CHEPACHET VILLAGE
STORMWATER SYSTEM RETROFIT
GLOCESTER, RHODE ISLAND

NOV. 24, 2010

REVISED MARCH 23, 2011

LEGEND:

GENERAL

EXISTING	PROPOSED	
		BERM
		BUILDING
	44	CONTOUR – MINOR
	50	CONTOUR – MAJOR
		CURB
		EDGE OF PAVEMENT
o	o	FENCE – CHAIN LINK
x x x x x x		FENCE – WIRE
		FENCE – WOOD
		GUARD RAIL
		LIMIT OF WORK
		PATHWAY
		SIDEWALK
		TREE LINE
		WALL – STONE

ENVIRONMENTAL

EXISTING	
	WETLAND BOUNDARY
b1–1	WETLAND FLAG BY HORSLEY WITTEN GROUP
△B–1	WETLAND FLAG BY OTHERS
BZ 50	50' PERIMETER WETLAND
	100' RIVERBANK WETLAND
RA 200	200' RIVERBANK WETLAND (10' WIDE OR GREATER)
FLOOD	FLOOD PLAIN LINE

PROPERTY INFORMATION

EXISTING	PROPOSED	
		ABUTTING LOT
		EASEMENT LINE
		PROPERTY, LOT, OR ROW
		SETBACK LINE

UTILITIES

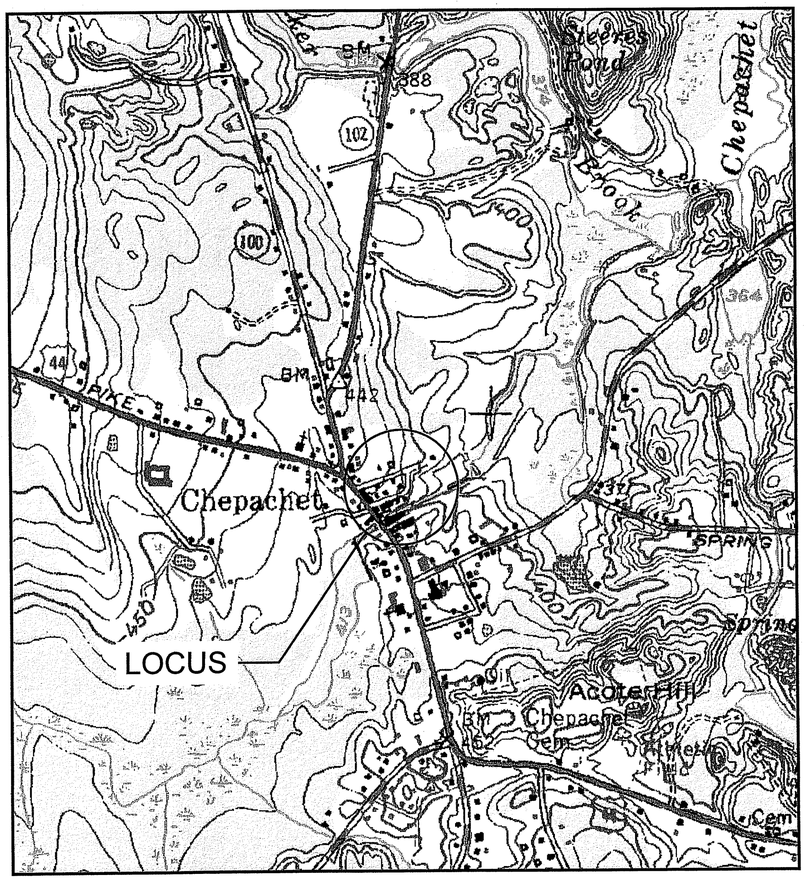
EXISTING	PROPOSED	
D		DRAIN PIPE
TELE		TELEPHONE LINE

EROSION & SEDIMENT CONTROL

PROPOSED	
SFHB	SILT FENCE–HAYBALE
SF	SILT FENCE
SS	SILT SOCK

SYMBOLS

BENCHMARK	FLARED END OUTLET
CB BOUNDARY	RIP RAP APRON
CONTROL POINT	INLET PROTECTION
EXISTING SHRUB	UTILITY BOX
EXISTING TREE	HYDRANT
EXISTING EVERGREEN TREE	UTILITY POLE
100 SPOT GRADE	LIGHT POST
SEWER MANHOLE	AUG# MONITORING WELL
ELECTRIC MANHOLE	HAYBALE
TELEPHONE MANHOLE	
DRAIN MANHOLE	
CATCH BASIN	



VICINITY MAP

GRAPHIC SCALE

1000 0 500 1000 2000 4000

(1 IN = 1000 FEET)

Sheet List Table

Sheet Number	Sheet Title
1	COVER
2	EXISITNG CONDITIONS
3	PROPOSED CONDITIONS PLAN
4	PLAN OF WET VEGETATED TREATMENT SYSTEM
5	PLANTING PLAN
6	SOIL EROSION CONTROL PLAN
7	DRAINAGE PROFILES
8	CONSTRUCTION DETAILS (1)
9	CONSTRUCTION DETAILS (2)
10	CONSTRUCTION DETAILS (3)
11	LANDSCAPE DETAILS

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED MAY 24 2011 FILE # 10-0229
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL.
APPROVED PLANS MUST BE AT CONSTRUCTION SITE.
W. Joseph Casey

Environmental Management
MAY 11 2011
Office of Water Resources

Plan Set:

CHEPACHET VILLAGE
STORMWATER SYSTEM RETROFIT
GLOCESTER, RHODE ISLAND

Prepared For:

Town of Glocester Planning Department
1145 Putnam Pike
Chepachet, RI 02814
(401)-568-6206

Prepared By:

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com

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Date Issued:	NOV. 24, 2010
Designed By:	DTO
Drawn By:	MJC
Checked By:	BRK

Registration:

BRIAN R. KUCHAR
No. 8776
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

Revisions

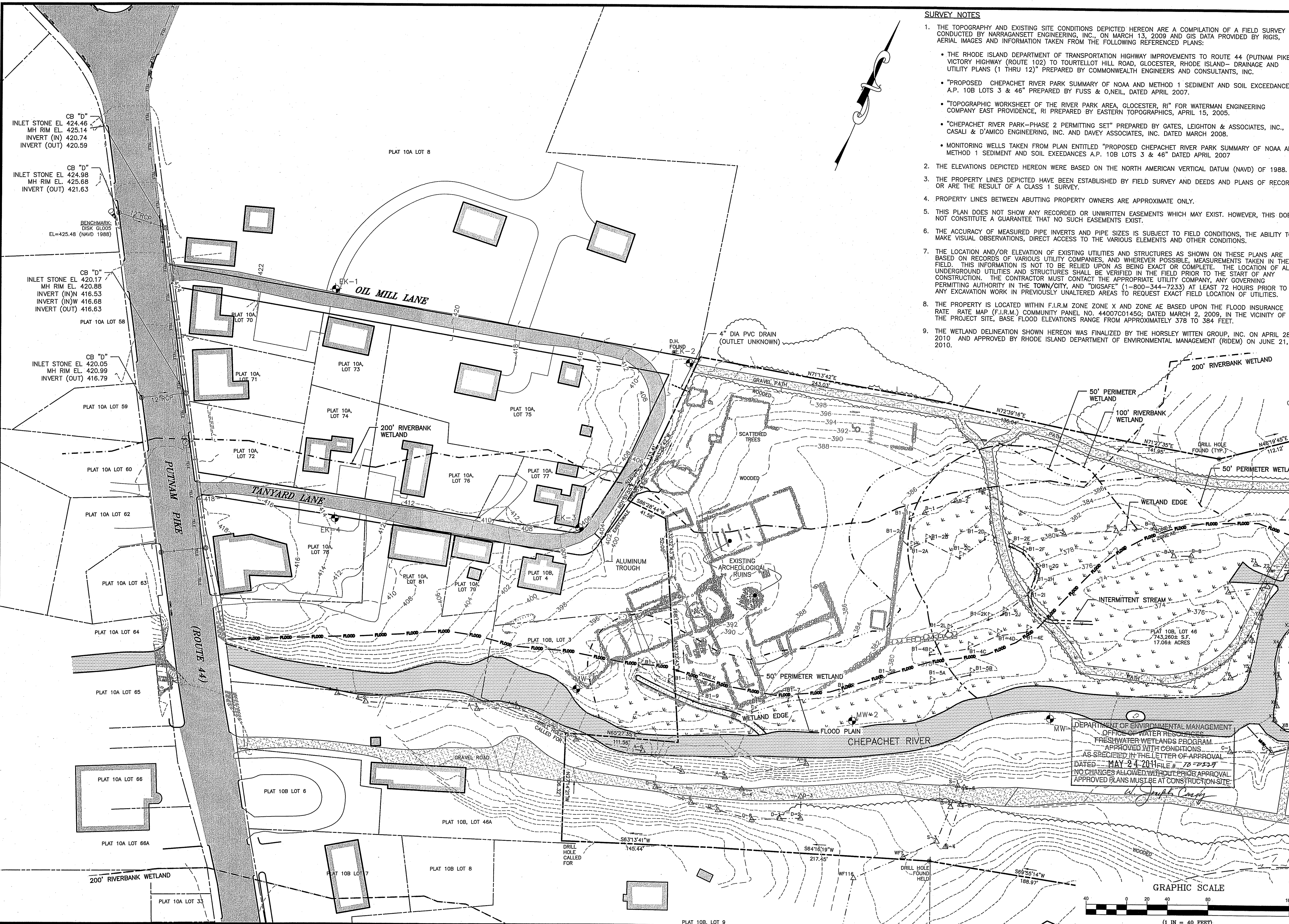
Rev.	Date	By	Appr.	Description
1	03/23/11	BRK	RAC	Revised Wetland Grading
2				
3				
4				
5				
6				
7				

Project Number:	8003
Sheet Number:	1 of 11
Drawing Number:	C-1

last modified: 05/10/11 printed: 05/10/11 by bk H:\Projects\2008\8003 Glocester_RI-Chepachet\Drawings-8003\8003-CV.dwg

SURVEY NOTES

1. THE TOPOGRAPHY AND EXISTING SITE CONDITIONS DEPICTED HEREON ARE A COMPILATION OF A FIELD SURVEY CONDUCTED BY NARRAGANSETT ENGINEERING, INC., ON MARCH 13, 2009 AND GIS DATA PROVIDED BY RIGIS, AERIAL IMAGES AND INFORMATION TAKEN FROM THE FOLLOWING REFERENCED PLANS:
   - THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION HIGHWAY IMPROVEMENTS TO ROUTE 44 (PUTNAM PIKE) VICTORY HIGHWAY (ROUTE 102) TO TOURTELLOT HILL ROAD, GLOCESTER, RHODE ISLAND– DRAINAGE AND UTILITY PLANS (1 THRU 12)" PREPARED BY COMMONWEALTH ENGINEERS AND CONSULTANTS, INC.
   - "PROPOSED CHEPACHET RIVER PARK SUMMARY OF NOAA AND METHOD 1 SEDIMENT AND SOIL EXCEEDANCES A.P. 10B LOTS 3 & 46" PREPARED BY FUSS & O,NEIL, DATED APRIL 2007.
   - "TOPOGRAPHIC WORKSHEET OF THE RIVER PARK AREA, GLOCESTER, RI" FOR WATERMAN ENGINEERING COMPANY EAST PROVIDENCE, RI PREPARED BY EASTERN TOPOGRAPHICS, APRIL 15, 2005.
   - "CHEPACHET RIVER PARK–PHASE 2 PERMITTING SET" PREPARED BY GATES, LEIGHTON & ASSOCIATES, INC., CASALI & D'AMICO ENGINEERING, INC. AND DAVEY ASSOCIATES, INC. DATED MARCH 2008.
   - MONITORING WELLS TAKEN FROM PLAN ENTITLED "PROPOSED CHEPACHET RIVER PARK SUMMARY OF NOAA AND METHOD 1 SEDIMENT AND SOIL EXEEDANCES A.P. 10B LOTS 3 & 46" DATED APRIL 2007
2. THE ELEVATIONS DEPICTED HEREON WERE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.
3. THE PROPERTY LINES DEPICTED HAVE BEEN ESTABLISHED BY FIELD SURVEY AND DEEDS AND PLANS OF RECORD OR ARE THE RESULT OF A CLASS 1 SURVEY.
4. PROPERTY LINES BETWEEN ABUTTING PROPERTY OWNERS ARE APPROXIMATE ONLY.
5. 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.
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.
7. 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 PRIOR TO THE START OF ANY CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY IN THE TOWN/CITY, AND "DIGSAFE" (1-800-344-7233) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK IN PREVIOUSLY UNALTERED AREAS TO REQUEST EXACT FIELD LOCATION OF UTILITIES.
8. THE PROPERTY IS LOCATED WITHIN F.I.R.M ZONE ZONE X AND ZONE AE BASED UPON THE FLOOD INSURANCE RATE RATE MAP (F.I.R.M.) COMMUNITY PANEL NO. 44007C0145G; DATED MARCH 2, 2009, IN THE VICINITY OF THE PROJECT SITE, BASE FLOOD ELEVATIONS RANGE FROM APPROXIMATELY 378 TO 384 FEET.
9. THE WETLAND DELINEATION SHOWN HEREON WAS FINALIZED BY THE HORSLEY WITTEN GROUP, INC. ON APRIL 28, 2010 AND APPROVED BY RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (RIDEM) ON JUNE 21, 2010.



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
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GRAPHIC SCALE

(1 IN = 40 FEET)

Revisions

Rev.	Date	By	Appr.	Description

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Date:	Designed By:	Drawn By:	Checked By:
NOV. 24, 2010	DTO	MJC	BRK

Plan Set:
CHEPACHET VILLAGE STORMWATER SYSTEM RETROFIT GLOCESTER, RHODE ISLAND

Plan Title:
EXISITNG CONDITIONS

Prepared For:
Town of Glocester
Planning Department
1145 Putnam Pike
Chepachet, RI 02814
Phone: (401)-568-6206
Fax: (401)

Survey Provided By:
Narragansett Engineering, Inc.
3102 East Main Road
Portsmouth, RI 02871
Phone: (401)-683-6630
Fax: (401)-
Dated: MARCH 2009

Environmental Management
MAY 11 2011
Office of Water Resources

Registration:
BRIAN R. KUCHAR
No. 8776
REGISTERED

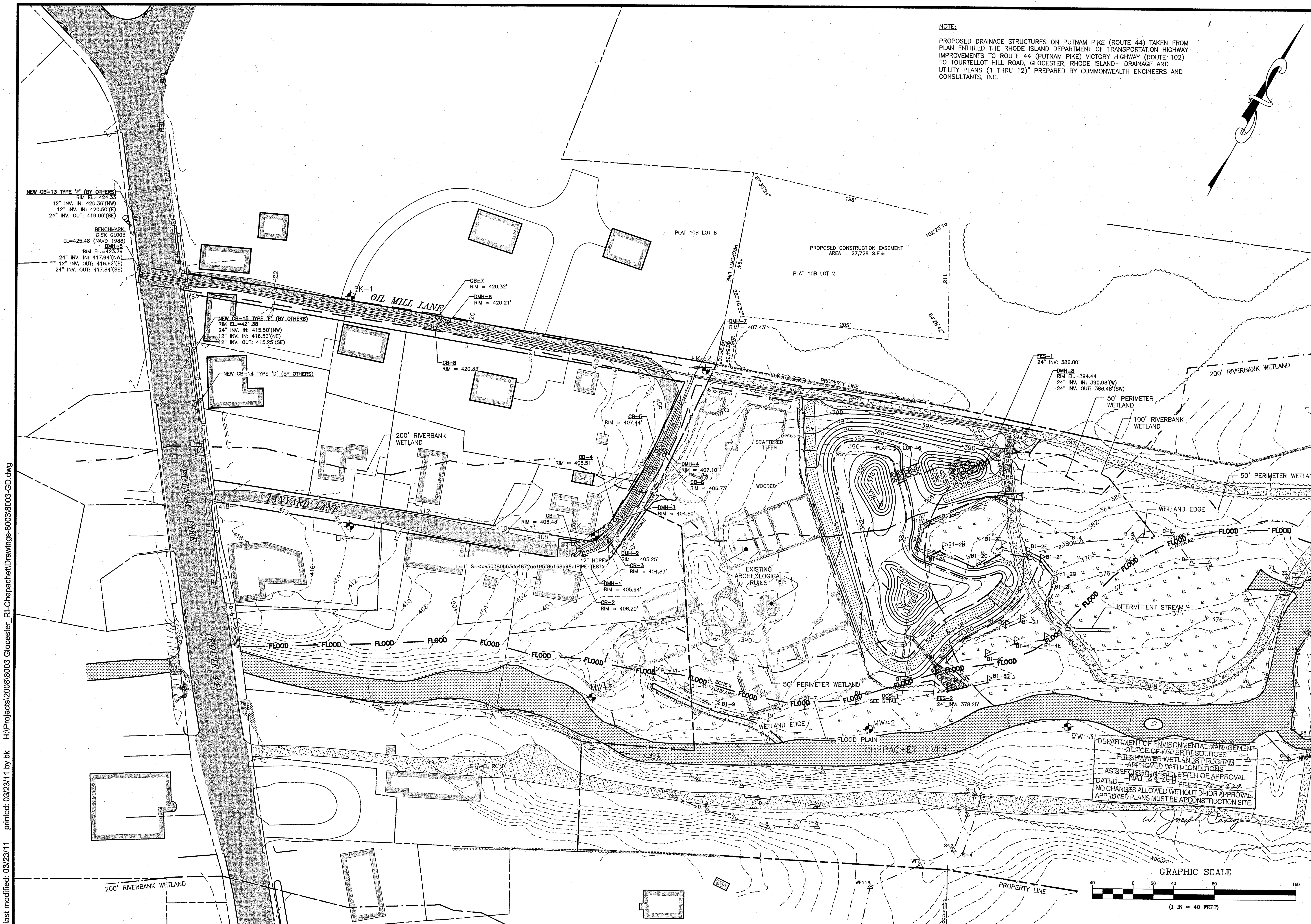
Project Number: 8003
Sheet: 2 of 11

Drawing Number:
C- 2

last modified: 11/24/10 printed: 11/29/10 by mc H:\Projects\2008\8003 Glocester_RI-Chepachet\Drawings-8003\8003-EX.dwg

NOTE:

PROPOSED DRAINAGE STRUCTURES ON PUTNAM PIKE (ROUTE 44) TAKEN FROM PLAN ENTITLED THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION HIGHWAY IMPROVEMENTS TO ROUTE 44 (PUTNAM PIKE) VICTORY HIGHWAY (ROUTE 102) TO TOURTELLOT HILL ROAD, GLOCESTER, RHODE ISLAND– DRAINAGE AND UTILITY PLANS (1 THRU 12)" PREPARED BY COMMONWEALTH ENGINEERS AND CONSULTANTS, INC.



