207-221-2822

January 30, 2013

City of Portland
Planning Division
389 Congress Street, 4th Floor
Portland, ME 04101

Re: West End Place/Final Site Plan Application

Dear Sir or Madam:

Redfern LWS LLC is pleased to submit the attached Level III Final Site Plan Application. This follows our Preliminary Site Plan Application, submitted on October 15, 2012 and reviewed at the November 13, 2012 Planning Board meeting.

This final application contains does not contain items that were included in, and have not changed since the Preliminary Application. Please contact me for any additional information. We appreciate your consideration of our project.

Sincerely,



Jonathan Culley
Redfern LWS LLC

**West End Place
Level III Site Plan – Final Application**

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General Submittal Requirements – Preliminary Plan (Optional)

Level III Site Plan

Preliminary Plan Phase Check list (if elected by applicant)

Applicant Checklist	Planner Checklist	Number of Copies	Written Submittal Requirements
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Completed application form
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Application fees
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Written description of project.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Evidence of right, title and interest.
<input type="checkbox"/> N/A	<input type="checkbox"/>	1	Copies of required State and/or Federal permits.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Written assessment of proposed project's compliance with applicable zoning requirements.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Written description of existing and proposed easements or other burdens.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Written requests for waivers from individual site plan and/or technical standards, where applicable.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Traffic analysis (may be preliminary, in nature, during the preliminary plan phase).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Written summary of significant natural features located on the site.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Written summary of project's consistency with related city master plans.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Neighborhood Meeting Material (refer to page 13 of this application.)
Applicant Checklist	Planner Checklist	Number of Copies	Site Plan Submittal Requirements
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Boundary Survey meeting the requirements of Section 13 of the City of Portland Technical Manual.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Preliminary Site Plan Including the following: (*information provided may be preliminary in nature during preliminary plan phase):
<input checked="" type="checkbox"/>	<input type="checkbox"/>		▪ Existing and proposed structures with distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone).
<input checked="" type="checkbox"/>	<input type="checkbox"/>		▪ Location of adjacent streets and intersections and approximate location of structures on abutting properties.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		▪ Proposed site access and circulation.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		▪ Proposed grading and contours.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		▪ Location and dimension of existing and proposed paved areas including all parking areas and vehicle, bicycle and pedestrian access ways.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		▪ Preliminary landscape plan including existing vegetation to be preserved, proposed site landscaping and street trees.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		▪ Existing and proposed utilities (preliminary layout).
<input checked="" type="checkbox"/>	<input type="checkbox"/>		▪ Preliminary infrastructure improvements (e.g. - curb and sidewalk improvements, roadway intersection modifications, utility connections, transit infrastructure, roadway improvements).
<input checked="" type="checkbox"/>	<input type="checkbox"/>		▪ Preliminary stormwater management and erosion control plan.
<input checked="" type="checkbox"/>	<input type="checkbox"/>		▪ Existing significant natural features located on the site (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features listed in Section 14-526 (b) 1. of the Land Use Code).
<input checked="" type="checkbox"/>	<input type="checkbox"/>		▪ Proposed alterations to and protection measures for significant natural features located on the site (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features listed in Section 14-526 (b)1. of the Land Use Code).



Existing and proposed easements or public or private rights of way.

General Submittal Requirements – Final Plan (Required)

Level III Site Plan

Final Plan Phase Check list (including items listed above in General Requirements for Preliminary Plan, if applicant did not elect to submit for a preliminary plan review)

Applicant Checklist	Planner Checklist	Number of Copies	Written Submittal Requirement
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Evidence of financial and technical capacity.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Evidence of utilities' capacity to serve the development.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Written summary of fire safety (referencing NFPA fire code and Section 3 of the City of Portland Technical Manual).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Construction management plan.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Traffic Plan (if development will (1) generate 100 or more PCE or (2) generate 25 or more PCE and is located on an arterial, within 1/2 mile of a high crash location, and/or within ¼ mile of an intersection identified in a previous traffic study as a failing intersection).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Stormwater management plan.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Written summary of solid waste generation and proposed management of solid waste.
<input type="checkbox"/> HP Board Review	<input type="checkbox"/>	1	Written assessment of conformity with applicable design standards.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	Manufacturer's verification that HVAC and manufacturing equipment meets applicable state and federal emissions requirements.

Final Plan Phase		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Final Site Plan including the following
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Existing and proposed structures on the site with distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Location of adjacent streets and intersections and approximate location of structures on abutting properties.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Proposed site access and circulation.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Proposed grading and contours.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Location and dimension of existing and proposed paved areas including all parking areas and vehicle, bicycle and pedestrian access ways. Proposed curb lines must be shown.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Proposed loading and servicing areas, including applicable turning templates for delivery vehicles
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Proposed snow storage areas or snow removal plan.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Proposed trash and recycling facilities.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Landscape plan including existing vegetation to be preserved, proposed site landscaping and street trees.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Existing and proposed utilities.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Location and details of proposed infrastructure improvements (e.g. - curb and sidewalk improvements, roadway intersection modifications, utility connections, public transit infrastructure, roadway improvements).
<input type="checkbox"/> N/A	<input type="checkbox"/>	Proposed septic system, if not connecting to municipal sewer. (Portland Waste Water Application included in this application)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Proposed finish floor elevation (FFE).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Exterior building elevation(s) (showing all 4 sides).
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Proposed stormwater management and erosion controls.

-
- TBD
-
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- W/A
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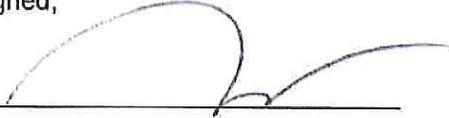
<ul style="list-style-type: none"> ▪ Exterior lighting plan, including street lighting improvements..
<ul style="list-style-type: none"> ▪ Proposed signage.
<ul style="list-style-type: none"> ▪ Identification of existing significant natural features located on the site (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features listed in Section 14-526 (b)1. of the Land Use Code). Wetlands must be delineated.
<ul style="list-style-type: none"> ▪ Proposed alterations to and protection measures for of existing significant natural features located on the site (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features listed in Section 14-526 (b)1. of the Land Use Code).
<ul style="list-style-type: none"> ▪ Total area and limits of proposed land disturbance.
<ul style="list-style-type: none"> ▪ Soil type and location of test pits and borings.
<ul style="list-style-type: none"> ▪ Details of proposed pier rehabilitation (Shoreland areas only).
<ul style="list-style-type: none"> ▪ Existing and proposed easements or public or private rights of way.

Neighborhood Meeting Certification

I, (applicant/consultant) hereby certify that a neighborhood meeting was held on (date) at (location) at (time).

I also certify that on (date at least seven days prior to the neighborhood meeting), invitations were mailed to all addresses on the mailing list provided by the Planning Division, including property owners within 500 feet of the proposed development or within 1000 feet of a proposed industrial subdivision or industrial zone change and the residents on the "interested parties" list.

Signed,



A handwritten signature in blue ink, consisting of a large, stylized initial 'R' followed by a surname, written over a horizontal line.

11/10/2012 (date)

Attached to this certification are:

1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting minutes

West End Place Neighborhood Meeting
November 15, 2012 at 7pm
Reiche Community Center, Portland Maine

In attendance were Jonathan Culley, representing Redfern LWS (the Developer) and Ryan Senatore (the project architect) as well as 8 members of the public (attendance sheet attached).

Jonathan Culley made a presentation describing the project objectives, scope, and timing (10 min). Ryan Senatore made a presentation describing the architecture (5 min). The floor was opened for questions.

Kevin Gillespie, owner of a 5-unit apartment building at 35 Pine St. expressed concerns about parking. Jonathan Culley explained that West End Place will have 34 parking spaces and 39 apartments. Jonathan Culley discussed the other things that the project developers are doing to mitigate parking, including a Zipcar (or similar) car sharing arrangement.

Paul Davis of 3 Pine St. and Cheryl Quimby of 232 Pine St. also expressed concerns about parking.

There was a discussion about larger urban areas and how in major cities apartment buildings were built without any parking. David Hall of 64 Carleton Street was enthusiastic about a Portland with less parking and fewer cars. He enthusiastically endorsed the project.

Judy West and Peter West of 18 Pine Street expressed similar sentiments, explaining that they have no parking for their single family townhome, but simply make it work, like many other city dwellers.

Tom MacMillan of 17 May St., expressed support for the project and appreciated the more progressive and "green" features of the development.

There was a discussion on the retail spaces on the ground level and what type of business should be there. There was broad support for a small grocery market.

The meeting adjourned at 7:41pm.



P.O. Box 8816
Portland, ME 04104
Office: 207-221-5746
Fax: 207-221-2822

January 30, 2013

City of Portland
Planning Division
389 Congress Street, 4th Floor
Portland, ME 04101

Re: West End Place/Financial and Technical Capacity

Dear Sir or Madam:

Redfern LWS LLC is a partnership of Redfern Properties LLC and LWS Investments LLC. Together, the partners have developed more than 200 housing units in Maine, including a number of projects in Portland. The value of our combined residential development projects exceeds \$50 Million. Jonathan Culley of Redfern Properties LLC and Paul Peck of LWS Investments, have each managed complex projects from initial design and permitting through completion.

While the partners will be contributing the equity financing for West End Place, we are in advanced stages of financing discussions with Rockport Mortgage of Gloucester, Massachusetts. Rockport is providing consulting and assistance in our efforts to obtain a loan guarantee from the U.S. Department of Housing and Urban Development (HUD), through HUDs Section 221 (d) 4 program. A letter form Rockport Mortgage is attached.

Sincerely,

A handwritten signature in black ink, appearing to read "Jonathan Culley", with a large, sweeping flourish extending to the right.

Jonathan Culley
Redfern LWS LLC

ROCKPORT
MORTGAGE
CORPORATION

City of Portland
Planning Board
389 Congress Street, 4th Floor
Portland, Maine 04101

Re: West End Place

Dear Sir or Madam,

Rockport Mortgage Corporation is a privately owned commercial mortgage banking firm that specializes in providing HUD/FHA insured financing programs. Rockport Mortgage is working closely with Redfern LWS LLC, and its principals Jonathan Culley and Paul Peck, to provide financing for the West End Place project. Together, we are pursuing financing through the HUD Section 221(d)(4) program, which provides mortgage insurance for new construction, market-rate multifamily projects.

On behalf of Redfern LWS LLC, Rockport Mortgage recently submitted a preliminary application to HUD and expects a favorable response. Given our knowledge of this deal, our due diligence to date (including several market reports and appraisals), and our experience with the HUD program, we are optimistic that Redfern LWS LLC will be successful in obtaining the desired financing.

Sincerely,



Joseph Mueller
Managing Partner



Central Maine Power

September 21, 2012

Blais Civil Engineers
C/O Ms. Jennifer R. Williams EIT
780 Broadway
South Portland, Maine 04106

RE: Three Phase Electric Service, 183 – 189 Brackett Street, Portland, Maine

Dear Ms. Williams,

This letter is to advise you Central Maine Power has sufficient three phase electrical capacity in the area to serve the subject project.

Once the project is accepted by the City of Portland, the owner will need to call our Customer Service Center at 1-800-565-3181 to sign up for a New Account and a Work Request Order so we may provide an actual cost.

I will need to know what size service and voltage the Customer will be requesting.

If you have any questions please feel free to call me at 828-2882.

Sincerely,

Paul DuPerre
Energy Service Specialist

An equal opportunity employer

162 Canco Road | Portland, Maine 04103

tel (800) 750-4000

www.cmpco.com

An Energy East Company



Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

October 9, 2012

Blais Civil Engineers
780 Broadway
South Portland, ME 04106

Attn: Jennifer R. Williams, EIT
Re: West End Place; 183 Brackett Street, Portland
Ability to Serve with PWD Water

Dear Ms. Williams:

The Portland Water District has received your request for an Ability to Serve determination for the noted site submitted on September 10, 2012. Based on the information provided, we can confirm that the District will be able to serve the proposed project as further described in this letter.

Please note that this letter does not constitute approval of this project from the District. Please review this letter for any special conditions specified by the District and to determine the appropriate next steps to take to move your project through the submittal and approval process.

Existing Site Service

According to District records, the project site does currently have existing water service. Three 3/4-inch diameter copper water service lines, located as shown on the attached water service cards, provide water service to this site. Please refer to the "Conditions of Service" section of this letter for requirements related to the use of these services.

Water System Characteristics

According to District records, there is a 6-inch diameter cast iron water main in the center of Brackett Street and a public fire hydrant located 60-feet from the site.

The current data from the nearest hydrant with flow test information is as follows:

Hydrant Location: Pine Street at Brackett Street
Hydrant Number: POD-HYD00336
Last Tested: 10/26/2005
Static Pressure: 56 psi
Residual Pressure: Not Measured
Flow: 992 GPM



Public Fire Protection

It is anticipated that this project will not include the installation of new public hydrants to be accepted into the District water system. The decision to require new hydrants and to determine their locations is solely that of the local fire department. It is your responsibility to contact the Portland Fire Department to ensure that this project is adequately served by existing and/or proposed hydrants.

Domestic Water Needs

The ability to serve request letter noted that the anticipated water demand for the mixed use site would be approximately 8,140 gallons per day. The data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of the proposed project.

Private Fire Protection Water Needs

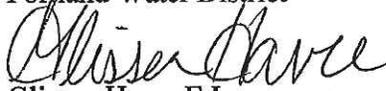
It is anticipated that this project will require water service to provide private fire protection to the site. Please note that the District does not guarantee any quantity of water or pressure through a fire protection service. Please share these results with your sprinkler system designer so that they can design the fire protection system to best fit the noted conditions. If the data is out of date or insufficient for their needs, please contact the MEANS Division to request a hydrant flow test and we will work with you to get more complete data.

Conditions of Service

The District can confirm that the existing water system has the capacity to serve the proposed 39 residential units and retail/restaurant space. New services for both fire and domestic may be installed from the water main in Brackett Street. The current minimum service line diameter is 1-inch pipe; the three existing ¾-inch water services at this site are inadequate for the proposed usage and must be discontinued. These must be discontinued by shutting corporation valve and cutting the pipe from the main.

As your project progresses, we advise that you submit any preliminary design plans to the MEANS Division for review of the water service line configuration. We will work with you or your representative to ensure that the design meets our current standards. If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District



Glissen Havu, E.I.
Design Engineer



November 20, 2012

Jennifer R. Williams, EIT
Blais Civil Engineers
780 Broadway
South Portland, ME 04106

Re: West End Place, 183-189 Brackett Street, Portland, ME

Thank you for your interest in using natural gas for the above referenced project.

Unitil does have sufficient natural gas in the vicinity of this project to provide service. The evaluation to complete the design, costs and determining if any customer contribution will be needed is in process and will be completed shortly. Unitil welcomes the opportunity for further discussions regarding this project.

If you have any further questions or require additional information, please contact me directly at (207) 541-2505 or at fowler@unitil.com.

Sincerely,

Kelly Fowler

Kelly Fowler
Sr. Business Development Representative

1075 Forest Avenue,
Portland, ME 04103-3321

Phone: 866-933-3821

Jennifer Williams

From: Fowler, Kelly
Sent: Tuesday, November 20, 2012 11:48 AM
To: Jennifer Williams
Subject: RE: Capacity review request - West End Place (183-189 Brackett Street) Portland
Attachments: 183-189Brackett_Ability to Serve.doc

Jennifer,

Please find attached a letter stating Unutil's ability to serve.

Unutil would like to thank you for the opportunity to provide natural gas to the above project. When the project moves forward, in order to complete that evaluation, we ask that you provide the following information:

- Service address
- Utility site plan in pdf format
- Natural gas load requirements (BTU rating of each piece of gas equipment)
- Number of meters requested and list of appliances per meter
- Requested delivery pressure (7" w.c. or 2 psi)
- Legal Entity Property owner name, address, number and email
- Timeline for construction
- Estimated annual usage (if available)

When Unutil receives this information, the Engineering and Operations groups can approve, size and estimate the cost to provide natural gas service to this project. When that is complete, the financial analysis can be done to determine what, if any, the customer contribution may be.

If you have any questions, please let me know.

From: Jennifer Williams [<mailto:jwilliams@blaisce.com>]
Sent: Tuesday, November 20, 2012 9:44 AM
To: Fowler, Kelly
Subject: FW: Capacity review request - West End Place (183-189 Brackett Street) Portland
Importance: High

Hi Kelly –

Just following up on this capacity review request originally from **September 11, 2012**. If you are not able to give us a response letter or an update on where this review stands, could you please forward the contact information for someone who can?

Thank you,
Jennifer

From: Jennifer Williams [<mailto:jwilliams@blaisce.com>]
Sent: Monday, November 12, 2012 3:02 PM
To: 'fowler@unitil.com'
Subject: RE: Capacity review request - West End Place (183-189 Brackett Street) Portland

Hi Kelly –

We will soon need to let Portland's Planning Board know if Unitil is willing and able to provide gas for the above mentioned project. Could you please let me know where the review process stands or who else I should contact about this project?

