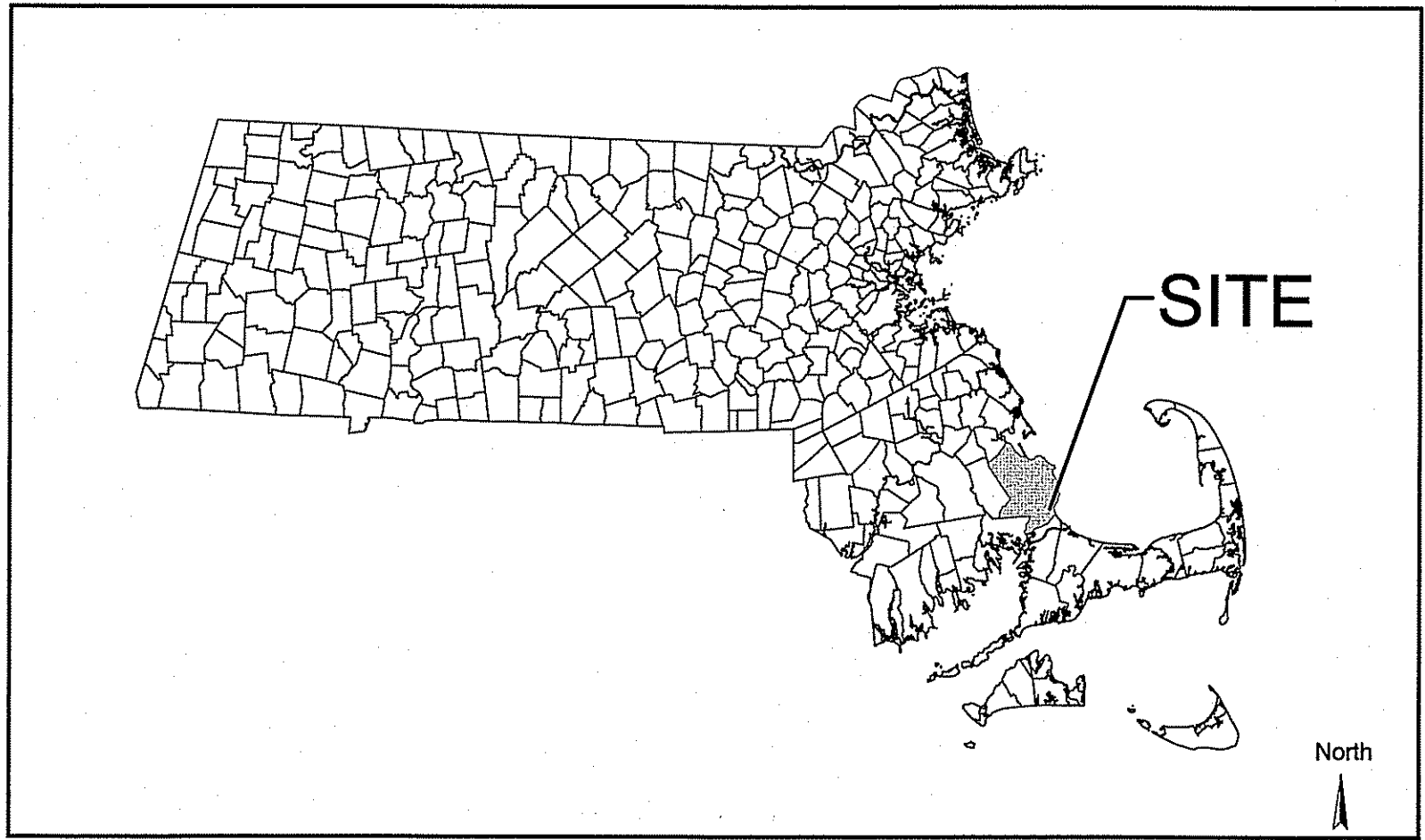
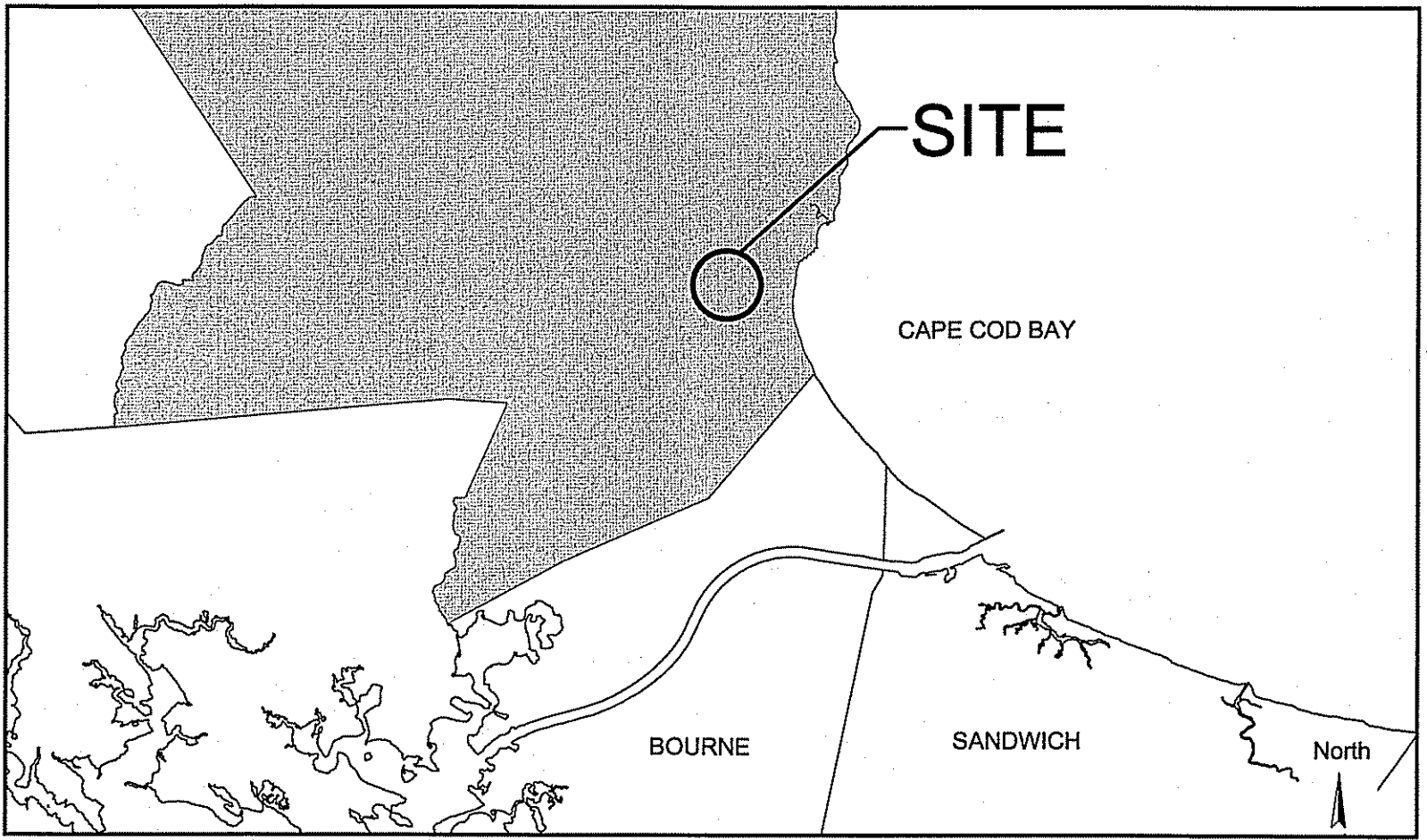


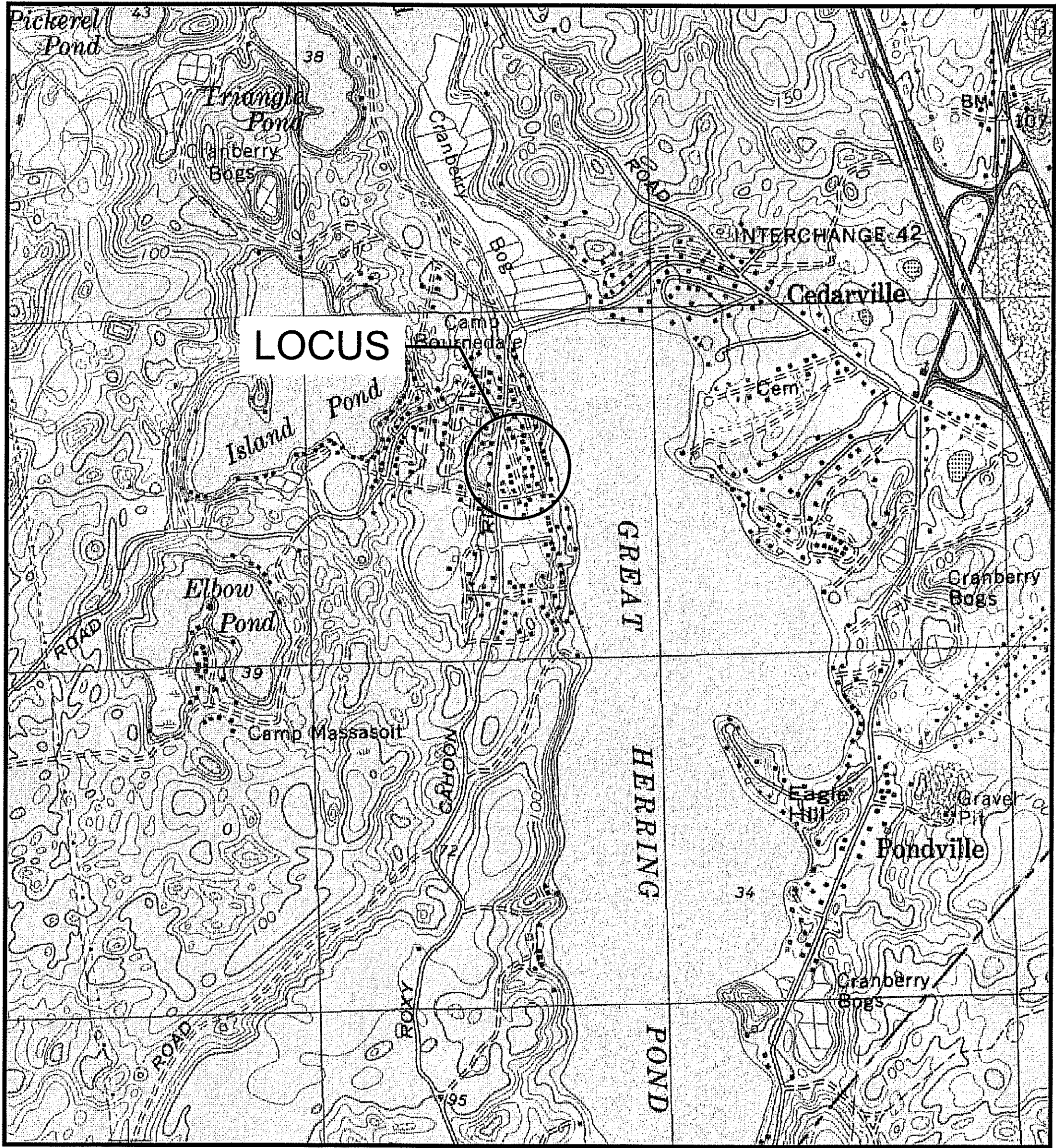
POND ROAD STORMWATER  
IMPROVEMENTS  
PLYMOUTH, MASSACHUSETTS  
JAN. 3, 2012



MASSACHUSETTS  
Graphic Scale  
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SCALE IN FEET  
1:150000



PLYMOUTH  
Graphic Scale  
0 12000  
SCALE IN FEET  
1:12000



VICINITY MAP  
Graphic Scale  
1-inch = 1000-feet

Sheet List Table

Sheet Number	Sheet Title
1	COVER
2	EXISTING CONDITIONS
3	SITE PLAN
4	GRADING PLAN
5	POND ROAD PROFILE
6	LAKEVIEW ROAD PROFILE
7	SHORE ROAD PROFILE
8	NOTES & DETAILS
9	CONSTRUCTION DETAILS 1
10	CONSTRUCTION DETAILS 2
11	BIORETENTION DETAILS
12	LANDSCAPE PLAN

Plan Set:		POND ROAD STORMWATER IMPROVEMENTS PLYMOUTH, MASSACHUSETTS	
Prepared For:		TOWN OF PLYMOUTH 11 Lincoln Street Plymouth, MA 02360 508-747-1620	
Prepared By:		Horsley Witten Group, Inc. Sustainable Environmental Solutions www.horsleywitten.com	
370 Ives Street Providence, RI 02906 (401) 272-1717 voice (401) 439-8368 fax		Headquarters 90 Route 6A Sandwich, MA 02563 (508) 833-6600 voice (508) 833-3150 fax	
Date Issued: JAN. 3, 2012	Registered Professional Engineer RICHARD A. CLAYTOR NO. 45118 REGISTERED PROFESSIONAL ENGINEER	Revisions	Project Number: 11051
Designed By: KMH	RAC		Sheet Number: 1 of 12
Drawn By: KMH/ERK			Drawing Number: C-1
Checked By: RAC			



## SOIL TEST PIT DATA

PERFORMED BY: J. HENDERSON, HORSLEY WITTEN GROUP, INC.  
WITNESSED BY: KIM MICHAELIS, TOWN OF PLYMOUTH  
DATE: JUNE 30 2011.

The figure displays four soil profile diagrams, each showing depth (feet) on the left, soil layers in the center, and elevation (feet) on the right. Groundwater levels are indicated by inverted triangles with horizontal lines.

- TP-1:**
  - 0" to 24": FILL (Elev. 98.2 to 94.2)
  - 24" to 44": C1 10 YR 5/1 MEDIUM SAND (Elev. 94.2 to 92.5)
  - 44" to 55": C2 10 YR 4/1 COARSE SAND (Elev. 92.5 to 91.5)
  - Groundwater encountered at EL. 91.5' (at 55" depth).
  - 98": GROUNDWATER ENCOUNTERED AT EL. 91.5'.
- TP-2:**
  - 0" to 24": FILL (Elev. 97.0 to 95.0)
  - 24" to 36": Bb 10 YR 4/6 MEDIUM SAND (Elev. 95.0 to 94.0)
  - 36" to 48": C1 10 YR 5/1 MEDIUM SAND (Elev. 94.0 to 93.0)
  - 48" to 67": C2 10 YR 4/1 COARSE SAND (Elev. 93.0 to 91.4)
  - Groundwater encountered at EL. 91.4' (at 67" depth).
  - 89": GROUNDWATER ENCOUNTERED AT EL. 91.4'.
- TP-5:**
  - 0" to 40": FILL (Elev. 113.0 to 109.7)
  - 40" to 42": Ab 10 YR 2/1 LOAMY SAND (Elev. 109.7 to 109.5)
  - 42" to 60": Bb 10 YR 5/8 MEDIUM SAND (Elev. 109.5 to 108.0)
  - 60" to 100": C 10 YR 6/4 MEDIUM COARSE SAND (Elev. 108.0 to 104.7)
  - Groundwater NOT ENCOUNTERED (at 100" depth).
- TP-6:**
  - 0" to 9": FILL (Elev. 123.0 to 122.3)
  - 9" to 12": Ab 10 YR 2/1 LOAMY SAND (Elev. 122.3 to 122.0)
  - 12" to 24": Bb 10 YR 5/8 LOAMY SAND (Elev. 122.0 to 121.0)
  - 24" to 60": C1 10 YR 6/4 LOAMY SAND (Elev. 121.0 to 116.0)
  - 60" to 100": C2 10 YR 8/4 FINE SAND (Elev. 116.0 to 114.7)
  - Groundwater NOT ENCOUNTERED (at 100" depth).