NEW CB-13 TYPE 'F' (BY OTHERS)
RIM EL.=424.33
12" INV. IN: 420.36'(NW)
12" INV. IN: 420.50'(E)
24" INV. OUT: 419.06'(SE)
BENCHMARK:
DISK GL005
EL=425.48 (NAVD 1988)
DMH-5
RIM EL.=423.79
24" INV. IN: 417.94'(NW)
12" INV. OUT: 416.62'(E)
24" INV. OUT: 417.84'(SE)
NEW CB-15 TYPE 'F' (BY OTHERS)
RIM EL.=421.38
24" INV. IN: 415.50'(NW)
12" INV. IN: 416.50'(NE)
12" INV. OUT: 415.25'(SE)
NEW CB-14 TYPE 'D' (BY OTHERS)
PUTNAM PIKE
(ROUTE 44)
OIL MILL LANE
TANYARD LANE
CB-7
RIM = 420.32'
DMH-6
RIM = 420.21'
CB-8
RIM = 420.33'
CB-5
RIM = 407.44'
CB-4
RIM = 405.51'
CB-1
RIM = 406.43'
DMH-4
RIM = 407.10'
CB-6
RIM = 406.73'
DMH-3
RIM = 404.80'
DMH-2
RIM = 405.25'
CB-3
RIM = 404.83'
DMH-1
RIM = 405.94'
CB-2
RIM = 406.20'
12" HDPE
DMH-7
RIM = 407.43'
PLAT 10B LOT 8
PLAT 10B LOT 2
PROPOSED CONSTRUCTION EASEMENT
AREA = 27,728 S.F.±
PROPERTY LINE
200' RIVERBANK WETLAND
50' PERIMETER WETLAND
100' RIVERBANK WETLAND
FES-1
24" INV: 386.00'
DMH-8
RIM EL.=394.44
24" INV. IN: 390.98'(W)
24" INV. OUT: 386.48'(SW)
SCATTERED TREES
WOODED
EXISTING ARCHEOLOGICAL RUINS
WETLAND EDGE
INTERMITTENT STREAM
FLOOD
ZONE X
ZONE AE
FLOOD PLAIN
FES-2
24" INV: 378.25'
OCS-1
SEE DETAIL
MW-1
MW-2
MW-3
EK-1
EK-2
EK-3
EK-4
CHEPACHET RIVER
GRAVEL ROAD
GRAPHIC SCALE
40 0 20 40 80 160
(1 IN = 40 FEET)
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
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Date: NOV. 24, 2010 | Designed By: DTO | Drawn By: MJC | Checked By: BRK

Plan Set:

CHEPACHET VILLAGE STORMWATER SYSTEM RETROFIT GLOCESTER, RHODE ISLAND

Plan Title:

PROPOSED CONDITIONS PLAN

Prepared For:
Town of Glocester
Planning Department
1145 Putnam Pike
Chepachet, RI 02814
Phone: (401)-568-6206
Fax: (401)

Survey Provided By:
Narragansett Engineering, Inc.
3102 East Main Road
Portsmouth, RI 02871
Phone: (401)-683-6630
Fax: (401)
Dated: MARCH 2009

Environmental Management
MAY 11 2011
Office of Water Resources

Registration:
BRIAN R. KUCHAR
No. 8776
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

Project Number: 8003 | Sheet: 3 of 11

Drawing Number: C- 3

last modified: 03/23/11 printed: 03/23/11 by bk H:\Projects\2008\8003 Glocester_RI-Chepachet\Drawings-8003\8003-GD.dwg

NOTE:

ALL SLOPES 3:1 OR STEEPER SHALL BE STABILIZED WITH EROSION CONTROL MATTING, SEE DETAIL.

15" HDPE
L=244' S=2.0%

DMH-7
RIM EL.=407.43
15" INV. IN: 404.00'(W)
12" INV. IN: 400.46'(S)
24" INV. OUT: 395.96'(E)

EX-2

PROPOSED CHAIN LINK FENCE (NIC)

10' WIDE GRASS MAINTENANCE ACCESS DRIVE

24" HDPE
L=328' S=1.5%

PERMANENT POOL ELEVATION=382.20

10' WIDE RIP-RAP SPILLWAY SEE DETAIL

PROPOSED SEDIMENT FOREBAY

LOAM AND SEED ABANDONED PATH AREAS

FES-1
24" INV: 386.00'

DMH-8
RIM EL.=394.44
24" INV. IN: 390.98'(W)
24" INV. OUT: 386.48'(SW)

50' PERIMETER WETLAND

100' RIVERBANK WETLAND

LOAM AND SEED ABANDONED PATH AREAS

DMH-6
RIM EL.=407.10
18" INV. IN: 399.99'(S)
12" INV. IN: 400.49'(SW)
12" INV. IN: 400.49'(SE)
18" INV. OUT: 399.89'(N)

12" HDPE
L=3' S=2.4%

CB-5
RIM EL.=407.44
12" INV. OUT: 400.57'(NE)

18" HDPE
L=72' S=0.6%

WOODED

SCATTERED TREES

PATH

12" HDPE
L=2' S=3.5%

CB-4
RIM EL.=405.51
12" INV. OUT: 400.95'(NE)

12" HDPE
L=3' S=2.3%

CB-6
RIM EL.=406.73
12" INV. OUT: 400.57'(NW)

DMH-2
RIM EL.=405.25
12" INV. IN: 400.96'(SW)
12" INV. IN: 400.96'(E)
18" INV. OUT: 400.71'(N)

12" HDPE
L=24' S=2.7%

NEW GRAVEL PATH INTERSECTION

24" HDPE
L=49' S=1.0%

8' WIDE GRASS MAINTENANCE ACCESS DRIVE

WETLAND EDGE

50' WETLAND BUFFER DISTURBANCE AREA=22,800± SF

EL-3

12" HDPE
L=4' S=2.7%

EXIST SWALE

DMH-3
RIM EL.=404.80
18" INV. IN: 400.62'(S)
12" INV. IN: 400.87'(SW)
18" INV. OUT: 400.37'(N)

18" HDPE
L=20' S=0.5%

12" HDPE
L=1' S=<ce50380b63dc4872ae195f8b168b98df|PIPE TEST>

CB-3
RIM EL.=404.83
12" INV. OUT: 401.01'(W)

DMH-1
RIM EL.=405.94
12" INV. IN: 401.71'(W)
12" INV. IN: 401.71'(S)
12" INV. OUT: 401.61'(NE)

12" HDPE
L=4' S=2.9%

EXISTING ARCHEOLOGICAL RUINS

381.75

AQUATIC BENCH
381.2 (EDGE OF PERMANENT POOL)

381.2 (EDGE PERM POOL)

10' WIDE GRASS MAINTENANCE ACCESS DRIVE

INTERMITTENT STREAM

15' WIDE REINFORCED TURF SPILLWAY

B1-1 B1-2 B1-2A B1-2B B1-2C B1-2D B1-2E B1-2F B1-2G B1-2H B1-2I B1-2J B1-2K B1-2L B1-3 B1-4A B1-4B B1-4C B1-4D B1-4E B1-5A B1-5B B1-6 B1-7 B1-8 B1-9 B1-10 B1-11 B-2 B-4 B-5 B-6

FLOOD ZONE X ZONE AE

50' PERIMETER WETLAND

18' LONG UNDERDRAINED GRAVEL TRENCH SEE DETAIL

OCS-1
SEE PROFILE

24" HDPE
L=33' S=0.5%

FES-2
24" INV: 378.25'

PROPOSED WET VEGETATED TREATMENT SYSTEM AREA = 9,569 S.F.±

18' LONG UNDERDRAINED GRAVEL TRENCH SEE DETAIL

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
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GRAPHIC SCALE
20 0 10 20 40 80
(1 IN = 20 FEET)

MW-2

Revisions

Rev.	Date	By	Appr.	Description
1	03-23-11	DO	KAC	Revised Wetland Grading

Horsley Witten Group, Inc.
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CHEPACHET VILLAGE
STORMWATER SYSTEM RETROFIT
GLOCESTER, RHODE ISLAND

Plan Set:

Plan Title: PLAN OF WET VEGETATED TREATMENT SYSTEM

Prepared For:
Town of Glocester
Planning Department
1145 Putnam Pike
Chepachet, RI 02814
Phone: (401)-568-6206
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Environmental Management
MAY 11 2011
Office of Water Resources

Survey Provided By:
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Phone: (401)-683-6363
Fax: (401)
Dated: MARCH 2009

Registered
BRIAN R. KUCHAR
No. 8776
REGISTERED PROFESSIONAL ENGINEER

Project Number: 8003
Sheet: 4 of 11

Drawing Number: C- 4

last modified: 03/23/11 printed: 03/23/11 by bk \\hwserver\hw-server\Projects\2008\8003 Glocester_RI-Chepachet\Drawings-8003\8003-GD.dwg

HATCH LEGEND

SEED MIX TYPE 1		ZONE A: WATER DEPTH: 0"–6"	
SEED MIX TYPE 2		ZONE B: WATER DEPTH: 6"–18"	

NOTES:

ALL REMAINING DISTURBED AREAS NOT HATCHED SHALL BE SEED MIX TYPE 3

FOR THE ZONE PLANTINGS, RANDOMLY MIX THE PLANT SPECIES WHEN PLANTING

Seed Mix - Type 1 (for WVTS Side Slopes)

New England Wetmix[1]

Application Rate: 35 LBS/ACRE (1,250 SQ. FT./LB)

Species: mud plantain (*Alisma plantago-aquatica*), swamp milkweed (*Asclepias incarnata*), New York aster (*Aster novi-belgii*), nodding bur marigold (*Bidens cernua*), bristly/cosmos sedge (*Carex cosmosa*), fringed sedge (Nodding) (*Carex crinita*), hop sedge (*Carex lupulina*), lurid sedge (*Carex lurida*), blunt broom sedge (*Carex scoparia*), fox sedge (*Carex vulpinoidea*), spotted Joe Pye weed (*Eupatorium maculatum*), boneset (*Eupatorium perfoliatum*), rattlesnake grass (*Glyceria canadensis*), fowl mannagrass (*Glyceria striata*), soft rush (*Juncus effusus*), square stemmed monkey flower (*Mimulus ringens*), sensitive fern (*Onoclea sensibilis*), green bulrush (*Scirpus atrovirens*), woolgrass (*Scirpus cyperinus*), soft-stem Bulrush (*Shoenoplectus tabernaemontani*) (formerly *S. validus*), and blue vervain (*Verbena hastata*).

Seed Mix - Type 2 (Exterior Embankment Side Slopes)

New England Erosion Control/Restoration Mix (Moist Sites)[1]

Application Rate: 35 LBS/ACRE (1250 SQ. FT./LB)

Species: upland bentgrass (*Agrostis perennans)*, creeping bentgrass (Agrostis stolonifera), big bluestem (Andropogon gerardii), fox sedge (Carex vulpinoidea), canada wild rye (Elymus canadensis), virginia wild rye (Elymus virginicus), creeping red fescue (

Seed Mix- Type 3 (for remaing 100 FT buffer zone restoration area)

Agway Conservation Green Mix[2]

Application Rate: 85 LBS/ACRE (515 SQ .FT./LB) New Lawn; 42 LBS/ACRE (1030 SQ. FT./LB) Over Seeding

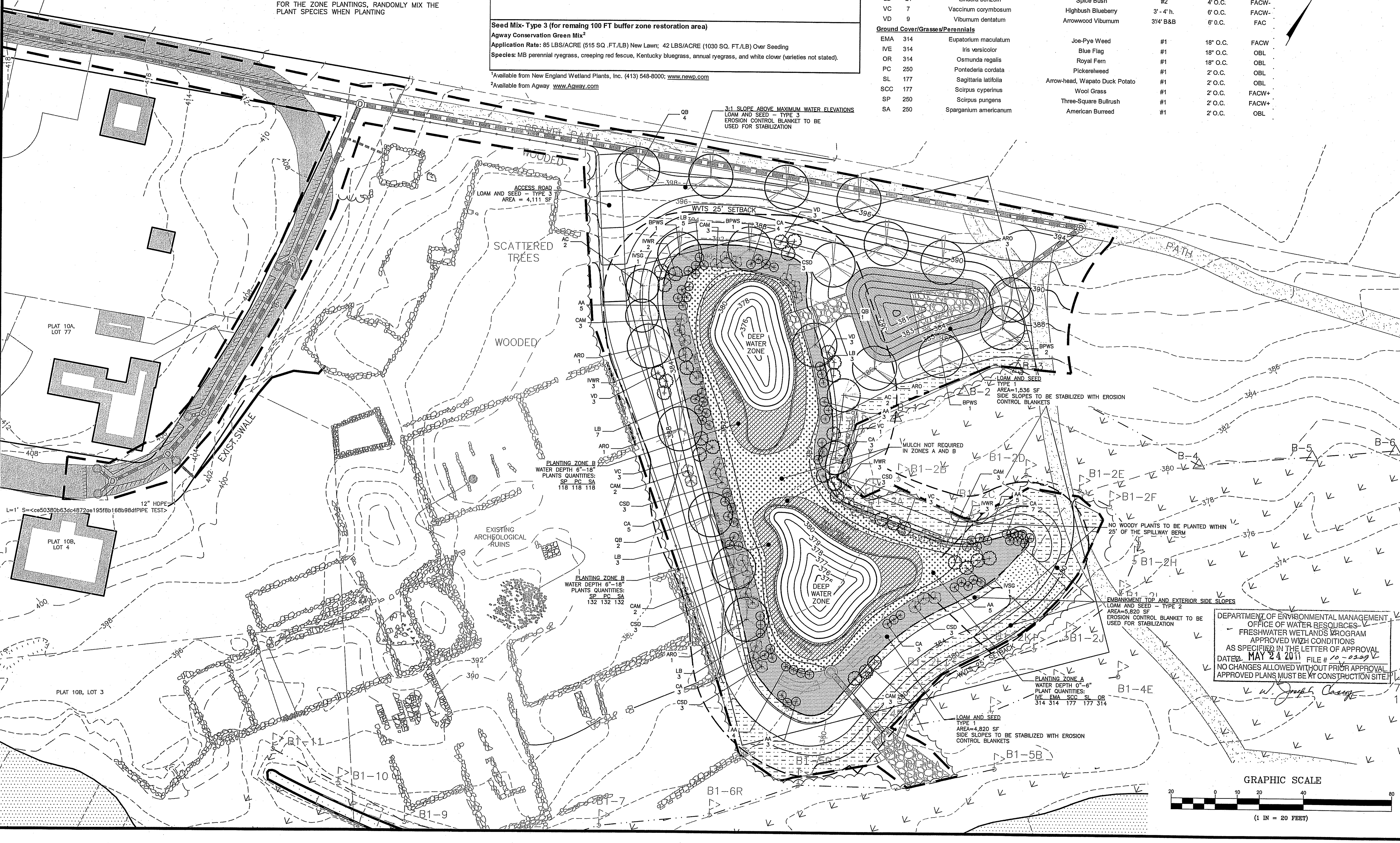
Species: MB perennial ryegrass, creeping red fescue, Kentucky bluegrass, annual ryegrass, and white clover (varieties not stated).

[1]Available from New England Wetland Plants, Inc. (413) 548-8000; www.newp.com

[2]Available from Agway www.Agway.com

WET VEGETATED TREATMENT SYSTEM PLANTING SCHEDULE

Key	Qty.	Botanical Name	Common Name	Size	Spacing	Wetland
Trees						
ARO	7	Acer rubrum 'October Glory'	October Glory Swamp Maple	3/3.5" Cal.	As Shown	FAC
AC	4	Amelanchier canadensis	Shadblow Juneberry	5/6' clump	As Shown	FAC
BPWS	5	Betula populifolia 'Whitespire Senior'	Whitespire Senior Gray Birch	12'/14' clump	As Shown	FAC
QB	7	Quercus bicolor	Swamp White Oak	3/3.5" Cal.	As Shown	FACW+
Shrubs						
AA	25	Aronia arbutifolia	Red Chokeberry	#3	4' O.C.	FACW
CA	25	Clethra alnifolia	White Summer Sweet	#7	4' O.C.	FAC+
CAM	16	Cornus amomum	Silky Dogwood	#3	5' O.C.	FAC
CSD	18	Cornus sericea	Red Osler Dogwood	#3	5' O.C.	FACW
IVSG	2	Ilex verticillata 'Southern Gentleman'	Southern Gentleman Winterberry	#3	6' O.C.	FACW+
IVWR	11	Ilex verticillata 'Winter Red'	Winter Red Winterberry	#3	6' O.C.	FACW+
LB	21	Lindera benzoin	Spice Bush	#2	4' O.C.	FACW-
VC	7	Vaccinum corymbosum	Highbush Blueberry	3' - 4' h.	6' O.C.	FACW-
VD	9	Viburnum dentatum	Arrowwood Viburnum	3'/4' B&B	6' O.C.	FAC
Ground Cover/Grasses/Perennials						
EMA	314	Eupatorium maculatum	Joe-Pye Weed	#1	18" O.C.	FACW
IVE	314	Iris versicolor	Blue Flag	#1	18" O.C.	OBL
OR	314	Osmunda regalis	Royal Fern	#1	18" O.C.	OBL
PC	250	Pontederia cordata	Pickerelweed	#1	2' O.C.	OBL
SL	177	Sagittaria latifolia	Arrow-head, Wapato Duck Potato	#1	2' O.C.	OBL
SCC	177	Scirpus cyperinus	Wool Grass	#1	2' O.C.	FACW+
SP	250	Scirpus pungens	Three-Square Bullrush	#1	2' O.C.	FACW+
SA	250	Sparganium americanum	American Burreed	#1	2' O.C.	OBL



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Revisions

Rev.	Date	By	Appr.	Description
1	8/25/10	AEC	RAC	Revised wetland location
2	3/23/11	HC	BRK	Revised wetland plantings
3				
4				
5				
6				
7				

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
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Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Date:	Designed By:	Drawn By:	Checked By:
NOV. 24, 2010	DTO	MJC	BRK

Plan Set: *CHEPACHET VILLAGE STORMWATER SYSTEM RETROFIT GLOCESTER, RHODE ISLAND*

Plan Title: *PLANTING PLAN*

PrepAROed For:
Town of Glocester
Planning DepAROtment
1145 Putnam Pike
Chepachet, RI 02814
Phone: (401)-568-6206
Fax: (401)

Survey Provided By:
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Dated: MAROCH 2009

Department of Environmental Management, Office of Water Resources — MAY 11 2011

Registration: REGISTERED LANDSCAPE ARCHITECT NO. 372 — 3/23/11

Project Number:	Sheet:
8003	5 of 11

Drawing Number: CV-5

last modified: 03/23/11 printed: 03/23/11 by bk H:\Projects\2008\8003 Glocester_RI-Chepachet\Drawings-8003\8003-GD.dwg

Revisions

Rev.	Date	By	Appr.	Description
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2				
3				
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5				
6				
7				

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Date:	Designed By:	Drawn By:	Checked By:
NOV. 24, 2010	DTO	MJC	BRK