Thank you,
Jennifer

Jennifer R. Williams, EIT
Blais Civil Engineers, PA
207-767-7300
www.BLAISce.com

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From: Jennifer Williams [<mailto:jwilliams@blaisce.com>]
Sent: Monday, October 29, 2012 4:06 PM
To: 'fowler@unitil.com'
Subject: FW: Capacity review request - West End Place (183-189 Brackett Street) Portland

Good afternoon Kelly,
I am following up on this capacity request letter, sent on September 11, for a development at 183-189 Brackett Street in Portland.

Please let me know if there are any questions about this project and where Unitil stands with the review.

Thank you,
Jennifer

From: Jennifer Williams [<mailto:jwilliams@blaisce.com>]
Sent: Tuesday, September 11, 2012 1:47 PM
To: 'fowler@unitil.com'
Subject: Capacity review request - West End Place (183-189 Brackett Street) Portland

Kelly –

Please see attached letter requesting your review of a proposed development project located at 183-189 Brackett Street in Portland.

Jennifer R. Williams, EIT
Blais Civil Engineers, PA
207-767-7300
www.BLAISce.com

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CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

Department of Public Services,
55 Portland Street,
Portland, Maine 04101-2991



Mr. Frank J. Brancely,
Senior Engineering Technician,
Phone #: (207) 874-8832,
Fax #: (207) 874-8852,
E-mail: fjb@portlandmaine.gov

Date: December 2012

1. Please, Submit Utility, Site, and Locus Plans.

Site Address: 183- 189 Brackett Street (corner of Pine and Brackett Street)

(Regarding addressing, please contact Leslie Kaynor, either at 756-8346, or at LMK@portlandmaine.gov)

Chart Block Lot Number: 45-E-39, 40, 41, 42, 50

Proposed Use: Mixed-Use (Retail/Restaurant, Residential)

Previous Use: Parking lot, vacant structures

Existing Sanitary Flows: 0 GPD

Existing Process Flows: 0 GPD

Description and location of City sewer, at proposed building sewer lateral connection:

Proposed connection from new building to existing 15" Brackett Street sewer line. See attached sheet for estimate of total residential + retail wastewater flows to be introduced into City system.

Clearly, indicate the proposed connection, on the submitted plans.

Site Category	Commercial	<input type="checkbox"/>
	Industrial (complete part 4 below)	<input type="checkbox"/>
	Governmental	<input type="checkbox"/>
	Residential	<input checked="" type="checkbox"/>
	Other (specify)	<input type="checkbox"/>

2. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 8,140 GPD

Peaking Factor/ Peak Times: 5.8, See Notes on Page 2

Specify the source of design guidelines: (i.e. "Handbook of Subsurface Wastewater Disposal in Maine," ___ "Plumbers and Pipe Fitters Calculation Manual," ___ Portland Water District Records, ___ Other (specify)

Note: Please submit calculations showing the derivation of your design flows, either on the following page, in the space provided, or attached, as a separate sheet.

3. Please, Submit Contact Information.

Owner/Developer Name: Jonathan Culley

Owner/Developer Address: Redfern Properties

Phone: 207-221-5746 Fax: 207-221-2822 E-mail: jonathan@redfernproperties.com

Engineering Consultant Name: Blais Civil Engineers, PA

Engineering Consultant Address: 780 Broadway South Portland, ME 04106

Phone: 207-767-7300 Fax: _____ E-mail: sblais@blaisce.com

City Planner's Name: Shukria Wiar Phone: 207-756-8083

Note: Consultants and Developers should allow +/- 15 days, for capacity status, prior to Planning Board Review.

4. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated: N/A GPD

Do you currently hold Federal or State discharge permits? Yes No x

Is the process wastewater termed categorical under CFR 40? Yes No x

OSHA Standard Industrial Code (SIC): _____ (<http://www.osha.gov/oshstats/sicser.html>)

Peaking Factor/Peak Process Times: N/A

Note: On the submitted plans, please show the locations, where the building's sanitary, and process water sewer laterals, exit the facility, where they enter the city's sewer, the location of any control manholes, wet wells, or other access points, and the locations of any filters, strainers, or grease traps.

Notes, Comments, or Calculations:

We anticipate that the average daily outflow from this development would be, conservatively, as follows:

7,020 gpd for 39 2-bedroom residential units
400 gpd for 510 SF of retail (conservatively assumes salon, barber shop, etc...)
720 gpd for 1485 SF of retail / potential restaurant

8,140 gpd Total

Peaking Factor = 5.8 for Average Daily Discharge of Domestic Sewage less than 100,000 gpd*.

*Reference: Figure 2-1 "Relation of Extreme Discharges on Maximum and Minimum Days to the Average Daily Discharge of Domestic Sewage" from WEF / ASCE.

Applying the factor of 5.8 means that the peak on a maximum day will equal 47,212 gallons.

January 8, 2013

Shukria Wiar
Planner
City of Portland Maine
389 Congress Street
Portland, Maine 04101

Re: West End Place Summary of Fire Safety

West End Place will be protected by a full NFPA 13 sprinkler system with standpipes in each of the the egress stairs. The 39 Unit Apartment Building with ground floor parking and retail has two remote egress stairs within fire rated shafts. The building will be designed in accordance with NFPA 101 2009 and IBC 2009, to include appropriate fire separations between occupancies and dwelling units.

We have met with Jeanne Bourke from the Code Enforcement department and Lieutenant Ben Wallace from the Fire department to review preliminary plans to discuss the overall design of the building in relation to applicable codes and locate fire department connections and knox boxes.

During the development of construction documents additional fire safety details will be generated and submitted as part of the building permit package to the City of Portland.

Please feel free to contact me with any questions during your site plan review.

Sincerely,



Ryan Senatore, AIA LEED BD+C

Principal

207-650-6414

senatorearchitecture.com

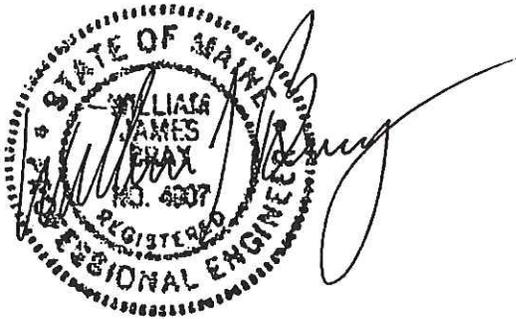
ryan@senatorearchitecture.com

67 Gray Rd, Gorham ME 04038

Traffic Assessment – Report Addendum
Proposed
West End Place
Peak Traffic Data (Pine Street @ Brackett Street)

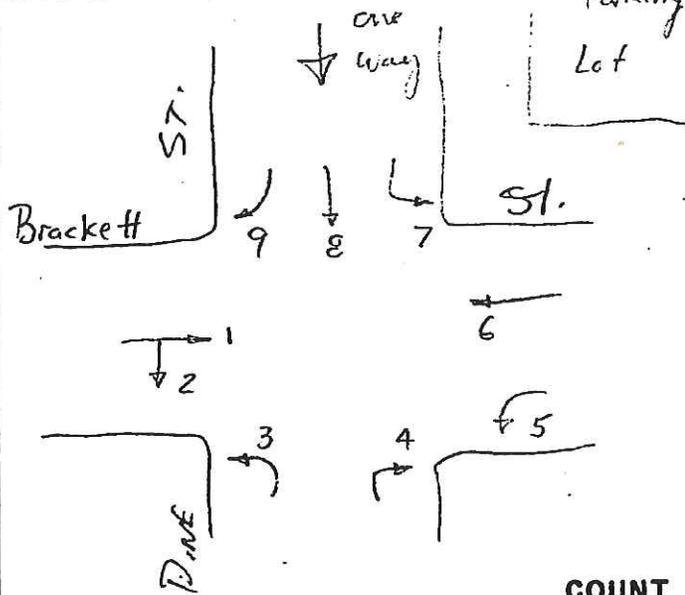
“Peak” Traffic Data – Pine Street @ Brackett Street

Manual vehicle turning movement counts were conducted at the Pine Street/Brackett Street intersection on Wednesday, October 10, 2012. All vehicular traffic approaching the intersection was recorded in 15-minute intervals between the hours of 7:00AM to 9:00AM and 3:00PM to 6:00 PM (Copies of the count summaries are attached). From a summary of the data, the peak hour of travel was determined for both peak commuter time periods. The morning peak hour was determined to occur between 8:00AM and 9:00AM when a total of 551 vehicles entered the intersection. The afternoon peak hour occurred between 3:15PM and 4:15PM with a total entering volume of 523 vehicles. Figures 1 and 2 attached illustratively depicts the peak entering traffic volumes for both travel time periods.



JOB NO. _____

**INTERSECTION PLAN
WITH NUMBERED MOVEMENTS:**



INTERSECTION PINE & BRACKETT
 DATE 10-10-2012
 DAY OF WEEK _____
 WEATHER _____
 REMARKS: _____

**COUNT SUMMARY
MOVEMENT**

	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
7:00													
7:15	13	3	11	1	2	17	5	14	7				73
7:15													
7:30	12	8	14	1	4	26	11	16	11				103
7:30													
7:45	17	4	15	5	3	19	6	21	16				106
7:45													
8:00	25	6	24	7	3	14	7	38	12				136
8:00													
8:15	21	9	15	7	4	29	15	31	18				149
8:15													
8:30	16	4	20	7	5	25	9	32	15				133
8:30													
8:45	25	7	22	6	5	25	15	13	6				124
8:45													
9:00	19	1	22	13	4	34	15	22	15				145
9:00													
9:15													
9:15													
9:30													
9:30													
9:45													
9:45													
10:00													

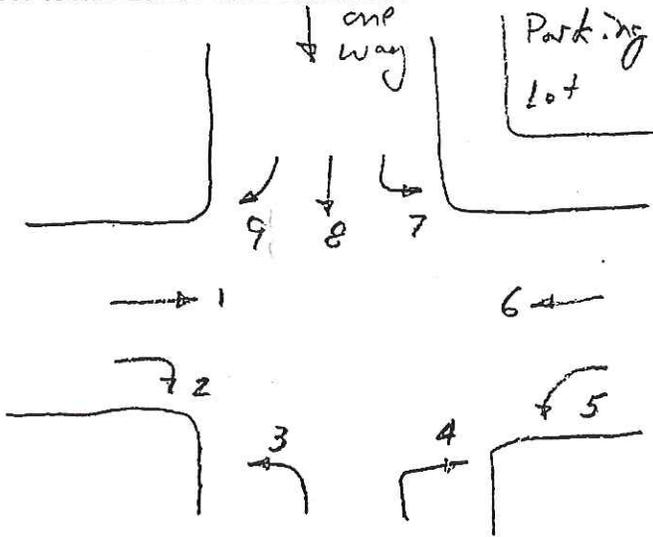
PEAK HOUR COUNT

TIME: 8:00 TO: 9:00

81	21	79	33	18	113	54	98	54					557
----	----	----	----	----	-----	----	----	----	--	--	--	--	-----

JOB NO. _____

**INTERSECTION PLAN
WITH NUMBERED MOVEMENTS:**



INTERSECTION Pine & Brackett Sts.

DATE 10-10-2012

DAY OF WEEK _____

WEATHER _____

REMARKS: _____

**COUNT SUMMARY
MOVEMENT**

	1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
3:00													
3:15	18	4	10	11	6	24	16	33	11				133
3:30	10	10	17	7	7	30	14	29	9				133
3:45	21	4	23	10	4	29	7	22	10				130
4:00	18	7	18	8	5	27	8	27	7				125
4:15	15	6	16	8	4	37	20	22	7				135
4:30	24	8	12	9	7	21	14	22	12				129
4:45	12	5	15	13	5	11	11	21	11				104
5:00	11	2	12	10	3	32	15	11	5				101
5:15	17	5	11	10	7	15	17	13	11				106
5:30	23	2	13	10	3	25	17	18	12				123
5:45	19	8	16	16	5	22	19	23	11				139
6:00	10	11	12	11	9	27	16	23	17				136

PEAK HOUR COUNT

TIME: 3:15 TO: 4:15

64	27	74	33	20	123	49	100	33				
----	----	----	----	----	-----	----	-----	----	--	--	--	--

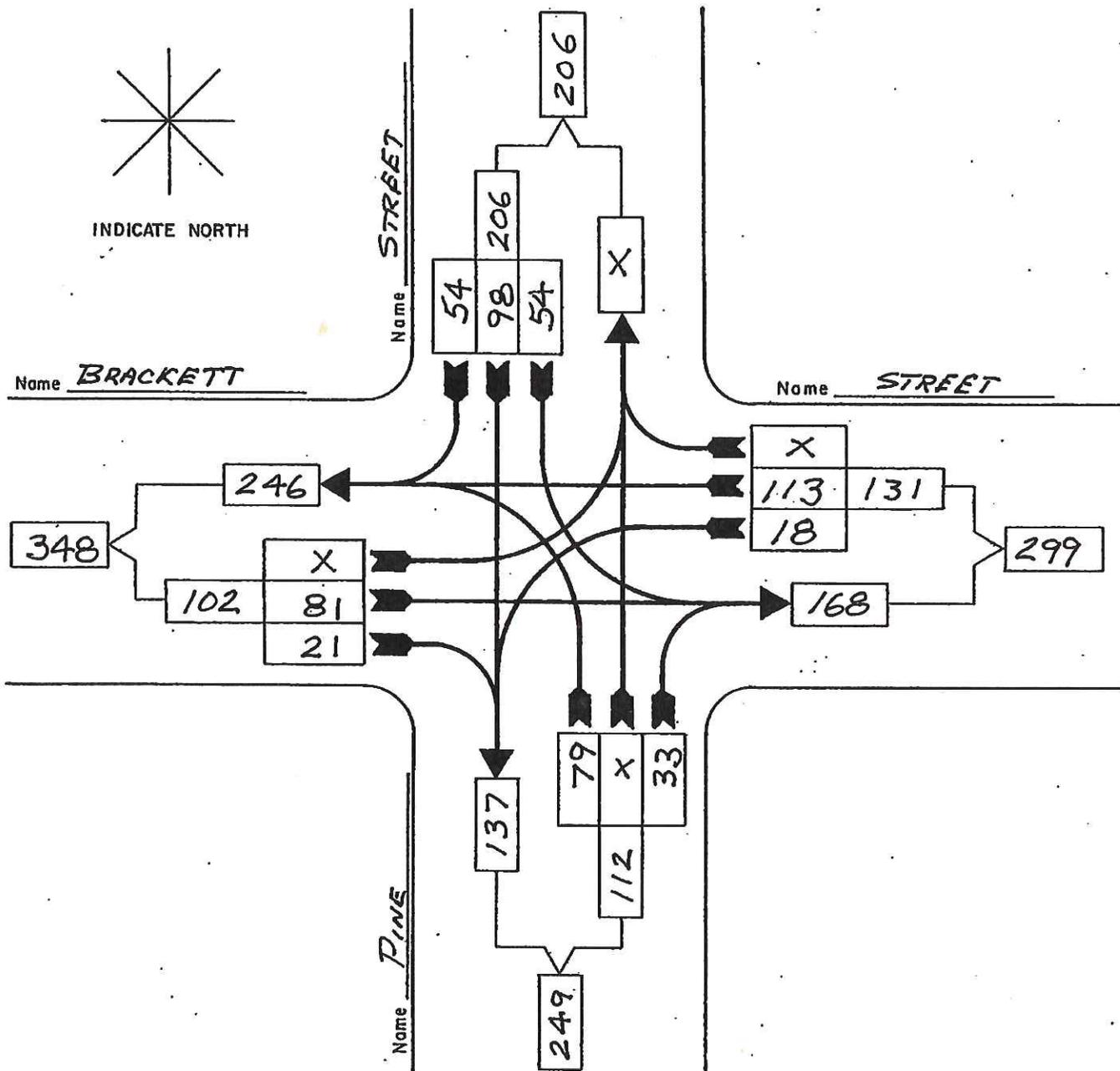
VEHICLE VOLUME COUNT GRAPHIC SUMMARY SHEET

Intersection of BRACKETT ST. & PINE ST.

