

Washington Avenue Efficiencies

134 Washington Avenue

Site Plan and Subdivision Plan
Application

April 4, 2014

APPLICANT:

AVESTA Washington Avenue, L.P.
307 Cumberland Avenue
Portland, Maine 04101

AGENT:

MITCHELL & ASSOCIATES
70 Center Street
Portland, Maine 04101

April 14, 2014

Mr. Alexander Jaegerman,
Director of the Portland Planning Division
and Planning Board Members
City of Portland
389 Congress Street
Portland, Maine 04101

**RE: Avesta Washington Avenue, LP
Proposed 134 Washington Avenue Efficiencies
Site Plan and Subdivision Review**

Dear Alex and Board Members:

On behalf of Avesta Washington Avenue, LP, we are pleased to submit the following Site Plan and Subdivision Application for the proposed "134 Washington Avenue Efficiencies" located at 134 Washington Avenue in Portland. This submission has been prepared in compliance with requirements of the City of Portland Zoning, Site Plan and Subdivision Ordinance. The project is intended to provide affordable rental housing on the peninsula with an emphasis toward providing quality housing for low income veterans.

The Site

The subject parcel has an existing single family residence on a 10,096 square foot lot located along Washington Avenue near the intersections of Fox Street and Walnut Street. The soils are characterized as urban conditions, as described in the geotechnical evaluation completed for the property. The residence is located close to the front property line on a level area of the site. The rear of the property slopes steeply to the west. A small single car garage and paved driveway are located along the southern property line. The property is located within the City's B-2-B District and abuts the residential R-6 District to the rear (west) of the property.

Mr. Alexander Jaegerman
and Board Members
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Project Description

The proposed project will create 18 units of affordable rental apartments. The gross square footage of the proposed 4 story building is 13,630 square feet with a 3,003 square foot building footprint. A partial daylight basement houses mechanical equipment and provides access to the backyard. The building will cover approximately 29% of the site, with surface parking for two vehicles. The project is further described in the following application.

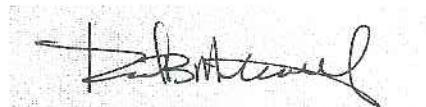
Submission

This submission includes the following information:

1. Cover letter, dated April 4, 2014
2. Site Plan and Subdivision Application & Checklist
3. Application Fee: \$1,087.50 (Per Sec 14-486 Affordable Housing Reduction)
4. Booklet of required exhibits
5. One set of plans (24" x 36")
6. One set of plans (11"x17")
7. One set of digital files

We trust that the Planning Board will consider this a complete application for a workshop meeting. If you desire any additional information, please do not hesitate to contact us. We look forward to our meeting with the Board at its earliest convenience.

Sincerely,
Mitchell & Associates



Robert B. Metcalf, Principal
Maine Licensed Landscape Architect

Enclosures

cc: Greg Payne
David Lloyd

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EXHIBIT	15	Light Fixtures
EXHIBIT	16	Construction Management Plan

PROJECT NAME: Washington Avenue Efficiencies

PROPOSED DEVELOPMENT ADDRESS:

134 Washington Avenue

PROJECT DESCRIPTION:

Development of 18 affordable housing units in a 4-story building

CHART/BLOCK/LOT: Map12/E/Lot 6

PRELIMINARY PLAN _____ (date)

FINAL PLAN _____ (date)

CONTACT INFORMATION:

Applicant – must be owner, Lessee or Buyer Name: Avesta Washington Avenue, LP, Greg Payne Business Name, if applicable: Address: 307 Cumberland Avenue City/State : Portland Zip Code: 04101	Applicant Contact Information Work # 207.553.7777 Home# Cell # Fax# e-mail: gpayne@avestahousing.org
Owner – (if different from Applicant) Name: Avesta Washington Avenue, LP Greg Payne Address: City/State : Zip Code:	Owner Contact Information Work # Home# Cell # Fax# e-mail:
Agent/ Representative Name: Mitchell & Associates, Bob Metcalf Address: 70 Center Street City/State : Portland, ME Zip Code: 04101	Agent/Representative Contact information Work #207.774.4427 Cell # e-mail: rmetcalf@mitchellassociates.biz
Billing Information Name: Avesta Housing Development Corp., Greg Payne Address: 307 Cumberland Avenue City/State : Portland Zip Code: 04101	Billing Information Work # 207.553.7777 Cell # Fax# e-mail: gpayne@avestahousing.org

Engineer Name: BH2M, Lester Berry Address: 28 State Street City/State: Gorham, ME Zip Code:	Engineer Contact Information Work # 207.8392771 Cell # Fax# e-mail: lberry@bh2m.com
Surveyor Owen Haskell Surveyors Name: 390 US Rt 1 Unit 10 Address: City/State: Falmouth, ME Zip Code:	Surveyor Contact Information Work # 207.774.0424 Cell # Fax# e-mail: cad@owenhaskell.com
Architect Name: Archetype, David Lloyd Address: 48 Union Wharf Portland, ME 04101 City/State: Zip Code:	Architect Contact Information Work # (207) 772-6022 Cell # Fax# e-mail: lloyd@archetypepepa.com
Attorney Name: Curtis and Thaxter Melinda Eldridge Address: 1 Canal Plaza, suite 1000 Portland, ME 04112 City/State: Zip Code:	Attorney Contact Information Work # 207.774.9000 Cell # Fax# e-mail: www.curtisthaxter.com

APPLICATION FEES:

Check all reviews that apply. (Payment may be made by Cash or Check payable to the City of Portland.)

<p>Level III Development (check applicable reviews)</p> <input checked="" type="checkbox"/> Less than 50,000 sq. ft. (\$500.00) <input type="checkbox"/> 50,000 - 100,000 sq. ft. (\$1,000) <input type="checkbox"/> 100,000 - 200,000 sq. ft. (\$2,000) <input type="checkbox"/> 200,000 - 300,000 sq. ft. (\$3,000) <input type="checkbox"/> over \$300,00 sq. ft. (\$5,000) <input type="checkbox"/> Parking lots over 11 spaces (\$1,000) <input type="checkbox"/> After-the-fact Review (\$1,000.00 plus applicable application fee) <p>Plan Amendments (check applicable reviews)</p> <input type="checkbox"/> Planning Staff Review (\$250) <input type="checkbox"/> Planning Board Review (\$500) <hr/> <p>The City invoices separately for the following:</p> <ul style="list-style-type: none"> • Notices (\$.75 each) • Legal Ad (% of total Ad) • Planning Review (\$40.00 hour) • Legal Review (\$75.00 hour) <p>Third party review fees are assessed separately. Any outside reviews or analysis requested from the Applicant as part of the development review, are the responsibility of the Applicant and are separate from any application or invoice fees.</p>	<p>Other Reviews (check applicable reviews)</p> <input type="checkbox"/> Traffic Movement (\$1,000) <input type="checkbox"/> Stormwater Quality (\$250) <input checked="" type="checkbox"/> Subdivisions (\$500 + \$25/lot) # of Lots <u>18</u> x \$25/lot = <u>450</u> <input type="checkbox"/> Site Location (\$3,000, except for residential projects which shall be \$200/lot) # of Lots <u> </u> x \$200/lot = <u> </u> <input type="checkbox"/> Other _____ <input type="checkbox"/> Change of Use <input type="checkbox"/> Flood Plain <input type="checkbox"/> Shoreland <input type="checkbox"/> Design Review <input type="checkbox"/> Housing Replacement <input type="checkbox"/> Historic Preservation
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APPLICATION SUBMISSION:

1. All site plans and written application materials must be submitted electronically on a CD or DVD with each plan submitted as separate files, with individual file names (see submittal requirements document attached).
2. In addition, one (1) paper set of the plans (full size), one (1) paper set of plans (11 x 17), paper copy of written materials, and the application fee must be submitted to the Planning Division Office to start the review process.

The application must be complete, including but not limited to the contact information, project data, application checklists, wastewater capacity, plan for fire department review, and applicant signature. The submissions shall include one (1) paper packet with folded plans containing the following materials:

1. One (1) full size site plans that must be folded.
2. One (1) copy of all written materials or as follows, unless otherwise noted:
 - a. Application form that is completed and signed.
 - b. Cover letter stating the nature of the project.
 - c. All Written Submittals (Sec. 14-525 2. (c), including evidence of right, title and interest.
3. A stamped standard boundary survey prepared by a registered land surveyor at a scale not less than one inch to 50 feet.
4. Plans and maps based upon the boundary survey and containing the information found in the attached sample plan checklist.
5. One (1) set of plans reduced to 11 x 17.


Refer to the application checklist for a detailed list of submission requirements.

Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14), which includes the Subdivision Ordinance (Section 14-491) and the Site Plan Ordinance (Section 14-521). Portland's Land Use Code is on the City's web site <http://www.portlandmaine.gov/citycode/chapter014.pdf>

APPLICANT SIGNATURE:

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Planning Authority and Code Enforcement's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for a Level II Site Plan review. It is not a permit to begin construction. An approved site plan, a Performance Guarantee, Inspection Fee, Building Permit, and associated fees will be required prior to construction. Other Federal, State or local permits may be required prior to construction, which are the responsibility of the applicant to obtain.

Signature of Applicant: 	Date: 4.14.14
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PROJECT DATA

The following information is required where applicable, in order to complete the application.

Total Area of Site	10,096 sq. ft.
Proposed Total Disturbed Area of the Site	10,096 sq. ft.
If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with DEP and a Stormwater Management Permit, Chapter 500, with the City of Portland	
Impervious Surface Area	
Impervious Area (Total Existing)	1,020 sq. ft.
Impervious Area (Total Proposed)	2,950 sq. ft.
Building Ground Floor Area and Total Floor Area	
Building Footprint (Total Existing)	1,700+/- sq. ft.
Building Footprint (Total Proposed)	3,003 sq. ft.
Building Floor Area (Total Existing)	sq. ft.
Building Floor Area (Total Proposed)	13,630 sq. ft.
Zoning	
Existing	B-2-B
Proposed, if applicable	
Land Use	
Existing	Single Family Residence
Proposed	Affordable Apartment Rentals
Residential, if applicable	
# of Residential Units (Total Existing)	1
# of Residential Units (Total Proposed)	18
# of Lots (Total Proposed)	1
# of Affordable Housing Units (Total Proposed)	18
Proposed Bedroom Mix	
# of Efficiency Units (Total Proposed)	18
# of One-Bedroom Units (Total Proposed)	
# of Two-Bedroom Units (Total Proposed)	
# of Three-Bedroom Units (Total Proposed)	
Parking Spaces	
# of Parking Spaces (Total Existing)	1
# of Parking Spaces (Total Proposed)	
# of Handicapped Spaces (Total Proposed)	1
Bicycle Parking Spaces	
# of Bicycle Spaces (Total Existing)	0
# of Bicycle Spaces (Total Proposed)	8
Estimated Cost of Project	\$1,683,069.00

PRELIMINARY PLAN (Optional) - Level III Site Plan

Applicant Checklist	Planner Checklist	# of Copies	GENERAL WRITTEN SUBMISSIONS CHECKLIST
X		1	Completed Application form
X		1	Application fees
X		1	Written description of project
X		1	Evidence of right, title and interest
N/A		1	Evidence of state and/or federal approvals, if applicable
X		1	Written assessment of proposed project's compliance with applicable zoning requirements
		1	Summary of existing and/or proposed easement, covenants, public or private rights-of-way, or other burdens on the site
		1	Written requests for waivers from site plan or technical standards, if applicable.
X		1	Evidence of financial and technical capacity
X		1	Traffic Analysis (may be preliminary, in nature, during the preliminary plan phase)
Applicant Checklist	Planner Checklist	# of Copies	SITE PLAN SUBMISSIONS CHECKLIST
X		1	Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
		1	Preliminary Site Plan including the following: (information provided may be preliminary in nature during preliminary plan phase)
X			Proposed grading and contours;
X			Existing structures with distances from property line;
X			Proposed site layout and dimensions for all proposed structures (including piers, docks or wharves in Shoreland Zone), paved areas, and pedestrian and vehicle access ways;
X			Preliminary design of proposed stormwater management system in accordance with Section 5 of the Technical Manual (note that Portland has a separate applicability section);
X			Preliminary infrastructure improvements;
X			Preliminary Landscape Plan in accordance with Section 4 of the Technical Manual;
N/A			Location of significant natural features (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features) located on the site as defined in Section 14-526 (b) (1);
N/A			Proposed buffers and preservation measures for significant natural features, as defined in Section 14-526 (b) (1);
			Location , dimensions and ownership of easements, public or private rights of way, both existing and proposed;
			Exterior building elevations.

FINAL PLAN - Level III Site Plan			
Applicant Checklist	Planner Checklist	# of Copies	GENERAL WRITTEN SUBMISSIONS CHECKLIST (* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)
		1	* Completed Application form
		1	* Application fees
		1	* Written description of project
		1	* Evidence of right, title and interest
		1	* Evidence of state and/or federal permits
		1	* Written assessment of proposed project's specific compliance with applicable Zoning requirements
		1	* Summary of existing and/or proposed easements, covenants, public or private rights-of-way, or other burdens on the site
		1	* Evidence of financial and technical capacity
		1	Construction Management Plan
		1	A traffic study and other applicable transportation plans in accordance with Section 1 of the technical Manual, where applicable.
		1	Written summary of significant natural features located on the site (Section 14-526 (b) (a))
		1	Stormwater management plan and stormwater calculations
		1	Written summary of project's consistency with related city master plans
		1	Evidence of utility capacity to serve
		1	Written summary of solid waste generation and proposed management of solid waste
		1	A code summary referencing NFPA 1 and all Fire Department technical standards
		1	Where applicable, an assessment of the development's consistency with any applicable design standards contained in Section 14-526 and in City of Portland Design Manual
		1	Manufacturer's verification that all proposed HVAC and manufacturing equipment meets applicable state and federal emissions requirements.

Applicant Checklist	Planner Checklist	# of Copies	SITE PLAN SUBMISSIONS CHECKLIST (* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)
		1	* Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
		1	Final Site Plans including the following:
			Existing and proposed structures, as applicable, and distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone);
			Existing and proposed structures on parcels abutting site;
			All streets and intersections adjacent to the site and any proposed geometric modifications to those streets or intersections;
			Location, dimensions and materials of all existing and proposed driveways, vehicle and pedestrian access ways, and bicycle access ways, with corresponding curb lines;
			Engineered construction specifications and cross-sectional drawings for all proposed driveways, paved areas, sidewalks;
			Location and dimensions of all proposed loading areas including turning templates for applicable design delivery vehicles;
			Existing and proposed public transit infrastructure with applicable dimensions and engineering specifications;
			Location of existing and proposed vehicle and bicycle parking spaces with applicable dimensional and engineering information;
			Location of all snow storage areas and/or a snow removal plan;
			A traffic control plan as detailed in Section 1 of the Technical Manual;
			Proposed buffers and preservation measures for significant natural features, where applicable, as defined in Section 14-526(b)(1);
			Location and proposed alteration to any watercourse;
			A delineation of wetlands boundaries prepared by a qualified professional as detailed in Section 8 of the Technical Manual;
			Proposed buffers and preservation measures for wetlands;
			Existing soil conditions and location of test pits and test borings;
			Existing vegetation to be preserved, proposed site landscaping, screening and proposed street trees, as applicable;
			A stormwater management and drainage plan, in accordance with Section 5 of the Technical Manual;
			Grading plan;
			Ground water protection measures;
			Existing and proposed sewer mains and connections;

- Continued on next page -

		Location of all existing and proposed fire hydrants and a life safety plan in accordance with Section 3 of the Technical Manual;
		Location, sizing, and directional flows of all existing and proposed utilities within the project site and on all abutting streets;
		Location and dimensions of off-premises public or publicly accessible infrastructure immediately adjacent to the site;
		Location and size of all on site solid waste receptacles, including on site storage containers for recyclable materials for any commercial or industrial property;
		Plans showing the location, ground floor area, floor plans and grade elevations for all buildings;
		A shadow analysis as described in Section 11 of the Technical Manual, if applicable;
		A note on the plan identifying the Historic Preservation designation and a copy of the Application for Certificate of Appropriateness, if applicable, as specified in Section Article IX, the Historic Preservation Ordinance;
		Location and dimensions of all existing and proposed HVAC and mechanical equipment and all proposed screening, where applicable;
		An exterior lighting plan in accordance with Section 12 of the Technical Manual;
		A signage plan showing the location, dimensions, height and setback of all existing and proposed signs;
		Location, dimensions and ownership of easements, public or private rights of way, both existing and proposed.

RIGHT, TITLE OR INTEREST

Please see attached Warranty Deed recorded in the Cumberland County Registry of Deeds, Book 30618, Page 111.