Plan Set:
CHEPACHET VILLAGE STORMWATER SYSTEM RETROFIT GLOCESTER, RHODE ISLAND

Plan Title:
SOIL EROSION CONTROL PLAN

Prepared For:
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Planning Department
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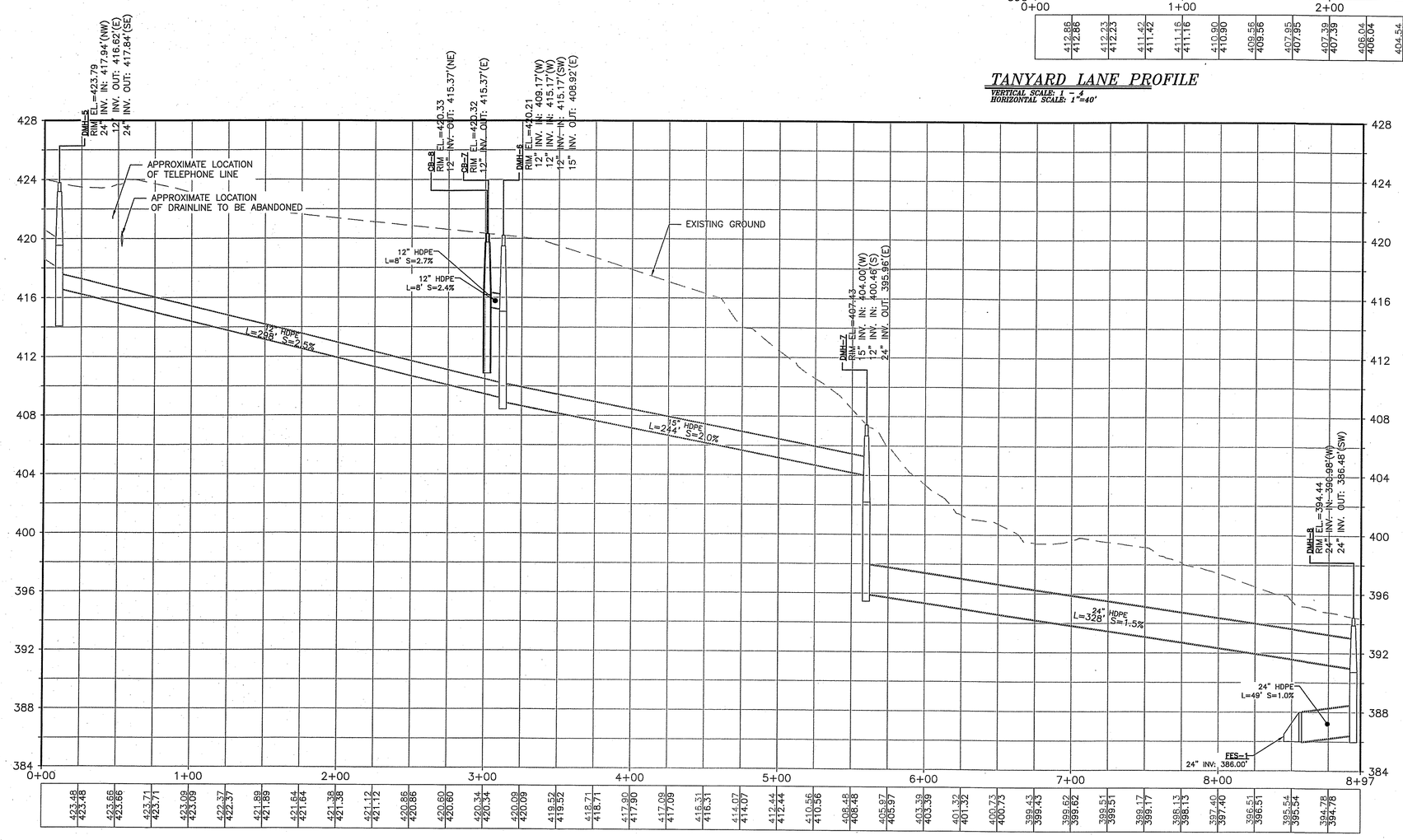
Dated: MARCH 2009

Environmental Management
MAY 11 2011
Office of Water Resources

Registration:
BRIAN R. KUCHAR
No. 8776
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

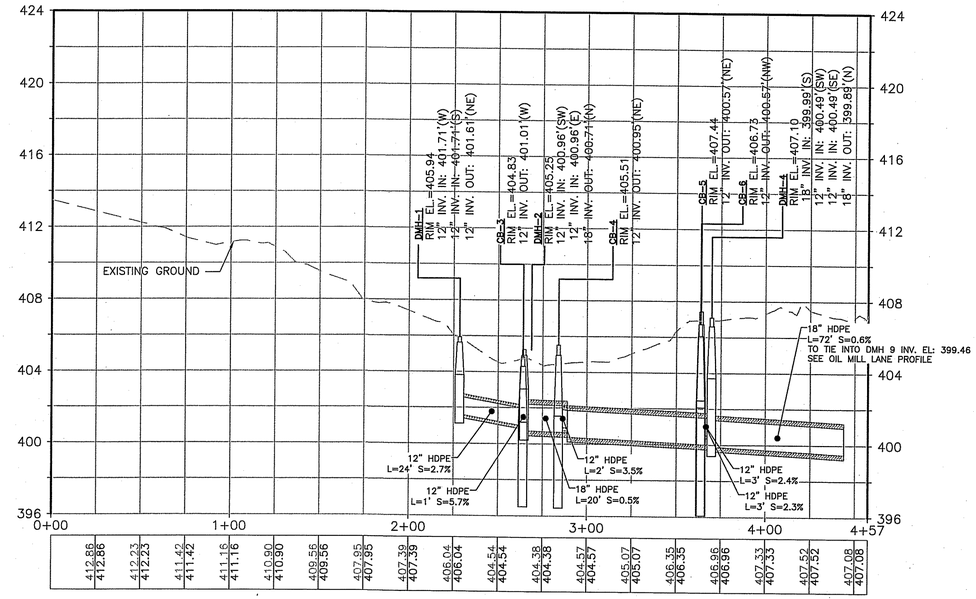
Project Number:	Sheet:
8003	6 of 11

Drawing Number:
C- 6



OIL MILL LANE PROFILE

VERTICAL SCALE: 1" = 4'
HORIZONTAL SCALE: 1"=40'



TANYARD LANE PROFILE

VERTICAL SCALE: 1" = 4'
HORIZONTAL SCALE: 1"=40'

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED MAY 24 2011 FILE # 10-0039
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL.
APPROVED PLANS MUST BE AT CONSTRUCTION SITE.
W. Joseph Casey

Revisions

Rev.	Date	By	Appr.	Description
1				
2				
3				
4				
5				
6				

Horsley Witten Group, Inc.
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Checked By: BRK
Drawn By: MAC
Designed By: DTO
Date: NOV. 24, 2010

Plan Set:
CHEPACHET VILLAGE
STORMWATER SYSTEM RETROFIT
GLOCESTER, RHODE ISLAND

Plan Title:
DRAINAGE PROFILES

Prepared For:
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Survey Provided By:
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Dated: MARCH 2009

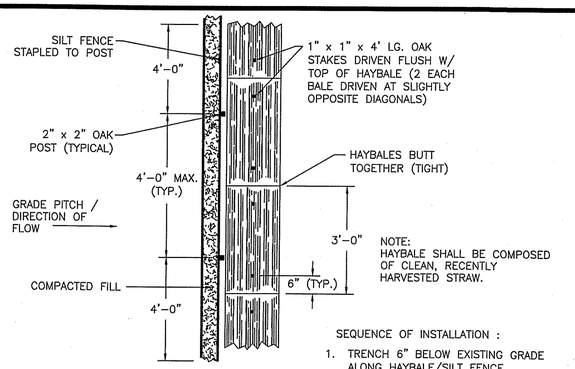
Environmental Management
Received JUL 11 2011
Office of Water Resources

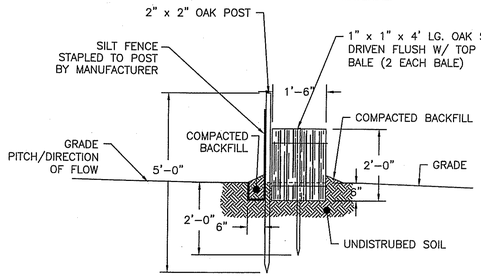
Registration:
BRIAN R. KUCHAR
No. 8776
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

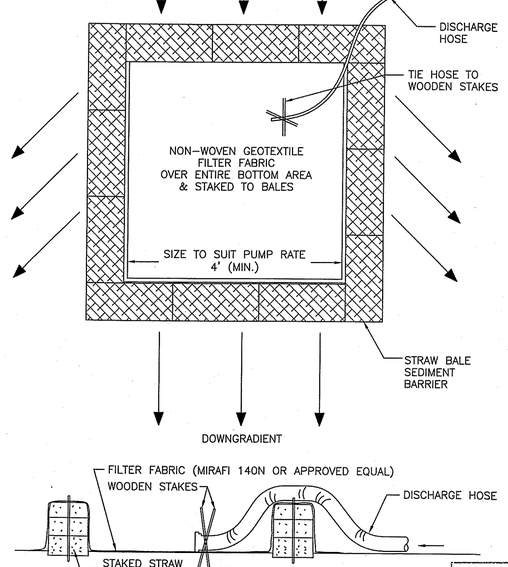
Project Number: 8003
Sheet: 7 of 11

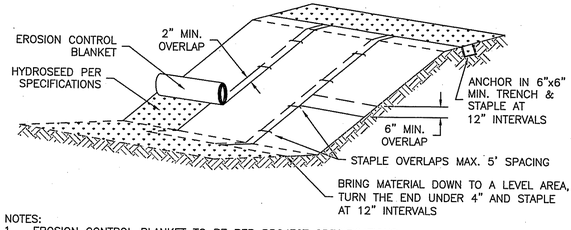
Drawing Number: C- 7

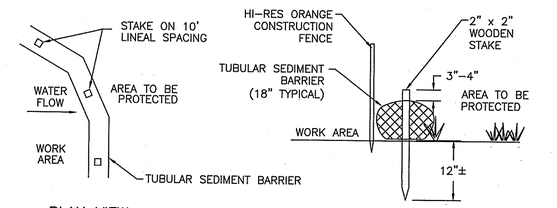
last modified: 11/29/10 printed: 11/29/10 by mc H:\Projects\2008\8003 Glocester_RI-Chepachet\Drawings-8003\8003-GD.dwg

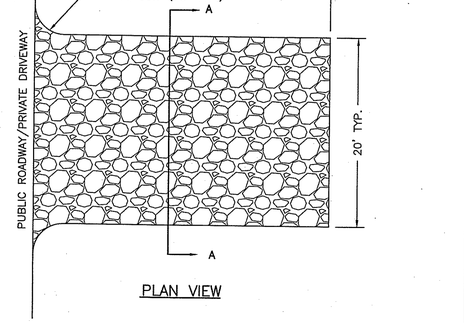


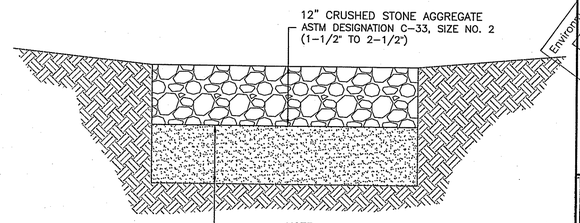












GENERAL CONSTRUCTION NOTES

1. ALL SITE PREPARATION NECESSARY TO COMPLETE THIS PROJECT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
2. ALL NECESSARY POLICE DETAILS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL COORDINATE WITH THE **LOCAL 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 IMPROVEMENT 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 "DIGSAFE" (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 PERSONAL 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 HAZARDOUS OR CONTAMINATED MATERIALS WILL BE ACCEPTED.
12. SITE LAYOUT SURVEY REQUIRED FOR CONSTRUCTION WILL BE PROVIDED BY THE CONTRACTOR AND SHALL BE CONDUCTED BY A **RHODE ISLAND** 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 **RHODE ISLAND DEPARTMENT OF TRANSPORTATION** STANDARD SPECIFICATIONS.
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 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 5000 PSI UNLESS OTHERWISE NOTED HEREIN.
21. 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 SEDIMENT CONTROL BARRIERS.
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. 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.
24. 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.

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. ALL EARTHWORK AND SITE PREPARATION SHALL BE DONE IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF ANY SUBSURFACE INVESTIGATION OR GEOTECHNICAL REPORTS PREPARED FOR THIS SITE.
8. ROADS AND PARKING AREAS ARE NOT TO BE PAVED UNTIL THE ENTIRE PERMANENT DRAINAGE SYSTEM HAS BEEN INSTALLED AND ALL PIPE CONNECTIONS COMPLETE.
9. DRAINAGE PIPING SHALL BE HIGH DENSITY POLYETHYLENE PIPE AND CONFORM TO AASHTO M294 CORRUGATED POLYETHYLENE PIPE. PIPE SHALL BE INSTALLED AT THE LOCATIONS INDICATED ON THE PLAN. MINIMUM CLEARANCE BETWEEN PROPOSED DRAINAGE PIPING AND OTHER UTILITIES/STRUCTURES SHALL BE 18" VERTICALLY AND 4-FT HORIZONTALLY. CPP SHALL BE CAREFULLY BACKFILLED IN ACCORDANCE WITH THE LATEST **RHODE ISLAND DEPARTMENT OF TRANSPORTATION** STANDARD SPECIFICATIONS. THE MINIMUM COVER FOR HDPE PIPE IS 1'-0" FOR H-20 TRAFFIC LOADS IF INSTALLED IN ACCORDANCE WITH AASHTO SECTION 30. THIS IS BASED ON EMPIRICAL CALCULATION OF LOAD RESPONSE, MANUFACTURER'S TESTING AND FIELD EXPERIENCE WITH THE PIPE. AASHTO SPECIFICATIONS SECTION 18.4.1.5 DEFINES THE MINIMUM COVER AS "ID/8 BUT NOT LESS THAN 12 INCHES." THIS COVER IS MEASURED FROM THE PIPE OD TO THE TOP OF A RIGID (CONCRETE) PAVEMENT OR THE BOTTOM OF A FLEXIBLE (BITUMINOUS) PAVEMENT. BOTH AASHTO AND ASTM, AS WELL AS MOST MANUFACTURERS, REQUIRE ADDITIONAL (TEMPORARY) COVER FOR CONSTRUCTION LOADS GREATER THAN H-20. GENERALLY, AN ADDITIONAL 2' OF TEMPORARY COVER, MOUNDED OVER THE PIPE AND REMOVED FOR FINAL GRADING AND PAVING, IS SUFFICIENT FOR LARGE CONSTRUCTION VEHICLE LOADS.
10. 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 95% 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.
11. 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 .

CONSTRUCTION SEQUENCE AND REQUIRED INSPECTIONS

1. PRIOR TO COMMENCING CONSTRUCTION, A PRECONSTRUCTION MEETING SHALL BE HELD AMONG THE OWNER, CONTRACTOR AND ENGINEER.
2. INSTALL PERIMETER EROSION AND SEDIMENT CONTROL PRACTICES.
3. CLEAR/GRUB PROPOSED DISTURBED AREA.
4. STRIP AND STOCKPILE TOPSOIL IN LOCATION APPROVED BY THE ENGINEER. SURROUND STOCKPILE WITH SEDIMENT CONTROL BARRIER.
5. ROUGH GRADE WET VEGETATED TREATMENT SYSTEM (WVTS) AND SEDIMENT FOREBAY AREAS DURING GENERAL SITE GRADING. INSTALL DIVERSION SWALES AS NECESSARY TO KEEP SURFACE RUNOFF FROM FLOWING INTO THE FOREBAY AND WET VEGETATED TREATMENT SYSTEM (WVTS) PRIOR TO BEING PERMANENTLY STABILIZED.
6. INSTALL INFLOW DRAINAGE SYSTEM AS SHOWN IN DETAILS (PIPE, CHANNEL, ETC).
7. INSTALL OVERFLOW OUTLET STRUCTURE PER DETAILS.
8. INSTALL SEDIMENT BARRIER ALONG THE TOE OF SLOPE INSIDE THE WVTS TO PREVENT SEDIMENT FROM WASHING INTO THE BASINS FROM DISTURBED AREAS AROUND THE FACILITY.
9. INSTALL APPROVED SUBGRADE MATERIAL AND CONSTRUCT ALL BERMS AND SPILLWAYS AS SHOWN IN THE DETAILS.
10. INSTALL PLANTING SOIL AS SHOWN IN THE DETAILS (UN-COMPACTED) – SEE PLANTING SOIL SPECIFICATIONS. THE CONTRACTOR MUST SUBMIT A SOIL SAMPLE (1 GALLON) TO THE ENGINEER PRIOR TO SOIL DELIVERY TO THE SITE.
11. STABILIZE ALL REMAINING DISTURBED AREAS AROUND FACILITY BY SEEDING, HYDROSEEDING AND/OR OTHER EROSION CONTROL METHODS AS OUTLINED IN THE PLANS AND DETAILS. MANDATORY INSPECTION REQUIRED SEE NOTE (3) BELOW.
12. INSTALL PLANTINGS AS SHOWN ON PLANTING PLANS AND DETAILS. NO PLANTING SHOULD OCCUR BEFORE REMAINING DISTURBED AREAS AROUND THE FACILITY(IES) ARE STABILIZED. THE CONTRACTOR WILL BE REQUIRED TO REMOVE ANY SEDIMENT WHICH WASHES INTO THE WVTS AREA DURING THE CONSTRUCTION AND PLANTING PHASES. IF SUITABLE VEGETATIVE COVER HAS NOT BEEN ESTABLISHED ALONG THE WVTS SLOPES PRIOR TO PLANTING, A SILT FENCE PERIMETER SHALL BE INSTALLED AT THE TOE OF THE WVTS SLOPES AND REMAIN IN PLACE UNTIL VEGETATIVE COVER IS ESTABLISHED. MANDATORY INSPECTION REQUIRED SEE NOTE (3) BELOW.
13. INSTALL REMAINING PLANTING SOIL AROUND PLANTS AS SHOWN IN DETAILS.
14. FILL IN TEMPORARY DIVERSION SWALES AND REMOVE REMAINING EROSION AND SEDIMENT CONTROLS ONLY AFTER SURROUNDING EXPOSED SOIL ARES HAVE BEEN PROPERLY STABILIZED. MANDATORY INSPECTION REQUIRED SEE NOTE (3) BELOW.
15. INSTALL REMAINING STORM DRAIN PIPES AND STRUCTURES, WORKING UPSTREAM FROM THE SEDIMENT FOREBAY. DRAINAGE SYSTEM SHALL REMAIN "OFF-LINE" UNTIL PERMANENT STABILIZATION OF SEDIMENT FOREBAY AND WVTS HAS BEEN ACHIEVED.

NOTES:

(1.) SEE GENERAL CONSTRUCTION NOTES FOR OVERALL CONSTRUCTION SEQUENCE.

(2.) SEE GENERAL NOTES/SPECIFICATIONS/CONSTRUCTION DETAILS FOR DETAILED CONSTRUCTION REQUIREMENTS.

(3.) MANDATORY NOTIFICATION/APPROVAL OF THE PROJECT ENGINEER IS REQUIRED PRIOR TO PROCEEDING WITH NEXT STAGE. CALL THE ENGINEER (HORSLEY WITTEN GROUP, INC.) AT 508-833-6600 PRIOR TO 12:00 NOON THE PROCEEDING DAY TO ARRANGE FOR INSPECTION.

EROSION & SEDIMENT CONTROL NOTES

1. THE CONTRACTOR SHOULD REFER TO THE **STORMWATER AND POLLUTION PREVENTION PLAN (SWPPP)** REGARDING ALL EROSION CONTROL MATTERS AND SHALL MAINTAIN A WORKING COPY ONSITE AT ALL TIMES. THE CONTRACTOR SHALL FOLLOW THE SWPPP PROTOCOL FOR SITE MAINTENANCE, INSPECTIONS AND PROPER DOCUMENTATION UNTIL THE SITE HAS BEEN ACCEPTED BY THE OWNER. AT THE COMPLETION OF THE PROJECT A NOTICE OF TERMINATION WILL NEED TO BE FILED BY THE CONTRACTOR OR OWNER WITH NPDES. IN ACCORDANCE WITH **RIPDES** REGULATIONS THE COMPLETED SWPPP, WHICH SHALL INCLUDE ALL OF THE SITE EROSION CONTROL DOCUMENTATION, WEEKLY EROSION INSPECTION REPORTS COMPLETED BY THE DESIGNATED SITE PERSONNEL, AND ANY OTHER PERTINENT SITE DOCUMENTATION MUST BE RETAINED FOR A MINIMUM OF 3 YEARS FROM THE DATE OF TERMINATION.
2. THE SITE CONSTRUCTION FOREMAN SHALL BE DESIGNATED AS THE ON-SITE PERSONNEL RESPONSIBLE FOR THE DAILY INSPECTION AND MAINTENANCE OF ALL SEDIMENT AND EROSION CONTROLS AND SHALL IMPLEMENT ALL NECESSARY MEASURES TO CONTROL EROSION AND PREVENT SEDIMENT FROM LEAVING THE SITE.
3. THE CONTRACTOR SHALL INSTALL ALL SEDIMENT AND EROSION CONTROL MEASURES AS SHOWN ON THE DESIGN PLANS, 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 INFORMED THAT NO CONSTRUCTION ACTIVITY IS TO OCCUR BEYOND THE LIMIT OF WORK AT ANY TIME THROUGH THE CONSTRUCTION PERIOD.
4. A MINIMUM SURPLUS OF 100-FEET OF EROSION CONTROL BARRIER (SILT FENCE, STRAWBALE, &/OR SILT SOCK) SHALL BE STOCKPILED ONSITE AT ALL TIMES.
5. THE CONTRACTOR SHALL PROTECT THE ADJACENT WETLAND AREA FROM SEDIMENTATION DURING PROJECT CONSTRUCTION UNTIL ACCEPTANCE BY THE TOWN.
6. A CONSTRUCTION EXIT SHALL BE CONSTRUCTED AS SHOWN IN THE DETAILS TO SHED DIRT FROM CONSTRUCTION VEHICLE TIRES. THE CRUSHED STONE PAD WILL BE REPLACED/CLEANED AS NEEDED TO MAINTAIN ITS EFFECTIVENESS.
7. 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.
8. 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 THAT ALL NECESSARY EROSION CONTROL DEVICES ARE INSTALLED AND FUNCTIONING PROPERLY TO MINIMIZE EROSION FROM ANY IMPENDING WEATHER EVENTS.
9. 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.
10. 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.
11. 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.
12. 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.
13. THE CONTRACTOR SHALL CONTAIN ALL SEDIMENT ONSITE. ALL EXITS FROM THE SITE WILL BE SWEPT AS NECESSARY INCLUDING ANY SEDIMENT TRACKING. PAVED AREAS SHALL BE SWEPT AS NEEDED TO REMOVE SEDIMENT AND POTENTIAL POLLUTANTS WHICH MAY ACCUMULATE DURING SITE WORK.
14. 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.
15. 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
16. PROPER MEASURES SHALL BE IMPLEMENTED BY THE CONTRACTOR IF DEWATERING IS NECESSARY DURING CONSTRUCTION. THESE MEASURES SHALL INCLUDE DEWATERING BAGS, TEMPORARY STRAWBALES, SILT FENCES, SILT SOCKS AND/OR OTHER APPROVED DEVICES. THE DEWATERING SETUP SHALL BE APPROVED BY THE ENGINEER.
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.