Date 10-10-2012

Weather _____ Road Surface Condition _____

Time 8:00 AM to 9:00 AM

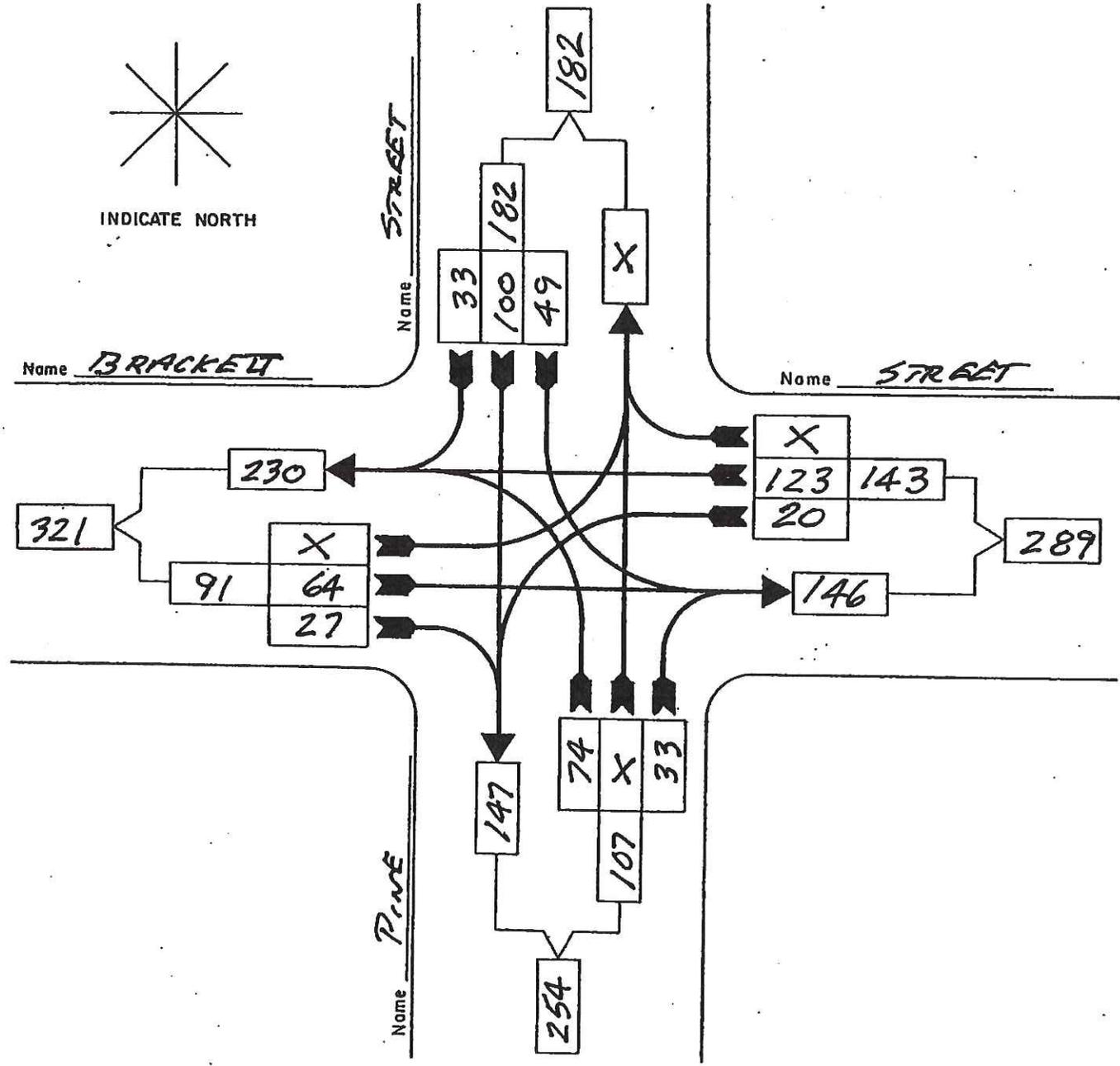


Remarks:

FIGURE 1: AM Peak Hour Traffic

VEHICLE VOLUME COUNT GRAPHIC SUMMARY SHEET

Intersection of BRACKET ST. @ PINE ST. Date 10-10-2012
 Weather CLOUDY Road Surface Condition _____ Time 3:15 to 4:15



Remarks:

FIGURE 2: PM Peak Hour Traffic

Transportation Demand Management (TDM) Plan

West End Place

Transportation Narrative

West End Place (Redfern LWS, LLC), a thirty-nine (39) unit up-scale one and two bedroom apartment and 1,999 square foot retail space project is located within the West End section of the Portland peninsula, a short walk from the Portland Downtown, Maine Medical Center, and Mercy Hospital campuses. The City of Portland's transportation system near the proposed project site includes: sidewalks on each City street, Metro, South Portland and RTP transit service, bikeways, U-Car Share service, affordable and convenient taxi service, rideshare opportunities, etc.

The project site is within a comfortable walking distance from thousands of jobs, schools, libraries, shopping, restaurants, parks, services, and other amenities sought by inner city residents.

West End Place will provide 34 on-site parking spaces for its residents falling just below the City's requirement of one space per unit. A formal memorandum of understanding between Redfern LWS, LLC of Portland and Avesta Housing Development Corporation of Portland provides an additional eight (8) parking spaces for residents of West End Place in a parking lot located on Carleton Street.

A combination of rental incentives, leased off-site parking spaces with Avesta Housing Development Corporation, and encouraged and promoted use of other modes of transportation (i.e. secure on-site bicycle storage, U-Car Share service at the front door of the project site, and close-by Metro bus route service) will ensure successful compliance with the City's transportation and sustainability goals.

TDM Coordinator

Dirigo Management, the property management team, will serve as the TDM coordinator for the project. They will be fully knowledgeable about all transportation services available to residents and prospective tenants of West End Place. Each new tenant, in a pre-lease interview with the Management Team, will receive a packet of information detailing available transportation services and be strongly encouraged to use other modes of transportation services provided both on-site and nearby.

Resident Survey/Monitoring

Dirigo Management will conduct an annual survey that quantifies average daily occupancy rates of the 34 on-site parking spaces, leased parking spaces with Avesta Housing Development, and nearby public on-street parking spaces to determine if residential parking demands of West End Place is being achieved. The survey will measure the available parking supply hourly for a typical weekday to determine if West End Place resident's parking needs are being met. A separate tenant questionnaire will

be conducted semi-annually to determine vehicle ownership trends of residents, tenant travel practices, tenant concerns, issues, and transportation service needs. The results of both surveys will be reported to the property ownership who will determine if parking needs and transportation services have been fully met or whether adjustments are necessary. A copy of the survey and tenant questionnaire results will also be shared with each building tenant. The survey and tenant questionnaire format and information search will be developed and reviewed with the City's TDM Manager and modified as necessary.

Parking Demand Calculation

The City of Portland's' Land-Use Ordinance requires 1.0 parking space per residential unit and no off-site parking requirements for the proposed 1,999 square feet of retail space. West End Place, a 39 unit apartment complex accordingly will require 39 parking spaces. The proposed project provides a total of 34 on-site parking spaces, (2 of which are ADA compliant) resulting in a parking ratio of 0.87. In addition, 1 motorcycle parking space is also provided. Redfern LWS, LLC is highly confident that their package of off-site leased parking spaces, proposed rental incentives and other transportation modal encouragements will ensure that the parking demand of project can and will be met.

Parking Description

A total of 34 on-site parking spaces, 17 full-size spaces and 17 compact car spaces will be provided to tenants of the building in an access controlled ground level garage. Redfern LWS, LLC has entered into a Memorandum of Understanding with Avesta Housing Development Corporation of Portland for an additional eight (8) parking spaces in a parking lot located on Carleton Street, a short walk from West End Place. (Copy of Memorandum of Understanding Attached) A passenger loading zone of 1 to 3 spaces in length is recommended for the curb face of Brackett Street adjacent to the project site to assist tenants delivering or picking up from their respective unit. A formal request for the passenger loading zone will be filed with the City with approval of the project.

Parking Reduction Strategies

Tenant Rental Incentives - Each tenant that doesn't require on-site parking will receive a \$70.00 reduction in their monthly rental fee.

Bicycle Facilities - West End Place will provide a total of 14 secured and covered bicycle parking spaces within the site and an additional storage capacity for 4 bicycles along the frontage of the project. Local and regional bicycle route and facility information will be available to tenants at the tenant kiosk located in the lobby of the building.

Metro Bus Service – Greater Portland Metro Bus Route #8 (attached map depicts Metro's Route #8) provides bus service to the West End neighborhood. There are bus stops at the intersection of Congress and State Streets (approximately 1/10th of a mile from the site corner of Pine and Brackett Streets) and at the intersection of Pine and West Streets (approximately 400 feet from the site). These bus stops, as well as the

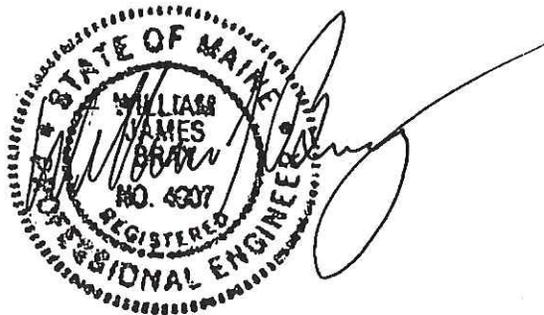
others along the #8 route, are denoted by yellow bus signs. West End Place tenants will receive, as a part of their tenant packet, a one-time ten-ride ticket pass to Metro with a copy of the Metro's route and schedule information.

U-Car Share - Redfern LWC, LLC is working closely with U-Car Share operators to locate a U-Car vehicle adjacent to West End Place. The proposed project site plans identifies a designated on-street parking space for the U-Car Share vehicle immediately right of the building driveway entrance. If their efforts are successful, Redfern LWC, LLC will pay for the one-time membership fee (\$25 one-time cost) for the U-Car Share program to any tenant that signs up as a member of the program as an incentive to use the program. There are currently four existing U-Car Share vehicles available to members on the Portland Peninsular: 645 Congress Street, 2 vehicles on Elm Street, and a single vehicle on Commercial Street.

U-Car Share is available to everyone 18 and older who meets the driving criteria. There is a one-time fee to become an annual member and no annual fee. Rates for U-Car Share start at \$9.50 per hour or \$66 per day. These rates include: gas, 125 free miles, and insurance. Once approved, a U-Car Share member will have access to reserve vehicles any time of the day. Upon a reservation time, the member will take their U-Car Share card to the vehicle and swipe in. The doors will unlock and allow the member to use the vehicle for their full reservation period. Upon returning the vehicle, the member will be charged for the time used.

Tenant Information Package - Each tenant will receive a welcoming package upon signing a lease that includes the following information:

- Metro Bus Service Information
- South Portland Bus Service Information
- RTP Service Information
- Bicycle commuting information
- Rideshare Information
- Portland Trails
- U-Car Share information
- Portland Trails map



Jennifer Williams

From: Tom Ridge
Sent: Monday, October 01, 2012 3:42 PM
To: Jennifer Williams
Subject: Re: Bus stop near Pine & Brackett Streets?

In your area, there are yellow signs signifying bus stop locations every few blocks.

Tom Ridge
Asst. Transportation Mgr./Safety Officer
Greater Portland Transit District
207-774-0351
207-310-1889
tridge@gpmetrobus.com

----- Original Message -----

From: [Jennifer Williams](mailto:Jennifer.Williams@maine.gov)
To: [Tom Ridge](mailto:Tom.Ridge@maine.gov)
Sent: Monday, October 01, 2012 3:13 PM
Subject: RE: Bus stop near Pine & Brackett Streets?

Thank you, that is very helpful. Are the bus stops in this area are noted with signs or do they have shelters?

Thanks again.

From: Tom Ridge [mailto:tridge@gpmetrobus.com]
Sent: Monday, October 01, 2012 3:06 PM
To: Jennifer Williams
Subject: Re: Bus stop near Pine & Brackett Streets?

Hi Jennifer,

If you are headed to Maine Medical you would need to wait in front of Local 188 at Congress St. and State St.. Heading in the direction of downtown, the nearest stop is at Pine St. and West St. at what is known as the old Butler School. The timepoint on the schedule to follow is the Maine Medical column.
Thank you,

Tom Ridge
Asst. Transportation Mgr./Safety Officer
Greater Portland Transit District
207-774-0351
207-310-1889
tridge@gpmetrobus.com

----- Original Message -----

From: [Jennifer Williams](mailto:Jennifer.Williams@maine.gov)
To: tridge@gpmetrobus.com
Sent: Monday, October 01, 2012 2:44 PM
Subject: Bus stop near Pine & Brackett Streets?

Tom -

Could you tell me where the closest bus stop is to the intersection of Pine Street and Brackett Street in the West End? I believe it is bus #8 that goes through that area, but couldn't tell from the map on your website where the closest stop is to that intersection.

Service Changes: Effective week of May 13, 2012

8 Peninsula Loop M8

Casco Bay Ferry Terminal

OUTBOUND	INBOUND	Arrives
Departs	Departs	Departs
Casco Bay Ferry Terminal	Maine Medical Center	Casco Bay Ferry Terminal
6:42	6:52	7:12
7:12	7:19	7:42
7:42	7:49	8:12
8:12	8:19	8:42
8:42	8:49	9:12
9:12	9:19	9:42
9:42	9:49	10:12
10:12	10:19	10:42
10:42	10:49	11:12
11:12	11:19	11:42
11:42	11:49	12:12
12:12	12:19	12:42
12:42	12:49	1:12
1:12	1:21	1:47
1:47	1:51	2:17
2:17	2:26	2:52
2:52	2:59	3:22
3:22	3:31	3:57
3:57	4:03	4:27
4:27	4:33	4:57
5:05	5:11	5:35
5:35	5:41	6:10
6:10	6:14	6:55
ends at Franklin Towers		
8:00	8:13	8:42
8:42	8:55	9:32
9:32	9:45	10:22
10:22	10:35	11:15
11:15	11:22	12:05
12:05	12:18	12:55
12:55	1:09	1:48
1:48	2:01	2:40
2:40	2:46	3:33
3:33	3:40	4:29
4:29	4:36	5:25
5:25	5:32	6:19
6:19	6:25	6:54
ends at Franklin Towers		

MONDAY - FRIDAY

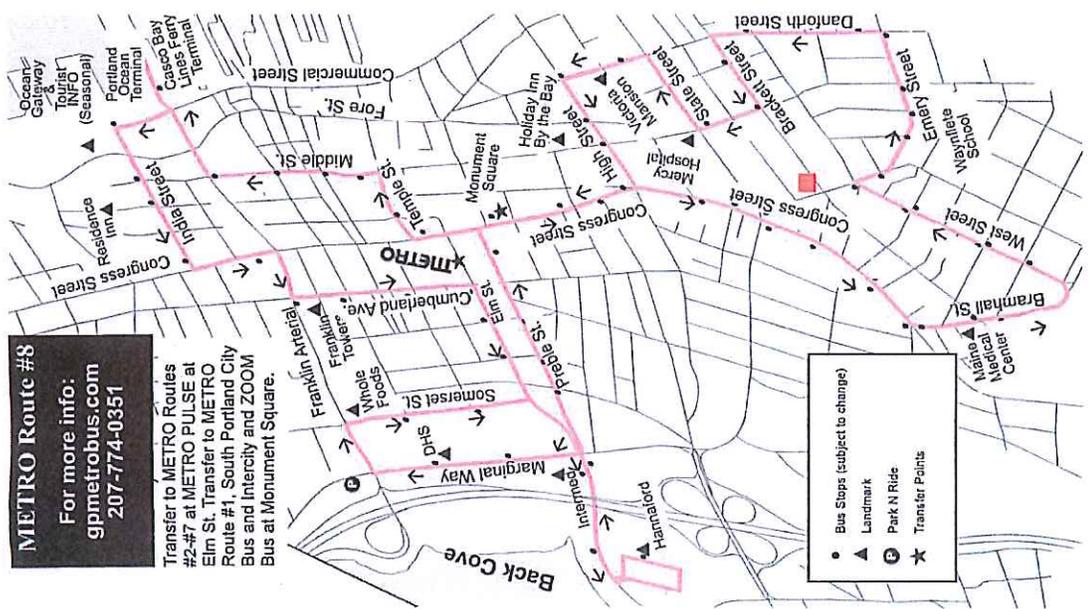
SATURDAY

NO SUNDAY SERVICE

METRO bus travels throughout Portland, Westbrook, Falmouth and the Maine Mall area of South Portland. Connect to Amtrak/DownEast, Concord Coach & Portland Jetport on METRO Route #5.

Regional Monthly Passes (for travel on METRO and South Portland Bus Service) & METRO TenRide Tickets available along this route at: METRO PULSE, Casco Bay Ferry Terminal (day passes also available) and Hannaford supermarket.

May 13, 2012 - Subject to change.



METRO Route #8
For more info:
gpmetrobus.com
207-774-0351

Transfer to METRO Routes #2-#7 at METRO PULSE at Elm St. Transfer to METRO Route #1, South Portland City Bus and Intercity and ZOOM Bus at Monument Square.

- Bus Stops (subject to change)
- ▲ Landmark
- ⊙ Park N Ride
- ★ Transfer Points

A Quick Glimpse at METRO Route #8

Outbound Route #8 leaves Casco Bay Ferry Terminal and travels to Marginal Way and Hannaford Supermarket with several stops along India Street, Cumberland Avenue and Elm Street.

Inbound Route #8 travels to the West End of Portland, Maine Medical Center and Mercy Hospital before heading back to Congress Street via Danforth, State and High Streets.

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (hereinafter "MOU") is dated September 27, 2012, by and between Avesta Housing Development Corporation of Portland, Maine (hereinafter "Avesta") and Redfern LWS, LLC of Portland, Maine (hereinafter "Redfern LWS").