SHORT FORM WARRANTY DEED

KNOW ALL PERSONS BY THESE PRESENTS, THAT DEBRA L. DIBIASE, of Cumberland County, Maine FOR CONSIDERATION PAID, grants to AVESTA HOUSING DEVELOPMENT CORPORATION, a Maine nonprofit corporation whose mailing address is 307 Cumberland Avenue, Portland, Maine 04101, WITH WARRANTY COVENANTS, the following described real property located at 134 Washington Avenue, Portland, Cumberland County, Maine:

A certain lot or parcel of land, with the buildings thereon, situated in Portland, County of Cumberland, State of Maine, on the westerly side of Washington Avenue a distance northerly of 26.9 feet from the corner formed by the intersection of the westerly side of Washington Avenue with the northerly side of Fox Street; thence from said point of beginning running westerly at right angles to Washington Avenue 72 ¼ feet to a point and other land of Annie Ryan; thence northerly parallel to Washington Avenue 37 feet, more or less, to land now or formerly of the Potter heirs; thence easterly adjoining said Potter heirs' land 72 ¼ feet to the westerly side of said Washington Avenue; thence southerly by the westerly side of Washington Avenue 37 feet, more or less, to the point of the beginning.

Also another lot or parcel of land, in said Portland, County of Cumberland, State of Maine, described as follows:

Land on the west side of Washington Avenue, Nos. 138-140, Portland, Maine, City Assessors' Plan, Plan Book 12, Block E, Lot 6.

Meaning and intending to describe and convey the same premises as conveyed by warranty deed of Michael A. DiBiase, Sr. to Debra L. DiBiase dated October 12, 2007 and recorded in the Cumberland County Registry of Deeds at Book 25541, Page 252

IN WITNESS WHEREOF, Debra L. DiBiase has hereunto set her hand and seal this 6th day of May, 2013.

WITNESS:

M A Selinger

Debra L DiBiase
Debra L. DiBiase

STATE OF MAINE
COUNTY OF CUMBERLAND, SS.

May 6, 2013

Personally appeared the above-named Debra L. DiBiase and acknowledged the foregoing instrument to be her free act and deed.

Before me,

M A Selinger
~~Notary Public~~/Attorney-at-Law
Maurice A. Selinger, III

Received
Recorded Register of Deeds
May 06, 2013 11:17:44A
Cumberland County
Pamela E. Lovley

MAINE REAL ESTATE TAX PAID

PROJECT DESCRIPTION

Housing Objectives

Avesta Housing's proposed development plan for 134 Washington Avenue is to construct a four level building with a partial basement to create 18 affordable, efficiency apartments. Avesta considers the deeper income targeting at Washington Avenue Efficiencies to be one of its most important features. Their experience at Oak Street Lofts shows an immense demand for efficiency apartments in the \$525-\$675/month range, which is affordable for many low-income workers but in extremely short supply in the Portland area. There are currently no plans to establish strict preferences for residency, but Avesta will work with many of its partners and the wider community to make a strong outreach to low-income veterans in particular. Based on their ability to fill some or all of the apartments with veterans, they will work with our partners to provide resident services that meet the needs of this population. Office space and common areas on the first floor of the building could be used for the provision of these services, which would be available to residents of Washington Avenue Efficiencies only.

The Site

134 Washington Avenue currently has a single family residence on a 10,096 SF lot. The building sits on a level area along the property line parallel with Washington Avenue and the site slopes off significantly to the rear of the property towards the abutting residential neighborhood. A small one-car garage and paved driveway are on the southerly side of the house and a larger level gravel area is located on the north side of the house. The property is within the Community Business District (B-2-B zone) and abuts the Residential Zone (R-6 zone) to the rear.



Rear of property



Existing single family residence

Building Program

Avesta proposes to demolish the existing single family residence and outbuildings and construct a four level building with a partial basement creating 18 efficiency apartments. The apartments will be accessed from a private side entrance on the southerly side of the building and from the first floor main entry off of Washington Avenue. The first floor will offer community meeting space, offices for management and resident services, utility rooms and small meeting rooms. The first floor façade engages activity along Washington Avenue with large windows. A trash room and bike room with storage for eight (8) bicycles will be located on the first floor with direct access to the driveway. The daylight basement will extend half of the building footprint and be accessible via ground level to the rear (west side) of the building. The partial basement will house mechanical utilities, janitor storage and elevator machine room. A driveway with access off of Washington Avenue offers one parking space and one handicap parking space on site. The upper levels of the building contain 18 efficiency apartments with each unit providing approximately 338 square feet of living space. The gross square footage of the proposed five level building is 13,630 square feet with a 3,003 square foot building footprint.

Stormwater Management

The current site is a single family residence with 29 percent of the lot impervious. The proposed building cover and site improvements will cover approximately 46 percent of the property. Stormwater runoff generated by the site will be treated in a stormwater infiltration area to the rear of the property. The majority of runoff will be from the building roof and paved driveway and will be designed to flow into the infiltration system. More detail on the stormwater system can be found in the included stormwater management plan.

PROJECT DATA

Applicant	Avesta Washington Avenue, LP c/o AVESTA Housing 307 Cumberland Avenue Portland, Maine 04101
Owner	Avesta Washington Avenue, LP c/o AVESTA Housing 307 Cumberland Avenue Portland, Maine 04101
Existing Zone	B2B – Community Business District
Tax Map & Lot Number	Map 12, Block E, Lot 6
Land Area	10,096 SF, or 0.23 Acres
Existing Land Use	Single Family Residence
Proposed Land Use	Affordable Housing Apartment Rental Units
Water	8 inch main in Washington Avenue
Sanitary Sewer	15 inch main in Fox Street
Storm Drainage	15 in storm drain in Fox Street
Natural Gas	4 inch line in Washington Avenue

Electric

Overhead Service on Washington Avenue

New service to be extended underground from east side of Washington Avenue *

Telephone & Cable TV

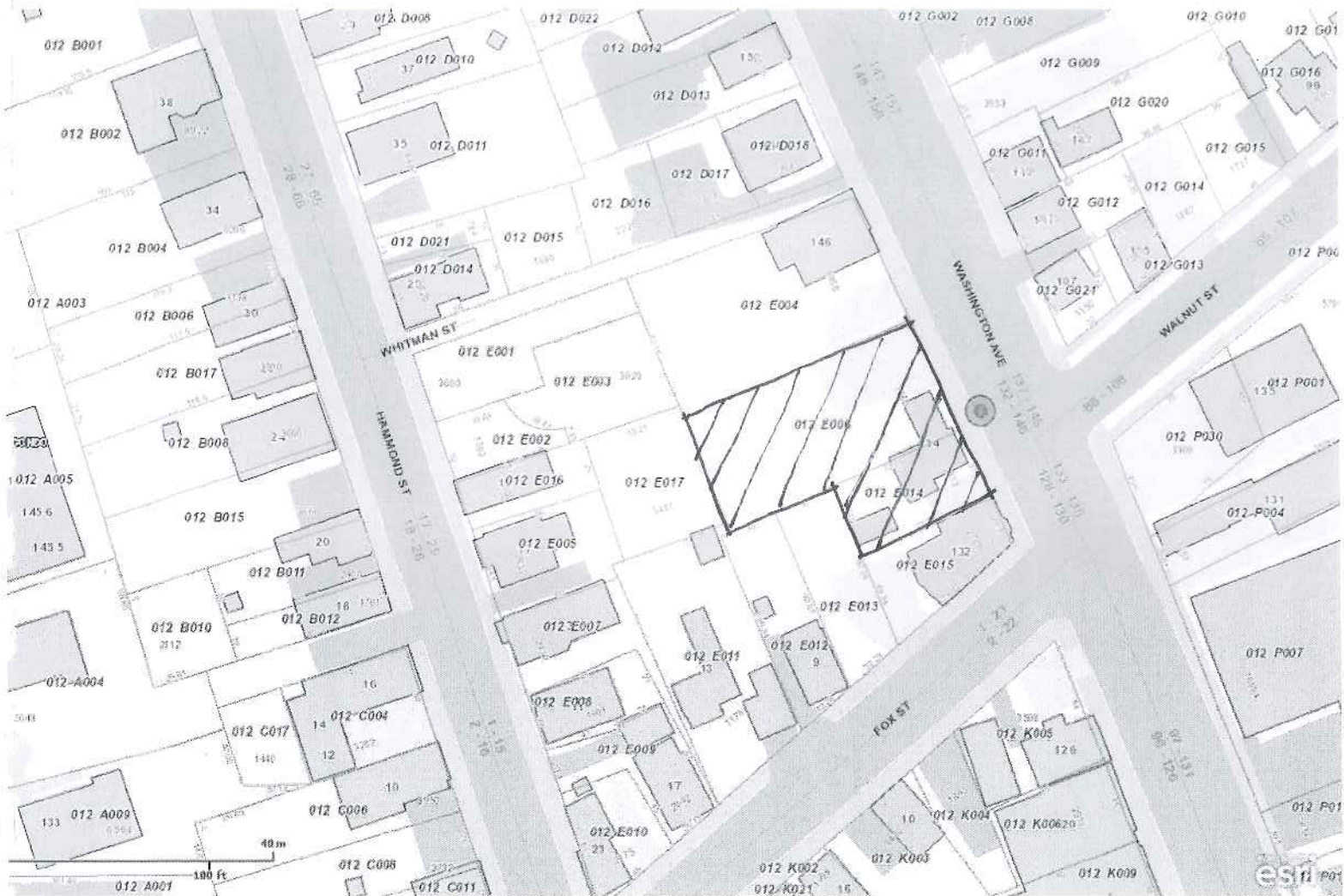
Overhead services on Washington Avenue

To be extended underground with electric line*

Proposed Service Connections *

TAX MAP

Please see Assessor's Plan noting the project site, Map 12, Block E, Lot 6 on Washington Avenue



copyright 2011 Esri. All rights reserved. Tue Feb 18 2014 02:52:44 PM.

134 Washington Avenue

ABUTTING PROPERTY OWNERS

Map 12, Block E, Lot 4
George M. York
136 Washington Avenue
Portland, ME 04101

Map 12, Block E, Lot 13-15
J. H. Edwards
P.O. Box 715
South Freeport ME 04078

Map 12, Block E, Lot 12
Clinton Knox Dobson III
9 Fox Street
Portland, ME 04101

Map 12, Block E, Lot 11
Rzepka Timothy R & Rosalce A Lamm JTS
13 Fox Street
Portland, ME 04101

Map 12, Block E, Lot 17
Cynthia Cochran
17 Hammond Street
Portland, ME 04101

EXISTING SOIL CONDITIONS

Soils on the site are representative of the urban environment.

The following tests results are included in our submission:

- Test borings by Summit Geoengineering Services performed on site in February 2014 revealed fill material, marine near shore, glacial marine & till.
- Soil test pits by Albert Frick Associates, Inc. performed on March 5, 2014.



Albert Frick Associates, Inc

Environmental Consultants

95A County Road Gorham, Maine 04038
(207) 839-5563 FAX (207) 839-5564
www.albertfrick.com info@albertfrick.com

Albert Frick, SS, SE
James Logan, SS, SE
Matthew Logan, SE
Brady Frick, SE
Bryan Jordan, SE
William O'Connor, SE
Noel Dunn, Office Manager

March 7, 2014

Ms. Sashie Misner
Mitchell Associates
70 Center Street
Portland, ME 04101

Re: 134 Washington Avenue, Portland

Dear Ms. Misner:

We visited the above-referenced property on March 5, 2014 to excavate and evaluate two test pits, at locations of your choosing. These are provided to assist with stormwater design for the property.

Enclosed for your review and use are soil profile descriptions for each test pit excavated, along with a general description of soil properties for each soil observed.

Soils on-site at TP1 consist of fill over moderately well drained Croghan soils, which are glacial outwash, generally with no hardpan or restrictive layers. Seasonal high groundwater table was observed at 52" in this excavation. Soils at TP2 are fill over well to excessively well drained Adams, which are similar to Croghan but generally have no water table within 6' of the soil surface.

Both soils are similar in textures, with permeabilities of 6"-20"/hour in the upper part (within 24" +/- of soil surface) to 20"/hour below these depths. I trust you will find this and the enclosed information helpful in stormwater design. Feel free to call should you have further questions or matters for discussion regarding the site.

Sincerely,

James Logan
Certified Soil Scientist #213
Licensed Site Evaluator #237
Wetland Scientist

Town, City, Plantation
PORTLAND

Street, Road Subdivision
134 WASHINGTON AVENUE

Owner's Name
AVESTA HOUSING

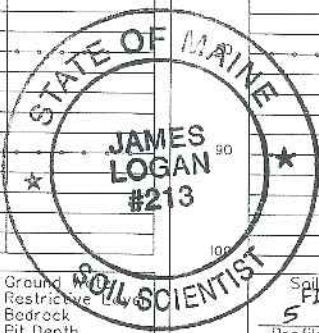
SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 1 Test Pit; Boring
 " Depth of Organic Horizon Above Mineral Soil

Observation Hole TP 2 Test Pit Boring
 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0		FROZEN		
5	SANDY LOAM AND LOAMY SAND (FILL)		DARK BROWN	
10		FRIABLE		
20				
30	MEDIUM SAND		YELLOW BROWN	
40				
50				
55		SLIGHTLY CEMENTED		FEW, FAINT
60	GRAVELLY COARSE SAND		LIGHT YELLOW BROWN	
65		FRIABLE		
75		LIMIT OF EXCAVATION		
80				
90				
100				

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0		FROZEN		
5	SANDY LOAM AND LOAMY SAND (FILL)		DARK BROWN	
10	WITH BRICKS AND GLASS			
20				
30	MEDIUM SAND W/BRICK DEBRIS (FILL)	FRIABLE	LIGHT YELLOW BROWN	
40				
50	GRAVELLY LOAMY SAND AND SAND (ORIGINAL)		DARK YELLOW BROWN	
60			YELLOW BROWN	
65	FINE MEDIUM SAND		LIGHT YELLOW BROWN	
75		LIMIT OF EXCAVATION		
80				
90				
100				



Soil Classification
S FILL OVER C
 Profile Condition

Slope
 %

Limiting Factor
52"

- Ground
- Restrictive Layer
- Bedrock
- Pit Depth

Soil Classification
S FILL OVER B
 Profile Condition

Slope
 %

Limiting Factor
 "

- Ground Water
- Restrictive Layer
- Bedrock
- Pit Depth

Soil Series Name:

Drainage Class:

Hydrologic Group:

Soil Series Name:

Drainage Class:

Hydrologic Group:

FILL OVER CROGHAN-LIKE SOILS

FILL OVER ADAMS-LIKE SOILS

James Logan (for AFA)
 Soil Scientist Signature

237/ 243
 CSS *

3/6/14
 Date

CROGHAN
(Aquic Haplorthods)

SETTING

Parent Material:	Derived from outwash or deltaic sand.
Landform:	Occupy outwash terraces and sand plains.
Position in Landscape:	Usually are found in intermediate or upper positions in the landscape.
Slope Gradient Ranges:	(B) 3-8% (C) 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class:	Moderately well-drained, with an apparent water table 1.5 to 2.0 feet below the soil surface from November through May. The water table fluctuates from approximately 1.5 feet during prolonged wet periods to depths greater than 4 feet in dry seasons.	
Typical Profile Description:	Surface layer:	Dark brown sand, 0-7"
	Subsurface layer:	Strong brown/yellowish brown, brown & pale brown sand with mottles below 13", 7-52"
	Substratum:	Grayish brown loose sand, 52-60"
Hydrologic Group:	Group B	
Surface Run Off:	Slow to medium	
Permeability:	Rapid to very rapid in the lower horizons.	
Depth to Bedrock:	Deep, greater than 40".	
Hazard to Flooding:	None	

INCLUSIONS
(Within Mapping Unit)

Similar:	Adams, Duane
Dissimilar:	Nicholville, Naumburg, Lyman, Kinsman

USE AND MANAGEMENT

Development with subsurface wastewater disposal: The limiting factor for building site development is wetness due to the presence of a groundwater table. Proper foundation drainage or site modification is recommended. Croghan soils are suitable for subsurface wastewater disposal in accordance with State of Maine Rules for Subsurface Wastewater Disposal. This soil requires a 24-inch separation distance from the bottom of the disposal area and the seasonal high groundwater table. This soil requires a minimum hydraulic loading rate of 2.6 and 1.3 sq.ft/gpd for disposal beds and chamber area, respectively.

Development with public sewer and water: The limiting factor for building site development is wetness due to the presence of a groundwater table. Proper foundation drainage or site modification is recommended.

Stormwater Design: The Croghan soil is moderately well drained. The groundwater table is typically greater than 15 inches, but less than 40 inches in the spring and/or periods of heavy precipitation.

The expected soil permeability is 6 to 20 inches/hr in the top 0-12 inches, and 20 inches/hr below 12 inches.

ADAMS (Typic Haplorthods)

SETTING

Parent Material:	Derived from outwash, stratified drift material.
Landform:	Occupy outwash terraces and sand plains, deltas, lake plains, moraines, terraces and eskers.
Position in Landscape:	Usually occupies the upper positions of landform.
Slope Gradient Ranges:	(A) 0-3% (B) 3-8% (C) 8-20% (D) 20%+

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class:	Somewhat excessively to excessively well drained, with no evidence of high groundwater table within 3.5 feet of the soil surface.
Typical Profile Description:	Surface layer: Pinkish gray sand, 0-4" Subsurface layer: Dark brown loamy sand, 4-10" Subsoil layer: Brown & yellowish brown sand, 10-26" Substratum: Grayish brown sand, 26-70"
Hydrologic Group:	Group A
Surface Run Off:	Very slow to medium
Permeability:	Rapid or very rapid
Depth to Bedrock:	Very deep, greater than sixty inches
Hazard to Flooding:	None

INCLUSIONS (Within Mapping Unit)

Similar:	Soils that are fine sandy loam to very fine sandy loam to a depth of 20 inches, Colton.
Dissimilar:	Croghan soils that are moderately well drained and occur in shallow depressions.