NOTE:
HAYBALE SHALL BE COMPOSED OF CLEAN, RECENTLY HARVESTED STRAW.

SEQUENCE OF INSTALLATION :

1. TRENCH 6" BELOW EXISTING GRADE ALONG HAYBALE/SILT FENCE ALIGNMENT.
2. PLACE AND STAKE HAY BALES AND SILT FENCE AS SHOWN.
3. WEDGE LOOSE STRAW BETWEEN BALES.
4. BACKFILL AND COMPACT EXCAVATED MATERIAL.

STAKED HAYBALE/SEDIMENTATION CONTROL FENCE DETAIL

NOT TO SCALE

NOTE:

1. FILTER FABRIC TO BE MIRAFI 140N OR APPROVED EQUIVALENT.
2. NUMBER OF BALES MAY VARY DEPENDING ON SITE CONDITIONS.
3. THE BASIN TO BE SIZED TO PREVENT DISCHARGE WATER FROM OVERTOPPING BASIN (SEE PLAN IF APPLICABLE).

DEWATERING CONTAINMENT AREA DETAIL

NOT TO SCALE

NOTES:

1. EROSION CONTROL BLANKET TO BE PER PROJECT SPECIFICATIONS.
2. SLOPE SURFACE SHALL BE SMOOTH BEFORE PLACEMENT FOR PROPER SOIL CONTACT.
3. STAPLING PATTERN AS PER MANUFACTURER'S RECOMMENDATIONS.
4. DO NOT STRETCH BLANKETS/MATTINGS TIGHT. ALLOW THE ROLLS TO MOLD TO ANY IRREGULARITIES.
5. FOR SLOPES LESS THAN 3H:1V, ROLLS MAY BE PLACED IN HORIZONTAL STRIPS.
6. LIME, FERTILIZE AND SEED BEFORE INSTALLATION. PLANTING OF SHRUBS, TREES, ETC. SHOULD OCCUR AFTER INSTALLATION.

EROSION CONTROL BLANKET DETAIL

NOT TO SCALE

NOTES:

1. TUBULAR SEDIMENT BARRIER SHALL BE PER PROJECT SPECIFICATIONS.
2. ALL MATERIAL TO MEET MANUFACTURER'S SPECIFICATIONS.
3. SEDIMENT BARRIER TO BE FILLED WITH COMPOST PER THE SPECIFICATIONS.
4. FOLLOWING CONSTRUCTION AND SITE STABILIZATION, COMPOST MATERIAL SHALL BE REMOVED OR DISPERSED ON SITE, AS APPROVED BY THE ENGINEER.

TUBULAR SEDIMENT BARRIER DETAIL

NOT TO SCALE

NOTE:

1. ROCK ENTRANCE(S) TO REMAIN UNTIL PERMANENT SITE STABILIZATION HAS BEEN ACHIEVED.

STONE CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED MAY 24 2011 FILE # 10-0229
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL.
APPROVED PLANS MUST BE AT CONSTRUCTION SITE.

W. Joseph Carey

Environmental Management
MAY 11 2011
Office of Water Resources

Revisions

Rev.	Date	By	Appr.	Description
1				
2				
3				
4				
5				
6				
7				

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Date: NOV. 24, 2010
Designed By: DTO
Drawn By: MJC
Checked By: BRK

Plan Set:
CHEPACHET VILLAGE
STORMWATER SYSTEM RETROFIT
GLOCESTER, RHODE ISLAND

Plan Title:
CONSTRUCTION DETAILS (1)

Prepared For:
Town of Glocester
Planning Department
1145 Putnam Pike
Chepachet, RI 02814
Phone: (401)-568-6206
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Survey Provided By:
Narragansett Engineering, Inc.
3102 East Main Road
Portsmouth, RI 02871
Phone: (401)-683-6630
Fax: (401)-
Dated: MARCH 2009

Registration:
BRIAN R. KUCHAR
No. 8776
REGISTERED PROFESSIONAL ENGINEER

Project Number: 8003
Sheet: 8 of 11
Drawing Number: C- 8

CONSTRUCTION SPECIFICATIONS FOR WVTS TREATMENT SYSTEMS

1. SUBGRADE SOIL SHALL BE WELL–COMPACTED FINE–GRAINED STABLE SOIL. NATIVE MATERIALS MAY BE USED IF APPROPRIATE. SOILS OF USDA HYDROLOGICAL SOIL GROUPS C AND/OR D ARE BEST.

2. PLANTING SOIL
THE PLANTING SOIL SHOULD BE AN APPROVED HIGH ORGANIC CONTENT MEDIUM TEXTURED LOAM OR SANDY LOAM, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHOULD BE MIXED OR DUMPED WITHIN THE WET VEGETATED TREATMENT SYSTEM (WVTS) THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHOULD BE FREE OF NOXIOUS WEEDS.

THE CONSTRUCTED WETLAND SHALL UTILIZE PLANTING SOIL HAVING A COMPOSITION AS FOLLOWS:

SAND: 45–55%
SILT: 15–25%
CLAY: 5–15%
ORGANIC MATTER: 15–20%
*NOTE: ORGANIC MATTER SHALL BE WELL AGED (6–12 MONTHS), WELL AERATED, LEAF COMPOST OR APPROVED EQUIVALENT.

THE PLANTING SOIL SHALL MEET THE FOLLOWING CRITERIA:

PH RANGE:	6.5 – 8.5
ORGANIC MATTER:	15 – 20%
ELECTRICAL CONDUCTIVITY:	NOT TO EXCEED 4 MMHO/CM
CATION EXCHANGE CAPACITY:	>15 MEQ/100 GRAMS OF SOIL

3. SOIL TESTING
PLANTING SOILS FOR THE WVTS SHALL BE TESTED. EACH TEST SHOULD CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, PHOSPHORUS, AND POTASSIUM AND ADDITIONAL TESTS OF ORGANIC MATTER, ELECTRICAL CONDUCTIVITY, AND CATION EXCHANGE CAPACITY.

THE PLANTING SOIL SHALL ALSO CONTAIN MAGNESIUM, PHOSPHORUS (P205), & POTASSIUM (K2O) AT A STANDARD LEVEL TO FACILITATE PROPER PLANT GROWTH AS APPROVED BY THE ENGINEER OR LANDSCAPE ARCHITECT.

A SOIL TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE'S STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHOULD BE PERFORMED FOR EACH LOCATION WHERE THE TOP SOIL WAS EXCAVATED.

SINCE DIFFERENT LABS CALIBRATE THEIR TESTING EQUIPMENT DIFFERENTLY, ALL TEST RESULTS SHOULD COME FROM THE SAME TESTING FACILITY. THE TESTING RESULTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

SHOULD THE PH FALL OUT OF THE ACCEPTABLE RANGE, IT MAY BE MODIFIED (HIGHER) WITH LIME OR (LOWER) WITH IRON SULFATE PLUS SULFUR.

4. FACILITY BACKFILLING
WHEN BACKFILLING THE CONSTRUCTED WETLAND, PLACE SUBGRADE SOIL IN LIFTS 12" OR GREATER. PLACE A MINIMUM OF 4" OF PLANTING SOIL ABOVE SUBGRADE SOIL FOR PROMOTING PLANT GROWTH. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE CONSTRUCTED WETLAND MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS. SATURATE PLANTING SOIL AFTER PLACEMENT AND ALLOW TO SETTLE FOR AT LEAST ONE WEEK PRIOR TO INSTALLING PLANT MATERIAL.

5. PLANT INSTALLATION
ROOT STOCK OF THE PLANT MATERIAL SHOULD BE KEPT MOIST DURING TRANSPORT AND ON–SITE STORAGE. THE DIAMETER OF THE PLANTING PIT SHOULD BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION.

TREES SHOULD BE BRACED USING 2" X 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL.

GRASSES AND LEGUME SEED SHOULD BE TILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHOULD BE PLANTED FOLLOWING THE NON–GRASS GROUND COVER PLANTING SPECIFICATIONS.

THE PLANTING SOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE CONSTRUCTED WETLAND IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFEATS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF COMPOST OR MULCH IS USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1,000 SQUARE FEET.

6. SIDE SLOPES
THE CONSTRUCTED WETLAND SIDE SLOPES SHALL BE STABILIZED PER THE DETAILS AND SEEDED WITH NEW ENGLAND EROSION CONTROL/RESTORATION MIX FROM NEW ENGLAND WETLAND PLANTS, INC. (www.newp.com or 413–548–8000) OR APPROVED EQUIVALENT.

BERM SOIL AND COMPACTION SPECIFICATIONS

1. THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6 INCHES, FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE EMBANKMENT SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE.
2. AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PER CONSTRUCTION DETAILS PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8–INCH THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWNSTREAM PORTIONS OF THE EMBANKMENT. THE PRINCIPAL SPILLWAY MUST BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.
3. ALL FILL PLACEMENT SHALL NOT EXCEED A MAXIMUM 8" LIFT. EACH LIFT SHALL BE CONTINUOUS FOR THE ENTIRE LENGTH OF EMBANKMENT. ALL UNSUITABLE MATERIAL SHALL BE REMOVED FROM AREAS ON WHICH FILL IS TO BE PLACED AND SHALL BE SCARIFIED PRIOR TO FILL PLACEMENT.
4. A KEY TRENCH SHALL BE PROVIDED BENEATH ALL FILL AREAS OF THE BERM AS SHOWN IN THE DETAILS. THE KEY TRENCH SIDE SLOPES SHALL BE A MINIMUM OF 1:1 (H:V). THE KEY TRENCH SHALL BE COMPACTED TO THE SAME SPECIFICATIONS LISTED IN ITEM 3 ABOVE.
5. ALL FILL SOILS USED IN THE EMBANKMENT/KEY TRENCH CONSTRUCTION SHALL NOT BE LESS THAN 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN 2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE A GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T–99 (STANDARD PROCTOR).
6. THE FILL SHOULD BE COMPACTED USING A SHEEPSFOOT TYPE COMPACTOR. IN ORDER TO PREVENT DAMAGE TO THE ANY DRAINAGE PIPE, NO COMPACTION EQUIPMENT SHALL CROSS ANY PIPE UNTIL MINIMUM COVER IS ESTABLISHED ALONG THE PIPE.
7. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH GEOTECHNICAL REPORTS TO VERIFY THAT THE BERM MEETS THE SPECIFIED COMPACTION REQUIREMENTS. COMPACTION REPORTS WILL BE NEEDED DURING THE AS–BUILT CERTIFICATION PROCESS FOR THIS STORMWATER FACILITY, THEREFORE, IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE COMPACTION TESTS ARE PROPERLY PERFORMED DURING CONSTRUCTION.
8. SIX INCHES OF TOP SOIL SHALL BE USED ON THE OUTER SHELL OF THE BERM AND MUST HAVE THE CAPABILITY TO SUPPORT VEGETATION OF THE QUALITY REQUIRED TO PREVENT EROSION OF THE BERM.

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 PROJECT IS ACCEPTED BY THE OWNER AND THE ENGINEER.
2. THE CONTRACTOR SHALL INSPECT AND RESTORE/CLEAN ALL FACILITIES (INLETS, MANHOLES, BASINS, 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. THE CONTRACTOR SHALL BE REFER TO THE "REQUEST FOR PRELIMINARY DETERMINATION" FILING FOR ADDITIONAL INFORMATION REGARDING INSTALLATION, OPERATION AND MAINTENANCE OF STORMWATER AND EROSION/SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMPs).
5. 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.
6. SPECIFIC ANNUAL MAINTENANCE SHALL BE AS FOLLOWS:

A. DRAINAGE STRUCTURES (INLETS, MANHOLES & CATCHBASINS): 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 SUMPS) AS NECESSARY, AND REPAIRED WHEN REQUIRED.

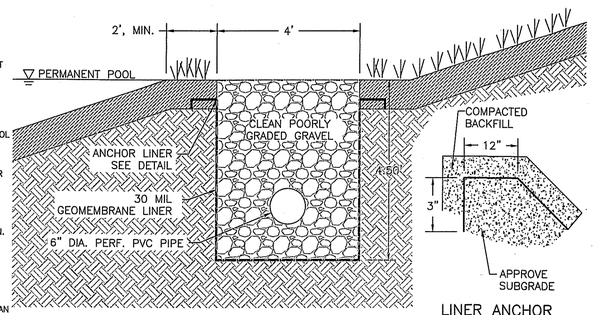
B. RIP–RAP SLOPE PROTECTION: RIP RAP AT THE OUTFALLS WILL BE INSPECTED ANNUALLY AND REPAIRED AS NECESSARY.

C. SEDIMENT FOREBAY: THE SEDIMENT FOREBAY(S) WILL BE INSPECTED ANNUALLY TO ENSURE PROPER FUNCTIONING. THE SEDIMENT BUILD–UP ON THE FLOOR OF THE FOREBAY WILL BE REMOVED AND PROPERLY DISPOSED OF APPROXIMATELY ONCE EVERY FIVE YEARS, OR MORE OFTEN AS NECESSARY TO LIMIT SEDIMENT BUILDUP TO LESS THAN 50 PERCENT OF THE DESIGN VOLUME.

D. WET VEGETATED TREATMENT SYSTEM (WVTS):
   a. THE WVTS WILL BE INSPECTED AFTER EVERY PRECIPITATION EVENT GREATER THAN 1.0–INCH FOR THE FIRST THREE MONTHS OF OPERATION. AFTER THE FIRST THREE MONTHS, GENERAL INSPECTIONS SHALL BE CONDUCTED ANNUALLY AND AFTER STORM EVENTS GREATER THAN OR EQUAL TO THE 1–YEAR, 24–HOUR PRECIPITATION EVENT.
   b. THE OUTLET STRUCTURE TRASH RACK SHALL BE MAINTAINED IN ACCORDANCE WITH THE MAINTENANCE CHECKLIST IN THE MOST CURRENT RHODE ISLAND STORMWATER DESIGN AND INSTALLATION STANDARDS MANUAL.
   c. GENERAL MAINTENANCE OF WVTS SYSTEM FALLS UNDER LANDSCAPING PRACTICES.
   d. SEDIMENT OR ORGANIC BUILD–UP SHOULD BE REMOVED FROM THE WVTS EVERY TWO YEARS, AS NEEDED.
   e. MULCH (IF APPLICABLE) WILL BE REPLACED EVERY TWO YEARS, AND ILL–ESTABLISHED, DEAD OR SEVERELY DISEASED PLANTS WILL BE REMOVED AND REPLACED AS NEEDED.
   f. HERBACEOUS VEGETATION ROOT STOCK SHALL BE PRUNED WHEN OVERCROWDING IS OBSERVED OR IF THERE IS A NEGATIVE IMPACT ON STORMWATER FLOWAGE THROUGH THE FACILITY, OR APPROXIMATELY ONCE EVERY THREE (3) YEARS.
   g. IF AT LEAST 50 PERCENT VEGETATION COVERAGE IS NOT ESTABLISHED AFTER TWO (2) YEARS, A REINFORCEMENT PLANTING SHOULD BE PERFORMED.
   h. ANY INVASIVE VEGETATION ENCROACHING UPON THE PERIMETER OF THE FACILITY SHOULD BE PRUNED OR REMOVED IF IT IS COMPROMISING THE ORIGINAL DESIGN VEGETATION, PROHIBITING ACCESS, OR REDUCING SITE VISIBILITY.
   i. THE EMBANKMENTS SHOULD BE CHECKED FOR STABILITY AND ANY BURROWING ANIMALS SHOULD BE REMOVED.
   j. ALL BARREN AREAS WITHIN THE EXTENTS OF THE FACILITY SHALL BE REPLENISHED WITH SOIL AND/OR MULCH AND BE RE–VEGETATED TO THE ORIGINAL DESIGN STANDARDS.
   k. THE GRASS ALONG THE PERIMETER OF THE WVTS SHOULD BE MOWED AT LEAST FOUR (4) TIMES DURING THE ANNUAL GROWING SEASON, OR AS REQUIRED TO MAINTAIN GRASS HEIGHTS BETWEEN FOUR (4) AND SIX (6) INCHES.
   l. DURING INSPECTION, ANY STRUCTURAL COMPONENTS OF THE SYSTEM, INCLUDING ORIFICE STRUCTURES, WEIR WALLS, DRAINAGE INLETS, TRASH RACKS, VALVES, PIPES, AND SPILLWAY STRUCTURES, SHOULD BE CHECKED FOR PROPER FUNCTION.
   m. ANY CLOGGED OPENINGS SHOULD BE CLEANED OUT AND REPAIRS SHOULD BE MADE WHERE NECESSARY.
   n. THE GRAVEL TRENCH OUTLET SHALL BE INSPECTED AFTER EVERY STORM EVENT IN THE FIRST THREE (3) MONTHS OF OPERATION TO ENSURE PROPER FUNCTION. THEREAFTER, THE TRENCH SHALL BE INSPECTED AT LEAST ONCE (1) ANNUALLY. THE INSPECTION CONSIST OF THE FOLLOWING:
      - VERIFYING THAT THE WVTS IS DRAINING TO THE PERMANENT POOL ELEVATION WITHIN THE 24–HOUR DESIGN REQUIREMENT.
      - VERIFY THAT POTENTIALLY CLOGGING MATERIAL, SUCH AS ACCUMULATION OF DECAYING LEAVES OR DEBRIS, DOES NOT PREVENT THE DISCHARGE THROUGH THE GRAVEL. WHEN CLOGGING OCCURS, AT LEAST THE TOP EIGHT (8) INCHES OF GRAVEL SHALL BE REPLACED OVER THE NEW MATERIAL.
      - ALL SEDIMENTS REMOVED SHALL BE DISPOSED OF IN AN ACCEPTABLE MANNER.

7. ROUTINE MAINTENANCE: OTHER ROUTINE MAINTENANCE WILL INCLUDE REMOVAL OF TRASH AND LITTER FROM PAVED AND PERIMETER AREAS, AND ANNUAL STREET SWEEPING AFTER THE SPRING THAW TO AVOID EXCESSIVE ACCUMULATION OF SEDIMENT IN THE DRAINAGE SYSTEM. ALL PIPES DRAINING TO THE PROJECT WILL BE INSPECTED ANNUALLY FOR PROPER FLOW.