Avesta owns a parking lot containing 45 leasable parking spaces on Carleton Street in Portland's West End.

Redfern LWS is proposing a 39 Unit apartment building at the corner of Pine and Brackett in Portland's West End.

Redfern LWS' proposed apartment building site is located 3 blocks from Avesta's parking lot.

Avesta, provided the parking lot is still be used as a parking lot, will be willing to lease to Redfern LWS or its tenants, under the same terms and condition of other parking lot tenants, at a price to be mutually agreed upon, right of first refusal to up to 8 parking spaces, as they become available, provided Redfern LWS gives Avesta no less than 4 months advance notice of its intent to lease.

This MOU is not a binding contract and is intended to serve as a general basis for commencing negotiations for the lease of the parking lot spaces. This MOU does not contain all the detailed provisions to be incorporated into a lease agreement, but does reflect the current mutual intentions of the parties.

Dated: 9/27/12 _____
Avesta Housing Development Corporation
By: Dana Totman
Its: President

Dated: 9/27/12 _____
Redfern LWS, LLC
By: Paul Pease
Its: Manager

Discussion of Requested Parking Waivers

Redfern LWS LLC seeks a waiver to provide 34 parking spaces for 39 Units.

Both 14-332(a), 3.c and 14-526 (a) 4.a. authorize the Planning Board to establish a parking requirement less than normally required for the zone.

The parking requirement may be reduced under 14-332.(a) 3.c if the Planning Board finds unique conditions that result in a lesser parking demand such as....housing that participates in a (travel) transportation demand management program. William Brey, PE of Traffic Solutions has submitted a comprehensive TDM plan which outlines multiple techniques the project will utilize to reduce parking demand (see TDM attached).

Redfern PWS LLC seeks a waiver to provide additional compact parking spaces.

At the November 13, 2012 Planning Board meeting, the Board appeared receptive to allowing for additional compact spaces, but asked for additional support for Redfern LWS assertion that cars are getting smaller and that our tenants are more likely to own compact cars. A series of articles attached and following this page demonstrate the trend toward both smaller and fewer cars in urban areas.

Existing Use of Parking Lots:

40 Pine Street/189-191 Brackett Street

The owners of 40 Pine Street and 189-191 Brackett Street have no written parking lease agreements. Bonobo Restaurant utilizes the parking lot on a month-to-month basis as do a few individuals.

183 Brackett Street

The owners of 183 Brackett Street have no written parking lease agreements. The veterinary practice on Brackett Street currently utilizes the parking lot on a month-to-month basis.

WEST END PLACE
U.S. SHIFT TO SMALL CARS SEEN AS PERMANENT

Surging demand for small cars in U.S. marks the start of a permanent change in America's taste in vehicles. *Financial Times ('FT')*, 10/2/12.

The shift to smaller cars may stem not from economic conditions but from a more permanent demographic shift. Reasoning behind the shift includes high gas prices, exciting new models, urban lifestyles, costs effectiveness and ecofriendly. *Christian Science Monitor*, 10/9/12.

General Motors' Senior VP for Automotive Development said the shift towards more urban living in the U.S. means the growth in small car sales will not reverse. *FT*, 10/2/12.

Ford Motors' Chief Financial Officer said small cars will become an increasingly large portion of the North American market. *FT*, 10/2/12.

The shift toward smaller more fuel efficient cars makes perfect sense. *Time Magazine*, 10/23/12..

The growing trend of going car-less, urban lifestyles, and temporary car services like zip car, are feeding the going car-less trend. Kimberly Kaver, *Siliconvalleymamas.com*, 7/31/12.

Ford admits consumer shift toward small cars will eat into profits. *Autoblog.com*, 11/16/12.

Subcompact and compact car sales surged by 49.9% into past year while large SUVs were down 29.8% and large cars down 79.4%. *Christian Science Monito*, 10/9/12.

FINANCIAL TIMES

October 2, 2012 7:15 pm

US shift to small cars seen as permanent

By Robert Wright in New York

Surging demand for small cars in the US marks the start of a permanent change in Americans' taste in vehicles, two of the US motor industry's most senior executives have said after sales of the smallest car class rose 70 per cent in a year.

Mary Barra, senior vice-president of automotive development for General Motors, the US's largest carmaker by revenues, told the Financial Times that trends such as the shift towards more urban living in the US would mean the growth in small car sales would not reverse.

"I think you're going to see a shift that doesn't bounce back," Ms Barra said.

Bob Shanks, chief financial officer of Ford Motor, the market's second-largest company by sales, agreed that small car sales were likely to continue their upward trajectory.

"We expect that small cars will become an increasingly large portion of the North American market, [and] in fact the global market," Mr Shanks said.

The trend was confirmed in Tuesday's US car sales figures, when General Motors reported that sales of mini, small and compact cars in September were up 97 per cent on the same month last year.

Ford said a 73 per cent year-on-year increase in small car sales for the month had given it its best small car sales for 10 years.

Sales of the subcompact Fiat 500, which Chrysler markets in the US, were up 51 per cent year-on-year.

Any permanent change would reverse the pattern following previous periods of high fuel prices, in which US small car demand tended to fall sharply as fuel prices dropped.

Petrol prices in many parts of the US are currently just less than \$4 a gallon – a level that many observers believe makes a significant difference in consumers' readiness to buy smaller, more fuel-efficient cars.

Many observers assume that the soaring demand for smaller cars will fall off in similar fashion if fuel prices fall again or consumers grow more used to high fuel prices.

Gualberto Ranieri, senior vice-president for communications at Chrysler, said the recent high growth figures were mainly a result of the previously tiny numbers of small cars sold in the US.

"The presence of small cars is still negligible here," Mr Ranieri said.

However, Ms Barra said that demand for smaller cars would continue to grow faster than that for the larger cars at which US carmakers have excelled over the past 20 years.

"I think it's going to be a permanent change," Ms Barra said, stressing that she expected the US market to continue to demand a wide range of vehicle sizes. Compact and subcompact cars accounted for only a combined 21.5 per cent of the US car market in August, according to Edmunds.com, the car information site, against 24.6 per cent for sports utility vehicles.

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Smart Spending

Smaller Cars, Better Mileage: Hot Auto Trends Now – and For Years to Come

By Brad Tuttle | Oct. 23, 2012 | 5



PETER DAZELEY / GETTY IMAGES

RELATED

[U.S. Fuel Economy in '12 Jumps 4.5% Thanks to Auto](#)

We are becoming Europe. Or at least, more and more, our cars are resembling those purchased overseas. Considering that American drivers are facing some of the same factors that for years have shaped auto markets abroad—high gas prices, regulations mandating better mpg—the shift toward smaller, more fuel-efficient cars makes perfect sense. That goes for right now, and down the road as well.

Slowly but surely, automakers have come to the realization that small economy cars will sell well in the U.S., and even be good profit-makers, just as they are in overseas markets. We all know that gas prices are high, and are likely to remain so. (Side note: When I caught some of “Sideways” on TV recently, I was reminded of how a film could be heartbreaking and hilarious at the same time — and I was also reminded of how quickly gas prices have risen. The movie came out in 2004, and at one point Paul Giamatti drives past a gas station charging a mere \$1.71 per gallon. In California no less!) What with new regulations requiring improved mpg among automakers in the U.S. as well, the trend will only continue.

New data from Wards Auto shows the degree to which today's new car buyers are finding themselves behind the wheels of vehicles with better mileage. Thus far this year, 70% of the 2012 model-year cars sold get 20 mpg or higher. That's up from 64% for 2011 models, and under 50% as recently as '08. Overall fuel economy for light vehicle purchases is up 4.5% compared to 2011.

(MORE: Top New Cars of 2013)

Small and mid-size car sales both have experienced decent increases. Small cars, with an average 29.4 mpg rating, have

accounted for 19.3% of 2012 light vehicles sold, up from 18.3% the previous year, while 21.2% of new cars sold have been in the mid-size category (27 mpg), up from 19.8%. The best-selling category this year has been the crossover/utility segment, which may seem to contradict the downsizing of the American vehicle. But today's SUVs and crossovers are not the behemoth gas-guzzlers of the past. The category, with an index rating of 22.1 mpg (3.3% better than the year before), accounts for 23.7% of all sales.

Sales of heavier vehicles with less-than-stellar fuel economy, meanwhile, have been underwhelming: Pickups have shrunk as a proportion of total sales, and large cars accounted for the smallest share of overall sales ever.

In a related trend, automakers are trying to cut weight on all kinds of vehicles, because lighter cars are more fuel-efficient cars. Ford, for instance, is incorporating aluminum into F-150 trucks, thereby dropping 700 pounds and increasing fuel economy by up to 25%.

(MORE: Ultra Cheap Cars Are Coming – Even to the U.S.)

As automakers seek lighter and lighter cars, though, they'll natural go for smaller and smaller cars too. The simplest way to make a car lighter, after all, is for there to be less car.

Brad Tuttle is a reporter at TIME. Find him on Twitter at @bradrtuttle. You can also continue the discussion on TIME's Facebook page and on Twitter at @TIME.

Brad Tuttle @bradrtuttle

Brad Tuttle covers business and personal finance for TIME. He lives in Massachusetts with his wife and four sons, and also teaches journalism at UMass-Amherst.

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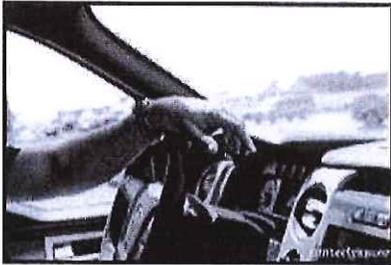
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The Growing Trend Toward Going Car-less

by Kimberly Kauer on July 31, 2012



More and more hipsters are taking to bikes. While at a stoplight the other day, I watched a hipster on a bike call out to another hipster on a bike across the street. I thought they knew each other, but then I realized they were acknowledging each other the same way people with the exact same car may wave or nod to each other. We live in an area where many people bike to work or the store, but I'm used to seeing them dressed in fancy gear. These two people were wearing flannel shirts (devoted to their look because flannel isn't typical summer fashion), skinny jeans, and one had heavy rimmed glasses. They both looked perfectly awesome, yet the whole scene made me laugh.

The younger than me generation isn't attached to owning cars, preferring to avoid the hassles of car ownership and often delaying obtaining a driver's license, too. My grandparents didn't drive, cars meant freedom to my parents' generation, I need a car and missed mine when I didn't live in California, yet I loved the convenience of a maintained subway system, and next, probably my kids, may not even own their own car.

I remember studying urban infill in college and seeing it in action in San Francisco, and now along the Peninsula where upscale apartments are going in near CalTrain stops, or even Santana Row, where the pricey housing, shopping, and dining are all one. People in their 20s and early 30s wonder if everything is within a short distance, why bother with a car, associated expenses, and hassle (parking in an urban area is a headache)? I knew many families who lived with only one car when their kids were young – either mom and kids stayed close to home, or they dropped a parent off at work, while the other stayed with the kids and car – but that gets so much harder as kids get older, activities increase, gear increases, and everyone has tight schedules in spread out locations.

group ownership. The younger generation is on to something, which in a way, feels like we're coming around full circle, back to when my car-less grandparents lived in the city, near work and plenty of things to do.

I did have one disappointment when hearing about future trends. Being from Silicon Valley and married to someone focused on artificial intelligence, I had hoped to hear more about computer driven cars. Ford is doing great things with computer assistance (hello hands free parallel parking!), but seems to be wary of fully automated cars. This is the future, without a doubt, and I'd love to see Ford, as an American automobile company, be on top of this. The technology isn't there yet, but it's coming, and it will be the solution to many issues, including global gridlock.

Disclosure: Ford paid for me to attend Go Further with Ford, its annual trend conference in Dearborn, MI in June. I found the event extremely informative and I was deeply impressed by company's thoughtfulness on the environment, green technology, emerging business models, fuel economy, and more. There were no stipulations about any sort of coverage. All opinions are my own.

Tagged as: [Ford Motor Company](#), [Zipcar](#)

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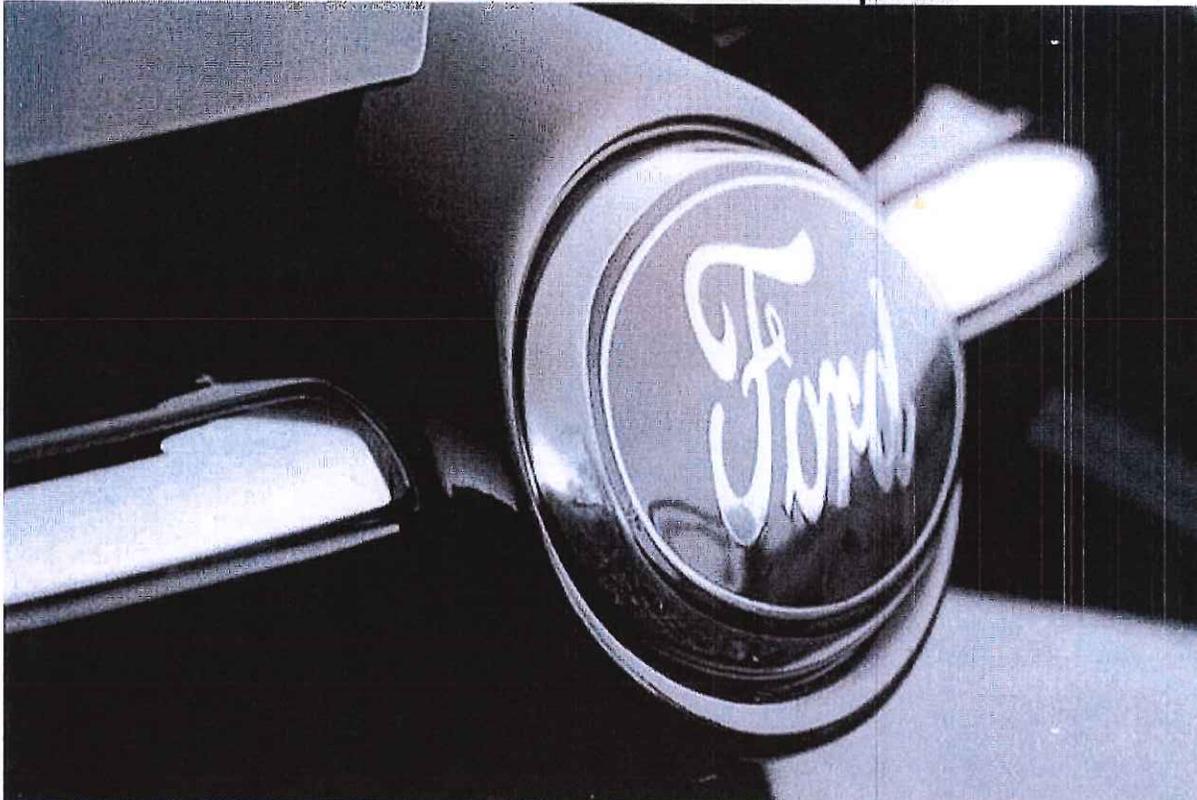
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Auto News >

Ford Admits Consumer Shift Toward Small Cars Will Eat Into Profits

REPORT

Ford admits consumer shift toward small cars will eat into profits



By Jeremy Korzeniewski RSS feed

Posted Nov 16th 2012 2:32PM

Big, expensive cars and trucks equal big profits. Small, inexpensive cars equal small profits.

The mathematics in today's marketplace simply can't be argued, and the result, as buyers increasingly switch from trucks, truck-based 'utes and big family cars into smaller sedans and hatchbacks, is less earning potential for full-line automakers. Like Ford, for instance. Citing the rising trend of smaller cars and crossovers, Ford Chief Operating Officer Mark Fields warned that fourth-quarter earnings will be down compared to last year.

Smaller profits in the US market are one thing; an even bigger problem is the almost complete lack of profit margin in South America and huge multi-billion-dollar losses in Europe, where economies are in crisis and automakers are laying off workers and closing plants. In other words, we're thinking Ford's eight to ten-percent margins in the States aren't looking so bad...

News Source: Businessweek

Image Credit: Copyright 2012 Jeremy Korzeniewski / AOL

Category: Europe, Ford, Earnings/Financials, South America

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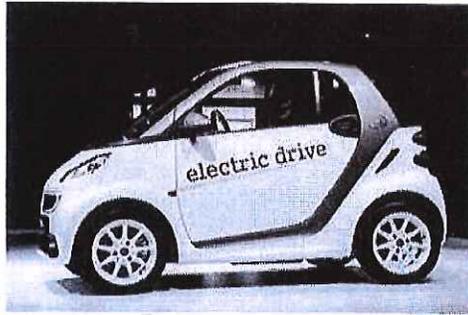


NEWS AND VIEWS FOR THE AUTOMOTIVE CONSUMER

Car trends: Small is the new big

Small cars are on track to reach a market share not seen since Bill Clinton's first Inauguration, Read writes.