USE AND MANAGEMENT

Development with subsurface wastewater disposal: Adams soil is suitable for subsurface wastewater disposal in accordance with State of Maine Rules for Subsurface Wastewater Disposal. This soil requires a 24-inch separation distance from the bottom of the disposal area and the seasonal high groundwater table. This soil requires a minimum hydraulic loading rate of 2.6 square feet/gpd for disposal system design. Adams soil is suited for building site development.

Development with public sewer and water: Adams soil is suited for building site development. Proper foundation drainage is recommended.

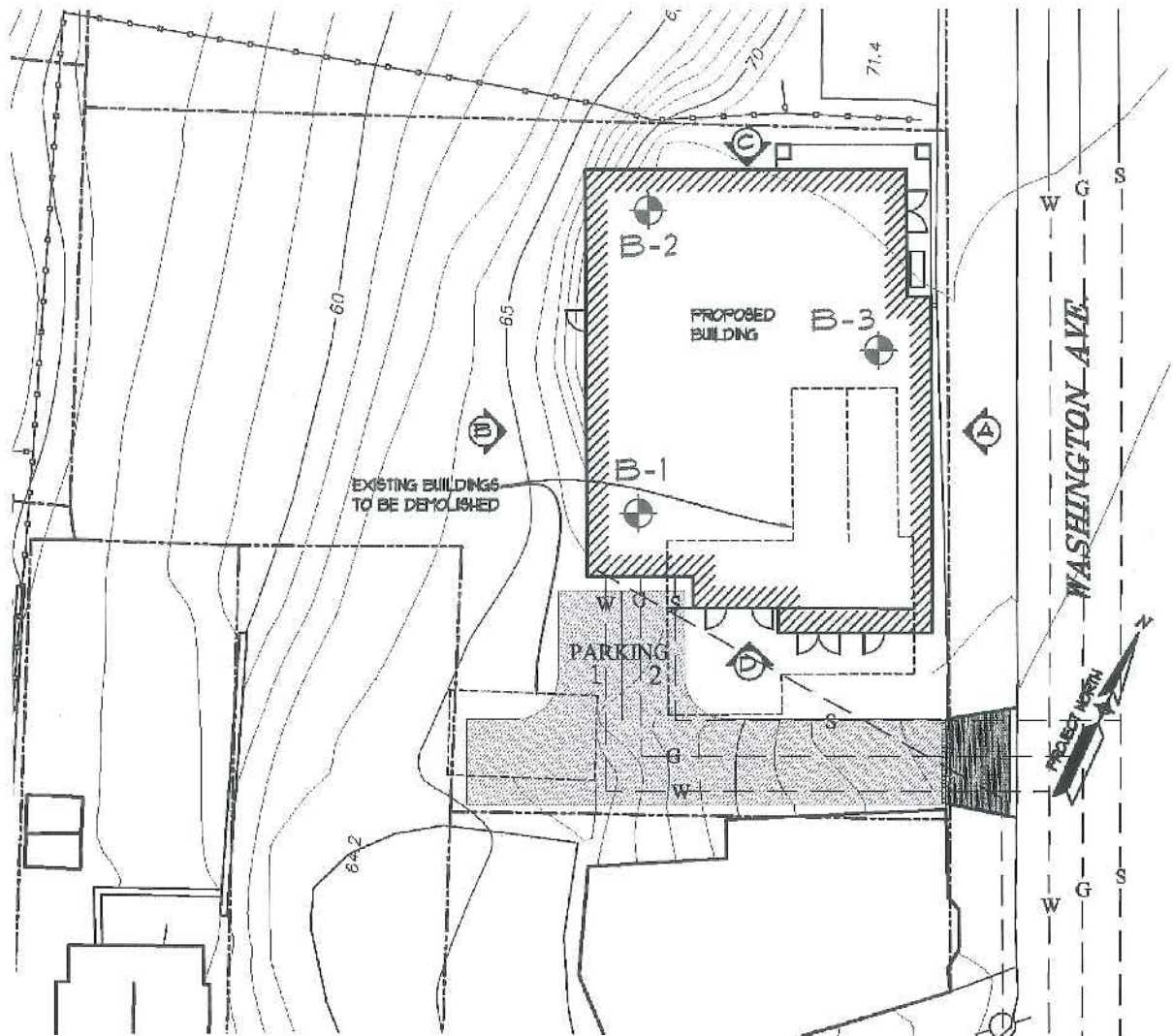
Stormwater Design: The Adams soil is well drained to excessively well drained. The groundwater table is typically below 4.0'. The groundwater table in this particular setting within the study area is greater than 8.0'. This soil is well suited for subsurface stormwater treatments. The expected soil permeability is 6.0 to 20.0 inches/hour in the upper horizon approximately 0-2', and 20.0 inches/hour in the lower horizons.

LEGEND

⊕ B-1 SUMMIT TEST BORING
(FEBRUARY 10, 2014)

PLAN REFERENCE

"134 WASHINGTON AVENUE, PORTLAND, MAINE", PREPARED BY ARCHETYPE ARCHITECTS



TEST BORING LOCATION PLAN PROPOSED BUILDING

134 WASHINGTON AVE. - PORTLAND, MAINE
PREPARED FOR
AVESTA HOUSING

145 LISBON ST. - SUITE 601
LEWISTON, ME 04240
Tel: (207) 576-3313

2002 ATLANTIC HIGHWAY
CAMDEN, ME 04843
Tel: (207) 706-7999

SUMMIT

GEOENGINEERING SERVICES
www.summitgeoeng.com

DATE: FEB. 14, 2011	DRAWN BY: KRF	CHECKED BY: WMP
JOB: 14008	SCALE: 1" = 30'	FILE: 14008 BOR



SOIL BORING LOG

Boring #: **B-1**
 Project #: 14008
 Sheet: 1 of 1
 Chkd by:

Drilling Co: Summit Geoengineering Services

Driller: C. Coolidge, P.E.

Summit Staff: B. Peterlein, P.E.

Boring Elevation:

Reference:

Date started: 2/10/2014 Date Completed: 2/10/2014

DRILLING METHOD		SAMPLER		ESTIMATED GROUND WATER DEPTH			
Vehicle: Tracked	Length: 24" SS	Date	Depth	Elevation	Reference		
Model: AMS Power Probe	Diameter: 2"OD/1.5"ID	2/10/2014			Borrehole caved at 20 ft - dry		
Method: 2-1/2" H.S.A.	Hammer: 140 lb						
Hammer Style: Auto	Method: ASTM D1586						

Depth (ft.)	SAMPLE DESCRIPTION					Geological/ Test Data	Geological Stratum
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀		
1	S-1	24/12	0 to 2	13		Brown Gravelly SAND, trace Silt, dry, loose, SP	FILL
				6			
				3			
2				2			
3							
4						Cobble at 4 ft.	
5							
6	S-2	24/12	5 to 7	1		Black Silty SAND mixed with coal ash, dry, very loose, SM	
				2			
				2			
7				2			
8							
9							
10							
11	S-3	24/15	10 to 12	2		Brown SAND, little Silt, trace Gravel, moist, loose, SM	
				11			
				22			
12				32		Brown Gravelly SAND, dry, very dense, SP	MARINE NEAR SHORE
13							
14							
15							
16	S-4	24/12	15 to 17	7		Brown Gravelly SAND, dry, compact, SP	
				6			
				6			
17				9			
18							
19							
20							
21	S-5	24/8	20 to 22	10		Brown SAND, little Gravel, wet, compact, SP	
				11			
				7			
22				6		Brown Silty SAND, moist, compact, SM	GLACIAL MARINE
23							
24							
25							
26	S-6	24/20	25 to 27	1		Olive-brown Sandy SILT, little Clay, trace Gravel, wet, loose to compact, ML	GLACIAL TILL
				1			
				4			
27				6			

End of Boring at 27 ft

Granular Soils		Cohesive Soils		% Composition ASTM D2487	NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index	Soil Moisture Condition Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%
Blows/ft.	Density	Blows/ft.	Consistency			
0-4	V. Loose	<2	V. soft		Bedrock Joints Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200	
5-10	Loose	2-4	Soft	< 5% Trace		
11-30	Compact	5-8	Firm	5-15% Little		
31-50	Dense	9-15	Stiff	15-30% Some		
>50	V. Dense	16-30	V. Stiff	> 30% With		
		>30	Hard			



SOIL BORING LOG

Boring #: **B-2**
 Project #: 14008
 Sheet: 1 of 1
 Chkd by:

Project:
 Location: 134 Washington Street
 City, State: Portland, Maine

Drilling Co: Summit Geoengineering Services
 Driller: C. Coolidge, P.E.
 Summit Staff: B. Peterlein, P.E.
 Boring Elevation:
 Reference:
 Date started: 2/10/2014 Date Completed: 2/10/2014

DRILLING METHOD	SAMPLER	ESTIMATED GROUND WATER DEPTH			
Vehicle: Tracked	Length: 24" SS	Date	Depth	Elevation	Reference
Model: AMS Power Probe	Diameter: 2"OD/1.5"ID	2/10/2014			25.5 ft at completion
Method: 2-1/2" H.S.A.	Hammer: 140 lb				
Hammer Style: Auto	Method: ASTM D1586				

Depth (ft.)	SAMPLER					SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀			
1	S-1	24/12	0 to 2	3		Dark brown Silty SAND, trace Gravel, damp, loose, SM	FILL	
2				3				
3				3				
4				3				
5				3				
6	S-2	24/12	5 to 7	2		Brown to gray fine Sandy SILT, brick pieces, trace coal ash, dry, loose, ML		
7				2				
8				5				
9				3				
10						Same as above		
11	S-3	24/9	10 to 12	4				
12				5				
13				4		Brown SAND, little Gravel, trace Silt, dry, loose SP	MARINE NEAR SHORE	
14				3				
15								
16	S-4	24/18	15 to 17	9				
17				26				
18				23		Same as above, dry, dense		
19				17				
20								
21	S-5	24/16	20 to 22	7				
22				11		Brown SAND, damp, compact, SP		
23				10				
24				10				
25						Olive-brown mottled Sandy SILT to Silty fine SAND, trace Gravel, wet, loose, SM or ML	GLACIAL TILL	
26	S-6	24/20	25 to 27	WH				
27				2				
				4				
				2		End of Boring at 27 ft		

Granular Soils		Cohesive Soils		% Composition ASTM D2487	NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index	Soil Moisture Condition
Blows/ft.	Density	Blows/ft.	Consistency			
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With	<u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees	Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%
5-10	Loose	2-4	Soft			
11-30	Compact	5-8	Firm			
31-50	Dense	9-15	Stiff			
>50	V. Dense	16-30	V. Stiff			
		>30	Hard			

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
 Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200



SOIL BORING LOG

Boring #: **B-3**
 Project #: 14008
 Sheet: 1 of 1
 Chkd by:

Drilling Co: Summit Geoengineering Services
 Driller: C. Coolidge, P.E.
 Summit Staff: B. Peterlein, P.E.
 Boring Elevation:
 Reference:
 Date started: 2/10/2014 Date Completed: 2/10/2014

DRILLING METHOD	SAMPLER	ESTIMATED GROUND WATER DEPTH			
Vehicle: Tracked	Length: 24" SS	Date	Depth	Elevation	Reference
Model: AMS Power Probe	Diameter: 2"OD/1.5"ID	2/10/2014			Dry at 27 ft
Method: 2-1/2" H.S.A.	Hammer: 140 lb				
Hammer Style: Auto	Method: ASTM D1586				

Depth (ft.)	SAMPLER					SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀			
1	S-1	24/12	0 to 2	28		Dark brown SAND, little Silt, trace Gravel, trace coal ash, dry, SM	FILL	
				41				
				18				
2				9				
3								
4								
5								
6	S-2	24/8	5 to 7	3		Brown to dark brown SAND, little Gravel and Silt, dry, loose, SM		
				3				
				4				
7				4				
8								
9								
10								
11	S-3	24/12	10 to 12	7		Brown fine to coarse SAND, trace Gravel, clean, compact, SP	MARINE NEAR SHORE	
				10				
				9				
12				10				
13								
14								
15								
16	S-4	24/16	15 to 17	14		Brown Gravelly SAND, dry, SP		
				24				
				19				
17				16				
18								
19								
20								
21	S-5	24/18	20 to 22	5		Olive-brown Sandy SILT, wet, loose, ML	GLACIAL MARINE	
				3				
				2				
22				4				
23								
24								
25								
26	S-6	24/24	25 to 27	6		Brown medium to fine SAND, little Silt, moist, compact, SM		
				9				
				9				
27				12				

End of Boring at 27 ft

Granular Soils		Cohesive Soils		% Composition	NOTES:	Soil Moisture Condition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487		
0-4	V. Loose	<2	V. soft		PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200	Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%
5-10	Loose	2-4	Soft	< 5% Trace		
11-30	Compact	5-8	Firm	5-15% Little		
31-50	Dense	9-15	Stiff	15-30% Some		
>50	V. Dense	16-30	V. Stiff	> 30% With		
		>30	Hard			

PUBLIC UTILITIES

Washington Avenue Efficiencies will be served by existing utility services located in Washington Avenue. The following public utilities are available:

Water

Water for both fire suppression and domestic service will be supplied from an existing 8 inch water main located in Washington Avenue. Proposed service connections include 4 inch fire service and 2 inch domestic service. Refer to the attached letter from the Portland Water District.

Sanitary Sewer

Sanitary sewer will be supplied from an existing 15 inch public sewer main located in Washington Avenue. Proposed service connection will be a 6 inch line located within the same area as the existing service. A Wastewater Capacity Application has been filed with this Site Plan Application.

Natural Gas

Natural gas will be supplied from an existing 4 inch gas line located in Washington Avenue. A 2 inch service will connect to the building. Refer to the attached letter from Unitil.

Electric

The new service will connect underground from a utility pole located on the opposite (east) side of Washington Avenue. The existing pole will be upgraded to 3-phase service. Refer to the attached letter from Central Maine Power.

Telephone and Cable TV

Telephone and cable TV will be connected along the same route as the proposed electric service.



Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

March 11, 2014

Mitchell & Associates
The Staples School
70 Center Street
Portland, ME 04101

Attn: Sashie Misner
Re: Washington Avenue Efficiencies; 134 Washington Avenue, Portland
Ability to Serve with PWD Water

Dear Ms. Misner:

The Portland Water District has received your request for an Ability to Serve determination for the noted site submitted on February 19, 2014. 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. A 3/4-inch diameter copper water service line, located as shown on the attached water service card, provides water service to this site. Please refer to the "Conditions of Service" section of this letter for requirements related to the use of this service.

Water System Characteristics

According to District records, there is an 8-inch diameter cast iron water main on the west side of Washington Avenue and a public fire hydrant located 75-feet from the site.

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

Hydrant Location: Washington Avenue opposite East Cove Street
Hydrant Number: POD-HYD00432
Last Tested: 8/22/1991
Static Pressure: 82 psi
Residual Pressure: Not Measured
Flow: 1,266 GPM

Public Fire Protection

It is not anticipated that this project will 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 data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of the proposed 18 efficiency units. Based on the high water pressure in this area, we recommend that you consider the installation of pressure reducing devices that comply with state plumbing codes.

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

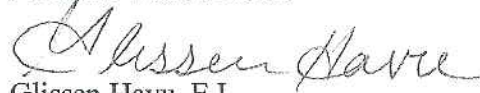
The ability to serve request indicated that the existing single family residence will be replaced with a four story, 18-unit apartment building. The existing 3/4-inch domestic service is undersized to serve the proposed use and will need to be retired by shutting the corporation valve and cutting the pipe from the main. It is the Districts understanding that a new service will be required to provide private fire protection to the site. New fire and domestic services may be installed through the properties frontage on Washington Avenue. Please note that only one meter and one bill will be associated to each domestic service line. This one master meter must be located in a common space that all tenants could gain access to if necessary.

