

90-A-A-1, 2+5
Peaks Island
512 Island Ave.
Peaks Isl. Fuel
~~LEITH IVERS~~



PORTLAND MAINE

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Penny St. Louis - Director of Planning and Urban Development

Marge Schmuckal, Zoning Administrator

512 Island Avenue, Peaks Island
90-AA-1, 2, 5 – IR-2/I-B Zone

August 18, 2011

The applicant, Mr. Ivers, is showing a vehicle parking lot for seven (7) vehicles located at 512 Island Avenue, Peaks Island. Currently a single family house is located on one portion of the lot. The proposed parking area will be located on another portion of the lot and has sufficient space to park four 2,800 gallon fuel trucks and three passenger-vehicle sized service vehicles. The vehicles are all to be actively used by Mr. Ivers in his heating and fuel oil business. The proposed parking area is shown entirely within the I-B zone.

Section 14-223(f) indicates that “off-street parking” is a permitted use in the I-B island business zone.

Section 14-331 defines “off-street parking” as parking “either by use of open-air spaces or by garage spaces which meet the standards set forth in the City of Portland Technical Manual, as hereafter amended....”

The above sections do not limit the allowable “off-street parking” to any particular type of vehicle or only allow parking as an accessory use. Instead, the I-B zone allows off-street parking as a specific permitted use and the definition makes clear that the parking spaces can either be open-air or garage spaces that meet the standards in the City’s Technical Manual. The proposed parking area is meeting the standards in the City’s Technical Manual. As a result, I have determined that the parking lot described in Mr. Iver’s application is permitted under the City Code.

It is important to note that I have reviewed the definition for a truck terminal. A “truck terminal” is defined in the City’s Land Use Zoning Ordinance as:

“a building and premises devoted to handling and temporary warehousing of goods, which may include facilities for the maintenance and repair (except body repairs, frame straightening and painting), fueling and storage of trucks or tractor-trailer combinations”.

Mr. Iver’s proposed parking lot is not a truck terminal. This is because his trucks are not warehoused or stored on the site. The trucks are also not filled, fueled and no product will dispensed on the site. Instead, the trucks are just parked on this site for active use as needed in Mr. Ivers’ propane and oil delivery business. The other vehicles that will be parked on the site are also for active use with Mr. Ivers’ heating repair business. Mr. Ivers’ business has been active through four generations and has garnered many clients on Peaks Island.

You have the right to appeal my decision. If you wish to exercise your right to appeal, you have thirty days from the date of this letter in which to appeal. If you should fail to do so, my decision is binding and not subject to appeal. Please contact this office for the necessary paperwork that is required to file an appeal.

Very truly yours,

Marge Schmuckal
Zoning Administrator

Cc: Penny St. Louis, Director of Planning and Urban Development
Alex Jaegerman, Division Director of Planning
Barbara Barhydt, Development Review Service Manager
Erick Giles, Planning
Danielle West-Chuhta, Corporation Counsel
Mike Murray, Island/Neighborhood Liaison



Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

1128

August 8, 2011

City of Portland Maine Planning Department
c/o Mr. Erick Giles, Planner
389 Congress Street
Portland, ME 04101-3509

**Site Alteration Application – Peaks Island Fuel
Island Avenue, Peak’s Island, Maine**

On behalf of Peaks Island Fuel, we are pleased to submit information pertaining to the Site Alteration Application for their new parking lot. The property is shown as Lots 1, 2 & 5 on the City of Portland Tax Map 90 and is located in the Island Residential 2 (IR2) & Island Business (IB) Districts. The proposed parking area and storage building are located entirely within the IB district.

The proposed improvements consist of an access drive, parking area and potential future 180 SF storage building. The 12' wide access drive will provide a single point of access from Island Ave. to the parking area. The parking area has space to park 4 - 2,800 gallon fuel trucks and three passenger-vehicle-sized service vehicles. The access drive and service vehicle parking will be gravel. The fuel trucks will be parked on a concrete pad.

This project does require a Spill Prevention, Control and Countermeasures Plan. We are working directly with the MDEP – Bureau of Remediation and Waste Management to finalize the details of that plan. We will forward the approved SPCC Plan under a separate cover. The influence of the SPCC Plan regulations can be readily seen on the site plan. As previously mentioned, the oil delivery trucks will be parked on a concrete pad. The pad will be surrounded on three sides by a water-tight curb dike. The Dike will serve as secondary containment for any spills or leaks from the oil trucks. Secondary containment measures need to be sized to contain a volume equal to the largest likely spill volume. In this case, where there is no transfer of materials from one tank to another – the most likely spills would be caused either from a leaky valve or from a leak in the delivery truck’s engine. The secondary containment provides a storage volume well in excess of the required amount.

Mohr & Seredin, Landscape Architects provided the landscaping plan. They also made key contributions to the site plan that will result in a more attractive site. Some key elements of their plan are as follows:

- A curved entrance drive will allow for trees and shrubs (to be planted on the inside of the curve) to block the view of the fuel trucks from Island Avenue.
- The storage building has been placed to block the view of the service vehicles from Island Ave. as well as partially blocking the view of the fuel trucks from those viewing the site from the south and west.

- A 6' high wooden fence will be added around the south and east sides of the delivery truck parking area.
- New trees, bushes and shrubs will be added to the site to beautify and screen the site from neighboring properties.
- Existing vegetation will be preserved as much as possible to provide mature screening. The lower end of the site will be preserved as a wooded buffer. This buffer will be used to filter storm-water runoff.

The applicant is not proposing any signage or lighting at this time.

The site plan standards call for a permanent paved service that is not subject to ponding. The access drive and service vehicle parking area are proposed to be gravel. Water will flow to a swale at the lower corner of the drive aisle that will drain to a ditch turnout buffer. Water will not pond in this portion of the parking area. The oil & propane delivery trucks will be parked on a curb-dike lined concrete pad as part of the site specific SPCC Plan. The pad has been designed to drain toward the 6"-7" high curb-dike. The dike will cause the water to pond to the full depth of the dike. The water within the dike will be inspected prior to release to ensure that no petroleum leakage has occurred. The dike/parking area will be drained via a threaded and capped PVC pipe. Both surfaces are stable and compact and will ultimately drain to a wooded buffer in the rear of the site. A paved parking lot would not provide any additional benefit in terms of functionality or quality of storm-water runoff.

We request a waiver of the following items:

- Bicycle parking – The parking lot is not for public use. There will be no vehicular or pedestrian traffic into the parking area except for employees of Peak's Island Fuel
- Typical driveway width – We are proposing a 12' wide access drive into the parking area. The smaller access drive is a key component of our efforts to better screen the parking area from the surrounding area. Additionally, a narrower entrance drive will help to increase the available buffer between the gravel surface and the adjacent abutter. At this time, Peak's Island Fuel only has one full time driver and one part time driver. There will not be opposing vehicles on the access drive at any time.

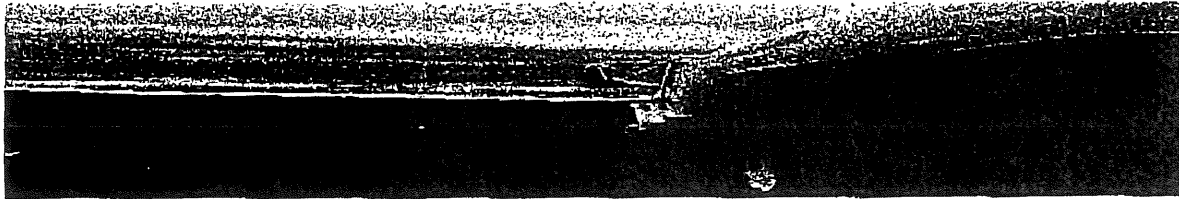
The following items are attached to this submittal:

- Civil Plan Set (including Site Plan, Grading & Erosion Control Plan and Construction Details)
- Landscaping Plan prepared by Mohr & Seregin, Landscape Architects
- Stormwater Management Report
- Agenda from the July 28th Peak's Island Council meeting where public meeting was held to discuss the project.
- Letters from Keith Ivers outlining both the public hearing process; specifics about the Peaks Island Fuel operations; as well as a waiver request and a further information on the use of the proposed parking area.

We hope that you find the enclosed information to be helpful in your review of this project. Please call me if you have any questions as you review the enclosed plans and information.

Sincerely,

Terradyn Consultants, LLC
JEFFREY D. AMOS
MA 10167
LICENSED PROFESSIONAL ENGINEER
Jeffrey D. Amos, P.E.

PEAKS ISLAND FUEL**P.O. BOX 104 PEAKS ISLAND, ME 04108****207-766-5700**

Mr. Giles,

This letter is to inform you of last weeks open meeting that was held at the Peaks Island Community Center. A public announcement was sent out through an email list that a large number of the Islanders are part of, it is also the same mailing list that has been used to circulate peoples opinions about my proposed site plan. This email list is what has been used by myself and the opposition since the very first day of the site review plan and that is why it was used to invite everyone to this public meeting.

The meeting was held on July 28th at 6:30 pm and it was put on by the Peaks Island Council. I have enclosed a copy of the email as it was sent out. I made one hundred (100) copies of the revised site plan and handed them out to everyone in the room and then I proceeded to the front of the room to explain in detail my ideas. I spent about half an hour explaining the plan and my situation in great detail to the packed room of sixty (60) plus people, after which the room was open to questions. Eighteen (18) people raised there hands and seventeen (17) were in support for the site plan. One person wasn't against it but would still like to see it elsewhere but had nothing other than asthetic concerns. A show of unanomouse support followed with applause and cheers and even a few tears. The council was unanimous in their support and made the comment that this was the largest crowd they had seen since the secession movement.

I am not a confrontational person by nature but that night I put my fears aside with hopes that certain neighbors, who have plagued my with opposition in every shape and form, would have questions loaded and I would be able to address them. Especially Fred O'Keefe who has said I haven't addressed all of my neighbors. At 6:15 pm he drove past me as I was leaving to head down to the meeting and I thought that he to was on his way, then another couple who has been brought up in opposition drove by as well. Not one of them or anyone else that has sent emails in opposition showed up that night. The council even stated that Mr. O'Keefe usually attends every council meeting. I was a little discouraged especially when I found out that playing cards at the local pub was more important to him than the concern he has for the neighborhood and his property values. But not to single him out, I was discouraged because the council was nice enough to change their agenda and to host this meeting and not one person that has shown opposition, aside from Mr. Haykal, thought the meeting was worth attending. I will give Mr. Haykal credit for showing up and speaking up and I'm glad he did. He has always been a good friend and I don't want to jepordize that but I have to look out for my family and what's right. I feel I have been

more than accomodating towards him and have spent over a thousand dollars having the plans changed over and over again in trying to make him happy but the plan we have now I feel is absolutly brilliant. Mr. Haykal is coming over for diner tonight and a resolution that works for us both will be reached.

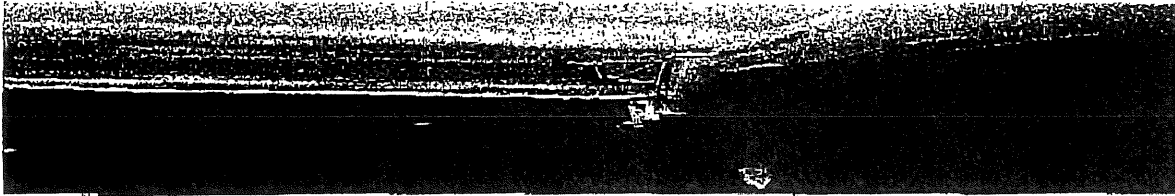
My Engineer has worked around the clock on this and he has done a fantastic job to say the least. The final touches were added by the generous donation from my fellow islanders of Mohr & Seredin Landscape Architects, Inc., along with a lot of input from neighbors and other islanders.

If you have any further questions about this public meeting please contact me. Thank you.

Best Regards,

A handwritten signature in black ink, appearing to read 'Keith Ivers', with a stylized flourish at the end.

Keith Ivers

PEAKS ISLAND FUEL**P.O. BOX 104 DEAKS ISLAND, ME 04108****207-766-5700**

Dear Mr. Giles:

Thank you for your time and consideration of my proposed 4,200 square foot parking area. The area will be used for parking of my fuel oil trucks which hold up to 2,800 gallons of fuel and up to three smaller service vehicles. I currently own four oil trucks but one of which is up for sale and will not be parked on the lot, I also would have one propane truck parked on the lot making a total of three fuel oil trucks and one propane truck. The service vehicles include a single rear wheel service van, service pick up and service flat bed truck none of which store any fuel oil in or on them. As a small business I would be responsible for the management of the lot and as I have only one seasonal driver, who is also a family member, and the lot will be for business use only. The majority of my business takes place from October thru April and that is when the fuel trucks will be on the road the most but no more then they currently are. During the summer months the oil trucks are on the street less than eight hours or one day a week and the same goes for the propane truck. When a fuel truck leaves the lot it is out for the day and only comes back when the deliveries are done and then will be parked so there will not be traffic in and out of the lot all day. My normal operating hours are from eight to five Monday through Friday.

Currently I park the trucks in rented space on Welch St., just above where the boat docks. It is the busiest and most congested street on the island not only in the summer but year round as well. There is no security for my trucks and the lot is often used by the public which not only creates an unsafe situation but it makes it very difficult of operate my business efficiently. Unlike the proposed use of my property, the lot I use now is much closer to the water and it is also a steep grade to the ocean which not only makes it difficult and unsafe in the winter but if a spill was ever to happen it would be much tougher to contain. In the fourteen years I have been with the company there has never been an accident with a vehicle or a fuel spill. On any given day there are thousands of people up and down Welch St. and the front of the island and it would be much safer to have the trucks away from the traffic and down at my own residence. Whether I am pulling out of Welch St. to go to work or if I leave from my own house I am going to and have been traveling past the proposed parking area so there will be no increase in traffic of the area it will simply be where the day ends for the trucks. For the past two years that I have lived at the residence I always drive one of the vehicles home after work and it is parked in front of my house, as there is no off street parking. It is parked there each night until I leave for work in the morning and I have had no problems or complaints so the only difference will be that the trucks will

be off the street and out of the way and out of sight. The original plan had shown two drive ways but if a waiver could be granted I would rather only have one drive way coming in from Island Ave and not access Trefethren St. The trucks would be secure on my lot and as the landscape plans show it will be near impossible for them to be seen and natural screening using trees and shrubs will keep noise down as well. The addition of a naturally raised berm with trees and shrubs planted on top will give added height to the vegetation and create better screening. Also adding trees and or shrubs along the south side of the parking area would block view of the lot when traveling down Island Ave towards Trefethren and from the neighbors up on Island Ave, and Oak Lawn.

I understand that change is tough for everyone and that is why I am committed to making sure every safety precaution is taken and making sure the entire site will become something people come to admire. Honestly, the people in opposition of the project have never seen one set of plans, I have offered and been met with resistance each time. Finally I am having an open meeting in hopes that something constructive can come from it and I can hopefully get some positive feedback from the opposition. I have had nothing but total support from hundreds of people out here, some living directly next door and across the street from me and the proposed sight. Why would I want to build something that was unsafe, ugly and a nuisance to everyone when my family and I are going to be living on the same piece of land? Financially it is the only choice, I currently spend over \$10,000.00 a year to rent the 30' by 50' lot that I am also required to maintain. I feel I'm held captive as it is the only commercially zoned space large enough to house my trucks but it is unsecure and my equipment is treated with total disrespect daily and especially each weekend as I am in the same lot that is used for Reggae Sunday all summer long.

I hope this answers your questions and concerns about my project. All in all it is a small site alteration and all I want to do is park my vehicles in a safe place that I own and this is the only chance I am going to have to be able to do so. Currently there is nothing for sale on the Island that is business zoned and even when there was the least expensive property was over \$500,000. Lastly, I have been in the house for two years and have been bringing these vehicles back and forth daily for work without a single complaint, now I want to move them out of sight when I'm done work and I am met with resistance?

If you have any further questions on the operation of my business please ask as I am always available to talk about this matter. Thank you for your time and consideration.

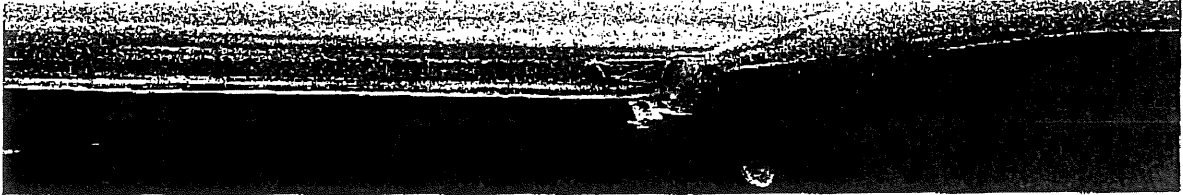
Best Regards,



Keith Ivers

Owner/President of Peaks Island Fuel

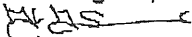
PEAKS ISLAND FUEL
P.O. BOX 104 PEAKS ISLAND, ME 04108
207-766-5700



Dear Mr. Giles,

This letter is in request for a waiver of the two (2) bicycle spaces required for every zero (0) to ten (10) parking spaces found under 14-526 (a) 4 (b) ii. The seven (7) spaces I have requested are strictly for private use as is the whole lot and in no way will allow for public bicycle access. Thank you for your consideration.

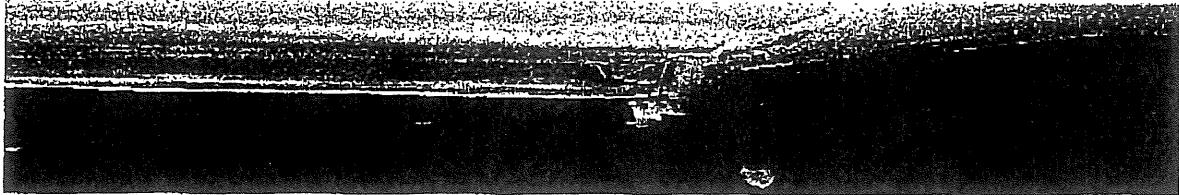
Best Regards,


Keith Ivers

PEAKS ISLAND FUEL

P.O. BOX 104 PEAKS ISLAND, ME 04108

207-766-5700



Dear Marge,

I have read and reviewed sections 14-339, 14-340 and 14-341 in order to supply you with further information on the use of the proposed parking area at 512 Island Ave.

In regards to section 14-339, since the proposed lot is for (7) spaces but does not allow for any of the vehicles to be parked within ten (10) feet of any street line in any direction. The parking lot itself will not abut a residential zone or a lot in residential use but the I-B zone that the proposed lot will be on does on the South side of the lot where it abuts my residence and on the East side where it abuts Mr. Haykals lot. As shown on the plans a sapling fence will extend between the proposed parking area and the abutting lots. The sapling fence will be no less than forty-eight inches in height and well maintained by Peaks Island Fuel. I have a very reputable and local landscape architect who has prepared the landscape plans for me.

In regards to section 14-340, since the proposed parking area is for seven (7) spaces I have taken into consideration for the following: there are no public sidewalks that will need to be crossed. The plans show the appropriate area that the lot will allow for maneuvering the vehicles on the proposed lot and where the driveway from the lot to the street will be. No artificial lighting will be installed on the lot. And the surface of the lot and its construction are all detailed on the refined engineering plans which also show the landscaping additions.

In regards to section 14-341, since the proposed parking area is for seven (7) spaces the aisle area for access to these spaces will be from one side and in excess of the total vehicle length to be parked there. These dimensions can be seen on the engineering plan as well.

I hope this answers your questions so you can make a determination on zoning compliance for the proposed lot. This lot is strictly for private use by my business and I hope that if you have any further questions you will let me know. I have provided you with answers that were carefully thought out and researched as my families home is on the line for this project. Thank you again for all your help and understanding on this project.

Best regards,


Keith Ivers

From: Peggie Peretti <peggieperetti@hotmail.com>
To: joyce doane <jed364pi@aol.com>
Subject: FW: Peaks Island Council meeting, Thursday, 6:30 pm
Date: Wed, Jul 27, 2011 8:25 pm

Subject: Fwd: Peaks Island Council meeting, Thursday, 6:30 pm
From: choppin@aol.com
Date: Wed, 27 Jul 2011 16:42:51 -0400

—Original Message—

From: Rusty Foster <rusty@kuro5hin.org>
To: Carol I. Eisenberg <CEisenberg@nwl.com>; Chris Hoppin <CHOPPIN@aol.com>
Sent: Wed, Jul 27, 2011 12:24 pm
Subject: PI Lists: Peaks Island Council meeting, Thursday, 6:30 pm

**Tomorrow night (Thursday, not Wednesday),
July 28th, 6:30 pm
The Community Center**

**The Peaks Island Council
will meet**

To be discussed:

~ The application by Peaks Island Fuel to build a parking lot on commercially zoned property near the TEIA club, and the subsequent harassment of Keith Ivers and his family by a small group of opponents to this plan

~ Progress on the sewer inspection, repair, and extension plans

~ Report on Island Transportation Fund expenditures, including the monthly and annual pass discounts, which are now officially in effect

~ A report on what we currently know about public beach

access laws

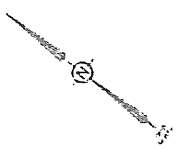
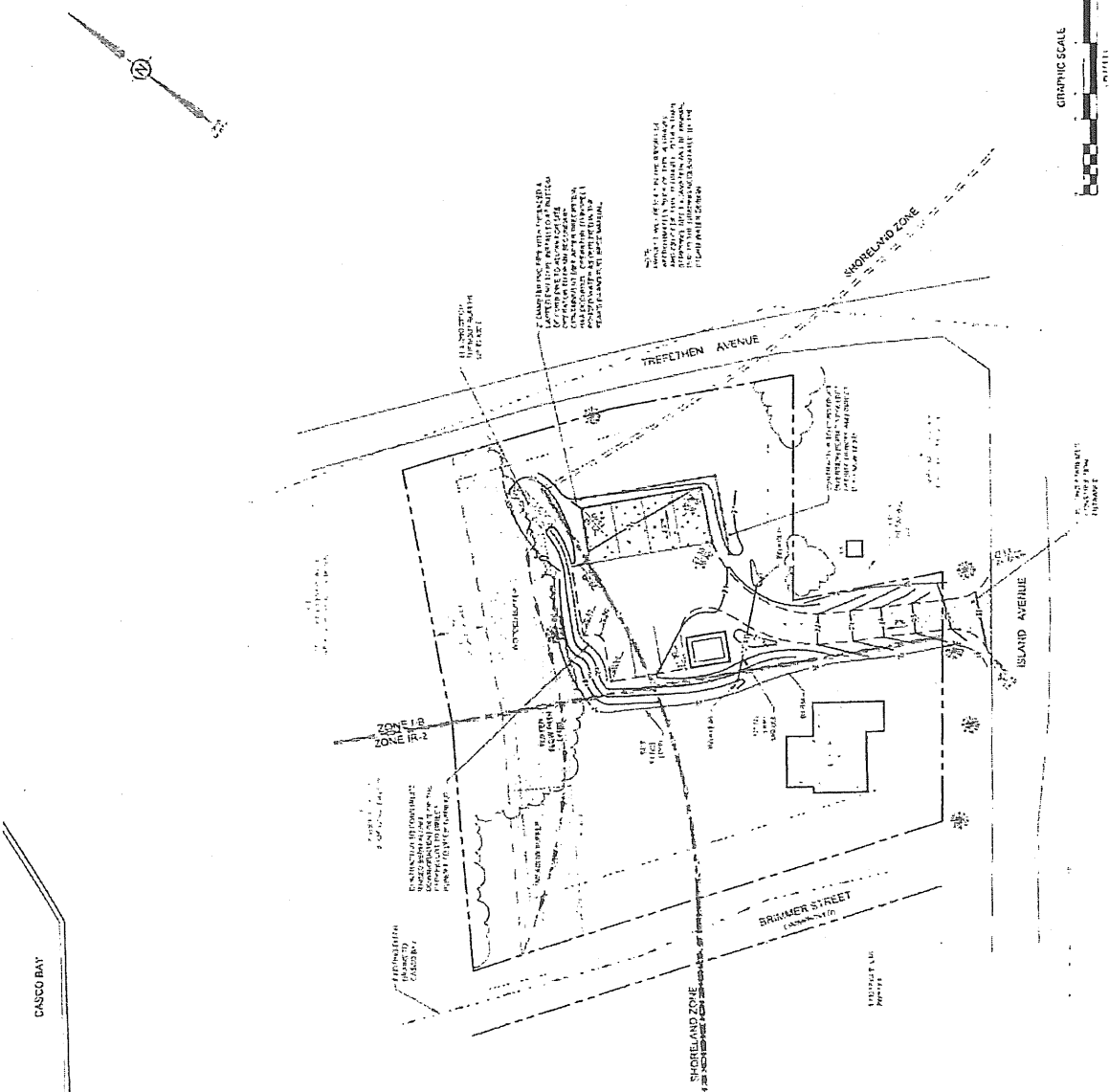
~ And a mention, at least, of what the deal is with the airport approach routing, or at least when we will have more clarity on that.

Do join us. It'll be a hootenanny.



NO.	DATE	REVISION

PROJECT NO.	115-018
PROJECT NAME	PEAKS ISLAND FUEL GRADING & EROSION CONTROL PLAN
PREPARED BY	TERRADYN CONSULTANTS, LLC
DATE	05/20/11



CONSTRUCTION NOTES

1. All work shall be in accordance with the applicable codes and regulations.
2. The site shall be graded and compacted to meet the design requirements.
3. Erosion control measures shall be installed and maintained throughout the construction process.
4. The contractor shall maintain access to all utility lines and easements.
5. The contractor shall maintain the stability of the existing structures.
6. The contractor shall maintain the integrity of the existing soil.
7. The contractor shall maintain the integrity of the existing vegetation.
8. The contractor shall maintain the integrity of the existing shoreland zone.
9. The contractor shall maintain the integrity of the existing drainage system.
10. The contractor shall maintain the integrity of the existing grading.
11. The contractor shall maintain the integrity of the existing erosion control measures.
12. The contractor shall maintain the integrity of the existing structures.
13. The contractor shall maintain the integrity of the existing infrastructure.
14. The contractor shall maintain the integrity of the existing site.
15. The contractor shall maintain the integrity of the existing plan.
16. The contractor shall maintain the integrity of the existing work.
17. The contractor shall maintain the integrity of the existing project.
18. The contractor shall maintain the integrity of the existing drawing.
19. The contractor shall maintain the integrity of the existing document.
20. The contractor shall maintain the integrity of the existing record.
21. The contractor shall maintain the integrity of the existing file.
22. The contractor shall maintain the integrity of the existing folder.
23. The contractor shall maintain the integrity of the existing drive.
24. The contractor shall maintain the integrity of the existing network.
25. The contractor shall maintain the integrity of the existing system.
26. The contractor shall maintain the integrity of the existing environment.
27. The contractor shall maintain the integrity of the existing community.
28. The contractor shall maintain the integrity of the existing society.
29. The contractor shall maintain the integrity of the existing culture.
30. The contractor shall maintain the integrity of the existing values.
31. The contractor shall maintain the integrity of the existing beliefs.
32. The contractor shall maintain the integrity of the existing attitudes.
33. The contractor shall maintain the integrity of the existing behaviors.
34. The contractor shall maintain the integrity of the existing actions.
35. The contractor shall maintain the integrity of the existing results.
36. The contractor shall maintain the integrity of the existing outcomes.
37. The contractor shall maintain the integrity of the existing impacts.
38. The contractor shall maintain the integrity of the existing effects.
39. The contractor shall maintain the integrity of the existing consequences.
40. The contractor shall maintain the integrity of the existing legacy.

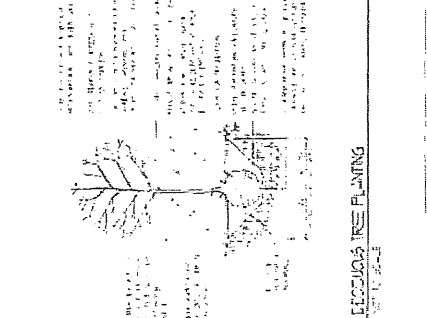
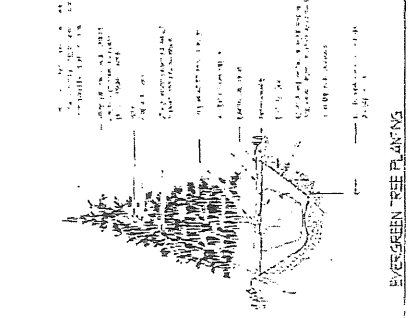
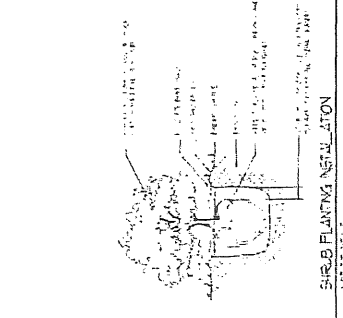
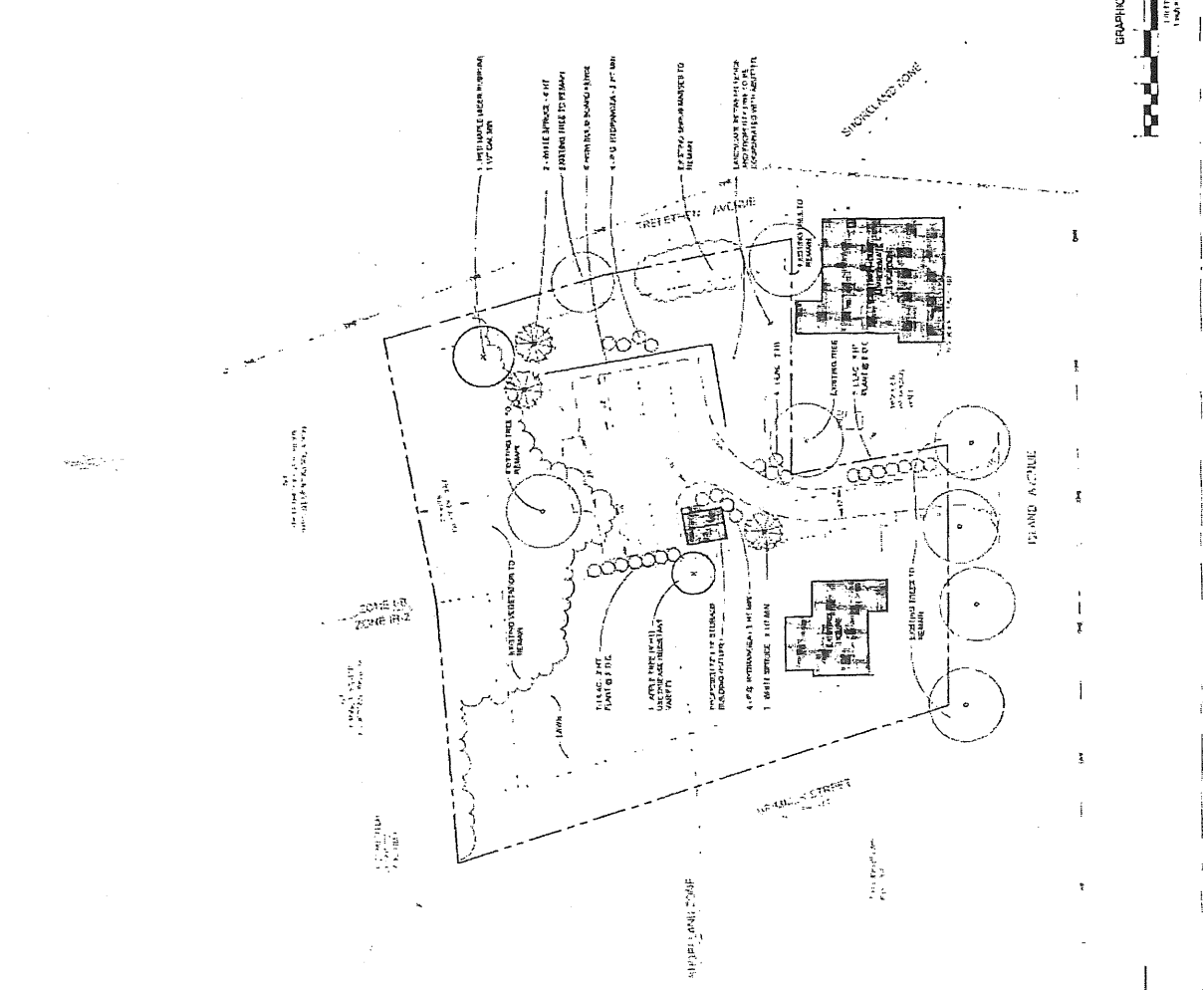
LEGEND