NOTE: OPERATION AND MAINTENANCE CHECKLIST AVAILABLE UPON REQUEST

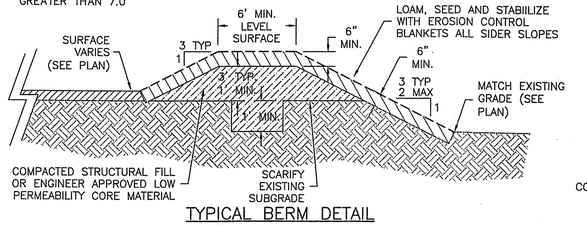


LINER ANCHOR DETAIL

UNDERDRAINED GRAVEL TRENCH (SECTION)

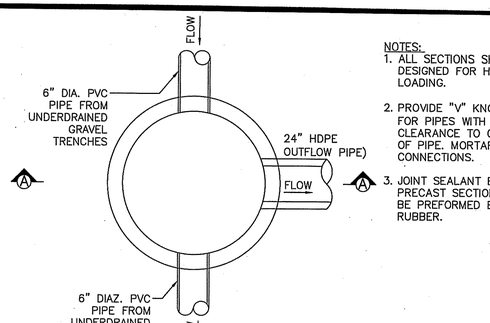
NOT TO SCALE

NOTES:
1. EROSION CONTROL BLANKET TO BE NORTH AMERICAN GREEN BIONET OR APPROVED EQUIVALENT.
2. VEGETATIVE COVER: GRASS SHALL BE NEW ENGLAND EROSION CONTROL/RESTORATION MIX OR APPROVED EQUAL.
3. LOAM MATERIAL: THE LOAM MATERIAL SHALL CONSIST OF 60–70% WASHED SCREENED SAND, 20–30% TOPSOIL, AND 10–20% ORGANIC MATTER. THE LOAM MATERIAL SHALL BE MIXED TO A UNIFORM CONSISTENCY.
4. TOPSOIL SHALL BE NATURAL, FERTILE, FRIABLE, LOAM OR SANDY LOAM TYPICAL OF CULTIVATED TOPSOIL. TOPSOIL SHALL BE FREE OF SUB–SOIL, LARGE STONES, EARTH CLODS, STICKS, STUMPS, CLAY LUMPS, ROOTS, OR OTHER OBJECTIONABLE MATTER. TOPSOIL SHALL ALSO BE FREE OF NOXIOUS WEEDS. TOPSOIL SHALL NOT HAVE A pH FACTOR OF LESS THAN 6.0 OR GREATER THAN 7.0



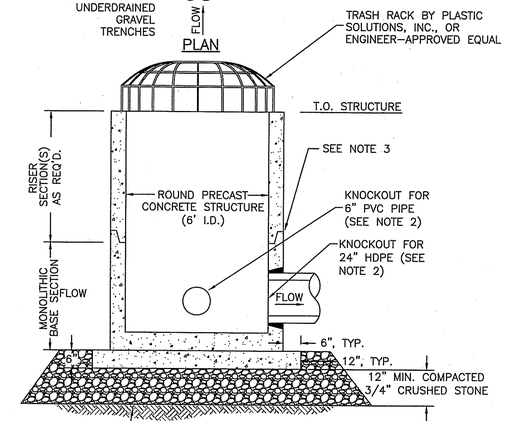
TYPICAL BERM DETAIL

NOT TO SCALE



PLAN

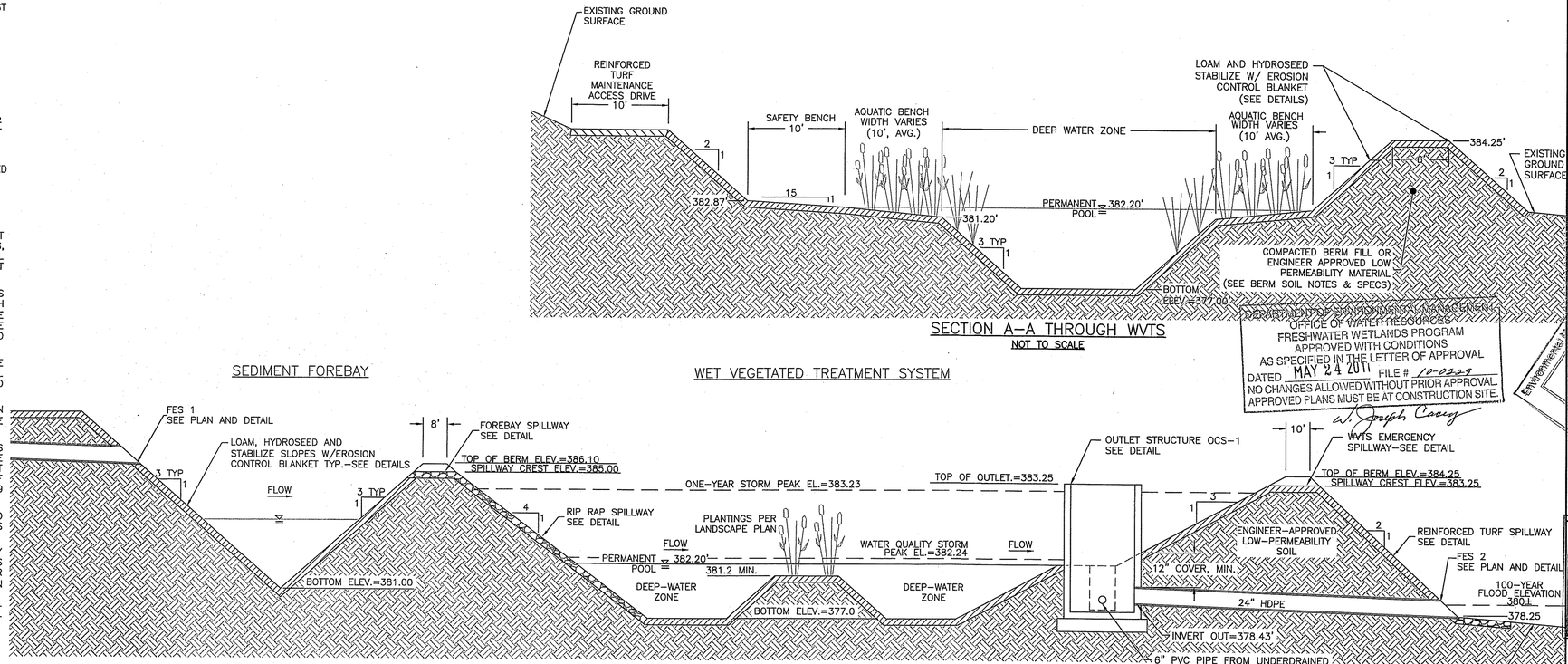
NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR HS–20 LOADING.
2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.



SECTION A–A

OCS–1

NOT TO SCALE



SECTION A–A THROUGH WVTS

NOT TO SCALE

SCHEMATIC PROFILE OF SEDIMENT FOREBAY & WVTS

NOT TO SCALE

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED MAY 24 2011 FILE # 10-0329
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL.
APPROVED PLANS MUST BE AT CONSTRUCTION SITE.
W. Joseph Casey

Environmental Management, Inc. MAY 2011 Office of Water Resources

Revisions

Rev.	Date	By	Appr.	Description
1				
2				
3				
4				
5				
6				
7				

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
90 Route 6A
Sandwich, MA 02563
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Checked By: BRK
Drawn By: MJC
Designed By: DTO
Date: NOV. 24, 2010

Plan Set: CHEPACHET VILLAGE STORMWATER SYSTEM RETROFIT GLOCESTER, RHODE ISLAND

Plan Title: CONSTRUCTION DETAILS (2)

Prepared For:
Town of Glocester
Planning Department
1145 Putnam Pike
Chepachet, RI 02814
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Survey Provided By:
Narragansett Engineering, Inc.
3102 East Main Road
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Phone: (401)-683-6630
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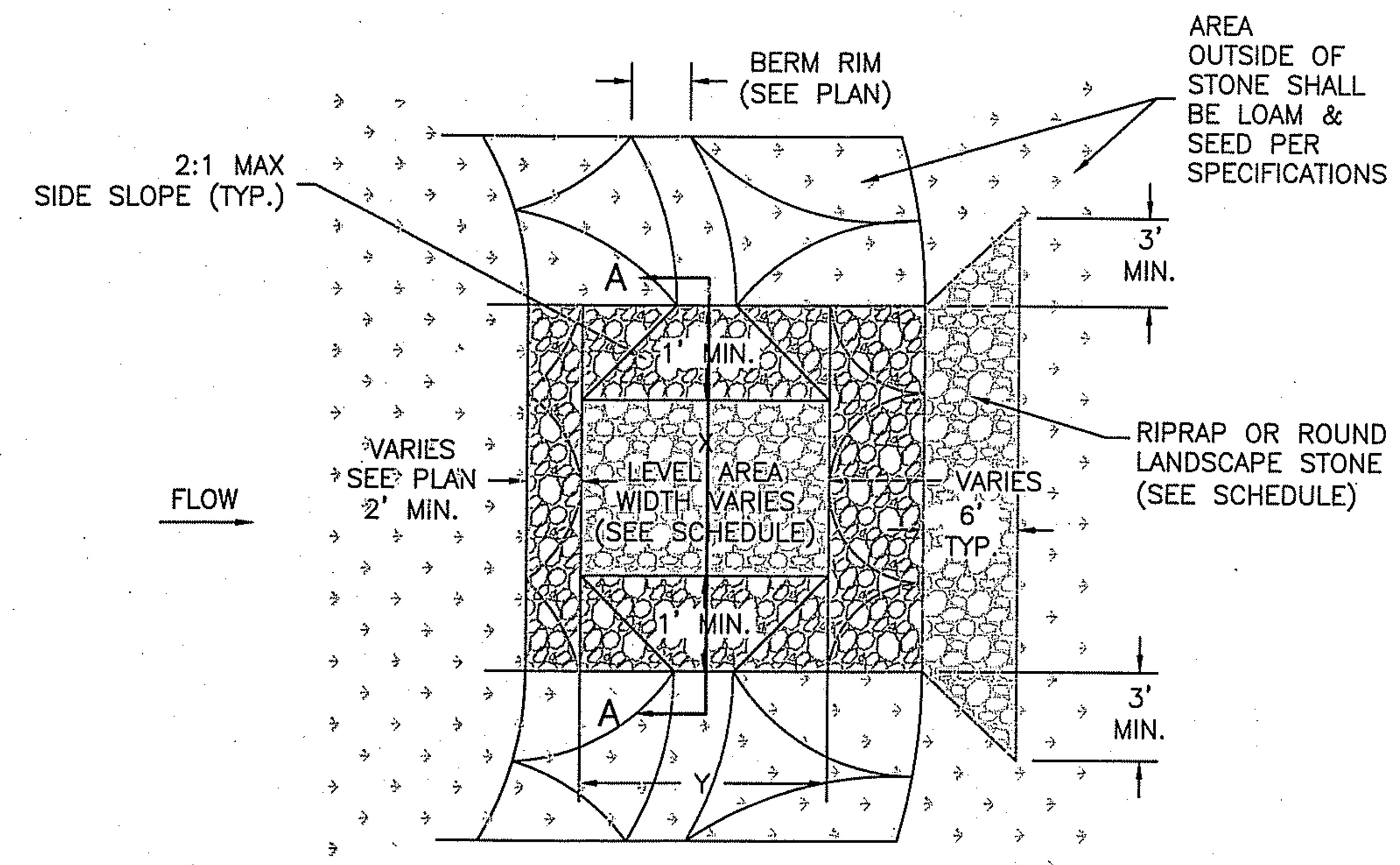
Date: MARCH 2009

Registration
BRIAN R. KUCHAR
No. 16776
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

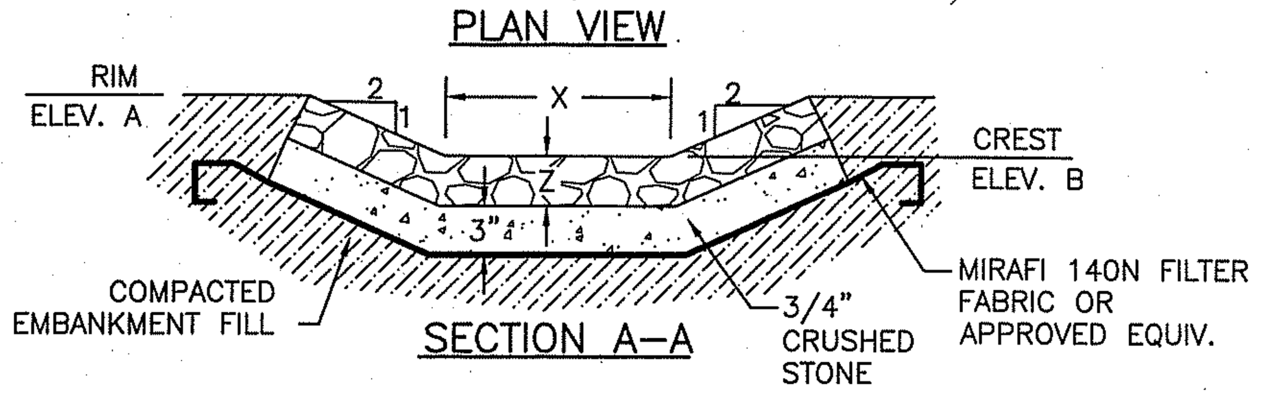
Project Number: 8003
Sheet: 9 of 11
Drawing Number: C- 9

last modified: 11/29/10 printed: 11/29/10 by mc H:\Projects\2008\8003 Glocester_RI-Chepachet\Drawings-8003\8003-DE.dwg

SPILLWAY	TOP OF BERM EL.	CREST EL.	X	Y	Z	STONE d50	SURFACE TYPE
FOREBAY	386.10'	385.00'	10'	15'	12"	4"	RIP-RAP
WVTS	384.25'	383.25'	15'	12'	12"	N/A	GRASS



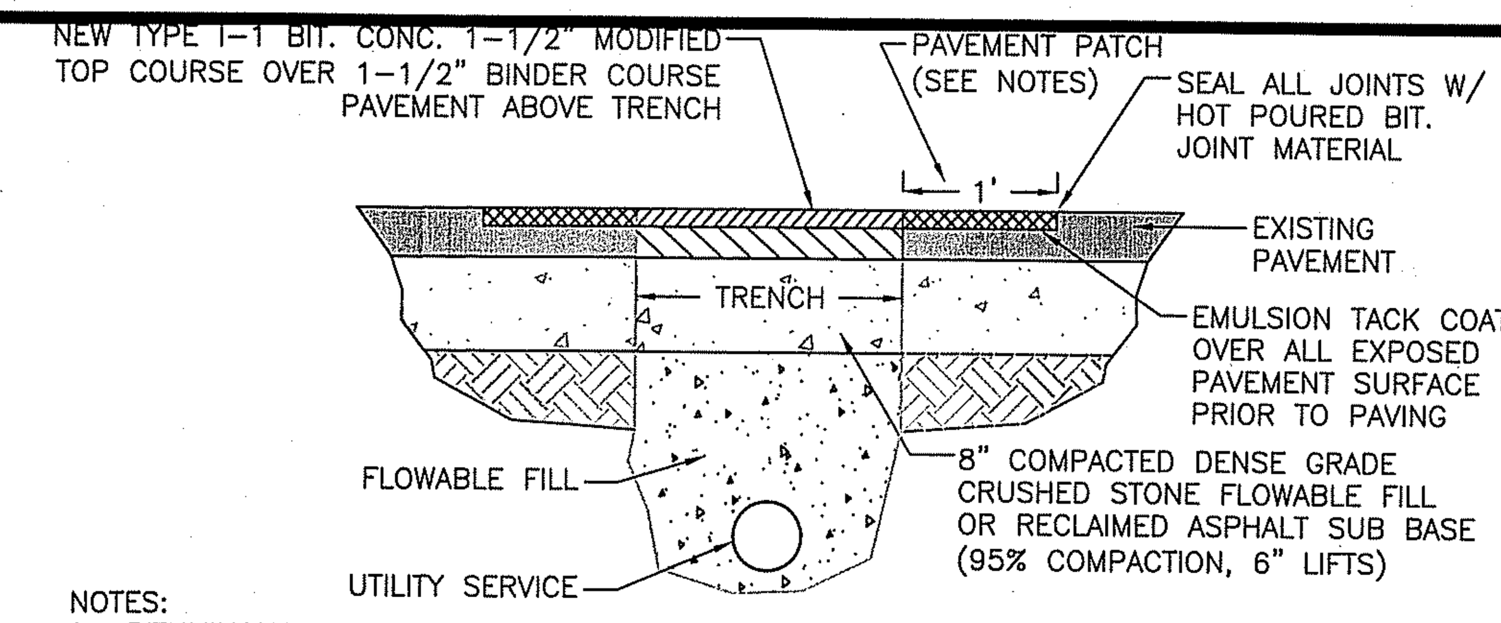
PLAN VIEW



SECTION A–A

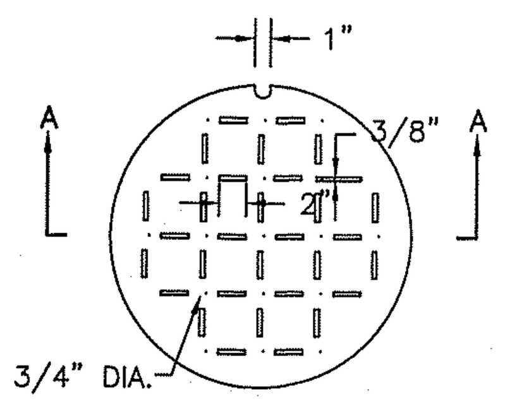
NOTES:
1. FILTER FABRIC SHALL EXTEND AT LEAST 12 INCHES BEYOND THE STONED AREA IN ALL DIRECTIONS AND SHALL BE KEYED INTO THE SOIL AS SHOWN.

TYPICAL SPILLWAY DETAIL
NOT TO SCALE

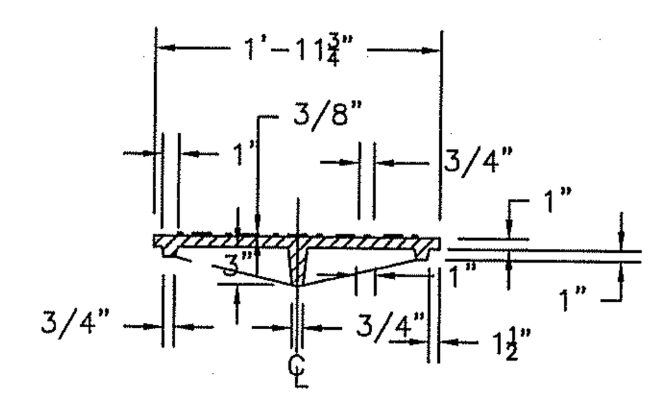


NOTES:
1. BITUMINOUS CONCRETE PAVEMENT SHALL BE REMOVED TO A CLEAN STRAIGHT EDGE VIA SAW CUTTING. THE SAW CUT SHALL BE COMPLETED PERPENDICULAR TO THE ROADWAY/SIDEWALK.
2. PAVEMENT PATCH – PRIOR TO INSTALLATION OF THE BITUMINOUS TOP COURSE, SAWCUT 1-1/2-INCHES INTO THE EXISTING PAVEMENT. MILL A 1-FT SECTION OF THE EXISTING TOP PAVEMENT SURFACE PERPENDICULAR TO THE SAWCUT. INSTALL MODIFIED TOP COURSE OVER THE BINDER COURSE AND 1-FT MILLED SECTION.
3. AN ASPHALT BASE EMULSION SHALL BE USED AS A TACK COAT BETWEEN EXISTING AND NEW PAVEMENT PER DETAIL.
4. CONTRACTOR WILL BE REQUIRED TO REMOVE PATCH & REPAVE AFTER 12-MONTHS IF SETTLEMENT HAS OCCURRED OVER THIS TIME PERIOD.