By Richard Read, Guest blogger / October 9, 2012



A 2013 Mercedes-Benz electric drive Smart Car is displayed, Wednesday at the New York International Auto Show in this April 2012 file photo. High gas prices is just one reason more Americans are buying smaller cars, Read writes.

Mark Lerriliani/AP/Files

Enlarge

Gas prices are soaring. Parking is pricey. The economy is recovering, but still shaky. Add all that up, and you'd expect small cars to be fairly popular in the U.S.

The Car Connection The Car Connection High Gear Media's flagship website offers news, reviews, and the latest shopping tools for the cars that matter to US consumers. For more expert insights from Car Connection editors and opinions from around the Web, click here.

And you'd be right. In fact, small cars are on track to reach a market share not seen since Bill Clinton's first inauguration.

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- 11.19.12 Ford Fiesta to get 3-cylinder engine in 2014

According to the *Wall Street Journal*, sales of compacts and subcompacts have surged by a whopping **49.9%** over the past year. In the first nine months of 2012, dealers moved 2,099,090 of them -- 240,288 in September alone.

By contrast, midsize vehicles are up just **15.8%** for the year, large SUVs are down **29.6%**, and large cars are down a staggering **79.4%**.

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As *AutoNews* notes, small cars now represent **19.3%** of new vehicles sold to American shoppers. Compacts and subcompacts haven't represented such a huge portion of the U.S. market since 1993, when they hit 20.5%.

Why is small such big news?

The reasons for America's fascination with small rides are numerous and varied. While some of the trend seems driven by fluctuating economic conditions, in other cases, it may stem from more permanent demographic shifts. Here are a few key factors:

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High gas prices: It's no secret that gas is expensive. Today, the average price for a gallon of regular unleaded is \$3.82 -- 42 cents higher than it was at this time last year. And if you live in California, the situation is even

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worse. Small cars are perceived to earn better gas mileage than their larger siblings, which helps explain the public's new-found interest in them. (**Note:** this perception isn't entirely accurate, since the midsize Toyota Prius is more fuel-efficient than many smaller rides.)

Exciting new models: Fuel economy would mean nothing to shoppers if today's gas-sippers weren't attractive. Thankfully, automakers have given car buyers a range of small cars to peruse, many of which feature great design and fashion-forward technology. Just think of the MINI Cooper, the Dodge Dart, the Chevrolet Spark, and the Ford Focus, the latter of which has seen sales surge 91% in the past 12 months.

Our urban lifestyles: The trend in America -- and in much of the world -- is for individuals and families to relocate to cities. Even people who've stayed in one place have awakened to find their formerly rural neighborhoods overtaken by suburban sprawl. Keeping a big vehicle in urban environments can be far tougher than managing a smaller one.

Cost-effectiveness: The U.S. economy seems to be on the rebound, but until the rest of the world gets its act together (looking at you, Europe), things will remain touch-and-go. Small cars tend to be cheaper than larger ones, and their cost of ownership often is, too.

Eco-friendly attitudes: America has been on an extended "green" kick for several years, and it shows no signs of abating. Even though small cars aren't necessarily greener than large ones, the public often thinks that they are, which has helped turn the heads of today's shoppers.

Small ain't what it used to be: Once upon a time, the compacts and subcompacts that littered America's highways and byways were tiny econoboxes, limited in space and creature comforts. The legal definitions haven't changed much over time: for decades, the EPA has classed cars by interior volume, with compacts having 100 - 110 cubic feet, subcompacts having 85 - 100 cubic feet, and minicompacts less than 85 cubic feet. However, through ingenious use of materials and the addition of gadgets like high-tech infotainment systems, today's small cars don't seem quite as small as their predecessors.

Are you planning to purchase a new vehicle anytime soon? Is a small car on your short list? Drop us a line, or leave us a note in the comments below.

The Christian Science Monitor has assembled a diverse group of the best auto bloggers out there. Our guest bloggers are not employed or directed by the Monitor and the views expressed are the bloggers' own, as is responsibility for the content of their blogs. To contact us about a blogger, [click here](#). To add or view a comment on a guest blog, please go to the blogger's own site by clicking on the link in the blog description box above.

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**STORMWATER MANAGEMENT REPORT
WEST END PLACE
PORTLAND, MAINE
January 18, 2013**

INTRODUCTION

The subject property (the Site) is located at 183-189 Brackett Street in Portland, Maine. This report discusses the Site's existing and proposed hydrologic conditions and the stormwater measures that will be implemented to mitigate stormwater impacts from the project.

The Site is approximately 17,388± square feet and is currently a mixture of paved and gravel parking lots accessed by three separate brick driveways from Brackett Street. There are two existing structures: one 1-story building and one 1.5-story building. The owner proposes to construct a 4-story, mixed-use building on the property. The building will consist of retail space and surface parking on the ground level with 39 residential units on the three above-ground levels. This report discusses the Site's hydrological conditions and compares stormwater runoff between existing and proposed conditions.

DATA COLLECTION AND ASSUMPTIONS

Site Data was gathered from an on Site survey performed by Nadeau Land Surveys in August, 2012. Additionally, a Site visit to confirm existing conditions was performed in November 2012. This data was used to create a HydroCAD stormwater model, which is based on the United States Department of Agriculture's (USDA) Technical Release 20 (TR-20) and Technical Release 55 (TR-55) hydraulic programs.

Curve numbers (CN's) assigned to differing land cover and soil types were taken from tables within the HydroCAD software, which are from the SCS TR-55 manual, revised 1986. Twenty-four-hour rainfall depths were taken from *Stormwater Management for Maine: Volume III BMP's Technical Design Manual, January 2006*. Time of concentrations were calculated with the HydroCAD software using the TR-55 methodologies including direct entry.

EXISTING SITE CONDITIONS

The existing structures on Site have a footprint of 2,389± square feet. The remaining 14,999± square feet include a concrete pad, brick driveways, asphalt parking, and gravel parking areas. Topography is relatively flat in the northeast corner of the Site and then moderately slopes southwest toward Brackett Street.

Currently there is no enclosed drainage on this property, and runoff drains via sheet flow to Brackett Street where it continues along the gutter line to a catch basin at the northeast corner of the intersection of Pine and Brackett Streets. This catch basin is connected to the City of Portland's combined sewer system, a 15" vitrified clay pipe.

PROPOSED SITE CONDITIONS

Redevelopment of the Site includes a new 10,927± square foot parking lot with an enclosed drainage system of catch basins, subsurface storage (Stormtank system) and piping, which will be connected to the City's combined sewer system through a new drain manhole in Brackett Street. Areas between the proposed parking lot and the property line will be landscaped with trees, shrubs and groundcover. In addition to the proposed work on Site, the brick sidewalk adjacent to the property on Pine and Brackett Streets will be reconstructed with Pine Hall Pathway pavers and street trees consistent with City of Portland standards. The existing brick driveways will be replaced by a single site entrance for vehicles.

Roof runoff will be collected through two separate roof drains and directed into the subsurface drainage system where the high velocity runoff flows from the roof drainage will be detained and slowed down before draining to the combined storm sewer system within Brackett Street. We have designed the proposed Stormwater piping system to allow for ease of a future connection to a storm drain trunk line should one be installed in the future as part of a sewer separation project.

These proposed improvements to the site will result in the creation of approximately 1,905± square feet of landscaped area equaling 10.9% of the Site.

Based on conversations with the City of Portland Engineering and Planning Staff, we have provided a Stormwater design that will mitigate any increase of the peak flows to the municipal combined sewer system due to the high-velocity roof flows. The roof drains will be connected to the underground piping system, which connects to the Stormtank storage system. Due to the nature of the in-situ soils consisting of sandy gravel, the Stormtank storage system has been designed to infiltrate Stormwater run-off. Since the groundwater elevation was found to be in excess of 15' below grade, we anticipate a quick infiltration rate, although a modest rate of 2" per hour has been used for the purposes of this report. Please refer to Table 1 for a summary of pre and post development peak flows. Table 2 shows the percent change in peak flows from pre to post development. Please also refer to the attached hydrologic modeling calculations for modeling assumptions.

Table 1: Summary of Peak Flows

Pre-development			Post-development		
2-Year Peak Flow (cfs)	10-Year Peak Flow (cfs)	25-Year Peak Flow (cfs)	2-Year Peak Flow (cfs)	10-Year Peak Flow (cfs)	25-Year Peak Flow (cfs)
1.11	1.81	2.14	0.95	1.60	1.90

Table 2: Percent Change in Rate of Runoff from Pre to Post Peak Flows

2 Year Storm Event	10 Year Storm Event	25 Year Storm Event
-14.4%	-11.6%	-11.2%

WATER QUALITY

All construction will be in accordance with the most current Maine Erosion and Sedimentation Control Best Management Practices. These measures will include as necessary temporary and permanent seeding, temporary sediment barriers, drainage inlet and outlet protection, and a stone-reinforced construction entrance. Proposed catch basins will be equipped with hoods to help separate possible oil and debris from parking lot runoff and 3-foot deep sumps to trap heavier sediment. Although this project is not required to provide treatment of stormwater per the City ordinances, the underground stormwater storage system is designed to receive a "first flush" of stormwater run-off, which will enter the chambers and surrounding stone storage, and will ultimately infiltrate into the ground.

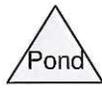
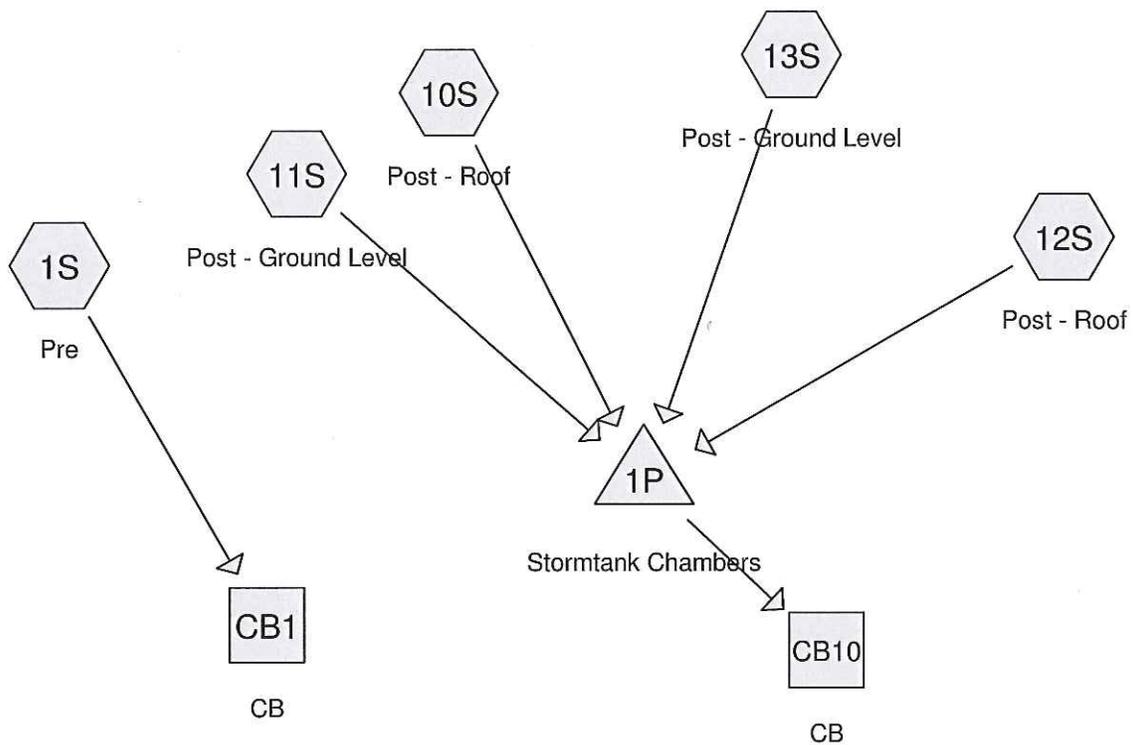
CONCLUSIONS

This project will use long-term and short-term erosion control measures as well as Stormwater quantity and quality treatment measures that will mitigate environmental impacts from stormwater. This project will have no significant adverse impacts on downstream properties as a result of stormwater.

BLAIS CIVIL ENGINEERS



Steve G. Blais, PE 1/18/13



Routing Diagram for 12137, Pre and Post Dev
 Prepared by Blais Civil Engineers, PA, Printed 1/18/2013
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Type III 24-hr 2-Yr Rainfall=3.00"

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Time span=0.00-24.00 hrs, dt=0.08 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre

Runoff Area=17,388 sf 75.98% Impervious Runoff Depth>2.45"
Flow Length=205' Tc=1.8 min CN=95 Runoff=1.11 cfs 0.081 af

Subcatchment 10S: Post - Roof

Runoff Area=5,840 sf 100.00% Impervious Runoff Depth>2.77"
Flow Length=153' Tc=1.7 min CN=98 Runoff=0.40 cfs 0.031 af

Subcatchment 11S: Post - Ground Level

Runoff Area=1,150 sf 56.00% Impervious Runoff Depth>1.74"
Flow Length=40' Tc=0.6 min CN=87 Runoff=0.06 cfs 0.004 af

Subcatchment 12S: Post - Roof

Runoff Area=5,908 sf 100.00% Impervious Runoff Depth>2.77"
Flow Length=155' Tc=1.7 min CN=98 Runoff=0.40 cfs 0.031 af

Subcatchment 13S: Post - Ground Level

Runoff Area=4,490 sf 61.58% Impervious Runoff Depth>1.90"
Flow Length=109' Tc=1.7 min CN=89 Runoff=0.23 cfs 0.016 af

Reach CB1: CB

Inflow=1.11 cfs 0.081 af
Outflow=1.11 cfs 0.081 af

Reach CB10: CB

Inflow=0.95 cfs 0.049 af
Outflow=0.95 cfs 0.049 af

Pond 1P: Stormtank Chambers

Peak Elev=134.35' Storage=314 cf Inflow=1.10 cfs 0.082 af
Discarded=0.03 cfs 0.032 af Primary=0.95 cfs 0.049 af Outflow=0.97 cfs 0.081 af

Total Runoff Area = 0.798 ac Runoff Volume = 0.164 af Average Runoff Depth = 2.46"
18.43% Pervious = 0.147 ac 81.57% Impervious = 0.651 ac

12137, Pre and Post Dev

Type III 24-hr 2-Yr Rainfall=3.00"

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Summary for Subcatchment 15: Pre

Runoff = 1.11 cfs @ 12.02 hrs, Volume= 0.081 af, Depth> 2.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs
Type III 24-hr 2-Yr Rainfall=3.00"

Area (sf)	CN	Description
* 2,447	98	Existing Rooftop
* 4,177	86	Existing Gravel
* 10,764	98	Existing Pavement/Impervious
17,388	95	Weighted Average
4,177		24.02% Pervious Area
13,211		75.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0175	1.10		Sheet Flow, A to B Smooth surfaces n= 0.011 P2= 3.00"
1.0	155	0.0150	2.49		Shallow Concentrated Flow, B to C Paved Kv= 20.3 fps
1.8	205	Total			

Summary for Subcatchment 10S: Post - Roof

Runoff = 0.40 cfs @ 12.02 hrs, Volume= 0.031 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs
Type III 24-hr 2-Yr Rainfall=3.00"

Area (sf)	CN	Description
* 5,840	98	Roof
5,840		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	98	0.0150	1.18		Sheet Flow, Rooftop Smooth surfaces n= 0.011 P2= 3.00"
0.3	55	0.0100	2.86	0.56	Pipe Channel, Roof to CB 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
1.7	153	Total			

Summary for Subcatchment 11S: Post - Ground Level

Runoff = 0.06 cfs @ 12.01 hrs, Volume= 0.004 af, Depth> 1.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs
Type III 24-hr 2-Yr Rainfall=3.00"

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Type III 24-hr 2-Yr Rainfall=3.00"

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Area (sf)	CN	Description
506	74	>75% Grass cover, Good, HSG C
* 0	98	Rooftop
* 644	98	Pavement
1,150	87	Weighted Average
506		44.00% Pervious Area
644		56.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	25	0.0100	0.76		Sheet Flow, A to B Smooth surfaces n= 0.011 P2= 3.00"
0.1	15	0.0200	2.12		Shallow Concentrated Flow, B to C Grassed Waterway Kv= 15.0 fps
0.6	40	Total			

Summary for Subcatchment 12S: Post - Roof

Runoff = 0.40 cfs @ 12.02 hrs, Volume= 0.031 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs
Type III 24-hr 2-Yr Rainfall=3.00"

Area (sf)	CN	Description
* 5,908	98	Roof
5,908		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.19		Sheet Flow, Rooftop Smooth surfaces n= 0.011 P2= 3.00"
0.3	55	0.0100	2.86	0.56	Pipe Channel, Roof to CB 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
1.7	155	Total			

Summary for Subcatchment 13S: Post - Ground Level

Runoff = 0.23 cfs @ 12.02 hrs, Volume= 0.016 af, Depth> 1.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs
Type III 24-hr 2-Yr Rainfall=3.00"