EXISTING PROPERTY LINE	(Symbol)
PROPOSED PROPERTY LINE	(Symbol)
EXISTING DRIVEWAY	(Symbol)
PROPOSED DRIVEWAY	(Symbol)
EXISTING SIDEWALK	(Symbol)
PROPOSED SIDEWALK	(Symbol)
EXISTING CURB	(Symbol)
PROPOSED CURB	(Symbol)
EXISTING EROSION CONTROL MEASURE	(Symbol)
PROPOSED EROSION CONTROL MEASURE	(Symbol)
EXISTING GRADING	(Symbol)
PROPOSED GRADING	(Symbol)
EXISTING SHORELAND ZONE	(Symbol)
PROPOSED SHORELAND ZONE	(Symbol)

NO.	DATE	DESCRIPTION
1	11/11/11	PRELIMINARY LAYOUT
2	12/15/11	REVISIONS

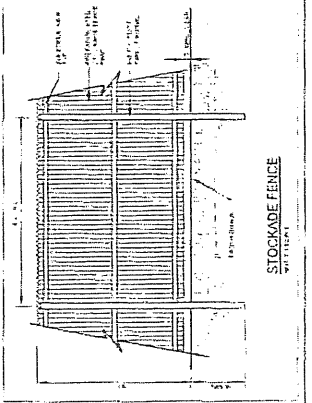
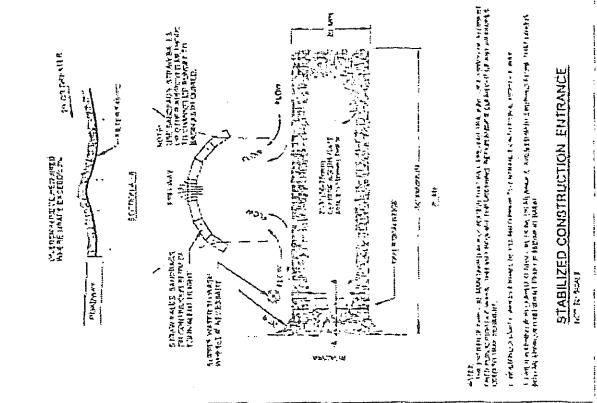
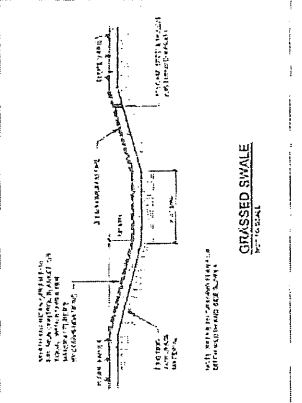
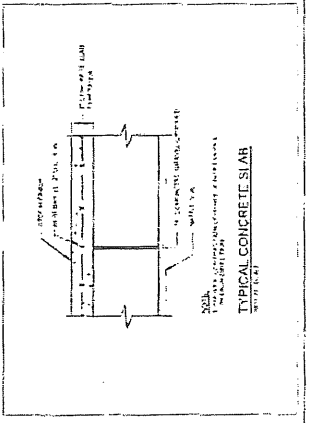
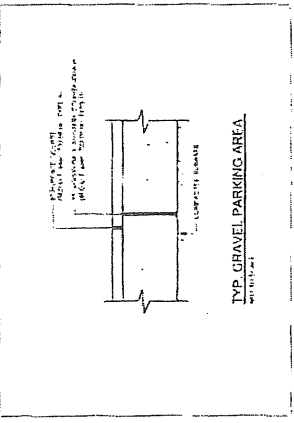
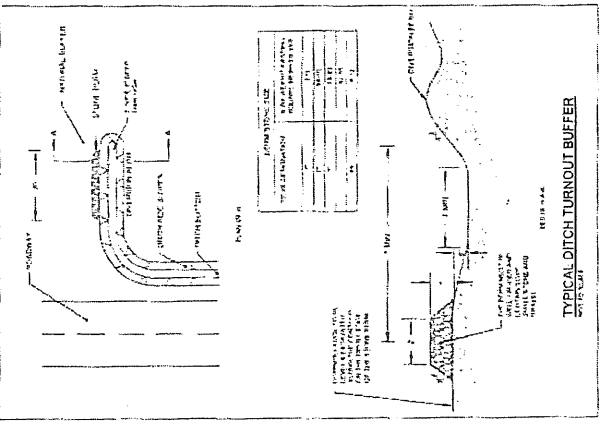
TERADYN CONSULTANTS, LLC
 1112 P.O. Box 133
 High Cholesterol, MO 63046
 Tel: 636.795.1112
 Fax: 636.795.1117
 www.teradynconsultants.com

SHEET NO. 133
 PEAKS ISLAND FUEL
 LANDSCAPE PLAN
 SCALE: 1"=10'-0"
 DATE: 11/11/11



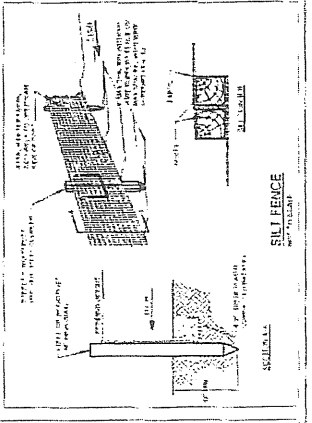
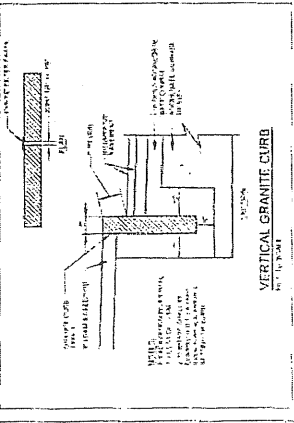
	PEAKS ISLAND FUEL DETAILS & NOTES PEAKS ISLAND FUEL	SHEET NO. 4	TOTAL SHEETS 4
		DATE: 12/1/17	PROJECT NO. 17-001

TERRADYN CONSULTANTS, LLC
 101 E. GAITHERSBURG ROAD
 GAITHERSBURG, MD 20878
 TEL: 410-486-1500
 FAX: 410-486-1517
 WWW.TERRADYN.COM



EROSION AND SEDIMENT CONTROL PLAN
 The purpose of this plan is to provide for the control of erosion and sedimentation during the construction of the project. The plan shall be in accordance with the requirements of the State of Maryland Department of the Environment.

1. The plan shall be prepared by a professional engineer or a professional geologist licensed in the State of Maryland.
2. The plan shall be submitted to the State of Maryland Department of the Environment for review and approval.
3. The plan shall be revised as necessary to reflect changes in the project or to comply with the requirements of the State of Maryland Department of the Environment.
4. The plan shall be maintained throughout the construction of the project.
5. The plan shall be updated as necessary to reflect changes in the project or to comply with the requirements of the State of Maryland Department of the Environment.
6. The plan shall be submitted to the State of Maryland Department of the Environment for review and approval.
7. The plan shall be revised as necessary to reflect changes in the project or to comply with the requirements of the State of Maryland Department of the Environment.
8. The plan shall be maintained throughout the construction of the project.
9. The plan shall be updated as necessary to reflect changes in the project or to comply with the requirements of the State of Maryland Department of the Environment.
10. The plan shall be submitted to the State of Maryland Department of the Environment for review and approval.



The purpose of this plan is to provide for the control of erosion and sedimentation during the construction of the project. The plan shall be in accordance with the requirements of the State of Maryland Department of the Environment.

1. The plan shall be prepared by a professional engineer or a professional geologist licensed in the State of Maryland.
2. The plan shall be submitted to the State of Maryland Department of the Environment for review and approval.
3. The plan shall be revised as necessary to reflect changes in the project or to comply with the requirements of the State of Maryland Department of the Environment.
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10. The plan shall be submitted to the State of Maryland Department of the Environment for review and approval.



Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

STORMWATER MANAGEMENT PLAN

Peak's Island Fuel Peak's Island, Maine

The following Stormwater Management Plan has been prepared for Peak's Island Fuel to evaluate stormwater runoff and erosion control for the proposed parking lot and future storage building to be located off Island Avenue in Peak's Island, Maine.

Site Calculations

Total Property Area	0.78 Ac (+/-) (34,171 SF)
Total New Impervious Area	0.11 Ac (4,907 SF)
Total Disturbed Area	0.28 Ac (12,500 SF)

Existing Conditions

The development property is approximately 0.78 AC and contains a single family home, a lawn and is wooded in the rear of the property. The lower end of the site is between 150'-200' away from Casco Bay and has frontage on the north side of Island Avenue, the west side of Trefethen Avenue and the east side of the unimproved Brimmer Street right-of-way. The property surrounds a small single family house lot that is located on the northwest corner of the Island Avenue/Trefethen Avenue intersection.

The property generally drains from a high point at the Island Avenue/Trefethen Avenue intersection to the lowpoint in the northwest corner of the lot. The top half of the lot contains slopes that are generally between 8%-10%. The lower half is generally between 3%-5%. The property drains to a ditch that runs down the Brimmer Street right-of-way and flows into Casco Bay. A copy of the U.S.G.S. Quadrangle Map (Portland East) is attached to this submittal.

Proposed Development

Peak's Island Fuel is proposing to add a parking lot, gravel access drive, future storage building and landscaping to the property. The new parking lot will be able to fit 4 – 2,800 gallon fuel trucks as well as 3 passenger-car-sized service vehicles. The drive aisle has been sized to allow for easy maneuverability. The fuel trucks will be parked on a curb-lined concrete pad. The curbing joints will be grouted to provide a watertight seal and the pad will serve as secondary containment dike for any potential fuel leaks. The containment area will be drained via a threaded 2" pvc pipe. The containment dike offers enough storage to fully contain all small storm events. The gravel parking area and access drive will drain to a new ditch turnout level spreader/buffer area. The runoff from the neighboring residence as well as portions of Island Avenue will be intercepted

by a 12" pipe in order to limit the size of the watershed that will drain to the level spreader/buffer system.

Flooding

The development area is not located within an area of flood hazard according to the Federal Insurance Rate Map 230051 0015 B. See attached map.

Water Quantity

We are requesting a waiver of the flooding standards. We believe this waiver to be appropriate due to the close proximity of Casco Bay (approximately 150' downstream of the site) as well as the design of the proposed stormwater management system.

Although we propose to provide no formal peak flow rate calculations, we believe that the proposed stormwater management system is not likely to cause an increase in the peak flow rate when compared to the existing condition. Nearly all of the new parking area will be collected and directed to a ditch turnout buffer. The buffer contains the gentlest slopes on the entire property and is located on the only wooded portion of the site. The time of concentration for the existing property would be over 150' of lawn area with an average slope of approximately 10%. This would equate to a Tc=7.4 minutes. The developed area will be routed through a 150' wooded buffer with an average slope of approximately 5%. This would equate to a Tc=37 minutes. The increase in the Tc would result in smaller peak flows. Furthermore, the concrete slab contains a water-tight curb along the down gradient side that will store a significant amount of runoff – thereby further reducing the post development flow rate.

Onsite Soils

The soils were delineated from the Cumberland County Medium Intensity Soil Survey, as shown (See attached map). The soil survey reports the onsite soils are as summarized below:

A copy of the Medium Intensity Soil Survey has been included with this submittal.

Soil Type Summary Table		
Soil Symbol	Soil Name	HSG
BuB	Buxton	D
HIC	Hinkley	A
HrC	Hollis	C/D
W	Water	

Water Quality (BMP Standard)

Best Management Practices (BMPs) will be implemented to reduce the impacts of the proposed site development on downstream water quality. A ditch turnout level spreader/buffer has been designed to provide the necessary water quality treatment. The impervious and disturbed treatment percentages are detailed below:

New Impervious Area: Approximately 4,907 SF of new impervious area will be created. According to our calculations, 4,767 SF of new impervious area and 268 SF of existing impervious area will flow to the ditch turnout buffer. Taking 50% credit for the treatment of the existing impervious area leaves us with:

$$[4,767 + (268/2)] / 4,907 = 4,901 / 4,907 = 0.9987$$

% of Treatment of the New Impervious Area = 99.9% (95% required)

Project Developed Area: The existing project area is currently developed as lawn. For the purpose of these calculations the developed area is assumed to be the area required to build the access drive, parking area and future storage building plus the lawn area required to match into existing ground at a 3:1 slope. (Note: the total disturbed area encircled all of the potential landscaped areas located along Trefethen Avenue.) Approximately 8,863 SF of developed area will be created including 4,907 SF of new impervious area and 3,956 SF of grassed area. According to our calculations, 8,226 SF of disturbed area will flow the ditch turnout level spreader/buffer. $8,226 / 8,863 = 0.928$

% of Treatment of the Disturbed Area = 92.8% (80% required)
--

Housekeeping and Maintenance & Inspection guidelines are attached to this report.

Level Spreader/Buffer Sizing

Ditch Turnout Buffer:

Development Type	
Impervious	5,035 SF
Pervious	3,191 SF

Required Berm length for a forested buffer (from Table 5-4 of BMP Manual) for Soil Group D non wetland:

Per acre of impervious area: 150'
Per acre of lawn: 45'

$$L = (5,035 / 43,560) \times 150' + (3,191 / 43,560) \times 45'$$

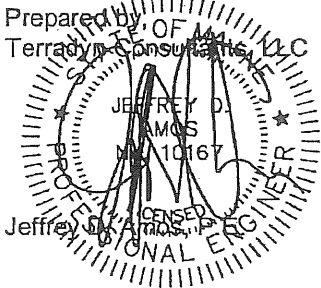
$$L = (0.116)(150) + (0.073)(45) = 17.4' + 3.3' = 20.7'$$

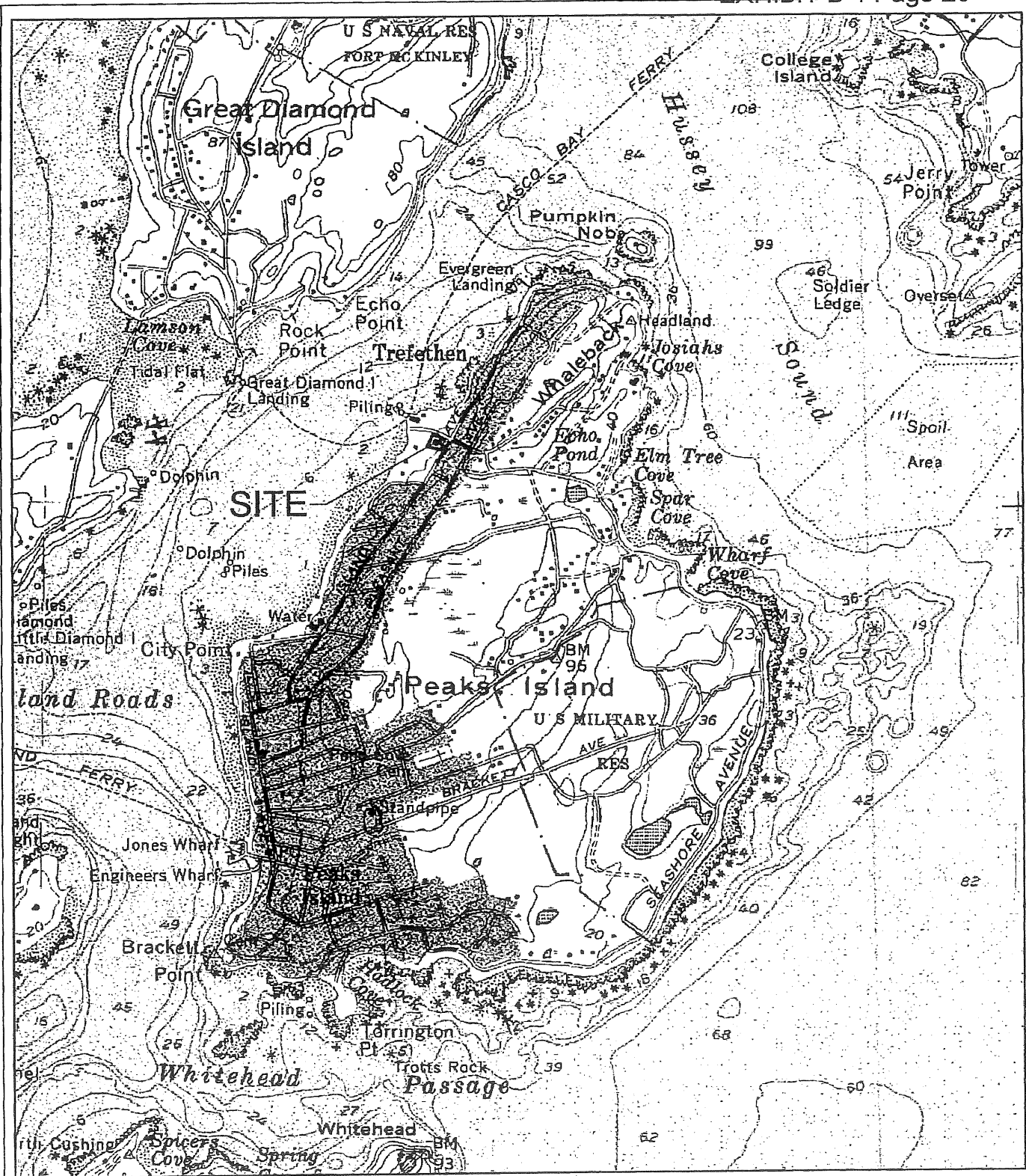
Required Length=20.7'
Proposed Length=21'

Required Length of Flow Path through Buffer = 150' (from Table 5-4 of BMP Manual)
Flow Path Provided = 180'

Summary

Based on the results of this evaluation, the proposed stormwater design is not expected to cause flooding, erosion or other significant adverse effects downstream of the site.





SHEET DESCRIPTION
 U.S.G.S. QUADRANGLE MAP
 PORTLAND EAST
 PREPARED FOR
 PEAK'S ISLAND FUEL
 P.O. BOX 6
 PEAK'S ISLAND, MAINE 04108



TERRADYN
CONSULTANTS, LLC

Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

P.O. Box 329
 111 Elderberry Lane
 New Gloucester, ME 04260
 Office: (207) 926-5111
 Fax: (207) 221-1317
www.terradynconsultants.com

JOB NO.	1128	SHEET
DATE	7/28/11	1
SCALE	1"=2,000'	OF
		1

Hydrologic Soil Group—Cumberland County and Part of Oxford County, Maine
(Peak's Island Fuel)



Hydrologic Soil Group—Cumberland County and Part of Oxford County, Maine
(Peak's Island Fuel)

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Political Features

Cities

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

MAP INFORMATION

Map Scale: 1:1,490 if printed on A size (8.5" x 11") sheet.

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 accurate map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>

Coordinate System: UTM Zone 19N NAD83

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 7, Jan 8, 2009

Date(s) aerial images were photographed: Data not available.

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.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Cumberland County and Part of Oxford County, Maine (ME005)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BuB	Buxton silt loam, 3 to 8 percent slopes	D	3.1	57.7%
HIC	Hinckley gravelly sandy loam, 8 to 15 percent slopes	A	0.7	12.6%
HrC	Hollis fine sandy loam, 8 to 15 percent slopes	C/D	1.4	26.5%
W	Water		0.2	3.2%
Totals for Area of Interest			5.4	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

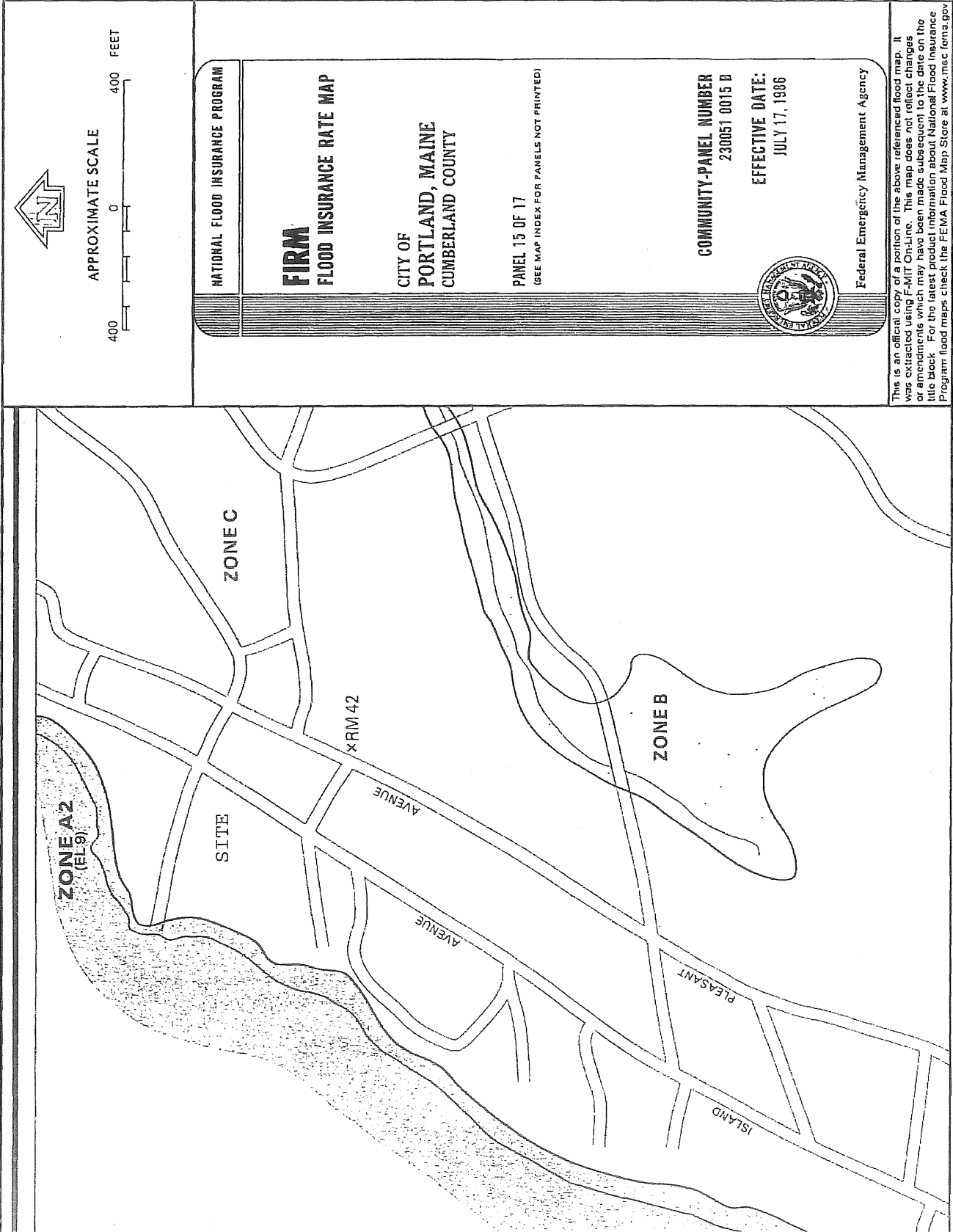
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



**MAINTENANCE PLAN OF STORMWATER MANAGEMENT FACILITIES
FOR:
Peak's Island Fuel
Peak's Island Fuel, Maine**

Land Owner: Mr. Keith Ivers

Project Developer: Mr. Keith Ivers / Peak's Island Fuel
P.O. Box 6
Peak's Island Fuel, ME 04108

Responsible Party: Peak's Island Fuel

List of Stormwater Measures:

Vegetated Areas
Conveyance & Distribution System (Stormwater Channels & Culverts)
Level Spreaders
Buffers

Inspection & Maintenance Tasks:

Although not required by the MDEP Chapter 500 or the City of Portland stormwater regulations, we recommend that the project developer follow the following inspection and maintenance guidelines.

Conveyance & Distribution Systems: (Stormwater Channels & Culverts, etc.)

1. Mowing: Grass should not be trimmed extremely short, as this will reduce the filtering effect of the swale (MPCA, 1989). The cut vegetation should be removed to prevent the decaying organic litter from adding pollutants to the discharge from the swale. The mowed height of the grass should be 2-4 inches taller than the maximum flow depth of the design water quality storm. A minimum mow height of 6 inches is generally recommended (Galli, 1993).

2. Routine Maintenance and Inspection: The area should be inspected for failures following heavy rainfall and repaired as necessary for newly formed channels or gullies, reseeding/sodding of bare spots, removal of trash, leaves and/or accumulated sediments, the control of woody or other undesirable vegetation and to check the condition and integrity of the check dams.

3. Aeration: The buffer strip may require periodic mechanical aeration to restore infiltration capacity. This aeration must be done during a time when the area can be reseeded and mulched prior to any significant rainfall.

4. Erosion: It is important to install erosion and sediment control measures to stabilize this area as soon as possible and to retain any organic matter in the bottom of the trench.

5. Fertilization: Routine fertilization and/or use of pesticides is strongly discouraged. If complete re-seeding is necessary, half the original recommended rate of fertilizer should be applied with a full rate of seed.

6. Sediment Removal: The level of sediment deposition in the channel should be monitored regularly, and removed from grassed channels before permanent damage is done to the

grassed vegetation, or if infiltration times are longer than 12 hours. Sediment should be removed from riprap channels when it reduces the capacity of the channel.

Level Spreaders:

Long term maintenance of the level spreader is essential to ensure its continued effectiveness. The following provisions should be followed. In the first year the level spreader should be inspected semi annually and following major storm events for any signs of channelization and should be immediately repaired. After the first year, annual inspection should be sufficient. Vegetated level spreaders may require periodic mowing. Spreaders constructed of wood, asphalt, stone or concrete curbing also require periodic inspection to check for damage and to be repaired as needed.

1. Inspections: At least once a year, the level spreader pool should be inspected for sand accumulation and debris that may reduce its capacity.

2. Maintenance Access: Level spreaders should be sited to provide easy access for removal of accumulated sediment and rehabilitation of the berm.

3. Sediment Removal: Sediment build-up within the swale should be removed when it has accumulated to approximately 25% of design volume or channel capacity. Dispose of the sediments appropriately.

4. Debris: As needed remove debris such as leaf litter, branches and tree growth from the spreader.

5. Mowing: Vegetated spreaders may require mowing.

6. Snow Storage: Do not store snow removed from the street and parking lot within the area of the level spreader.

7. Level Spreader Replacement: The reconstruction of the level spreader may be necessary when sheet flow from the spreader becomes channeled into the buffer.

Buffers:

1. Inspect resource and treatment buffers at least once a year for evidence of erosion, concentrating flow, and encroachment by development.

2. Management of a buffer's vegetation must be consistent with the requirements in any deed restrictions for the buffers.

3. Wooded buffers must remain fully wooded and have no disturbance to the duff layer.

4. Vegetation in non-wooded buffers must be cut no more than three times per year and no shorter than six inches.

5. Erosion within a buffer must be repaired as soon as practicable. If flows are concentrating within the buffer, site grading, level spreaders, or ditch turn-outs must be used to ensure a more even distribution of flow into the buffer.

6. Check downslope of all spreaders and turn-outs for erosion. If erosion is present, adjust or modify the spreader's or turnout's lip to ensure a better distribution of flow into the buffer.

7. Clean-out any accumulation of sediment within the spreader bays or turn-out pools.

Task Frequency:

Table 11-1 Long-Term Inspection & Maintenance Plan				
	Spring	Fall or Yearly	After a Major Storm	Every 2-5 Years
Vegetated Areas				
Inspect all slopes and embankments	X		X	
Replant bare areas or areas with sparse growth	X		X	
Armor areas with rill erosion with an appropriate lining or divert the ero-sive flows to on-site areas able to withstand concentrated flows. See Appendix A(5) of Rule.	X		X	
Stormwater Channels				
Inspect ditches, swales and other open stormwater channels	X	X	X	
Remove any obstructions and accumulated sediments or debris	X	X		
Control vegetated growth and woody vegetation		X		
Repair any erosion of the ditch lining		X		
Mow vegetated ditches		X		
Remove woody vegetation growing through riprap		X		
Repair any slumping side slopes		X		
Replace riprap where underlying filter fabric or underdrain gravel is showing or where stones have dislodge		X		
Culverts				
Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit	X	X	X	
Repair any erosion damage at the culvert's inlet and outlet	X	X	X	
Roadways and Parking Surfaces				
Clear accumulated winter sand in parking lots and along roadways	X			
Sweep pavement to remove sediment	X			
Grade road shoulders and remove excess sand either manually or by a front-end loader	X			
Grade gravel roads and gravel shoulders	X			
Clean-out the sediment within water bars or open-top culverts	X			
Ensure that stormwater is not impeded by accumulations of material or false ditches in the shoulder	X			

Table 11-1 Long-Term Inspection & Maintenance Plan						
	Spring	Fall or Yearly	After Major Storm	Every 2-5 Years		
Buffers						
Inspect treatment buffers for evidence of erosion, concentrated flow, or encroachment by development		X				
Manage the buffer's vegetation with the requirements in any deed restrictions		X				
Mow vegetation in non-wooded buffers no shorter than six inches and less than three times per year		X				
Repair any sign of erosion within a buffer		X				
Inspect and repair down-slope of all spreaders and turn-outs for erosion		X				
Install more level spreaders, or ditch turn-outs if needed for a better distribution of flow		X				
Clean-out any accumulation of sediment within the spreader bays or turnout pools		X				
Stormwater Detention and Retention Facilities						
Inspect the embankments for settlement, slope erosion, internal piping, and downstream swamping. A professional engineer must review these immediately.		X	X			
Mow the embankment to control woody vegetation		X				
Inspect the outlet control structure for broken seals, obstructed orifices, and plugged trash racks		X	X			
Remove and dispose of sediments and debris within the control structure		X				
Repair any damage to trash racks or debris guards		X				
Mow vegetated spillways to control woody vegetation and replace any dislodged stone in riprap spillways		X				
Remove and dispose of accumulated sediments within the impoundment and forebay						X
Runoff Infiltration Facilities						
Inspect and clean-out any pre-treatment measures that collect sediment and hydrocarbons entering an infiltration measure	X	X				
Provide for the removal and disposal of accumulated sediments within the infiltration area						X
Renew the infiltration measure if it fails to drain within 72 hours after a rainfall of one-half inch or more						X
Till and replant the soil of vegetated infiltration basins						X
Reconstruct rock-lined basins or stone-filled trenches by removing the stones, replacing new underlying filter fabric, and tilling or removing the underlying soil						X
Other Practices and Measures						
Contact the department for appropriate inspection and maintenance requirements for other drainage control and runoff treatment measures.						

HOUSEKEEPING PERFORMANCE STANDARDS

FOR:
Peak's Island Fuel
Peak's Island Fuel, Maine

Land Owner: Mr. Keith Ivers

Project Developer: Mr. Keith Ivers
Peak's Island Fuel
P.O. Box 6
Peak's Island Fuel, ME 04108

Responsible Party: Peak's Island Fuel

Introduction:

The contractor shall be responsible for maintaining proper housekeeping standards throughout the construction phase of the project. After the construction phase has been completed, the owner or operator of the project and the homeowners association will be responsible.

Standards:

In accordance with the housekeeping performance standards required by MDEP chapter 500 stormwater regulations, the following standards shall be met:

- Spill prevention.** Controls must be used to prevent pollutants from being discharged from materials on site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.
- Groundwater protection.** During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.
- Fugitive sediment and dust.** Actions must be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.

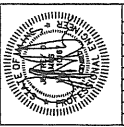
Operations during wet months that experience tracking of mud off the site onto public roads should provide for sweeping of road areas at least once a week and prior to significant storm events. Where chronic mud tracking occurs, a stabilized construction entrance should be provided. Operations during dry months, that experience fugitive dust problems, should wet down the access roads once a week or more frequently as needed.

- Debris and other materials.** Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

To prevent these materials from becoming a source of pollutants, construction and post-construction activities related to a project may be required to comply with

applicable provision of rules related to solid, universal, and hazardous waste, including, but not limited to, the Maine solid waste and hazardous waste management rules; Maine hazardous waste management rules; Maine oil conveyance and storage rules; and Maine pesticide requirements.

5. **Trench or foundation de-watering.** Trench de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved by the department.
6. **Non-stormwater discharges.** Identify and prevent contamination by non-stormwater discharges.