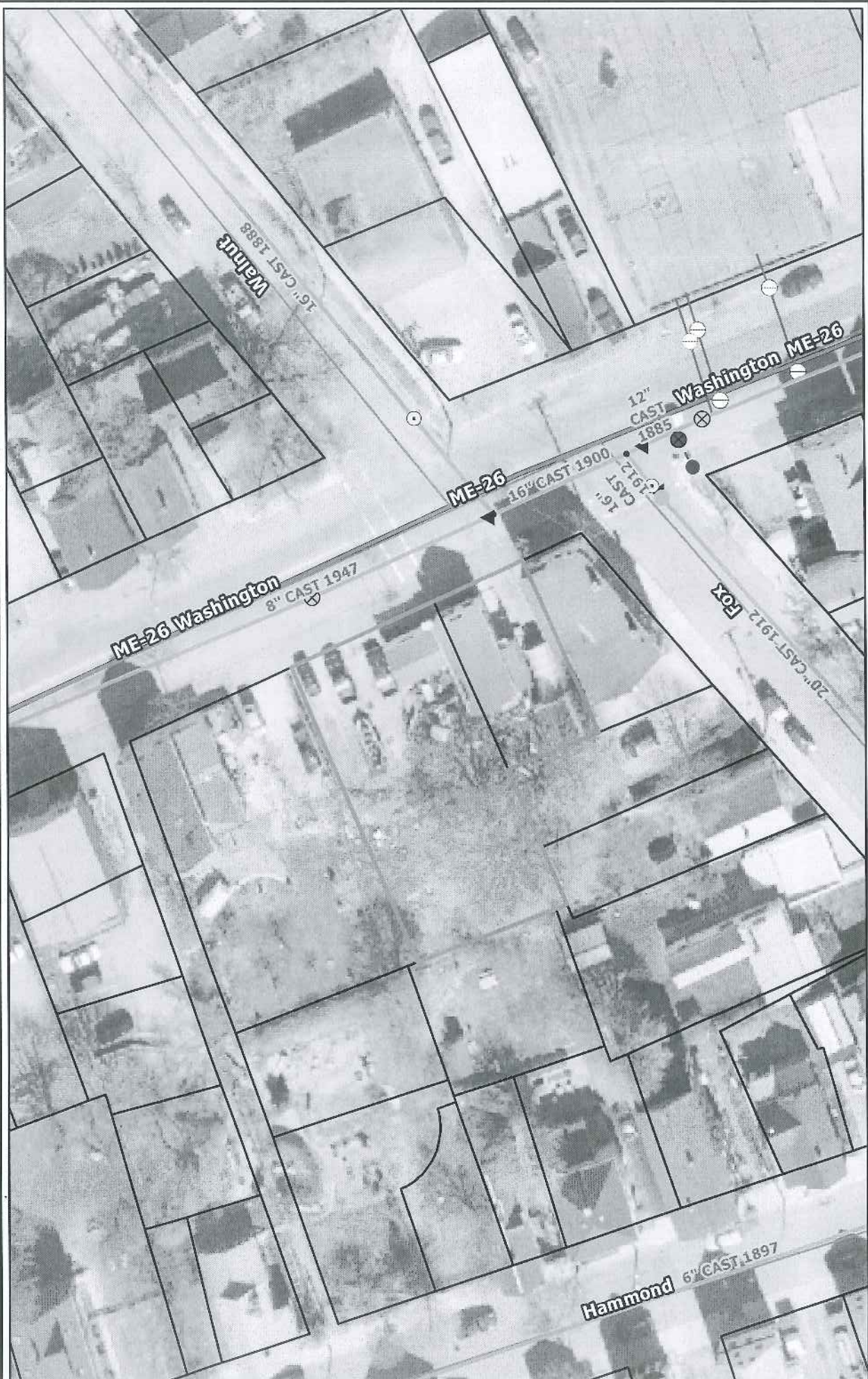
The District has reviewed the Layout Plan dated March 10, 2014 and has the following comments:

- A single service line may be installed all the way to the building as proposed. However, a water meter would need to be located before any branch in the service line. This meter would be sized based on the combined fire and domestic usage necessary as determined by a mechanical engineer. The prices for these meters can be found on our website at <http://www.pwd.org/infrastructure/services/services.php>
- The minimum separation between water service and sewer service is 5-feet. If the sewer service is laid 18-inches below the water service, then an 18-inch horizontal separation is allowable.
- The minimum separation between water service and gas service is 6-feet face to face.

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



Disclaimer: This map is suitable for preliminary study and analysis and is based on PWD record information. PWD is not liable for any damages whatsoever resulting from inaccurate data or from errors made in the location and marking of its infrastructure.

Drawn By: G.JH
 Scale: As Noted
 Prepared For: Archetype, P.A.
 Date: September 19, 2011



Legend

○	Blow Off	●	Air Valve	●	Sleeve
⊙	By Pass	●	Hydrant Control	●	Tee
⊗	Distribution	●	Service	●	Hydrants
⊠	End of Main	●	Transmission	▲	Reducer

134 Washington Avenue
Portland
PORTLAND WATER DISTRICT
 225 Douglass Street
 Portland, ME 04104



Unitil

ME GAS OPERATIONS

March 18, 2014

Miss. Sashi Misner
Mitchell Associates

Re: 134 Washington Ave, Portland, ME

Dear Miss Misner:

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

Unitil has 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) 541-2536 or at Mathers@unitil.com.

Sincerely,

Bridget L. Harmon
Business Development Representative
Unitil Corporation
(o) 207-541-2535

ME GAS CUSTOMER ENERGY SOLUTIONS
1075 Forest Avenue
Portland, ME 04103-3586

T 888-486-4845 www.unitil.com



2/20/2014

Sashie Misner
Mitchell & Associates
70 Center Street, Portland, ME 04101
phone: 207-774-4427
Sent via email to: smisner@mitchellassociates.biz

RE: Ability to Serve Letter for Avesta Housing 134 Washington Avenue Project in Portland

Dear Ms. Misner:

CMP has the ability to serve the proposed project located at 134 Washington Avenue in Portland, Maine, in accordance with our CMP Handbook (web link below). We can provide you the desired pad or pole mounted transformers per your request and city approval, in accordance with our CMP Standards Handbook. If you have any questions on the process, or need help in completion of the documents, please feel free to contact me.

New Service Milestones

- Call 1-800-565-3181 to establish a new account and an SAP work order.
- Submit any electronic drawings (PDF (preferred) or DWG files) of the site layout and proposed electrical connections if you have them.
- Submit Load information. Please complete this CMP spreadsheet using load information.
- Submit the easement information worksheet. Please complete this CMP form and either email or fax back to us.
- Preliminary meetings with CMP to determine the details of job
- Field planner design appointment to cost out job and develop CMP Invoice.
- Submit invoice for payment.
- Easements signed and payment received.
- Job scheduled for completion after the electrical inspection has been received.

This process can take several months, depending upon several factors including transformer delivery, potential substation upgrades, return of completed paperwork, and other jobs in the system that may be ahead of yours. In addition, contact with the other utilities, including telephone and cable, should be commenced as soon as practical. They may have additional work or charges in addition to the CMP work required to bring your project on line.

162 Canco Road Portland, ME 04103
Tel (800) 750-4000
207-842-2367 office
207-458-0382 cell
207-626-4082 fax

www.cmpco.com



An equal opportunity employer



For your convenience, here is a link to the CMP Website which contains our Handbook with details on most service requirements:

[CMP Handbook of Standard Requirements](#)

(<http://www.cmpco.com/MediaLibrary/3/6/Content%20Management/YourAccount/PDFs%20and%20Docs/handbook.pdf>)

If you have any questions, please contact me.

Regards,

Jamie Cough
Energy Services Advisor
Central Maine Power Company
162 Canco Road
Portland, ME 04103
207-842-2367 office
207-458-0382 cell
207-626-4082 fax

162 Canco Road Portland, ME 04103
Tel (800) 750-4000
207-842-2367 office
207-458-0382 cell
207-626-4082 fax

www.cmpco.com



An equal opportunity employer



To: Interested Parties

From: Greg Payne, Development Officer

Re: Statement of Technical Capability

Avesta Housing is Maine's largest and most sophisticated non-profit housing developer and manager. Incorporated in 1972, Avesta is driven by the vision that decent, affordable housing should be available to all Mainers, without exception. Avesta owns and manages 75 properties containing over 1,900 affordable apartments. These apartments serve low-income seniors and families, as well as persons with special needs, primarily in York and Cumberland Counties. Avesta Housing is chartered as a nonprofit corporation in the state of Maine and is tax exempt under Section 501(c)(3) of the federal Internal Revenue Code. Avesta is governed by a 14-member board of directors representing a variety of banking, business, public, community, social service and housing organizations. Its administrative headquarters is in Portland, Maine. It has a staff of 95 full-time and part-time employees.

Bangor
Savings Bank

You matter more.

Avesta Housing
307 Cumberland Avenue
Portland, ME

City of Portland
389 Congress Street
Portland, ME 04101

February 3, 2014

RE: City of Portland – Avesta Washington Ave LP financial capability support letter

Gentlemen:

On behalf of Bangor Savings Bank I am pleased to provide this letter in support of Avesta Housing for the above referenced project. Based on our prior experience with Avesta Housing for similar affordable housing development projects and a review of the financial elements of the proposal for the Washington Ave LP project, we believe that the applicant has the ability to finance projected costs and develop a project of similar type and scale from a fiscal perspective.

Bangor Savings Bank has helped Avesta Housing complete successful affordable housing projects including Avesta Oak Street in Portland and Avesta Brickhill Cottages and Avesta Brickhill Heights in South Portland. The Bank has successfully sponsored Maine Housing and Federal Home Loan Bank applications for equity grants for Avesta Housing and the Bank has the capability to provide construction and tax increment financing credit financing. Avesta Housing has demonstrated the ability to secure development capital through the low income housing tax credit program and other public and private sector sources and could, we believe, secure the approximately \$3 million needed to complete this project.

While this letter of support is not a commitment to lend, Bangor Savings bank would welcome the opportunity to be a resource to Avesta Housing for financing and sponsorship any equity awards necessary in connection with this project. Our experience is that Avesta Housing is, in many ways, the premier affordable housing development organization in Maine with a solid record of supporting healthy and inclusive neighborhoods and helping to build strong and sustainable communities.

Yours truly,



Diane H. Donaldson
Vice President

TECHNICAL CAPABILITY

The following firms and individuals have provided technical information contained in this application:

Mitchell & Associates

Landscape Architects and Site Planners

70 Center Street

Portland, Maine 04101

Telephone: (207) 774-4427

Contacts: Robert Metcalf, Maine licensed landscape architect #1815

Sashie Misner, Maine licensed landscape architect #3657

Archetype

Architects

48 Union Wharf

Portland, Maine 04101

Telephone: (207) 772-6022

Contacts: David Lloyd

Bennett Engineering

Mechanical and Electrical Engineers

7 Bennett Road

P.O. Box 297

Freeport, Maine 04032

Telephone: (207) 865-9475

Contact: Will Bennett, PE, Maine #2919

BH2M Engineers

Civil Engineers

28 State Street

Gorham, Maine 04038

Telephone: (207) 839-2771

Contacts: Lester Berry, PE, Maine #3341

Owen Haskell

Land Surveyors

390 U.S. Route One, Suite 10

Falmouth, Maine 04105

Telephone: (207) 774-0424

Contact: John Swan, Maine #1314

Albert Frick Associates

Environmental Consultants

95A County Road

Gorham, Maine 04038

Telephone: (207) 839-5563

Summit Geoengineering Services

145 Lisbon Street
Lewiston, Maine 04240
Telephone: (207) 576-3313

Geotechnical Engineers

Gorrill-Palmer Consulting Engineers

15 Shaker Rd, Gray, ME 04039
(207) 657-6910

Transportation Engineers



LETTER OF AUTHORIZATION

February 3, 2014

To: City of Portland Planning Department

This letter authorizes Robert Metcalf and/or Sashie Misner of Mitchell & Associates and David Lloyd of Archetype Architects to act as agents on behalf of Avesta Housing Development Corporation in the submission of any and all application materials and public meeting that relate to our proposed development of Washington Avenue Efficiencies on Washington Avenue in Portland.

Sincerely,

A handwritten signature in black ink, appearing to read 'Greg Payne', is written over a circular stamp or seal.

Greg Payne
Development Officer

COMPLIANCE WITH APPLICABLE ZONING REQUIREMENTS

The proposed development will be located within the Community Business District (B-2-B zone). A wonderful mix of business, multi-family and single family residences exists along this engaging section of Washington Avenue. The proposed affordable efficiency units will offer high quality housing options for a population that struggles to afford housing on the peninsula. The proposed development intends to complement the neighborhood and be a dynamic addition to the surrounding services provided.

The B-2-B zone encourages new buildings to be oriented to and constructed close to the street. Washington Avenue Efficiencies will be constructed along the front property line with the main building entrance facing Washington Avenue. Large first floor windows facing the street will offer a street presence. Four floors of the building will be visible along Washington Avenue. The height of the proposed building is 44' while 45' is the maximum allowable within the B-2-B zone. The intent of the development is to provide much needed housing within the peninsula and create a welcome street presence on a currently underutilized property. The building will maintain five foot setbacks along the side property lines. A portion of the rear property line is adjacent to a residential zone requiring a twenty foot setback. The building will be constructed close to Washington Avenue and not approach the rear setback. Onsite parking consists of one parking space and one handicap parking space. Marketing for the apartment units will be targeted to a low income population; this population does not as frequently have personal vehicles. Avesta intends to pay the fee in lieu for the 16 parking spaces they are unable to accommodate on site.

The proposed development is in compliance with the applicable zoning requirements set-forth the Portland Land Use Ordinance conforming to provisions of the Site Plan and Subdivision Regulations and the zoning provisions of the B-2-B designated district.

WAIVER REQUEST

The applicant is not requesting any waivers for this project.

**CONSISTANCY WITH CITY'S MASTER PLAN &
CONFORMITY WITH DESIGN STANDARDS**

Development in the B-2b

1. Building Location and Form

The proposed 4-story apartment building will be situated on the parcel such that the front face of the building is located along the Washington Avenue property line. The effect of this upon the neighborhood will be accentuating the urban street wall that is established by the buildings to the south of the property. The 44 foot height of the proposed building is in proportion to the width of the adjacent street. The Washington Avenue right-of-way is 66 feet and the proposed building will help to define the street.

2. Building Function

While the primary function of the building is residential units, the first floor will offer services to residents including office space and common areas and the 18 apartment units will be on the upper three floors.

3. Orientation of Buildings and their Entrances to the Street

The main building entrance will be along Washington Avenue.

4. Windows The first floor will have storefront type windows along the sidewalk which will relate to the existing businesses along Washington Ave.

5. Building Character, Detail Scale and Graphic Qualities

The building is a four story 18 unit building with a flat roof. The exterior consists of a combination cement board siding as manufactured by Nichiha, a high end cement panel and metal siding. The building will have an aluminum store front at its base and an entry canopy.

6. Signage and Building Entrances

The main entrance and signage is designed for pedestrian access and therefore at pedestrian scale.

7. Development Relationship to Street

The building is located along the property line facing Washington Avenue.

8. Parking Lots

A small (2 space) parking area will be located along the side of the building. The owner anticipates that less than half of the residents will own vehicles and therefore has not provided a large parking lot. Avesta intends to pay the fee in lieu for the 16 parking spaces they are unable to accommodate on site.

9. Transit Connections

A public bus stop is located in front of this property.

FIRE DEPARTMENT CHECKLIST

1. Name, address, telephone number of applicant

Avesta 134 Washington Avenue, LP
307 Cumberland Avenue
Portland, Maine 04101
Contact: Greg Payne
Phone: 207.553.7777

2. Name, address, telephone number of architect

Archetype
48 Union Wharf
Portland, Maine 04101
Contact: David Lloyd
Phone: 207.772.6022

3. Proposed uses of any structures [NFPA and IBC classification]

IBC: R-2 Apartments

NFPA: Residential – New Apartment Building

4. Square footage of all structures [total and per story]

Basement	1,237 SF
First Floor:	3,003 SF
Second Floor:	3,130 SF
Third Floor:	3,130 SF
<u>Fourth Floor:</u>	<u>3,130 SF</u>
Total:	13,630 SF

5. Elevation of all structures

Building Height is 44.0 feet as measured by IBC definitions

6. Proposed fire protection of all structures

NFPA 13R system throughout. Standpipes at both stairs

7. Hydrant locations:

There is a hydrant within a 100 feet of the site, located on the corner of Fox Street and Washington Avenue.

8. An 8 inch water main is located within Washington Avenue. Two water services are proposed for the building, one 4 inch service for fire and one 2 inch service for domestic.

9. Access to all structures [min. 2 sides]

The proposed structure is accessible from the full length of Washington Avenue and a driveway along the south side of the building. The abutting lots to the northwest of the structure are currently low rise residential structures.

10. A code summary shall be included referencing NFPA 1 and all fire department Technical standards.

Preliminary Code Summary provided to PFD under separate cover (Archetype to review details with Portland Fire Department).

11. The elevator shall be sized to fit an 80" x 24" stretcher and two personnel

Elevator Cab Size to meet PFD Requirements (Archetype to review details with Portland Fire Department).

12. Some structures may require Fire flows using annex H of NFPA 1

Fire Flows to meet PFD Requirements (Archetype to review details with Portland Fire Department).