**TP-3**

DEPTH	ELEV.
0"	104.5
5"	104.1
28"	102.2
65"	99.1
87"	97.3

GROUNDWATER NOT ENCOUNTERED

**TP-4**

DEPTH	ELEV.
0"	114.0
5"	113.6
28"	111.7
65"	108.6
87"	108.8

GROUNDWATER NOT ENCOUNTERED

**TP-7**

DEPTH	ELEV.
0"	123.0
5"	122.6
28"	120.7
87"	115.8

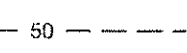

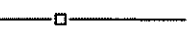

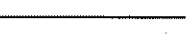
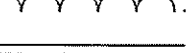






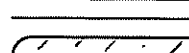

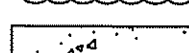
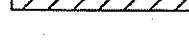




GROUNDWATER NOT ENCOUNTERED

**TP-8**

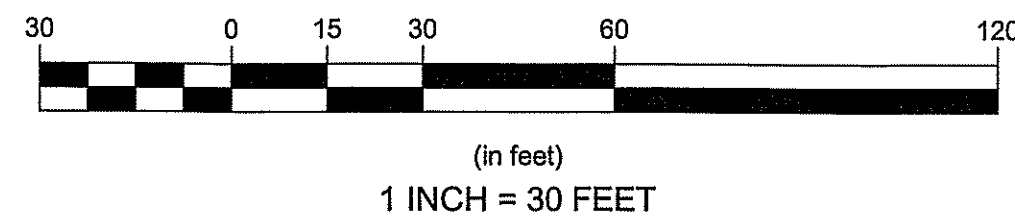
DEPTH	ELEV.
0"	138.0
7"	137.4
27"	135.8
42"	134.5
98"	129.8

GROUNDWATER NOT ENCOUNTERED

LEGEND:

<p><b>EXISTING</b></p>  <p>44</p> <p>50</p>       		<p><b>PROPOSED</b></p>  <p>44</p> <p>50</p>       		<p><b>BERM</b></p> <p><b>BERM CUT</b></p> <p><b>BUILDING</b></p> <p><b>CENTERLINE</b></p> <p><b>CONTOUR - MINOR</b></p> <p><b>CONTOUR - MAJOR</b></p> <p><b>CURB</b></p> <p><b>EDGE OF PAVEMENT</b></p> <p><b>FENCE - CHAIN LINK</b></p> <p><b>FENCE - WOOD</b></p> <p><b>GUARD RAIL</b></p> <p><b>LIMIT OF WORK</b></p> <p><b>RIP RAP</b></p> <p><b>SIDEWALK</b></p> <p><b>STORMWATER AREA</b></p> <p><b>TREE LINE</b></p> <p><b>WALL - RETAINING</b></p> <p><b>WALL - STONE</b></p> <p><b>CONCRETE</b></p> <p><b>CROSSWALK/PAVEMENT STRIPING</b></p>	<p><b>SYMBOLS</b></p>  <b>BENCHMARK</b>
<p><b>PROPERTY INFORMATION</b></p> <p><b>EXISTING</b></p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p>		<p><b>PROPOSED</b></p> <p>-----</p> <p>-----</p> <p>-----</p> <p>-----</p>		<p><b>ABUTTERS PROPERTY LINE</b></p> <p><b>EASEMENT LINE</b></p> <p><b>PROPERTY, LOT, OR ROW</b></p> <p><b>SETBACK LINE</b></p> <p><b>ABUTTING LOT</b></p>	<p><b>CB</b> <b>BOUNDARY</b></p> <p><b>△</b> <b>CONTROL POINT</b></p> <p> <b>EXISTING SHRUB</b></p> <p> <b>EXISTING TREE</b></p> <p> <b>EXISTING EVERGREEN TREE</b></p> <p><b>x 100</b> <b>SPOT GRADE</b></p> <p><b>S</b> <b>SEWER MANHOLE</b></p> <p><b>E</b> <b>ELECTRIC MANHOLE</b></p> <p><b>T</b> <b>TELEPHONE MANHOLE</b></p> <p><b>M</b> <b>MANHOLE</b></p> <p><b>TV</b> <b>TV BOX</b></p> <p><b>MP</b> <b>METER PIT</b></p> <p><b>D</b> <b>DRAIN MANHOLE</b></p> <p><b>C</b> <b>CATCHBASIN</b></p> <p><b>D</b> <b>RECHARGE BASIN W/ MANHOLE</b></p> <p><b>△</b> <b>FLARED END OUTLET</b></p> <p><b>RA</b> <b>RIPRAP APRON</b></p> <p><b>WV</b> <b>WATER VALVE</b></p> <p><b>GV</b> <b>GAS VALVE</b></p> <p><b>CS</b> <b>CURB STOP</b></p> <p><b>CO</b> <b>CLEAN OUT</b></p> <p><b>□</b> <b>PIPE STUB</b></p> <p><b>HY</b> <b>HYDRANT</b></p> <p><b>UP</b> <b>UTILITY POLE W/ GUY</b></p> <p><b>UP1</b> <b>UTILITY POLE</b></p> <p><b>G</b> <b>GUY</b></p> <p><b>☆</b> <b>LIGHT POST</b></p> <p><b>W</b> <b>MONITORING WELL</b></p> <p><b>W</b> <b>WATER WELL</b></p> <p><b>SAS</b> <b>SOIL ABSORPTION SYSTEM</b></p> <p><b>ST</b> <b>SEPTIC TANK</b></p> <p><b>LP</b> <b>LEACHING PIT</b></p> <p><b>CP</b> <b>CESS POOL</b></p>
<p><b>UTILITIES</b></p> <p><b>EXISTING</b></p> <p><b>D</b></p> <p><b>CHW</b></p>		<p><b>PROPOSED</b></p> <p><b>D</b></p> <p><b>CHW</b></p>		<p><b>DRAIN PIPE</b></p> <p><b>OVERHEAD WIRE</b></p>	<p><b>WV</b> <b>WATER VALVE</b></p> <p><b>GV</b> <b>GAS VALVE</b></p> <p><b>CS</b> <b>CURB STOP</b></p> <p><b>CO</b> <b>CLEAN OUT</b></p> <p><b>□</b> <b>PIPE STUB</b></p> <p><b>HY</b> <b>HYDRANT</b></p> <p><b>UP</b> <b>UTILITY POLE W/ GUY</b></p> <p><b>UP1</b> <b>UTILITY POLE</b></p> <p><b>G</b> <b>GUY</b></p> <p><b>☆</b> <b>LIGHT POST</b></p> <p><b>W</b> <b>MONITORING WELL</b></p> <p><b>W</b> <b>WATER WELL</b></p> <p><b>SAS</b> <b>SOIL ABSORPTION SYSTEM</b></p> <p><b>ST</b> <b>SEPTIC TANK</b></p> <p><b>LP</b> <b>LEACHING PIT</b></p> <p><b>CP</b> <b>CESS POOL</b></p>
<p><b>EROSION &amp; SEDIMENT CONTROL</b></p> <p><b>PROPOSED</b></p> <p><b>HB</b></p> <p><b>SFHB</b></p> <p><b>SF</b></p>		<p><b>HAYBALE</b></p> <p><b>SILT FENCE-HAYBALE</b></p> <p><b>SILT FENCE</b></p>		<p><b>TP-#</b></p> <p><b>TEST PIT</b></p> <p><b>WF</b> <b>WETLAND FLAG</b></p> <p><b>MB</b> <b>MAIL BOX</b></p> <p><b>SIGN</b></p>	<p><b>WV</b> <b>WATER VALVE</b></p> <p><b>GV</b> <b>GAS VALVE</b></p> <p><b>CS</b> <b>CURB STOP</b></p> <p><b>CO</b> <b>CLEAN OUT</b></p> <p><b>□</b> <b>PIPE STUB</b></p> <p><b>HY</b> <b>HYDRANT</b></p> <p><b>UP</b> <b>UTILITY POLE W/ GUY</b></p> <p><b>UP1</b> <b>UTILITY POLE</b></p> <p><b>G</b> <b>GUY</b></p> <p><b>☆</b> <b>LIGHT POST</b></p> <p><b>W</b> <b>MONITORING WELL</b></p> <p><b>W</b> <b>WATER WELL</b></p> <p><b>SAS</b> <b>SOIL ABSORPTION SYSTEM</b></p> <p><b>ST</b> <b>SEPTIC TANK</b></p> <p><b>LP</b> <b>LEACHING PIT</b></p> <p><b>CP</b> <b>CESS POOL</b></p>
<p><b>ENVIRONMENTAL</b></p> <p><b>EXISTING</b></p> <p><b>BZ 50</b></p> <p><b>BZ 100</b></p> <p><b>MHW</b></p> <p><b>FLOOD</b></p> <p>-----</p>		<p><b>POND BOUNDARY</b></p> <p><b>WETLAND 50 BUFFER</b></p> <p><b>WETLAND 100 BUFFER</b></p> <p><b>MEAN HIGH WATER</b></p> <p><b>FEMA FLOOD ZONE</b></p> <p><b>35' BUFFER TO INLAND BANK</b></p>		<p><b>TP-#</b></p> <p><b>TEST PIT</b></p> <p><b>WF</b> <b>WETLAND FLAG</b></p> <p><b>MB</b> <b>MAIL BOX</b></p> <p><b>SIGN</b></p>	<p><b>WV</b> <b>WATER VALVE</b></p> <p><b>GV</b> <b>GAS VALVE</b></p> <p><b>CS</b> <b>CURB STOP</b></p> <p><b>CO</b> <b>CLEAN OUT</b></p> <p><b>□</b> <b>PIPE STUB</b></p> <p><b>HY</b> <b>HYDRANT</b></p> <p><b>UP</b> <b>UTILITY POLE W/ GUY</b></p> <p><b>UP1</b> <b>UTILITY POLE</b></p> <p><b>G</b> <b>GUY</b></p> <p><b>☆</b> <b>LIGHT POST</b></p> <p><b>W</b> <b>MONITORING WELL</b></p> <p><b>W</b> <b>WATER WELL</b></p> <p><b>SAS</b> <b>SOIL ABSORPTION SYSTEM</b></p> <p><b>ST</b> <b>SEPTIC TANK</b></p> <p><b>LP</b> <b>LEACHING PIT</b></p> <p><b>CP</b> <b>CESS POOL</b></p>

GRAPHIC SCALE



NOTES:  
PROPERTY LINES WERE OBTAINED FROM PLYMOUTH, MA GIS AND SHOULD BE  
CONSIDERED APPROXIMATE ONLY.

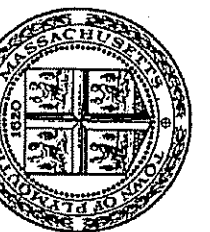
Revisions



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508-833-6600 voice  
508-833-3750 fax

*POND ROAD STORMWATER  
IMPROVEMENTS  
PLYMOUTH, MASSACHUSETTS*

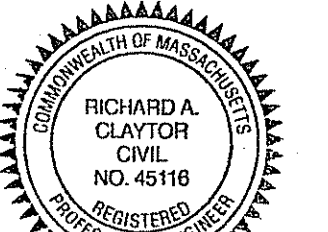
## EXISTING CONDITIONS



**TOWN OF PLYMOUTH**  
11 Lincoln Street  
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Phone: 508-747-1620  
Fax: 508 920 4091

Horsley Witten Group, Inc.  
20 Route 6A

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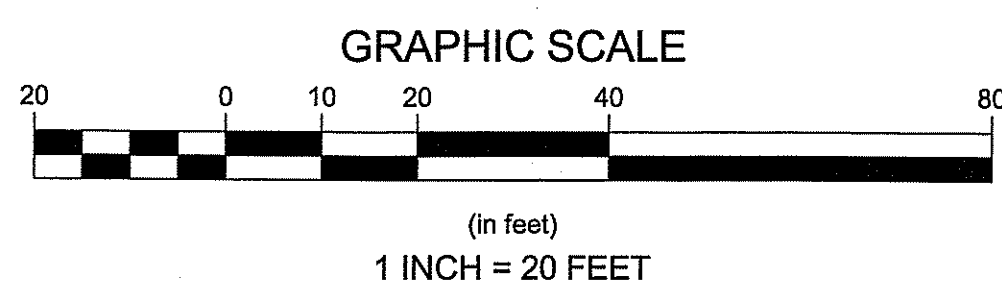
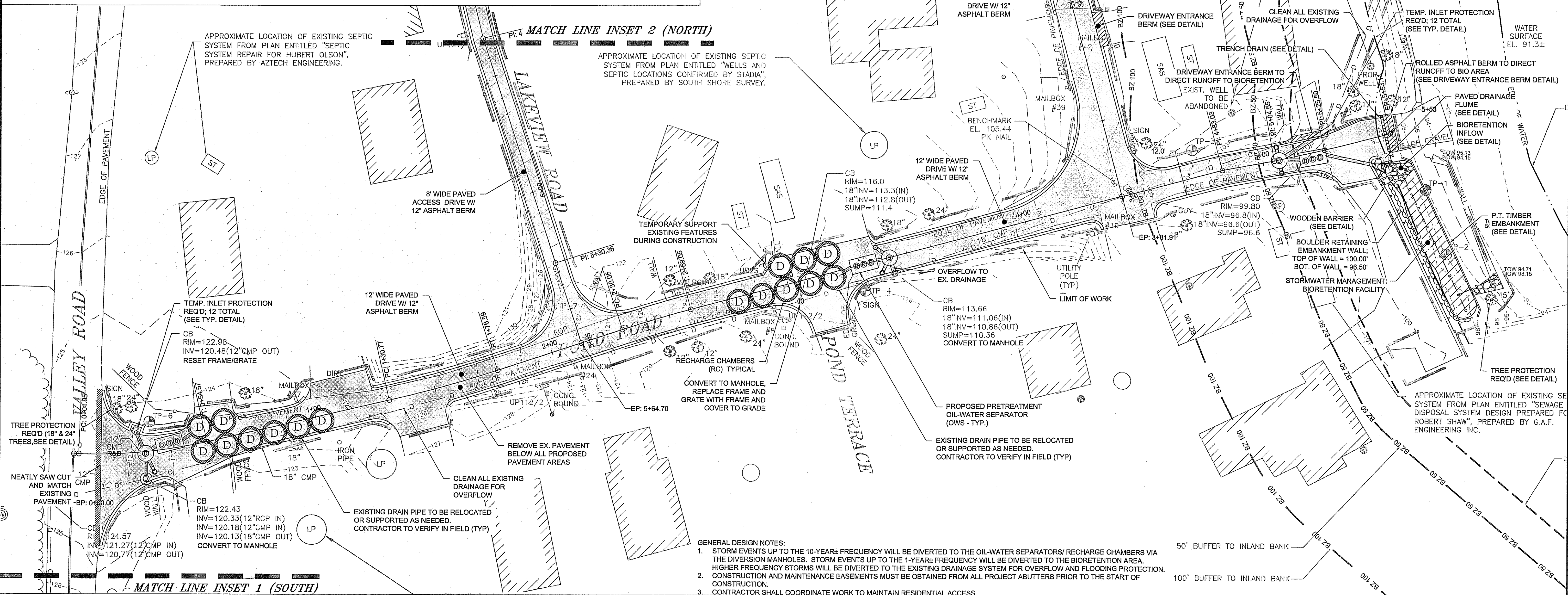
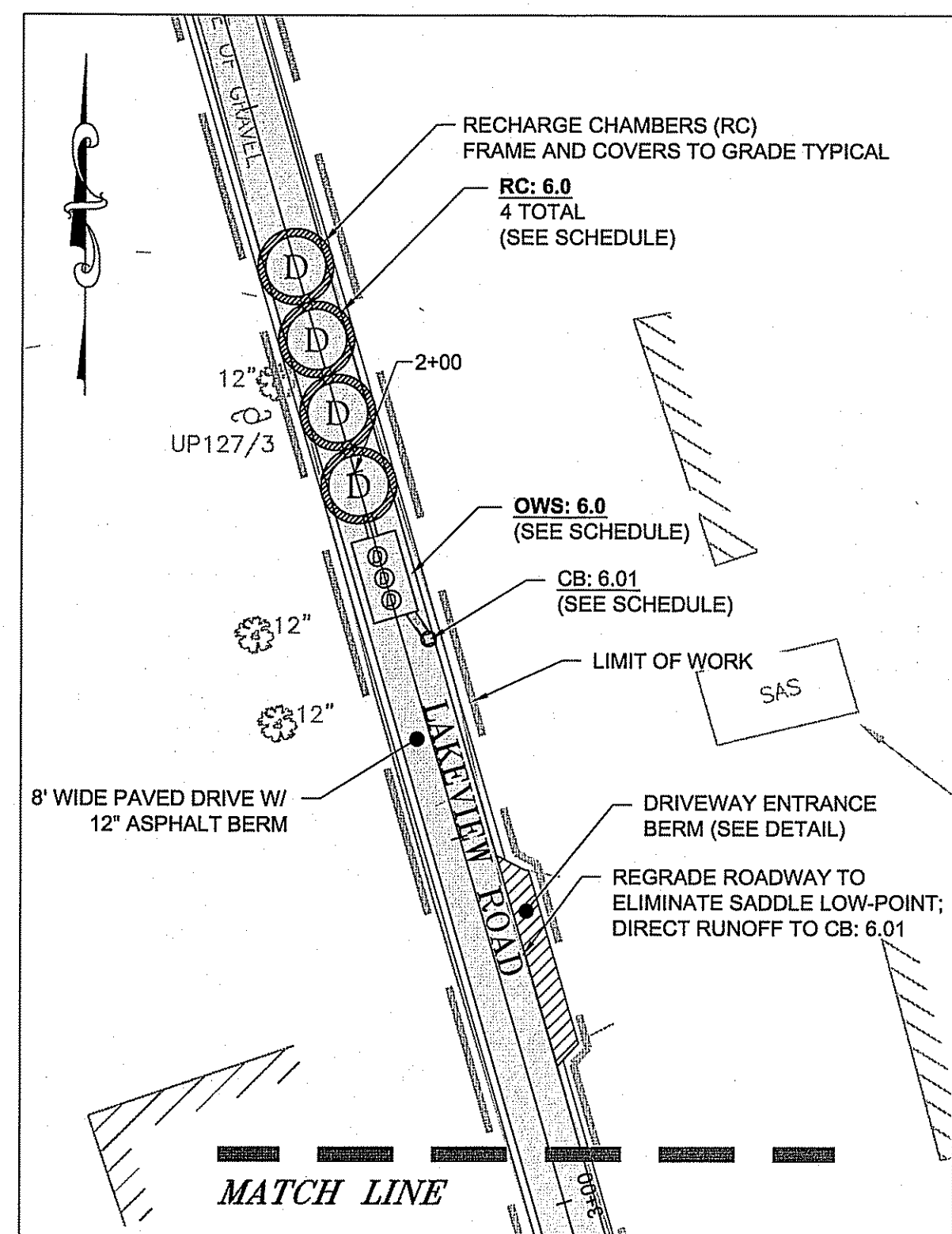
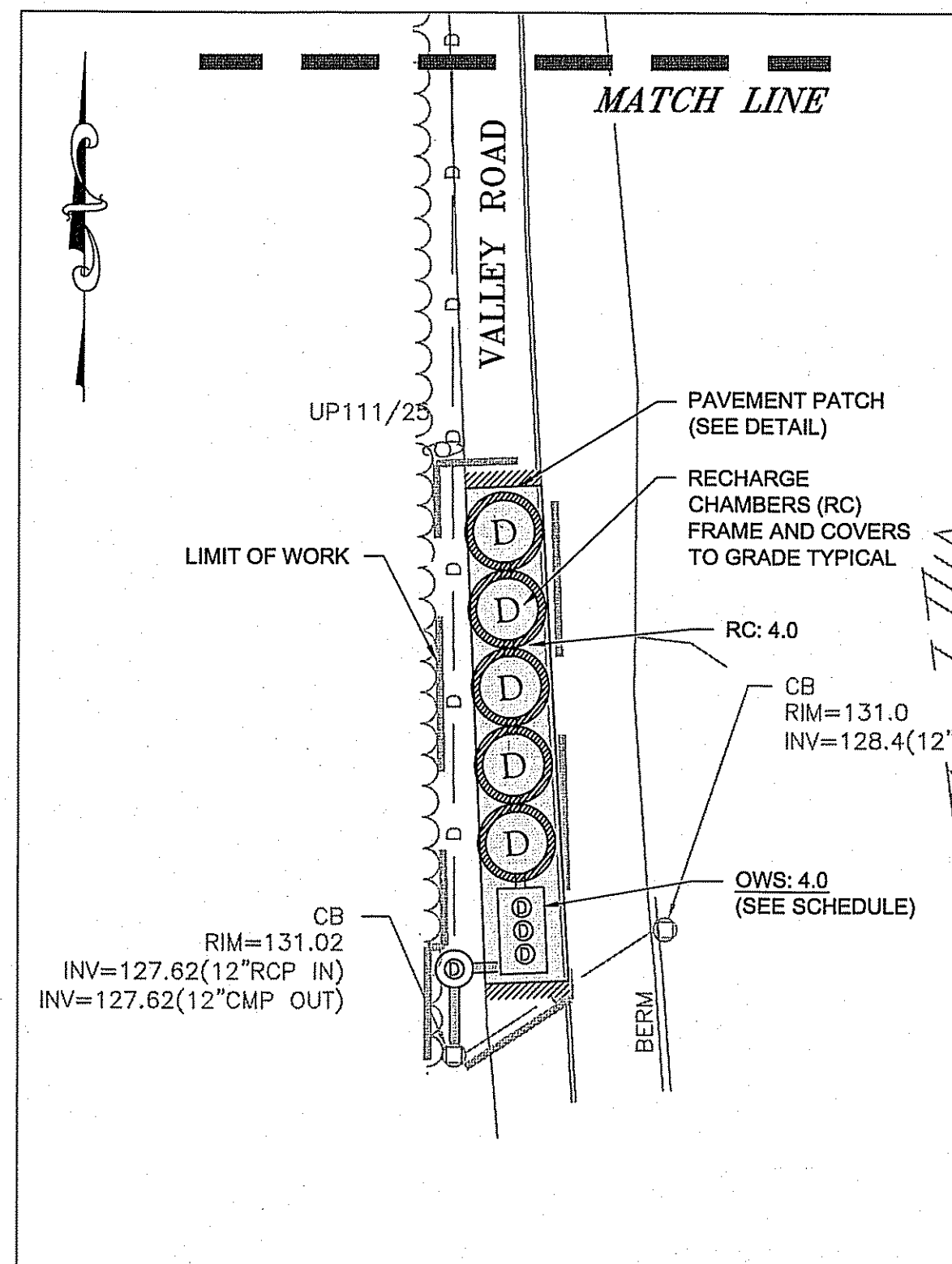
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ATM-25-1