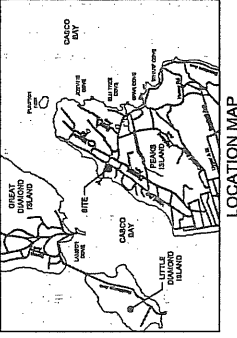


NO.	DATE	REVISIONS

PEAKS ISLAND FUEL
 SHEET NO. 1128
 DATE 7/20/11
 SCALE 1"=40'
 1"=40'
 4

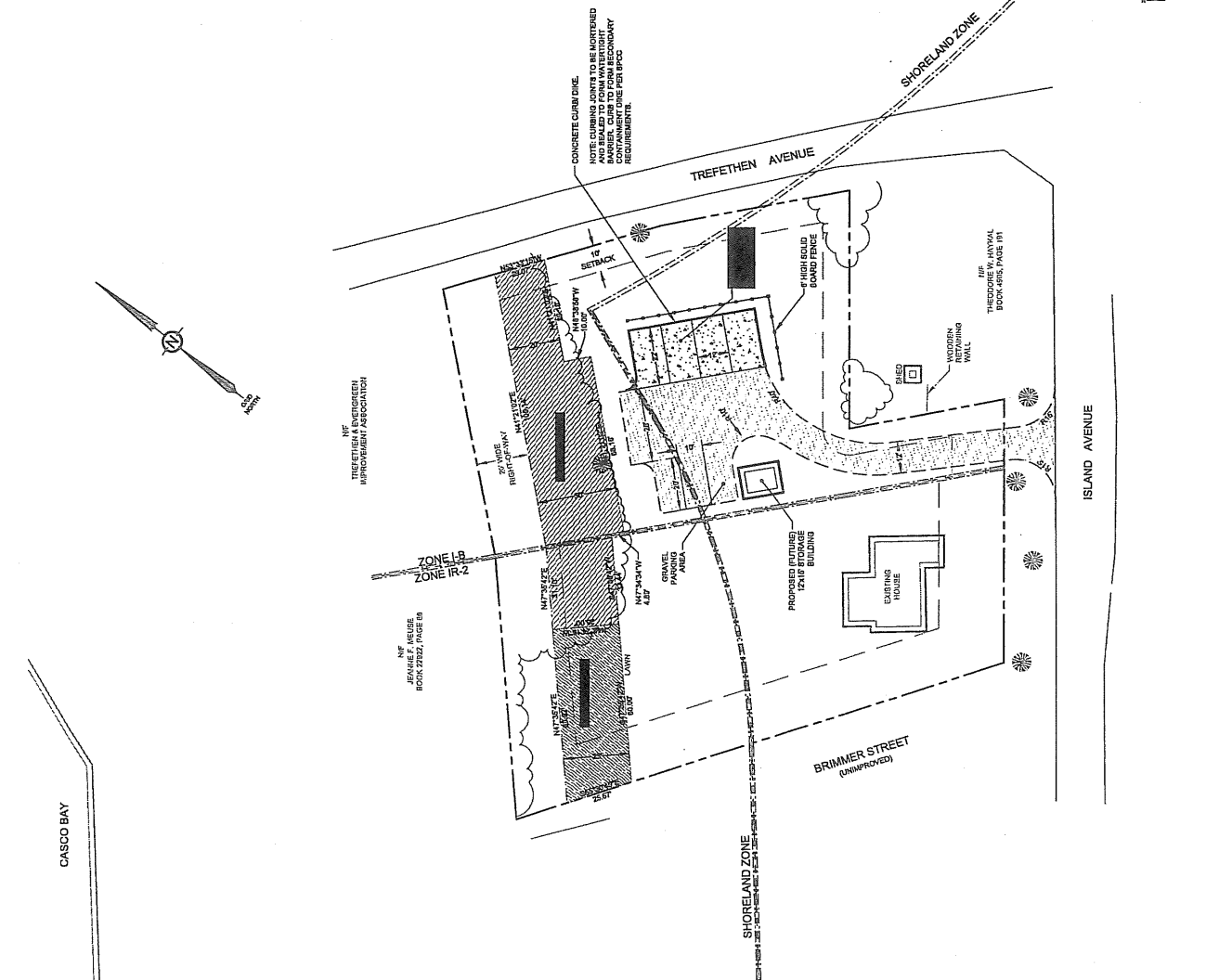
PEAKS ISLAND FUEL
 SHEET NO. 1128
 DATE 7/20/11
 SCALE 1"=40'
 1"=40'
 4

PEAKS ISLAND FUEL
 SHEET NO. 1128
 DATE 7/20/11
 SCALE 1"=40'
 1"=40'
 4



- GENERAL NOTES:**
- BOUNDARY & TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON A STANDARD BOUNDARY AND TOPOGRAPHIC SURVEY BY AUSTIN LAND SURVEYING MADE FOR KEITH HYEST, DATED APRIL 26, 2011.
 - SEE THE PLAN REFERENCED IN NOTE #1 FOR THE RECORD OWNER INFORMATION.
 - THE PROPERTY IS SHOWN AS LOTS 1, 2 & 3 (BLOCK A) ON THE CITY OF PEAKS ISLAND MAP AND AS LOTS 1, 2 & 3 (BLOCK B) ON THE CITY OF PEAKS ISLAND MAP.
 - BOUNDARY & TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON A STANDARD BOUNDARY AND TOPOGRAPHIC SURVEY BY AUSTIN LAND SURVEYING MADE FOR KEITH HYEST, DATED APRIL 26, 2011.
 - SEE THE PLAN REFERENCED IN NOTE #1 FOR THE RECORD OWNER INFORMATION.
 - SPACE AND BUILDING INFORMATION

ISLAND RESIDENTIAL-2	ISLAND BUSINESS (B)
MIN. LOT SIZE: 10,000 SQ. FT.	MIN. LOT SIZE: 10,000 SQ. FT.
MIN. FRONT SETBACK: 25 FT.	MIN. FRONT SETBACK: 25 FT.
MIN. SIDE SETBACK: 25 FT.	MIN. SIDE SETBACK: 25 FT.
MIN. REAR SETBACK: 25 FT.	MIN. REAR SETBACK: 25 FT.
MAX. BUILDING HEIGHT (ACCESSORY DETACHED): 18 FT.	MAX. BUILDING HEIGHT (ACCESSORY DETACHED): 18 FT.



LEGEND

[Symbol]	EXISTING PROPERTY LINE
[Symbol]	PROPOSED PROPERTY LINE
[Symbol]	EXISTING EMBANKMENT
[Symbol]	PROPOSED EMBANKMENT
[Symbol]	EXISTING DRIVE
[Symbol]	PROPOSED DRIVE
[Symbol]	PROPOSED EDGE OF GRAVEL
[Symbol]	EDGE OF WATER
[Symbol]	PROPOSED TREE LINE
[Symbol]	PROPOSED FENCE
[Symbol]	PROPOSED BUILDING
[Symbol]	PROPOSED CONCRETE PAD
[Symbol]	MEADOW BUFFER
[Symbol]	WOODED BUFFER

- BUFFER RESTRICTIONS:**
- Restrictions on Forested Buffer Area. The Forested Buffer Area must remain undeveloped in its natural state and shall be maintained in accordance with the Forest Management Plan for the Forested Buffer Area to be maintained as follows:
 - No work, trees, stumps, logs, debris, rocks or other material shall be placed, piled, stored or dumped on the Forested Buffer Area, nor may the topography of the area be altered or disturbed in any way.
 - No structure of any kind or other vegetation within the Forested Buffer Area shall be allowed to be placed, stored or dumped on the Forested Buffer Area, nor may the topography of the area be altered or disturbed in any way.
 - No structure of any kind or other vegetation within the Forested Buffer Area shall be allowed to be placed, stored or dumped on the Forested Buffer Area, nor may the topography of the area be altered or disturbed in any way.
 - No structure of any kind or other vegetation within the Forested Buffer Area shall be allowed to be placed, stored or dumped on the Forested Buffer Area, nor may the topography of the area be altered or disturbed in any way.
 - Restrictions on Meadow Buffer Area. The Meadow Buffer Area must be maintained in its natural state and shall be maintained in accordance with the Forest Management Plan for the Forested Buffer Area to be maintained as follows:
 - No work, trees, stumps, logs, debris, rocks or other material shall be placed, piled, stored or dumped on the Meadow Buffer Area, nor may the topography of the area be altered or disturbed in any way.
 - No structure of any kind or other vegetation within the Meadow Buffer Area shall be allowed to be placed, stored or dumped on the Meadow Buffer Area, nor may the topography of the area be altered or disturbed in any way.
 - No structure of any kind or other vegetation within the Meadow Buffer Area shall be allowed to be placed, stored or dumped on the Meadow Buffer Area, nor may the topography of the area be altered or disturbed in any way.
 - No structure of any kind or other vegetation within the Meadow Buffer Area shall be allowed to be placed, stored or dumped on the Meadow Buffer Area, nor may the topography of the area be altered or disturbed in any way.
 - Restrictions on Wooded Buffer Area. The Wooded Buffer Area must be maintained in its natural state and shall be maintained in accordance with the Forest Management Plan for the Forested Buffer Area to be maintained as follows:
 - No work, trees, stumps, logs, debris, rocks or other material shall be placed, piled, stored or dumped on the Wooded Buffer Area, nor may the topography of the area be altered or disturbed in any way.
 - No structure of any kind or other vegetation within the Wooded Buffer Area shall be allowed to be placed, stored or dumped on the Wooded Buffer Area, nor may the topography of the area be altered or disturbed in any way.
 - No structure of any kind or other vegetation within the Wooded Buffer Area shall be allowed to be placed, stored or dumped on the Wooded Buffer Area, nor may the topography of the area be altered or disturbed in any way.
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STATE OF MAINE
 COUNTY OF BENTLEY
 RECEIVED _____
 PLANNING BOARD
 PAGE _____
 ATTENT: _____ REGISTER

CONSTRUCTION NOTES

1. All work shall conform to the applicable codes and ordinances.
2. Contractor shall verify all applicable codes, ordinances, laws, regulations, and rules, including but not limited to, the Massachusetts Department of Public Safety's regulations regarding the use of firearms, the Massachusetts Department of Environmental Protection's regulations regarding the use of pesticides, and the Massachusetts Department of Transportation's regulations regarding the use of heavy machinery. The contractor shall be responsible for obtaining all necessary permits and approvals. The contractor shall be responsible for providing all necessary safety measures and ensuring that all work is completed in a safe and sound manner.
3. Contractor shall notify engineer of all permits or items needed as "holding" which are not found in the field.
4. Contractor shall verify all applicable codes, ordinances, laws, regulations, and rules, including but not limited to, the Massachusetts Department of Public Safety's regulations regarding the use of firearms, the Massachusetts Department of Environmental Protection's regulations regarding the use of pesticides, and the Massachusetts Department of Transportation's regulations regarding the use of heavy machinery. The contractor shall be responsible for obtaining all necessary permits and approvals. The contractor shall be responsible for providing all necessary safety measures and ensuring that all work is completed in a safe and sound manner.
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8. The contractor shall obtain all required permits prior to construction.
9. All erosion and sediment control measures shall be installed in accordance with the erosion and sedimentation control plan. The contractor shall be responsible for maintaining the erosion and sedimentation control plan and for ensuring that all work is completed in a safe and sound manner.
10. The contractor shall verify all applicable codes, ordinances, laws, regulations, and rules, including but not limited to, the Massachusetts Department of Public Safety's regulations regarding the use of firearms, the Massachusetts Department of Environmental Protection's regulations regarding the use of pesticides, and the Massachusetts Department of Transportation's regulations regarding the use of heavy machinery. The contractor shall be responsible for obtaining all necessary permits and approvals. The contractor shall be responsible for providing all necessary safety measures and ensuring that all work is completed in a safe and sound manner.
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14. All work within the public right-of-way shall require a M.D.O.T. Permit as well as permits from the town as applicable.
15. The contractor shall verify all applicable codes, ordinances, laws, regulations, and rules, including but not limited to, the Massachusetts Department of Public Safety's regulations regarding the use of firearms, the Massachusetts Department of Environmental Protection's regulations regarding the use of pesticides, and the Massachusetts Department of Transportation's regulations regarding the use of heavy machinery. The contractor shall be responsible for obtaining all necessary permits and approvals. The contractor shall be responsible for providing all necessary safety measures and ensuring that all work is completed in a safe and sound manner.
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17. All work performed by the general contractor or its subcontractors shall conform to the requirements of local, state or federal laws, as well as any other governing requirements, whether or not specified on the drawings.
18. Where the term "approved" appears, it shall mean "approved" or other general certifying terms are used in these notes, it shall be understood that approval is made in the ruling and judgment of Termyth Consultants, LLC.
19. The general contractor shall provide all necessary protection for the work until turned over to the owner.
20. The general contractor shall maintain a current and complete set of construction drawings on the site during all phases of construction for use of all trades.
21. The contractor shall have full responsibility for any change and deviation of approved plans not authorized by the architect/engineer and/or owner.
22. Details are provided to show the result of design. Any modification to suit field dimension and condition shall be the responsibility of the contractor. All dimensions shall be verified and approved prior to any work.
23. All work shall be completed in accordance with the specifications and standards of all applicable codes, ordinances, laws, regulations, and rules, including but not limited to, the Massachusetts Department of Public Safety's regulations regarding the use of firearms, the Massachusetts Department of Environmental Protection's regulations regarding the use of pesticides, and the Massachusetts Department of Transportation's regulations regarding the use of heavy machinery. The contractor shall be responsible for obtaining all necessary permits and approvals. The contractor shall be responsible for providing all necessary safety measures and ensuring that all work is completed in a safe and sound manner.
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LEGEND

- EXISTING PROPERTY LINE
- EXISTING RETAINING WALL
- EXISTING EMBANKMENT
- PROPOSED EMBANKMENT
- EXISTING MAJOR CONTOUR
- PROPOSED MAJOR CONTOUR
- EXISTING STORMWATER
- PROPOSED STORMWATER
- EXISTING OVERHEAD ELECTRIC
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF GRAVEL
- EXISTING TREE LINE
- PROPOSED TREE LINE
- PROPOSED FENCE
- EXISTING UTILITY POLE
- PROPOSED UTILITY POLE
- PROPOSED BUILDING
- PROPOSED CONCRETE PAD
- MEADOW BUFFER
- WOODED BUFFER

CONTRACTOR TO CONSTRUCT DOWNSTREAM SIDE OF THE PARADOX LOT TO DIRECT RUNOFF TO DITCH TURNOUT.

CONTRACTOR TO CONSTRUCT DOWNSTREAM SIDE OF THE PARADOX LOT TO DIRECT RUNOFF TO DITCH TURNOUT.

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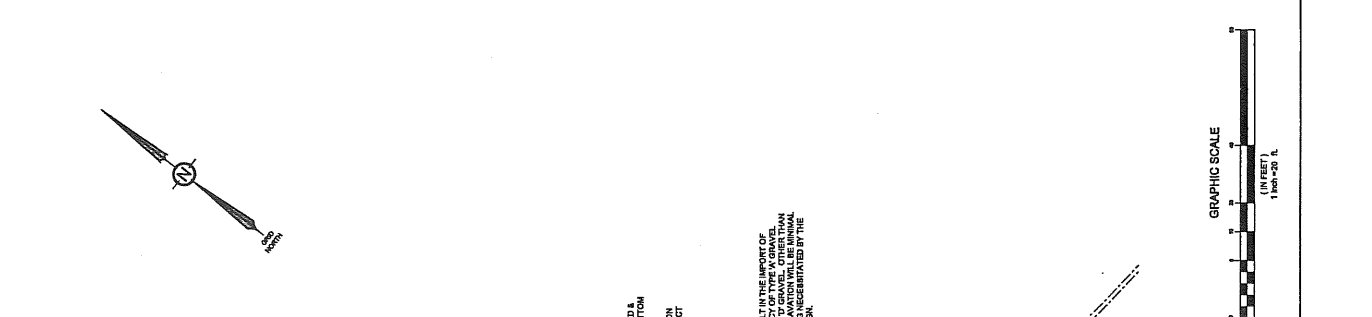
CONTRACTOR TO CONSTRUCT DOWNSTREAM SIDE OF THE PARADOX LOT TO DIRECT RUNOFF TO DITCH TURNOUT.

NOTE: PROJECT WILL RESULT IN THE IMPORT OF APPROXIMATELY 70 CY OF TYPE A GRAVEL. ALL GRAVEL SHALL BE QUANTIFIED AND THE IMPORT/EXPORT, SITE EXCAVATION WILL BE ANNUAL. THIS PROJECT WILL BE ANNUAL. THIS PROJECT WILL BE ANNUAL. THIS PROJECT WILL BE ANNUAL.

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NO.	DATE	REVISIONS

PEAKS ISLAND FUEL
PEAKS ISLAND FUEL
PEAKS ISLAND FUEL

PREPARED FOR: PEAKS ISLAND FUEL
P.O. BOX 8
PEAKS ISLAND, MASSACHUSETTS
01968

DATE: 7/27/11
SHEET NO.: 2
SCALE: 1"=200'

TERRADYN
CONSULTANTS, LLC

111 Bedford Lane
New Bedford, MA 01950
TEL: (508) 922-5111
WWW.TERRADYNCONSULTANTS.COM

Civil Engineering - Land Planning - Stormwater Design - Stormwater Design - Environmental Permitting



11 Trefethen Street, Columbia, Maine 04101
Tel: 603.688.1100
Fax: 603.688.1100



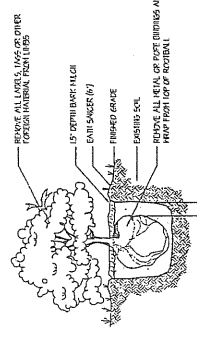
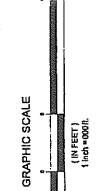
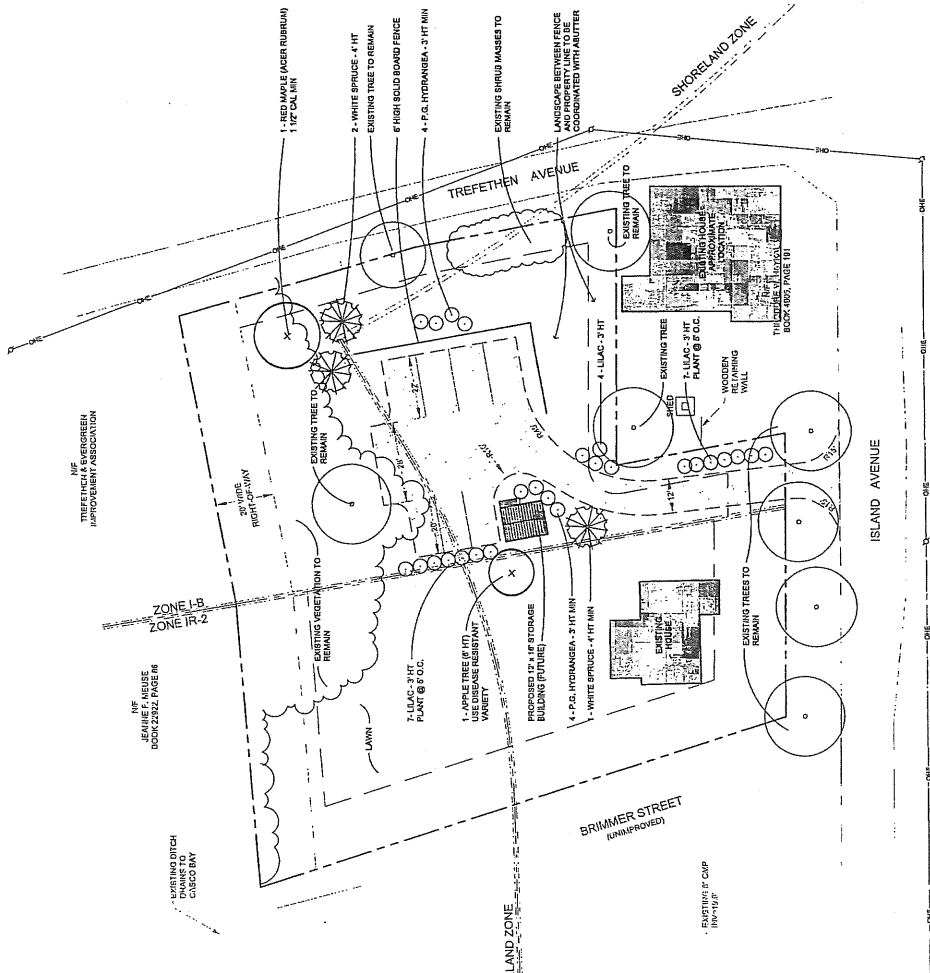
NO.	DATE	REVISIONS



TERADYNN CONSULTANTS, LLC
111 DENVER STREET
NEW BRUNSWICK, NJ 08901
P.O. BOX 139
WWW.TERADYNN.COM
Tel: 732.221.1317
Fax: 732.221.1317

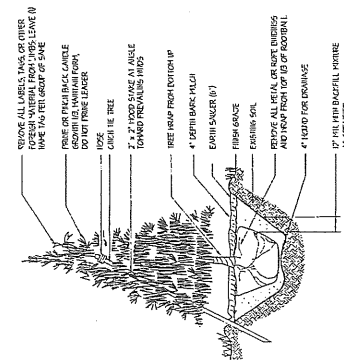
JOB NO.	DATE	SHEET	OF
110	7/20/11	3	4

LANDSCAPE PLAN
PEAKS ISLAND FUEL
PEAKS ISLAND FUEL
PEAKS ISLAND, MAINE 04103



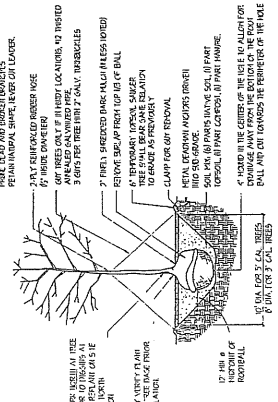
SHRUB PLANTING INSTALLATION

NOT TO SCALE



EVERGREEN TREE PLANTING

NOT TO SCALE



DECIDUOUS TREE PLANTING

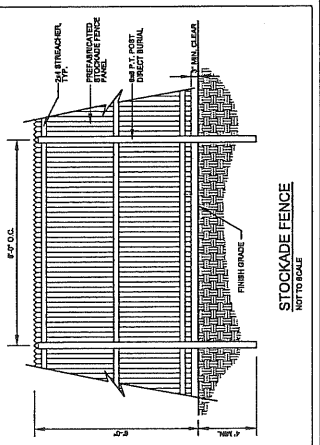
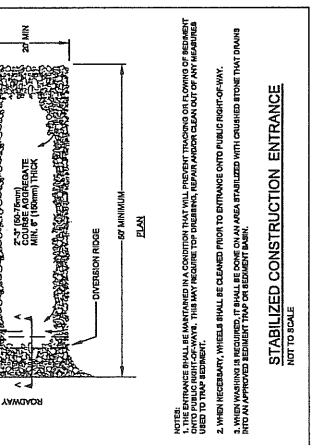
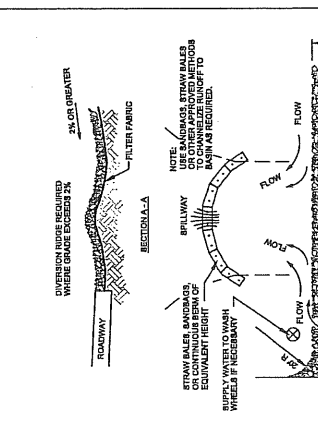
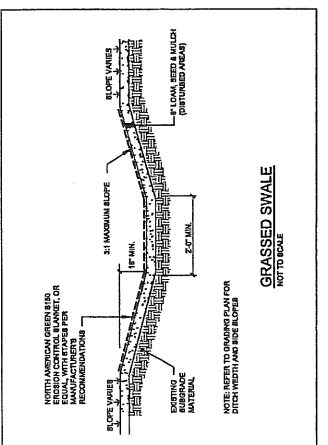
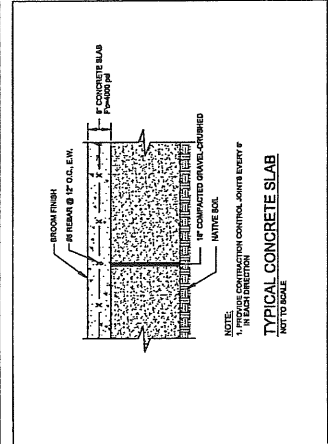
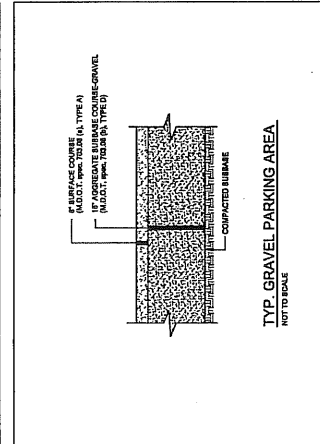
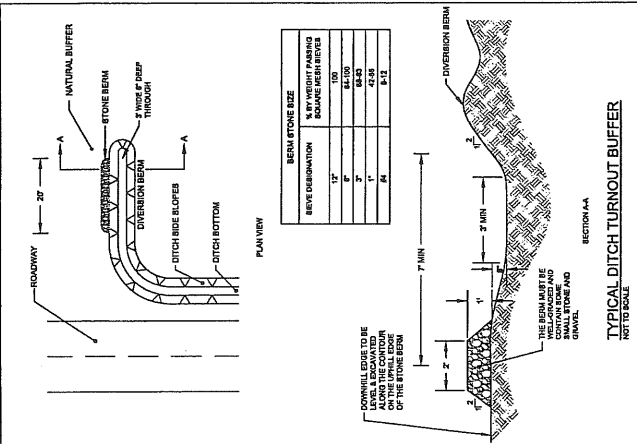
NOT TO SCALE



NO.	DATE	REVISIONS

Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting
TERRADYNS LLC
 111 Dealeway Drive
 New Greentown, MD 20650
 Phone: (301) 925-5111
 Fax: (301) 925-1317
 www.terradyns.com

PROJECT NO.	PEAKS ISLAND FUEL
DATE	09/11
SCALE	AS SHOWN
SHEET DESCRIPTION	DETAILS & NOTES
DATE	11/8
OF	4
SHEET NO.	4



EROSION AND SEDIMENT CONTROL PLAN

1.0 Purpose: The purpose of this plan is to provide a detailed description of the erosion and sediment control measures to be installed and maintained on the site during construction. The plan is intended to be used in conjunction with the approved permit and the approved construction schedule.

2.0 Site Description: The site is located at the intersection of [Address] and [Address]. The site is approximately [Area] acres in size and is currently undeveloped. The site is surrounded by [Surrounding Area].

3.0 Construction Phases: The construction of the site will be completed in three phases: Phase 1, Phase 2, and Phase 3. Each phase will have its own set of erosion and sediment control measures.

4.0 Erosion and Sediment Control Measures: The following measures will be installed and maintained on the site during construction:

- 4.1 Temporary Erosion and Sediment Control Measures:** These measures will be installed and maintained during the construction phase. They include:
 - A. Temporary silt fences: These will be installed along the perimeter of the site to prevent sediment from leaving the site.
 - B. Temporary sediment basins: These will be installed to capture sediment before it leaves the site.
 - C. Temporary erosion control blankets: These will be installed on exposed soil to prevent erosion.
 - D. Temporary mulch: This will be applied to exposed soil to prevent erosion.
 - E. Temporary straw bales: These will be used to stabilize exposed soil.
 - F. Temporary geotextiles: These will be used to stabilize exposed soil.
 - G. Temporary concrete curb: This will be installed to prevent sediment from leaving the site.
 - H. Temporary stockade fence: This will be installed to prevent sediment from leaving the site.
 - I. Temporary vertical granite curb: This will be installed to prevent sediment from leaving the site.
 - J. Temporary silt fence: This will be installed to prevent sediment from leaving the site.
- 4.2 Permanent Erosion and Sediment Control Measures:** These measures will be installed and maintained after construction is complete. They include:
 - A. Permanent silt fences: These will be installed along the perimeter of the site to prevent sediment from leaving the site.
 - B. Permanent sediment basins: These will be installed to capture sediment before it leaves the site.
 - C. Permanent erosion control blankets: These will be installed on exposed soil to prevent erosion.
 - D. Permanent mulch: This will be applied to exposed soil to prevent erosion.
 - E. Permanent straw bales: These will be used to stabilize exposed soil.
 - F. Permanent geotextiles: These will be used to stabilize exposed soil.
 - G. Permanent concrete curb: This will be installed to prevent sediment from leaving the site.
 - H. Permanent stockade fence: This will be installed to prevent sediment from leaving the site.
 - I. Permanent vertical granite curb: This will be installed to prevent sediment from leaving the site.
 - J. Permanent silt fence: This will be installed to prevent sediment from leaving the site.

5.0 Maintenance and Inspection: The erosion and sediment control measures will be inspected and maintained on a regular basis. The contractor is responsible for ensuring that the measures are properly installed and maintained.

6.0 Other Requirements: The contractor is responsible for ensuring that all other requirements of the approved permit are met.

7.0 Notes:

- The contractor shall be responsible for ensuring that all erosion and sediment control measures are properly installed and maintained.
- The contractor shall be responsible for ensuring that all other requirements of the approved permit are met.
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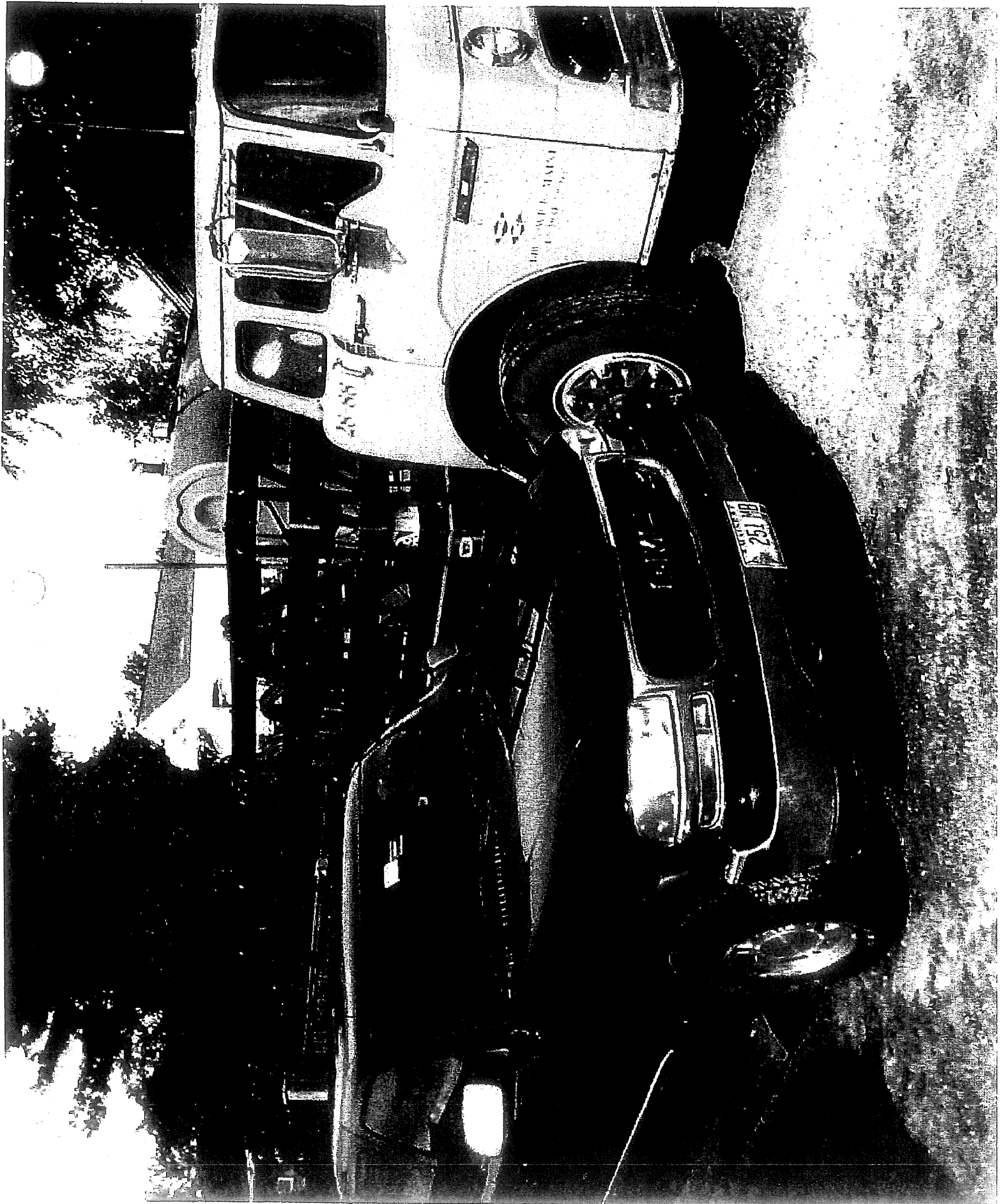
8.0 Appendix:

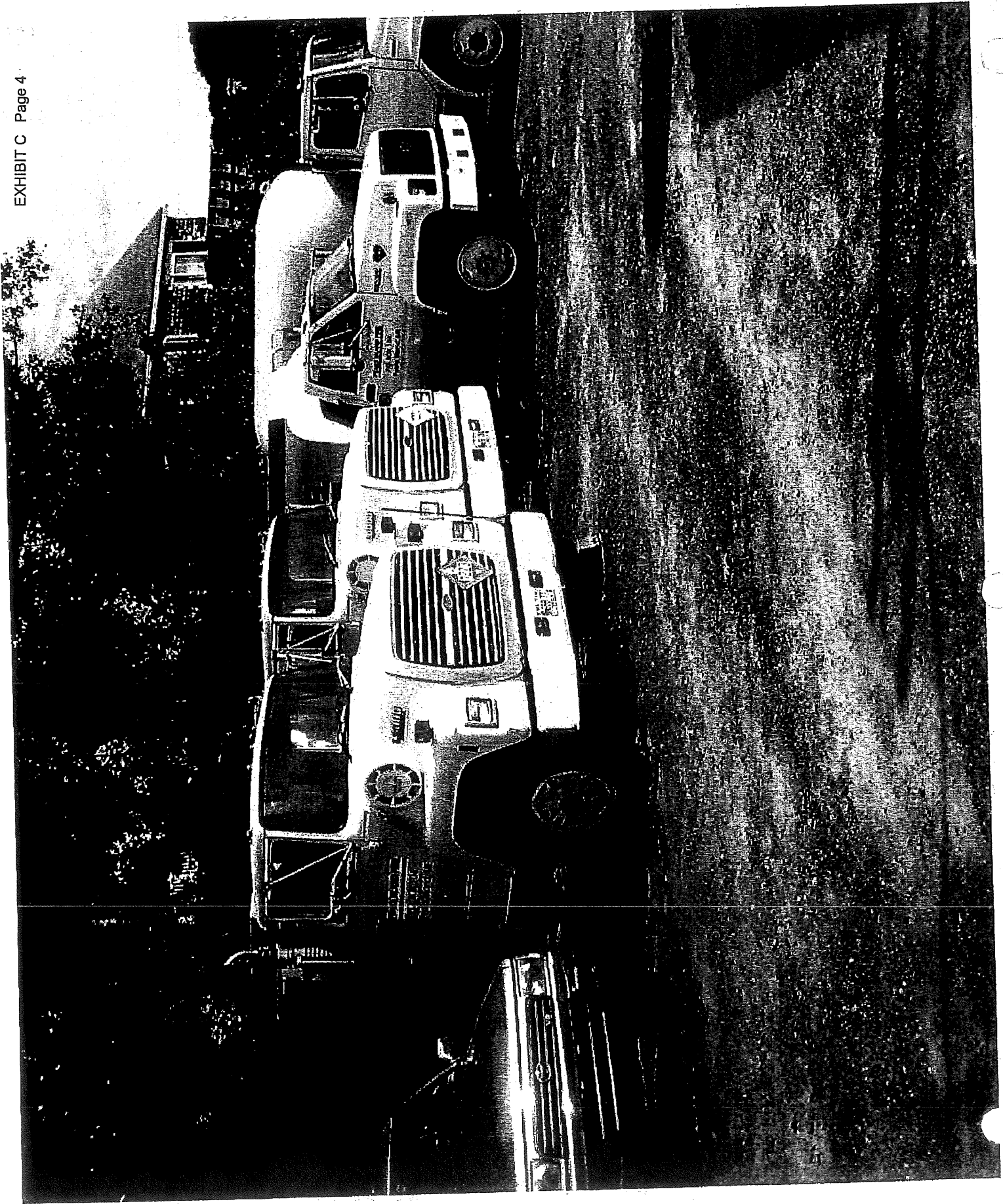
8.1 Erosion and Sediment Control Measures: This appendix contains detailed drawings of the erosion and sediment control measures to be installed and maintained on the site during construction.