Area (sf)	CN	Description
1,725	74	>75% Grass cover, Good, HSG C
* 273	98	Rooftop
* 2,492	98	Pavement
4,490	89	Weighted Average
1,725		38.42% Pervious Area
2,765		61.58% Impervious Area

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Type III 24-hr 2-Yr Rainfall=3.00"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	26	0.0100	0.77		Sheet Flow, A to B Smooth surfaces n= 0.011 P2= 3.00"
1.0	73	0.0200	1.25		Sheet Flow, B to C Smooth surfaces n= 0.011 P2= 3.00"
0.1	10	0.0300	2.79		Shallow Concentrated Flow, C to D Unpaved Kv= 16.1 fps
1.7	109	Total			

Summary for Reach CB1: CB

Inflow Area = 0.399 ac, 75.98% Impervious, Inflow Depth > 2.45" for 2-Yr event
 Inflow = 1.11 cfs @ 12.02 hrs, Volume= 0.081 af
 Outflow = 1.11 cfs @ 12.02 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs

Summary for Reach CB10: CB

Inflow Area = 0.399 ac, 87.17% Impervious, Inflow Depth = 1.48" for 2-Yr event
 Inflow = 0.95 cfs @ 12.04 hrs, Volume= 0.049 af
 Outflow = 0.95 cfs @ 12.04 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs

Summary for Pond 1P: Stormtank Chambers

Inflow Area = 0.399 ac, 87.17% Impervious, Inflow Depth > 2.48" for 2-Yr event
 Inflow = 1.10 cfs @ 12.02 hrs, Volume= 0.082 af
 Outflow = 0.97 cfs @ 12.04 hrs, Volume= 0.081 af, Atten= 11%, Lag= 1.5 min
 Discarded = 0.03 cfs @ 12.04 hrs, Volume= 0.032 af
 Primary = 0.95 cfs @ 12.04 hrs, Volume= 0.049 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs / 3

Peak Elev= 134.35' @ 12.04 hrs Surf.Area= 577 sf Storage= 314 cf

Plug-Flow detention time= 42.9 min calculated for 0.081 af (98% of inflow)

Center-of-Mass det. time= 33.1 min (800.9 - 767.8)

Volume	Invert	Avail.Storage	Storage Description
#1	132.85'	2,232 cf	18.00'W x 18.00'L x 6.00'H Prismatic Z=2.0 5,688 cf Overall - 108 cf Embedded = 5,580 cf x 40.0% Voids
#2	132.85'	105 cf	StormTank 24N @ 18.00' L x 2 Inside #1 Inside= 18.0"W x 24.0"H => 2.91 sf x 18.00'L = 52.4 cf Outside= 18.0"W x 24.0"H => 3.00 sf x 18.00'L = 54.0 cf
		2,337 cf	Total Available Storage

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Type III 24-hr 2-Yr Rainfall=3.00"

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Device	Routing	Invert	Outlet Devices
#1	Primary	133.85'	12.0" Round Culvert L= 64.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.85' / 133.40' S= 0.0070 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Discarded	132.85'	2.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.03 cfs @ 12.04 hrs HW=134.34' (Free Discharge)↳ **2=Exfiltration** (Exfiltration Controls 0.03 cfs)**Primary OutFlow** Max=0.90 cfs @ 12.04 hrs HW=134.34' (Free Discharge)↳ **1=Culvert** (Barrel Controls 0.90 cfs @ 3.45 fps)

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Type III 24-hr 10-Yr Rainfall=4.70"

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Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre

Runoff Area=17,388 sf 75.98% Impervious Runoff Depth>4.12"
Flow Length=205' Tc=1.8 min CN=95 Runoff=1.81 cfs 0.137 af

Subcatchment 10S: Post - Roof

Runoff Area=5,840 sf 100.00% Impervious Runoff Depth>4.46"
Flow Length=153' Tc=1.7 min CN=98 Runoff=0.63 cfs 0.050 af

Subcatchment 11S: Post - Ground Level

Runoff Area=1,150 sf 56.00% Impervious Runoff Depth>3.29"
Flow Length=40' Tc=0.6 min CN=87 Runoff=0.11 cfs 0.007 af

Subcatchment 12S: Post - Roof

Runoff Area=5,908 sf 100.00% Impervious Runoff Depth>4.46"
Flow Length=155' Tc=1.7 min CN=98 Runoff=0.64 cfs 0.050 af

Subcatchment 13S: Post - Ground Level

Runoff Area=4,490 sf 61.58% Impervious Runoff Depth>3.49"
Flow Length=109' Tc=1.7 min CN=89 Runoff=0.42 cfs 0.030 af

Reach CB1: CB

Inflow=1.81 cfs 0.137 af
Outflow=1.81 cfs 0.137 af

Reach CB10: CB

Inflow=1.60 cfs 0.097 af
Outflow=1.60 cfs 0.097 af

Pond 1P: Stormtank Chambers

Peak Elev=134.54' Storage=364 cf Inflow=1.80 cfs 0.137 af
Discarded=0.03 cfs 0.037 af Primary=1.60 cfs 0.097 af Outflow=1.63 cfs 0.134 af

Total Runoff Area = 0.798 ac Runoff Volume = 0.275 af Average Runoff Depth = 4.13"
18.43% Pervious = 0.147 ac 81.57% Impervious = 0.651 ac

12137, Pre and Post Dev

Type III 24-hr 10-Yr Rainfall=4.70"

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Summary for Subcatchment 1S: Pre

Runoff = 1.81 cfs @ 12.02 hrs, Volume= 0.137 af, Depth> 4.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs
Type III 24-hr 10-Yr Rainfall=4.70"

Area (sf)	CN	Description
* 2,447	98	Existing Rooftop
* 4,177	86	Existing Gravel
* 10,764	98	Existing Pavement/Impervious
17,388	95	Weighted Average
4,177		24.02% Pervious Area
13,211		75.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0175	1.10		Sheet Flow, A to B Smooth surfaces n= 0.011 P2= 3.00"
1.0	155	0.0150	2.49		Shallow Concentrated Flow, B to C Paved Kv= 20.3 fps
1.8	205	Total			

Summary for Subcatchment 10S: Post - Roof

Runoff = 0.63 cfs @ 12.02 hrs, Volume= 0.050 af, Depth> 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs
Type III 24-hr 10-Yr Rainfall=4.70"

Area (sf)	CN	Description
* 5,840	98	Roof
5,840		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	98	0.0150	1.18		Sheet Flow, Rooftop Smooth surfaces n= 0.011 P2= 3.00"
0.3	55	0.0100	2.86	0.56	Pipe Channel, Roof to CB 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
1.7	153	Total			

Summary for Subcatchment 11S: Post - Ground Level

Runoff = 0.11 cfs @ 12.01 hrs, Volume= 0.007 af, Depth> 3.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs
Type III 24-hr 10-Yr Rainfall=4.70"

12137, Pre and Post Dev

Type III 24-hr 10-Yr Rainfall=4.70"

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Area (sf)	CN	Description
506	74	>75% Grass cover, Good, HSG C
* 0	98	Rooftop
* 644	98	Pavement
1,150	87	Weighted Average
506		44.00% Pervious Area
644		56.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	25	0.0100	0.76		Sheet Flow, A to B Smooth surfaces n= 0.011 P2= 3.00"
0.1	15	0.0200	2.12		Shallow Concentrated Flow, B to C Grassed Waterway Kv= 15.0 fps
0.6	40	Total			

Summary for Subcatchment 12S: Post - Roof

Runoff = 0.64 cfs @ 12.02 hrs, Volume= 0.050 af, Depth> 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs
Type III 24-hr 10-Yr Rainfall=4.70"

Area (sf)	CN	Description
* 5,908	98	Roof
5,908		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.19		Sheet Flow, Rooftop Smooth surfaces n= 0.011 P2= 3.00"
0.3	55	0.0100	2.86	0.56	Pipe Channel, Roof to CB 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
1.7	155	Total			

Summary for Subcatchment 13S: Post - Ground Level

Runoff = 0.42 cfs @ 12.02 hrs, Volume= 0.030 af, Depth> 3.49"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs
Type III 24-hr 10-Yr Rainfall=4.70"

Area (sf)	CN	Description
1,725	74	>75% Grass cover, Good, HSG C
* 273	98	Rooftop
* 2,492	98	Pavement
4,490	89	Weighted Average
1,725		38.42% Pervious Area
2,765		61.58% Impervious Area

12137, Pre and Post Dev

Type III 24-hr 10-Yr Rainfall=4.70"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	26	0.0100	0.77		Sheet Flow, A to B Smooth surfaces n= 0.011 P2= 3.00"
1.0	73	0.0200	1.25		Sheet Flow, B to C Smooth surfaces n= 0.011 P2= 3.00"
0.1	10	0.0300	2.79		Shallow Concentrated Flow, C to D Unpaved Kv= 16.1 fps
1.7	109	Total			

Summary for Reach CB1: CB

Inflow Area = 0.399 ac, 75.98% Impervious, Inflow Depth > 4.12" for 10-Yr event
 Inflow = 1.81 cfs @ 12.02 hrs, Volume= 0.137 af
 Outflow = 1.81 cfs @ 12.02 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs

Summary for Reach CB10: CB

Inflow Area = 0.399 ac, 87.17% Impervious, Inflow Depth = 2.92" for 10-Yr event
 Inflow = 1.60 cfs @ 12.04 hrs, Volume= 0.097 af
 Outflow = 1.60 cfs @ 12.04 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs

Summary for Pond 1P: Stormtank Chambers

Inflow Area = 0.399 ac, 87.17% Impervious, Inflow Depth > 4.13" for 10-Yr event
 Inflow = 1.80 cfs @ 12.02 hrs, Volume= 0.137 af
 Outflow = 1.63 cfs @ 12.04 hrs, Volume= 0.134 af, Atten= 10%, Lag= 1.2 min
 Discarded = 0.03 cfs @ 12.04 hrs, Volume= 0.037 af
 Primary = 1.60 cfs @ 12.04 hrs, Volume= 0.097 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs / 3

Peak Elev= 134.54' @ 12.04 hrs Surf.Area= 614 sf Storage= 364 cf

Plug-Flow detention time= 32.6 min calculated for 0.134 af (97% of inflow)

Center-of-Mass det. time= 16.2 min (774.5 - 758.2)

Volume	Invert	Avail.Storage	Storage Description
#1	132.85'	2,232 cf	18.00'W x 18.00'L x 6.00'H Prismatic Z=2.0 5,688 cf Overall - 108 cf Embedded = 5,580 cf x 40.0% Voids
#2	132.85'	105 cf	StormTank 24N @ 18.00' L x 2 Inside #1 Inside= 18.0"W x 24.0"H => 2.91 sf x 18.00'L = 52.4 cf Outside= 18.0"W x 24.0"H => 3.00 sf x 18.00'L = 54.0 cf
		2,337 cf	Total Available Storage

12137, Pre and Post Dev

Type III 24-hr 10-Yr Rainfall=4.70"

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Device	Routing	Invert	Outlet Devices
#1	Primary	133.85'	12.0" Round Culvert L= 64.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.85' / 133.40' S= 0.0070 1/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Discarded	132.85'	2.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.03 cfs @ 12.04 hrs HW=134.52' (Free Discharge)↳ **2=Exfiltration** (Exfiltration Controls 0.03 cfs)**Primary OutFlow** Max=1.51 cfs @ 12.04 hrs HW=134.52' (Free Discharge)↳ **1=Culvert** (Barrel Controls 1.51 cfs @ 3.84 fps)

12137, Pre and Post Dev

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Type III 24-hr 25-Yr Rainfall=5.50"

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Time span=0.00-24.00 hrs, dt=0.08 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre

Runoff Area=17,388 sf 75.98% Impervious Runoff Depth>4.92"
Flow Length=205' Tc=1.8 min CN=95 Runoff=2.14 cfs 0.163 af

Subcatchment 10S: Post - Roof

Runoff Area=5,840 sf 100.00% Impervious Runoff Depth>5.26"
Flow Length=153' Tc=1.7 min CN=98 Runoff=0.74 cfs 0.059 af

Subcatchment 11S: Post - Ground Level

Runoff Area=1,150 sf 56.00% Impervious Runoff Depth>4.04"
Flow Length=40' Tc=0.6 min CN=87 Runoff=0.13 cfs 0.009 af

Subcatchment 12S: Post - Roof

Runoff Area=5,908 sf 100.00% Impervious Runoff Depth>5.26"
Flow Length=155' Tc=1.7 min CN=98 Runoff=0.75 cfs 0.059 af

Subcatchment 13S: Post - Ground Level

Runoff Area=4,490 sf 61.58% Impervious Runoff Depth>4.25"
Flow Length=109' Tc=1.7 min CN=89 Runoff=0.51 cfs 0.037 af

Reach CB1: CB

Inflow=2.14 cfs 0.163 af
Outflow=2.14 cfs 0.163 af

Reach CB10: CB

Inflow=1.90 cfs 0.121 af
Outflow=1.90 cfs 0.121 af

Pond 1P: Stormtank Chambers

Peak Elev=134.62' Storage=387 cf Inflow=2.13 cfs 0.164 af
Discarded=0.03 cfs 0.038 af Primary=1.90 cfs 0.121 af Outflow=1.93 cfs 0.160 af

Total Runoff Area = 0.798 ac Runoff Volume = 0.327 af Average Runoff Depth = 4.92"
18.43% Pervious = 0.147 ac 81.57% Impervious = 0.651 ac

12137, Pre and Post Dev

Type III 24-hr 25-Yr Rainfall=5.50"

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Summary for Subcatchment 1S: Pre

Runoff = 2.14 cfs @ 12.02 hrs, Volume= 0.163 af, Depth> 4.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs

Type III 24-hr 25-Yr Rainfall=5.50"

Area (sf)	CN	Description
* 2,447	98	Existing Rooftop
* 4,177	86	Existing Gravel
* 10,764	98	Existing Pavement/Impervious
17,388	95	Weighted Average
4,177		24.02% Pervious Area
13,211		75.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0175	1.10		Sheet Flow, A to B Smooth surfaces n= 0.011 P2= 3.00"
1.0	155	0.0150	2.49		Shallow Concentrated Flow, B to C Paved Kv= 20.3 fps
1.8	205	Total			

Summary for Subcatchment 10S: Post - Roof

Runoff = 0.74 cfs @ 12.02 hrs, Volume= 0.059 af, Depth> 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs

Type III 24-hr 25-Yr Rainfall=5.50"

Area (sf)	CN	Description
* 5,840	98	Roof
5,840		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	98	0.0150	1.18		Sheet Flow, Rooftop Smooth surfaces n= 0.011 P2= 3.00"
0.3	55	0.0100	2.86	0.56	Pipe Channel, Roof to CB 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
1.7	153	Total			

Summary for Subcatchment 11S: Post - Ground Level

Runoff = 0.13 cfs @ 12.01 hrs, Volume= 0.009 af, Depth> 4.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs

Type III 24-hr 25-Yr Rainfall=5.50"

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Type III 24-hr 25-Yr Rainfall=5.50"

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Area (sf)	CN	Description
506	74	>75% Grass cover, Good, HSG C
*	0	98 Rooftop
*	644	98 Pavement
1,150	87	Weighted Average
506		44.00% Pervious Area
644		56.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	25	0.0100	0.76		Sheet Flow, A to B Smooth surfaces n= 0.011 P2= 3.00"
0.1	15	0.0200	2.12		Shallow Concentrated Flow, B to C Grassed Waterway Kv= 15.0 fps
0.6	40	Total			

Summary for Subcatchment 12S: Post - Roof

Runoff = 0.75 cfs @ 12.02 hrs, Volume= 0.059 af, Depth> 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs
Type III 24-hr 25-Yr Rainfall=5.50"

Area (sf)	CN	Description			
*	5,908	98 Roof			
5,908		100.00% Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0150	1.19		Sheet Flow, Rooftop Smooth surfaces n= 0.011 P2= 3.00"
0.3	55	0.0100	2.86	0.56	Pipe Channel, Roof to CB 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.013 Corrugated PE, smooth interior
1.7	155	Total			

Summary for Subcatchment 13S: Post - Ground Level

Runoff = 0.51 cfs @ 12.02 hrs, Volume= 0.037 af, Depth> 4.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs
Type III 24-hr 25-Yr Rainfall=5.50"

Area (sf)	CN	Description
1,725	74	>75% Grass cover, Good, HSG C
*	273	98 Rooftop
*	2,492	98 Pavement
4,490	89	Weighted Average
1,725		38.42% Pervious Area
2,765		61.58% Impervious Area

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Type III 24-hr 25-Yr Rainfall=5.50"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	26	0.0100	0.77		Sheet Flow, A to B Smooth surfaces n= 0.011 P2= 3.00"
1.0	73	0.0200	1.25		Sheet Flow, B to C Smooth surfaces n= 0.011 P2= 3.00"
0.1	10	0.0300	2.79		Shallow Concentrated Flow, C to D Unpaved Kv= 16.1 fps
1.7	109	Total			