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Revisions	Date	By	Description
1			
2			
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4			
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6			
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**POND ROAD STORMWATER IMPROVEMENTS**  
PLYMOUTH, MASSACHUSETTS

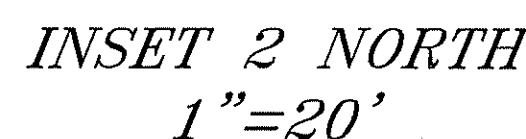
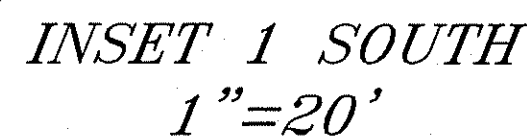
**SITE PLAN**

Prepared For:  
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Plymouth, MA 02560  
Phone: (508) 747-1620  
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Survey Provided By:  
**Horsley Witten Group, Inc.**  
90 Route 6A  
Plymouth, MA 02563  
Phone: (508) 833-6000  
Fax: (508) 833-3150  
Date: 2011

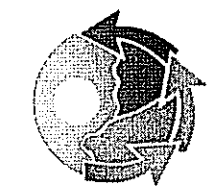
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Sheet: 3 of 12  
Sheet Number: C-3





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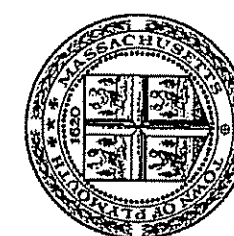
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3			
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6			
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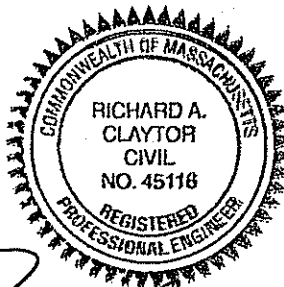
*POND ROAD STORMWATER  
IMPROVEMENTS  
PLYMOUTH, MASSACHUSETTS*

*CRADINE DIAM*



Prepared For:  
TOWN OF PLYMOUTH

Survey Provided By:  
**Horslev Witten Group Inc**

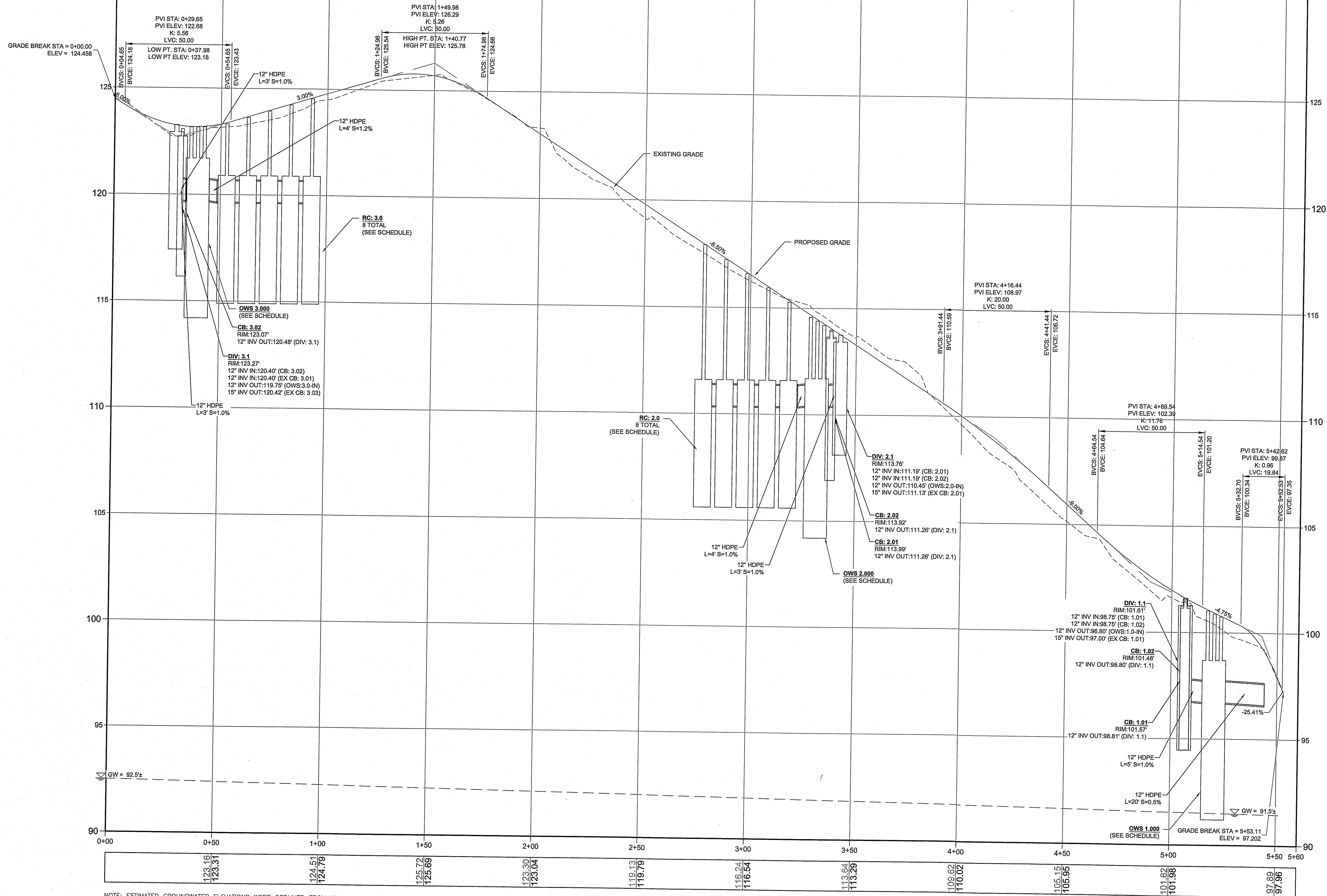


Project Number:	Sheet:
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C - 4



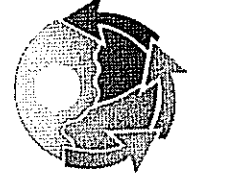
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NOTE: ESTIMATED GROUNDWATER ELEVATIONS WERE OBTAINED FROM HW TEST PIT OBSERVATIONS ON JUNE 30, 2011 AND FROM U.S. GEOLOGICAL SURVEY WRI REPORT 90-4204 (HANSEN AND LAPHAM, 1992).

**Pond Road PROFILE**  
HORIZONTAL SCALE: 1" = 20'  
VERTICAL SCALE: 1" = 2'

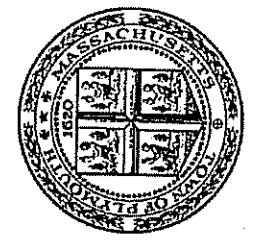
Revisions



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**POND ROAD STORMWATER IMPROVEMENTS**  
PLYMOUTH, MASSACHUSETTS

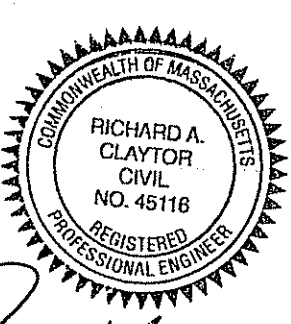
Plan Set: \_\_\_\_\_  
Plan Title: \_\_\_\_\_



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Fax: 508-833-3150  
Dated: 2011

Registration:

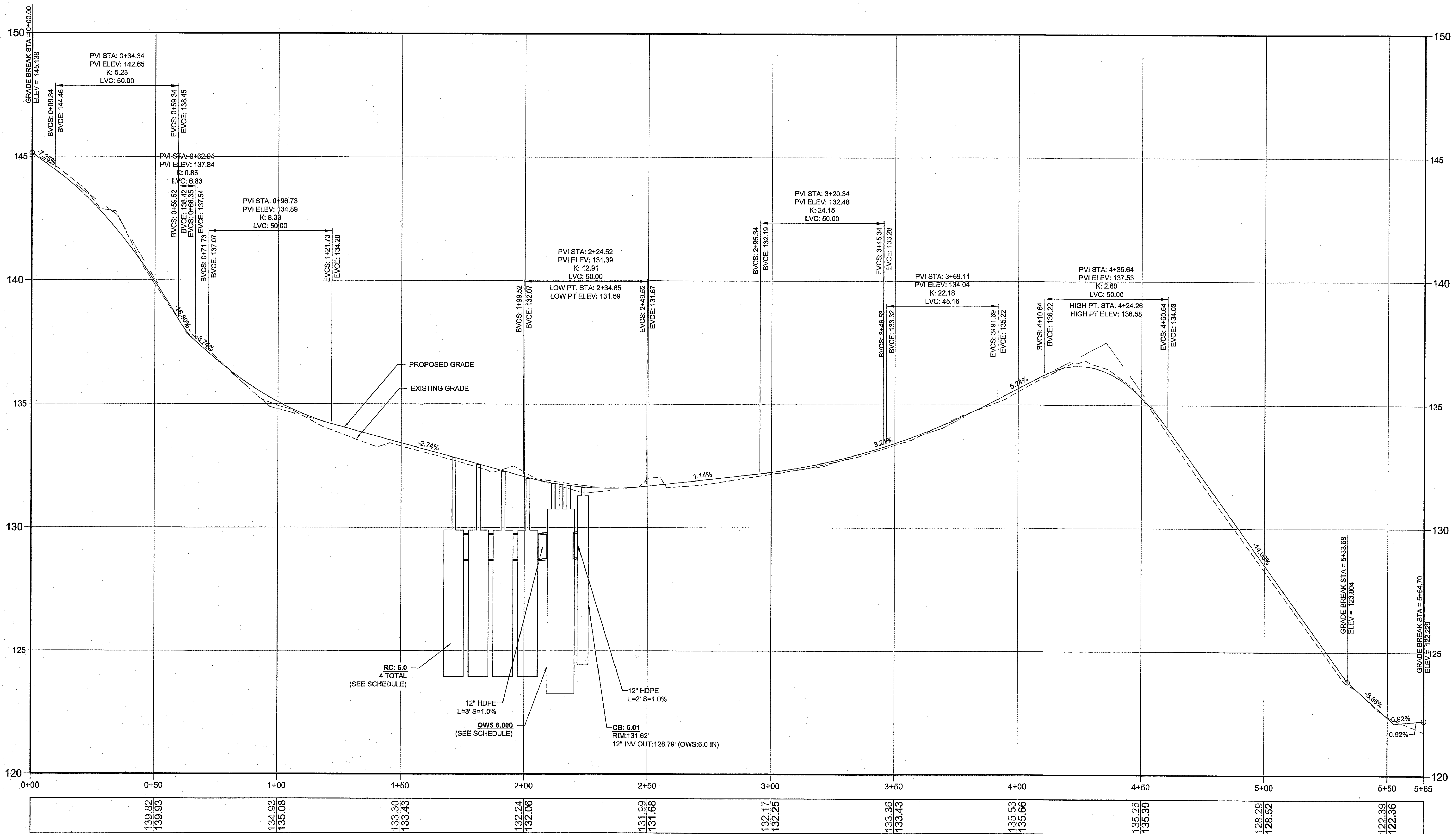


Project Number: 11051  
Sheet: 5 of 12

Sheet Number: \_\_\_\_\_

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NOTE: ESTIMATED GROUNDWATER ELEVATION IS APPROXIMATELY 92.5'.  
GROUNDWATER TABLE DATA WAS OBTAINED FROM HW TEST PIT  
OBSERVATIONS ON JUNE 30, 2011 AND FROM U.S. GEOLOGICAL SURVEY  
WRI REPORT 90-4204 (HANSEN AND LAPHAM, 1992).

LAKEVIEW PROFILE  
HORIZONTAL SCALE: 1" = 20'  
VERTICAL SCALE: 1" = 2'

Revisions

Rev.	Date	By	Appr.	Description
1				
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**Horsley Witten Group, Inc.**  
Sustainable Environmental Solutions  
www.horsleywitten.com  
90 Route 6A  
Sandwich, MA 02563  
Phone: (508) 833-3150  
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Date: JAN. 3, 2012

Drawn By: KMH/ERK

Checked By: RAC

Designed By: KMH

**POND ROAD STORMWATER IMPROVEMENTS**  
PLYMOUTH, MASSACHUSETTS

**LAKEVIEW ROAD PROFILE**

Plan Set:

Prepared For:  
**TOWN OF PLYMOUTH**  
11 Lincoln Street  
Plymouth, MA 02360  
Phone: (508) 747-1620  
Fax: (508) 830-4081

Survey Provided By:

**Horsley Witten Group, Inc.**  
90 Route 6A  
Sandwich, MA 02563  
Phone: (508) 833-6000  
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Date: 2011

Registration:

**RICHARD A. CLAYTON**  
CIVIL  
NO. 45118  
PROFESSIONAL ENGINEER

Project Number:

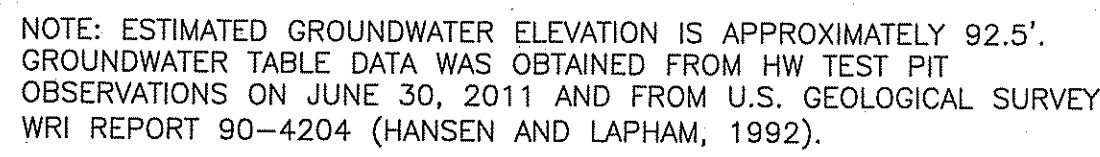
11051

Sheet:

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Sheet Number:

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**HORIZONTAL SCALE: 1" = 20'**

**VERTICAL SCALE: 1" = 2'**



Checked By:  
RAC


**Horsley Witten Group, Inc.**  
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508-833-6600 voice  
508-833-3150 fax

*POND ROAD STORMWATER  
IMPROVEMENTS  
PLYMOUTH, MASSACHUSETTS*

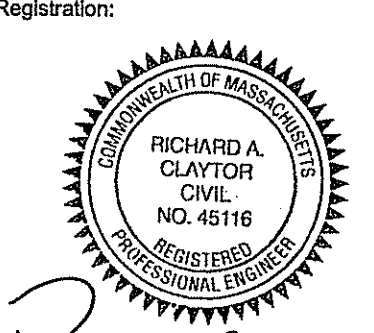
Prepared For:

**TOWN OF PLYMOUTH**

11 Lincoln Street  
Plymouth, MA 02360  
Phone: 508-747-1620  
Fax: 508-830-4081

The seal of the Town of Plymouth is a circular emblem. It features a central shield divided into four quadrants, each containing a different heraldic symbol. The shield is surrounded by a border containing the text "TOWN OF PLYMOUTH" at the top and "1620" at the bottom. The entire seal is encircled by a decorative border.