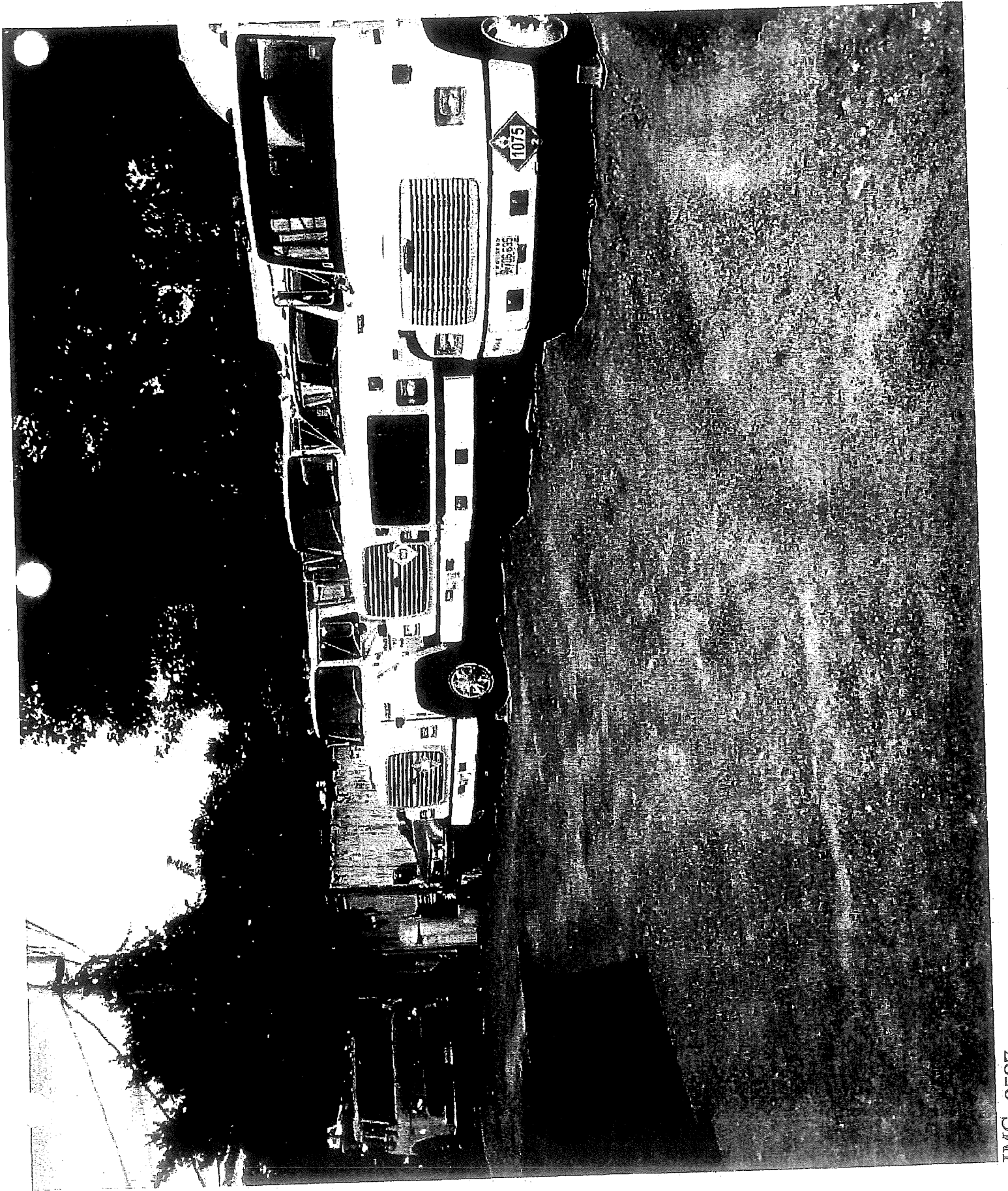
8.2 Other Requirements: This appendix contains detailed drawings of the other requirements of the approved permit.

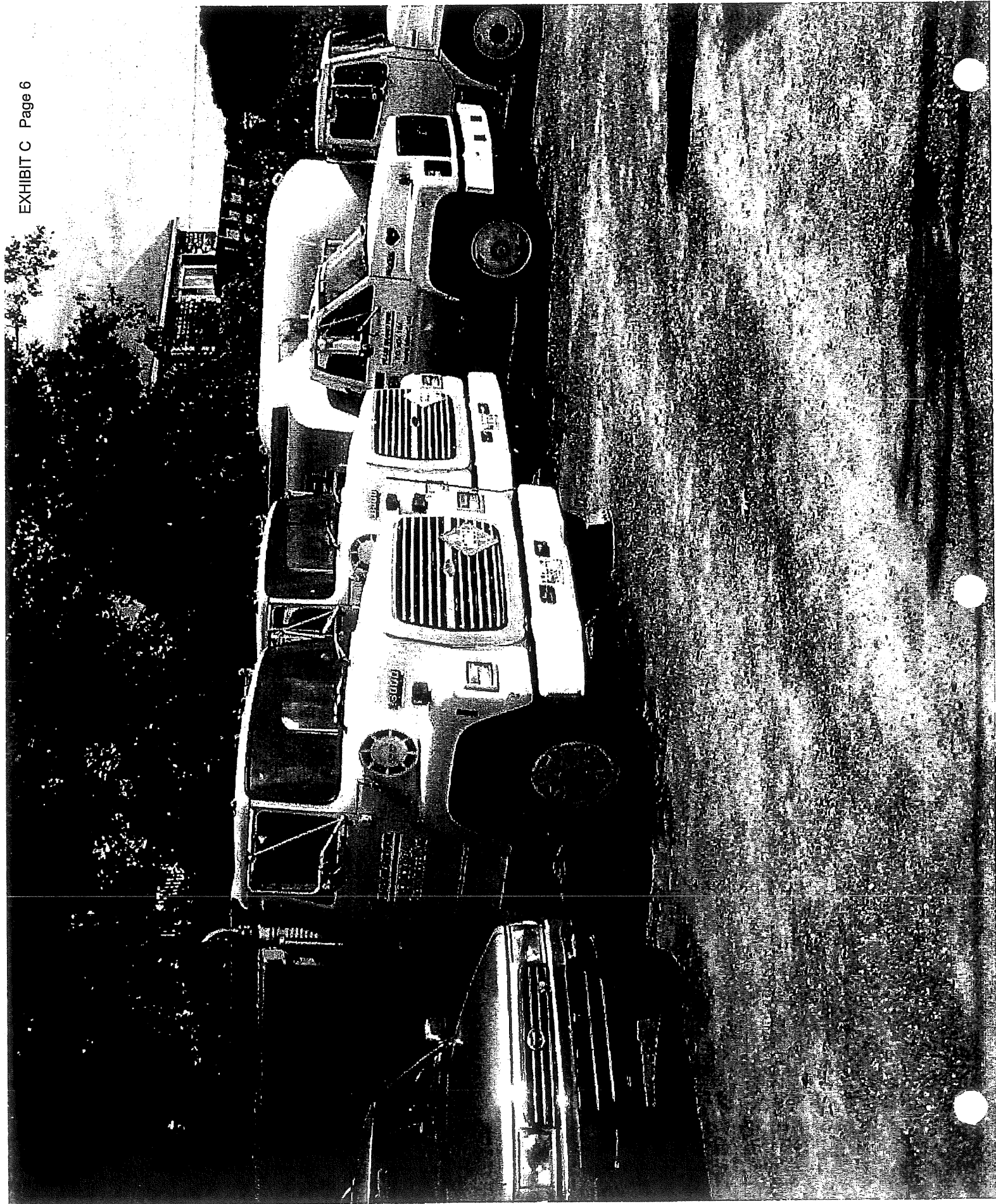












1. TRANSPORTATION SYSTEMS AND STREET DESIGN STANDARDS

1.1. TRAFFIC STUDIES

For the purposes of this section, **passenger car equivalents (PCE)** shall be defined as the number of passenger cars or, in the case of non-passenger vehicles, the number of passenger cars that would be displaced by non-passenger vehicles. One tractor trailer combination is the equivalent of two passenger cars.

Developments that generate 100 PCE or more, thus requiring a Traffic Movement Permit (TMP), shall meet the requirements of TMP regulations of State Law, in addition to all applicable transportation site plan standards of the City Code. For more information concerning state TMP requirements, please refer to <http://www.maine.gov/mdot/traffic-counts/traffic-mvmnt-app.php> or contact the Maine Department of Transportation (MDOT). The City of Portland is the delegated reviewing authority for TMP applications.

Developments that generate less than 100 passenger car equivalents (PCE) but require a scoping meeting because they generate 25 PCE or more and are located

(1) on an arterial; and/or

(2) within ½ mile of a high crash location; and/or

(3) within ¼ mile of an intersection that has been identified in a previous traffic study as a failing intersection, with an overall level of service below level of service D,

shall meet the following standards, if a traffic study is required:

1.1.1.1. Traffic studies shall be prepared, stamped and signed by a Professional Engineer licensed in the State of Maine.

1.1.1.2. Scope of Study:

The City Transportation Engineer, in consultation with the applicant's engineer, shall determine the need for and scope of the traffic study. The requirements for the study shall be based on standard transportation engineering practices.

A typical traffic study includes the following major sections:

- A description of the development proposal
- A description of existing conditions.
- Estimated trip generation by the development and design hour volume for affected driveway(s) and study intersections.
- Trip generation will be based upon the latest edition of the ITE *Trip Generation* publication unless suitable documented local data that meets ITE methodology is available.
- Trip distribution
- Capacity analysis for adjacent roadways and for any existing or proposed driveways.
- Traffic crash analysis for adjacent roadways.
- Key findings concerning traffic impacts, problems, and deficiencies.
- Proposed traffic improvements.
- Summary of findings and recommendations for transportation improvements and other impact mitigation measures.

1.2. Reserved**1.3. HORIZONTAL ALIGNMENT OF STREETS**

The horizontal alignment of all proposed streets shall conform to the following standards:

- Horizontal curves shall have centerline radii of not less than 110 feet.
- The alignment centerline shall be straight for at least 100 feet between reverse curves whenever either curve has a centerline radius of less than 200 feet.
- When two streets intersect and one street is an arterial or collector street, or both streets are arterial or collector streets, the angle of intersection shall be 90 degrees. When two streets intersect and neither street is an arterial or collector street, the angle of intersection shall be at least 75 degrees and no greater than 105 degrees.
- When two streets intersect, adjoining right-of-way lines shall be connected by a circular arc with radius of at least ten (10) feet. The connecting arc shall be tangent to the right-of-way lines on both streets. When the angle of intersection is other than 90 degrees, a radius greater than ten (10) feet may be required.
- All dead-end streets shall provide for a turnaround at the end of the street, subject to approval by the reviewing authority. Turnarounds shall be designed to facilitate future street connectivity and shall always be designed to the right (refer to Figure I-5).
- Street intersections with more than four (4) legs shall be prohibited.

- The minimum distance between intersections on any street shall be as follows unless the City Engineer determines that unique conditions of the site necessitate a lesser length. The distance between intersections shall be measured from the intersection of street centerlines at one intersection to the intersection of street centerlines at the other intersection. Streets shall be classified in accordance with the Federal Highway Administration Functional Classification Guidelines.

Local Street and Local Street Intersection	300 feet
Local Street and Collector Street Intersection	300 feet
Local Street and Arterial Street Intersection	500 feet
Collector Street and Collector Street Intersection	500 feet
Collector Street and Arterial Street Intersection	500 feet
Arterial Street and Arterial Street Intersection	500 feet

1.4. STREET GRADES

1.4.1. Street grades shall conform to the following standards:

- The maximum grade for the centerline of all streets shall not exceed eight (8) percent.
- The minimum grade for the centerline of all streets shall not be less than one-half (0.5) percent.
- The cross slope for local streets shall be 0.03. The cross slope for other street classifications shall be 0.02.
- Cross slopes for sidewalks shall be 0.02, sloping down and away from the street line to the top of the curb at the gutter line.
- Street grades at intersections shall not be more than three (3) percent for a distance of one hundred (100) feet from the center of the intersection.

1.5. VERTICAL ALIGNMENT

Where two adjacent street segments are proposed to have different straight line centerline finish grades, vertical curves shall be used to connect the adjacent street segments. Vertical curves shall be parabolic and tangent to each of the adjacent

grades. The minimum vertical curve length, "L", shall be calculated based on the following formula

$$L = K \times A$$

where "A" is the absolute value of the algebraic difference between the beginning grade and the ending grade of the vertical curve, with both grades expressed in percent, and "K" is a factor whose value depends on street design speed, which is related to street classification. The design speeds, in miles per hour, for this section's street classifications are as follows:

Local Street	25 mph
Collector Street	30 mph
Arterial Street	35 mph

The K values corresponding to the minimum vertical curve lengths for the above street classifications and vertical curve types (sag curve or crest curve) are as follows:

Local Streets

Crest Vertical Curves: K = 20

Sag Vertical Curves: K = 30

Collector Streets

Crest Vertical Curves: K = 30

Sag Vertical Curves: K = 40

Arterial Streets

Crest Vertical Curves: K = 50

Sag Vertical Curves: K = 50

1.6. SIGHT DISTANCE

Where driveways or new streets enter an existing street, vehicular sight-distance shall conform to standards established by the Maine DOT as contained in their publication, Chapter 299, Highway Driveway and Entrances Rules and noted below for entrances with standard vehicles. For driveways frequently accessed by large vehicles, greater sight distance will be required according to Maine DOT guidelines.

Speed Limit (mph)	Measured Distance (feet)
25	200
30	250
35	305
40	360
45	425
50	495
55	570
60	645

1.7. DRIVEWAY DESIGN

1.7.1. Residential development with nine (9) parking spaces or less:

Minimum/maximum driveway width: Any site shall have a minimum driveway width of ten (10) feet and a maximum width of twenty (20) feet measured at the property line.

Location of driveway: A driveway shall be located on the lot in a manner to provide a minimum distance of twenty (20) ft spacing between it and adjacent driveways. This spacing shall be measured between edge of driveways at the property line. If the development is a Level III site plan with frontage on an arterial roadway, the standards listed in the table under section 1.6.1.7 shall apply.

No more than one (1) driveway shall be permitted.

1.7.2. Multi-Family Residential with 10 (ten) parking spaces or more, Commercial and Industrial shall meet the following standards:

1.7.2.1. All driveways shall be designed to connect perpendicular to the street, where feasible. In no case shall the angle of intersection be less than 75 degrees or greater than 105 degrees.

1.7.2.2. Minimum driveway width (one-way): Any site with driveway access to a street shall have a minimum 12 foot wide driveway (at the property line) for one-way ingress or egress. Driveways shall permit traffic to enter and leave the site simultaneously without conflict in aisles, parking or maneuvering areas. If parking is adjacent to the property line, then the appropriate aisle width shall apply. Both the entrance and exit drives shall be identified with appropriate signage.

1.7.2.3. Minimum driveway width (two-way): Any site with driveway access to a street shall have a minimum width of 20 feet for two-way ingress and egress, with a preferred width of 24 feet.

1.7.2.4. **Maximum driveway width (two-way):** The maximum width of a driveway will be based upon site conditions or vehicle characteristics that warrant a wider access (e.g., dedicated turn lanes at exits) and will require approval of the reviewing authority. Maximum widths shall not exceed the following, although confirmation of exact capacity requirements will be necessary:

- Commercial -24 feet
- Industrial – 30 feet

1.7.2.5. **Curbing of driveways:** Where driveways enter on an existing street, the full radius of the driveway shall be designed and constructed of granite curb. The radius size shall be based upon information in the following tables. The radii listed below are recommended standards. A vehicle template analysis may be submitted for review as an alternative to the use of the following table:

Passenger Car	12 foot or less departure lane	12 to 14 foot departure lane	14 to 16 foot departure lane	16 to 18 foot departure lane
12 foot or less receiving lane	15ft	15ft	15ft	15ft
12 to 14 foot receiving lane	15ft	15ft	15ft	15ft
14 to 16 foot receiving lane	15ft	15ft	15ft	15ft
SU-30 Truck	12 foot or less departure lane	12 to 14 foot departure lane	14 to 16 foot departure lane	16 to 18 foot departure lane
12 foot or less receiving lane	35ft	30ft	30ft	30ft
12 to 14 foot receiving lane	30ft	30ft	30ft	30ft
14 to 16 foot receiving lane	30ft	30ft	30ft	30ft
WB-50 Truck	12 foot or less departure lane	12 to 14 foot departure lane	14 to 16 foot departure lane	16 to 18 foot departure lane
12 foot or less receiving lane	45ft	45ft	45ft	45ft
12 to 14 foot receiving lane	35ft	35ft	35ft	35ft
14 to 16 foot receiving lane	25ft	25ft	25ft	25ft
WB-62 Truck	12 foot or less departure lane	12 to 14 foot departure lane	14 to 16 foot departure lane	16 to 18 foot departure lane
12 foot or less receiving lane	85ft	85ft	85ft	85ft
12 to 14 foot receiving lane	85ft	85ft	85ft	85ft
14 to 16 foot receiving lane	65ft	65ft	65ft	65ft

1.7.2.6. Maneuvering: The area within the site to which a driveway provides access shall be of sufficient size to allow all necessary functions for loading, unloading and parking maneuvers to be carried out on the site and completely off the street right-of-way. Backing out of vehicles from the driveway is prohibited. The design vehicle used in the analysis shall be the predominant vehicle type and shall be approved by the reviewing authority.

1.7.2.7. Location and spacing of driveways: The location and spacing of driveways shall be determined as follows:

- The angle of intersection between an access driveway and the right of way shall be 90 degrees where feasible and shall in no case be less than 75 degrees or greater than 105 degrees.
- Along local streets, access driveways to corner lots shall be located a minimum of thirty-five (35) feet from the intersection of the projection of right-of-way lines to the center line of the driveway, except as provided hereinafter.
- Along arterial and collector streets, access driveways to corner lots shall be located a minimum of one hundred fifty (150) feet from the intersection of the projection of right-of-way lines to the center line of the driveway except as provided for hereinafter.
- Along arterial, collector and local streets, minimum acceptable spacing between double or multiple driveways for driveways on adjacent lots or on the same parcel shall meet the criteria below:

Speed Limit (mph)	Minimum Separation* (feet)
25 or less	100
30	125
35	150
40	185
45	230

**Spacing of driveways shall be measured from center of driveway to center of driveway and shall include driveways on both sides of the street.*

1.7.2.8. Number of driveways:

No more than two (2) driveways shall be permitted for ingress and egress purposes to any commercial, industrial or residential (with 10 or more parking spaces) site.

A joint access driveway shall be considered as adequate access for any adjacent sites and shall be encouraged. An easement for joint access shall be required.

1.7.2.9. Off-street vehicular circulation:

An off-street facility shall have full internal vehicular circulation and storage.

Vehicle circulation shall be completely contained within the facility, and vehicles located within one portion of the facility shall have access to all other portions without using the adjacent street system.

1.7.3. Auxiliary Lanes:

Ingress left-turn lanes requirements: A left-turn lane with appropriate storage and transition shall be provided where a submitted engineering analysis indicates a need.

Ingress right-turn lanes: For any site, a right-turn lane with appropriate storage and transition shall be provided where a submitted engineering analysis indicates a need.

1.8. SIDEWALKS AND DRIVEWAY APRONS

1.8.1. Driveway Aprons

Any driveway, or section thereof, located within any public street right-of-way shall be designed and built with a permanent, erosion resistant, surface, such as hot mix asphalt pavement or brick, as illustrated in Figures I-10 through I-12.

1.8.2. Sidewalk Construction and Materials.

Sidewalks shall be brick, concrete or hot mix asphalt. The City Sidewalk Materials Policy (Appendix-1 of this manual) shall be consulted to determine the appropriate type of sidewalk and driveway construction to use on various streets and in different areas of the City. Sidewalk and driveway construction details are illustrated in Figures I-10 through I-15.

All new concrete sidewalks which abut existing concrete sidewalks must be doweled in prior to pouring.

1.8.3. Sidewalk Design for Accessibility.

The minimum sidewalk width shall be five (5) feet. Where obstructions, such as utility poles, are located in sidewalks, a minimum clear path width of five (5) feet shall be required between the obstruction and one edge of the sidewalk.

The maximum allowed vertical level change at any point is ¼-inch. A level change of ¼-inch to ½-inch shall be formed with a beveled slope no steeper than 26.6 degrees (2:1). Level changes greater than ½-inch shall be designed as ramps.

Sidewalks shall be designed with a running slope no greater than the adjacent street slope.

Sidewalks shall be designed with a cross slope of 2%.

Accessible sidewalk ramps shall be required on all projects involving construction of new streets or new sidewalks and all projects involving major alteration, including repaving, of existing streets and sidewalks.

1.1.1. Sidewalk Ramp Design:

Ramps, flares, landings and approaches shall be designed as follows:

- (1) Maximum ramp running slope shall be 8.33% for new construction. In retrofit situations, ramp slope may be between 8.33% to 10% for a rise of up to six (6) inches and 10% to 12.5% for a rise of up to three (3) inches. Ramp cross slope shall be 2% or less.
- (2) Minimum ramp width shall be four (4) feet in new construction and three (3) feet for retrofits.
- (3) Sidewalk ramps adjacent to all public streets shall be constructed with truncated dome detectable warning surface panels. The detectable warning panel shall be located so that the edge nearest the curb line is 6 inches minimum or 8 inches maximum from the curb line. The panel shall be oriented to the direction of travel as identified by the point of egress. The panel shall extend 24 inches minimum up the ramp in the direction of travel. The panel shall extend the full width of the ramp.
- (4) Detectible warning panels shall be composite wet set (replaceable) as manufactured by ADA Solutions, Inc ([www. Adatile.com](http://www.Adatile.com)), or equivalent.
- (5) Distinct standards for curb ramp construction apply for locations (1) within and immediately adjacent to Historic Districts and/or Historic Landscapes (Figure I-7A) and (2) all other locations within the City (Figure I-7).
 - For locations within Historic Districts and Historic Landscapes and the areas immediately adjacent where detectible warning panels are required, "Dark Gray" (#36118) panels shall be used (Figure I-7A).
 - For all other areas, "Federal Yellow" (#33538) panels shall be used (Figure I-7).
- (6) Flares shall be designed with a maximum slope of 10% provided that a landing area at least 48 inches x 48 inches is provided at the top of the ramp. If the landing area is less than 48 inches x 48 inches, the maximum slope of the flares shall be 8.33%.

- (7) Landings shall be at least 48 inches by 48 inches for new construction and at least 36 inches x 36 inches for retrofits. Landings shall be designed with slopes in both directions that are no greater than 2%.
- (8) Approaches shall be designed with a cross slope no greater than 2% and a running slope that does not exceed the slope requirements for sidewalk ramps.

1.8.5. Sidewalk Ramp Location and Orientation:

Sidewalk ramps shall be designed as perpendicular ramps with the direction of travel on the ramp perpendicular to the curb line and parallel to the crosswalk. Where existing conditions (such as narrow right of way width) preclude such layouts, parallel ramps or diagonal ramps may be approved.

Diagonal ramps are located in the middle of a section of circular curb at a corner, where the ramp is at an angle of about 45 degrees to one or two marked crosswalks. In such cases, the crosswalks shall be laid out to encompass a 48 inch by 48 inch landing and wheelchair maneuvering area at the base of the ramp in the street.

1.9. Reserved

1.10. SURFACE AND AGGREGATES

- 1.10.1. Aggregates used in concrete mixes and in the construction of streets, sidewalks and aprons shall meet the requirements in SECTION 703 - AGGREGATES of the *State of Maine Department of Transportation Standard Specifications Revision of December 2002* with the following additions and modifications:

703.02 Coarse Aggregate for Concrete:

Designated Aggregate Size

Sieve Size	Percent Passing Sieve				
	2 in.	1½ in.	1 in.	¾ in.	½ in.
2 in.	95-100	100	-	-	-
1-1/2 in.	-	95-100	100	-	-
1 in.	50-70	-	90-100	100	-
¾ in.	-	50-70	-	90-100	100
½ in.	15-30	-	25-60	-	90-100
¾ in.	-	10-30	-	20-55	-
No. 4	0-5	0-5	0-10	0-10	0-15
F.M. (+0.20)	7.45	7.20	6.95	6.70	6.10

1.10.2. Aggregate used in concrete shall not exceed the following maximum designated sizes:

- 2 inches for mass concrete
- 1-1/2 inch for piles, pile caps, footings, foundation mats, and walls 8 inches or more thick
- 3/4 inch for slabs, beams, and girders.
- 1/2 inch for fireproofing on steel columns and beams
- 1 inch for all other concrete

1.10.3. 703.06 (a) Aggregate Base:

Aggregate base - crushed, type "B" shall not contain particles of rock which will not pass a two inch (2") square mesh sieve, and shall conform to the type "B" aggregate, as listed in the subsection of the Standard Specifications.

"Crushed" shall be defined as consisting of rock particles with at least 50 per cent of the portion retained on a 1/4 inch square mesh sieve, having a minimum of 2 fracture faces.

1.10.4. 703.06 (b) Aggregate Subbase:

Sand subbase shall not contain particles of rock which will not pass a one inch (1") square mesh sieve, and shall conform to the type "F" Aggregate, as listed in this subsection of the Standard Specifications.

Gravel subbase shall not contain particles of rock which will not pass a three inch (3") square mesh sieve, and shall conform to type "D" Aggregate, as listed in this subsection of the Standard Specifications.

1.10.5. 703.18 Common Borrow:

Common borrow shall not contain any particle of bituminous material.

1.10.6. 703.19 Granular Borrow:

Granular borrow shall contain no particles which will not pass a three inch (3") square mesh sieve.

1.10.7. 703.20 Gravel Borrow:

Gravel borrow shall not contain particles of rock which will not pass a three inch (3") square mesh sieve.

1.10.8. 703.31 Crushed Stone for Pipe Bedding and Underdrain:

"Crushed Stone" shall be defined as rock of uniform quality and shall consist of clean, angular fragments of quarried rock, free from soft disintegrated pieces, vegetable matter, lumps or balls of clay, and other unsuitable substances.

Crushed stone used as a bedding material for pipe and underdrain shall be uniformly graded and shall meet the gradations listed in the tables below. The stone shall be free from vegetable matter, lumps or balls of clay, and other unsuitable substances.

Sieve Designation	Percentage by Weight Passing
3/4 – inch	100
3/8 – inch	20 - 55
No. 4	0 - 10

For pipe sizes 42 inches and larger	
Sieve Designation (square mesh sieve)	Percentage by Weight Passing
1-1/4 – inch	100
3/8 – inch	20-55
No. 4	0-10

Minimum thicknesses for pavement structure materials:

Street Classification	Minimum Materials Thicknesses (Inches)			
	Wearing Course Pavement	Base Course Pavement	Agg. Base Course	Agg. Subbase Course
Minor Residential	1 ½	2	3	15
Residential	1 ½	2	3	15
Collector	1 ½	2 ½	3	18
Commercial/Industrial	2	3	3	18

Minimum placement temperatures for hot mix asphalt pavement:

Base Temp. of	Mat Thickness, Inches					
	½	¾	1	1 ½	2	3+
40 - 50*	--	--	--	--	285	275
50 - 60	--	310	300	295	280	270
60 - 70	310	300	290	285	275	265
70 - 80	300	290	285	280	270	265
80 - 90	290	280	275	270	265	260
90+	280	275	270	265	260	255

* Surface course pavement shall not be placed when the air or road base temperature is less than 50 degrees F.

1.11. STREETS ON ISLANDS IN CASCO BAY

Reserved.

1.12. PARKING STUDY

Parking studies shall be produced by a licensed transportation professional engineer.

Where a parking study is required, data shall be determined by values contained in the most up to date version of the Institute of Transportation Engineers (ITE) publication titled Parking Generation, or through local, regional or other pertinent national data. If local or regional data is to be used, the scope and methodology of the parking study shall be coordinated with the City Transportation Engineer.

Where a parking study is required, the applicant's engineer shall have a scoping meeting with the City Transportation Engineer or their designee to determine the need for and required scope of the study. The requirements for the study shall be based on standard transportation engineering practices.

1.13. TRANSPORTATION DEMAND MANAGEMENT (TDM)

All TDM Plans shall include specific provisions for the following:

1.13.1. Transportation Narrative:

Every TDM plan shall describe how the project fits within the multimodal transportation system serving the district in which the development is located. The narrative should address the specifics of the use, occupants, visitors, and location of the development and how it is anticipated to relate to its transportation context.

1.13.2. Identify a TDM Coordinator to administer the TDM plan:

Every TDM Plan needs to identify the plan administrator and establish the roles and responsibilities of the administrator.

1.13.3. Employee and Customer Survey:

The TDM plan shall develop and use an employee and/or customer survey format that:

- Is specifically designed to reflect the use mix within the development.
- Is electronically tabulated.