Summary for Reach CB1: CB

Inflow Area = 0.399 ac, 75.98% Impervious, Inflow Depth > 4.92" for 25-Yr event
 Inflow = 2.14 cfs @ 12.02 hrs, Volume= 0.163 af
 Outflow = 2.14 cfs @ 12.02 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs

Summary for Reach CB10: CB

Inflow Area = 0.399 ac, 87.17% Impervious, Inflow Depth = 3.65" for 25-Yr event
 Inflow = 1.90 cfs @ 12.04 hrs, Volume= 0.121 af
 Outflow = 1.90 cfs @ 12.04 hrs, Volume= 0.121 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs

Summary for Pond 1P: Stormtank Chambers

Inflow Area = 0.399 ac, 87.17% Impervious, Inflow Depth > 4.92" for 25-Yr event
 Inflow = 2.13 cfs @ 12.02 hrs, Volume= 0.164 af
 Outflow = 1.93 cfs @ 12.04 hrs, Volume= 0.160 af, Atten= 10%, Lag= 1.2 min
 Discarded = 0.03 cfs @ 12.04 hrs, Volume= 0.038 af
 Primary = 1.90 cfs @ 12.04 hrs, Volume= 0.121 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.08 hrs / 3

Peak Elev= 134.62' @ 12.04 hrs Surf.Area= 630 sf Storage= 387 cf

Plug-Flow detention time= 28.8 min calculated for 0.159 af (97% of inflow)

Center-of-Mass det. time= 13.3 min (768.4 - 755.2)

Volume	Invert	Avail.Storage	Storage Description
#1	132.85'	2,232 cf	18.00'W x 18.00'L x 6.00'H Prismatic Z=2.0 5,688 cf Overall - 108 cf Embedded = 5,580 cf x 40.0% Voids
#2	132.85'	105 cf	StormTank 24N @ 18.00' L x 2 Inside #1 Inside= 18.0"W x 24.0"H => 2.91 sf x 18.00'L = 52.4 cf Outside= 18.0"W x 24.0"H => 3.00 sf x 18.00'L = 54.0 cf
		2,337 cf	Total Available Storage

12137, Pre and Post Dev

Type III 24-hr 25-Yr Rainfall=5.50"

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Device	Routing	Invert	Outlet Devices
#1	Primary	133.85'	12.0" Round Culvert L= 64.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 133.85' / 133.40' S= 0.0070 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Discarded	132.85'	2.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.03 cfs @ 12.04 hrs HW=134.59' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=1.79 cfs @ 12.04 hrs HW=134.59' (Free Discharge)
↑**1=Culvert** (Barrel Controls 1.79 cfs @ 3.98 fps)

NO.	DATE	DESCRIPTION

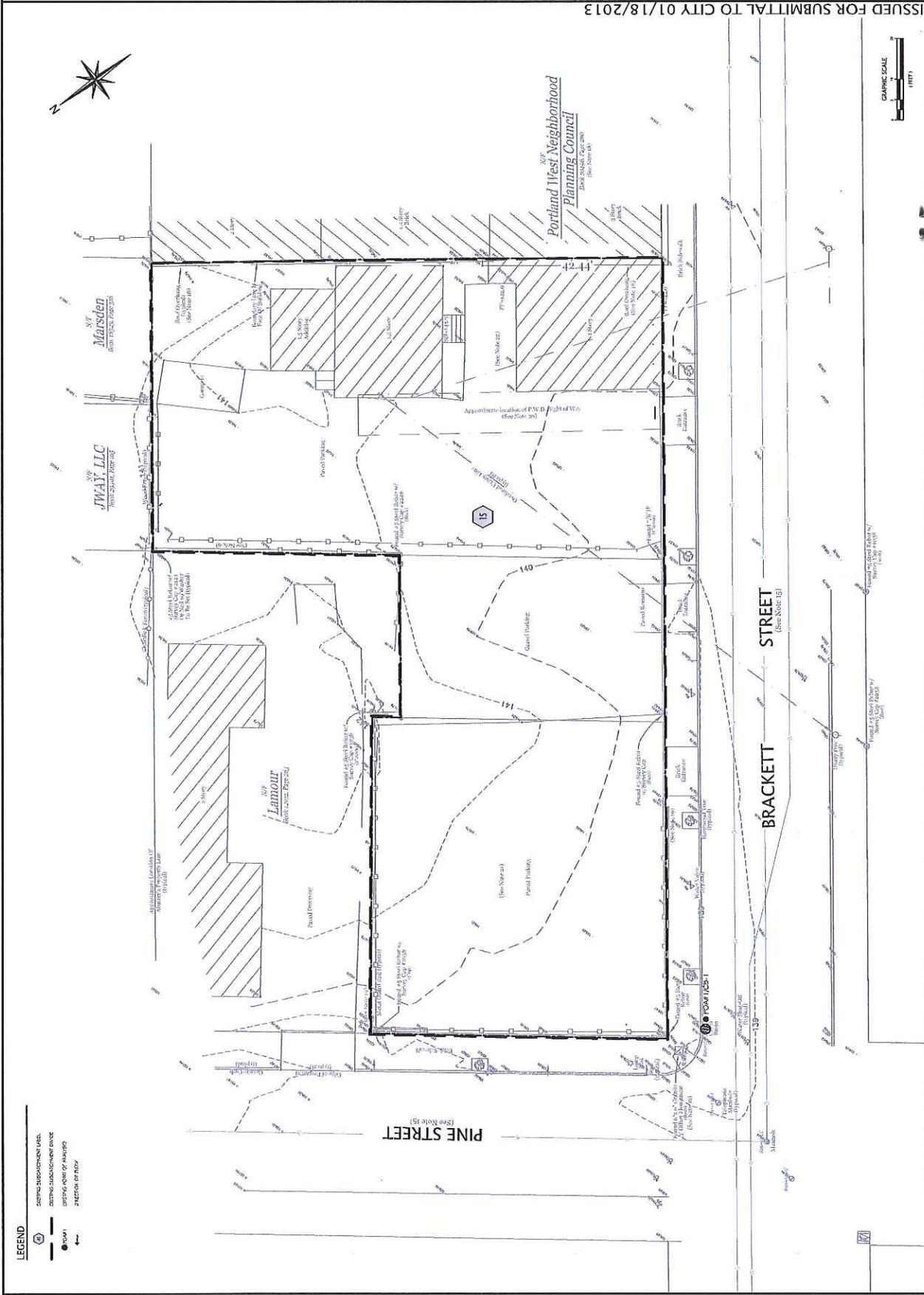


Blais
 CIVIL ENGINEERS
 260 BROADWAY, 20, PORTLAND, ME 04106
 (207) 767-2300

PRE DEVELOPMENT DRAINAGE PLAN
 WEST END PLACE
 BRACKETT STREET PORTLAND, MAINE
 REDFERN LWS, LLC
 P.O. BOX 8816
 PORTLAND, MAINE 04101

DATE: OCTOBER 09, 2012
 DESIGNED BY: JF
 CHECKED BY: JS
 REVISION NO.: 12/137

D1-1



LEGEND

- Catchment Line
- Stormwater Line
- Manhole
- Catch Basin

GRAPHIC SCALE
 (Feet)

ISSUED FOR SUBMITTAL TO CITY 01/18/2013



**Post Stormwater Management Plan: Inspection and Maintenance
For Stormwater Best Management Practices (BMPS)**

**West End Place
Portland, Maine**

January 2013

Stormwater management facilities include paved surfaces, vegetated areas and subsurface storage and infiltration. During construction activities, the maintenance of all stormwater measures will be the direct responsibility of the Contractor. After acceptance by the Owner, the maintenance of all stormwater management facilities, the establishment of any contract services required for implementing the program, and the keeping of records and maintenance log book will be the responsibility of the Owner. At a minimum, the following maintenance activities for each stormwater management system shall be performed on the prescribed schedule.

RECERTIFICATION REQUIREMENT

Each one-year interval from June 30, within 12 months of the date of issuance of the permit, the permittee shall certify the following to the City of Portland, Department of Public Services, as described in Chapter 32 of the City of Portland, Maine Ordinances.

(a) All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas. (b) All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the facilities. (c) The erosion and stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the City of Portland and by June 30 or each year, provide a completed and signed certification to the Department of Public Services on the proper form.

PAVED SURFACES

Accumulations of sediment, wood debris, and winter sand along paved surfaces shall be cleared at least once a month, and periodically during the year on an as-needed basis, to minimize transportation of sediment during rainfall events. Accumulations on pavement may be removed by pavement sweeping or vacuuming. Accumulations of sand along

road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Grading of gravel roads, or grading of the gravel shoulders of gravel or paved roads, must be routinely performed to ensure that stormwater drains immediately off the road surface to adjacent buffer areas or stable ditches, and is not impeded by accumulations of graded material on the road shoulder or by excavation of false ditches in the shoulder.

VEGETATED AREAS

Vegetated areas should be inspected monthly and after significant rainfall/snow melt events. Slopes or embankments should be inspected for erosion and sediment buildup. All debris should be removed. Bare areas or areas with sparse growth should be re-vegetated as soon as possible to prevent erosion. Areas of rill erosion should be lined with an appropriate lining or the erosive flow diverted to an area able to withstand the concentrated flow.

A maintenance program should be set up to maintain the vegetative cover of the vegetated area. Periodic liming and fertilizing shall be based on soil tests or visual observations. Vegetated areas should be mowed at least once annually.

The removed material must be disposed of in accordance with all applicable federal, state, and local regulations.

The date and initials of the inspector should be recorded on the forms provided as well as notations of any corrective actions that were taken and the approximated volume of sediment or materials that were removed. Any damage, unusual conditions, or maintenance procedures needed/performed should be noted by the inspector on the forms provided.

SUBSURFACE STORAGE AND INFILTRATION

Subsurface storage to temporarily store runoff and release it at a controlled rate both through infiltration into the existing soils and into the municipal combined sewer system.

The storage tanks should be inspected at least four times annually for settling and other signs of structural failure, and loss of storage volume due to sediment accumulation. Corrective action should be taken immediately upon identification of problems.

A professional Stormwater maintenance company should be retained to clean the storage system on an annual basis at a minimum.

CATCH BASINS

Catch basins shall be inspected on an annual basis to remove any obstructions to flow; remove accumulated sediments and debris at the inlet, and within the conduit; and to repair any erosion damage at the pipe inlet and outlet. Sediment should be removed when its level exceeds 6" from the sump. Casco Bay Traps shall be inspected and cleared of any sediment or other accumulations that may inhibit their effectiveness. This may be accomplished by hydraulic flushing or any mechanical means; however, care should be taken to contain the sediment at the ultimate pipe outlets, and not flush the sediments into the subsurface storage areas as this will reduce the capacity and ability to infiltrate runoff, and will hasten the time when the subsurface storage must be cleaned or rehabilitated.

CULVERTS AND STORM DRAINAGE PIPES

Culverts and piped drainage systems shall be inspected on an annual basis to remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit; and to repair any erosion damage at the pipe inlet and outlet. Sediment should be removed when its level exceeds 20% of the pipe diameter. This may be accomplished by hydraulic flushing or any mechanical means; however, care should be taken to contain the sediment at the pipe outlet, and not flush the sediments into the detention/infiltration pond areas as this will reduce the ponds capacity and ability to infiltrate runoff, and will hasten the time when the pond must be cleaned or rehabilitated.

DISPOSAL

Any sediment or debris removed during maintenance of the stormwater system must be disposed of in accordance with the Maine Solid Waste Disposal Rules.



Maintenance Log
Sample Inspection Report:

WEST END PLACE – PORTLAND, MAINE
STORMWATER FACILITIES INSPECTION REPORT

NAME: _____ SIGNATURE: _____

TITLE: _____ COMPANY: _____

DATE: _____

OBSERVATIONS:

<u>BMP</u>	<u>Defects</u>	<u>Location(s)</u>	<u>Repair/Action Needed</u>	<u>Date/Action taken</u>
Paved Surfaces	Yes/no			
Vegetated Areas	Yes/no			
Subsurface Storage	Yes/no			
Catch Basins	Yes/no			
Drainage Piping	Yes/no			



**WRITTEN SUMMARY OF
SOLID WASTE GENERATION
WEST END PLACE - SITE PLAN APPLICATION
January 18, 2013**

The West End Place development plan calls for two existing vacant buildings to be demolished and a four-story building to be constructed on the entire lot. The ground floor will have a 510 gsf, a 1485 gsf retail space and covered parking. The second, third and fourth floors will consist of 39 one and two-bedroom residential units.

Once construction is finished and the building is open for residents, a property management company will be hired. It is anticipated that this company will be responsible for all property management issues including but not limited to grounds maintenance, snow clearing and removal, and solid waste management.

As seen on Sheet C1-2 of the Site Plan set submitted to the City of Portland, 1/18/13, there will be a room dedicated for trash and recycling located behind the smaller retail space. This room will be accessible to all residents of the building and will be used to contain trash and recycling until it is collected by the property management company or trash removal subcontractor.

We have calculated the solid waste generation for this project using data from the 2010 Annual Municipal Solid Waste Management Report for the City of Portland:

Portland (*per Annual MSW Management Report, 2010*) –

City of Portland 2010 Population = 64,249

\$4,368,454 annual MSW expense / 11,533.97 tons of MSW = \$378.75 / ton

Assumed average of 3 people per household (conservative) = 0.54 tons of MSW per year per household

0.54 tons per year per household x 39 units at West End Place = **21.06 tons of MSW per year**

The solid waste generated by the two retail spaces could vary widely depending on future use and tenants; however, all retail waste will be handled by the property management company or removed by the same trash removal subcontractor and not introduced into the City's municipal street pick up system.

Verification that HVAC Equipment meets state and federal emission standards

Redfern LWS is currently working with a mechanical contractor to specify HVAC equipment. West End Place will utilize Daikin Mult-split Heat Pumps for both heating and cooling. These units are electronic and utilize no fossil fuels. When final equipment models are specified, we will submit product details and verify that all products meet state and federal emissions standards.



Re: Response to Review Comments
West End Place Planning Board Review

In regards to the above-referenced project, the following responses by Blais Civil Engineers, Nadeau Land Surveys, Redfern RWS, LLC, Senatore Architecture, and Allied Cook Construction address comments received from Shukria Wiar, Planner, City of Portland in a letter dated November 2nd, 2012:

Shukria Wiar, Planner, City of Portland Comments:

1. *Zoning (Marge Schmuckal, Zoning Administrator, City of Portland)*

This project is for a new building consisting of two retail spaces along with parking on the first floor with 39 residential dwelling units above. The full property is located primarily within a B-1 zone with approximately 27 foot of R-6 zone located in the rear of the property abutting Brackett Street. Section 14-51 can be employed so that essentially the entire lot is located within the B-1 zone. There is also a Historic Overlay zone.

Response: Acknowledged.

The B-1 zone allows the retail uses and multi-family uses. The setbacks work if Pine Street is declared the "front" of the property. The initial information indicates that the maximum building height can be met. However, I would like more detail showing the average grades around the building and how that relates to the height. The maximum impervious surface ratio is being met.

Response: Pine Street is the Front of the Property. See the Grading Plan (Sheet C1-3) indicating Spot Grades around the Building. The base floor elevation is 139.40', the building height of 43'-0" from top of roof beam of the proposed structure is measured from this elevation. The lowest grade at the face of building perimeter is 139.0'. At one location on the Northwest corner of the building, grades increase in all directions around the perimeter. The average grade will be higher than or equal to 139.40' and the building height of 43'-0" to top of roof beam from 139.40' will be below the 45' maximum for the Zone.

The applicant has asked for a "waiver" of 5 parking spaces from the Planning Board. It is the Board of Appeals that must grant a variance for the parking spaces, not the Planning Board. However, I question whether this is considered to be an "affordable housing" project that would allow for reduction in parking.

Response: Both 14-332(a), 3.c and 14-526(a), 4.a authorize the Planning Board to establish a parking requirement less than normally required for the zone.

The parking requirement may be reduced under 14-332.(a) 3.c if the Planning Board finds unique conditions that result in a lesser parking demand such as housing that participates in a (travel) transportation demand management program. William Bray, PE, of Traffic Solutions has submitted a comprehensive TDM plan which outlines multiple techniques the project will utilize to reduce parking demand. The TDM plan is included in this submittal.

All HVAC units shall meet the maximum noise allowance as stated in the B-1 zone. At the time of HVAC permitting this office will require unit information on dBA emissions.

Response: The Applicant will submit documentation for all HVAC equipment with their respective dBA emissions when the project is submitted for building permit.

Separate permits are required for any new signage.

Response: As the project is within the West End Historic District, all signage not currently shown on the submitted plans will be submitted to the Historic Preservation Program Manager for approval and permit.

2. Transportation Standards

- a. *I concur with the trip generation estimate and that there are no High Crash Locations in the study area. The applicant will be providing an evaluation of the Brackett Street/Pine Street intersection and I will provide comments upon receipt of the analysis.*

Response: Bill Bray of Traffic Solutions prepared the Traffic Assessment of the Brackett Street / Pine Street intersection. The assessment is included with this submission.