Survey Provided By:  
**Horsley Witten Group, Inc.**  
90 Route 6A  
Sandwich, MA 02563  
Phone: (508) 833-6600  
Fax: (508) 833-3150  
Dated: 2011



Project Number:	Sheet :
11051	7 of 12

Sheet Number:  
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last modified: 01/20/12 printed: 01/24/12 by mc H:\Projects\2011\11051 Plymouth-Pond Rd SW Mgt Design\Drawings - 11051\11051 DE.dwg

## SURVEY NOTES

1. THE TOPOGRAPHY AND EXISTING SITE DETAIL DEPICTED HEREON WERE OBTAINED FROM AN INSTRUMENT SURVEY CONDUCTED ON THE GROUND BY THE HORSLEY WITTEN GROUP, INC. IN JULY, 2011.
2. THIS PLAN DOES NOT SHOW ANY RECORDED OR UNWRITTEN EASEMENTS WHICH MAY EXIST. HOWEVER, THIS DOES NOT CONSTITUTE A GUARANTEE THAT NO SUCH EASEMENTS EXIST.
3. THE ELEVATIONS DEPICTED HEREON WERE BASED ON AN ASSUMED DATUM.
4. ALL PROPERTY AND BOUNDARY LINES DEPICTED ARE APPROXIMATE ONLY.
5. EXISTING CONTOUR INTERVALS ARE EQUAL TO ONE FOOT.
6. THE ACCURACY OF MEASURED PIPE INVERTS AND PIPE SIZES IS SUBJECT TO FIELD CONDITIONS, THE ABILITY TO MAKE VISUAL OBSERVATIONS, DIRECT ACCESS TO THE VARIOUS ELEMENTS AND OTHER CONDITIONS.

## GENERAL CONSTRUCTION NOTES

1. ALL SITE PREPARATION NECESSARY TO COMPLETE THIS PROJECT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
2. ALL NECESSARY POLICE DETAIL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL COORDINATE WITH THE PLYMOUTH POLICE DEPARTMENT.
3. THE CONTRACTOR SHALL MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY CONSTRUCTION PERMITS, PAY ALL FEES INCLUDING POLICE DETAILS AND POST ALL BONDS, IF NECESSARY, ASSOCIATED WITH THE SAME, AND COORDINATE WITH THE OWNER AND THE ENGINEER.
4. ALL EXISTING CONDITIONS SHOWN SHALL BE CONSIDERED APPROXIMATE AND ARE BASED ON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER PRIOR TO INSTALLING ANY PORTION OF THE SITE WORK WHICH WOULD BE AFFECTED.
5. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF VARIOUS UTILITY COMPANIES, AND WHEREVER POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY IN THE TOWN, AND "DISSAFE" (1-800-344-7233) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK IN PREVIOUSLY UNALTERED AREAS TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RESOLVE CONFLICTS BETWEEN THE PROPOSED UTILITIES AND FIELD-LOCATED UTILITIES AND SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED, INCOMPLETELY OR INACCURATELY SHOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ACCURATE RECORDS OF THE LOCATION AND ELEVATION OF ALL WORK INSTALLED AND EXISTING UTILITIES FOUND DURING CONSTRUCTION FOR THE PREPARATION OF THE AS-BUILT PLAN.
6. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL EXISTING UTILITIES IN WORKING ORDER AND FREE FROM DAMAGE DURING THE ENTIRE DURATION OF THE PROJECT. ALL COST RELATED TO THE REPAIR OF UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. EXCAVATION REQUIRED WITHIN THE PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER.
7. THE CONTRACTOR SHALL UTILIZE ALL PRECAUTIONS AND MEASURES TO ENSURE THE SAFETY OF THE PUBLIC, ALL PERSONNEL AND PROPERTY DURING CONSTRUCTION IN ACCORDANCE WITH OSHA STANDARDS, INCLUDING BARRICADES, SAFETY LIGHTING, CONES, POLICE DETAIL AND/OR FLAGMEN AS DETERMINED NECESSARY BY THE ENGINEER AND/OR TOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF POLICE DETAIL AND FOR COORDINATING WITH THE LOCAL OR STATE POLICE DEPARTMENT FOR ALL REQUIRED POLICE DETAIL.
8. ALL TRENCHING WORK WITHIN A ROADWAY SHALL BE COORDINATED WITH THE PROPER LOCAL & STATE AGENCY. TRENCH SAFETY SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR INCLUDING ANY LOCAL AND/OR STATE PERMITS REQUIRED FOR THE TRENCHWORK. THIS WORK MAY BE REQUIRED TO TAKE PLACE OUTSIDE OF NORMAL HOURS OF OPERATION FOR THE FACILITY. THE CONTRACTOR SHALL PLAN ACCORDINGLY.
9. ALL TRENCH WORK WITHIN EXISTING PAVEMENT SHALL BE SAWCUT PER THE APPLICABLE DETAILS. TRENCHWORK BACKFILL AND COMPACTION SHALL HAVE MAX. 8-INCH LIFTS. CONTRACTOR SHALL BE REQUIRED TO REMOVE PATCH AND REPAVE AFTER ONE COMPLETE 12-MONTH CYCLE IF SETTLEMENT OCCURS DUE TO INADEQUATE COMPACTION AS DETERMINED BY THE ENGINEER WITHIN THE WARRANTY PERIOD.
10. THE CONTRACTOR SHALL MAKE ALL CONNECTION ARRANGEMENTS WITH UTILITY COMPANIES, AS REQUIRED.
11. ALL IMPORTED MATERIAL SHALL BE CLEAN, NO MATERIAL WILL BE ACCEPTED FROM AN EXISTING OR FORMER 21E SITE AS DEFINED BY THE MASSACHUSETTS CONTINGENCY PLAN 310 CMR 40.0000.
12. SITE LAYOUT SURVEY REQUIRED FOR CONSTRUCTION WILL BE PROVIDED BY THE CONTRACTOR AND SHALL BE CONDUCTED BY A MASSACHUSETTS REGISTERED PROFESSIONAL LAND SURVEYOR. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE SURVEYOR FOR ALL SITE SURVEY WORK.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCHMARKS DURING CONSTRUCTION INCLUDING BENCHMARK LOCATIONS AND ELEVATIONS AT CRITICAL AREAS. THE LOCATION OF ALL CONTROL POINTS AND BENCHMARKS SHALL BE COORDINATED WITH THE ENGINEER.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL GRADE STAKES SET BY THE SURVEYOR. GRADE STAKES SHALL REMAIN UNTIL A FINAL INSPECTION OF THE ITEM HAS BEEN COMPLETED BY THE ENGINEER. ANY RE-STAKING OF PREVIOUSLY SURVEYED SITE FEATURES SHALL BE THE RESPONSIBILITY (INCLUDING COST) OF THE CONTRACTOR.
15. UNLESS OTHERWISE SPECIFIED ON THE PLANS AND DETAILS/SPECIFICATIONS, ALL SITE CONSTRUCTION MATERIALS AND METHODOLOGIES ARE TO CONFORM TO THE MOST RECENT VERSION OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (THE MASSACHUSETTS HIGHWAY DEPARTMENT 1988 STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, THE 2002 SUPPLEMENTAL SPECIFICATIONS, AND THE 2005 STANDARD SPECIAL PROVISIONS).
16. CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS REGARDING NOISE, VIBRATION, DUST, SEDIMENTATION CONTAINMENT, AND TRENCH WORK.
17. SOLID WASTES SHALL BE COLLECTED AND STORED IN A SECURED DUMPSTER. THE DUMPSTER SHALL MEET ALL LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS.
18. THE CONTRACTOR SHALL RESTORE ALL DISTURBED SURFACES EQUAL TO THEIR ORIGINAL CONDITION AFTER CONSTRUCTION IS COMPLETE. AREAS NOT DISTURBED BY CONSTRUCTION SHALL BE LEFT NATURAL. THE CONTRACTOR SHALL TAKE CARE TO PREVENT DAMAGE TO SHRUBS, TREES, OTHER LANDSCAPING AND/OR NATURAL FEATURES. WHEREAS THE PLANS DO NOT SHOW ALL LANDSCAPE FEATURES, EXISTING CONDITIONS MUST BE VERIFIED BY THE CONTRACTOR IN ADVANCE OF THE WORK.
19. ALL UNPAVED AREAS DISTURBED BY THE WORK SHALL HAVE A MINIMUM OF 4-INCHES OF LOAM INSTALLED AND BE SEEDED WITH GRASS SEED AS SHOWN ON THE PLAN AND/OR DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING ANY LOAM AND SEEDED AREAS UNTIL LAWN GROWTH IS ESTABLISHED AND APPROVED BY THE ENGINEER AND/OR OWNER.
20. ALL PROPOSED STRUCTURES SHALL BE DESIGNED BY THEIR MANUFACTURERS FOR AASHTO H-20 LOADING. PRECAST CONCRETE SHALL HAVE A MINIMUM 28-DAY STRENGTH OF 4000 PSI UNLESS OTHERWISE NOTED HEREIN.
21. A HIGH WATER TABLE IS NOT ANTICIPATED. HOWEVER, IF THE WATER TABLE IS ENCOUNTERED DURING EXCAVATION, THE WATER TABLE SHALL BE TEMPORARILY LOWERED BY PUMPING. THE CONTRACTOR SHALL INSTALL A DEWATERING BASIN AS SHOWN IN THE DEWATERING BASIN DETAIL AND PROVIDE A DEWATERING PLAN DEPICTING PROPOSED DEWATERING LOCATION. THE PUMP DISCHARGE SHALL BE DIRECTED TO THIS BASIN TO PREVENT SEDIMENTS FROM LEAVING THE CONSTRUCTION AREA. THE CONTRACTOR SHALL INSTALL ADDITIONAL BASINS IF REQUIRED. INSTALL THE BASIN AS SHOWN ON THE SITE PLAN IF SO NOTED, OTHERWISE INSTALL THE BASIN(S) WITHIN THE LIMIT OF DISTURBANCE AS SHOWN BY THE SILT FENCE AND/OR STRAWBALES.
22. LEDGE OR BOULDER EXCAVATION IS NOT ANTICIPATED FOR THIS SITE. HOWEVER, THE CONTRACTOR SHALL PROVIDE A UNIT PRICE COST IN CUBIC YARD MEASURE FOR LEDGE AND/OR BOULDER REMOVAL. LEDGE AND/OR BOULDERS LESS THAN 1 CUBIC YARD IN SIZE BASED ON THE AVERAGE DIMENSIONS WILL NOT BE CONSIDERED PAYABLE ROCK. UNIT PRICE SHALL BE GIVEN FOR BOTH ON AND OFF SITE DISPOSAL. COST OF REPLACEMENT MATERIAL SHALL BE INCLUDED IF ADDITIONAL FILL MATERIAL IS REQUIRED.
23. THE CONTRACTOR SHALL REGULARLY INSPECT THE PERIMETER OF THE PROPERTY TO CLEAN UP AND REMOVE LOOSE CONSTRUCTION DEBRIS BEFORE IT LEAVES THE SITE. ALL DEMOLITION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE SITE TO AN APPROVED DUMP SITE. ALL TRUCKS LEAVING THE SITE SHALL BE COVERED.
24. CONCRETE TRUCKS SHALL NOT BE WASHED ONSITE. ANY CEMENT OR CONCRETE DEBRIS LEFT IN THE DISTURBED AREA SHALL BE REMOVED BY HAND AT THE CONTRACTOR'S EXPENSE.
25. BURIAL OF ANY STUMPS, SOLID DEBRIS, AND/OR STONES/BOULDERS ONSITE IS PROHIBITED. NO ROAD SALT OR OTHER DE-ICING CHEMICALS SHALL BE USED ON THE ACCESS ROADWAY.
26. IF ANY DEVIATION OR ALTERATION OF THE WORK PROPOSED ON THESE DRAWINGS IS REQUIRED, THE CONTRACTOR IS TO IMMEDIATELY CONTACT AND COORDINATE WITH THE ENGINEER AND OWNER.
27. AT THE END OF CONSTRUCTION, THE CONTRACTOR SHALL REMOVE ALL CONSTRUCTION DEBRIS AND SURPLUS MATERIALS FROM THE SITE. A THOROUGH INSPECTION OF THE WORK PERIMETER IS TO BE MADE AND ALL DISCARDED MATERIALS, BLOWN OR WATER CARRIED DEBRIS, SHALL BE COLLECTED, AND REMOVED FROM THE SITE.

## BASIC CONSTRUCTION SEQUENCE

- THE FOLLOWING CONSTRUCTION SEQUENCE IS TO BE USED AS A GENERAL GUIDELINE. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER, ENGINEERS, AND LANDSCAPE ARCHITECTS AND SUBMIT A PROPOSED CONSTRUCTION SEQUENCE FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
1. SURVEY AND STAKE THE PROPOSED LIMIT OF DISTURBANCE AND LIMIT OF SEDIMENTATION BARRIERS.
  2. PLACE SEDIMENTATION BARRIERS (STRAWBALES, SILT FENCE, ETC.) AS SHOWN ON THE PLANS AND STAKED OUT IN THE FIELD. IN NO CASE IS THE LIMIT OF DISTURBANCE TO EXTEND BEYOND THE SEDIMENTATION BARRIERS/LIMIT OF DISTURBANCE LINE AS SHOWN ON THE PROJECT PLANS AND AS APPROVED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP).
  3. BEGIN CLEARING THE SITE AS REQUIRED.
  4. SURVEY AND STAKE CENTERLINE OF THE PROPOSED STORMWATER TREATMENT AREAS AND DRAINAGE LINES.
  7. BEGIN CLEARING AND GRUBBING IN AREA OF THE PROPOSED STORMWATER TREATMENT AREAS. TOPSOIL IS TO BE STRIPPED FROM THE WORK AREA(S) AND STOCKPILED IN APPROVED LOCATIONS. TOPSOIL STOCKPILES ARE TO BE PROTECTED BY A SEDIMENT BARRIER (SILT FENCE, STRAWBALES, ETC).
  8. EXCAVATE AND ROUGH GRADE THE PROPOSED BIORETENTION AREA AND ANY ADDITIONAL TEMPORARY BASINS NECESSARY TO CONTROL SITE RUNOFF AND SEDIMENTS. PERMANENT DRAINAGE BASINS SHALL BE TEMPORARILY SEEDED. PERMANENT DRAINAGE BASIN SEEDING AND PLANTING SHALL BE COMPLETED AFTER THE CONTRIBUTING AREA TO THE BASIN HAS REACHED A MINIMUM OF 80% STABILIZATION AND IS NO LONGER REQUIRED TO BE USED AS A CONSTRUCTION SEDIMENTATION BASIN.
  9. INSTALL TEMPORARY CONVEYANCE DEVICES (SWALES, CHECK DAMS, PIPES, ETC.) AS NECESSARY TO CONVEY RUNOFF TO TREATMENT AREAS.
  10. BEGIN ROUGH GRADING THE ROADWAYS. BRING ROUGH GRADING TO PROPER ELEVATIONS AS SOON AS PRACTICABLE. WORK SHALL PROGRESS DILIGENTLY TO MINIMIZE TIME SOILS ARE UN-STABILIZED.
  11. INSTALL DRAINAGE PIPES, DRAINAGE MANHOLES, CATCH BASINS, AND UNDERGROUND DRAINAGE STRUCTURES. WORK SHALL BEGIN AT THE BIORETENTION AREA AND PROGRESS UP-GRADE/IN. PROTECT DISCHARGE OUTLETS WITH RIP-RAP APRONS. THE DRAINAGE BASINS AND DRAINAGE NETWORK ARE TO BE PROTECTED FROM SEDIMENTATION WITH SILT FENCE AND STRAWBALES UNTIL ALL UN-STABILIZED AREAS ARE STABILIZED WITH STONE SUB-BASE OR VEGETATION. INSTALL SEDIMENT BARRIERS AT ALL POINTS OF ENTRY INTO THE DRAINAGE NETWORK. PARTICULAR CARE SHALL BE TAKEN TO PROTECT THE UNDERGROUND DRAINAGE STRUCTURES FROM SEDIMENT.
  12. PERMANENTLY SEED ALL DISTURBED AREAS OUTSIDE OF THE AREA TO BE PAVED.
  13. IMMEDIATELY FOLLOWING ALL UNDERGROUND DRAINAGE AND UTILITY INSTALLATIONS, PLACE COMPACTED GRAVEL FOUNDATION AND ROUGH GRADE THE ROADWAYS IN ACCORDANCE WITH THE SITE PLANS AND IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL REGULATIONS.
  14. BEGIN ROAD CONSTRUCTION PER SITE PLANS AND IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL REGULATIONS. ROADS AND PARKING AREAS ARE NOT TO BE PAVED UNTIL THE ENTIRE PERMANENT DRAINAGE SYSTEM HAS BEEN INSTALLED AND ALL PIPE CONNECTIONS COMPLETE.
  15. FINISH PERMANENT STABILIZATION. SWEEP THE ROADWAY TO REMOVE ALL SEDIMENTS. REPAIR DRAINAGE OUTLETS AND TREATMENT AREAS AS REQUIRED. THE CONTRACTOR SHALL CLEAN AND FLUSH THE DRAINAGE STRUCTURES AND PIPES AT THE END OF CONSTRUCTION AND ALL ACCUMULATED DRAINAGE BASINS SHALL BE REMOVED. CONTRACTOR SHALL INSPECT THE DRAINAGE NETWORK AND REPAIR ANY DAMAGE IMMEDIATELY.
  16. COMPLETE ALL REMAINING PLANTING AND SEEDING.
  17. REMOVAL OF ALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES FOLLOWING VEGETATIVE ESTABLISHMENT OF ALL DISTURBED AREAS SHALL BE APPROVED BY THE ENGINEER AND WHEN THE CONTRIBUTING AREA HAS REACHED A MINIMUM OF 80% STABILIZATION.