- Produces comparable data from year to year
- Allows for compilation of data from multiple employers by third party.
- Allows for data use by employees to foster car pooling and ride sharing.
- Identifies barriers to or best practices in public transit, bicycle, and pedestrian transportation.
- Can be conducted periodically (typically annually) and can be used to monitor program effectiveness and provide the basis for periodic plan adjustment (see monitoring section below).

1.13.4. Set Parking and Trip Reduction Target:

The TDM plan shall use ITE trip generation and parking demand projections as the basis to establish a projected transportation demand and/or impact of the development. Alternatively, project-specific parking and trip generation projections may be used in place of ITE standards, if estimated by a licensed professional engineer and approved by the City. A project specific demand analysis may be advantageous to projects that can demonstrate reduced parking demand and trip generation based on approved assumptions in their TDM and Site Plan.

The TDM plan must use the specific use, location, local alternative transportation opportunities, and initial survey results to establish an achievable percentage reduction in transportation demand for the project. The TDM plan will utilize the stated parking and trip reduction targets as the basis for reduced infrastructure and contribution requirements for the Planning Board's evaluation.

1.13.5. Customize Parking and Trip Reduction Strategies:

Every TDM plan must be customized to reflect the specific mix of use proposed for the development. For example, A residential development will utilize a very different approach to reducing project generated parking and trips than an office building. Likewise, the administration of the TDM plan and the role of the TDM Coordinator must adequately respond to the scale of the development, the uses in the development, as well as the ownership framework and management of the facility.

1.13.6. Education:

The TDM plan shall, at a minimum include provisions for the following. All educational information and programs shall be readily accessible to all project occupants.

- Transit maps and schedules. These shall be posted and updated by the TDM Coordinator, as necessary.

- Access to Information concerning transportation providers and guaranteed ride home services such as: car pooling list serves and/or van pool providers.
- Internal information sharing such as posting a “Ride Board” or employee email list-serve to facilitate car pooling and to share the results of employee and customer surveys.
- Educational and promotional materials that describe and identify the advantages and cost saving opportunities of using alternative transportation, including specific incentives offered by the employer.
- Recognition of employees who reduce the traffic impact of the development through newsletter, email, bulletin board, or other announcements.
- Information on bicycling routes, parking infrastructure and locations and other amenities or incentives that may be available.

1.13.7. Monitoring:

All TDM plans must include provisions for monitoring program effectiveness over time to establish whether trip reduction targets are being met.

Responsibility: TDM Coordinators and/or plan administrators are responsible for monitoring the efficacy of the TDM plan periodically over time and making adjustments to the plan needed to achieve trip reduction targets.

Methods: The methods and scheduling of monitoring shall be outlined in the TDM plan and shall follow accepted transportation engineering. Monitoring methods will typically involve use of the periodic survey combined with direct observation.

Reporting: TDM plan monitoring shall be compiled into a report that compares the results to trip reduction targets and parking demand projections. The monitoring results shall be provided to the Reviewing Authority according to the monitoring schedule established in the TDM plan.

1.13.8. Project Specific Standards:

Individual TDM Plans shall assess the following topics on a site-specific basis tailored to the transportation needs of the development.

1.13.8.1. Infrastructure:

On-site and off-site infrastructure improvements may be incorporated to achieve trip reduction targets and may include the following:

- **Public Transit Access:** The TDM plan shall identify how occupants and/or visitors will access public transit. Pedestrian links to bus routes and other transit links shall be identified and their usability assessed for

sidewalk condition, ADA accessibility, street lighting, cross walk facilities, wayfinding, and general safety and attractiveness. The nearest sheltered public transit facility shall be identified. Deficiencies in the links to public transit that constitute barriers to its use shall be addressed in the TDM plan and in the site plan.

- **Bicycle Parking:** Minimum bicycle parking is a site plan requirement according to Section 14-526 of the Land Use Code. The TDM plan may incorporate additional bicycle parking, bicycle wayfinding, and/or covered parking to further encourage bicycle use.
- **On-site Shower and Locker Facilities:** Access to showers and locker facilities may be incorporated into the TDM Plan in order to encourage human powered transportation alternatives.
- **TDM Bulletin Board or Kiosk:** TDM plans shall identify to occupants where information and educational material will be provided within the development a visible and convenient facility such as a transportation bulletin board and/or kiosk. In multi-tenanted facilities, transportation information shall be provided in the lobby of the structure or other such location that is accessible and frequented by a significant majority of occupants and visitors to the facility. The TDM coordinator shall be responsible for keeping all material current and available, as needed.

1.13.8.2. **Incentives:** Incentives available to users and/or occupants of the development may be incorporated to achieve trip reduction targets and may include the following:

- **Parking "Cash Out":** TDM plans may include "parking cash out" incentives where employees have the choice of receiving monetary payments in lieu of provided parking. The efficacy of these programs will need to be carefully assessed and the method of monitoring must be described in the TDM plan.
- **Public Transit Passes/Van Pool vouchers:** Free or reduced price bus passes or van pool vouchers may be used as an incentive in the TDM plan. The use of transit options should be incorporated into the employee/customer survey and incorporated into the plan monitoring program. Transit payment options may be combined with parking cash out incentives, where appropriate.
- **Preferred parking for car pool:** Car pooling employees may be provided with more convenient and attractive parking, if available. If this option is incorporated into the TDM plan, the location of preferred parking shall be identified on the site plan and signed accordingly.
- **Car sharing:** Residential developments may incorporate shared car services or jointly owned vehicles into the TDM plan. Commercial development TDM plans may identify use of a shared vehicle for use by employees for either commercial or personal trips through the work day as a means to encourage

alternative commuting to work.

- Telecommuting, flex time, and other flexible work scheduling mechanisms that promote fewer employee trips to work or promote alternative transportation travel.

*Other incentives infrastructure improvements and/or methods as may also be appropriate to the development.

1.14. PARKING LOT AND PARKING SPACE DESIGN

Refer to Division 20 of the City Land Use Code (Sections 14-331 to 14-350) for zoning ordinance requirements concerning the number of parking spaces required for off-street parking.

Parking spaces shall meet the following dimensional requirements:

- Standard parking space: 9 feet wide by 18 feet long.
- Compact parking space: 8 feet wide by 15 feet long.
- Motorcycle/motorized scooter parking space: 4 feet wide by 8 feet long.

Any parking lot with 10 or fewer spaces shall contain standard sized parking spaces. Parking lots with greater than 10 spaces may be comprised of up to 20% compact parking spaces.

Parking lot layout shall conform to Figures I-28 thru I-32.

Vehicular access shall be provided by one or more aisles. Minimum widths of aisles are illustrated in Figures I-28 thru I-31.

1.15. BICYCLE PARKING

Refer to Division 20 of the City Land Use Code (Sections 14-332.1) for zoning ordinance requirements concerning the number of bicycle parking spaces required.

Bicycle parking shall:

- Provide secure, durable racks that maintain bicycles in an upright position and to which bicycles can be affixed with customary lock and cable mechanisms. Fence-type ("wheel bender") racks designed to secure the front wheel only are prohibited.
- Be installed on a hard surface.
- Be separated from car parking by a physical barrier such as curbing, wheel stops, parking bollards or similar features.

- Be adequately illuminated where nighttime use is anticipated.

1.15.1. Bicycle parking intended for long-term use (residential or full-time employee parking) shall be provided under covered areas and/or in secure storage lockers.

1.15.2. Placement of off-street bicycle parking racks shall conform to the Bicycle Parking Rack Placement Criteria (*drawn from the Bicycle Facility Design Guide of the District Department of Transportation, 2006*) as illustrated in Figure I-33.

1.15.3. Commercial, Industrial (requiring more than ten (10) bicycle parking spaces):

- A minimum of ten percent (10%) of required bicycle parking shall be provided within fifty (50) feet of the main egress point of the structure, or shall be no further from such entry than the nearest five (5) non-handicapped parking spaces.
- Where there is more than one structure on a site, or where a structure has more than one main entrance, the parking shall be distributed to adequately serve all structures or main entrances.

1.15.4. Directional Signage: If bicycle parking is not directly visible from the public right of way, directional signage shall be provided indicating the availability and location of bicycle parking facilities.

1.15.5. Approved Bicycle Racks:

Private property: A variety of commercially available racks are acceptable for installation on private property, including but not limited to those catalogue listings identified herein (Figures I-34 and I-35).

In the Public Right-of-Way: Where site conditions cannot reasonably accommodate bicycle parking on private property, it may be located within a public sidewalk area either adjacent to or within reasonable walking distance of the site, if such areas are available that meet the Bicycle Parking Rack Placement Criteria of this chapter (*drawn from the Bicycle Facility Design Guide of the District Department of Transportation, 2006*) – see Figure I-33. If no such location is available, a financial contribution commensurate with the cost for purchase and installation of the required number of bicycle racks shall be made to a City infrastructure account.

The following approved brands, installed according to company specifications, shall be permitted in the public right of way. Equivalent bicycle racks by other manufacturers are acceptable upon approval by the reviewing authority.

- DERO 'Downtown Rack' Inverted U-Rack (Figure I-35)
- DERO 'Bike Hitch' (Figure I-34)
- Old Port District, including Commercial Street: DERO Bike Hitch only (Figure I-34)

Bicycle racks in the public right of way shall become the property of the City of Portland.

Bicycle racks in the public right of way shall match the designated street furniture color for that location as described in the Municipal Street Lighting Standards in this manual. Where there is no designated street furniture color, bicycle racks in the public right of way shall be black (manufacturer's specification).

1.16. BICYCLE ROUTES AND LANES

The City has developed a Bike Route Network Map (Figure I-35) to show present and proposed bike routes on City streets. These routes are typically accomplished by providing either dedicated lanes or "Share the Road" methodology. Positive identification of the lanes shall be provided by pavement markings, bike lane symbols, and signage. The following standards shall be applied to the installation of bike lanes on City streets:

- Vehicular travel lanes and bicycle lanes shall be separated by a six (6) inch solid white painted edge line. At intersections the white edge line shall be a dotted line (two (2) foot painted length by four (4) foot opening) across the intersection.
- Bike lanes shall have a minimum width of five (5) feet. Where sufficient shoulder width is provided, a second edge line shall be painted off the face of the curb at one (1) or two (2) feet. This edge line shall not extend across intersections. See Figure I-36
- When bike lanes are provided on streets with on-street parking, the bike lane shall be a minimum of six (6) feet wide delineated by edge lines on either side of the bike lane. See Figure I-37
- Bicycle lanes shall be marked with appropriate stenciled symbols; see Figure I-38 for two examples.
- Bike routes shall be identified by appropriate signage as found in the FHWA 'Manual of Uniform Traffic Control Devices'. See Figure I-38 for examples.

1.17. Reserved.

1.18. MOTORCYCLE / MOPED PARKING (ON-STREET):

To distinguish motorcycle/moped parking spaces from standard parking spaces the spaces shall be painted and delineated with signage. These painted spaces shall be angled and shall be four (4) feet wide by eight (8) feet long. The dimensions for on-street motorcycle/moped parking are outlined in Figure I-31.

On-street motorcycle and moped parking may also be located where standard vehicle parking would be prohibited because of sight restrictions, such as, adjacent to a crosswalk or an approach to a traffic control device. Motorcycles/mopeds do not have the same sight impediment as a standard vehicle.

1.19. TRAFFIC SIGNALS

New or modified traffic signals require the submission of a traffic signal plan including location of all equipment, underground utilities, a phasing and timing plan and a specific list of all traffic signal hardware. For new or modified traffic signal installations, a new plan shall be submitted to the reviewing authority for review and approval before installation can proceed.

Listed below are the traffic signal items required for traffic signal installations. These items or an approved equivalent shall be provided.

1.19.1. Controller Equipment:

- Controllers shall be compatible with existing Naztec Street Wise ATMS Software
- Traffic control cabinets shall be Naztec Model M34 or P44 TS2 Type 1 Series only
- Secondary traffic controllers shall be Naztec Model 980 TS2 Type 1 Series only
- Master controllers shall be Naztec Model 981 Series only
- Malfunction management units shall be Naztec Model MMU-516E only

1.19.2. Video Detection Equipment:

- Video detection units shall be Traficon Model VIP3.1 & VIP3.2 Series only
- Video detection cameras shall be Traficon approved models only

1.19.3. Signal Equipment:

- Signal housings shall be McCain Model MTSTA or MTSTP Series only
- LED modules for vehicle indications shall be GELcore Model DR6 Series only
- LED modules for pedestrian indications shall be GELcore Model PS7 Series only
- Accessible Pedestrian Signals shall be Campbell Advisor Series only

1.19.4. Traffic Structures:

- Mast arms shall be Valmont SM16 or CB16 Series only
- Strain poles shall be Valmont SW56 Series only.

1.20. PUBLIC CROSSWALKS

Public crosswalks shall meet the requirements of The Manual on Uniform Traffic Control Devices (MUTCD), unless City standards specify a stricter measure. Public improvements may include but shall not be limited to any one or combination of the following:

- Crosswalks;
- Curb Bump Outs or Curb Extensions;
- Pedestrian Crossing Signs (curbside, overhead or in the street);
- Pedestrian Activated Yellow Flashing Warning Lights;
- Pedestrian Activated Traffic Control Signal (Red, yellow, green);
- Medians

1.20.1. Critical Physical Factors:

Walking Speed:

- This factor is applicable at signalized intersections and affects the length of the pedestrian clearance (flashing “don’t walk”) interval.
- Average walking speed is generally measured as three and a half (3.5) feet per second. In areas with elderly or young children pedestrians, a rate of three (3) feet per second is appropriate.

Vehicular Sight Distance:

- Sight distance shall be based on the posted speed plus 5 miles per hour or the 85th percentile travel speed as tabulated below.

Table 1 Stopping Sight Distances (1)	
Speed (mph)	Stopping Sight Distance (feet) *
25	155
30	200
35	250
40	305
45	360
50	425

*Assumes level grade

Source: AASHTO Policy reference 1, Exhibit 3-1 of that publication.

- Sight distance shall be based on a driver eye height of 3.5 feet and a pedestrian height of 2.0 feet.
- Parking shall be prohibited within twenty (20) feet from the centerline of a crosswalk and within thirty (30) feet at signalized and STOP sign locations.

1.20.2. General Standards for Crosswalk Installation:

1.20.2.1. The Manual on Uniform Traffic Control Devices (MUTCD) provides guidance for placement of crosswalks. In addition, crosswalks should:

- Occur where substantial pedestrian/vehicle conflicts exist. (See The Federal Highway Administration notebook titled "Traffic Conflict Techniques for Safety and Operations" which provides methods for conflict evaluation.)
- Occur at points of pedestrian concentration that can meet applicable standards or where pedestrians may not recognize the appropriate place to cross (e.g., loading islands, mid-block pedestrian crossings).
- Maintain suitable separation (approximately 300 feet) between non-intersection or mid-block crosswalks.
- Be installed based on an engineering study if located other than at a STOP sign or traffic signal. For mid-block locations, a study shall evaluate factors of need including but not limited to school crossings, age of pedestrians, and nearest alternative crosswalk location as well as safety issues such as traffic speed, volume, and sight lines.
- Consider advance warning signage if installed at uncontrolled locations and allow for restriction of parking for adequate visibility of the advance signage.
- No crosswalk spacing requirements are to be imposed at intersection locations. Other engineering factors are to be reviewed in the determination of suitability of the location.

1.20.2.2. The Crosswalk Installation Guidelines (Figure I-24) provide criteria for guiding evaluations of when crosswalks may be desirable at uncontrolled locations based on pedestrian and vehicular volumes. Crosswalks at uncontrolled locations shall be placed where these criteria are met; or where special requirements and/or plans exist that support the installation of a crosswalk.

1.20.2.3. Crosswalks proposed at signalized intersections shall include pedestrian signal indications for substantial pedestrian crossings.¹ Each proposed location shall be evaluated based on through traffic volumes, turning vehicle volumes and signal phasing to determine which legs of the intersection are most appropriate for pedestrian crossings. The default assumption is that crosswalks shall be provided on all intersection approaches and supplemental analysis must be provided that identifies specific engineering conclusions on why this cannot be accomplished.

1.20.2.4. Marked crosswalks across stop controlled intersection approaches shall

¹ Design and Safety of Pedestrian Facilities, 1998, ITE Technical Committee 5A-5

be considered where vehicular traffic may block pedestrian traffic². This will be assessed based on a visual observation of vehicular and pedestrian traffic flow at the intersection to determine if there is sufficient vehicular traffic to block the pedestrian crossing path for a significant period of time.

1.20.3. Design Criteria:

Street Markings: Crosswalks on public streets shall use a minimum of eight (8) inch wide solid white lines, which should be spaced to provide a minimum overall width of eight (8) feet. Wider line width is required for locations with higher posted speeds as shown in Table 2. Paint, wherever used, shall meet Maine Department of Transportation (Maine DOT) specifications. Additional designs may consist of longitudinal lines. Figure I-21 illustrates these typical crosswalk markings and Table 2 provides dimensions utilized in the City of Portland for various applications.

Type	Overall Width	Line Width	Spacing
Standard Crosswalk Marking (two lines) Posted Speed ≤ 35 mph Posted Speed > 35 mph	8' 8'	8" 12"	N.A.
Crosswalk With Longitudinal Lines (block style) (See Table 4)	8'	24"	Spacing 4' o.c.

The longitudinal or block style striping of crosswalks should be reserved for use at the following locations (see Table 4):

- Uncontrolled locations of special significance, such as school walking routes, trail/shared-use paths and mid-block crossings;
- High volume pedestrian locations with at least 25 pedestrian crossings for each 4 hours or 40 crossings during the peak hour; and
- High vehicle speed (> 35 mph posted speed) crossings.

1.20.3.1. Street Lighting: Crosswalk locations shall be adequately illuminated for night-time use.

1.20.3.2. Signage: Select crosswalk locations may need to be accentuated through the use of signage mounted curbside, overhead, or on the road centerline, as described below:

² Pedestrian Facilities Users Guide, March 2002, USDOT - FHWA

1.20.3.3. Curbside Signs: There are three standard curbside signs consisting of a crosswalk warning sign, a school crossing warning sign, and an advance warning pedestrian crossing sign. The City of Portland also installs “yield for pedestrians” signs at crosswalks, as shown in Figures I-22 and I-23. Crosswalk signs shall be placed directly adjacent to crosswalks and advance warning signs shall be placed in accordance with the MUTCD guidelines as shown on Table 3.

85 th Percentile Speed* (mph)	Advance Placement (feet)
25	125**
30	125**
35	125**
40	125
45	175

*or the posted speed when a speed study is not available.

**recommended minimum for the City of Portland

Source: Table 2C-4 of the MUTCD.

1.20.4. Standard signs shall be black legend on a yellow background. The MUTCD also allows the use of a yellow-green fluorescent high grade reflective background for increased visibility. These higher grade signs shall be used where locations meet at least one of the following criteria:

- Vehicle 85th percentile speeds or the posted speed is greater than or equal to 35 mph;
- Pedestrian crossing volume of at least 25 per hour for four hours or 40 during the peak hour; or
- School crossing.

1.20.4.1. Overhead Signs and Flashing Warning Lights: Overhead signs supplemented with pedestrian activated flashers may be placed at high volume pedestrian crossing locations or where specific pedestrian safety issues have been identified.

1.20.4.2. Centerline Signs: Centerline signs shall be able to withstand vehicle impact without damage to the vehicle and with minimal damage to the device and shall be anchored in place. Note that these devices must be removed without damaging the pavement prior to the start of winter season. The City recommends a device with a base anchored to the pavement with epoxy and a flexible upright paddle that is replaceable. The following criteria should be considered for these devices to be utilized:

- Presence of a high crash location (HCL) as defined by Maine DOT:
 Both of the following 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; and

- o A minimum of eight (8) accidents over a three (3) year period.
- Principal or minor arterial, as identified in Figure -24.
- At least 25 pedestrian crossings per hour for four (4) hours or 40 pedestrian crossings for the peak hour.

1.20.5. Traffic Control Signals: The following provides general guidance concerning installation of a pedestrian activated red-yellow-green traffic control signal. The MUTCD should be consulted for specific details:

- The location is a school crossing and a traffic engineering study reveals that there are not adequate gaps in the traffic stream; or
- There are 107 pedestrian crossings for each of four (4) hours or 133 crossings during any one hour and under both conditions for high volume roadways. Higher rates of pedestrian crossings are necessary for lower volume streets. The number of pedestrians may be reduced by 50% where they are predominantly elderly or young children to include crossing locations along school walking routes for elementary and middle school students.

1.20.6. Specific Guidelines for Crosswalk Use: The City of Portland has established the following guidelines for pedestrian street crossing devices (Table 4):

Table 4: Pedestrian Crossing Devices	
Device	Use *
Crosswalk –	
a. 8" lines, 8' total width	Where volume criteria of Figure I-25 are met and speeds are less than 35 mph and at signalized intersections.
b. 12" lines, 8' total width	At all unsignalized locations where volume criteria of Figure I-25 are met and speeds are between 35 and 45 mph.
c. 24" block style lines, 8' width	At mid-block locations where volume criteria of Figure I-25 are met and speeds are between 35 and 45 mph, at all school and trail/shared-use path crossings and as noted in (Design Criteria) above, subsection 1.17 or at uncontrolled locations as determined by the Traffic Engineer.
Curbside signs –	
a. Advance Crossing Signs	For all mid-block crosswalks and other uncontrolled locations as determined by Traffic Engineer.
b. Crossing Signs	
1. Standard Grade	At all locations where crosswalk lines alone are not sufficient to define the crossing location to motorists at the discretion of the Crosswalk Committee.
2. High Grade	Speed greater than or equal to 35 mph; or 25 pedestrians crossing per hour for four hours or 40 pedestrians crossing for the peak hour
3. School	In accordance with MUTCD

Table 4: Pedestrian Crossing Devices (cont.)	
Device	Use *
Overhead Signs/Flashers	On arterial roadways or roadways with at least two lanes of traffic in at least one direction
Centerline Signs	As noted in 1.17.4.2, above.
Traffic Control Signal	Consider at locations meeting MUTCD warrants for school crossings or pedestrian volume crossings.

*All speeds are 85th percentile speeds for off-peak daytime periods or the posted speed.

1.21. PUBLIC TRANSIT FACILITIES

Where required, public transit facilities shall meet the following standards:

1.21.1. Transit Pullout Bays:

- 1.21.1.1. Transit pullout bays shall be located in the City right of way along the property frontage; or
- 1.21.1.2. Where space constraints prevent locating a transit pullout bay along the property frontage, within reasonable walking distance of the site.
- 1.21.1.3. The design of the pullout bay shall provide adequate space for vehicles to maneuver through facilities without causing damage to either the vehicles or facilities, as detailed in Section I of the Technical Manual.

1.21.2. Transit Shelters:

- 1.21.2.1. Transit shelters shall be located within the site, directly adjacent to the right-of-way on which the public transportation route is established; or
- 1.21.2.2. Where site constraints prevent locating a transit shelter on the site, it shall be located within a public sidewalk area along the property frontage. If a transit shelter is to be located within a public sidewalk area, City sidewalk clearance requirements.
- 1.21.2.3. Where space constraints prevent locating a transit shelter within a public sidewalk area along the property frontage, it may be located within reasonable walking distance of the site.
- 1.21.2.4. Installation and ongoing maintenance of transit shelters on private property shall be the responsibility of the property owner. Ongoing maintenance of transit shelters located in the City right of way shall be the responsibility of the City or of the local or regional transit authority serving the facility.

1.21.3. Where necessary, developments shall provide easements to the City, sufficient in size to accommodate public transit infrastructure.

1.22. CONSTRUCTION PERMITTING AND TRAFFIC CONTROL PLANS

1.22.1. Construction activity in the public right-of-way is controlled by Chapter 25 Article VII of the City Code of Ordinances. Required licenses and permits, restrictions on activity, and fees & charges are all outlined in that Chapter. Rules and Regulations for Excavation Activity are available through the Street Opening Clerk at the Department of Public Services.

1.22.2. Sewer and stormwater system connections are controlled by Chapters 24 and 32 of the City Code of Ordinance. Required permits for new connections and/or abandonment of existing connections are available through the Street Opening Clerk at the Department of Public Services. Rules and Regulations for these utility systems are available through the City Engineer's office of the Department of Public Services. See also Section II of the Technical Manual for lateral abandonment requirements associated with demolition permits.

1.22.3. Traffic Control Plans: Construction activity that impacts the existing public street system must be controlled to protect the safety of the construction workers and all modes of the traveling public. Projects that will occur along arterial and/or collector streets are required to submit a satisfactory 'maintenance of traffic' (MOT) plan prior to any site plan, subdivision, or street opening permit approval.

Maintenance of Traffic (MOT) plans shall provide for the safe passage of the public through or along the construction work zone. On a case-by-case basis applicants may be allowed to close a street and/or detour a mode of traffic when absolutely necessary for safety. MOT plans shall employ the appropriate techniques and devices as called for in the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). In addition:

- Construction speed signing may be used as needed to slow traffic
- Traffic Control signs shall not be placed where they are an obstruction to bicycles or pedestrians.
- In extreme situations, flaggers may be required to allow for safe pedestrian and bicycle movement

1.22.4. All existing modes of travel in the work zone area shall be accommodated if impacted by the activity. The safe passage of pedestrians, bicyclists, transit providers, and motorists are of equal importance when planning out the work zone; no pre-existing travel mode may be eliminated without the express approval of the Department of Public Services.

- Traffic control for bicycle and pedestrian facilities or routes through work zones shall be maintained until the bicycle and pedestrian facilities or routes are ready for safe operation. Traffic control will not be removed to allow auto travel at the expense of bicycles and pedestrians.
- Barrier systems utilized to separate the construction activity from the public

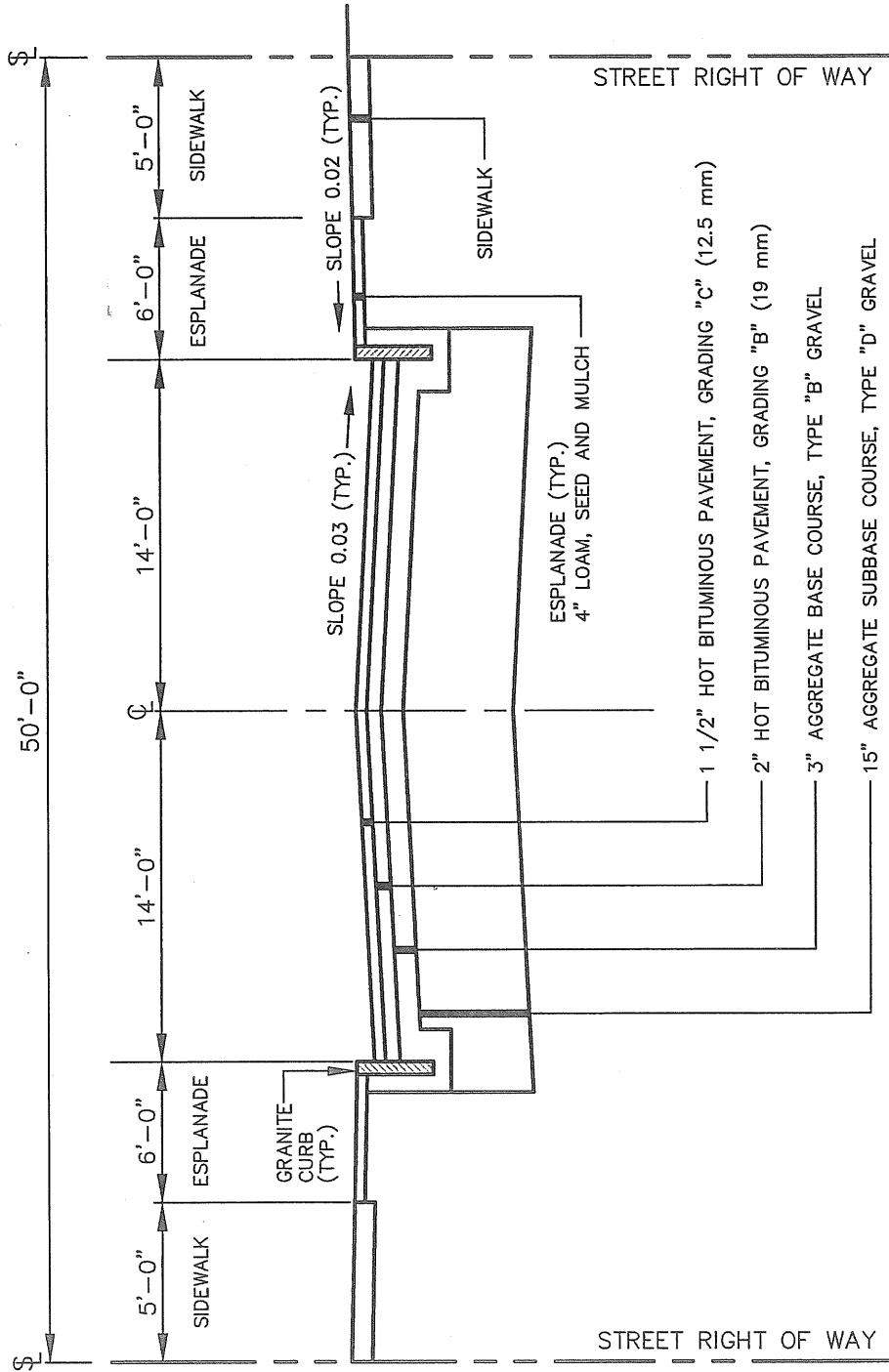
street and/or sidewalk shall not inhibit sight distances, particularly for visibility of pedestrians and bicyclists.

- 1.22.5. Use of public parking spaces or the blockage of any portion of sidewalk for the purpose of construction activity shall require an occupancy permit and appropriate fee as assessed by the Department of Public Services.

1.23. INFRASTRUCTURE CONTRIBUTIONS

Projects that generate traffic, which impacts roadways and intersections already operating at substandard levels of service E or F or adds traffic to improvement districts within the City (**as identified on the attached map - Figure I-39**) shall contribute towards future improvements. A contribution is not required when the applicant implements improvements to fully mitigate a project's impact.

The contribution amount shall be based upon the percentage impact of the project during the Weekday PM peak hour. Specifically, a percentage calculation of the trip generation increase as compared to No-Build traffic levels multiplied by the capital cost of implementing an improvement plan. If an improvement plan has not been identified for complex locations, the applicant shall fund a study that identifies required improvements.