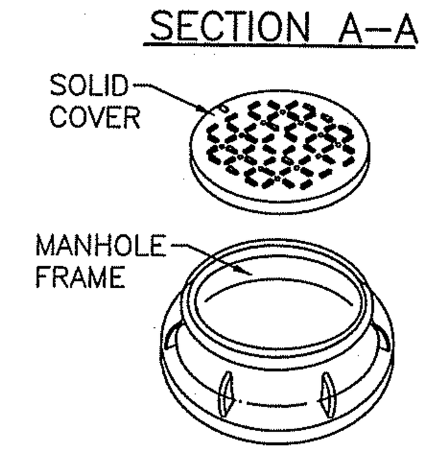
TYPICAL TRENCH PAVEMENT PATCH DETAIL
NOT TO SCALE



SOLID COVER PLAN



SECTION A–A



NOTES:
1. FRAME AND COVER SHALL CONFORM TO PROJECT SPECIFICATIONS.
2. ALL H20 LOADING
3. MIN. FRAME WEIGHT:
   4" FLANGE 295 LBS
   3" FLANGE 265 LBS
4. MATERIAL–CAST IRON
5. MIN. GRATE WEIGHT: 200LBS.
6. SEE CATCHBASIN, MANHOLE AND OCS DETAILS FOR INSTALLATION.

TYPICAL DRAINAGE STRUCTURE FRAME AND COVER
NOT TO SCALE

NOTES:
1. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH A FOUNDATION OF CLASS I OR II MATERIAL AS DEFINED IN ASTM D2321, "STANDARD PRACTICE FOR INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS," LATEST EDITION; AS AN ALTERNATIVE AND AT THE DISCRETION OF THE ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A WOVEN GEOTEXTILE FABRIC.
2. BEDDING, HAUNCHING AND INITIAL BACKFILL: SUITABLE MATERIAL SHALL CONSIST OF CLEAN, HARD, PARTICLES OF GRAVEL MEETING THE FOLLOWING:

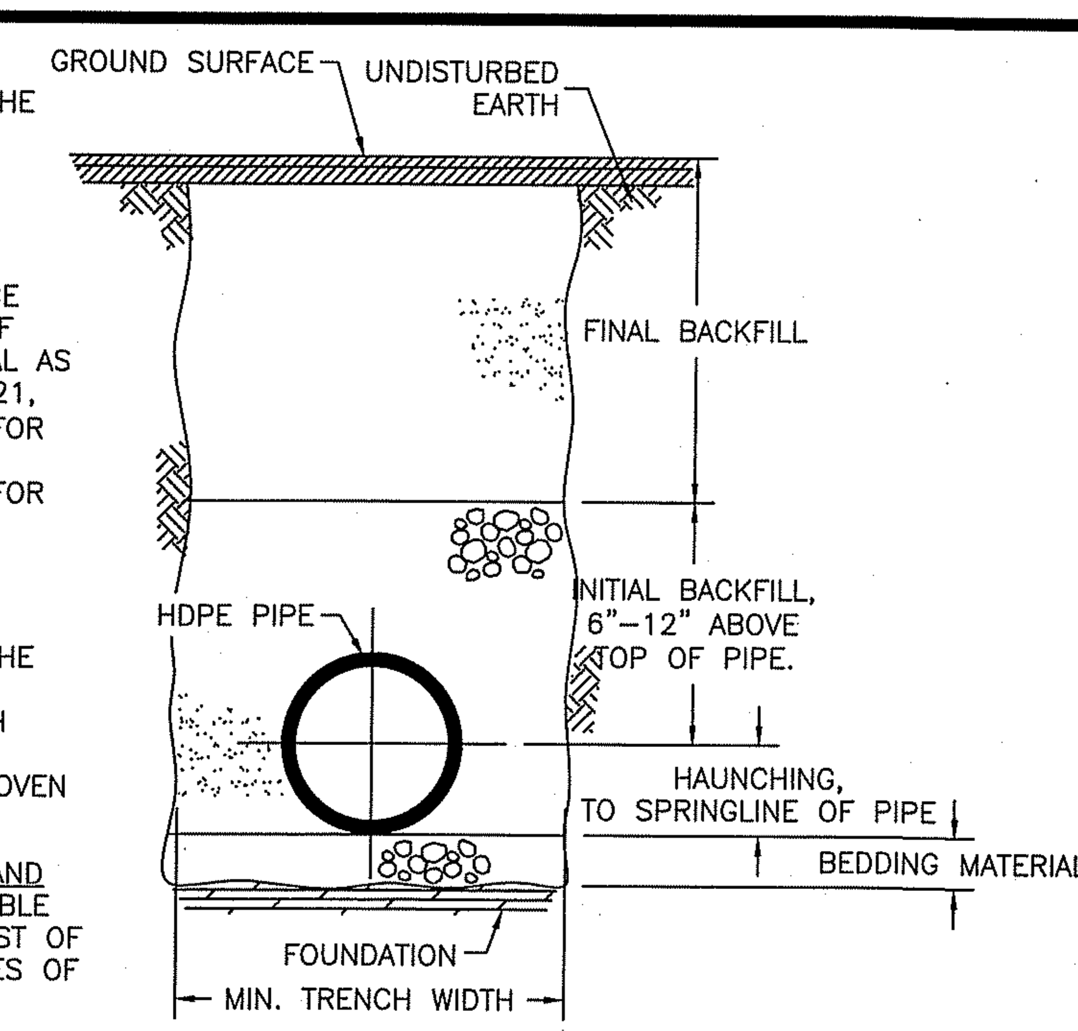
SIEVE SIZE	% PASSING
3/8"	85–95
NO. 4	5–15
NO. 8	0–2

UNLESS OTHERWISE APPROVED BY THE ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"–24" (100–600mm) AND 42"–48"(1050–1200mm) CORRUGATED POLYETHYLENE PIPE (CPEP); 6" (150mm) FOR 30"–36" (750–900mm) CPEP.

3. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:

NOMINAL ø in (mm)	MIN. RECOMMENDED TRENCH WIDTH, in (mm)
8 (200)	25 (630)
10 (250)	28 (710)
12 (300)	31 (790)
15 (375)	34 (860)
18 (450)	39 (990)



DETAIL PROVIDED BY ADVANCED DRAINAGE SYSTEMS, INC.

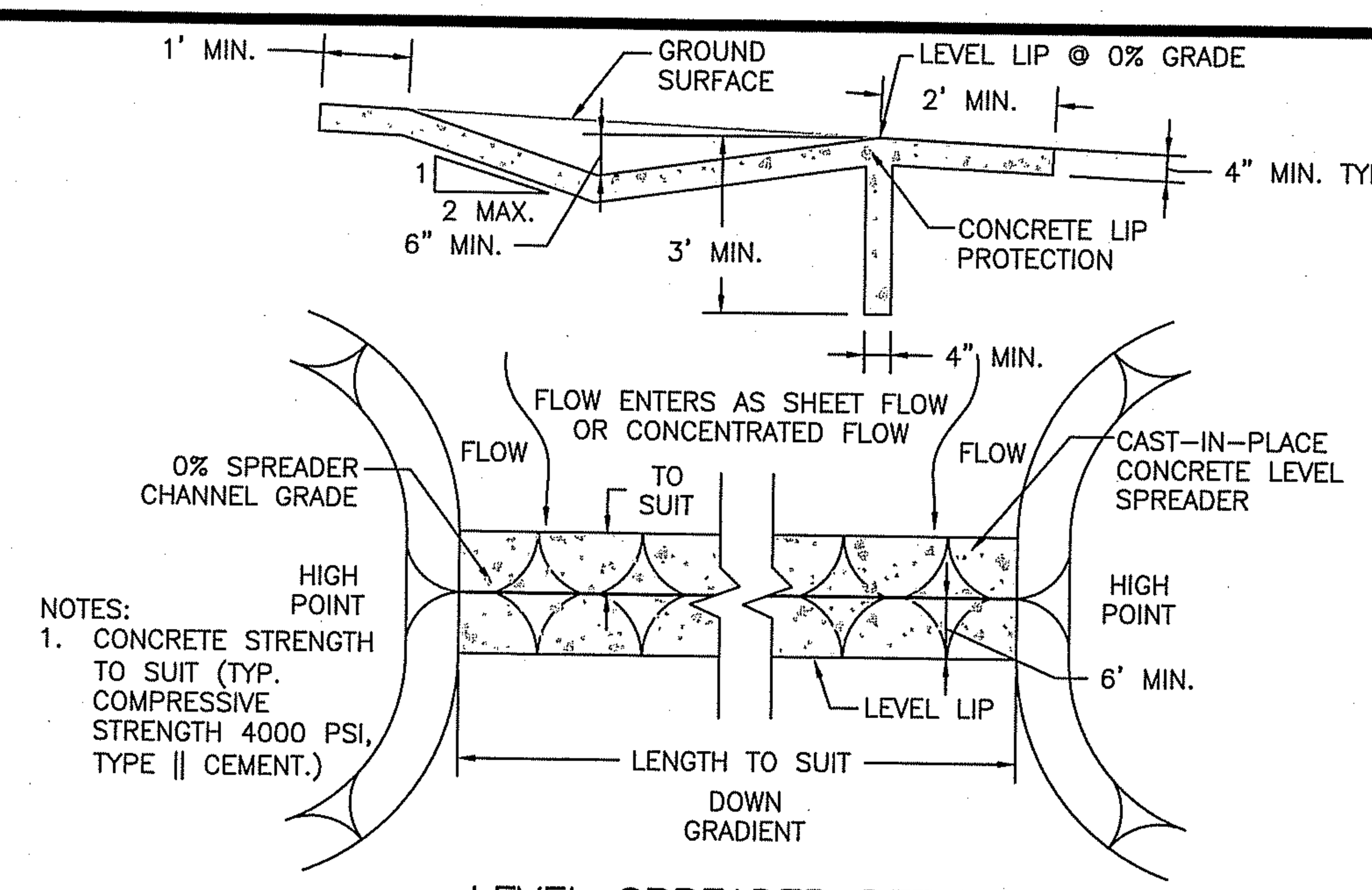
4. MINIMUM COVER: MINIMUM RECOMMENDED DEPTHS OF COVER FOR VARIOUS LIVE LOADING CONDITIONS ARE SUMMARIZED IN THE FOLLOWING TABLE. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TAKEN FROM THE TOP OF PIPE TO THE GROUND SURFACE.

SURFACE LIVE LOADING CONDITION	MINIMUM RECOMMENDED COVER, in (mm)
H25 (FLEXIBLE PAVEMENT)	12 (300)
H25 (RIGID PAVEMENT)	12 (300)
E80 RAILWAY HEAVY CONSTRUCTION	24 (610) 48 (1220)

*TOP OF PIPE TO BOTTOM OF BITUMINOUS PAVEMENT

THE MINIMUM COVER FOR A HDPE PIPE IS 1'-0" FOR H-20 TRAFFIC LOADS IF INSTALLED IN ACCORDANCE WITH AASHTO SECTION 30. THIS IS BASED ON EMPIRICAL CALCULATION OF LOAD RESPONSE, MANUFACTURER'S TESTING AND FIELD EXPERIENCE WITH THE PIPE. AASHTO SPECIFICATIONS SECTION 18.4.1.5 DEFINES THE MINIMUM COVER AS "ID/8 BUT NOT LESS THAN 12 INCHES". THIS COVER IS MEASURED FROM THE PIPE OD TO THE TOP OF A RIGID (CONCRETE) PAVEMENT OR THE BOTTOM OF A FLEXIBLE (BITUMINOUS) PAVEMENT. BOTH AASHTO AND ASTM, AS WELL AS MOST MANUFACTURERS, REQUIRE ADDITIONAL (TEMPORARY COVER, MOUNDED OVER THE PIPE AND REMOVED FOR FINAL GRADING AND PAVING, IS SUFFICIENT FOR LARGE CONSTRUCTION VEHICLE LOADS.

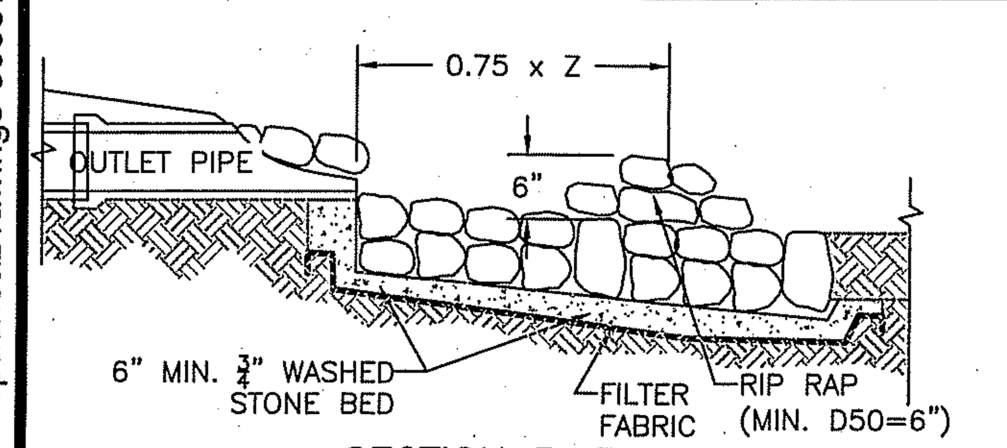
TYPICAL DRAINAGE PIPE TRENCH DETAIL
NOT TO SCALE



NOTES:
1. CONCRETE STRENGTH TO SUIT (TYP. COMPRESSIVE STRENGTH 4000 PSI, TYPE || CEMENT.)

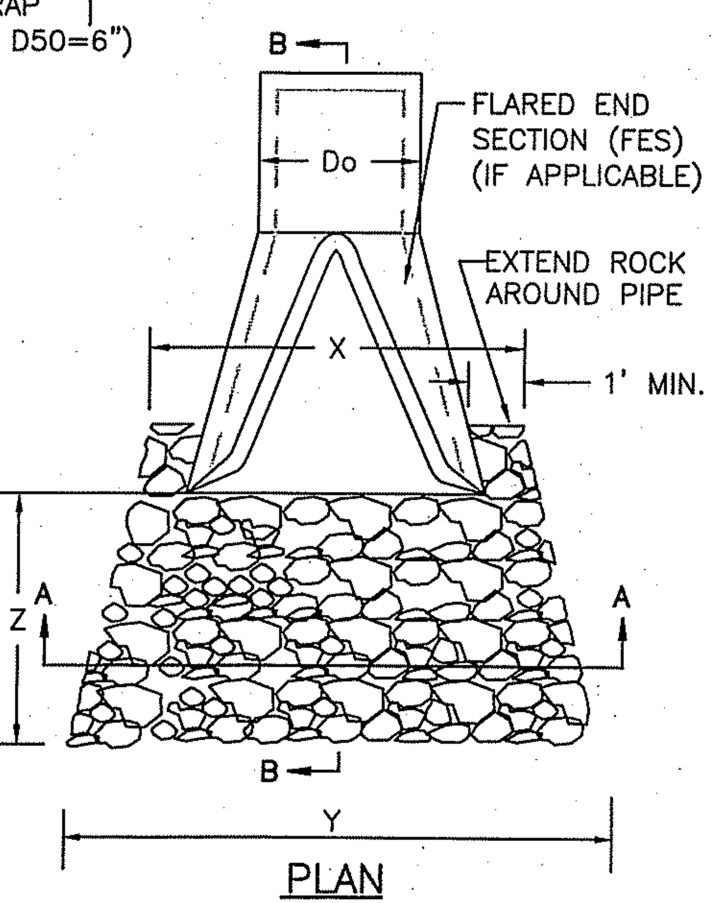
LEVEL SPREADER DETAIL
NOT TO SCALE

OUTLET	Do (IN)	d50	D (IN)	H (IN)	X (FT)	Y (FT)	Z (FT)	M
1	24	6	12	12	8	20	34	2
2	24	6	12	12	8	18	30	2

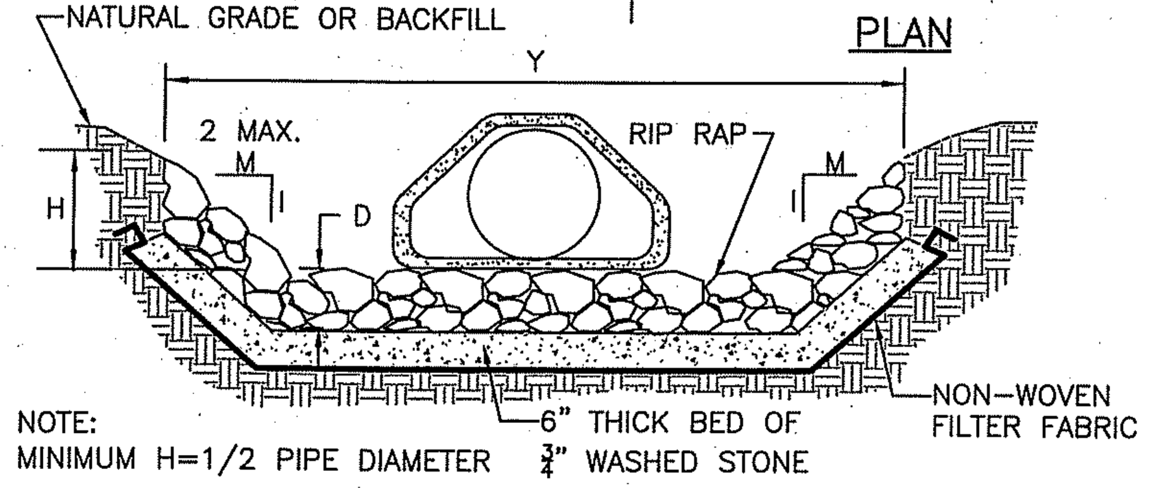


SECTION B–B

NOTES:
1. RIPRAP SHOULD EXTEND UP BOTH SIDES OF THE APRON AND AROUND THE END OF THE PIPE OR CULVERT AT THE DISCHARGE OUTLET AT A MAXIMUM SLOPE OF 2:1 AND A HEIGHT NOT LESS THAN TWO THIRDS THE PIPE DIAMETER OR CULVERT HEIGHT.
2. THE AREA TO BE RIPRAPPED SHALL BE UNDERCUT SO THAT THE INVERT OF THE APRON SHALL BE AT THE SAME GRADE (FLUSH) WITH THE SURFACE OF THE RECEIVING CHANNEL.
3. THE WIDTH OF THE END OF THE APRON SHALL BE EQUAL TO THE BOTTOM WIDTH OF THE RECEIVING CHANNEL. MAXIMUM TAPER TO RECEIVING CHANNEL 5:1
4. ALL SUBGRADE FOR STRUCTURE TO BE COMPACTED TO 95% OR GREATER.
5. HORIZONTAL ALIGNMENT OF THE APRON SHALL BE PER THE SITE PLAN.
6. ANY DISTURBED AREA FROM END OF APRON TO RECEIVING CHANNEL MUST BE STABILIZED.