## GENERAL DEMOLITION NOTES

- THIS PLAN DOES NOT INCLUDE DETAILS & SPECIFICATIONS FOR ALL DEMOLITION WORK REQUIRED WITHIN THE PROPOSED CONSTRUCTION LIMITS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE OWNER, PROJECT ARCHITECT, MECHANICAL ENGINEERS AND OTHER PROJECT ED WAREHOUSE WITH THE PROPOSED NEW CONSTRUCTION TO DEVELOP A SUITABLE DEMOLITION PLAN, WHICH WILL ALLOW THE FACILITIES TO REMAIN IN OPERATION DURING THE ENTIRETY OF CONSTRUCTION.
1. UNLESS OTHERWISE NOTED, THE CONTRACTOR IS RESPONSIBLE FOR THE RELOCATION, DEMOLITION, REMOVAL AND DISPOSAL, IN A LOCATION APPROVED BY ALL GOVERNING AUTHORITIES, OF ALL EXISTING SITE ELEMENTS AND STRUCTURES INCLUDING, BUT NOT LIMITED TO, ROADWAYS, BITUMINOUS ASPHALT, CEMENT CONCRETE, GRAVEL, CURBS, WALKWAYS, BERMS, FENCES, POSTS, PLANTING BEDS, TREES, SHRUBS, UTILITIES, DRAINAGE STRUCTURES AND ALL OTHER STRUCTURES SHOWN AND NOT SHOWN WITHIN CONSTRUCTION LIMITS, AND WHERE NEEEDED, TO ALLOW FOR NEW CONSTRUCTION. ALL FACILITIES TO BE REMOVED SHALL BE UNDERCUT TO SUITABLE MATERIAL AND BROUGHT TO GRADE WITH SUITABLE COMPACTED FILL MATERIAL PER SPECIFICATIONS.
  2. PRIOR TO DEMOLITION OCCURRING, ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED AND MAINTAINED ACCORDING TO THE PLANS AND SPECIFICATIONS.
  3. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL DEBRIS FROM THE SITE AND DISPOSING OF THE DEBRIS IN A PROPER AND LEGAL MANNER. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FOR DEMOLITION AND DISPOSAL.
  4. THE CONTRACTOR SHALL COORDINATE WITH RESPECTIVE UTILITY COMPANIES PRIOR TO THE REMOVAL AND/OR RELOCATION OF UTILITIES. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES CONCERNING PORTIONS OF THE WORK WHICH MAY BE PERFORMED BY THE UTILITY COMPANY AND ANY FEES WHICH ARE TO BE PAID TO THE UTILITY COMPANY FOR THEIR SERVICES. THE CONTRACTOR IS RESPONSIBLE FOR PAYING ALL FEES AND CHARGES.
  5. THE CONTRACTOR SHALL REFER TO SPECIFICATIONS FOR ALL WORK WHICH REQUIRES UTILITIES TO BE REMOVED, RELOCATED, OR ABANDONED AND LEFT IN PLACE.
  6. THE CONTRACTOR IS TO PROVIDE NOTICE TO ALL UTILITY COMPANIES REGARDING DESTRUCTION AND REMOVAL OF ALL SERVICE LINES AND CAP ALL UTILITY LINES, AS REQUIRED, BEFORE PROCEEDING WITH THE WORK.
  7. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS ACCESS AND OPERATION FOR SURROUNDING FACILITIES, AS DEEMED BY THE OWNER, AT ALL TIMES DURING DEMOLITION OF THE EXISTING FACILITIES.

## GENERAL GRADING AND DRAINAGE NOTES

1. ALL CUT AND FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.
2. EXISTING GRADE CONTOUR INTERVALS SHOWN AT 1 FOOT.
3. PROPOSED GRADE CONTOUR INTERVALS SHOWN AT 1 FOOT.
4. CONTRACTOR SHALL ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH FIT AND CONTINUOUS GRADE.
5. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS.
6. PROPOSED ELEVATIONS ARE SHOWN TO FINISH PAVEMENT OR GRADE UNLESS NOTED OTHERWISE.
7. ROADS ARE NOT TO BE PAVED UNTIL THE ENTIRE PERMANENT DRAINAGE SYSTEM HAS BEEN INSTALLED AND ALL PIPE CONNECTIONS ARE COMPLETE.
8. DRAINAGE PIPING SHALL BE HIGH DENSITY POLYETHYLENE PIPE AND CONFORM TO AASHTO M284 CORRUGATED POLYETHYLENE PIPE. PIPE SHALL BE INSTALLED AT THE LOCATIONS INDICATED ON THE PLAN. MINIMUM CLEARANCE BETWEEN DRAINAGE PIPING AND OTHER UTILITIES/STRUCTURES SHALL BE 18" VERTICALLY AND 4-F' HORIZONTALLY. CPP SHALL BE CAREFULLY BACKFILLED IN ACCORDANCE WITH THE LATEST MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS.
9. BACKFILL ADJACENT TO PIPES AND STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. BACKFILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED SIX INCHES IN THICKNESS AND COMPACTED TO A DENSITY OF 98% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN +/- 2% OF OPTIMUM. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99. TESTING OF BACKFILL MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
10. ALL DRAINAGE STRUCTURES AND PIPES MUST BE CONNECTED TO THE DRAINAGE SYSTEM PRIOR TO THE INSTALLATION OF ANY PAVEMENT. PAVING WILL NOT BE ALLOWED IF THE DRAINAGE SYSTEM FOR THE PROPOSED PAVED AREA IS NOT COMPLETELY AND PROPERLY INSTALLED. THIS INCLUDES THE STABILIZATION OF ALL DISTURBED AREAS CONTRIBUTING TO THE DRAINAGE SYSTEMS AND ANY STORMWATER BASIN FLOORS AND SIDE SLOPES.

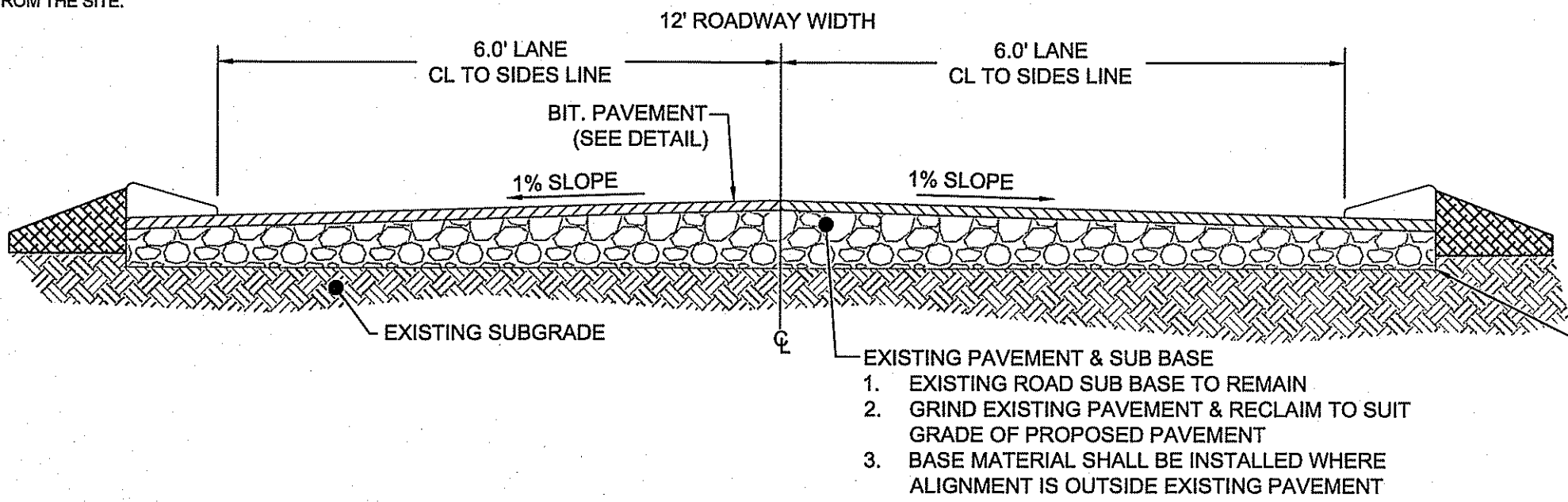
## STORMWATER FACILITY OPERATION & MAINTENANCE:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER INSPECTION AND MAINTENANCE OF ALL STORMWATER MANAGEMENT FACILITIES UNTIL SUCH TIME THAT THE ROADWAYS AND ASSOCIATED UTILITIES ARE ACCEPTED BY THE OWNER AND THE ENGINEER.
2. THE CONTRACTOR SHALL INSPECT AND RESTORE/CLEAN ALL FACILITIES (INLETS, MANHOLES, INFILTRATION STRUCTURES, BIORETENTION AREAS, ETC.) OF SEDIMENT AND DEBRIS PRIOR TO THE OWNER'S ACCEPTANCE.
3. ALL SEDIMENT AND DEBRIS SHALL BE DISPOSED OF PROPERLY IN A PRE-APPROVED LOCATION AS APPROVED BY THE TOWN.
4. ALL STORMWATER FACILITIES SHALL BE INSPECTED BY THE CONTRACTOR AFTER EVERY MAJOR RAINFALL EVENT FOR THE ENTIRE DURATION OF THE CONSTRUCTION PROJECT AND THE FIRST 3 MONTHS AFTER CONSTRUCTION TO ENSURE PROPER STABILIZATION AND CONSTRUCTION.
5. SPECIFIC ANNUAL MAINTENANCE SHALL BE AS FOLLOWS:
  - A. DRAINAGE STRUCTURES (INLETS, MANHOLES, CATCH BASINS, OIL/WATER SEPARATORS, RECHARGE CHAMBERS) : ALL DRAINAGE STRUCTURES WILL BE INSPECTED ANNUALLY TO MONITOR FOR PROPER OPERATION, COLLECTION OF LITTER OR TRASH, AND STRUCTURAL DETERIORATION. THE BASINS WILL BE CLEANED OF SEDIMENT (INCLUDING SLUMPS) AS NECESSARY, AND REPAIRED WHEN REQUIRED.
  - B. RIPRAP SLOPE PROTECTION: RIPRAP AT THE OUTFALLS WILL BE INSPECTED ANNUALLY AND REPAIRED AS NECESSARY.
  - C. SEDIMENT FOREBAY: THE SEDIMENT FOREBAY(S) WILL BE INSPECTED ANNUALLY TO ENSURE PROPER FUNCTIONING. THE SEDIMENT BUILDUP ON THE FLOOR OF THE FOREBAY WILL BE REMOVED AND PROPERLY DISPOSED OF APPROXIMATELY ONCE EVERY FIVE TO SEVEN YEARS, OR MORE OFTEN AS NECESSARY TO LIMIT SEDIMENT BUILDUP TO LESS THAN 80 PERCENT OF THE DESIGN VOLUME.
  - D. BIORETENTION SYSTEM: THE BIORETENTION SYSTEM WILL BE INSPECTED TWICE ANNUALLY FOR THE FIRST YEAR OF OPERATION AND ANNUALLY AFTER THE FIRST YEAR, AND AFTER STORM EVENTS GREATER THAN OR EQUAL TO THE 1-YEAR, 24-HOUR PRECIPITATION EVENT. GENERAL MAINTENANCE OF THE BIORETENTION SYSTEM FALLS UNDER LANDSCAPING PRACTICES. THE PLANTING SOIL BED WILL BE MONITORED FOR PROPER PH, EROSION, AND AERATION. MULCH WILL BE REPLACED BI-ANNUALLY, AND ILL-ESTABLISHED, DEAD OR SEVERELY DISEASED PLANTS WILL BE REMOVED AND REPLANTED ANNUALLY.
  - E. ROUTINE MAINTENANCE: OTHER ROUTINE MAINTENANCE WILL INCLUDE REMOVAL OF TRASH AND LITTER FROM PAVED AND PERIMETER AREAS, AND ANNUAL STREET AND PARKING LOT SWEEPINGS AFTER THE SPRING THAW TO AVOID EXCESSIVE ACCUMULATION OF SEDIMENT IN THE DRAINAGE SYSTEM. THE PIPES DRAINING THE PROJECT WILL BE INSPECTED ANNUALLY FOR PROPER FLOW.