134 WASHINGTON AVENUE

RELEVANT CODES

IBC-2009

USE GROUP R-2 (RESIDENTIAL)
 CONSTRUCTION TYPE 5-A
 OCCUPANT LOAD = 16 PEOPLE
 R-2 Sprinkled w/WFPA 13R
 24,000sqf. ALLOWED WITH SPRINKLER INCREASE
 3,130sqf. PROPOSED
 ALLOWABLE HGT. WITH SPRINKLER 4 STORIES, 70 FT.
 4 STORIES, 44 FT. PROPOSED
 BASEMENT IS NOT A STORY ABOVE GRADE PLANE
 BECAUSE 1ST FLOOR IS ONLY 3 FT ABOVE GRADE
 PLANE AND ONLY 9 FT MAX ABOVE FINISHED
 GROUND AT ANY POINT

FIRE RESISTANCE FOR TYPE 5-A

STRUCTURAL FRAME - 1 HOUR
 BEARING WALLS - EXTERIOR - 1 HOUR
 BEARING WALLS - INTERIOR - 1 HOUR
 NON-BEARING WALLS - EXTERIOR - 1 HOUR
 NON-BEARING WALLS - INTERIOR - 0 HOUR
 FLOOR CONSTRUCTION - 1 HOUR
 ROOF CONSTRUCTION - 1 HOUR
 ROOF CLASSIFICATION - TYPE B

CODE REFERENCE

310
 T-503
 T-1004.1.1
 903.2.8 & 903.3.1.2
 506.3
 504.2
 202

FIRE PARTITIONS

CORRIDOR FIRE PARTITION (NONBEARING) - 1/2 HR
 DWELLING UNIT SEPARATION - 1 HR
 CORRIDOR DOORS .33 HOURS IN 1 HOUR WALL
 CORRIDOR DOORS TO HAVE SMOKE CONTROL
 4-STORY SHAFT - 2 HOURS
 DRAFTSTOPPING - EVERY (2) UNITS
 STANDPIPE REQUIRED EACH STAIRWELL
 FIRE DEPT. CONNECTION REQUIRED
 MANUAL FIRE ALARM NOT REQUIRED
 SMOKE DETECTORS AND ALARMS REQUIRED
 3' ELEVATOR VENT REQUIRED

CODE REFERENCE

T-1018.1
 709.3
 T-715.4
 715.4.3
 708.4
 717.3.2
 905.3.1
 (AS DIRECTED BY FIRE)
 907.2.9.1 exception 2
 907.2.9.2 & 907.2.11.2
 3004.1

MEANS OF EGRESS

MINIMUM REQUIRED CORRIDOR WIDTH IS 44"
 ELEVATOR LOBBY NOT REQ'D WITH SPRINKLER
 ELEVATOR BACKUP GENERATOR IS REQUIRED

1018.2
 708.14.1 EX. 4
 1007.2.1

CODE REFERENCE

NFPA 101 LIFE SAFETY - 2009

BASEMENT - MECHANICAL ROOM (1 HR SEPARATION)
 1ST, 2ND, 3RD & 4TH - RESIDENTIAL
 OCCUPANT LOAD = 16 PEOPLE
 BUILDING SPRINKLED WITH NFPA 13R
 CONSTRUCTION TYPE V (III)
 STAIR ENCLOSURE MATERIALS TO BE NON COMBUSTIBLE
 EXIT ENCLOSURE 1 HR RATED FOR 4 STORY STAIR
 EXIT ENCLOSURE 2 HR RATED FOR 5 STORY STAIR
 MEANS OF EGRESS CAPACITY - 36" CORRIDORS MIN
 2 MEANS OF EGRESS REQUIRED
 COMMON PATH OF TRAVEL 50 FT MAX
 DEAD END CORRIDORS 50 FT MAX
 TRAVEL DISTANCE FROM UNIT TO EXIT 125 FT MAX
 TRAVEL DISTANCE FROM UNIT TO EXIT 200 FT MAX
 EMERGENCY LIGHTING REQUIRED
 ILLUMINATED EXIT SIGNS REQUIRED
 FIRE ALARM SYSTEM REQUIRED
 FIRE ALARM INIATION BY MANUAL MEANS
 AUTOMATIC FIRE ALARM NOTIFICATION REQUIRED
 SMOKE ALARMS REQUIRED
 AUTOMATIC SPRINKLER SYSTEM REQUIRED
 PORTABLE FIRE EXTINGUISHERS ARE REQUIRED BY NFPA 1

NFPA T-30.3.2.1.1
 NFPA T-7.3.1.2
 NFPA 30.3.5.2
 NFPA 7.1.3.2.1
 NFPA 30.2.2.1.2
 NFPA 7.1.3.2.1
 NFPA 30.2.3.4
 NFPA 30.2.4.1
 NFPA 30.2.5.3.2
 NFPA 30.2.5.4.2
 NFPA 30.2.6.2
 NFPA 30.2.9
 NFPA 30.2.10
 NFPA 30.3.4.1.1
 NFPA 30.3.4.2.1
 NFPA 30.3.4.3.1
 NFPA 30.3.4.5
 NFPA 30.3.5.1



Gorrill-Palmer Consulting Engineers, Inc.

Engineering Excellence Since 1998

PO Box 1237
15 Shaker Rd.
Gray, ME 04039

207-657-6910
FAX: 207-657-6912
E-Mail: mailbox@gorrillpalmer.com

April 1, 2014

Mr. Robert Metcalf
Mitchell & Associates Inc.
70 Center Street
Portland, ME 04101

Re: Traffic and Parking Assessment
Washington Avenue Efficiencies
134 Washington Ave, Portland, Maine

Dear Bob:

As requested by your office, our office has completed a parking and traffic assessment for the proposed 18 units of affordable housing. The proposed project is planned to be located at the northwest corner of the intersection of Fox Street and Washington Avenue.

Traffic Assessment

Trip Generation

Gorrill-Palmer Consulting Engineers, Inc. used the Institute of Transportation Engineers (ITE) publication *Trip Generation*, 9th Edition to estimate the potential trip generation for the proposed apartment building. Based on Land Use Code (LUC) 220, Apartment, with 18 units, the proposed site is anticipated to generate the following trips:

AM Peak Hour	9 trip ends
PM Peak Hour	11 trip ends

ITE trip rates are based on surveys of predominantly suburban locations rather than urban so our office reviewed a trip generation count we had on file for Pearl Place which was taken on Tuesday, October 5, 2010 from 3:30 to 5:30. Based upon the counts, the actual trip generation was low; only twenty peak hour trips were recorded at the site driveway for the 60 units in place when the count was done, and no on-street parking associated with the facility was observed during the count. A significant number of pedestrian trips to and from the site were observed. This results in a PM peak hour trip rate of 0.33 per unit for this existing facility. Applying this rate to the proposed 18 units yields 6 trip ends during the PM peak hour.

Given these results and that the project is in an urban area and not all residents are anticipated to have cars, our office has estimated that the proposed project will generate 6 trip ends (ins and outs combined, thus a round trip is equal to 2 trip ends) during both the AM and PM peak hours respectively. The majority of these trips will be parking off site as discussed in the parking section later in this letter.

Mr. Robert Metcalf
 March 26, 2014
 Page 2 of 4

Sight Line Evaluation

The Maine Department of Transportation requires a safe entering sight distances at driveways within urban compacts of 200 feet for a posted speed limit of 25 mph. Gorrill-Palmer Consulting Engineers, Inc. has evaluated the available sight lines at the proposed 134 Washington Avenue Efficiencies driveway in accordance with Maine DOT standards.

The Maine DOT standards are as follows:

Driveway observation point:	10 feet off major street travelway
Height of eye at driveway:	3 ½ feet above ground
Height of approaching vehicle:	4 ¼ feet above road surface

The posted speed on Washington Avenue in the vicinity of the site driveway is 25 mph. The results of this sight line analysis exiting the site drive is summarized in the following tables:

134 Washington Avenue Efficiencies Driveway Sight Line Evaluation

Direction	Posted Speed (mph)	Recommended Sight Line (ft)	Actual Sight Line (ft)
Exiting onto Washington Ave Looking			
Left	25	200	165
Right	25	200	310

As shown, the sight lines exiting the driveway looking to the left exceed Maine DOT requirements. The sightlines to the right are obstructed by a parking space approximately 100 feet to the north of the driveway, which is not uncommon in an urban area. Gorrill-Palmer Consulting Engineers, Inc. recommends that all plantings, which will be located within the right of way, not exceed 3 feet in height and be maintained at or below that height. Signage should not interfere with sight lines. In addition, we recommend that during construction, when heavy equipment is entering and exiting into the site, that appropriate measures, such as signage and flag persons, be utilized in accordance with the Manual on Uniform Traffic Control Devices.

2 types?

Collision History

In order to evaluate whether a location has a crash problem, Maine DOT uses two criteria to define High Crash Locations (HCL). Both criteria must be met in order to be classified as an HCL.

- A critical rate factor of 1.00 or more for a three-year period. (A Critical Rate Factor {CRF} compares the actual accident rate to the rate for similar intersections in the State. A CRF of less than 1.00 indicates a rate less than average) and:
- A minimum of 8 crashes over a three-year period.

Our office reviewed the 2010-2012 crash data in this area and found that the intersection of Fox Street and Washington Ave has had 7 collisions over this three year period with a CRF of 1.52, just shy of meeting the definition of an HCL. The proposed project should not have a significant impact

Mr. Robert Metcalf
March 26, 2014
Page 3 of 4

on the safety of this intersection due to its low trip generation and the majority of the traffic will park off site.

Parking Assessment

The City ordinance suggests one parking space per housing unit which would result in the Applicant needing to provide a total of 18 spaces. Providing more parking than needed results in loss of open space and increases stormwater impacts, and underutilization of valuable urban land. At the same time, providing too little parking would have adverse impacts on residents and the surrounding neighborhood. The applicant's goal through the parking demand analysis process is to find the appropriate ratio of parking spaces. Our office has data suggesting actual parking demand will be well below one space per unit for affordable housing. To estimate the parking demand for the proposed project, Gorrill-Palmer Consulting Engineers, Inc. reviewed our files for relevant parking studies we have completed and determined that two were relevant to this project and are summarized below:

- Island View Apartments in Portland: This inventory was performed on July 12, 2004 from 6:00 to 9:00 PM. Island View Apartments is a 70-unit apartment building on the corner of Walnut and North Streets in Portland. It contains a total of 84 parking spaces, 29 of which are designated visitor parking only, and 2 of which are handicap. In the peak half-hour period, a maximum of 49 parking spaces were occupied. This translates to a demand of 0.70 parking spaces per dwelling unit.
- As part of studies for similar projects in the past, our office examined the parking occupancy of apartment buildings in downtown Portland with dedicated parking lots, either behind or within the building as part of another application. Our office completed parking occupancy counts from 10-11 PM (within the peak period, based on ITE and ULI data) at 53 Danforth Street, 645 Congress Street, and Walker Terrace (at the corner of Congress and Walker Street) on Tuesday, October 26, 2010. See summary below.
- In addition, we referenced the parking supply for Franklin Towers and Oak Street Lofts. Franklin Towers has 200 units, and based upon aerial data, a parking supply of 56 spaces. Oak Street Lofts has 37 units, and 16 parking spaces, although it should be noted that half of these spaces (eight) are for motorcycles. For the purposes of this letter, it is assumed that peak demand at both of these facilities is at 100 percent occupancy.

Based on the occupancy counts, the following parking demand was determined:

53 Danforth:	43 units, 29 spaces occupied	=	0.67 spaces/unit
645 Congress:	56 units, 28 spaces occupied	=	0.50 spaces/unit
Walker Terrace:	40 units, 20 spaces occupied	=	0.50 spaces/unit
Oak Street Lofts:	37 units, 16 spaces occupied*	=	0.43 spaces/unit
Franklin Towers:	200 units, 58 spaces occupied**	=	0.29 spaces/unit
		AVERAGE:	0.48spaces/unit

*Assumes 100% occupancy at Oak Street.

Mr. Robert Metcalf
March 26, 2014
Page 4 of 4

**** Assumes 58 spaces based upon aerial imagery, and 100% occupancy at Franklin Towers.**

This information indicates an average need for 0.48 spaces per apartment within the Portland Peninsula.

Based on the level of demand at the above referenced studies, it is the opinion of Gorrill Palmer that appropriate parking demand for the proposed 134 Washington Avenue Efficiencies is 0.70 spaces per unit, translating to a demand for 13 spaces. Of these 13 spaces, 2 would be provided on site and 11 off site through the City's in lieu fee process.

Our office completed an on street parking assessment within a 360 foot radius of the project on Monday March 24, 2014 at 11:30 PM. This radius is within a 2 minute walk to the site. This information showed there are 73 spaces available and 24 were occupied at that time, presumably by residents.

Closing

Please contact this office with any questions.

Sincerely,

Gorrill-Palmer Consulting Engineers, Inc.



Thomas L Gorrill, PE, PTOE
Principal



Berry, Huff, McDonald, Milligan Inc.
Engineers, Surveyors

LESTER S. BERRY
WILLIAM A. THOMPSON
ROBERT C. LIBBY, Jr.
WALTER E. PELKEY

March 18, 2014

Bob Metcalf
70 Center Street
Portland, Me. 04101

Re: Stormwater Management
Avesta Housing
134 Washington Avenue
Portland, ME

Dear Bob:

Based on the Project Plans prepared by Mitchell & Associates and our review we have prepared the following Stormwater Management Report. The location within the City of Portland requires the compliance with the Chapter 500 Standards in the State Stormwater Law.

EXISTING CONDITIONS

The existing site has been surveyed and can be found on the Existing Conditions Plan and the Pre-development Plan. The site is located at 134 Washington Avenue which is on the west side opposite Walnut Street. A USGS Location Map is attached. The site is a small [10,096 sf] lot with an existing 2 story wood frame house, garage, paved driveway and gravel parking area.

PROPOSED PROJECT

Avesta proposes to demolish the existing structures and paving [approximately 2,983 sf of impervious area] and construct a 3 story – 18 housing unit building with a small driveway and 2 parking spaces [approximately 4,707 sf of impervious area]. This results is a minor increase of 1,724 sf. Typically 1,724 sf of impervious area is insignificant but in this case with the steep grades and abutters, it was determined that measures were needed to reduce peak flow rates and treat runoff. Therefore, an infiltration bed is proposed.

SOILS

The soils are shown on the Cumberland County Medium Intensive Soils Maps [attached] as Hinckley soils [HSG A]. Test pits by James Logan, CSS, Albert Frick Associates,

indicate that soils are Adams like [HSG A] and Croghan like [HSG B]. For calculations we are using Hydrologic Soils Group A soils. Soils report and test pit logs are attached.

PRE-DEVELOPMENT CONDITIONS

The Pre-development Plan and calculations are attached.

The site has a significant slope from the Washington Avenue side to the rear. Grades fall from elevation 72 to elevation 55 at the rear line which is only 120+/- feet [14% grade]. None of the Washington Avenue runoff appears to enter the site so only runoff generated from the site flows downhill or westerly. It appears that runoff generally stays in a sheet flow manner before crossing the property lines to the abutting lots located on Hammond Street. Hence, the Analysis Point [AP 1] is actually the boundary line which is approximately 98 feet long. There appears to be no issues with the existing drainage flow conditions but it is difficult during winter conditions to fully assess the situation.

The site has 2,383 sf of disconnected impervious, 600 sf of gravel, and 7,113 sf of grass. Peak flow rates were calculated as follows:

2 year storm =	0.00 cfs
10 year storm =	0.08 cfs
25 year storm =	0.18 cfs

The flow rates support the conclusion that downstream impacts from this site are non-existent to minimal.

POST DEVELOPMENT CONDITIONS

The Post development Plan and calculations are attached [same model as pre].

The goal was to limit post development peak flow rates to no greater than the above pre-development rates and treat as much flow as possible. The issue appears to be that we do not want to create a concentrated discharge to any of the downstream abutters.

Based upon the medium intensive soils maps [attached] it seemed that infiltration is an option. Therefore, the site has been designed to discharge all the roof and driveway runoff into Catchbasin 1 and then into an infiltration bed consisting of 12 Stormtech SC-740 chambers embedded in crushed stone. Pretreatment will be from a sump in the catchbasin and an Isolator row. The Isolator Row's capacity is much larger than DEP minimum sizing.

The infiltration bed was designed using the HydroCad "Chamber Wizard" [see calculations] with an infiltration rate of 2.41 inches per hour. The soils report indicates that actual infiltration is in the 6-20 inches per hour rate. The bed was sized to handle the 25 year storm with a bypass above this for any storm that may exceed the capacity. The bottom of the stone is at elevation 59.5 which is 4 feet above the seasonal ground water

table in TP1. TP2 did not find the seasonal ground water table. The chambers are at elevation 60.0 with a top of stone at elevation 63.0. The peak storage elevation for each design storm is as follows:

2 year storm =	60.51
10 year storm =	61.44
25 year storm =	61.99

The bypass was set at elevation 62.5.

The peak discharge rate from the project consists only of runoff from Subarea 3 which is the same grassed rear yard as exists now. Peak flow rates are as follows:

2 year storm =	0.00 cfs (0.00 cfs)
10 year storm =	0.00 cfs (0.08 cfs)
25 year storm =	0.01 cfs (0.18 cfs)

The peak flow rates to the downhill abutters have been reduced from the minor predevelopment rates to almost nothing.

O & M


An infiltration bed is a stormwater structure that needs to be monitored as it ages and needs protection from abuse. Abuse would be defined as discharging fines into the bed that could eventually clog the bed. An O & M is attached that the Owners should incorporate into their standard maintenance for the project. In addition a silt trap should be kept and maintained at the catchbasin until the site is stabilized.