LOCAL STREET CROSS SECTION

NOT TO SCALE

DATE:
AUGUST 2009

REVISED:

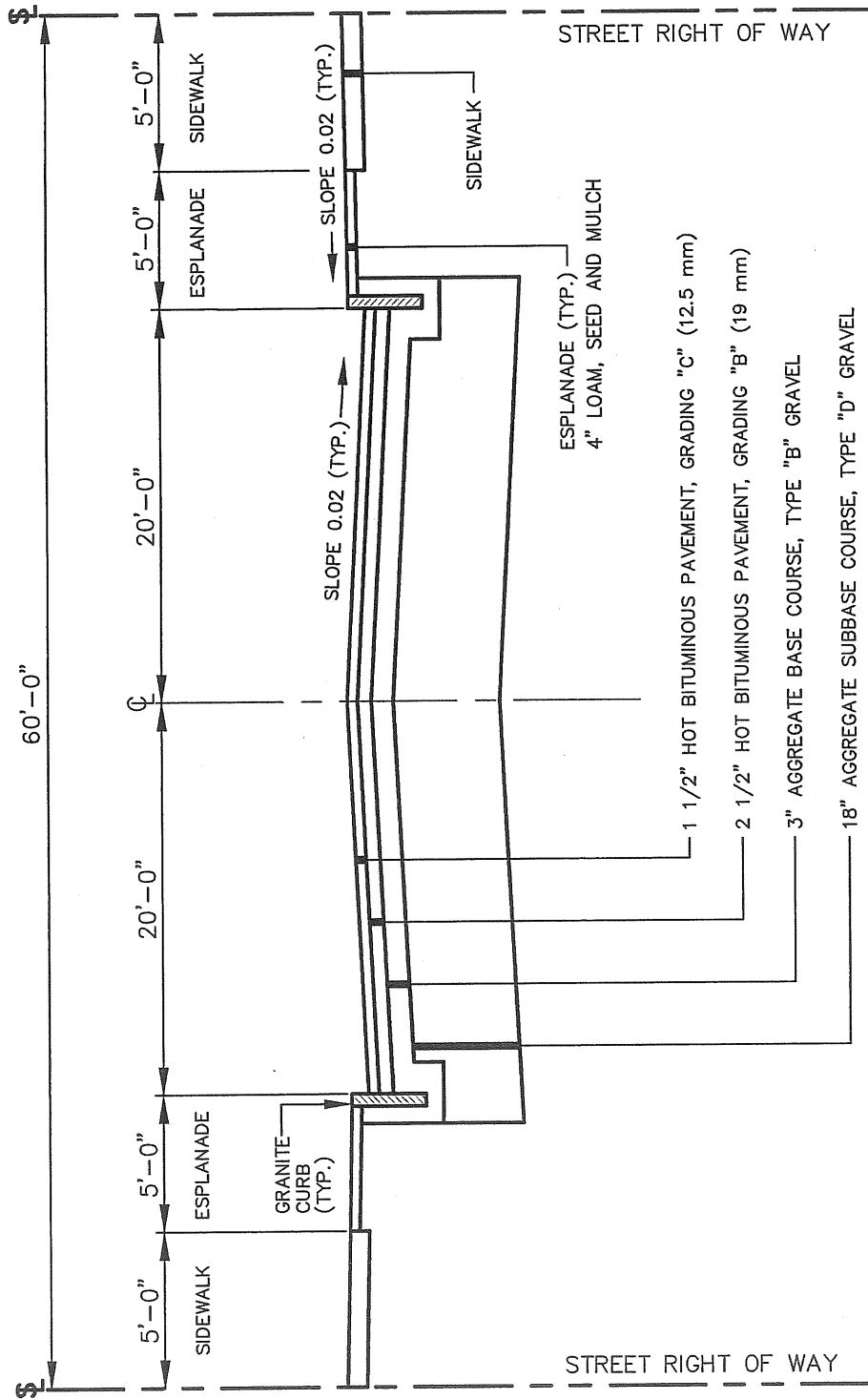
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TECHNICAL STANDARDS MANUAL

TRANSPORTATION SYSTEMS
AND STREET DESIGN
SECTION I

FIGURE:

LOCAL STREET CROSS SECTION

I-1



COLLECTOR STREET CROSS SECTION

NOT TO SCALE

DATE:
AUGUST 2009
REVISED:

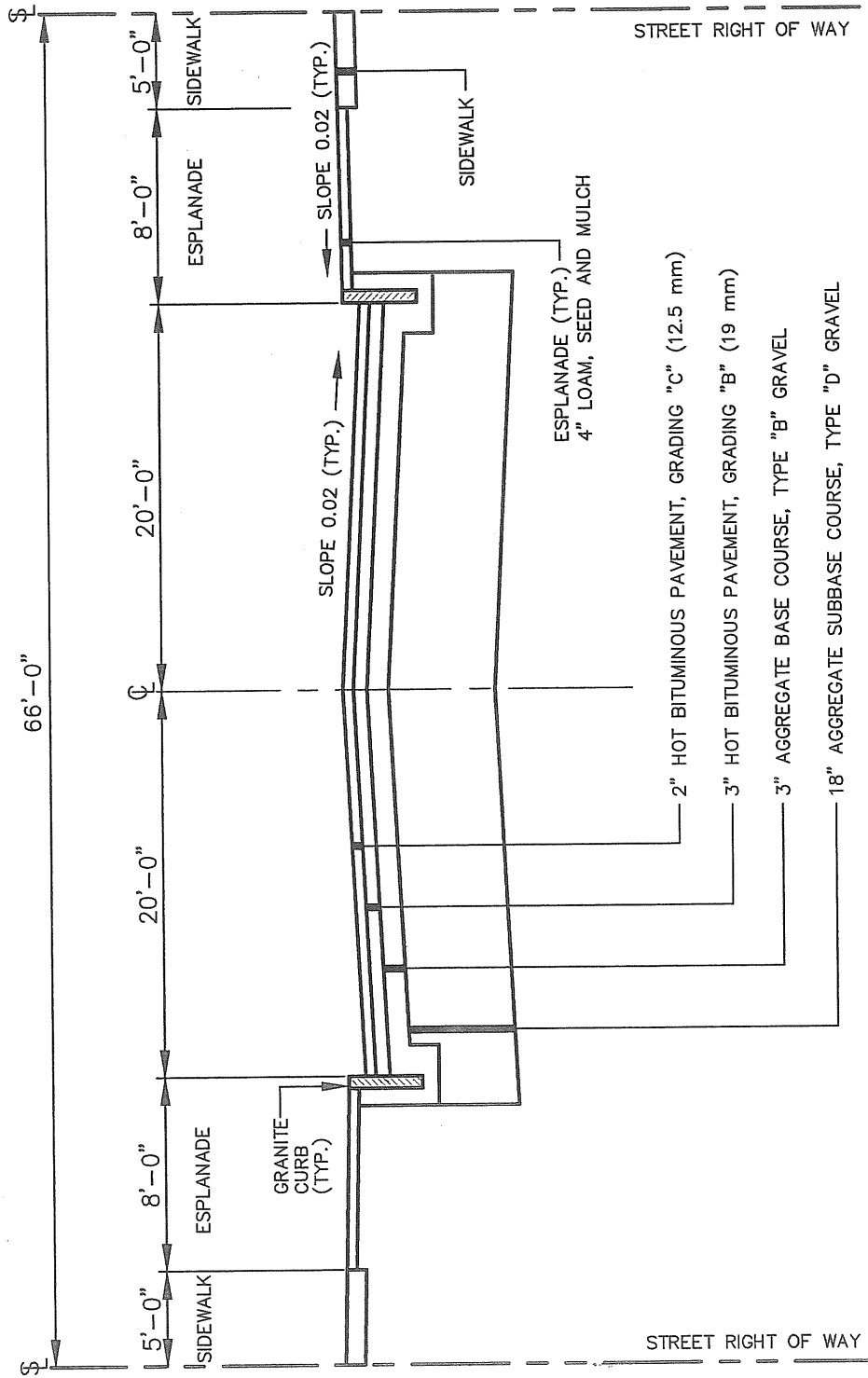
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 SECTION I

FIGURE:

COLLECTOR STREET CROSS SECTION

I-2



ARTERIAL STREET CROSS SECTION
 NOT TO SCALE

DATE:
 AUGUST 2009
 REVISED:

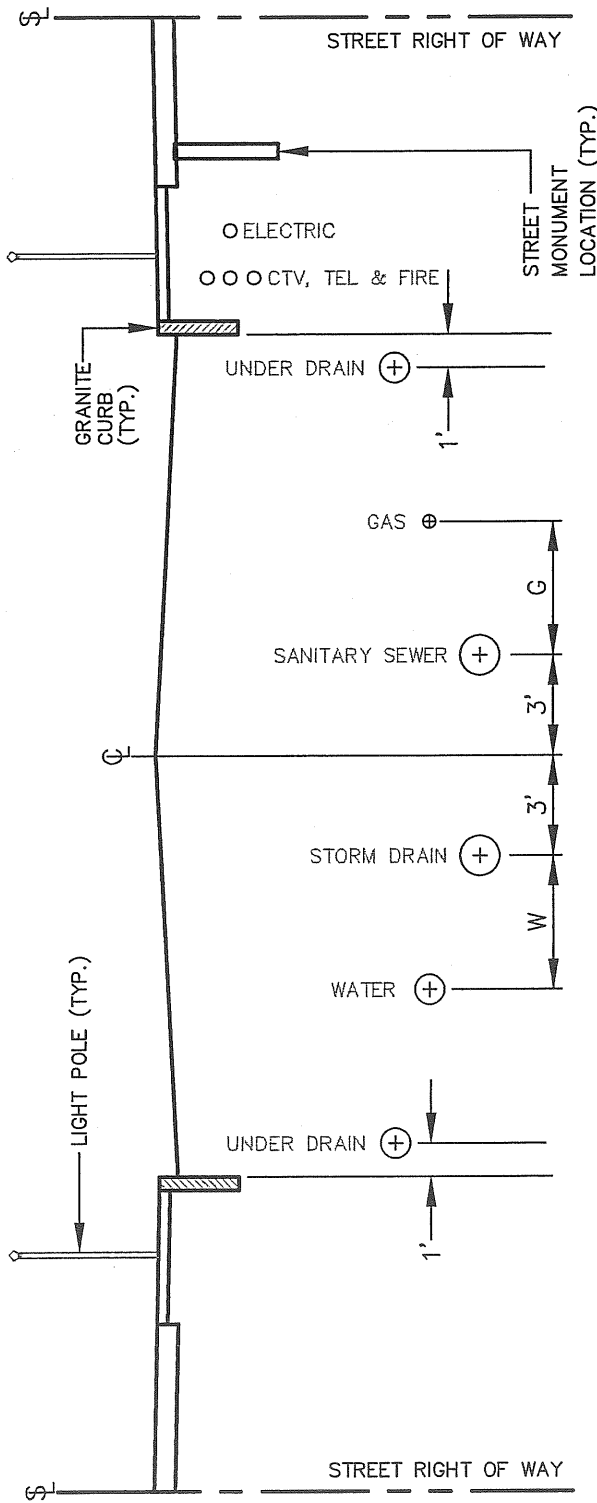
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 SECTION I

FIGURE:

ARTERIAL STREET CROSS SECTION

I-3



STREET CLASSIFICATION	R.O.W. WIDTH (ft.)	UTILITY LOCATION DIMENSIONS	
		W (ft.)	G (ft.)
LOCAL	50	5	5
COLLECTOR	60	7	7
ARTERIAL	66	8	8

- NOTES:
1. DEPTH OF SANITARY SEWER AND STORM DRAIN PER CITY ENGINEER.
 2. DEPTH OF UNDER DRAIN SHALL BE 3'-6" FROM GUTTER LINE TO PIPE INVERT.
 3. DEPTHS OF ELECTRIC, TELEPHONE, CABLE TELEVISION AND FIRE TO BE AT LEAST 36 INCHES BELOW FINISH GRADE. DEPTHS OF OTHER UTILITIES PER REQUIREMENTS OF APPLICABLE UTILITY COMPANY. WHEN TREES ARE PROPOSED FOR THE ESPLANADE, THE UTILITIES DESIGNATED FOR THAT LOCATION SHALL MAKE NECESSARY PROVISIONS.
 4. APPLICABLE WARNING TAPE SHALL BE PLACED OVER EACH UTILITY.
 5. RIGID PVC CONDUIT IS REQUIRED FOR STREET AND DRIVEWAY CROSSINGS AND OTHER PAVEMENT CROSSINGS MORE THAN 12 FEET IN LENGTH. CONDUITS CROSSING STREETS SHALL BE ENCASED IN CONCRETE.

UTILITY LOCATIONS IN STREETS

NOT TO SCALE

DATE:
MARCH 2011
REVISED:

CITY OF PORTLAND, MAINE
TECHNICAL STANDARDS MANUAL

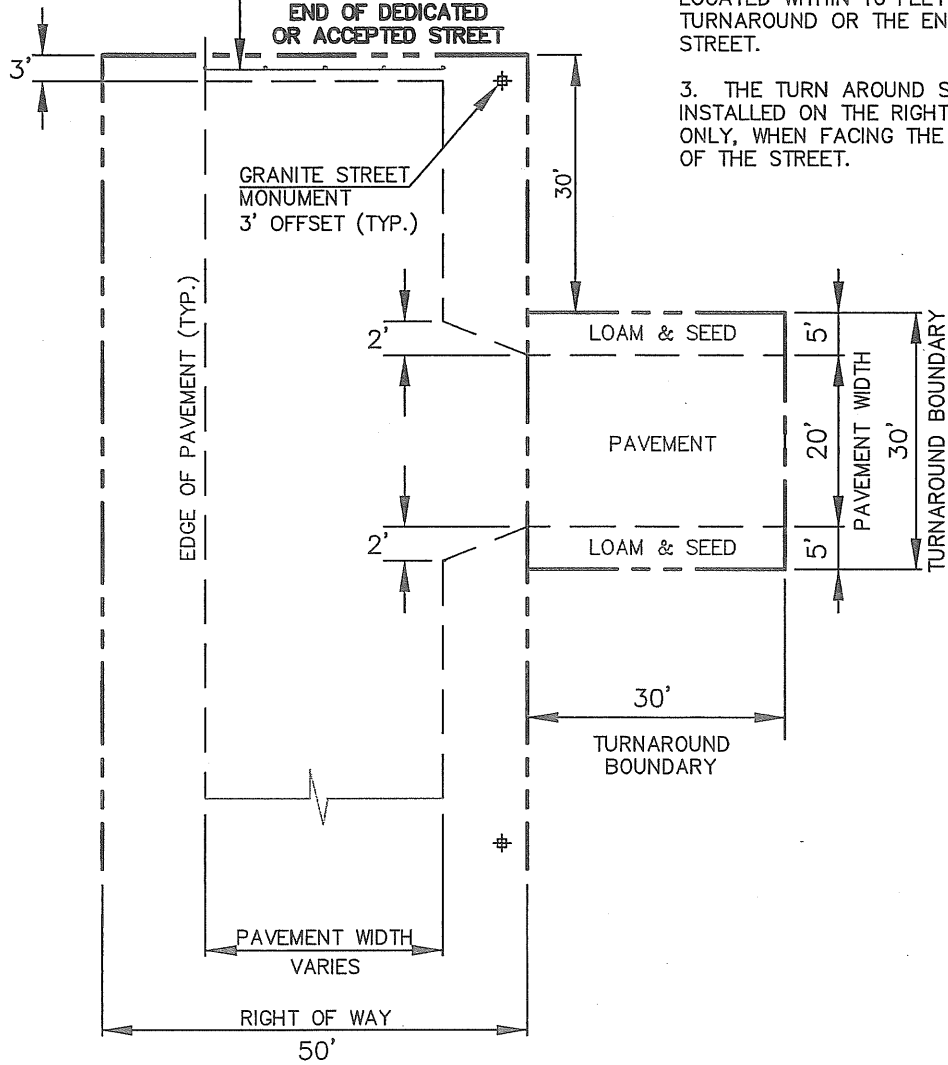
TRANSPORTATION SYSTEMS
AND STREET DESIGN
SECTION I

FIGURE:

UTILITY LOCATIONS IN STREETS

I-4

GALVANIZED STEEL OR PRESSURE TREATED WOOD GUARDRAIL WITH OM4-2 END OF ROADWAY MARKER SIGN OR APPROVED EQUAL



NOTES

1. A TURNAROUND EASEMENT SHALL BE CONVEYED TO THE CITY.
2. NO DRIVEWAYS SHALL BE LOCATED WITHIN 10 FEET OF THE TURNAROUND OR THE END OF THE STREET.
3. THE TURN AROUND SHALL BE INSTALLED ON THE RIGHT SIDE ONLY, WHEN FACING THE DEAD END OF THE STREET.

TURNAROUND ON DEAD END STREET

NOT TO SCALE

DATE:
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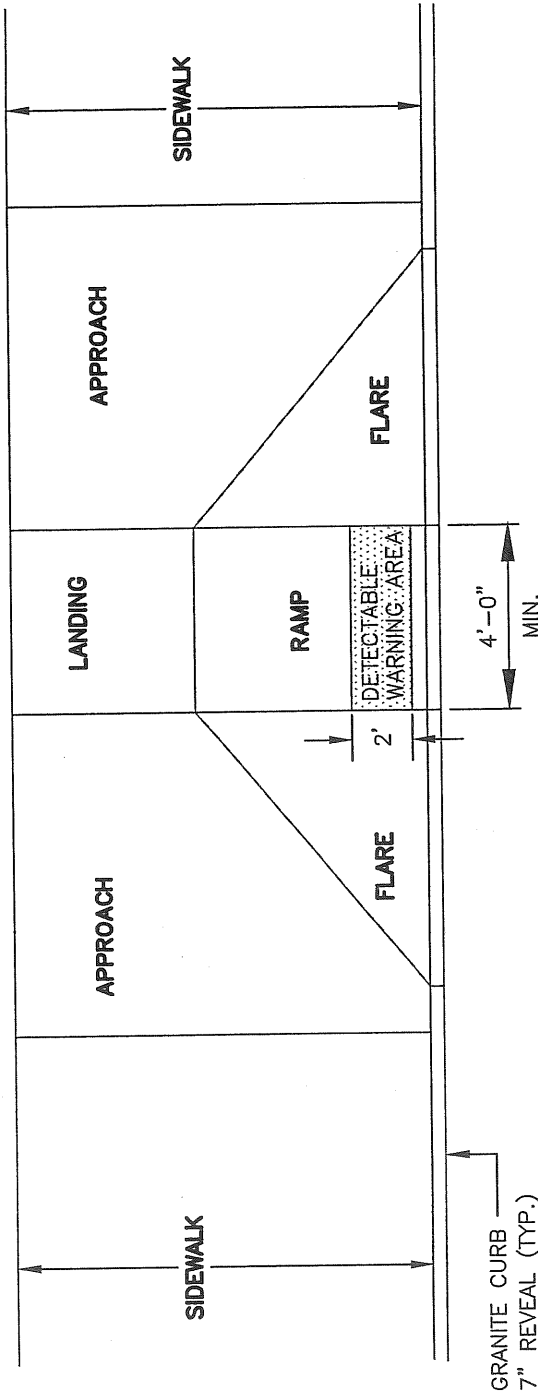
FIGURE:

TURNAROUND ON DEAD END STREET

I-5

DESIGN ELEMENT	SLOPE	CROSS SLOPE
APPROACH	IN DIRECTION OF TRAVEL 8.33% MAXIMUM	2%
LANDING	2%	2%
RAMP	8.33% MAXIMUM	MATCH STREET GRADE
FLARE	10% MAX. AT CURB FACE	-
SIDEWALK	MATCH STREET GRADE	2%

NOTES:
 ALL RAMPS SHALL COMPLY WITH ADA STANDARDS.
 GRANITE CURB ADJACENT TO RAMP SHALL BE FLUSH WITH STREET.



PLAN VIEW

PERPENDICULAR ADA RAMP LAYOUT FOR WIDE SIDEWALK WITH NO ESPLANADE

NOT TO SCALE

DATE:
AUGUST 2009

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 TECHNICAL STANDARDS MANUAL

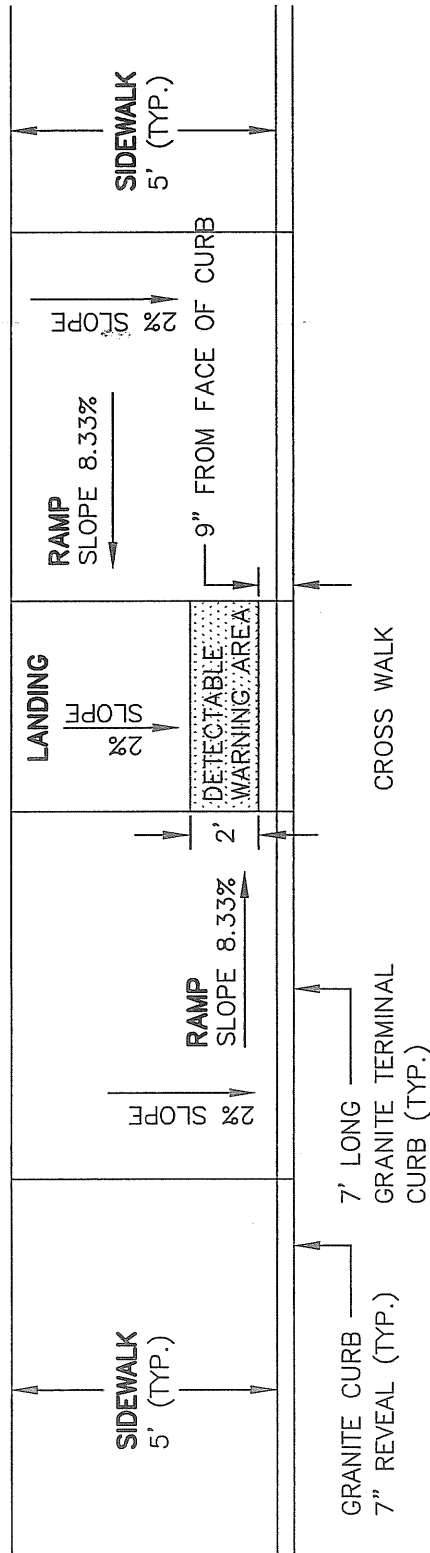
TRANSPORTATION SYSTEMS
 AND STREET DESIGN
 SECTION I

FIGURE:

PERPENDICULAR RAMP FOR WIDE SIDEWALK WITH NO ESPLANADE

I-6A

NOTES:
 ALL RAMPS SHALL COMPLY WITH ADA STANDARDS.
 GRANITE CURB ADJACENT TO LANDING SHALL BE FLUSH WITH STREET.
 SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.



PLAN VIEW

PARALLEL SIDEWALK RAMP LAYOUT FOR NARROW SIDEWALK WITH NO ESPLANADE

NOT TO SCALE

DATE:
 AUGUST 2009
 REVISED:

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 TECHNICAL STANDARDS MANUAL

TRANSPORTATION SYSTEMS
 AND STREET DESIGN
 SECTION I

FIGURE:

PARALLEL ADA RAMP LAYOUT FOR
 NARROW SIDEWALK WITH NO ESPLANADE

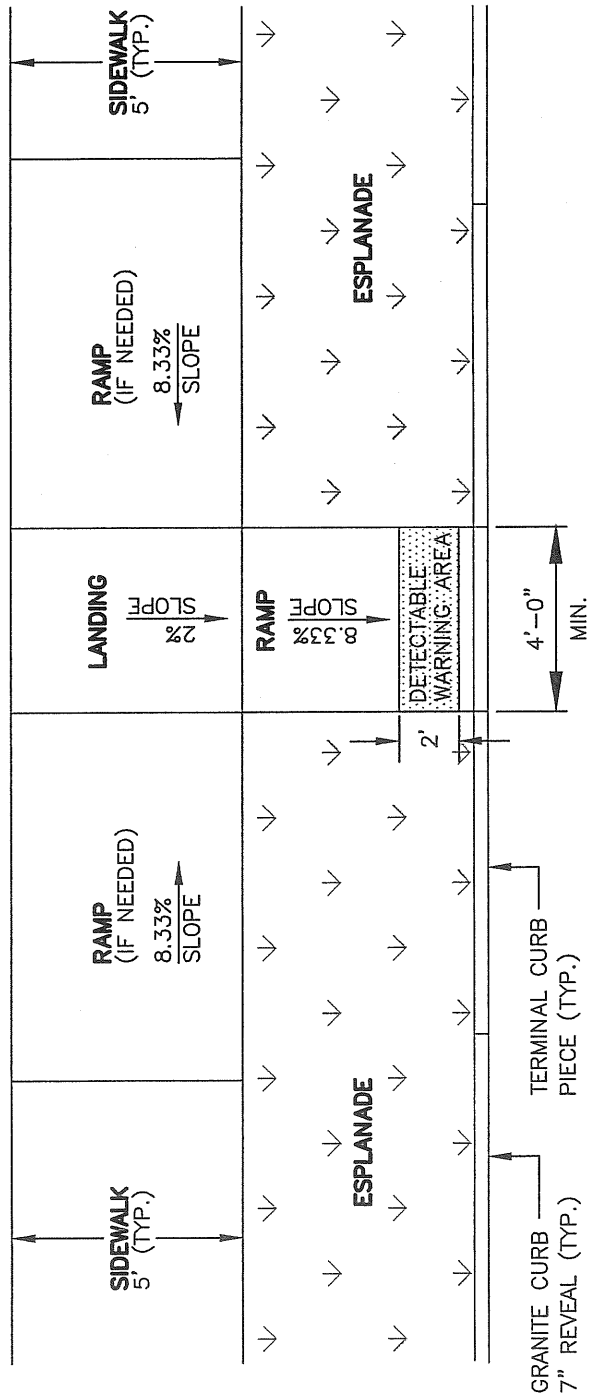
I-6B

NOTES:

ALL RAMPS SHALL COMPLY WITH ADA STANDARDS.

GRANITE CURB ADJACENT TO LANDING SHALL BE FLUSH WITH STREET.

SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.



PLAN VIEW

**PERPENDICULAR ADA RAMP LAYOUT FOR
 NARROW SIDEWALK WITH ESPLANADE**

NOT TO SCALE

DATE:
 AUGUST 2009

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TRANSPORTATION SYSTEMS
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FIGURE:

**PERPENDICULAR RAMP FOR
 NARROW SIDEWALK WITH ESPLANADE**

I-6C

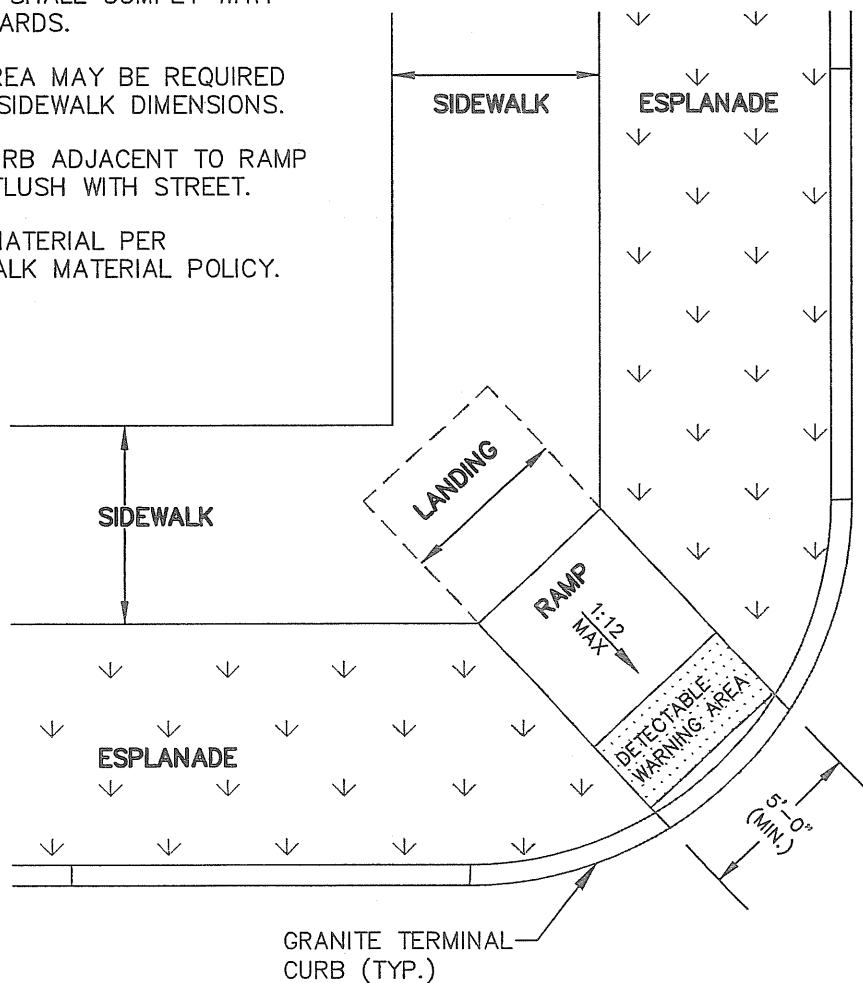
NOTES:

ALL RAMPS SHALL COMPLY WITH ADA STANDARDS.

LANDING AREA MAY BE REQUIRED BASED ON SIDEWALK DIMENSIONS.

GRANITE CURB ADJACENT TO RAMP SHALL BE FLUSH WITH STREET.

SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.



DIAGONAL SIDEWALK RAMP LAYOUT AT INTERSECTION FOR SIDEWALK WITH ESPLANADE

NOT TO SCALE

(REQUIRES WAIVER)

DATE:
FEBRUARY 2010
REVISED:

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TECHNICAL STANDARDS MANUAL

TRANSPORTATION SYSTEMS
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SECTION I

FIGURE:

DIAGONAL SIDEWALK RAMP LAYOUT AT
INTERSECTION FOR SIDEWALK WITH ESPLANADE

I-6D

City of Portland Technical Manual

NOTES:

ALL RAMPS SHALL COMPLY WITH ADA STANDARDS.

LANDING AREA MAY BE REQUIRED BASED ON SIDEWALK DIMENSIONS.

GRANITE CURB ADJACENT TO LANDING SHALL BE FLUSH WITH STREET.

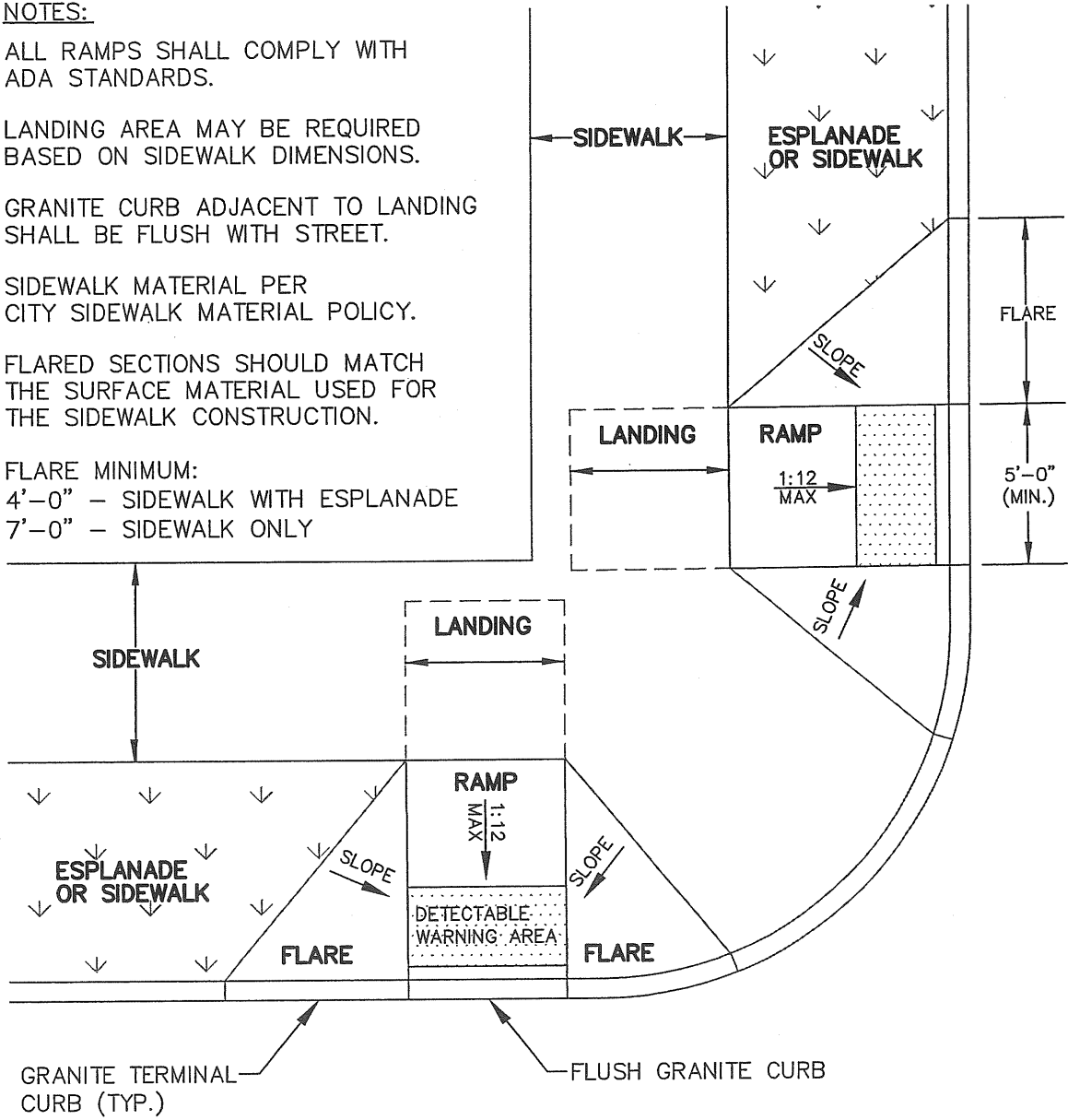
SIDEWALK MATERIAL PER CITY SIDEWALK MATERIAL POLICY.

FLARED SECTIONS SHOULD MATCH THE SURFACE MATERIAL USED FOR THE SIDEWALK CONSTRUCTION.