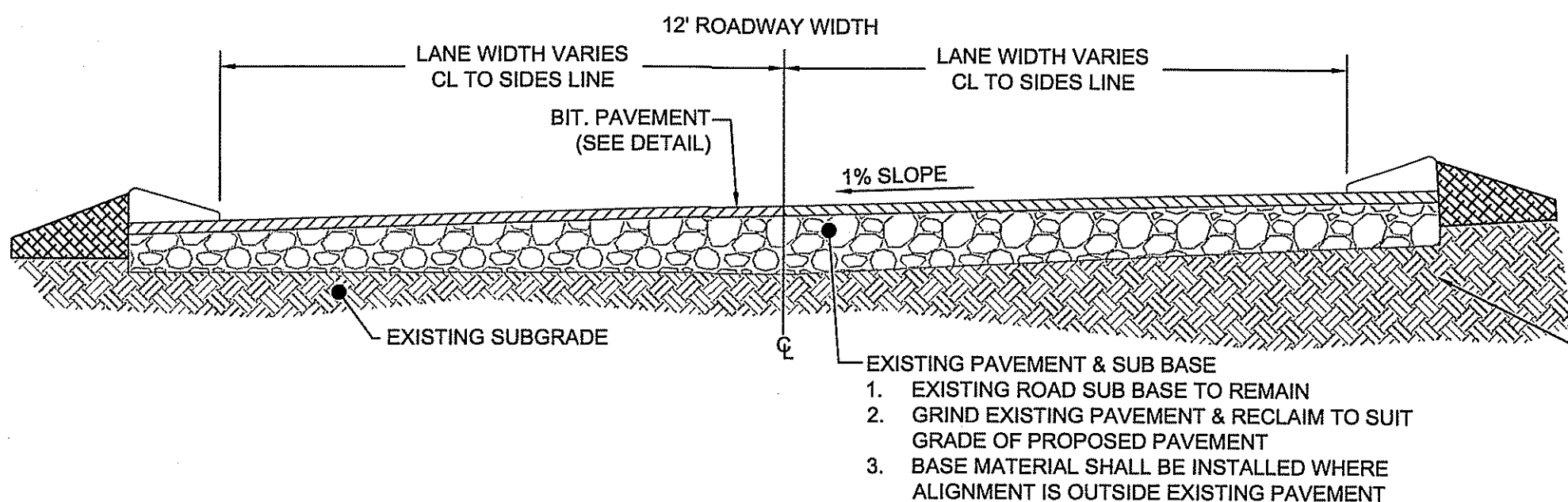
NOTE: OPERATION AND MAINTENANCE CHECKLIST AVAILABLE UPON REQUEST

## EROSION & SEDIMENT CONTROL NOTES

1. THE SITE CONSTRUCTION FOREMAN SHALL BE DESIGNATED AS THE ON-SITE PERSONNEL RESPONSIBLE FOR THE DAILY INSPECTION AND MAINTENANCE OF ALL SEDIMENT AND EROSION CONTROL S AND SHALL IMPLEMENT ALL NECESSARY MEASURES TO CONTROL EROSION AND PREVENT SEDIMENT FROM LEAVING THE SITE.
2. THE CONTRACTOR SHALL INSTALL ALL SEDIMENT AND EROSION CONTROL MEASURES AS SHOWN ON THE DESIGN PLANS IN CONSULTATION WITH THE CONSERVATION AGENT, AND AS DETERMINED NECESSARY IN THE FIELD BY THE ENGINEER BEFORE ANY CONSTRUCTION ACTIVITIES ARE TO BEGIN. THESE MEASURES SHALL BE CHECKED, MAINTAINED/REPLACED AS NECESSARY DURING THE ENTIRE CONSTRUCTION PERIOD OF THE PROJECT. SUCH MEASURES SHALL REPRESENT THE LIMIT OF WORK. WORKERS SHALL BE RESPONSIBLE FOR ENSURING CONSTRUCTION ACTIVITY IS TO OCCUR BEYOND THE LIMIT OF WORK AT ANY TIME THROUGH THE CONSTRUCTION PERIOD.
3. A MINIMUM SURPLUS OF 25-FEET OF EROSION CONTROL BARRIER (SILT FENCE, STRAWBALE, &/OR SILT SOCK) SHALL BE STOCKPILED ONSITE AT ALL TIMES.
4. THE CONTRACTOR SHALL PROTECT THE ADJACENT RESOURCE AREA FROM SEDIMENTATION DURING PROJECT CONSTRUCTION UNTIL ACCEPTANCE BY THE OWNER & IN CONFORMANCE WITH THE ORDER OF CONDITIONS.
5. THE LIMIT OF ALL CLEARING, GRADING AND DISTURBANCES SHALL BE KEPT TO A MINIMUM WITHIN THE PROPOSED AREA OF CONSTRUCTION. THE CONTRACTOR SHALL PHASE THE SITE WORK IN A MANNER TO MINIMIZE AREAS OF EXPOSED SOIL. IF TREES ARE TO BE CUT ON THE ENTIRE SITE, ONLY THOSE AREAS WHICH ARE ACTIVELY UNDER CONSTRUCTION SHALL BE GRUBBED. THE REQUIRED SEDIMENTATION CONTROL FACILITIES MUST BE PROPERLY ESTABLISHED, CLEARLY VISIBLE AND IN OPERATION PRIOR TO INITIATING ANY LAND CLEARING ACTIVITY AND/OR OTHER CONSTRUCTION RELATED WORK.
6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MONITOR LOCAL WEATHER REPORTS DURING CONSTRUCTION AND PRIOR TO SCHEDULING EARTHMOVING OR OTHER CONSTRUCTION ACTIVITIES WHICH WILL LEAVE LARGE DISTURBED AREAS UNSTABILIZED. IF INCLEMENT WEATHER IS PREDICTED, THE CONTRACTOR SHALL USE THEIR BEST PROFESSIONAL JUDGEMENT WHEN SCHEDULING CONSTRUCTION ACTIVITIES AND SHALL BE RESPONSIBLE FOR ENSURING THE NECESSARY EROSION CONTROL DEVICES ARE INSTALLED AND FUNCTIONING PROPERLY TO MINIMIZE EROSION FROM ANY IMPENDING WEATHER EVENTS.
7. SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED ON A WEEKLY BASIS AND AFTER EACH RAINFALL EVENT OF 0.25 INCH OR GREATER DURING CONSTRUCTION TO ENSURE THAT THE EROSION AND SEDIMENTATION CONTROL MEASURES ARE INTACT AND FUNCTIONING PROPERLY. IDENTIFIED DEFICIENCIES SHALL BE CORRECTED IMMEDIATELY NO LATER THAN 24 HOURS AFTER IDENTIFICATION.
8. SOIL STOCKPILES LEFT OVERNIGHT SHALL BE SURROUNDED ON THEIR PERIMETERS WITH SILT SOCK, SILT FENCE, STRAWBALES, OR A COMBINATION OF SILT FENCE WITH STRAWBALE, AS DETERMINED NECESSARY.
9. DISTURBED AREAS AND SLOPES SHALL NOT BE LEFT UNATTENDED OR EXPOSED FOR EXCESSIVE PERIODS OF TIME SUCH AS THE INACTIVE WINTER SEASON. THE CONTRACTOR SHOULD PROVIDE APPROPRIATE STABILIZATION PRACTICES ON ALL DISTURBED AREAS AS SOON AS POSSIBLE BUT NOT MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY OR PERMANENTLY CEASED. TEMPORARY AREAS HAVING A SLOPE GREATER THAN 4:1 SHALL BE REINFORCED WITH EROSION BLANKETS OR APPROVED EQUAL UNTIL THE SITE IS PROPERLY STABILIZED. TEMPORARY SWALES MAY ALSO BE REQUIRED IF DETERMINED NECESSARY IN THE FIELD BY THE ENGINEER.
10. THE CONTRACTOR SHALL INSTALL INLET PROTECTION (SEE DETAIL) AT EACH EXISTING CATCHBASIN RECEIVING RUNOFF FROM THE SITE. UPON THE INSTALLATION OF EACH NEW CATCH BASIN, THE CONTRACTOR SHALL INSTALL INLET PROTECTION. THESE ARE TO BE INSPECTED AFTER EACH SIGNIFICANT STORM EVENT AND REMOVED AND EMPTIED AS NEEDED DURING THE ENTIRE CONSTRUCTION PERIOD.
11. SMALL SEDIMENTATION BASINS MAY BE CONSTRUCTED ON AN AS-NEEDED BASIS DURING CONSTRUCTION TO AID IN THE CAPTURE OF SITE RUNOFF AND SEDIMENT. IT WILL BE THE RESPONSIBILITY OF THE SITE CONTRACTOR, IN CONSULTATION WITH THE ENGINEER, TO SIZE AND CREATE THESE BASINS IN APPROPRIATE LOCATIONS.
12. THE CONTRACTOR SHALL CONTAIN ALL SEDIMENT ONSITE. ALL EXITS FROM THE SITE WILL BE SWEEPED AS NECESSARY INCLUDING ANY SEDIMENT TRACKING. PAVED AREAS SHALL BE SWEEPED AS NEEDED TO REMOVE SEDIMENT AND POTENTIAL POLLUTANTS WHICH MAY ACCUMULATE DURING SITE WORK.
13. ACCUMULATED SEDIMENT SHALL BE REMOVED FROM ALL TEMPORARY PRACTICES AND DISPOSED OF IN A PRE-APPROVED LOCATION BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.
14. THE CONTRACTOR SHALL PROVIDE ON SITE OR MAKE READILY AVAILABLE THE NECESSARY EQUIPMENT AND SITE PERSONNEL DURING CONSTRUCTION HOURS FOR THE DURATION OF THE PROJECT TO ENSURE ALL EROSION AND SEDIMENTATION CONTROL DEVICES ARE PROPERLY MAINTAINED AND REPAIRED IN A TIMELY AND RESPONSIBLE MANNER. IF SITE WORK IS SUSPENDED DURING THE WINTER MONTHS THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE PERSONNEL AND EQUIPMENT EITHER ON SITE OR MAKE READILY AVAILABLE TO ENSURE ALL EROSION AND SEDIMENTATION CONTROL DEVICES ARE PROPERLY MAINTAINED AND REPAIRED IN A TIMELY AND RESPONSIBLE MANNER.
15. PROPER MEASURES SHALL BE IMPLEMENTED BY THE CONTRACTOR IF DEWATERING IS NECESSARY DURING CONSTRUCTION. THESE MEASURES SHALL INCLUDE A DEWATERING CONTAINMENT AREA, DEWATERING BAGS, TEMPORARY STRAWBALES, SILT FENCES, SILT SOCKS AND/OR OTHER APPROVED DEVICES. THE DEWATERING PLAN AND SETUP SHALL BE APPROVED BY THE ENGINEER.
16. ALL SEDIMENT COLLECTED IN THE PARTIALLY CONSTRUCTED BIORETENTION AREAS WILL BE REMOVED AND DISPOSED OF PROPERLY PRIOR TO FILTER FABRIC AND MEDIA INSTALLATION WITHIN THE BIORETENTION AREAS. PARTIALLY CONSTRUCTED BIORETENTION AREAS WILL HAVE A SURFACE ELEVATION AT A MINIMUM 1-FOOT ABOVE THE BOTTOM OF STONE ELEVATION AS SHOWN IN THE BIORETENTION SCHEDULE. THIS WILL ALLOW AN OVER-DIG OF THE COLLECTED SEDIMENT FROM WITHIN THE BIORETENTION AREA PRIOR TO MEDIA/FABRIC INSTALLATION.
17. DUST SHALL BE CONTROLLED BY WATERING OR OTHER APPROVED METHODS AS NECESSARY, OR AS DIRECTED BY THE ENGINEER AT NO EXTRA COST TO THE OWNER.
18. THE CONTRACTOR IS RESPONSIBLE FOR THE INSPECTION AND MAINTENANCE DURING CONSTRUCTION OF ALL STORMWATER FACILITIES INSTALLED OR AFFECTED BY THE PROJECT. ANY SEDIMENT OR DEBRIS COLLECTED WITHIN THESE FACILITIES FROM THE PROJECT WORK SHALL BE REMOVED PRIOR TO THE OWNER'S ACCEPTANCE.



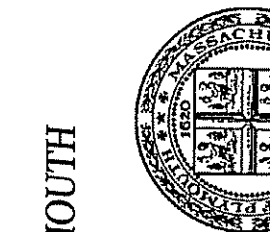
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CROSS SECTION  
NOT TO SCALE



2-LANE SUPERELEVATED ROADWAY RE-ALIGNMENT  
CROSS SECTION  
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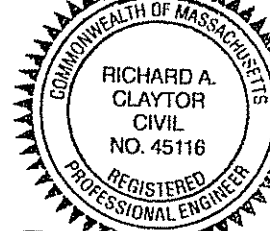
POND ROAD STORMWATER  
IMPROVEMENTS  
PLYMOUTH, MASSACHUSETTS



Prepared For:  
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Dated: JULY 2011

Registration:



Project Number: 11051  
Sheet: 8 of 12

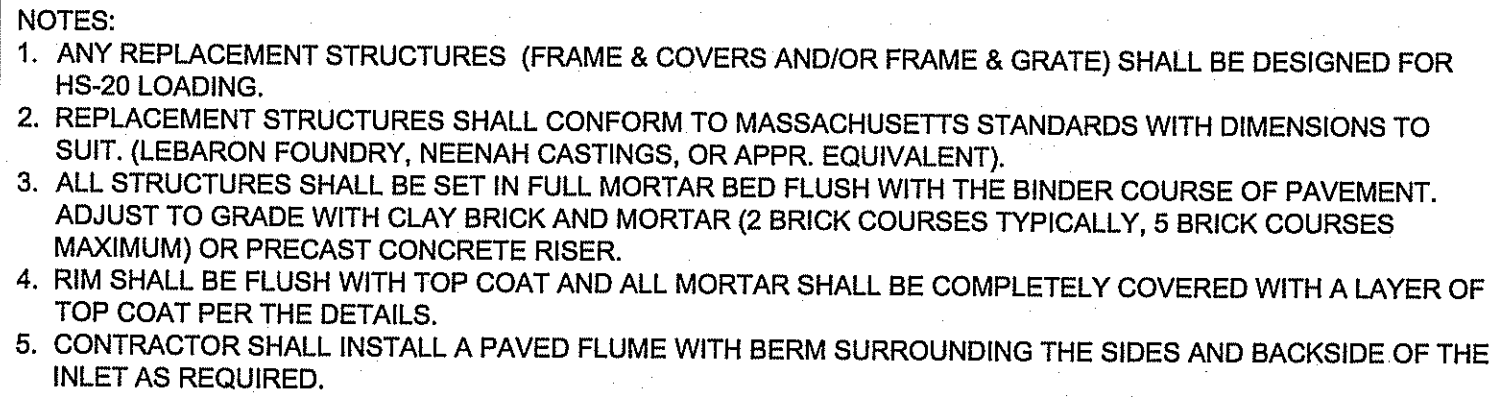
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ADJUSTMENT  
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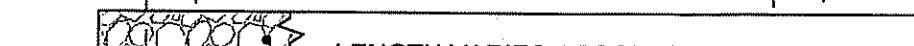
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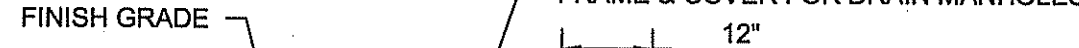
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OIL-WATER SEPARATION SCHEDULE									
OWS #	OWS INSIDE WIDTH (FT)	OWS INSIDE HEIGHT (FT)	OWS INSIDE LENGTH (FT)	INLET/OUTLET PIPE DIA. (IN.)	INLET/OUTLET INV. ELEV. (FT)	BOT. OF EXCAVATION ELEV. (FT)	INSIDE BOT. OF STRUCTURE ELEV. (FT)	COVER OVER STRUCTURE (FT)	ESTIMATE/SHGW ELEV. (FT)
OWS: 1.0	5.0	6.5	10.0	12	96.70	90.70	91.70	2.15	91.50
OWS: 2.0	5.0	6.5	10.0	12	110.40	104.40	105.40	2.05	> 10'
OWS: 3.0	5.0	6.5	10.0	12	119.70	113.70	114.70	1.55	> 10'
OWS: 4.0	5.0	6.5	10.0	12	127.40	121.40	122.40	2.10	> 10'
OWS: 5.0	5.0	6.5	10.0	12	107.30	101.30	102.30	1.20	> 10'
OWS: 6.0	5.0	6.5	10.0	12	128.75	122.75	123.75	1.05	> 10'

- NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
  2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
  3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PERFORMED BUTYL RUBBER.
  4. CATCH BASIN FRAME AND GRATE SHALL BE SET IN FULL 12" WIDE MORTAR BED. ADJUST TO GRADE.
  5. FRAME AND GRATE COVER SHALL BE LOW PROFILE WITH A HEIGHT OF 4-INCHES & CONFORM TO MASSACHUSETTS STANDARDS HEAVY DUTY (H20). EAST JORDAN IRON WORKS OF EQU.
  6. HOOD SHALL BE "THE ELIMINATOR" OIL & FLOATING DEBRIS TRAP (MANUFACTURED BY GROUND WATER RESCUE, INC., QUINCY, MA. TEL. 617-773-1128 ON THE WEB @ [WWW.KLEANSTREAM.COM](http://WWW.KLEANSTREAM.COM)) OR APPROVED EQUIVALENT.
  7. STRUCTURE SHALL BE SCITUATE PRECAST OR APPROVED EQUAL.



NOT TO SCALE



NOT TO SCALE

RECHARGE CHAMBER FIELD SCHEDULE									
RECHARGE CHAMBER FIELD	RECHARGE CHAMBER DIA. (FT)	RECHARGE CHAMBER HEIGHT (FT)	NO. OF CHARGES	INLET PIPE DIA. (IN.)	INLET INV. ELEV. (FT)	BOT. OF EXCAVATION ELEV. (FT)	BOT. OF CHAMBER ELEV. (FT)	MIN. COVER OVER CHARGE R (FT)	ESTIMATE D SHGW ELEV. (FT)
RC: 2.0	8.0	6.0	8	12	110.35	104.60	105.60	2.83	91.50
RC: 3.0	8.0	6.0	8	12	119.65	113.90	114.90	1.63	> 10'
RC: 4.0	8.0	6.0	5	12	127.35	121.60	122.60	2.43	> 10'
RC: 5.0	8.0	6.0	3	12	127.25	101.50	102.50	1.43	> 10'
RC: 6.0	8.0	6.0	4	12	128.70	122.95	123.95	1.38	> 10'



NOT TO SCALE

Revisions	Rev.	Date	By
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2			
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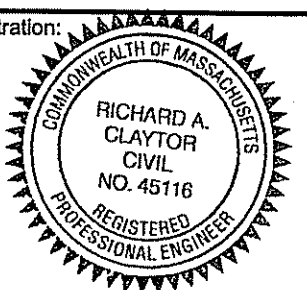
**...sley Witten Group, Inc.**  
Sustainable Environmental Solutions  
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*POND ROAD STORMWATER  
IMPROVEMENTS  
PLYMOUTH, MASSACHUSETTS  
CONSTRUCTION DETAILS 2*



Prepared For:  
TOWN OF PLYMOUTH

Survey Provided By:  
**Horsley Witten Group, Inc.**



Re A 1-25.12

Project Number:	Sheet :
11051	10 of 12

Sheet Number:





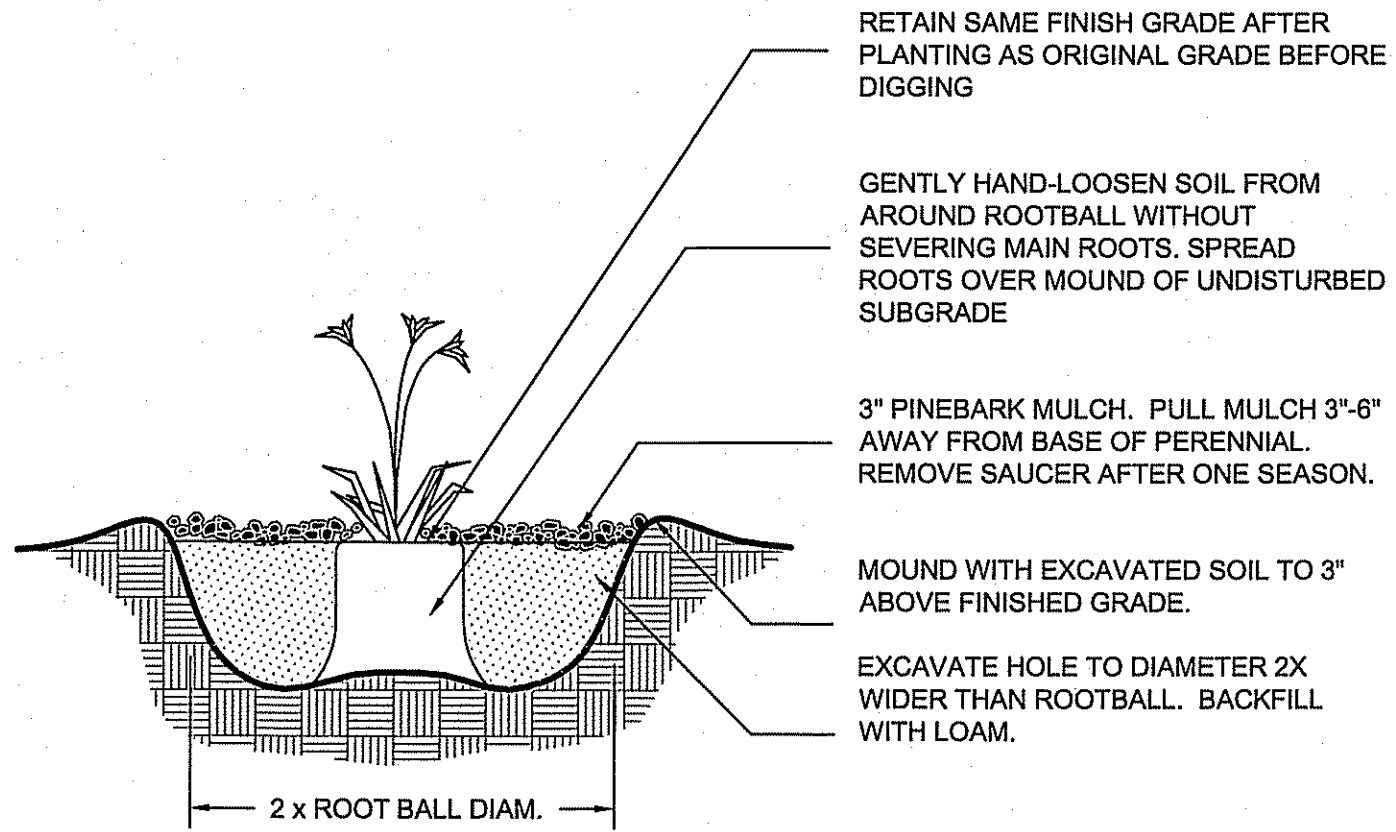


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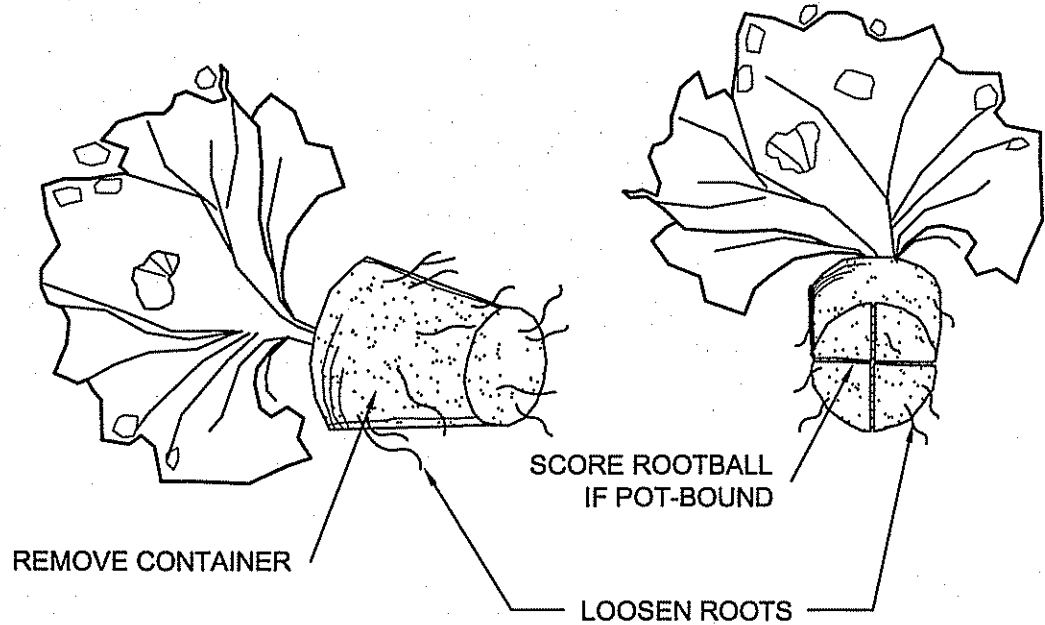
GENERAL PLANTING NOTES:

- THE FOLLOWING NOTES ARE PROVIDED AS GENERAL PLANTING GUIDELINES ONLY. THE LANDSCAPE CONTRACTOR AND FOREMAN SHALL THOROUGHLY REVIEW THE PROJECT SPECIFICATIONS FOR ALL LANDSCAPE REQUIREMENTS PRIOR TO THE COMMENCEMENT OF ANY LANDSCAPE WORK. ANY QUESTIONS OR CLARIFICATIONS REQUIRED SHALL BE SUBMITTED IN WRITING TO THE LANDSCAPE ARCHITECT AT A MINIMUM OF 30 DAYS PRIOR TO ORDERING ANY MATERIALS OR BEGINNING ANY LANDSCAPE CONSTRUCTION.
- THE CONTRACTOR SHALL INSPECT ALL AREAS TO BE PLANTED OR SEEDED PRIOR TO STARTING ANY LANDSCAPE WORK AND REPORT ANY DEFECTS SUCH AS INCORRECT GRADING, INCORRECT SUBGRADE ELEVATIONS OR DRAINAGE PROBLEMS, ETC. TO THE LANDSCAPE ARCHITECT AND ENGINEER PRIOR TO BEGINNING WORK. COMMENCEMENT OF WORK SHALL INDICATE ACCEPTANCE OF SUBGRADE AREAS TO BE PLANTED, AND THE LANDSCAPE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR ALL LANDSCAPE WORK.
- SEASONS FOR PLANTING:  
  
SPRING: APRIL 15 THROUGH JUNE 1  
  
FALL: SEPTEMBER 15 THROUGH NOVEMBER 15  
  
PLANTING UNDER FROZEN CONDITIONS IN EITHER THE SPRING OR FALL WILL NOT BE PERMITTED. PLANTING BEFORE OR AFTER THE ABOVE REFERENCED PLANTING DATES WILL INCREASE THE LIKELIHOOD OF PLANT OR GRASS SEED ESTABLISHMENT FAILURE. ANY DEVIATION FROM THE ABOVE REFERENCED PLANTING DATES SHALL BE UNDERTAKEN AT SOLE RISK OF THE CONTRACTOR AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE AN ADDITIONAL MAINTENANCE AND WATERING WHICH MAY BE REQUIRED TO ENSURE SATISFACTORY PLANT AND SEED ESTABLISHMENT.
- FURNISH AND INSTALL ALL PLANTS AS SHOWN ON THE DRAWINGS AND IN THE SIZE AND QUANTITIES SPECIFIED ON THE PLANTING SCHEDULE.
- CONTRACTOR TO PROVIDE A ONE (1) YEAR GUARANTEE FOR ALL MATERIALS. CONTRACTOR GUARANTEES THAT PLANTS WILL REMAIN HEALTHY FOR ONE (1) GROWING SEASON. CONTRACTOR TO MAINTAIN ALL PLANTING AND SEEDING AREAS UNTIL FINAL PROJECT ACCEPTANCE. GUARANTEE PERIOD TO COMMENCE AT FINAL ACCEPTANCE. ANY REPLACEMENT PLANTS SHALL BE OF THE SAME SIZE AND SPECIES AS SPECIFIED WITH NEW GUARANTEE COMMENCING ON THE DATE OF REPLACEMENT.
- SUBMIT TO THE LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL ALL REQUIRED LANDSCAPE SUBMITTALS AS DESCRIBED IN THE SPECIFICATIONS INCLUDING A PLANT LIST WITH PLANT SIZE AND QUANTITIES TO BE ORDERED PRIOR TO DELIVERY TO THE PROJECT SITE.
- THE CONTRACTOR SHALL SEND A REPRESENTATIVE SAMPLE OF THE TOPSOIL TO A TESTING LABORATORY FOR STANDARD SOIL ANALYSIS AS DESCRIBED IN THE SPECIFICATIONS. TEST RESULTS WITH RECOMMENDED SOIL TREATMENTS TO PROMOTE PLANT AND GRASS GROWTH SHALL BE SUBMITTED TO THE LANDSCAPE ARCHITECT AND ENGINEER. DEFICIENCIES IN THE LOAM AND STOCKPILED TOPSOIL SHALL BE CORRECTED BY THE CONTRACTOR AS DIRECTED BY THE TESTING AGENCY.
- ALL PLANT MATERIAL SHALL CONFORM, IN ALL RESPECTS, TO THE GUIDELINES OF "THE AMERICAN STANDARD FOR NURSERY STOCK," LATEST EDITION, PUBLISHED BY THE AMERICAN NURSERY & LANDSCAPE ASSOCIATION, INC. AND SHALL HAVE BEEN GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCALITY OF THE PROJECT FOR AT LEAST TWO (2) YEARS. ALL PLANTS SHALL BE NURSERY GROWN AND HEALTHY, FREE OF DISEASE, INSECTS, PESTS, EGGS OR LARVAE, AND SHALL HAVE A WELL DEVELOPED ROOT SYSTEM.
- ALL PLANTS SHALL BE PLANTED WITHIN ONE (1) WEEK OF PURCHASE. IF PLANTS ARE TO BE STORED AT THE SITE PRIOR TO PLANTING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THEY ARE PROPERLY MAINTAINED, WATERED, AND REMAIN HEALTHY.
- ALL PLANT LAYOUT AND ACTUAL PLANTING LOCATIONS ARE TO BE FIELD VERIFIED BY LANDSCAPE ARCHITECT PRIOR TO PLANTING. THE LANDSCAPE ARCHITECT SHALL BE NOTIFIED AT A MINIMUM OF 48 HOURS IN ADVANCE PRIOR TO SCHEDULING ANY FIELD INSPECTIONS.
- PLANT SUBSTITUTION SELECTION MUST BE APPROVED BY BIOLOGIST OR LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
- FOR POTTED PLANTS, REMOVE THE PLANT FROM THE POT AND LOOSEN OR SCORE THE ROOTS BEFORE PLANTING SO THAT THEY MAY GROW OUTWARDS INTO THE SOIL.
- FOR FIELD GROWN PLANTS, CUT AND REMOVE ANY PLASTIC, CUT AND REMOVE WIRE FROM THE TOP HALF OF ROOTBALL. UNTIE, CUT AND REMOVE BURLAP WRAP FROM AT LEAST THE TOP HALF OF THE ROOTBALL AND TURN DOWN ANY EXTRA BURLAP INTO THE HOLE MAKING SURE TO BURY THE MATERIAL COMPLETELY.
- THE PLANTING HOLE IS TO BE DUG THE SAME DEPTH AS THE ROOT BALL AND TWO TO THREE TIMES WIDER. SCORE ALL SIDES OF THE HOLE, PLACE THE PLANT IN THE HOLE SO THE TOP OF ROOT BALL IS EVEN WITH SOIL SURFACE. FILL THE HOLE HALFWAY AND THEN ADD WATER ALLOWING IT TO SEEP INTO BACK FILLED MATERIAL. BE SURE TO REMOVE ALL AIR POCKETS FROM BACK FILLED SOIL. DO NOT SPREAD SOIL ON TOP OF THE ROOTBALL. IF SOIL IS EXTREMELY POOR, REPLACE BACK FILL WITH GOOD QUALITY TOP SOIL. AMEND THE SOIL, AS NECESSARY.
- CREATE A 2" TO 4" BERM AROUND THE EDGE OF PLANTING HOLE WITH REMAINING SOIL TO RETAIN WATER.
- MULCH ALL PLANTING BEDS AS SHOWN ON DRAWINGS. UNLESS NOTED OTHERWISE, ALL PLANTS TO RECEIVE 2-3 INCHES OF MULCH. DO NOT PILE OR MOUND MULCH AROUND THE PLANT STEMS OR TRUNK.
- TRIM BROKEN AND DEAD BRANCHES FROM TREES AND SHRUBS AFTER PLANTING. NEVER CUT A LEADER.
- ALL PLANT TAGS AND FLAGS SHOULD BE REMOVED FROM THE PLANTS AND PROPERLY DISCARDED.
- THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER PREPARATION OF ALL PROPOSED PLANTED AND SEEDING AREAS PER THE NOTES AND SPECIFICATIONS.
- ALL AREAS THAT ARE DISTURBED AND/OR GRADED DURING CONSTRUCTION ARE TO BE BROUGHT TO FINISHED GRADE WITH AT LEAST 4" MINIMUM DEPTH OF GOOD QUALITY LOAM AND SEEDING WITH A QUICK GERMINATING GRASS SEED SUCH AS NEW ENGLAND EROSION CONTROL RESTORATION MIX OR AS SPECIFIED ON THE PLANS.
- PRIOR TO THE PLACEMENT OF TOP SOIL, THE SUBGRADE OF ALL PROPOSED SEEDING AREAS SHALL BE LOOSENEED TO A DEPTH OF 6" AND RAKED TO REMOVE STONES LARGER THAN 1 INCH, STICKS, ROOTS, RUBBISH AND OTHER EXTRANEOUS MATTER AND LEGALLY DISPOSED OF THEM TO AN OFF SITE LOCATION.
- DO NOT SPREAD TOPSOIL IF THE SUBGRADE IS FROZEN, EXCESSIVELY WET, COMPACTED OR NOT PROPERLY PREPARED PER THE NOTES AND SPECIFICATIONS.