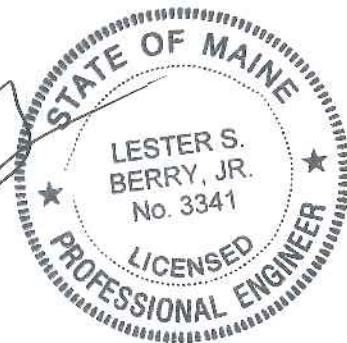
SUMMARY

The parcel is fortunate to have soils that are able to infiltrate stormwater in that this is an easy method to manage peak flow rates and provide stormwater treatment.

Please review and let me know if you or the City have any questions.

Sincerely,


Lester S. Berry, PE





Albert Frick Associates, Inc

Environmental Consultants

95A County Road Gorham, Maine 04038
(207) 839-5563 FAX (207) 839-5564
www.albertfrick.com info@albertfrick.com

Albert Frick, SS, SE
James Logan, SS, SE
Matthew Logan, SE
Brady Frick, SE
Bryan Jordan, SE
William O'Connor, SE
Noel Dunn, Office Manager

March 7, 2014

Ms. Sashie Misner
Mitchell Associates
70 Center Street
Portland, ME 04101

Re: 134 Washington Avenue, Portland

Dear Ms. Misner:

We visited the above-referenced property on March 5, 2014 to excavate and evaluate two test pits, at locations of your choosing. These are provided to assist with stormwater design for the property.

Enclosed for your review and use are soil profile descriptions for each test pit excavated, along with a general description of soil properties for each soil observed.

Soils on-site at TP1 consist of fill over moderately well drained Croghan soils, which are glacial outwash, generally with no hardpan or restrictive layers. Seasonal high groundwater table was observed at 52" in this excavation. Soils at TP2 are fill over well to excessively well drained Adams, which are similar to Croghan but generally have no water table within 6' of the soil surface.

Both soils are similar in textures, with permeabilities of 6"-20"/hour in the upper part (within 24" +/- of soil surface) to 20"/hour below these depths. I trust you will find this and the enclosed information helpful in stormwater design. Feel free to call should you have further questions or matters for discussion regarding the site.

Sincerely,

James Logan
Certified Soil Scientist #213
Licensed Site Evaluator #237
Wetland Scientist

Town, City, Plantation
PORTLAND

Street, Road Subdivision
134 WASHINGTON AVENUE

Owner's Name
AVESTA HOUSING

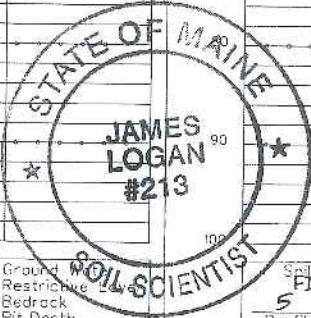
SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 1 Test Pit Boring
 " Depth of Organic Horizon Above Mineral Soil

Observation Hole TP 2 Test Pit Boring
 " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0		FROZEN		
5	SANDY LOAM AND LOAMY SAND (FILL)		DARK BROWN	
10				
15		FRIABLE		
20				
25				
30				
35	MEDIUM SAND		YELLOW BROWN	
40				
45				
50				
55		SLIGHTLY CEMENTED		FEW, FAINT
60	GRAVELLY COARSE SAND		LIGHT YELLOW BROWN	
65		FRIABLE		
70				
75				
80				
85				
90				
95				
100				

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0		FROZEN		
5	SANDY LOAM AND LOAMY SAND (FILL)		DARK BROWN	
10	WITH BRICKS AND GLASS			
15				
20				
25				
30	MEDIUM SAND W/BRICK DEBRIS (FILL)	FRIABLE	LIGHT YELLOW BROWN	
35				
40				
45				
50	GRAVELLY LOAMY SAND AND SAND (ORIGINAL)		DARK YELLOW BROWN	
55			YELLOW BROWN	
60				
65	FINE MEDIUM SAND		LIGHT YELLOW BROWN	
70				
75				
80				
85				
90				
95				
100				



Soil Classification: FILL OVER	Slope: _____ %	Limiting Factor: 52"	<input type="checkbox"/> Ground Water	Soil Classification: FILL OVER	Slope: _____ %	Limiting Factor: _____ "	<input type="checkbox"/> Ground Water
Profile: S Condition: C			<input type="checkbox"/> Restrictive Layer	Profile: S Condition: B			<input type="checkbox"/> Restrictive Layer
Soil Series Name: _____	Drainage Class: _____	Hydrologic Group: _____	<input type="checkbox"/> Bedrock	Soil Series Name: _____	Drainage Class: _____	Hydrologic Group: _____	<input type="checkbox"/> Bedrock
			<input type="checkbox"/> Pit Depth				<input type="checkbox"/> Pit Depth

FILL OVER CROGHAN-LIKE SOILS

FILL OVER ADAMS-LIKE SOILS

James Logan (for AFA)
 Soil Scientist Signature

237/ 243
 CSS *

3/6/14
 Date

CROGHAN
(Aquic Haplorthods)

SETTING

Parent Material:	Derived from outwash or deltaic sand.
Landform:	Occupy outwash terraces and sand plains.
Position in Landscape:	Usually are found in intermediate or upper positions in the landscape.
Slope Gradient Ranges:	(B) 3-8% (C) 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class:	Moderately well-drained, with an apparent water table 1.5 to 2.0 feet below the soil surface from November through May. The water table fluctuates from approximately 1.5 feet during prolonged wet periods to depths greater than 4 feet in dry seasons.	
Typical Profile Description:	Surface layer:	Dark brown sand, 0-7"
	Subsurface layer:	Strong brown/yellowish brown, brown & pale brown sand with mottles below 13", 7-52"
	Substratum:	Grayish brown loose sand, 52-60"
Hydrologic Group:	Group B	
Surface Run Off:	Slow to medium	
Permeability:	Rapid to very rapid in the lower horizons.	
Depth to Bedrock:	Deep, greater than 40".	
Hazard to Flooding:	None	

INCLUSIONS
(Within Mapping Unit)

Similar:	Adams, Duane
Dissimilar:	Nicholville, Naumburg, Lyman, Kinsman

USE AND MANAGEMENT

Development with subsurface wastewater disposal: The limiting factor for building site development is wetness due to the presence of a groundwater table. Proper foundation drainage or site modification is recommended. Croghan soils are suitable for subsurface wastewater disposal in accordance with State of Maine Rules for Subsurface Wastewater Disposal. This soil requires a 24-inch separation distance from the bottom of the disposal area and the seasonal high groundwater table. This soil requires a minimum hydraulic loading rate of 2.6 and 1.3 sq.ft/gpd for disposal beds and chamber area, respectively.

Development with public sewer and water: The limiting factor for building site development is wetness due to the presence of a groundwater table. Proper foundation drainage or site modification is recommended.

Stormwater Design: The Croghan soil is moderately well drained. The groundwater table is typically greater than 15 inches, but less than 40 inches in the spring and/or periods of heavy precipitation.

The expected soil permeability is 6 to 20 inches/hr in the top 0-12 inches, and 20 inches/hr below 12 inches.

ADAMS (Typic Haplorthods)

SETTING

Parent Material:	Derived from outwash, stratified drift material.
Landform:	Occupy outwash terraces and sand plains, deltas, lake plains, moraines, terraces and eskers.
Position in Landscape:	Usually occupies the upper positions of landform.
Slope Gradient Ranges:	(A) 0-3% (B) 3-8% (C) 8-20% (D) 20%+

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class:	Somewhat excessively to excessively well drained, with no evidence of high groundwater table within 3.5 feet of the soil surface.	
Typical Profile Description:	Surface layer:	Pinkish gray sand, 0-4"
	Subsurface layer:	Dark brown loamy sand, 4-10"
	Subsoil layer:	Brown & yellowish brown sand, 10-26"
	Substratum:	Grayish brown sand, 26-70"
Hydrologic Group:	Group A	
Surface Run Off:	Very slow to medium	
Permeability:	Rapid or very rapid	
Depth to Bedrock:	Very deep, greater than sixty inches	
Hazard to Flooding:	None	

INCLUSIONS (Within Mapping Unit)

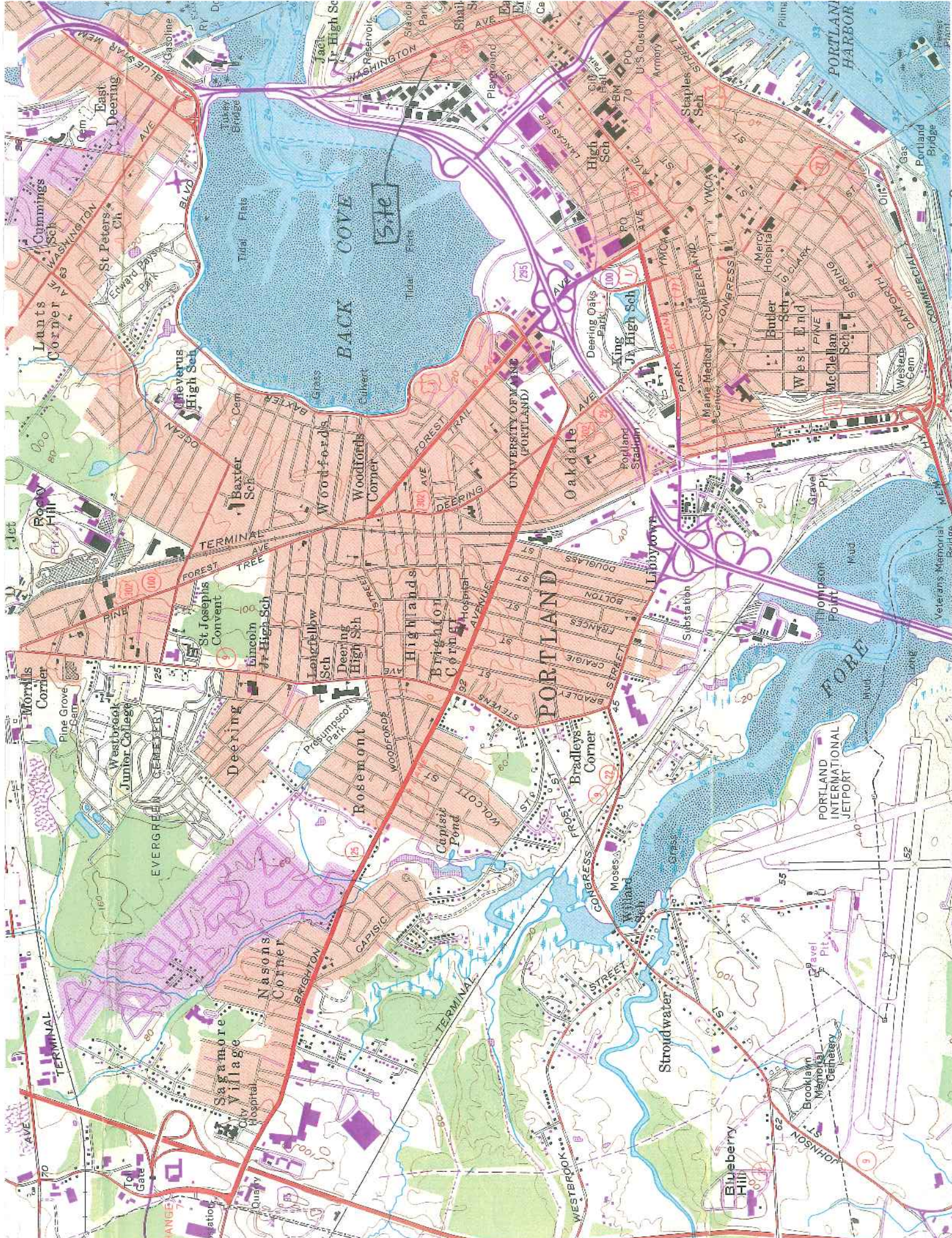
Similar:	Soils that are fine sandy loam to very fine sandy loam to a depth of 20 inches, Colton.
Dissimilar:	Croghan soils that are moderately well drained and occur in shallow depressions.

USE AND MANAGEMENT

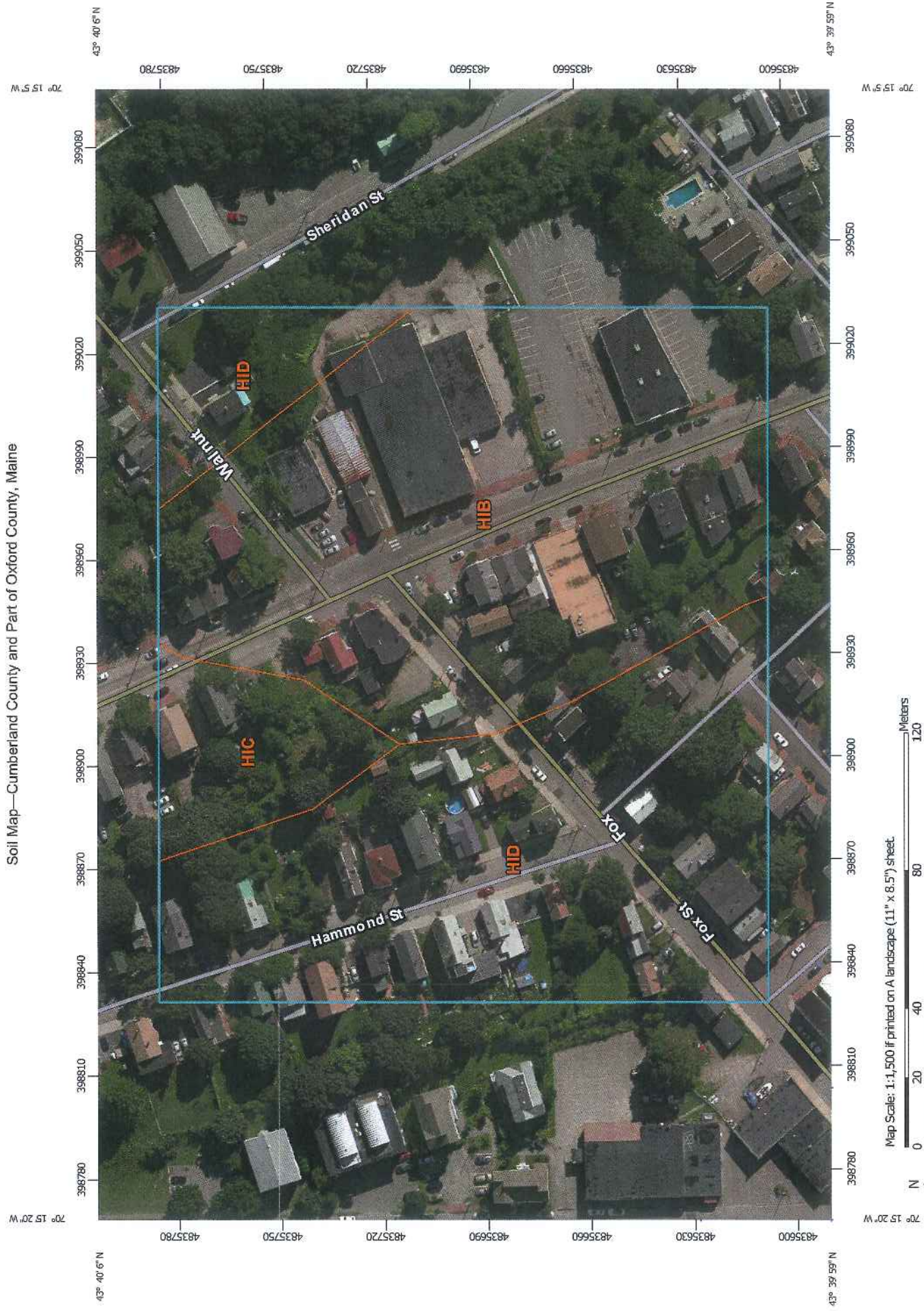
Development with subsurface wastewater disposal: Adams soil is suitable for subsurface wastewater disposal in accordance with State of Maine Rules for Subsurface Wastewater Disposal. This soil requires a 24-inch separation distance from the bottom of the disposal area and the seasonal high groundwater table. This soil requires a minimum hydraulic loading rate of 2.6 square feet/gpd for disposal system design. Adams soil is suited for building site development.

Development with public sewer and water: Adams soil is suited for building site development. Proper foundation drainage is recommended.

Stormwater Design: The Adams soil is well drained to excessively well drained. The groundwater table is typically below 4.0'. The groundwater table in this particular setting within the study area is greater than 8.0'. This soil is well suited for subsurface stormwater treatments. The expected soil permeability is 6.0 to 20.0 inches/hour in the upper horizon approximately 0-2', and 20.0 inches/hour in the lower horizons.



Soil Map—Cumberland County and Part of Oxford County, Maine



Map Scale: 1:1,500 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.