- b. *The applicant has indicated a TDM Plan is being prepared and I will review the plan when it is submitted.*

Response: Bill Bray of Traffic Solutions prepared the TDM for this project. The TDM is included with this submission.

- c. *The proposed driveway will have a minimum width of 18 feet and therefore does not meet City standards. I support a waiver from the technical standards given low traffic volumes. I will continue to review the design of the garage door system and sight distance issues between vehicles exiting the garage and pedestrians on the sidewalk.*

Response: Acknowledged.

- d. *A portion of the sidewalk appears to be in the right-of-way at the corner of Brackett Street and Pine Street. A pedestrian easement should be provided.*

Response: A pedestrian easement is shown on the proposed Subdivision Plat which is included in this Application.

- e. *The sidewalk ramp illustrated on the plan at the corner of Brackett Street and Pine Street has an apex alignment. The City standard is to provide perpendicular alignment. The applicant should provide justification for the apex configuration.*

Response: Perpendicular ramps are not proposed in this location because they would have conflicted with the existing catch basin at the intersection. Maintaining the apex ramp was discussed with and agreed to by David Margolis-Pineo.

- f. *The pavement markings delineating the no-parking areas at the driveway shall be removed.*

Response: The pavement markings for the no-parking areas adjacent to the driveway have been removed.

- g. The parking lot layout does not meet City design standards for aisle width and the number of compact parking spaces. The applicant has provided vehicle turning templates that illustrates maneuvers into and out of parking spaces is possible. Given that the traffic volumes will be low and the applicant has provided evidence of a functioning garage, I support a waiver from the City's technical standards.*

Response: Acknowledged.

- h. The applicant is proposing both 15-minute on-street parking spaces and U-share parking. I need to continue to review this and what type of parking regulation to implement.*

Response: Acknowledged.

- i. The applicant shall document who currently parks on the existing site so that the City can assess whether there are any prior site plan approvals that were based on use of the site.*

Response: The owners of 40 Pine Street and 189-191 Brackett Street have no written parking lease agreements. Bonobo Restaurant utilizes the parking lot on a month-to-month basis, as do a few individuals.

The owners of 183 Brackett Street have no written parking lease agreements. The veterinary practice on Brackett Street currently utilizes the parking lot and leases parking on a month-to-month basis.

3. Environmental Quality Standards

a. Landscaping

The City Arborist review is pending and comments will be forwarded at a later date.

Response: Acknowledged.

b. *Water Quality, Storm Water Management and Erosion Control*

David Senus, Consultant Engineer with Woodard and Curran:

1. *The application is preliminary. As such, additional documents will need to be submitted for the final application, including letters from utilities confirming capacity to serve the proposed development, and a Construction Management Plan. Woodard & Curran will perform a review of the Final Application upon receipt of those documents.*

Response: Letters confirming available capacity and ability to serve from the Portland Water District, Central Maine Power and Unutil are enclosed. Allied Cook has prepared a Construction Management Plan.

2. *Per Section 13 of the City's Technical Manual, the Applicant is required to submit a Boundary Survey that has been stamped by a Maine Licensed Professional Surveyor; the Boundary Survey submitted by the applicant has not been stamped.*

Response: The Boundary Survey has been stamped and is included with this submission.

3. *Final plans will need to be stamped by a professional engineer (Section 14-527, sub-section (e) of the City of Portland Land Use Ordinance.*

Response: The enclosed drawings are stamped, signed, and dated by Steve Blais, PE.

4. *In accordance with Section 2.1.1 of the City of Portland Technical Manual: The introduction of non-contaminated water such as rain water...surface drains or any other sources of inflow shall not be allowed to discharge into a sewer which conveys sanitary waste unless approved by the City Engineer. The Applicant has proposed a new closed drainage system of catch basins and pipes connected to the City's combined sewer system through a new catch basin and drain manhole in Brackett Street. Although the site will result in a net reduction in impervious area, direct connections of stormwater to a sewer system can result in an increase in the rate of stormwater inflow into the system. The Applicant should confirm that this is an acceptable method of stormwater management with the City Engineer.*

Response: The stormwater management design for this project was discussed with Deputy City Engineer David Margolis-Pineo and Consultant Engineer for the City, David Senus. Both have conceptually agreed the idea of mitigating the rate of inflow into the system via the use of stormwater detention in the form of underground storage or rain gardens. We have designed an underground storage system that will reduce the rate of flow by 20%. The enclosed drawings and stormwater report show and explain the design in detail.

5. *In accordance with Section 2.7.8 of the City of Portland Technical Manual: No storm drain lines, with the exception of field inlets and underdrains, shall be connected into a catch basin structure. The Applicant has proposed a roof drain connection at the corner of Pine and Brackett Streets to an existing City of Portland catch basin and a storm drain connection to a new catch basin in Brackett Street. The Applicant should propose an alternate concept for these connections that is acceptable to the City Engineer.*

Response: The roof drain connection to the City's catch basin at Pine and Brackett Streets has been removed. The proposed catch basin on Brackett Street remains and was reviewed with David Margolis-Pineo as mentioned above. The purpose of the added catch basin on Brackett Street is to make it obvious that the subject drain connection should be separated in the event the stormwater is separated from the sanitary sewer in the future. As an additional benefit, this catch basin should help improve drainage at the flatter sections of Brackett Street.

6. *In accordance with Section 5 of the City of Portland Technical Manual, a Level III development project is required to submit a stormwater management plan pursuant to the regulations of Maine DEP Chapter 500 Stormwater Management Rules, including conformance with the Basic, General, and Flooding Standards:*
 - i. *Basic Standards: Notes and details have been provided to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in accordance with Appendix A, B, & C of Maine DEP Chapter 500. The proposed locations*

and/or methods of erosion control measures should also be indicated on the site plans.

Response: We have added erosion and sedimentation control locations to the site plans.

- ii. *General Standards: It appears that the project will result in net decrease in impervious areas. As such, the project is not required to include any specific stormwater management features for stormwater quality control.*

Response: Acknowledged.

- iii. *Flooding Standards: It appears that the project will result in net decrease in impervious area. However, the direct connection of stormwater to the combined sewer system can result in an increase in the rate of inflow entering the system. As such, the Applicant should consider detaining stormwater onsite or propose a means of discharging stormwater from the site through a design that is acceptable to the City Engineer.*

Response: Underground storage chambers have been added to the stormwater management design in order to decrease the peak flow of runoff from the Site. Both of these stormwater management elements were reviewed with David Margolis-Pineo as mentioned above.

- 7. *The following details should be provided in accordance with the City of Portland Technical Manual for work within the City Right-of-Way:*

- i. *Catch Basins should be per Figure II-2.*

Response: This detail has been revised and is shown on Sheet C3-1.

- ii. *The Detectable Warning Tile should be per Figure I-7A for brick sidewalks.*

Response: This detail has been revised and is shown on Sheet C3-2.

- iii. *Sewer Manholes should be per Figure II-1.*

Response: This detail has been removed.

David Margolis-Pineo, Deputy City Engineer
Department of Public Services

1. *Please consider installing bike parking racks for four additional bikes in the sidewalk area. The proposed internal bike parking configuration does not allow for convenient access for parking of bikes. Consider different location or configuration.*

Response: Additional bike racks, providing parking for four bikes, are shown in the sidewalk area; one rack near the lobby entrance and one near the entrance to the smaller retail space.

2. *Please be aware that if a restaurant is proposed, a properly size external grease trap will be required. See Technical Manual Figure II-19 for design and sizing.*

Response: No restaurant is proposed for this project.

3. *A backflow preventer is required on the sewer lateral.*

Response: We have added backflow preventers to the sewer laterals.

4. *To avoid the installation of a sanitary manhole, please consider using a 6" sewer lateral to service the complex. If it is desired to install an 8" lateral, a manhole will be required, but not a "doghouse" style manhole. The contractor shall cut a section of the 15" VC pipe out and drop a manhole on line using 15" PVC pipe straight through the manhole with a Fernco style connector on each side of the manhole adapting from 15" VC to 15" PVC. The top half of the 15" pipe within the manhole shall be cut out with the bottom half remaining as the channel and form to construct shelf area.*

Response: We have revised the sewer service connections to 6" laterals and removed the proposed sanitary manhole.

5. *Curb ramp should reflect historic detail for detectable warning panel. Current detail is incorrect.*

Response: This detail has been revised and is shown on Drawing C3-2.

6. *Consider motorcycle parking in proposed area to be stripped beside drive entrance.*

Response: One angled, 4-foot by 8-foot, on-street motorcycle parking space has been added to either side of the driveway.

7. *Drive apron detail (there is no esplanade) is not totally desirable. It is preferred to have the sidewalk slope perpendicular to the drive vs. being angled towards the street.*

Response: The driveway apron detail has been revised and is shown on Drawing C3-2.

8. *A Wastewater Capacity Application needs to be submitted.*

Response: A Wastewater Capacity Application is included with this submission.

9. *The applicant is requesting to reconfigure the street parking. City Council action may be required.*

Response: We acknowledge this and will take the matter up with City Council as needed.

10. *As indicated by the applicant, stormwater currently sheet flows from the site. It is requested to maintain that practice after the site is developed since direct connections to the sewer system for stormwater are not permitted. Please see comment by David Senus.*

Response: The stormwater management design for this project was discussed with Deputy City Engineer David Margolis-Pineo and Consultant Engineer for the City, David Senus. Both have conceptually agreed the idea of mitigating the rate of inflow into the system via the use of stormwater detention in the form of underground storage or rain gardens. We have designed an underground storage system that will reduce the rate of flow by 20%. The enclosed drawings and stormwater report show and explain the design in detail.

11. Plans are required to be stamped.

Response: Final plans have been stamped, signed, and dated by Steve Blais, PE.

12. Please add note that all work within the road right of way will meet City of Portland Technical Manual standards.

Response: We have added Note 1 on Drawing C1-2 accordingly.

13. Show the State Plane Coordinates for the four (4) property corners to be set, and for the three foot offset monument held at the easterly corner of Pine Street and Brackett Street.

Response: The requested coordinates have been added to the Boundary Survey prepared by Nadeau Land Surveys.

14. Title. Minor detail. The property is on the "Northeasterly Sideline of Brackett Street" and not the "Northwesterly Sideline" as noted.

Response: The Boundary Survey title has been revised by Nadeau Land Surveys.

4. Public Infrastructure and Community Safety Standards

a. Public Safety and Fire Prevention

- 1. Captain Chris Pirone of the Fire Department review is pending and comments will be forwarded at a later date.*

Response: Acknowledged.

b. Availability and Adequate Capacity of Public Utilities

- 1. Submit letters from utilities confirming capacity to serve the proposed development.*

Response: Letters confirming available capacity and ability to serve from the Portland Water District, Central Maine Power and Unitil are enclosed.

5. *Site Design Standards*

a. *Snow and Ice Loading*

1. *Explain how will snow and ice removal on site be handled? Show the snow area on the site plan.*

Response: The majority of snow will remain on the roof. The snow that falls within the parking area will be either stored in the open space areas shown on Sheet C1-2 or removed from the Site.

b. *Exterior Lighting*

1. *Submit lighting/Photometric Plan for review. Also submit catalogue cuts for all proposed lighting fixtures.*

Response: See the attached Photometric Plan and Lighting Fixture Cuts.

c. *Noise and Vibration*

1. *The B-1 zoning has noise standards that need to be met. Please submit catalogue cuts and noise emissions for all proposed mechanical units.*

Response: The Applicant will submit documentation for all HVAC equipment with their respective dBA emissions when the project is submitted for building permit.

d. *Signage and Wayfinding*

1. *Signage and Wayfinding plan needs to be submitted for all proposed traffic signs.*

Response: Proposed signs are located on Sheet C1-2 and are to be in accordance with applicable Portland City Standards.

e. *Trash Removal*

1. *Explain how will trash removal be handled at the site. Will it be private or public?*

Response: Based on an assumed weekly solid waste generation rate of 30-gallons per unit, we anticipate this project will generate approximately 1,170 gallons of solid waste per week. Trash and recycling will be removed from the site by a private contractor and overseen by a property management company.

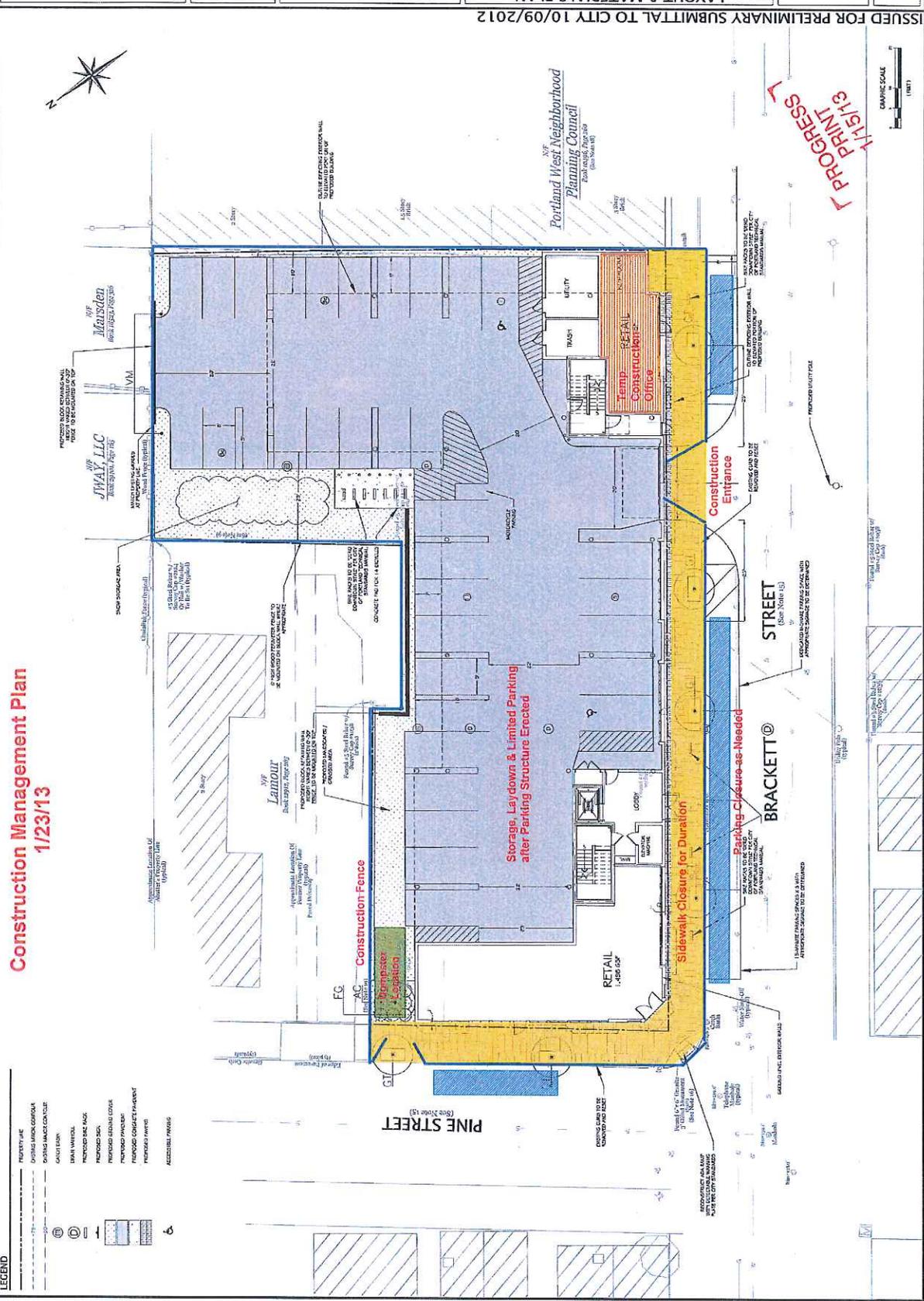
NO.	DATE	DESCRIPTION

Blais
 CIVIL ENGINEERS
 760 BROADWAY, 20, PORTLAND, ME 04105 (207) 792-7300
 100 BROADWAY, 20, PORTLAND, ME 04105 (207) 792-7300

LAYOUT & MATERIALS PLAN
 WEST END PLACE
 BRACKETT STREET PORTLAND, MAINE
 REDFERN LWS, LLC
 P.O. BOX 8815
 PORTLAND, MAINE 04101

LATEST REVISION (DATE)
 DATE: OCTOBER 09, 2012
 DESIGNED BY: JH
 CHECKED BY: BS
 PROJECT NO: 12137

C1-2



Construction Management Plan
 1/23/13

LEGEND

	PROPERTY LINE
	EXISTING WALKWAY
	EXISTING STREET
	CONSTRUCTION FENCE
	BRICKWORK
	PROPOSED BRICK WALL
	PROPOSED SIDEWALK
	PROPOSED CONCRETE SLAB
	PROPOSED CONCRETE FOOTING
	PROPOSED FOUNDATION
	ACCESSORY STRUCTURE