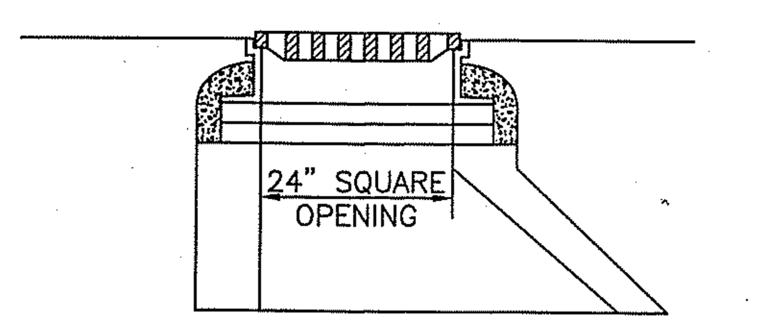
PLAN



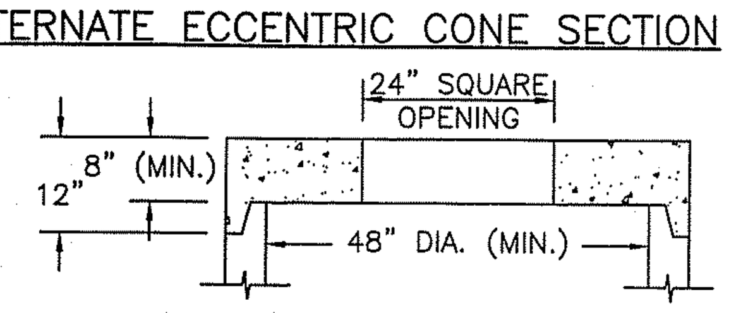
NOTE:
MINIMUM H=1/2 PIPE DIAMETER

SECTION A–A

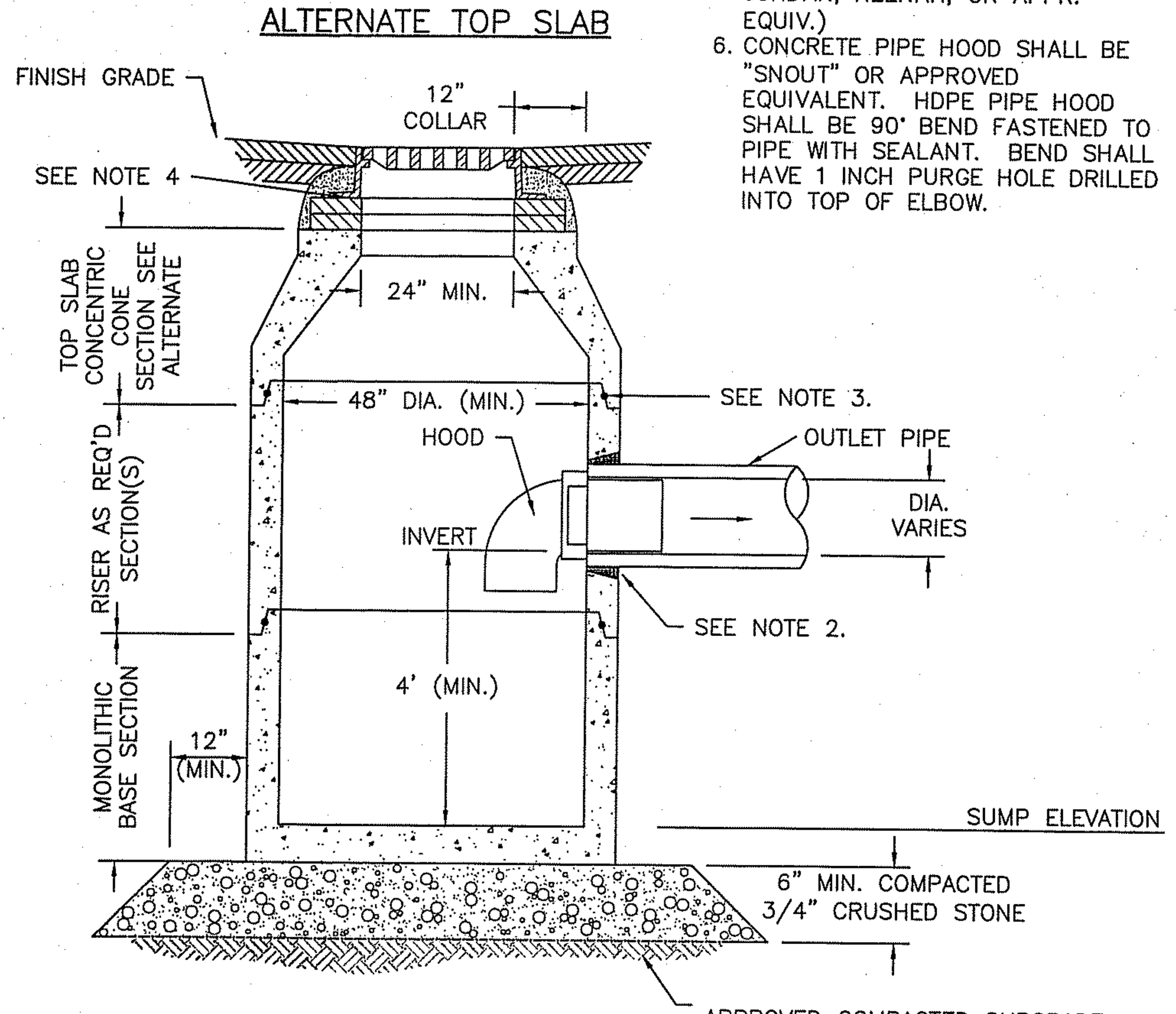
TYPICAL RIPRAP OUTFALL DETAIL
NOT TO SCALE



ALTERNATE ECCENTRIC CONE SECTION

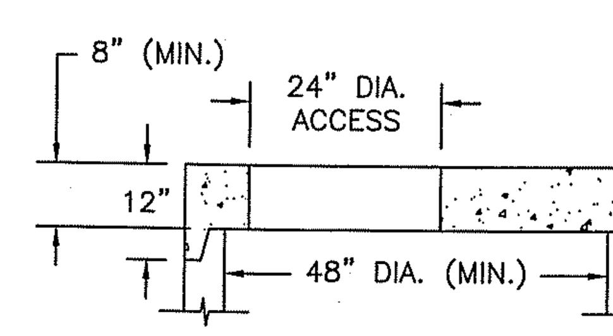


ALTERNATE TOP SLAB

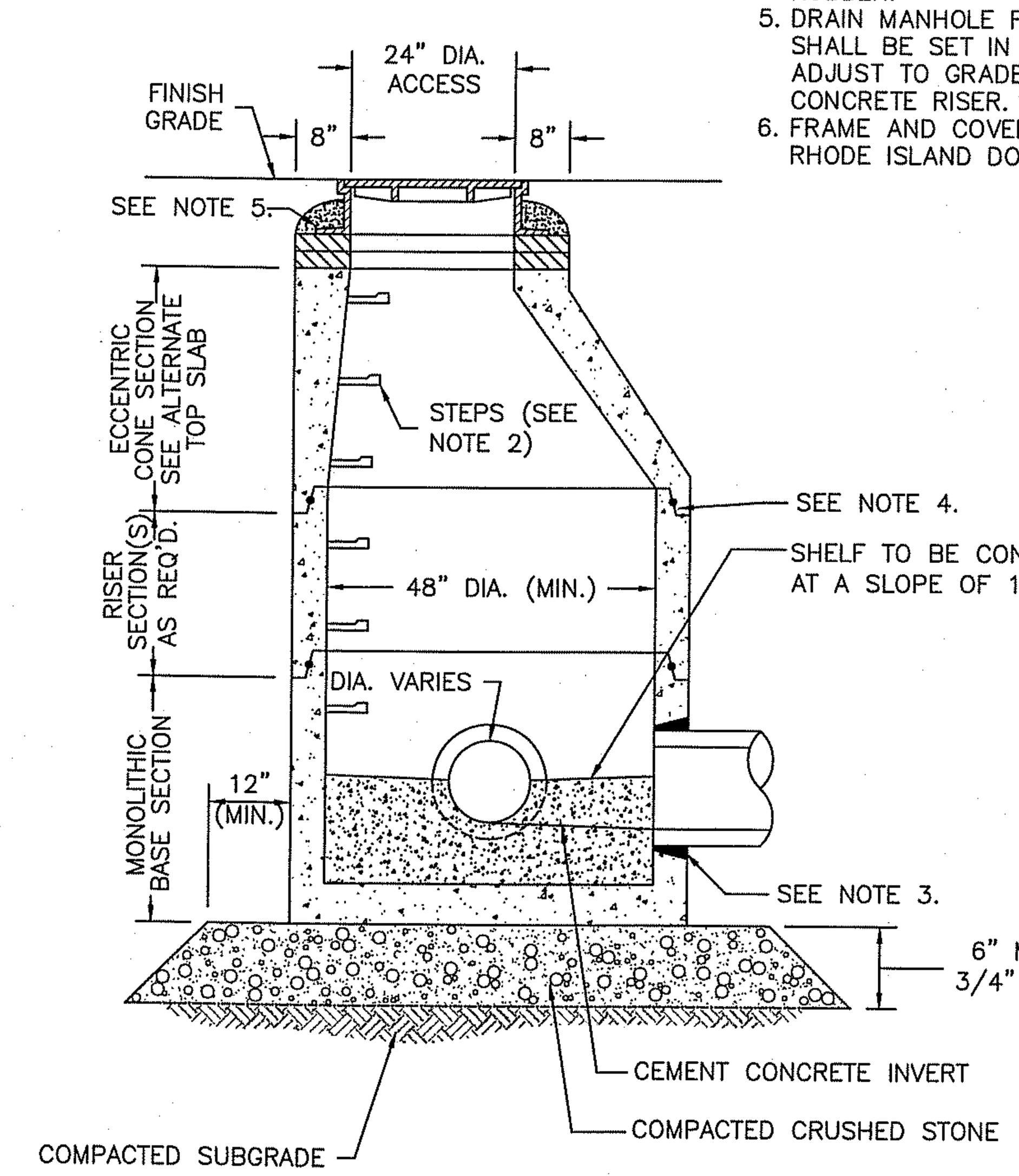


NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR H-20 LOADING.
2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. CATCH BASIN FRAME AND GRATE SHALL BE SET IN FULL 12" WIDE MORTAR BED. ADJUST TO GRADE WITH PRECAST CONCRETE RISER OR BRICK.
5. FRAME AND COVER SHALL CONFORM TO RHODE ISLAND STANDARDS HEAVY DUTY (EAST JORDAN, NEENAH, OR APPR. EQUIV.)
6. CONCRETE PIPE HOOD SHALL BE "SNOUT" OR APPROVED EQUIVALENT. HDPE PIPE HOOD SHALL BE 90° BEND FASTENED TO PIPE WITH SEALANT. BEND SHALL HAVE 1 INCH PURGE HOLE DRILLED INTO TOP OF ELBOW.

PRECAST CONCRETE CATCH BASIN (CB) WITH HOOD
NOT TO SCALE



ALTERNATE TOP SLAB



NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR H-20 LOADING.
2. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
3. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
5. DRAIN MANHOLE FRAME AND COVER SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH PRECAST CONCRETE RISER.
6. FRAME AND COVER SHALL CONFORM TO RHODE ISLAND DOT STANDARDS.

PRECAST DRAIN MANHOLE (DMH)
NOT TO SCALE

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
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W. Joseph Casey

Environmental Engineering, Inc. — Office of Water Resources — MAY 11 2011

Revisions

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Horsley Witten Group, Inc.
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Sandwich, MA 02563
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508-833-3150 fax

Date:	Designed By:	Drawn By:	Checked By:
NOV. 24, 2010	DTO	MJC	BRK

Plan Set: CHEPACHET VILLAGE STORMWATER SYSTEM RETROFIT GLOCESTER, RHODE ISLAND

Plan Title: CONSTRUCTION DETAILS (3)

Prepared For: Town of Glocester Planning Department, 1145 Putnam Pike, Chepachet, RI 02814, Phone: (401)-568-6206, Fax: (401)

Survey Provided By: Narragansett Engineering, Inc., 3102 East Main Road, Portsmouth, RI 02871, Phone: (401)-683-6630, Fax: (401)-, Dated: MARCH 2009

Registration: BRIAN R. KUCHAR, No. 8776, REGISTERED PROFESSIONAL ENGINEER (CIVIL)

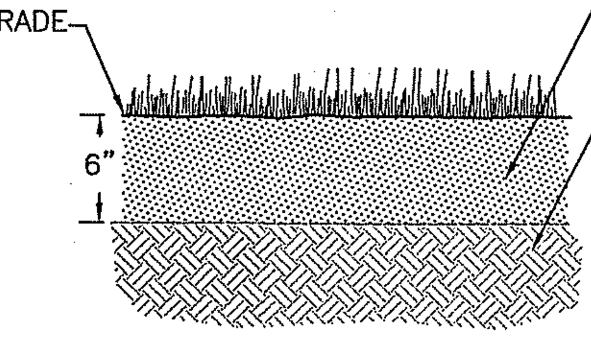
Project Number:	Sheet:
8003	10 of 11

Drawing Number: C- 10

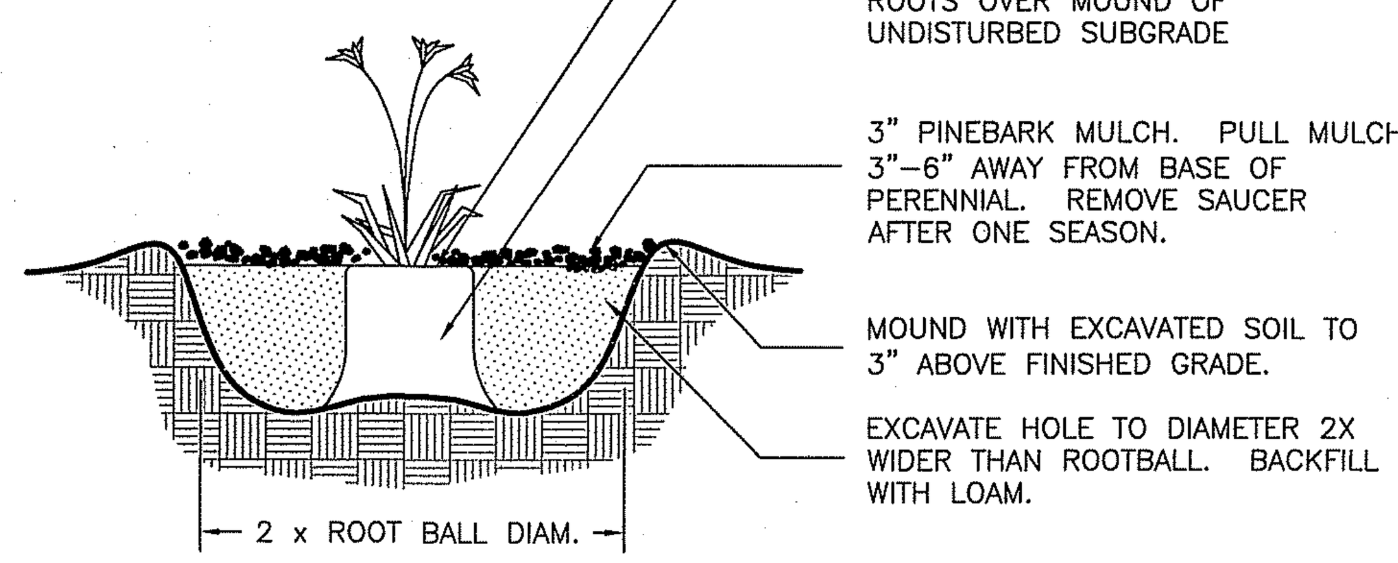
last modified: 11/29/10 printed: 11/29/10 by mc H:\Projects\2008\8003 Glocester_RI-Chepachet\Drawings-8003\8003-DE.dwg

GENERAL PLANTING NOTES:

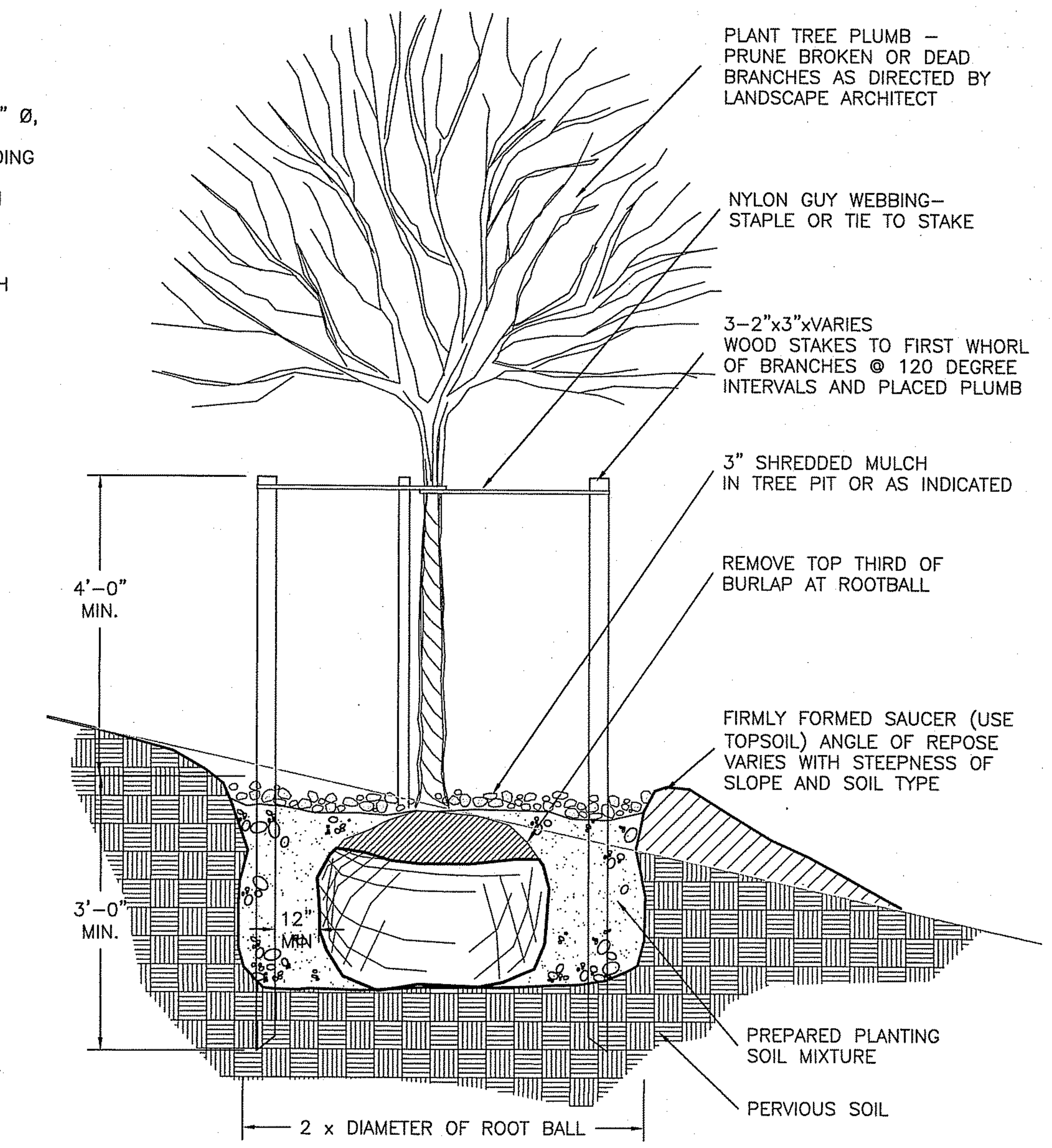
1. FURNISH AND INSTALL ALL PLANTS AS SHOWN ON THE DRAWINGS AND IN THE SIZE AND QUANTITIES SPECIFIED ON THE PLANTING SCHEDULE.
2. CONTRACTOR TO PROVIDE A ONE (1) YEAR GUARANTEE FOR ALL MATERIALS. CONTRACTOR GUARANTEES THAT PLANTS WILL REMAIN HEALTHY FOR ONE (1) GROWING SEASON. CONTRACTOR TO MAINTAIN ALL PLANTING AND SEEDED 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.
3. 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, INSECT, PESTS, EGGS OR LARVAE AND SHALL HAVE A WELL DEVELOPED ROOT SYSTEM.
4. ALL PLANTS SHALL BE PLANTED WITHIN ONE (1) WEEK OF PURCHASE. IF PLANTS ARE TO BE STORED AT THE SITE PRIOR TO PLANTING, THEY SHALL BE PROPERLY MAINTAINED AND WATERED BY THE CONTRACTOR.
5. ALL PLANT LAYOUT AND ACTUAL PLANTING LOCATIONS ARE TO BE FIELD VERIFIED BY LANDSCAPE ARCHITECT PRIOR TO PLANTING.
6. ALL TREES WITHIN 5'–0" OF WALKWAYS AND SIDEWALKS TO HAVE A 6'–8" STANDARD BRANCHING HEIGHT.
7. PLANT SUBSTITUTION SELECTION MUST BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
8. 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.
9. FOR FIELD GROWN PLANTS, UNTIE OR CUT THE PLASTIC OR BURLAP WRAP IF POSSIBLE OR TURN THE BURLAP DOWN BACK INTO THE HOLE MAKING SURE TO BURY THE MATERIAL COMPLETELY.
10. HALL PLANT PLUGS SHALL BE PLANTED UPRIGHT AND NOT AT AN ANGLE. PLANTING HOLES SHALL BE DUG LARGE ENOUGH AND DEEP ENOUGH TO ACCOMMODATE THE ENTIRE ROOT MASS. THE PLUGS SHALL BE PLANTED WITH NO TWISTED OR BALLED ROOTS AND SHALL BE PLANTED WITH NO ROOTS EXPOSED ABOVE THE GRADE LINE. THE SOIL SHALL BE HAND PACKED AROUND THE ENTIRE PLUG ROOT MASS
11. 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 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.
12. CREATE A 2" TO 4" BERM AROUND THE EDGE OF PLANTING HOLE WITH REMAINING SOIL TO RETAIN WATER.
13. MULCH ALL PLANTING BEDS AS SHOWN ON DRAWINGS. UNLESS NOTED OTHERWISE, ALL PLANTS TO RECEIVE A MINIMUM OF 2–3 INCHES OF MULCH. DO NOT PILE OR MOUND MULCH AROOUND THE PLANT STEMS OR TRUNK.
14. TRIM BROKEN AND DEAD BRANCHES FROM TREES AND SHRUBS AFTER PLANTING. NEVER CUT A LEADER.
15. ALL AREAS THAT ARE DISTURBED AND/OR GRADED DURING CONSTRUCTION ARE TO BE BROUGHT TO FINISHED GRADE WITH AT LEAST 6" MINIMUM DEPTH OF GOOD QUALITY LOAM AND SEEDED WITH A QUICK GERMINATING GRASS SEED SUCH AS NEW ENGLAND EROSION CONTROL RESTORATION MIX OR AS SPECIFIED ON THE PLANS.
16. REMOVE WEEDS IN PLANTING AREAS PRIOR TO AND DURING PLANTING.
17. IF A WETLAND SEED MIX IS INCLUDED IN THE PLANT LIST SHOWN, SEEDING SHALL BE AFTER THE SOIL HAS BEEN HAND RAKED. SEED SHALL BE SOWN BY HAND OR BY SMALL MECHANICAL SEED SPREADER AT THE SPECIFIED SEED MIX RATES. WATERING OF THE SEEDED AREAS MUST TAKE PLACE IMMEDIATELY AFTER SEEDING.
18. AN APPROPRIATE WATERING SCHEDULE SHALL BE ESTABLISHED BY THE CONTRACTOR FOR ALL PLANT MATERIAL BASED UPON PLANT SPECIES REQUIREMENTS AND SHOULD BE FOLLOWED UNTIL PLANTS ARE FULLY ESTABLISHED.
19. 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 OR AS DETERMINED BY ANY WRITTEN AGREEMENTS BETWEEN THE CONTRACTOR AND PROPERTY OWNER.