Soil Survey Area: Cumberland County and Part of Oxford County, Maine
 Survey Area Data: Version 8, Nov 27, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 20, 2010—Aug 11, 2013

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

MAP LEGEND

- | | |
|--|---|
|  Area of Interest (AOI) |  Spot Area |
|  Soils |  Stony Spot |
|  Soil Map Unit Polygons |  Very Stony Spot |
|  Soil Map Unit Lines |  Wet Spot |
|  Soil Map Unit Points |  Other |
|  Special Point Features |  Special Line Features |
|  Blowout |  Water Features |
|  Borrow Pit |  Streams and Canals |
|  Clay Spot |  Transportation |
|  Closed Depression |  Rails |
|  Gravel Pit |  Interstate Highways |
|  Gravely Spot |  US Routes |
|  Landfill |  Major Roads |
|  Lava Flow |  Local Roads |
|  Marsh or swamp |  Background |
|  Mine or Quarry |  Aerial Photography |
|  Miscellaneous Water | |
|  Perennial Water | |
|  Rock Outcrop | |
|  Saline Spot | |
|  Sandy Spot | |
|  Severely Eroded Spot | |
|  Sinkhole | |
|  Slide or Slip | |
|  Sodic Spot | |

Map Unit Legend

Cumberland County and Part of Oxford County, Maine (ME005)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HIB	Hinckley gravelly sandy loam, 3 to 8 percent slopes	4.3	48.3%
HIC	Hinckley gravelly sandy loam, 8 to 15 percent slopes	0.7	7.4%
HID	Hinckley gravelly sandy loam, 15 to 25 percent slopes	3.9	44.4%
Totals for Area of Interest		8.9	100.0%



SA1 PRE/AP1



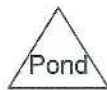
SA2 TO INFILTRATION



SA3 POST/AP1



INFILTRATION BED



Routing Diagram for 134 Washington Avenue Pre and Post
Prepared by BH2M ENGINEERS, Printed 4/2/2014
HydroCAD® 10.00 s/n 00619 © 2011 HydroCAD Software Solutions LLC

Summary for Subcatchment 1S: SA1 PRE/AP1

Runoff = 0.00 cfs @ 13.77 hrs, Volume= 0.001 af, Depth> 0.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
2,383	98	Unconnected roofs, HSG A
600	96	Gravel surface, HSG A
7,113	39	>75% Grass cover, Good, HSG A
10,096	56	Weighted Average, UI Adjusted CN = 50
7,713		76.40% Pervious Area
2,383		23.60% Impervious Area
2,383		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MINIMUM

Summary for Subcatchment 2S: SA2 TO INFILTRATION

Runoff = 0.29 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 2.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
4,707	98	Unconnected pavement, HSG A
520	39	>75% Grass cover, Good, HSG A
5,227	92	Weighted Average
520		9.95% Pervious Area
4,707		90.05% Impervious Area
4,707		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MINIMUM

Summary for Subcatchment 3S: SA3 POST/AP1

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
4,869	39	>75% Grass cover, Good, HSG A
4,869		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MINIMUM

Summary for Pond 4P: INFILTRATION BED

Inflow Area = 0.120 ac, 90.05% Impervious, Inflow Depth > 2.04" for 2 YEAR STORM event
 Inflow = 0.29 cfs @ 12.09 hrs, Volume= 0.020 af
 Outflow = 0.03 cfs @ 12.81 hrs, Volume= 0.020 af, Atten= 89%, Lag= 43.1 min
 Discarded = 0.03 cfs @ 12.81 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 60.51' @ 12.81 hrs Surf.Area= 0.013 ac Storage= 0.008 af

Plug-Flow detention time= 81.0 min calculated for 0.020 af (100% of inflow)
 Center-of-Mass det. time= 80.2 min (849.0 - 768.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	59.50'	0.014 af	17.75'W x 31.92'L x 3.50'H Field A Z=0.2 0.048 af Overall - 0.013 af Embedded = 0.036 af x 40.0% Voids
#2A	60.00'	0.013 af	StormTech SC-740 x 12 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 3 rows
		0.027 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	59.50'	2.410 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.03 cfs @ 12.81 hrs HW=60.51' (Free Discharge)
 ↳ **1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Pond 4P: INFILTRATION BED - Chamber Wizard Field A

Chamber Model = StormTech SC-740

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

Row Length Adjustment= +0.44' x 6.45 sf x 3 rows

51.0" Wide + 12.0" Spacing = 63.0" C-C Row Spacing

4 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 28.92' Row Length +18.0" End Stone x 2 = 31.92' Base Length

3 Rows x 51.0" Wide + 12.0" Spacing x 2 + 18.0" Side Stone x 2 = 17.75' Base Width

6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

0.2 ' Side-Z x Height = 8.4" Flare/Side

Base Length + Flare x 2 = 33.32' Top Length

Base Width + Flare x 2 = 19.15' Top Length

12 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 3 Rows = 559.8 cf Chamber Storage

2,107.0 cf Field - 559.8 cf Chambers = 1,547.2 cf Stone x 40.0% Voids = 618.9 cf Stone Storage

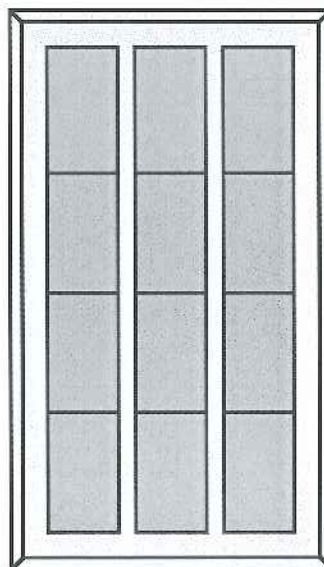
Stone + Chamber Storage = 1,178.7 cf = 0.027 af

Overall Storage Efficiency = 55.9%

12 Chambers

78.0 cy Field

57.3 cy Stone



Summary for Subcatchment 1S: SA1 PRE/AP1

Runoff = 0.08 cfs @ 12.15 hrs, Volume= 0.010 af, Depth> 0.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
2,383	98	Unconnected roofs, HSG A
600	96	Gravel surface, HSG A
7,113	39	>75% Grass cover, Good, HSG A
10,096	56	Weighted Average, UI Adjusted CN = 50
7,713		76.40% Pervious Area
2,383		23.60% Impervious Area
2,383		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MINIMUM

Summary for Subcatchment 2S: SA2 TO INFILTRATION

Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.036 af, Depth> 3.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
4,707	98	Unconnected pavement, HSG A
520	39	>75% Grass cover, Good, HSG A
5,227	92	Weighted Average
520		9.95% Pervious Area
4,707		90.05% Impervious Area
4,707		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MINIMUM

Summary for Subcatchment 3S: SA3 POST/AP1

Runoff = 0.00 cfs @ 13.76 hrs, Volume= 0.001 af, Depth> 0.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
4,869	39	>75% Grass cover, Good, HSG A
4,869		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MINIMUM

Summary for Pond 4P: INFILTRATION BED

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.120 ac, 90.05% Impervious, Inflow Depth > 3.59" for 10 YEAR STORM event
 Inflow = 0.50 cfs @ 12.09 hrs, Volume= 0.036 af
 Outflow = 0.03 cfs @ 13.56 hrs, Volume= 0.030 af, Atten= 93%, Lag= 88.1 min
 Discarded = 0.03 cfs @ 13.56 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 61.44' @ 13.56 hrs Surf.Area= 0.014 ac Storage= 0.016 af

Plug-Flow detention time= 162.9 min calculated for 0.030 af (83% of inflow)
 Center-of-Mass det. time= 113.6 min (869.7 - 756.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	59.50'	0.014 af	17.75'W x 31.92'L x 3.50'H Field A Z=0.2 0.048 af Overall - 0.013 af Embedded = 0.036 af x 40.0% Voids
#2A	60.00'	0.013 af	StormTech SC-740 x 12 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 3 rows
		0.027 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	59.50'	2.410 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.03 cfs @ 13.56 hrs HW=61.44' (Free Discharge)
 1=Exfiltration (Exfiltration Controls 0.03 cfs)

Pond 4P: INFILTRATION BED - Chamber Wizard Field A

Chamber Model = StormTech SC-740

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

Row Length Adjustment= +0.44' x 6.45 sf x 3 rows

51.0" Wide + 12.0" Spacing = 63.0" C-C Row Spacing

4 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 28.92' Row Length +18.0" End Stone x 2 = 31.92' Base Length

3 Rows x 51.0" Wide + 12.0" Spacing x 2 + 18.0" Side Stone x 2 = 17.75' Base Width

6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

0.2 ' Side-Z x Height = 8.4" Flare/Side

Base Length + Flare x 2 = 33.32' Top Length

Base Width + Flare x 2 = 19.15' Top Length

12 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 3 Rows = 559.8 cf Chamber Storage

2,107.0 cf Field - 559.8 cf Chambers = 1,547.2 cf Stone x 40.0% Voids = 618.9 cf Stone Storage

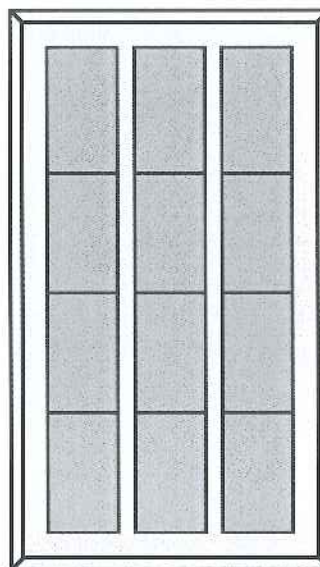
Stone + Chamber Storage = 1,178.7 cf = 0.027 af

Overall Storage Efficiency = 55.9%

12 Chambers

78.0 cy Field

57.3 cy Stone



Summary for Subcatchment 1S: SA1 PRE/AP1

Runoff = 0.18 cfs @ 12.12 hrs, Volume= 0.015 af, Depth> 0.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
2,383	98	Unconnected roofs, HSG A
600	96	Gravel surface, HSG A
7,113	39	>75% Grass cover, Good, HSG A
10,096	56	Weighted Average, UI Adjusted CN = 50
7,713		76.40% Pervious Area
2,383		23.60% Impervious Area
2,383		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MINIMUM

Summary for Subcatchment 2S: SA2 TO INFILTRATION

Runoff = 0.59 cfs @ 12.09 hrs, Volume= 0.043 af, Depth> 4.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
4,707	98	Unconnected pavement, HSG A
520	39	>75% Grass cover, Good, HSG A
5,227	92	Weighted Average
520		9.95% Pervious Area
4,707		90.05% Impervious Area
4,707		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MINIMUM

Summary for Subcatchment 3S: SA3 POST/AP1

Runoff = 0.01 cfs @ 12.40 hrs, Volume= 0.002 af, Depth> 0.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
4,869	39	>75% Grass cover, Good, HSG A
4,869		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, MINIMUM

Summary for Pond 4P: INFILTRATION BED

[82] Warning: Early inflow requires earlier time span

Inflow Area = 0.120 ac, 90.05% Impervious, Inflow Depth > 4.33" for 25YEAR STORM event
 Inflow = 0.59 cfs @ 12.09 hrs, Volume= 0.043 af
 Outflow = 0.03 cfs @ 13.91 hrs, Volume= 0.031 af, Atten= 94%, Lag= 109.6 min
 Discarded = 0.03 cfs @ 13.91 hrs, Volume= 0.031 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 61.99' @ 13.91 hrs Surf.Area= 0.014 ac Storage= 0.021 af

Plug-Flow detention time= 167.2 min calculated for 0.031 af (72% of inflow)
 Center-of-Mass det. time= 104.1 min (856.6 - 752.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	59.50'	0.014 af	17.75'W x 31.92'L x 3.50'H Field A Z=0.2 0.048 af Overall - 0.013 af Embedded = 0.036 af x 40.0% Voids
#2A	60.00'	0.013 af	StormTech SC-740 x 12 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 3 rows
		0.027 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	59.50'	2.410 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.03 cfs @ 13.91 hrs HW=61.99' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.03 cfs)

Pond 4P: INFILTRATION BED - Chamber Wizard Field A

Chamber Model = StormTech SC-740

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

Row Length Adjustment= +0.44' x 6.45 sf x 3 rows

51.0" Wide + 12.0" Spacing = 63.0" C-C Row Spacing

4 Chambers/Row x 7.12' Long +0.44' Row Adjustment = 28.92' Row Length +18.0" End Stone x 2 = 31.92' Base Length

3 Rows x 51.0" Wide + 12.0" Spacing x 2 + 18.0" Side Stone x 2 = 17.75' Base Width

6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

0.2 ' Side-Z x Height = 8.4" Flare/Side

Base Length + Flare x 2 = 33.32' Top Length

Base Width + Flare x 2 = 19.15' Top Length

12 Chambers x 45.9 cf +0.44' Row Adjustment x 6.45 sf x 3 Rows = 559.8 cf Chamber Storage

2,107.0 cf Field - 559.8 cf Chambers = 1,547.2 cf Stone x 40.0% Voids = 618.9 cf Stone Storage

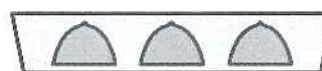
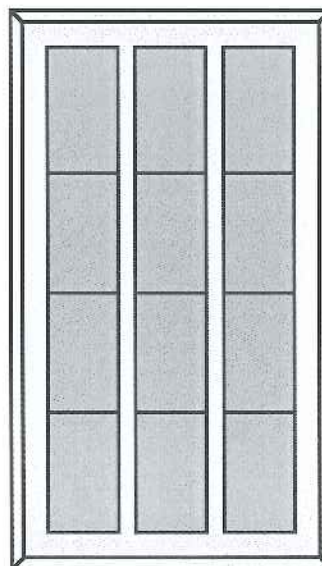
Stone + Chamber Storage = 1,178.7 cf = 0.027 af

Overall Storage Efficiency = 55.9%

12 Chambers

78.0 cy Field

57.3 cy Stone



OPERATIONS & MAINTENANCE PLAN
FOR STORMWATER FACILITIES

For: Washington Avenue Efficiencies
134 Washington Avenue
Portland, Maine

The applicant, Avesta Washington Ave. LP, will be responsible for all operation and maintenance of the entire site.

Site Description

Washington Avenue Efficiencies is an 18 unit apartment project located at 134 Washington Avenue, Portland, Maine.

Stormwater Overview and Objectives

With the highly permeable sandy soils the project was designed to infiltrate runoff into the ground. That is how the site is currently discharging most runoff. Therefore, continuing with infiltration will have no impacts to abutters or the groundwater table.

The stormwater system consists of one infiltration bed, a catchbasin and 2 manholes.

Contacts:

Design Engineer: BH2M
28 State Street
Gorham, Me. 04038
(207) 839-2771

Developer: Avesta Washington Ave. LP
307 Cumberland Avenue
Portland, Me. 04101

Inspector: _____

- b) Measure and record silt accumulation, if any. Sumps shall be cleaned at least on a yearly basis in the spring.
3. Check pipelines on an annual basis to determine silt accumulation, if any. Remove excess silt if found.

Housekeeping

1. Use "Inspection & Maintenance Log" and keep records in three-ring binder.
2. See attached Appendix B "Inspection and Maintenance" from Maine DEP Stormwater Regulations.
3. See attached "Appendix C" from Maine DEP Stormwater Regulations for Performance Standards.

Contractors:

Contractor 1 _____

Contractor 2 _____

Purpose

The following O&M Plan provides guidance and schedules for the O&M of the stormwater facility.

Infiltration Basin

1. Inlet Inspections: The inlet of the basin shall be checked periodically to ensure that flows are not blocked by debris. Inspections shall be conducted monthly during wet weather conditions from March to November.

2. Erosion & Instability: The infiltration basin should be inspected annually for erosion, destabilization of side slopes, embankment 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.

4. Sediment Removal: Sediment shall be removed from the pretreatment structure at least annually and from the basin when necessary.

5. Measurement of Sediment Accumulation: Inspect for sediment accumulation. If sediment reaches 2" in depth, the sediment shall be removed.

6. Check Inspection port to check for accumulated silt. If silt is found clean per manufacturer's instructions.

Storm Drain System Includes Catch Basins & Manholes

1. Inspect catch basin inlets on a monthly basis for debris or conditions which could inhibit flow entry. Remove debris and properly dispose.

2. Inspect the catch basin structures on an annual basis.
 - a) Check that rims are securely attached and properly set to optimize flow entry.

INSPECTION SUMMARY
WASHINGTON AVENUE EFFICIENCIES

<u>Inspection of</u>	<u>Schedule *</u>
• Infiltration Basin	
Inspect	Monthly
Remove Sediment	Yearly
• Storm Draining & Drywells	
Inspect	Monthly
Measure Silt & Remove	Yearly

* After significant rainstorm in addition to regular inspections. Inspections shall be within 3 days of significant rainfall.

INSPECTION LOG
Washington Avenue Efficiencies
Stormwater Management
Inspection & Maintenance Log

Date of Inspection: _____

Inspection by: _____

Purpose of Inspection: Monthly, Yearly, Significant Rainfall (circle one)

- Infiltration Basin

Description of Conditions:

Maintenance & Date of Repairs:

Sediment Inspection & Removal:

- Catchbasins

Description of Conditions:

Maintenance & Date of Repairs:

Sediment Inspection & Removal:

Inspector Signature

SOLID WASTE DISPOSAL

Washington Avenue Efficiencies will contract with a private hauler for removal of solid waste generated within the building. A waste management room is located on the first floor of the building and accessible from an exterior door along the south side of the building. The trash hauler will either back into the driveway off of Washington Avenue or park on the street. The hauler will wheel container units to the truck. These units will provide recycling and solid waste disposal. Pickup will occur twice each week.