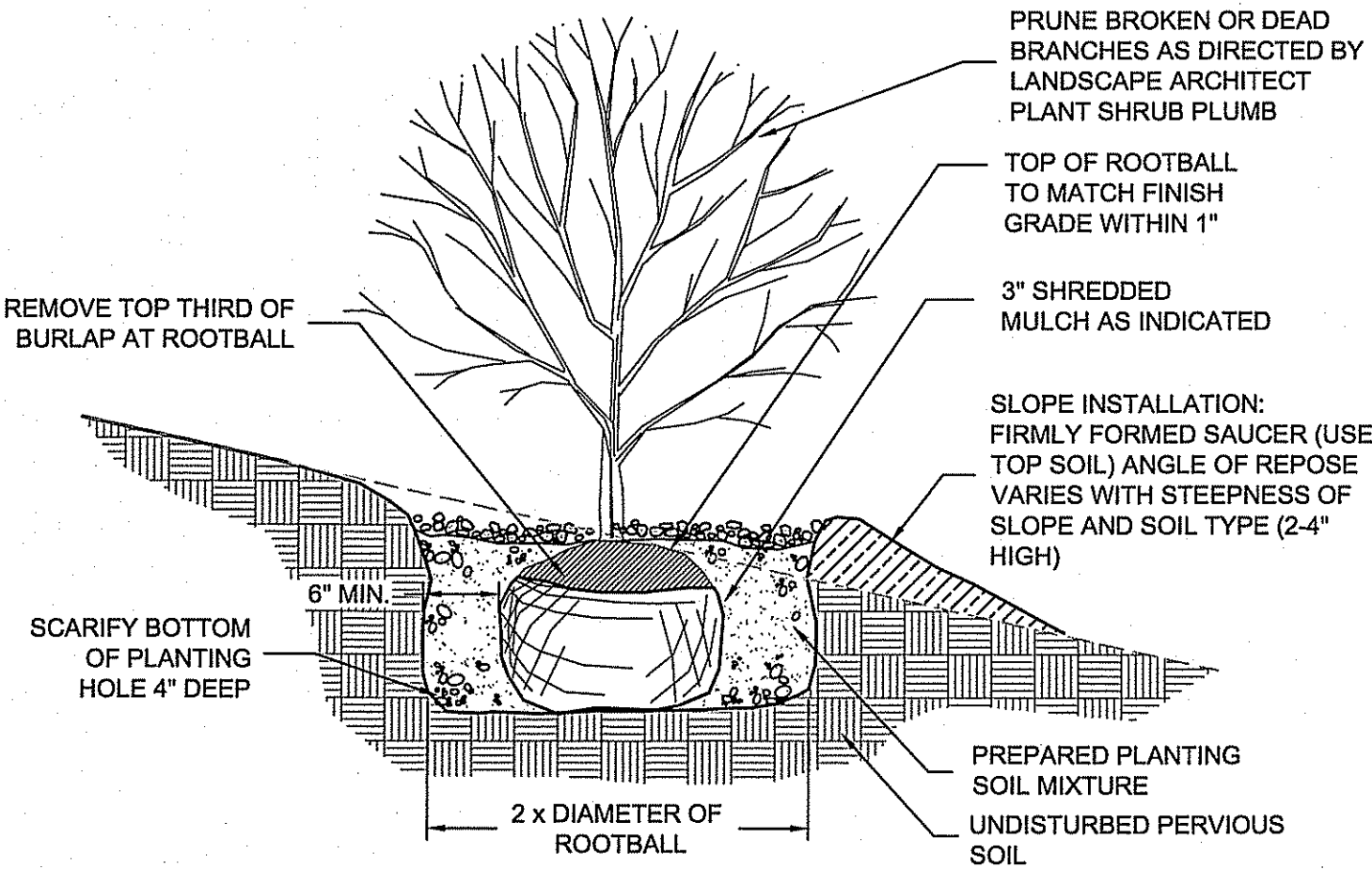
- AN APPROPRIATE WATERING SCHEDULE SHALL BE ESTABLISHED BY THE LANDSCAPE CONTRACTOR FOR ALL PLANT MATERIAL BASED UPON PLANT SPECIES REQUIREMENTS AND PROVIDED IN WRITING TO THE LANDSCAPE ARCHITECT AND OWNER FOR REVIEW AND APPROVAL. THE APPROVED SCHEDULE SHOULD BE FOLLOWED UNTIL PLANTS ARE FULLY ESTABLISHED. AT A MINIMUM THE NEWLY SEEDED AND/OR HYDROSEEDED LAWNS SHOULD BE WATERED 2-3 TIMES A DAY. SPECIAL CARE SHOULD BE TAKEN TO ENSURE THAT THE LAWN IS NOT SATURATED DURING WATERING. IF AN IRRIGATION SYSTEM IS NOT PROVIDED, A TEMPORARY IRRIGATION SYSTEM OR HANDHELD GARDEN HOSE SHALL BE USED FOR WATERING SEEDED AREAS. THE AREA MUST BE MAINTAINED CONSISTENTLY MOIST FOR THE BEST GERMINATION RESULTS. ADDITIONAL WATERING WILL BE REQUIRED IF PLANTING AND SEEDING OCCUR OUTSIDE OF THE RECOMMENDED PLANTING SEASONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER PLANT CARE, MAINTENANCE AND WATERING ON SITE UNTIL SUCH TIME AS THE LANDSCAPING IS ACCEPTED BY THE PROPERTY OWNER AS SATISFACTORY PER THE SPECIFICATIONS OR AS DETERMINED BY ANY WRITTEN AGREEMENTS BETWEEN THE CONTRACTOR AND PROPERTY OWNER.
- THE SITE IS LOCATED WITHIN THE TOWN'S AQUIFER PROTECTION DISTRICT AND ADJACENT TO THE TOWN'S WELL PROTECTION ZONE, THEREFORE, NO NITROGEN CONTAINING FERTILIZERS, PESTICIDES OR CHEMICALS SHALL BE USED DURING PLANTING AND MAINTENANCE OF THE LANDSCAPING OR LAWN AREAS. ADDITIONALLY THERE SHALL BE NO USE OF PESTICIDES OR HERBICIDES CONTAINING INORGANIC COMPOUNDS (IOC) AS LISTED IN THE MASSACHUSETTS DRINKING WATER REGULATION (310 CMR 22.06), OR SYNTHETIC ORGANIC COMPOUNDS (SOC) OR VOLATILE ORGANIC COMPOUNDS (VOC) AS LISTED IN THE MASSACHUSETTS DRINKING WATER REGULATION (310 CMR 22.07).



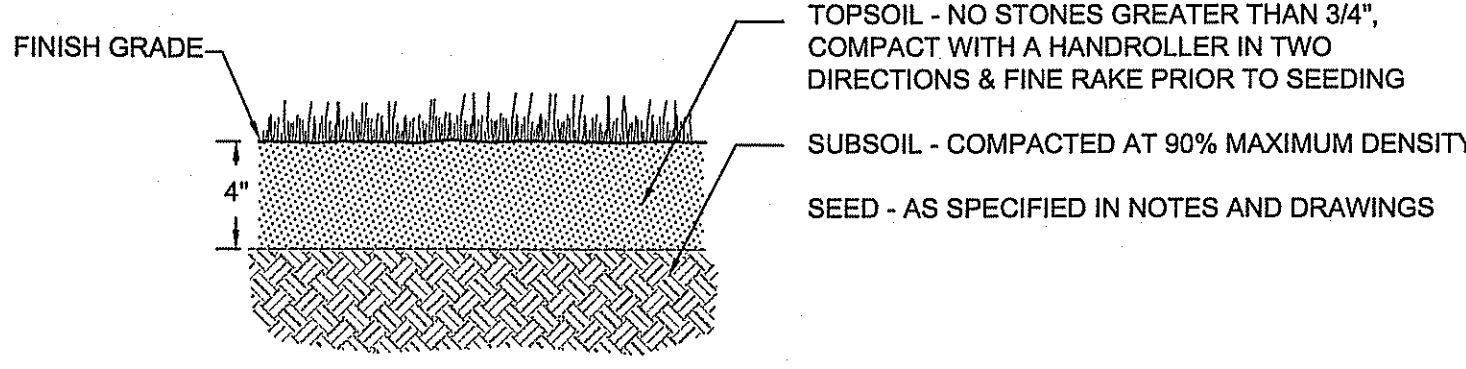
PERENNIAL PLANTING DETAIL  
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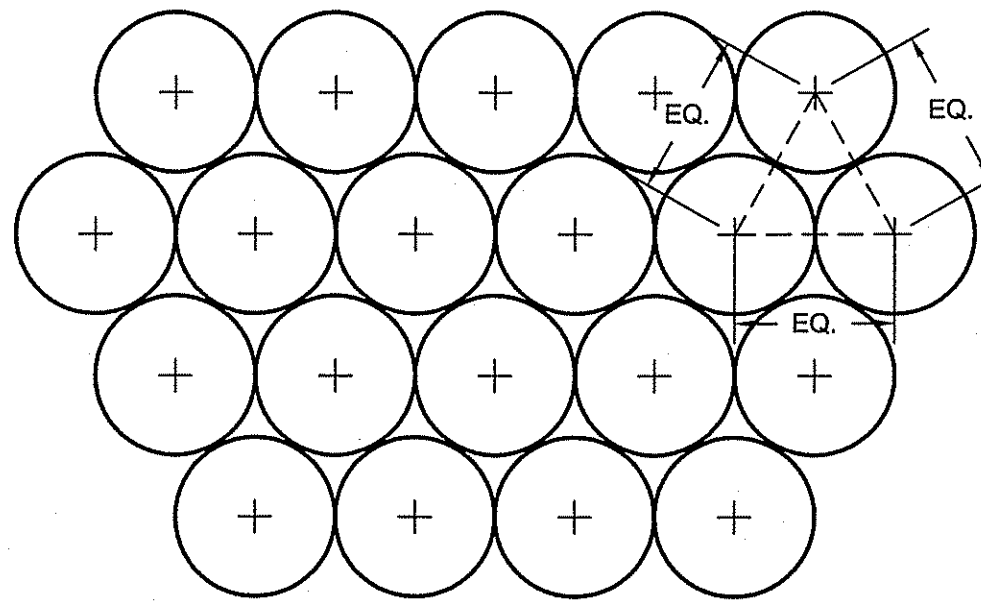
CONTAINER PLANT ROOTBALL TREATMENT  
NOT TO SCALE



SHRUB PLANTING DETAIL  
NOT TO SCALE

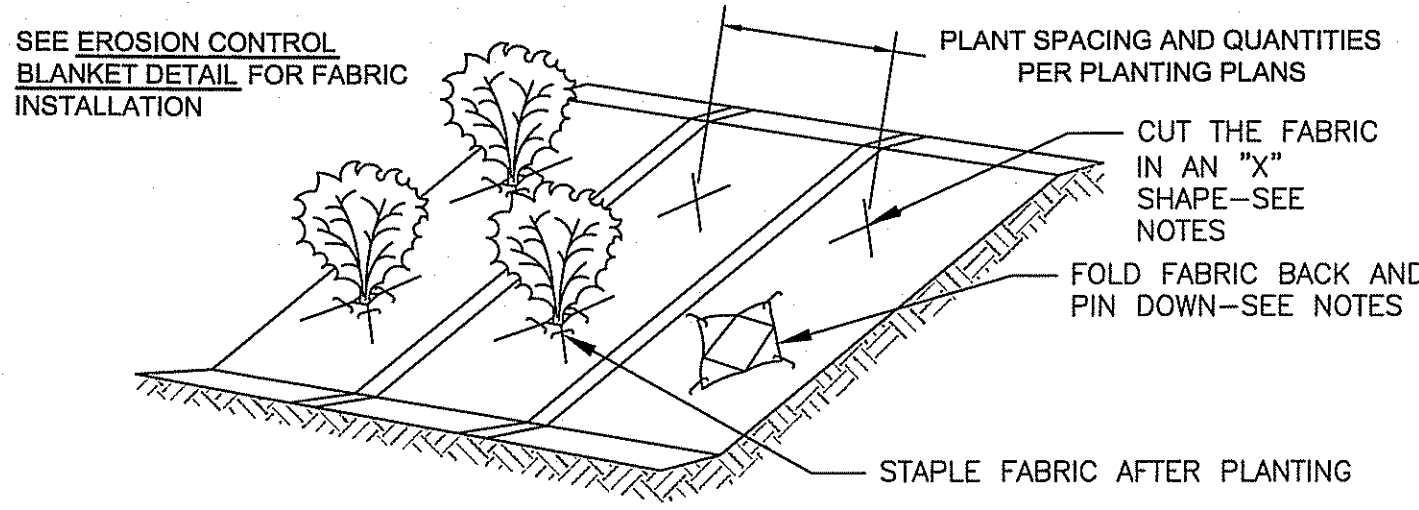


LOAM AND SEED DETAIL  
NOT TO SCALE



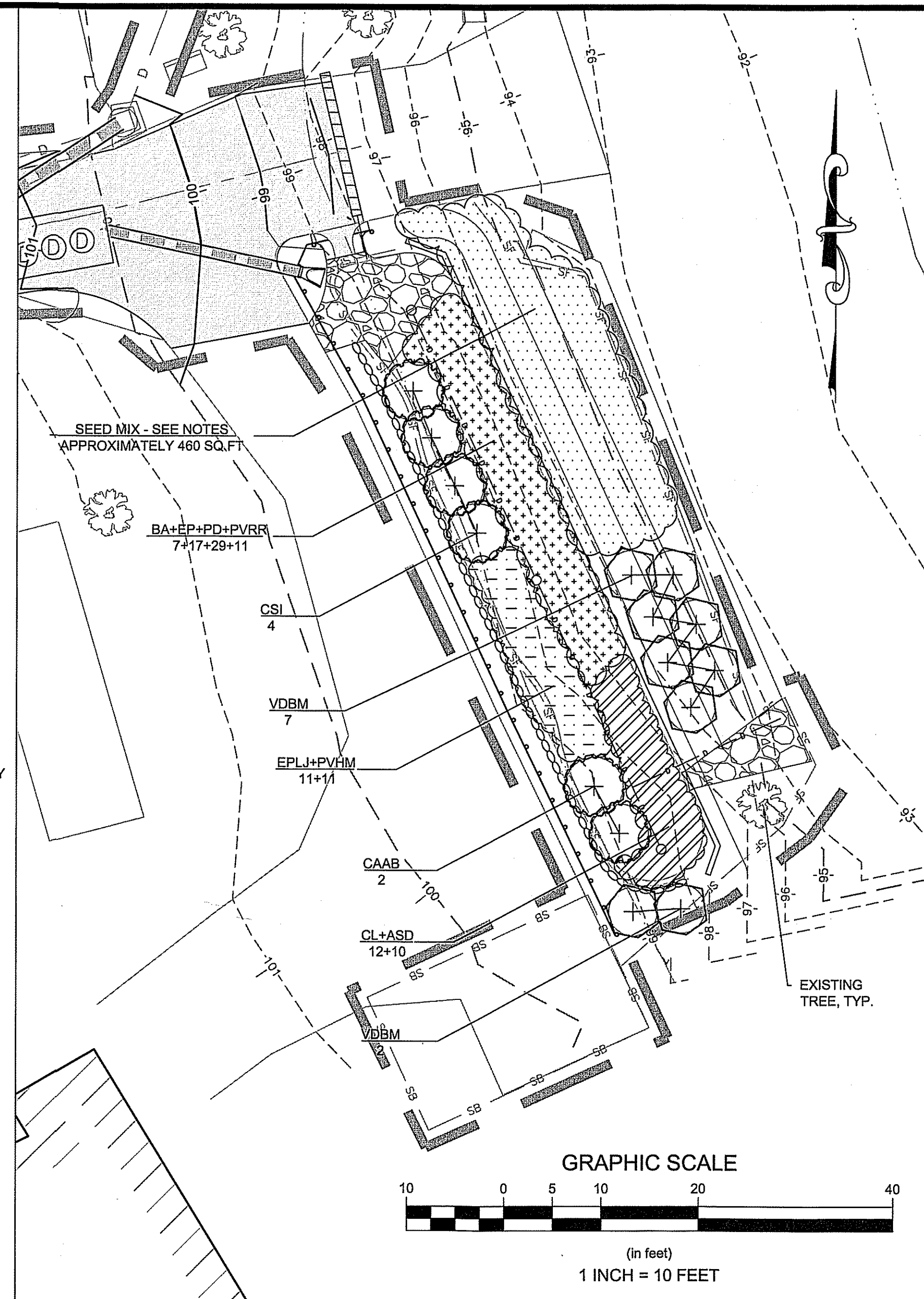
USE EQUIDISTANT TRIANGULAR SPACING FOR PLANTS - FOR ACTUAL SPACING SEE PLANS OR PLANTING SCHEDULE

PLANTING SPACING DETAIL  
NOT TO SCALE



- NOTES:
- CUT THE FABRIC IN AN "X" SHAPE TO ACCOMMODATE 2 TIMES THE DIAMETER OF THE ROOTBALL.
  - FOLD FABRIC BACK AND PIN DOWN TO CREATE A HOLE IN THE MAT.
  - DIG THE HOLE PER PLANTING DETAILS.
  - AFTER PLANTING, FOLD FABRIC BACK INTO PLACE AND STAPLE DOWN AS REQUIRED TO SECURE FABRIC IN PLACE.

PLANTING IN EROSION CONTROL  
BLANKET DETAIL  
NOT TO SCALE



Bioretention Planting Area

Key	#	Botanical Name	Common Name	Size	Spacing
<b>Shrubs</b>					
CAAB	2	<i>Clethra alnifolia</i> 'Anne Bidwell'	Anne Bidwell Summer Sweet	#7	5' O.C.
CSI	4	<i>Cornus sericea</i> 'Isanti'	Isanti Red Twig Dogwood	#3	5' O.C.
VDBM	6	<i>Viburnum dentatum</i> 'Blue Muffin'	Blue Muffin Arrowwood Viburnum	#5	4' O.C.
<b>Ground Cover/Grasses/Perennials</b>					
ASD	10	<i>Aster divaricatus</i>	White Wood Aster	#1	30" O.C.
BA	7	<i>Baptisia australis</i>	False Blue Indigo	#1	36" O.C.
CL	12	<i>Chasmanthium latifolium</i>	Indian Woodoats	#1	30" O.C.
EP	17	<i>Echinacea purpurea</i>	Purple Coneflower	#1	24" O.C.
EDLJ	11	<i>Eupatorium dubium</i> 'Little Joe'	Little Joe Pye Weed	#2	30" O.C.
PVHM	11	<i>Panicum virgatum</i> 'Heavy Metal'	Heavy metal Switch Grass	#2	30" O.C.
PVRR	11	<i>Panicum virgatum</i> 'Ruby Ribbons'	Ruby Ribbons Switch Grass	#2	30" O.C.
PD	29	<i>Penstemon digitalis</i>	Beardtongue	#1	18" O.C.

SEED MIX - RESTORATION

THE GRASS MIX SURROUNDING BIORETENTION AREA SHALL BE ECO-BLEND/OUT CLOVER FROM DIRTWORKS OR APPROVED EQUIVALENT.  
THE MIX CONTAINS:  
35% Penn 1901 Tall Fescue  
15% Longfellow II Chewings Fescue  
15% Applaud Perennial Ryegrass  
15% Discovery Hard Fescue  
9.5% (9.75% if no clover) Broadway Kentucky Bluegrass)  
10% Navigator Red Fescue  
0.25% Redtop

Revisions

Rev	Date	By	Appr	Description
1				
2				
3				
4				
5				

**Horsley Witten Group, Inc.**  
Sustainable Environmental Solutions  
www.horsleywitten.com  
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Sandwich, MA 02563  
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Checked By: BK

Drawn By: HLC

Designed By: HLC

Date: JAN. 3, 2012

**POND ROAD STORMWATER IMPROVEMENTS**  
**PLYMOUTH, MASSACHUSETTS**

**LANDSCAPE PLAN**

Prepared For:  
**TOWN OF PLYMOUTH**  
11 Lincoln Street  
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Seal of the State of Massachusetts

Survey Provided By:  
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Dated: JULY 2011

Registration:  

**RICHARD A. CLAYTON**  
CIVIL  
NO. 45116  
REGISTERED PROFESSIONAL ENGINEER

Project Number:  
**11051**

Sheet:  
**12 of 12**

Sheet Number:  
**C - 12**