FLARE MINIMUM:

4'-0" - SIDEWALK WITH ESPLANADE

7'-0" - SIDEWALK ONLY



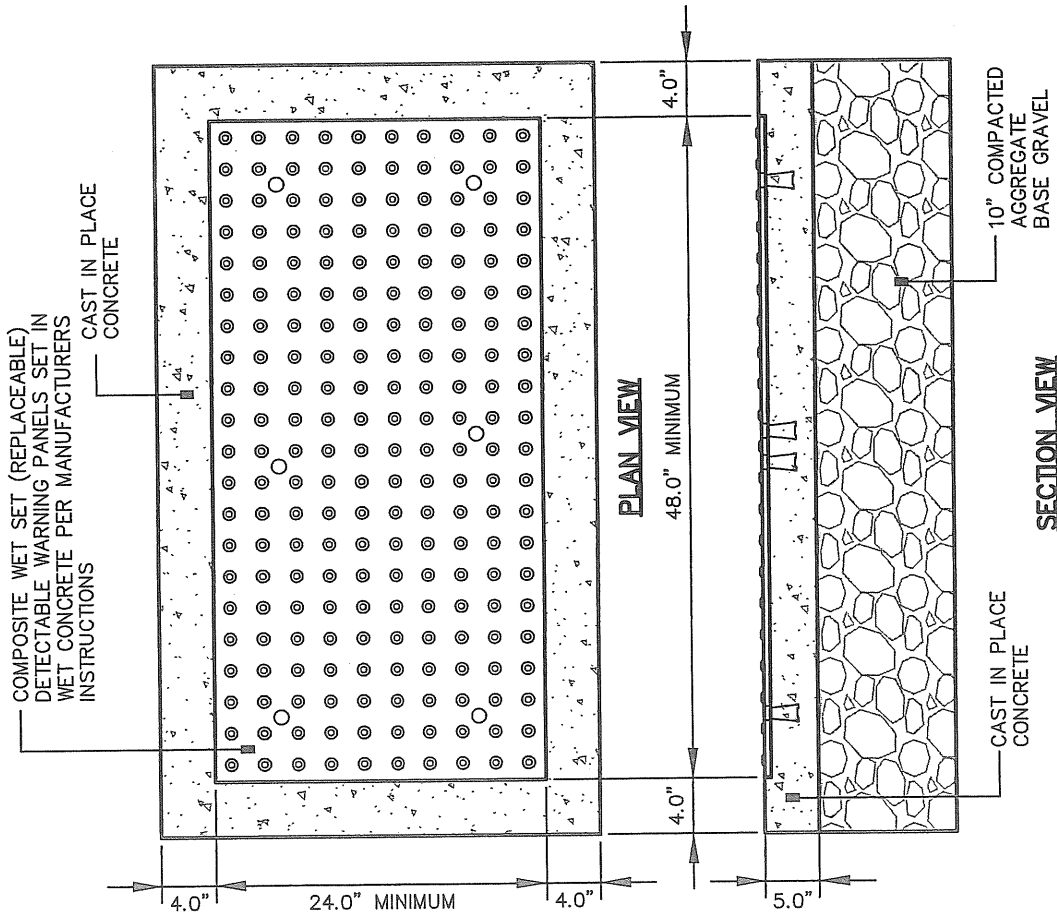
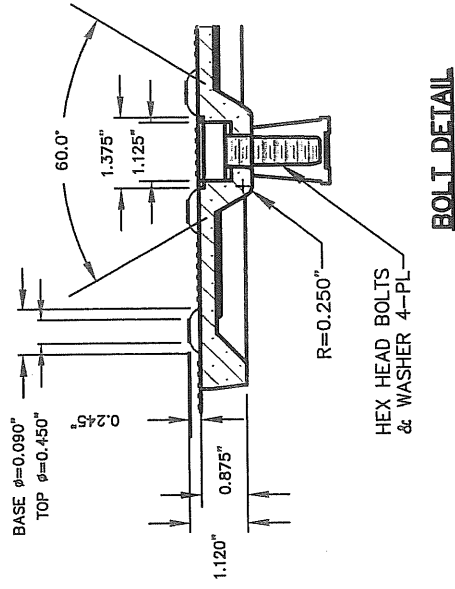
PREFERRED SIDEWALK RAMP AT INTERSECTION

NOT TO SCALE

<p>DATE: FEBRUARY 2010</p>	<p>CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL</p>	<p>TRANSPORTATION SYSTEMS AND STREET DESIGN SECTION I</p>	<p>FIGURE:</p>
<p>REVISED:</p>	<p>PREFERRED SIDEWALK RAMP LOCATION AT INTERSECTION</p>		<p>I-6E</p>

NOTES:

1. COMPOSITE WET SET (REPLACEABLE) DETECTABLE WARNING PANELS SHALL BE AS MANUFACTURED BY ADA SOLUTIONS, INC. (WWW.ADATILE.COM), OR APPROVED EQUAL.
2. CAST IN PLACE CONCRETE SHALL MEET SPECIFICATIONS FOR MAINE D.O.T. CLASS A STRUCTURAL CONCRETE, MINIMUM COMPRESSIVE STRENGTH 4,000 PSI. THE CONCRETE SHALL BE SEALED PRIOR TO SETTING PANELS. THE EXPOSED CONCRETE BORDER SHALL RECEIVE A GROOVED EDGE BETWEEN THE PANEL AND CONCRETE, ALONG WITH A UNIFORM BROOM FINISH PERPENDICULAR TO THE FLOW OF PEDESTRIAN TRAFFIC.
3. TRUNCATED DOMES SHALL BE ALIGNED IN ROWS, PARALLEL AND PERPENDICULAR TO THE PREDOMINANT DIRECTION OF TRAVEL. TRUNCATED DOME BRICKS AND GRANITE PAVERS ARE NOT ALLOWED.
4. FOR ALL DETECTABLE WARNING PANELS (EXCEPT AS SPECIFIED IN FIGURE I-7A AND TECHNICAL MANUAL SECTION 1.8.4.), FEDERAL YELLOW COLORED (#53538) PANELS SHALL BE USED. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
5. SIZE: THE DETECTABLE WARNING PANEL(S) SHALL EXTEND 24 INCHES MINIMUM IN THE DIRECTION OF TRAVEL AND THE FULL WIDTH OF THE CURB RAMP, LANDING, OR BLENDED TRANSITION TO THE STREET.
6. ORIENTATION: THE DETECTABLE WARNING PANEL SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 INCHES MINIMUM AND 8 INCHES MAXIMUM FROM THE CURB LINE. THE PANEL SHALL BE ORIENTED TO THE DIRECTION OF TRAVEL AS IDENTIFIED BY THE POINT OF EGRESS.



SIDEWALK RAMP DETECTABLE WARNING PANEL

NOT TO SCALE

DATE:
 JUNE 3, 2010
 REVISED:
 MARCH 2, 2011
 JUNE 23, 2011

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 SECTION I

FIGURE:

SIDEWALK RAMP DETECTABLE WARNING PANEL

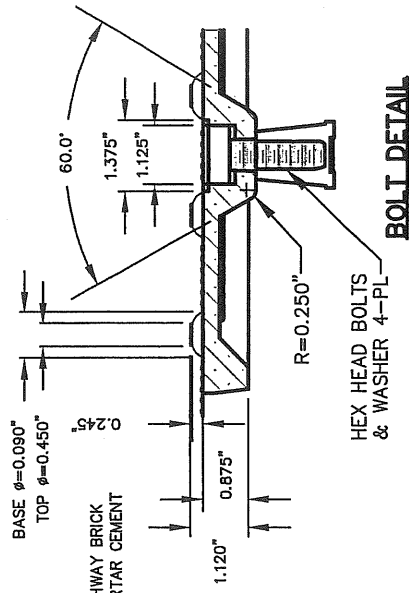
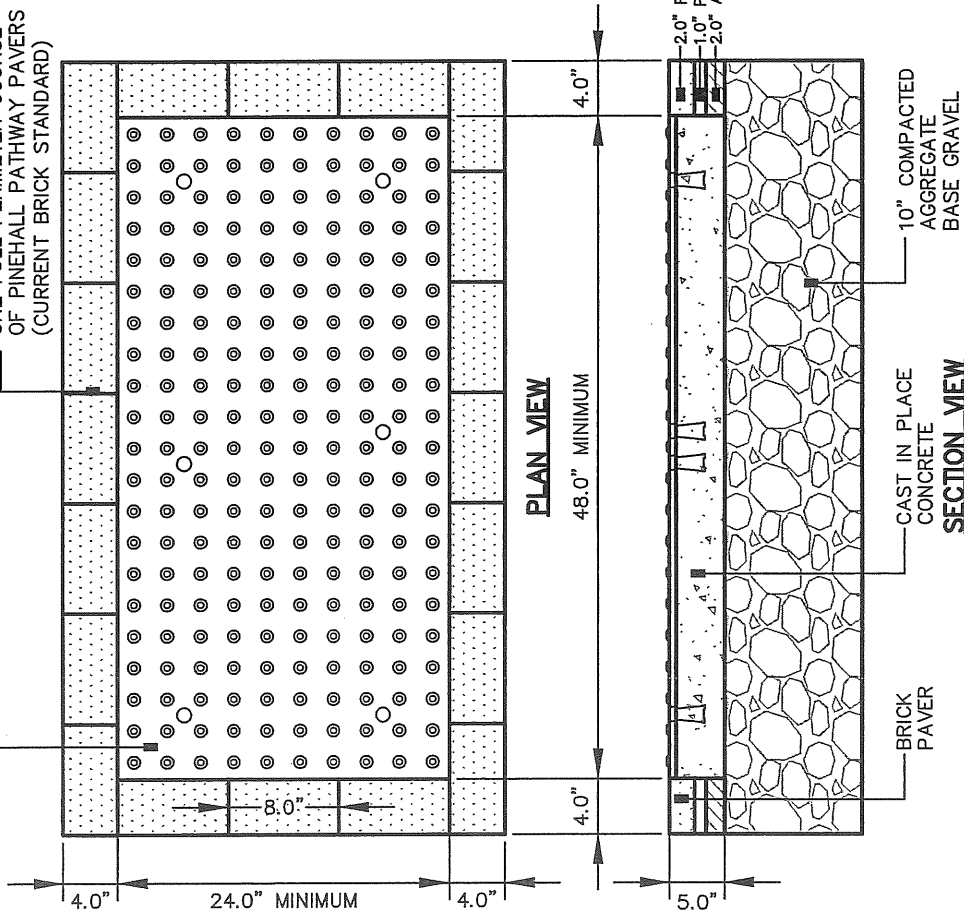
I-7

NOTES:

1. COMPOSITE WET SET (REPLACEABLE) DETECTABLE WARNING PANELS SHALL BE AS MANUFACTURED BY ADA SOLUTIONS, INC. (WWW.ADATILE.COM), OR APPROVED EQUAL.
2. CAST IN PLACE CONCRETE SHALL MEET SPECIFICATIONS FOR MAINE D.O.T. CLASS A STRUCTURAL CONCRETE, MINIMUM COMPRESSIVE STRENGTH 4,000 PSI. THE CONCRETE SHALL BE SEALED PRIOR TO SETTING PANELS.
3. TRUNCATED DOMES SHALL BE ALIGNED IN ROWS, PARALLEL AND PERPENDICULAR TO THE PREDOMINANT DIRECTION OF TRAVEL. NO OTHER DETECTABLE WARNING DESIGN OR CONFIGURATION IS ALLOWED.
4. FOR ALL DETECTABLE WARNING PANELS, WITHIN OR ABUTTING HISTORIC DISTRICTS AND HISTORIC LANDSCAPES, "DARK GRAY" COLORED (#36118) PANELS SHALL BE USED. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
5. THE DETECTABLE WARNING PANEL SHALL HAVE ONE FULL COURSE OF PINEHALL PATHWAY PAVERS (THE CURRENT BRICK STANDARD) AROUND THE FULL PERIMETER OF THE PANEL. THIS PERIMETER COURSE SHALL BE SET USING PORTLAND MORTAR CEMENT TO CREATE A FLUSH SURFACE BETWEEN THE BRICK AND THE PANEL.
6. SIZE: THE DETECTABLE WARNING PANEL(S) SHALL EXTEND 24. INCHES MINIMUM IN THE DIRECTION OF TRAVEL AND THE FULL WIDTH OF THE CURB RAMP, LANDING, OR BLENDED TRANSITION TO THE STREET.
7. ORIENTATION: THE DETECTABLE WARNING PANEL SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 INCHES MINIMUM AND 8 INCHES MAXIMUM FROM THE CURB LINE. THE PANEL SHALL BE ORIENTED TO THE DIRECTION OF TRAVEL AS IDENTIFIED BY THE POINT OF EGRESS.

COMPOSITE WET SET (REPLACEABLE) DETECTABLE WARNING PANELS SET IN WET CONCRETE PER MANUFACTURERS INSTRUCTIONS

ONE FULL PERIMETER COURSE OF PINEHALL PATHWAY PAVERS (CURRENT BRICK STANDARD)



SIDEWALK RAMP DETECTABLE WARNING PANEL (HISTORIC DISTRICTS AND LANDSCAPES)

NOT TO SCALE

DATE:
JUNE 23, 2011

REVISED:

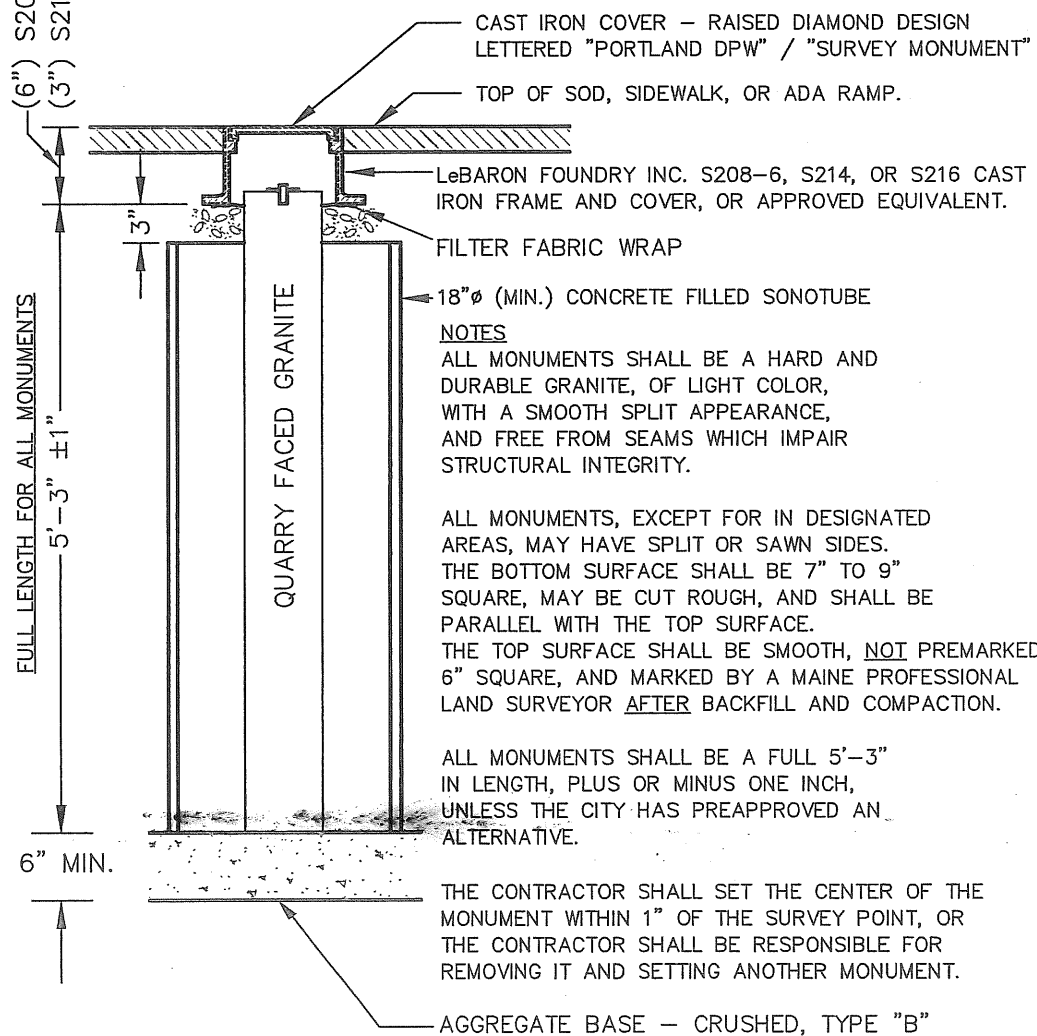
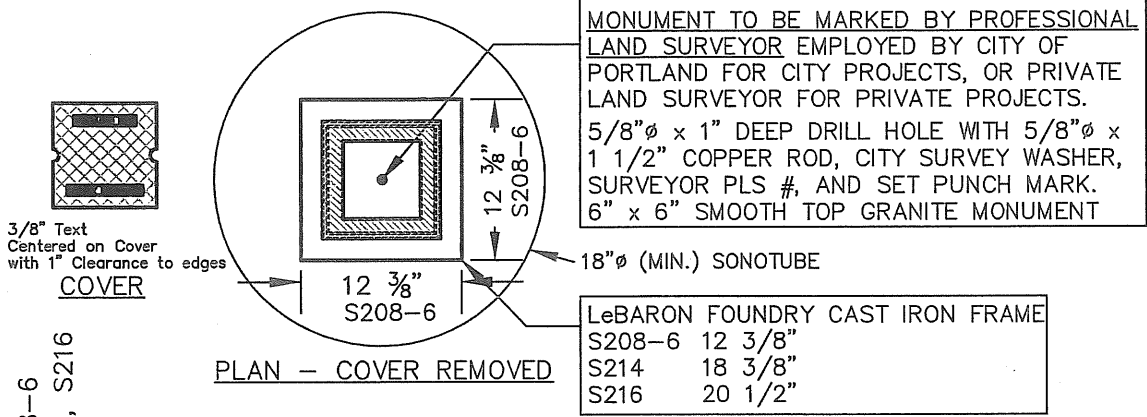
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TRANSPORTATION SYSTEMS
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 SECTION I

FIGURE:

**SIDEWALK RAMP DETECTABLE WARNING PANEL
 (HISTORIC DISTRICTS AND LANDSCAPES)**

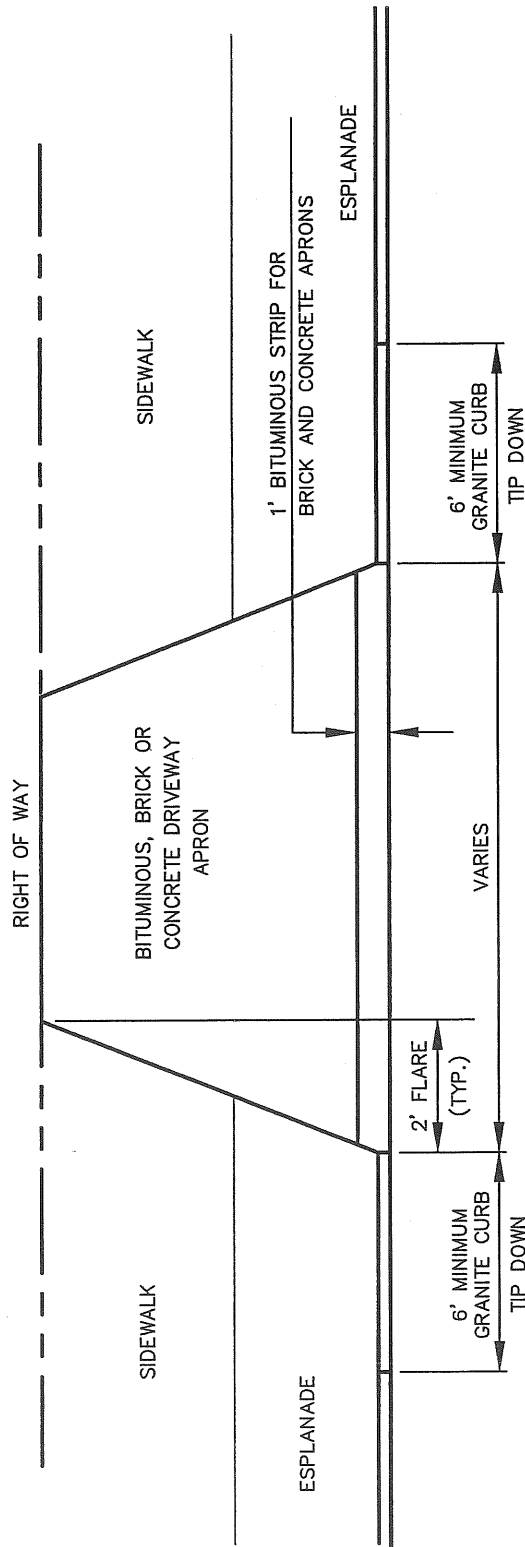
I-7A



GRANITE STREET MONUMENT
 NOT TO SCALE

DATE: AUGUST 2009	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	TRANSPORTATION SYSTEMS AND STREET DESIGN SECTION I	FIGURE:
REVISED:	GRANITE STREET MONUMENT		I-8

NOTE:
MATCH GRADE OF EXISTING DRIVEWAY
AT R. O. W. LINE, EXCEPT WHEN
DIRECTED OTHERWISE BY CITY ENGINEER.



DRIVEWAY APRON LAYOUT

NOT TO SCALE

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AUGUST 2009
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CITY OF PORTLAND, MAINE
TECHNICAL STANDARDS MANUAL

TRANSPORTATION SYSTEMS
AND STREET DESIGN
SECTION I

FIGURE:

DRIVEWAY APRON LAYOUT

I-9

BRICKS TO BE USED:

NEW CONSTRUCTION:

4"x8" PINE HALL PATHWAY PAVER BRICK; MFG. BY PINE HALL BRICK CO., MADISON, NORTH CAROLINA. LACHANCE ITEM # 193623, PINE HALL PATHWAY PAVER BRICK.

REPAIR / MAINTENANCE TO EXISTING BRICK SIDEWALKS: VERMONT PAVER; SUPPLIED BY GAGNE AND SONS. SPECIFICATION NUMBER: "VERMONT BACKER BRICK", ITEM NUMBER # VBBB

10" AGGREGATE BASE COURSE, TYPE "B" GRAVEL

2" HOT BITUMINOUS PAVEMENT, GRADING "B" (19 mm)

CLEAN SAND SWEEP INTO JOINTS

1" DRY SAND-CEMENT MIX (6:1) FOR BASE

BRICKS LAID FLAT

4" LOAM, SEED & MULCH

7" REVEAL

FINISHED STREET GRADE

GRANITE CURB

BORDER BRICK COURSE SET IN WET CEMENT MORTAR, OR USE APPROVED EDGE RAIL (TYP.)

WIDTH VARIES
5' MINIMUM

4" LOAM, SEED, AND MULCH AS DIRECTED BY CITY ENGINEER

6"

6"

BRICK SIDEWALK WITH BITUMINOUS BASE

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AND STREET DESIGN
SECTION I

FIGURE:

BRICK SIDEWALK WITH BITUMINOUS BASE

I-10

BRICKS TO BE USED:

NEW CONSTRUCTION:

4"x8" PINE HALL PATHWAY PAVER BRICK; MFG. BY PINE HALL BRICK CO., MADISON, NORTH CAROLINA. LACHANCE ITEM # 193623, PINE HALL PATHWAY PAVER BRICK.

REPAIR / MAINTENANCE TO EXISTING

BRICK SIDEWALKS: VERMONT PAVER; SUPPLIED BY GAGNE AND SONS. SPECIFICATION NUMBER: "VERMONT BACKER BRICK", ITEM NUMBER # VBBB

12" AGGREGATE BASE COURSE, TYPE "B" GRAVEL

2" BITUMINOUS PAVEMENT, GRADING "B" (19 mm)

1" DRY SAND-CEMENT MIX (6:1) FOR BASE

CLEAN SAND SWEEP INTO JOINTS

12"

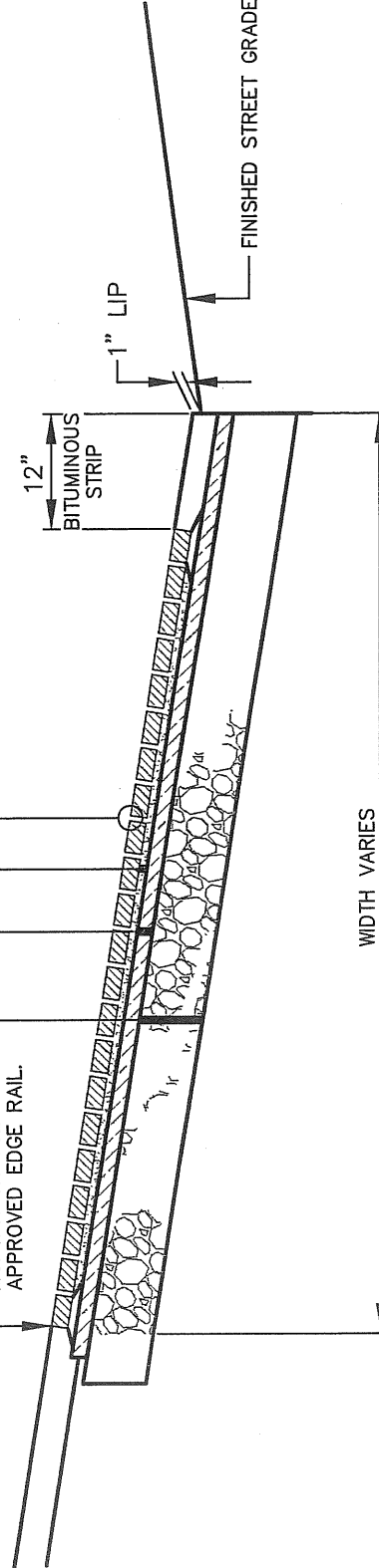
BITUMINOUS STRIP

1" LIP

FINISHED STREET GRADE

BORDER COURSES OF BRICK SET IN CEMENT MORTAR OR USE APPROVED EDGE RAIL.

WIDTH VARIES



BRICK DRIVEWAY APRON WITH BITUMINOUS BASE

NOT TO SCALE

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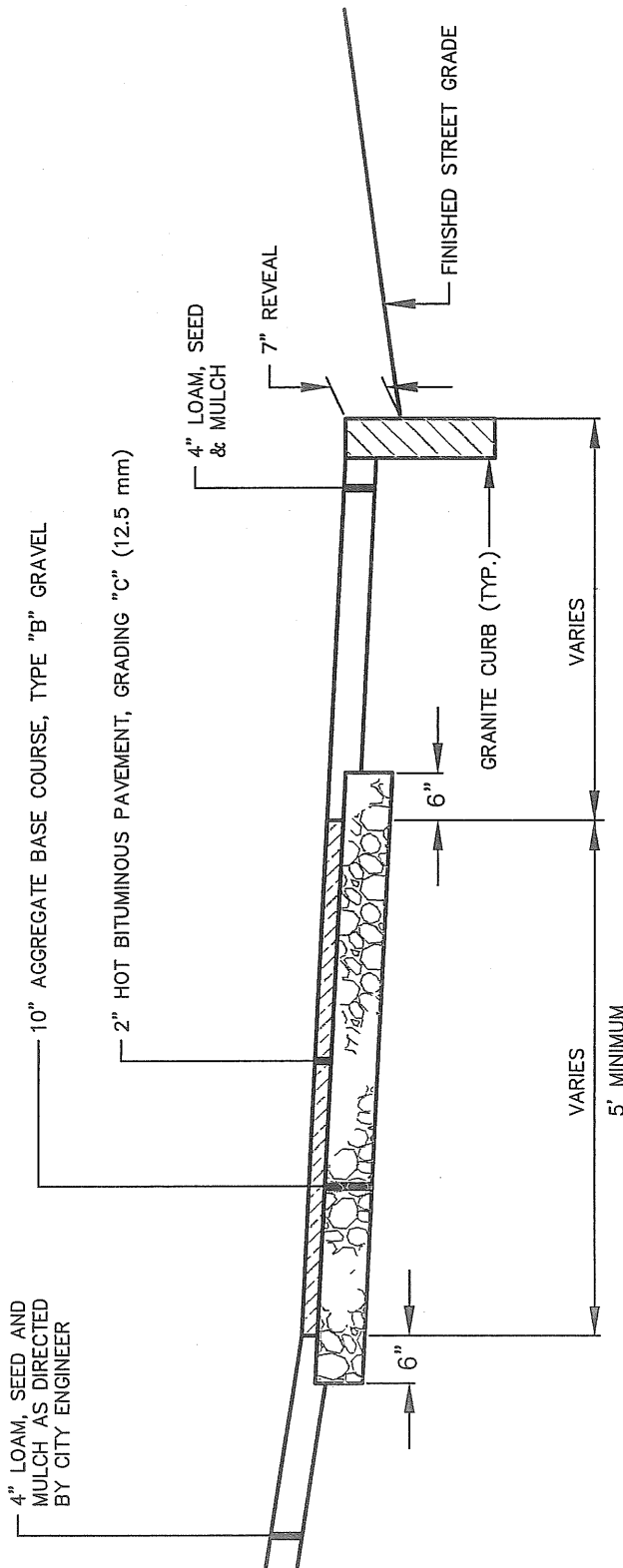
CITY OF PORTLAND, MAINE
TECHNICAL STANDARDS MANUAL

TRANSPORTATION SYSTEMS
AND STREET DESIGN
SECTION I

FIGURE:

**BRICK DRIVEWAY APRON
WITH BITUMINOUS BASE**

I-11



BITUMINOUS SIDEWALK
 NOT TO SCALE

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 REVISED:

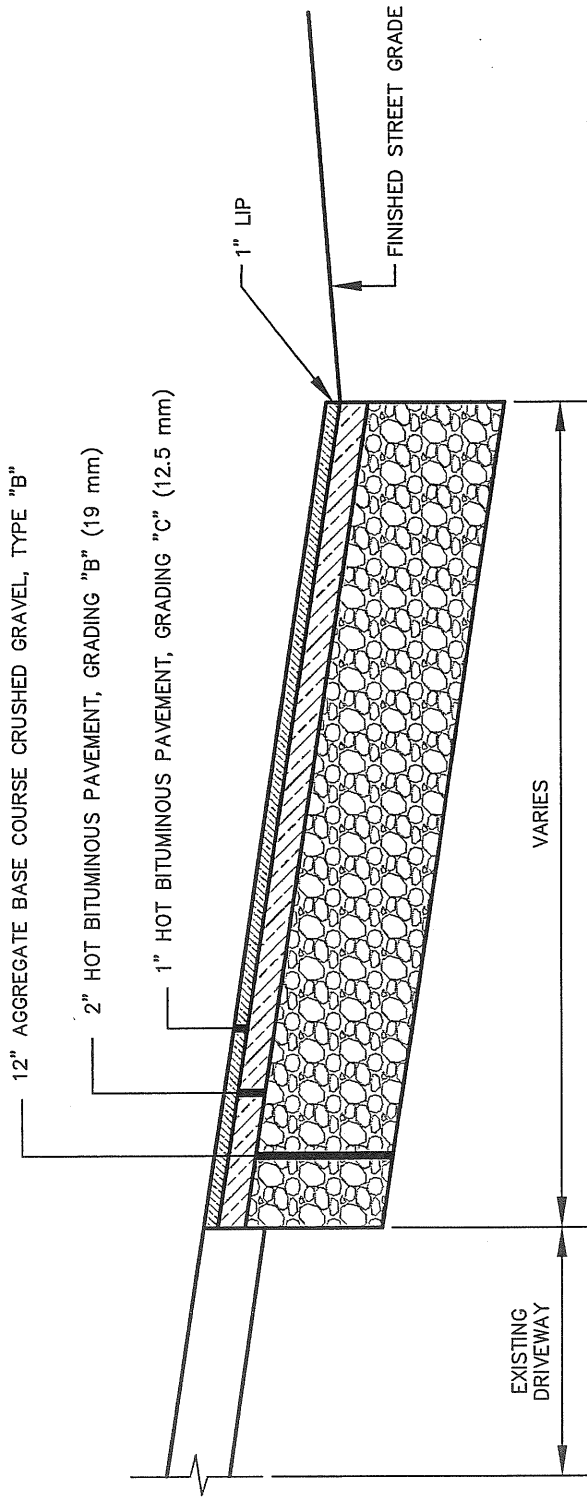
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 TECHNICAL STANDARDS MANUAL

TRANSPORTATION SYSTEMS
 AND STREET DESIGN
 SECTION I

FIGURE:

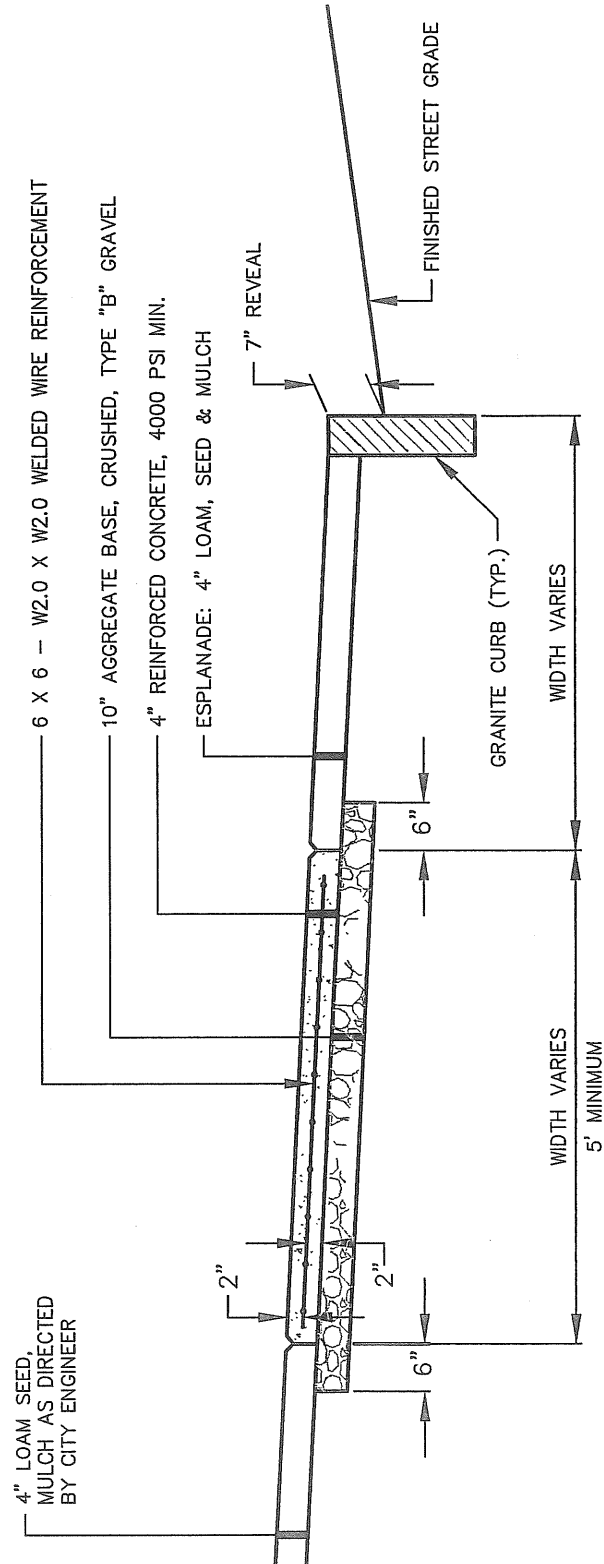
I-12

BITUMINOUS SIDEWALK



BITUMINOUS DRIVEWAY APRON
NOT TO SCALE

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REVISED:	BITUMINOUS DRIVEWAY APRON		I-13



REINFORCED CONCRETE SIDEWALK

NOT TO SCALE

DATE:
AUGUST 2009

REVISED:

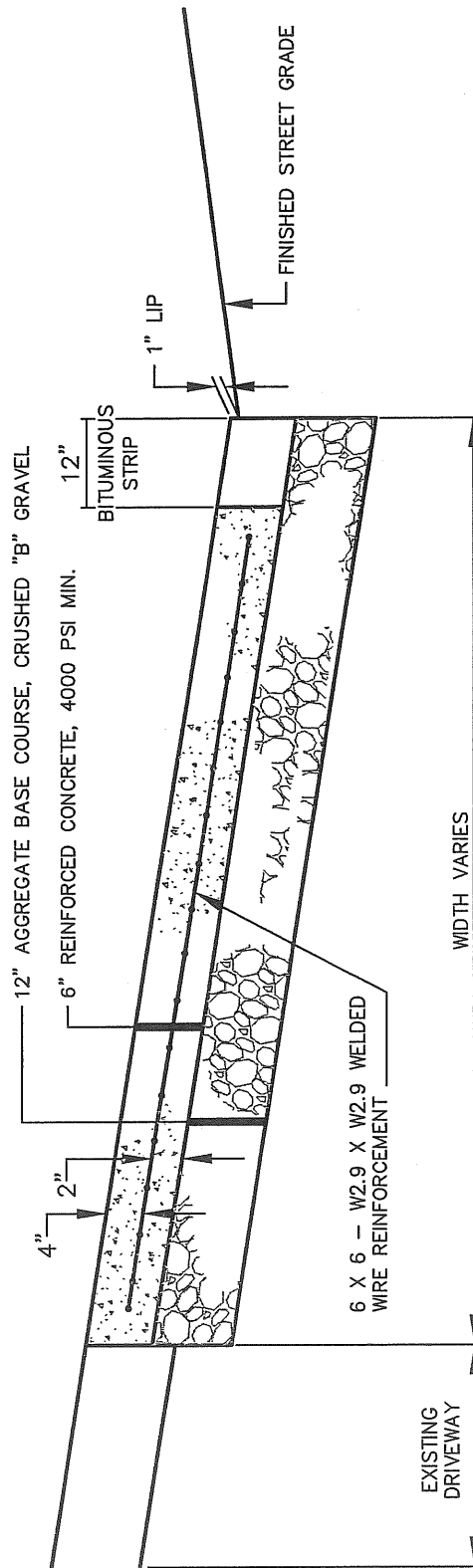
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 SECTION I

FIGURE:

I-14

REINFORCED CONCRETE SIDEWALK



REINFORCED CONCRETE DRIVEWAY APRON

NOT TO SCALE

DATE:
AUGUST 2009
REVISED:

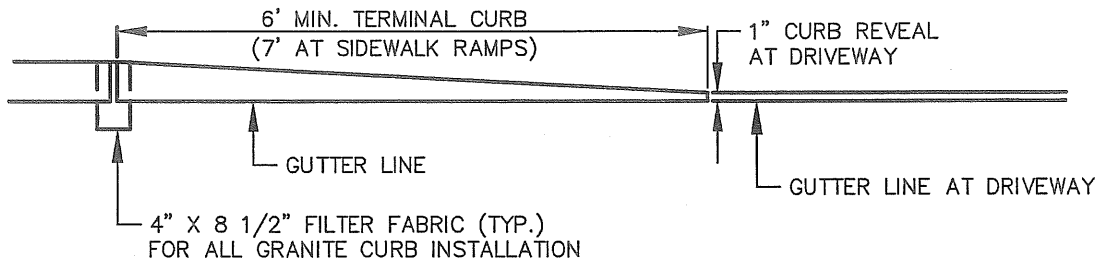
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TRANSPORTATION SYSTEMS
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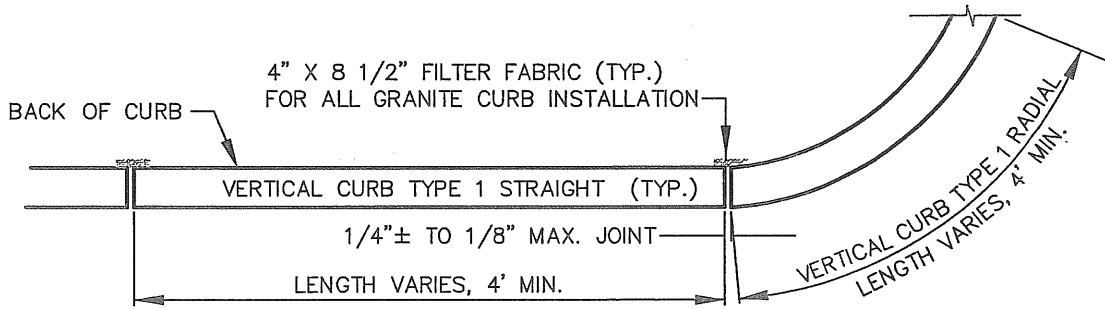
FIGURE:

REINFORCED CONCRETE DRIVEWAY APRON

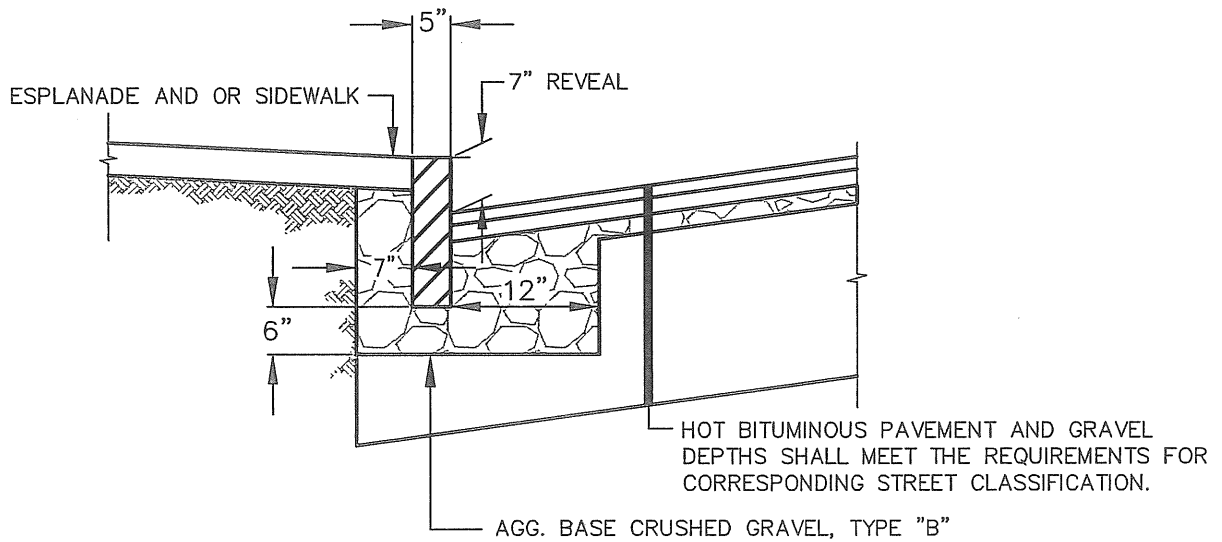
I-15



TERMINAL CURB PROFILE



VERTICAL GRANITE CURB PLAN VIEW



VERTICAL GRANITE CURB CROSS SECTION

VERTICAL GRANITE CURB
FULL DEPTH STREET CONSTRUCTION

NOT TO SCALE

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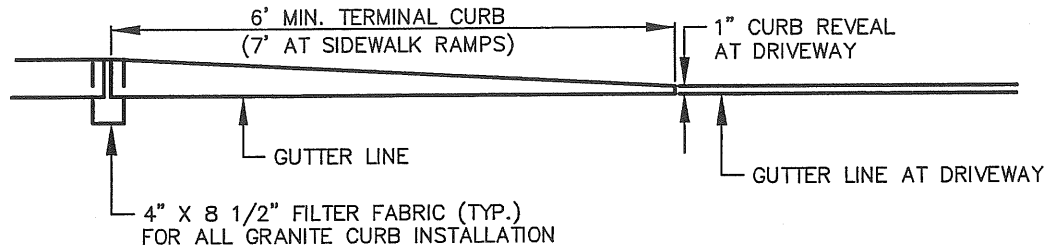
CITY OF PORTLAND, MAINE
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AND STREET DESIGN
SECTION I

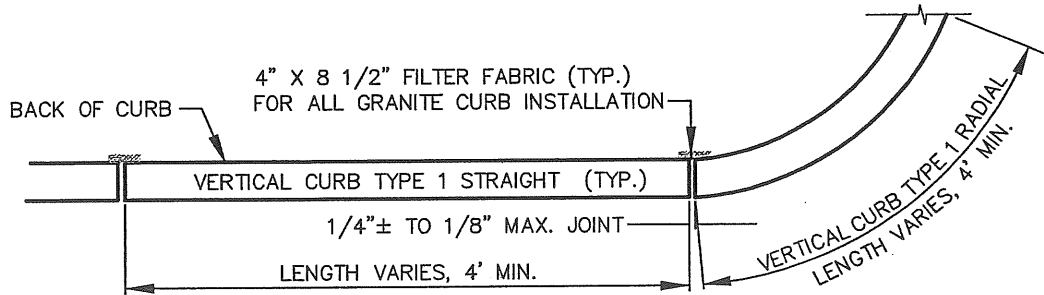
FIGURE:

VERTICAL GRANITE CURB
FULL DEPTH STREET CONSTRUCTION

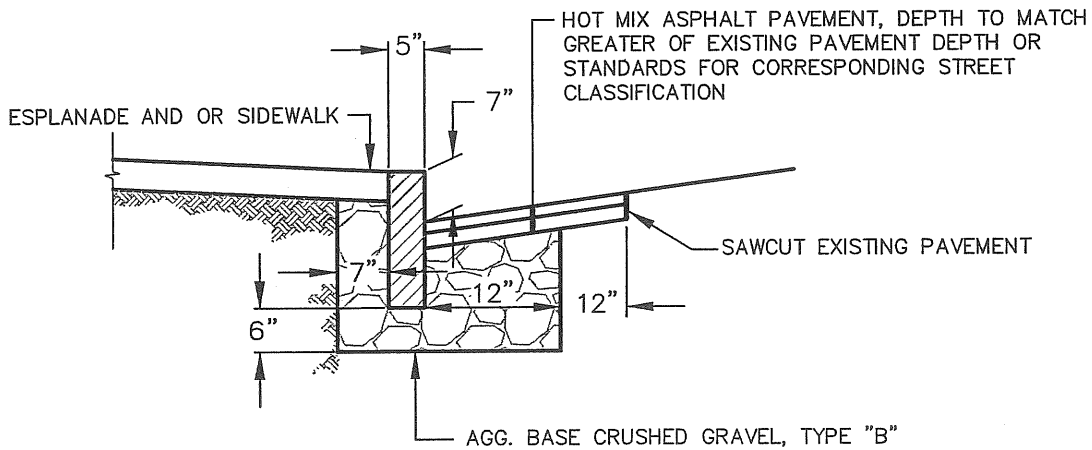
I-16
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TERMINAL CURB PROFILE



VERTICAL GRANITE CURB PLAN VIEW



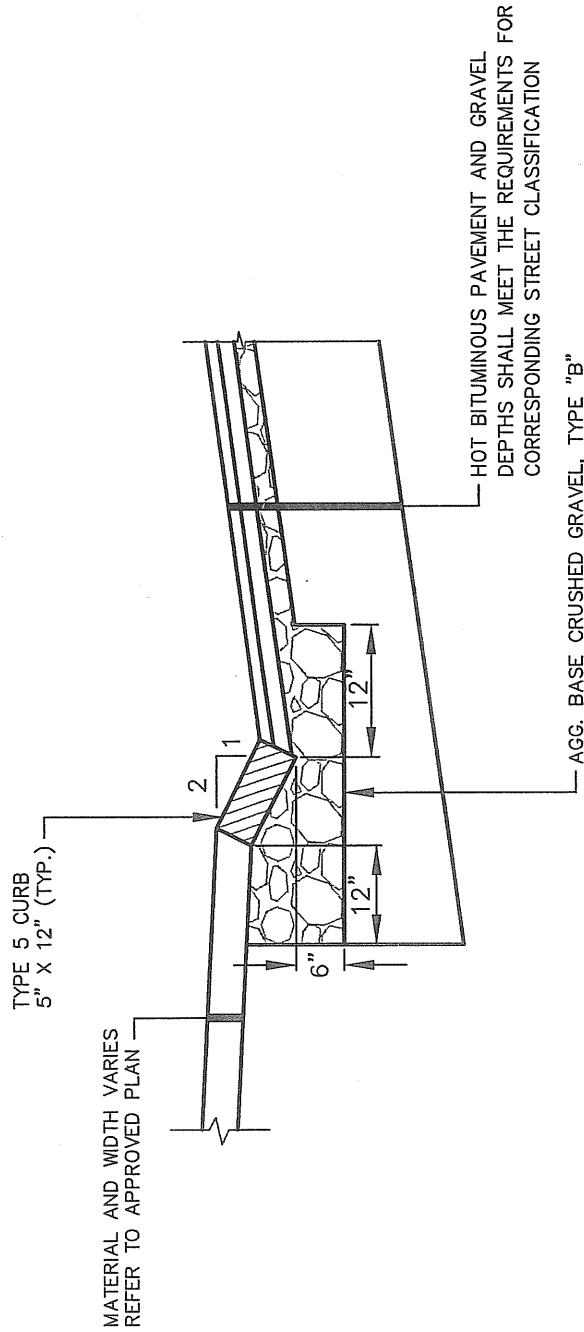
VERTICAL GRANITE CURB CROSS SECTION

**VERTICAL GRANITE CURB
 INSTALLATION IN EXISTING STREETS**

NOT TO SCALE

<p>DATE: AUGUST 2009</p>	<p>CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL</p>	<p>TRANSPORTATION SYSTEMS AND STREET DESIGN SECTION I</p>	<p>FIGURE:</p>
<p>REVISED:</p>	<p>VERTICAL GRANITE CURB INSTALLATION IN EXISTING STREETS</p>		<p>I-17</p>

NOTE:
INDIVIDUAL PIECES OF CURB SHORTER THAN 4 L.F. ARE
NOT ALLOWED, WITH THE EXCEPTION OF RADIAL CURB.



SLOPED GRANITE CURB -- FULL DEPTH STREET CONSTRUCTION

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TECHNICAL STANDARDS MANUAL

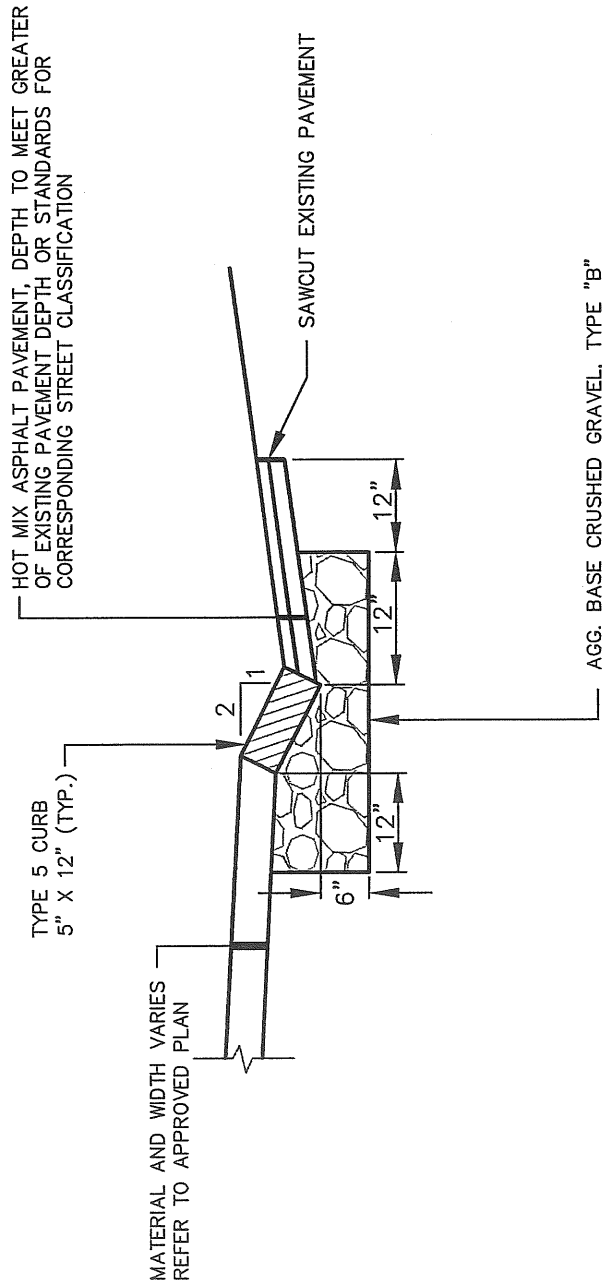
TRANSPORTATION SYSTEMS
AND STREET DESIGN
SECTION I

FIGURE:

**SLOPED GRANITE CURB
FULL DEPTH STREET CONSTRUCTION**

I-18

NOTE:
 INDIVIDUAL PIECES OF CURB SHORTER THAN 4 L.F. ARE
 NOT ALLOWED, WITH THE EXCEPTION OF RADIAL CURB.



SLOPED GRANITE CURB -- INSTALLATION IN EXISTING STREETS

NOT TO SCALE

DATE:
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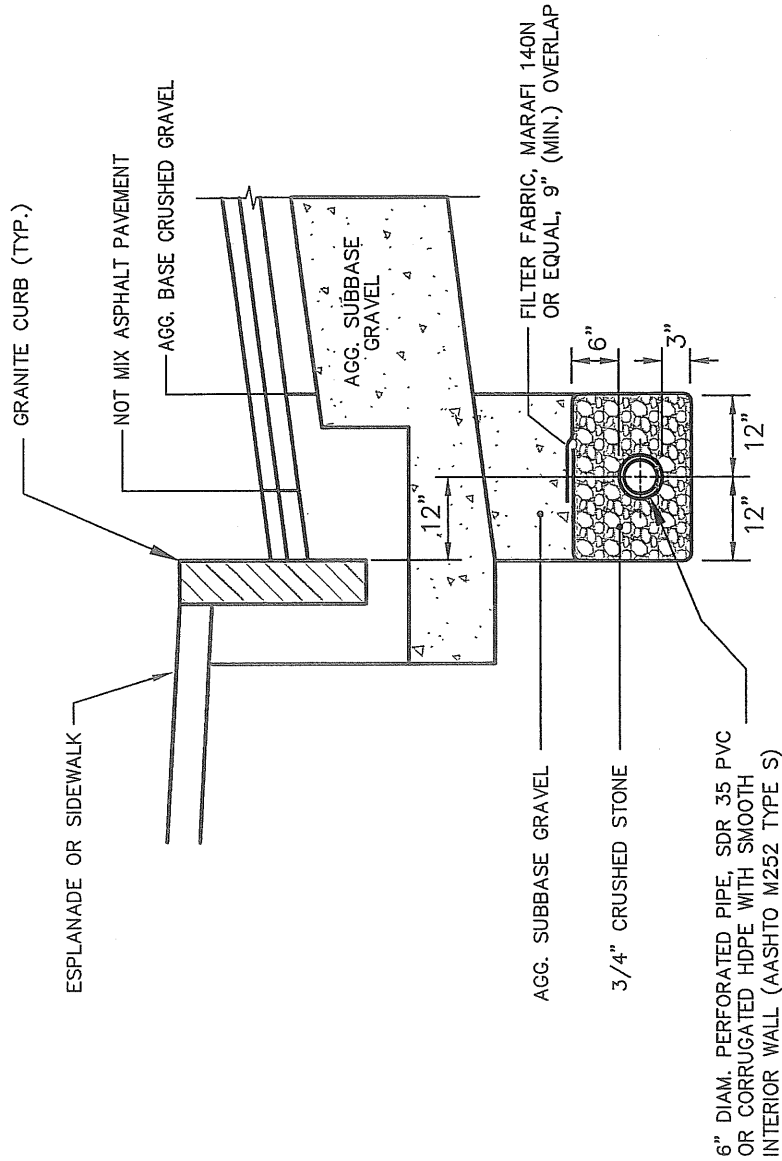
TRANSPORTATION SYSTEMS
 AND STREET DESIGN
 SECTION I

FIGURE:

**SLOPED GRANITE CURB
 INSTALLATION IN EXISTING STREETS**

I-19

- NOTES
1. UNDERDRAIN PIPE INVERT ELEVATIONS SHALL BE AT LEAST 42 INCHES BELOW GUTTER GRADES.
 2. PERFORATIONS IN UNDERDRAIN PIPE SHALL BE ORIENTED DOWN.



TYPE "B" UNDERDRAIN INSTALLATION DETAIL - ALTERNATIVE "A"

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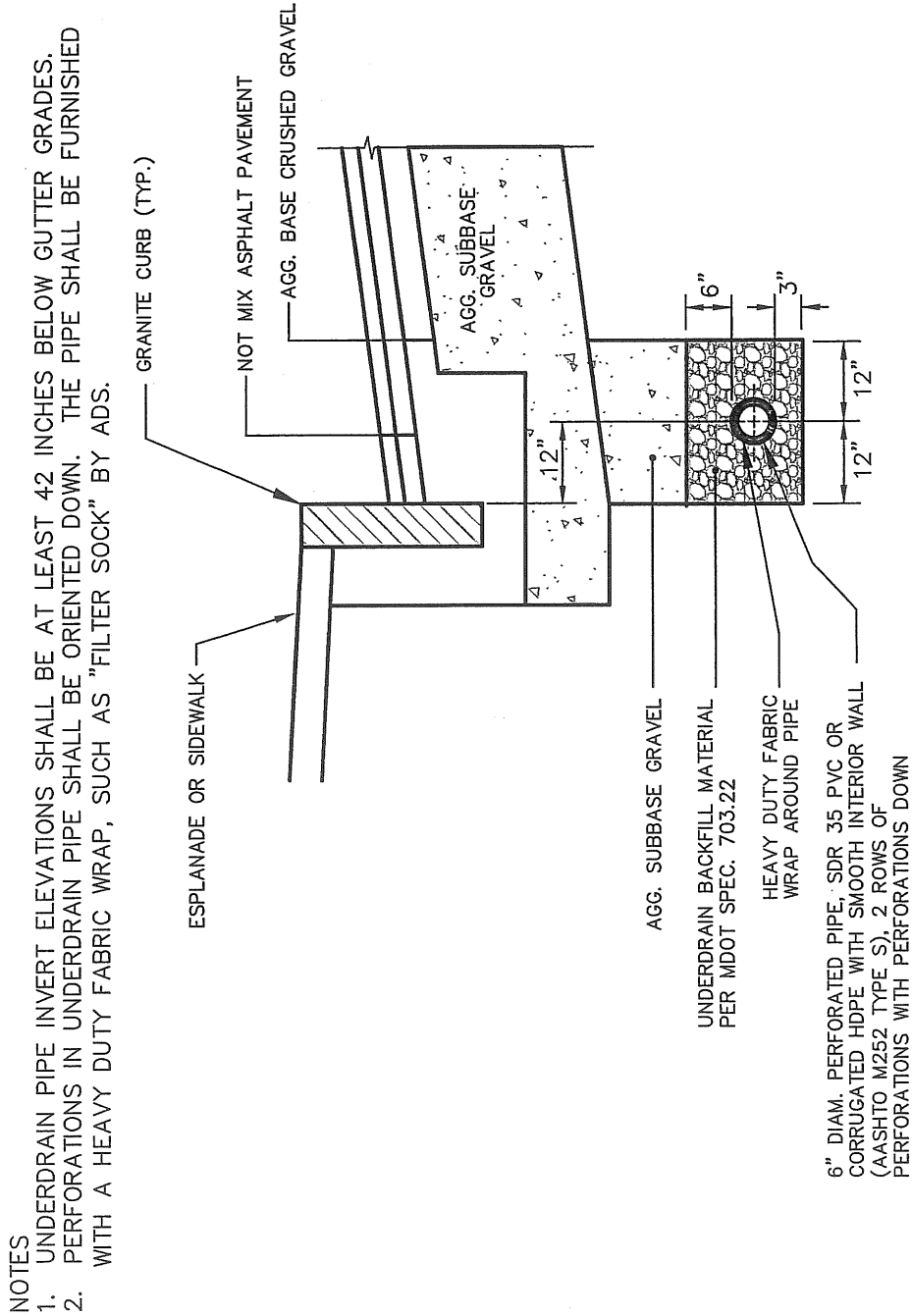
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TRANSPORTATION SYSTEMS
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 SECTION I

FIGURE:

UNDERDRAIN INSTALLATION
 ALTERNATIVE A

I-20



UNDERDRAIN INSTALLATION - ALTERNATIVE "B"

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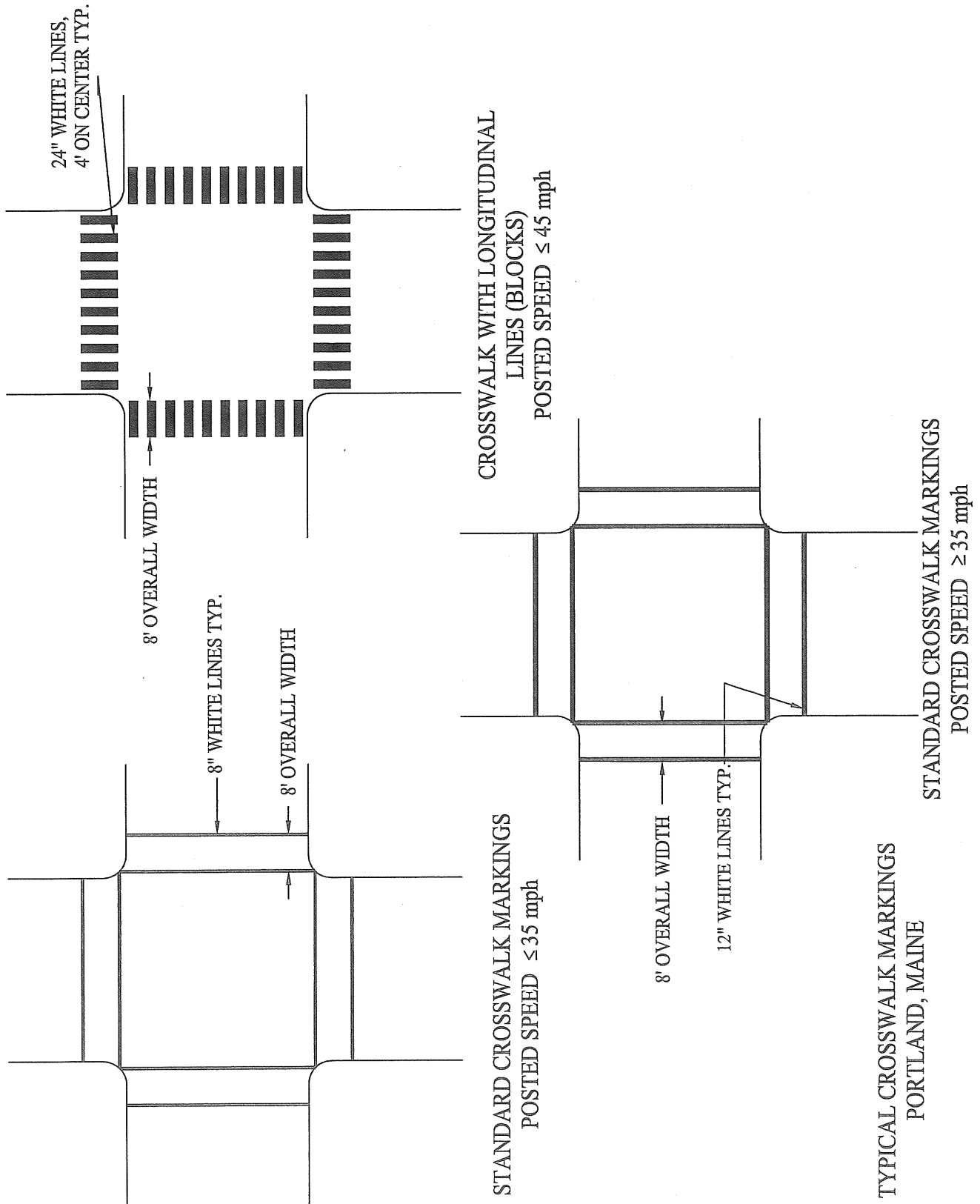
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SECTION I

FIGURE:

**UNDERDRAIN INSTALLATION
ALTERNATIVE B**

I-21



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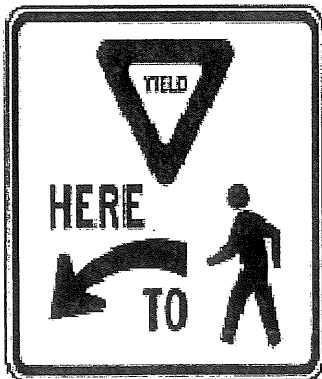
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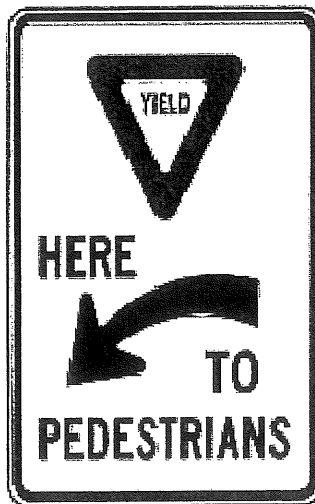
FIGURE:

TYPICAL CROSSWALK MARKINGS

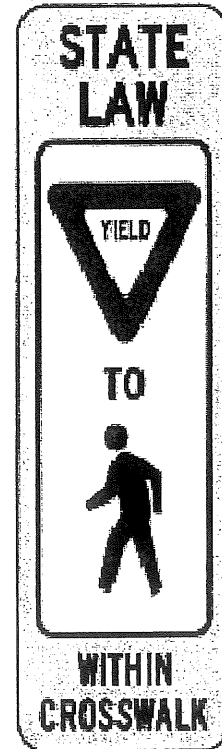
I-22
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R1-5



R1-5a



R1-6

Unsignalized Pedestrian Crosswalk Signage

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AND STREET DESIGN
SECTION I

FIGURE:

UNSIGNALIZED PEDESTRIAN CROSSWALK SIGNAGE

I-23