Please refer to the trash demand analysis for estimated needs.

SNOW REMOVAL

Washington Avenue Efficiencies will contract with a snow plow company to maintain driveway and sidewalk access after snow storms. Snow can be piled near the catchbasin in the driveway, pushed over the wall ~~into the backyard~~ or, in extreme situations, hauled off site.

steps

Washington Ave TRASH ANALYSIS

The following analysis is based on MaineHousing guideline of 0.25 cubic yards per week per bedroom. Recycling based on experience of PineTree Waste and Avesta.

NEEDED TRASH CAPACITY

	Cubic Yards
# Bedrooms	18
times 0.25 cu. yd. per BR	4.5
TOTAL NEEDED (rounded up) without recycling program	5

NEEDED RECYCLE CAPACITY

Max 45% of trash volume	2.25
Max Recycling Capacity	2
Min 30% of trash volume	1.5
Minimum Recycling Capacity	2
Total Yards Trash with recycling	3

PROPOSED DUMPSTER CAPACITY

Weekly Collection

TRASH	4 yards
RECYCLING	2 yards
TOTAL CAPACITY	6 yards

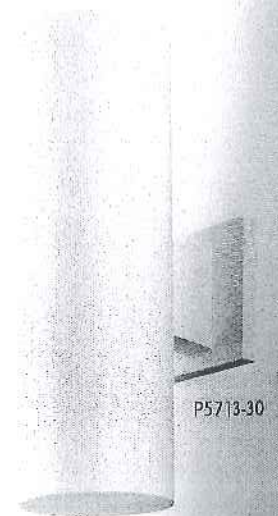
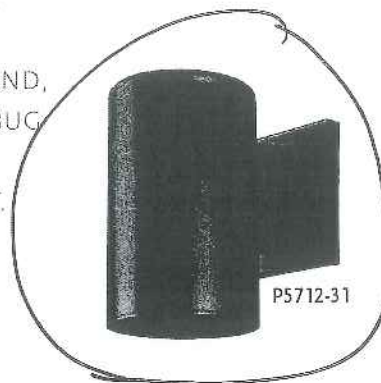
LIGHT FIXTURES

Building mounted lighting locations are identified on Sheet 2, Layout Plan. Fixture cut sheets are included in this submission. Recessed light fixtures are proposed within the canopy at the main entrance.

★ Polymeric Cylinders

SLEEK, CYLINDRICAL FORMS ESPECIALLY IDEAL FOR COASTAL LOCATIONS. UP OR DOWN CONFIGURATION OPTIONS. NON-CORROSIVE COMPONENTS WITHSTAND SALT, WIND, SAND, WATER AND SUN, DOWN VERSION SHIELDS PAR LAMP AND BUG LIGHTS TO MINIMIZE GLARE ONTO BEACH FOR TURTLE LAW COMPLIANCE. WET LOCATION LISTED. DARK SKY COMPLIANT.

Product No.	Finish	Description	Size	Lamp(s)
P5712-30	Textured White	One-light	5" W, 7-1/4" ht.	1 75w PAR-30
P5712-31	Black	polymeric cylinder	Extends 7-3/4"	or 65w BR-30
P5713-30	Textured White	Two-light	5" W, 14" ht.	2 75w PAR-30
P5713-31	Black	polymeric cylinder	Extends 7-3/4"	or 65w BR-30
P8712-30	Textured White	Turtle-friendly	5" dia., 4" ht.	n/a
P8712-31	Black	accessory		

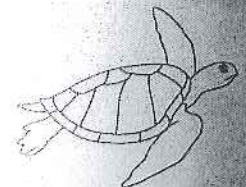
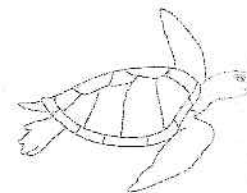
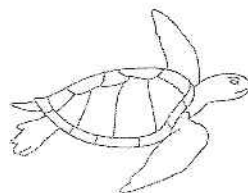
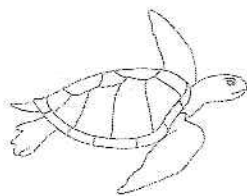
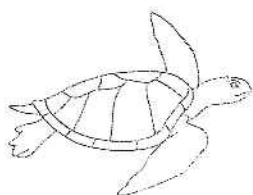


★ Sea Turtle Friendly

P8712-30 White
P8712-31 Black
Size: 5" dia., 4" ht.

Accessory provides additional shielding of the light source to achieve "turtle-friendly" illumination. Check with your local turtle enforcement official.

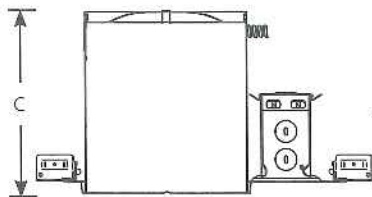
P8712-30
P8712-31



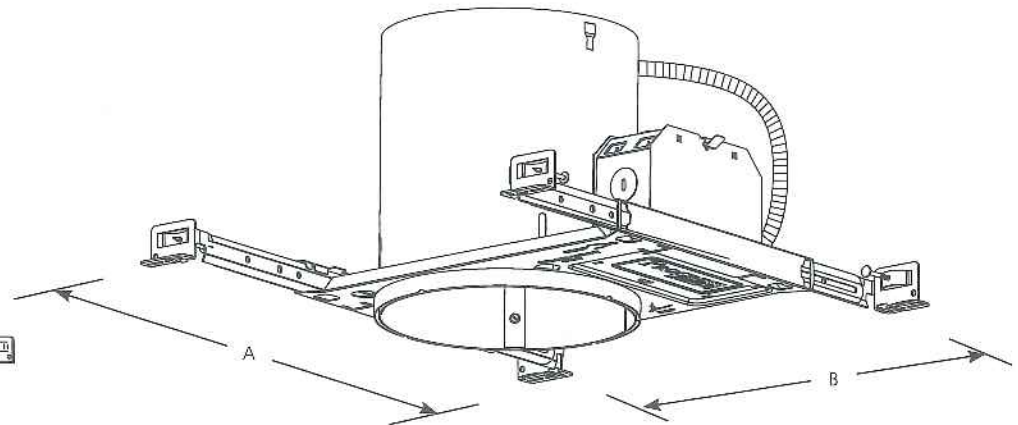
Type _____
P87-LED

Catalog No.	Lamping	Dimensions (Inches)		
		A	B	C
P87-LED	See Trim Specifications	7-7/8	10-3/4	7-1/4 Ceiling Opening 6-7/8

PROGRESS LED



Side view



The P87-LED IC rated, new construction recessed can is designed specifically for use with P8071 Series LED trims (purchased separately). The integral quick link connector provides electrical connection to the trim in place of a traditional Edison base socket. The P87-LED in conjunction with the P8071 series LED trims is a high efficacy luminaire compliant with California Title 24 requirements for recessed lighting. Marked for 15W maximum input power, the P87-LED is also a great option where lighting power densities limit allowable W/ft².

Title 24 Lighting

Specifications:

Wiring

- Universal junction box with snap-out sides
- Removable housing for field inspection of wiring
- Grounding pigtail
- Knockout free Romex clamps
- 1/2" & 3/4" Knock outs for rigid or BX fittings
- Pre-Installed wire quick connects
- Thru-branch wiring for #12 90° conductors (4 in/4 out)

Construction

- Housing adjusts for ceiling thickness from 1/2" to 1-1/2" thick
- Full wrap-around plaster frame
- Removable K.O. for remodel use (P8607-01 plaster frame clips also required)
- Galvanized steel construction
- Notched housing for chalkline alignment
- Quick connector allows easy electrical connection with trim

Bar Hangers

- Integral nail for wood joist construction
- Integral T-bar mounting clip
- Spans 24" T-bar for suspended ceilings
- Lock to secure housing
- Captive with joist adjustment tabs
- 90-degree mounting for tight spaces

Labeling/Compliance

- IC and Non-IC rated
- Performance tested to ASTM E283 Air Tight requirements, including IECC, CA Title 24 and Washington State Energy Codes
- UL-CUL listed for damp location and through branch wiring
- Approved for use in New York City per calendar #40330.
- Complies with California Title 24
- Labeled as 15w maximum input

Trim

- Trim-Lok® action forces trim to fit snugly against the ceiling
- P87-LED is designed for use with P8071 Series LED Trims (purchased separately)



LED

6" Open Trim
New Construction and Remodel
Wet Location

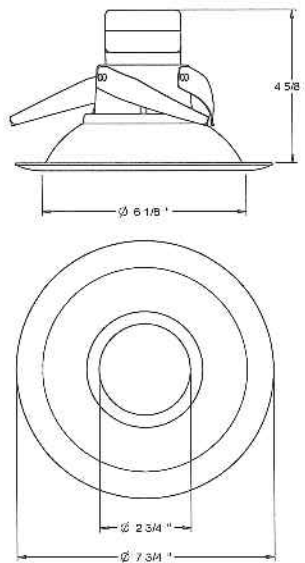
Recessed

Type _____

-28/30KSTR2
P8071

Finish

Catalog No	Finish				3000K LED	LED
	Antique Bronze	White	Black	Metalic Gray	Color Temp	Generation
P8071	-20	-28	-31	-82	30K	STR2



Lamp Wattage Housing

	IC	Non-IC
P86-TG	13.5w	13.5w
P87-AT	13.5w	13.5w
P87-ATQC	13.5w	13.5w
P87-LED	13.5w	13.5w
P186-TG	13.5w	13.5w
P187-TG	13.5w	13.5w
P821-FB	13.5w	13.5w
Competitive Housings*	13.5w	13.5w

*See Trim Compatibility Guide

The P8071 is ideal for use in both new construction as well as remodel/retrofit applications. Light output is comparable to that of typical downlight lamps providing up to 75% energy savings. The P8071 is equipped with both an Edison base adapter and quick link allowing easy installation in many standard incandescent cans, and also affording compliance to California title 24 and IECC lighting power density (w/ft²) requirements when used with the P87-LED housing (purchased separately).

Specifications:

Trim Assembly

- Frosted polycarbonate lens controls direct glare from the LEDs
- Easy "Push and Twist" installation with (3) friction spring clips.
- In addition to the Progress P87-AT, P87-ATQC, P87-LED, P187-TG, the P8071 is also UL classified for use with 6" housings made by Capri, Commercial Electric, Halo, Intense, Juno, Lithonia, Nora and WAC. See ProgressLED trim compatibility guide for a complete list of classified housings.

Lamping

- 5 LED (Light Emitting Diode) lamps included
- 13.5-watt input power
- Lumen output: 691 lumens. Absolute photometry conducted per LM-79 for solid state luminaires
- Lumen output and distribution comparable to a 65w BR30 incandescent lamp
- CRI is 80+ rivaling CFL
- 60,000 hours life based on 70% lumen maintenance (TM-21)

- Lamp contains no mercury
- Suitable for use in IC or NON-IC Applications with 25°C (77°F) continuous room side ambient temperature.

Electrical

- Class 2 driver, compliant to FCC 47CFR part 15 Class B, Class A noise rating, >0.90 Power Factor
- Trim comes with attached quick link for use with E26 Edison Base adapter whip (provided) or P87-LED housing (purchased separately)
- Flicker-free dimming to 15% with most standard incandescent dimmers (See Dimming Notes)

Labels

- cULus classified for wet locations

PROGRESS LED



lighting facts
LED Product Partner

Progress Lighting
701 Millennium Blvd.
Greenville, South Carolina
29607

www.progresslighting.com

Rev. 04/13

ELECTRICAL DATA P8071-28/30KSTR2

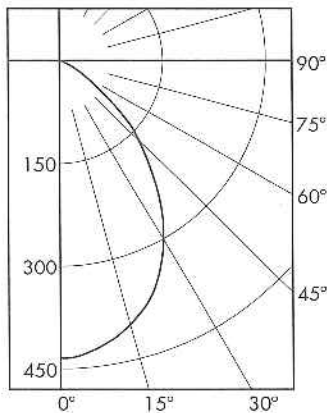
Input Voltage	120V
Input Frequency	43-63 Hz
Input Current	0.12A
Input Power	13.5W
Constant Current Output	700mA
Power Factor	>0.90
THD	<20%
EMI Filtering	FCC 47CFR Part 15, Class B
Operating Temperature	-30°C to 60°C
Dimming	Yes*
Over-voltage, over-current, short-circuit protected	
*See Dimming Notes for more information	

PERFORMANCE DATA CHART

Single Unit, Initial Footcandles, 30" Work Plane							Ceiling to Floor Height (ft)	Multiple Units, Initial Footcandles, 30" Work Plane				
Nadir		10°		20°		30°		Spacing is Maximum Over Work Plane, SMH = 1.1				
FC	FC	Dia (ft)	FC	Dia (ft)	FC	Dia (ft)		Fixture Spacing (ft)	RCR 2	RCR 5	RCR 7	
35	33	1	25	3	16	4	6	4.0	46	34	29	
14	13	2	10	4	6	6	8	6.0	19	14	12	
7	6	3	5	6	3	9	10.5	9.0	9	7	6	
5	4	3	3	7	2	11	12	10.0	6	5	4	

P8071-28/30KSTR2

LED Light Engine: 3000K 84 CRI
 System Wattage: 13.5
 Fixture delivered lumens: 691
 Fixture Efficacy: 51.1
 Spacing Criteria: 1.1



CANDELA DISTRIBUTION

DEG	CANDELA
0	434
5	429
15	398
25	339
35	250
45	162
55	72
65	24
75	6
85	3
90	1

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%LUMINAIRE
0-30	309	44.6%
0-40	467	67.5%
0-60	659	95.3%
0-90	691	100.0%

COEFFICIENTS OF UTILIZATION

Zonal Cavity Method

Room Cavity Ratio	% Effective Ceiling Cavity Reflectance									
	80%		70%		50%		30%			
	20% Effective Floor Cavity Reflectance									
	% Wall Reflectance									
	70	50	30	10	70	10	50	10	50	10
1	112	108	105	102	109	101	102	98	98	95
3	97	89	83	78	95	77	85	76	82	74
5	84	74	67	61	83	61	71	60	69	60
7	74	62	55	50	72	50	60	49	59	49
9	65	53	46	41	64	41	52	41	51	41

P8071-28/30KSTR2

Test No. 4659

Test No. 4659

Tested at 25°C Ambient in accordance to IESNA LM-79-2008

Tested in P87-AT housing

DIMMING NOTES:

ProgressLED integral driver is compatible with existing 2-wire dimming circuits and is designed to operate with most standard dimmers including incandescent 120V line voltage (forward phase-leading edge) dimmers as well as 120V electronic low voltage (ELV) (reverse phase-trailing edge) dimmers. Dimming capabilities will vary depending upon the dimmer control used.

A 120V Electronic Low Voltage (ELV) dimmer can typically operate a single LED unit and are recommended for use with P8071 Series.

Recommended Electronic Low Voltage Dimmers:

- Lutron Nova T Series (Part number NTELV-600)
- Lutron Faedra (Part Number FAELV-T00-XX)
- Leviton Acenti (Part Number ACE06-XXX)
- Leviton Vizia (Part Number VZE04)

Most incandescent line voltage dimmers have minimum load requirements of approximately 40W and may require multiple LED modules per control. (See dimmer control manufacturer's instructions for specific requirements.)

Recommended Incandescent Line Voltage Dimmers:

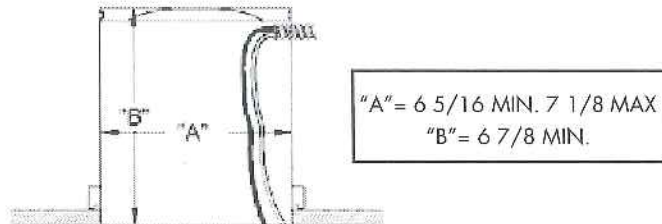
- Leviton, Illumitech Series (Part Numbers IPI06-XXX)
- Leviton, Trimatron Series (Part Numbers 6602-X, 6681-X, 6683-X, 6684-X, 700-X and 705-X)
- Leviton, SureSlide Series (Part Numbers 6631)
- Leviton, True Touch Series (Part Number 66061LM)
- Lutron Skylark Series (Part Number S-600, S2-LH)
- Cooper, Aspire Series (Part Numbers 9530XXX)

Digital dimmers are not compatible with Progress LED modules.

COMPATIBILITY OF 6" RECESSED HOUSINGS:

ProgressLED modules are UL/cUL classified for use with Progress and most competitive recessed cans (with "A" and "B" dimensions) including:

Progress	Lithonia
Capri	Lumapro
Commercial Electric	Luminaire
Elco	Nora
Emerald	Prescolite
Halo	Sea Gull
Intense	WAC
Jimway	
Juno	



NOTES

1. Operation in ambient temperatures higher than those specified will shorten life.
2. Warranty is limited to repair and replacement of defective parts of the LED system and does not include labor or installation. 5 year warranty requires product registration. Contact Technical Support for details.