LOAM AND SEED DETAIL
NOT TO SCALE

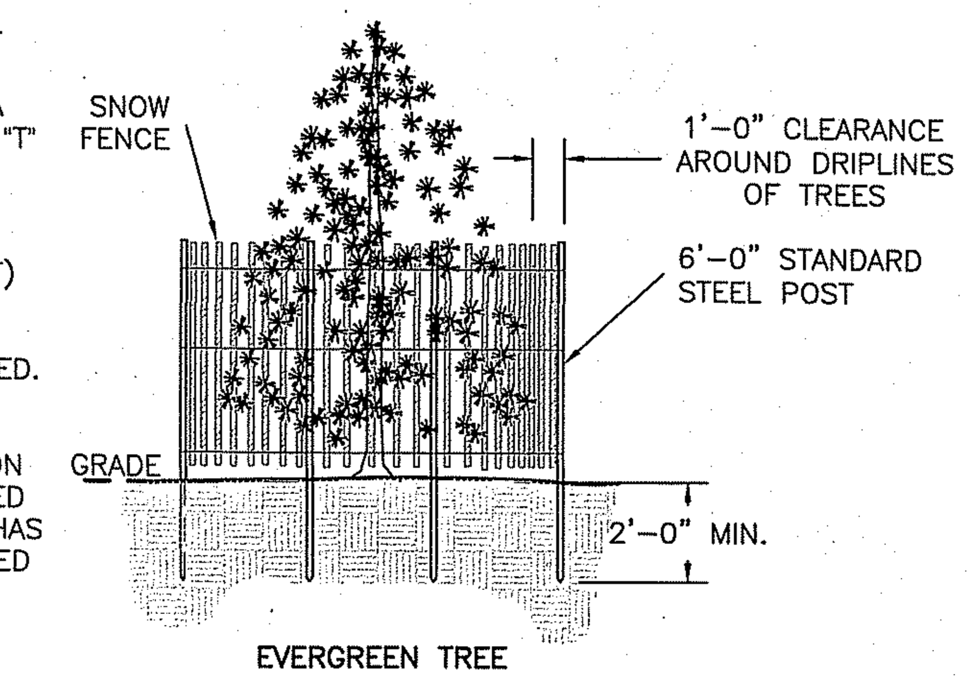


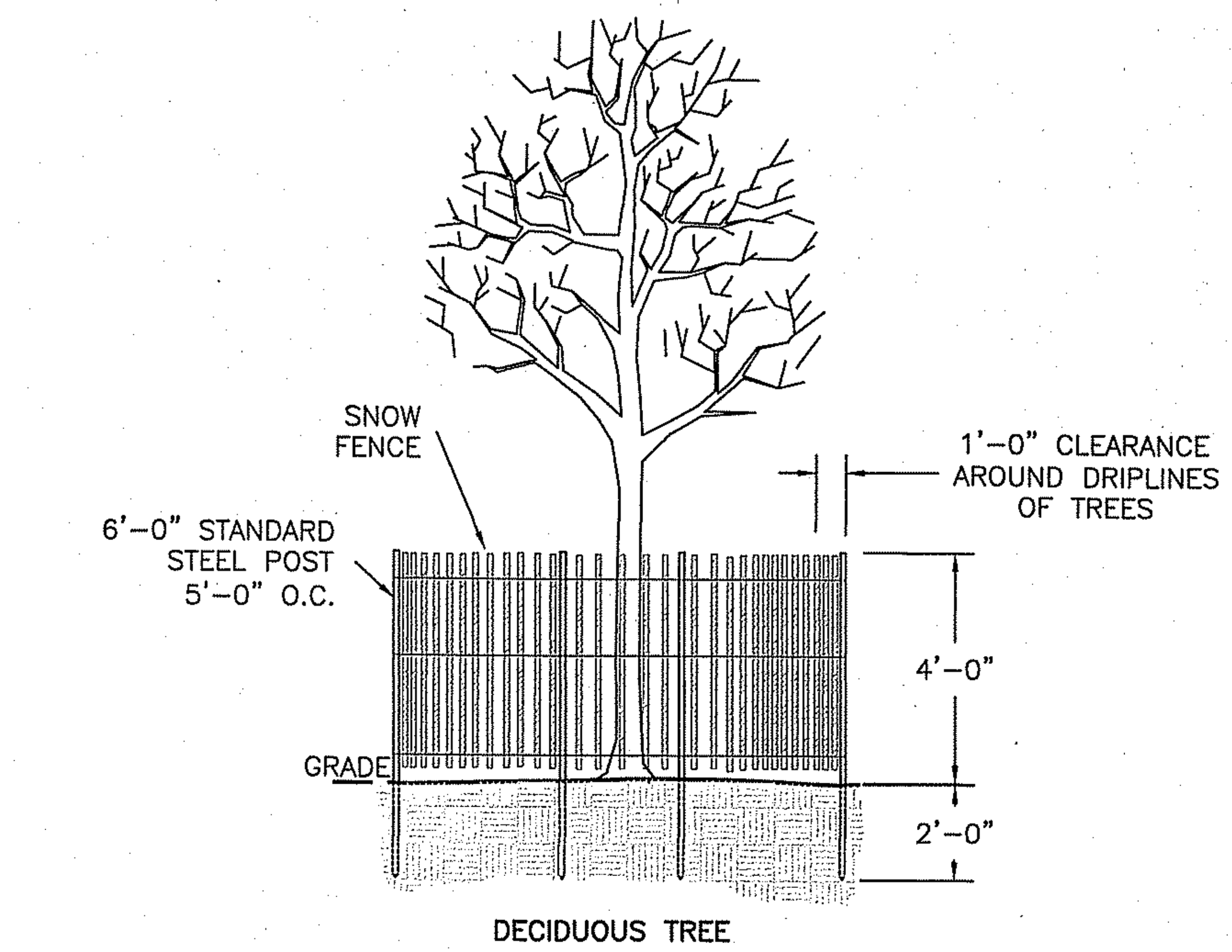
PERENNIAL PLANTING DETAIL
NOT TO SCALE



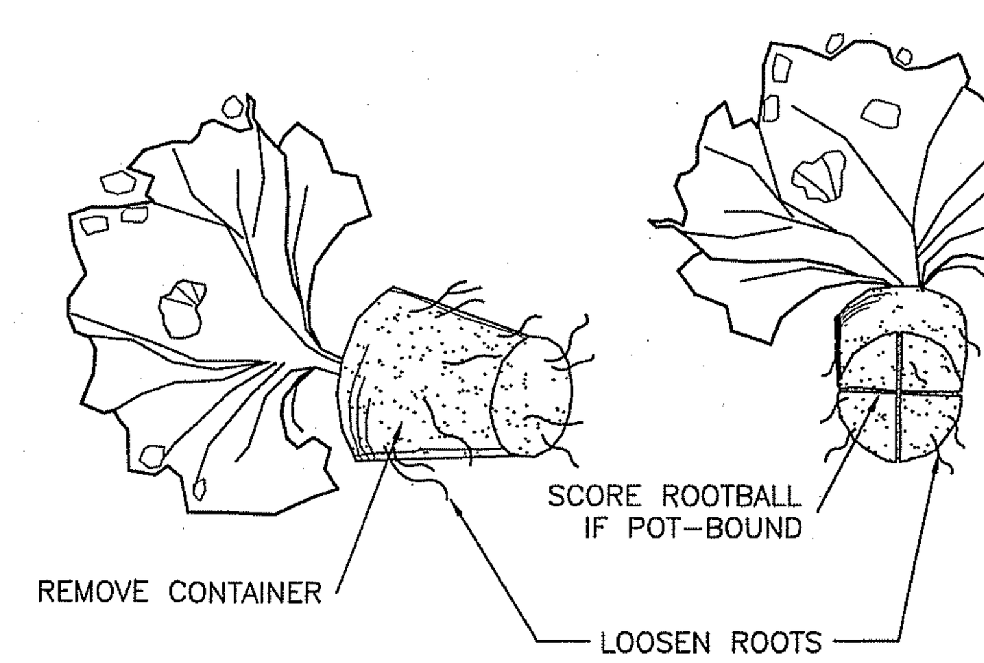
TREE PLANTING ON SLOPE DETAIL
NOT TO SCALE

NOTES:
1. FENCING SHALL BE ORANGE RESINET SM60 BARRIER FENCE "SNOW FENCE" OR APPROVED EQUIVALENT.
2. POST SHALL BE HOT ROLLED RAIL STEEL AND FORMED INTO A "T". DIMENSIONS OF "T" POST SECTION, APPROXIMATELY 1 7/16" X 1 5/16" X 1/8" X 6' (SIX FEET) LONG. THE POST SHALL BE PAINTED GREEN OR GALVANIZED.
3. THE FENCING SHALL REMAIN IN PLACE UNTIL ALL EXCAVATION HAS BEEN COMPLETED AND THE SURFACE HAS BEEN RE–ESTABLISHED

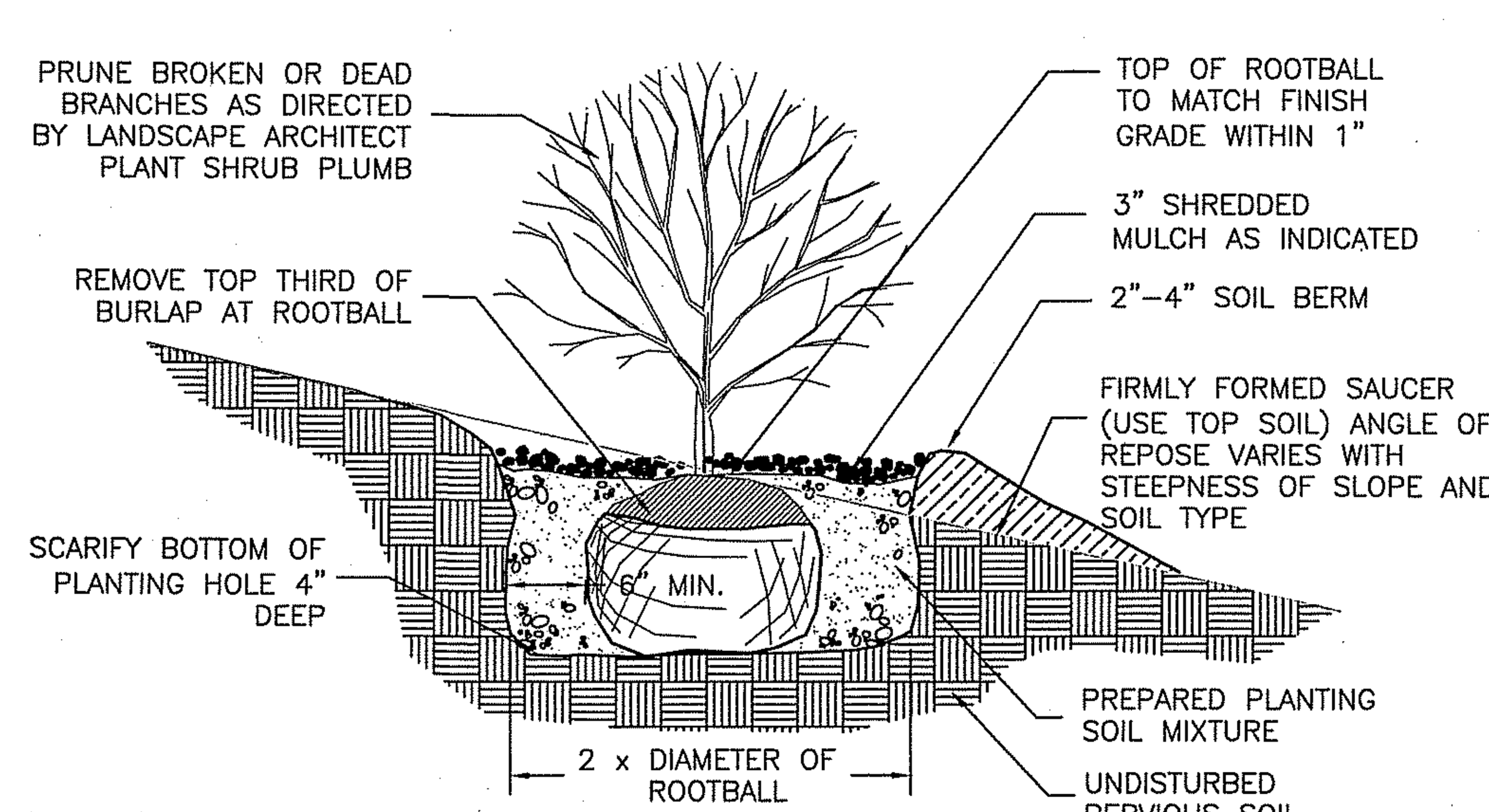




TREE PROTECTION DETAIL
NOT TO SCALE

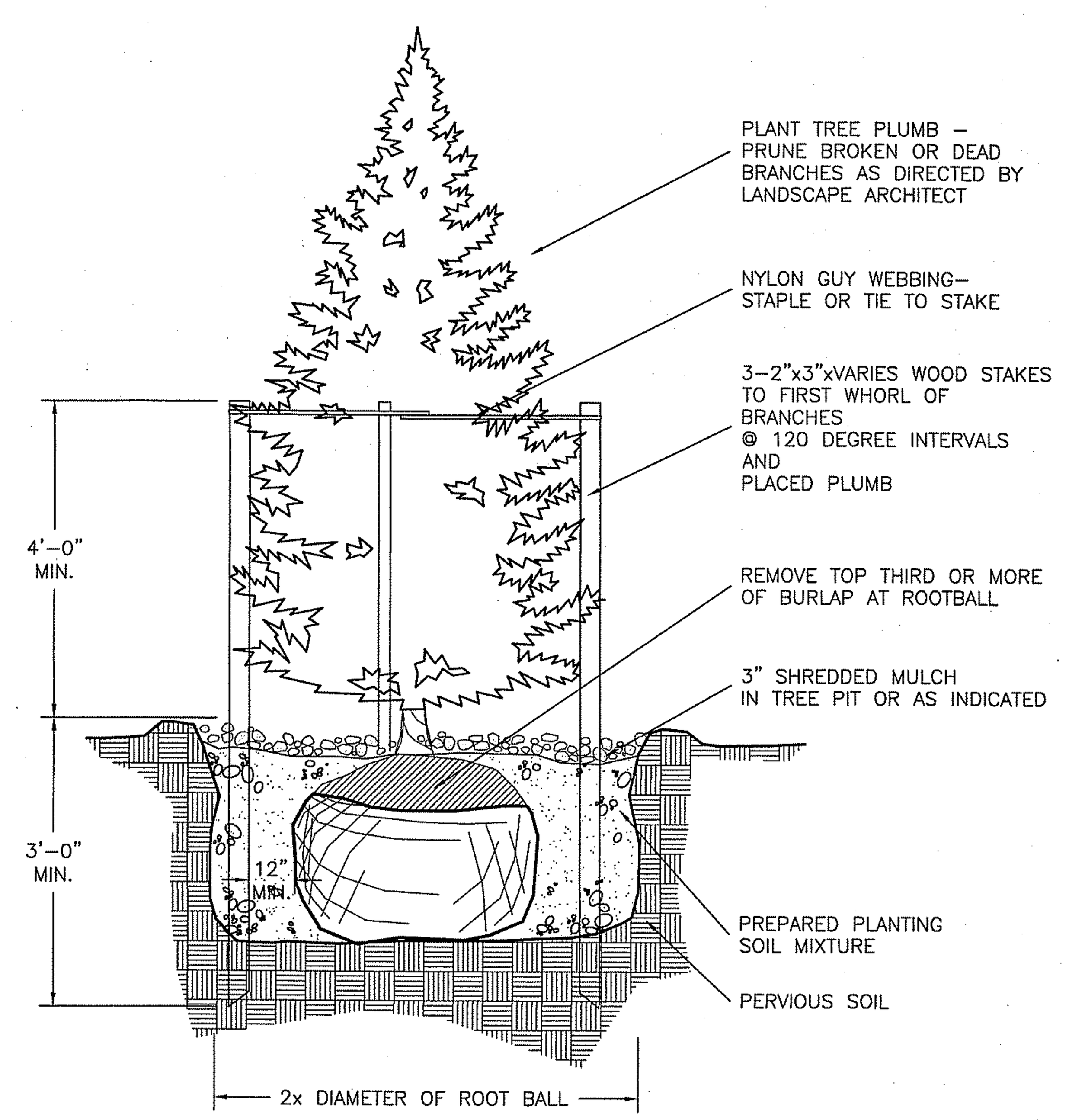


CONTAINER PLANT ROOTBALL TREATMENT
NOT TO SCALE

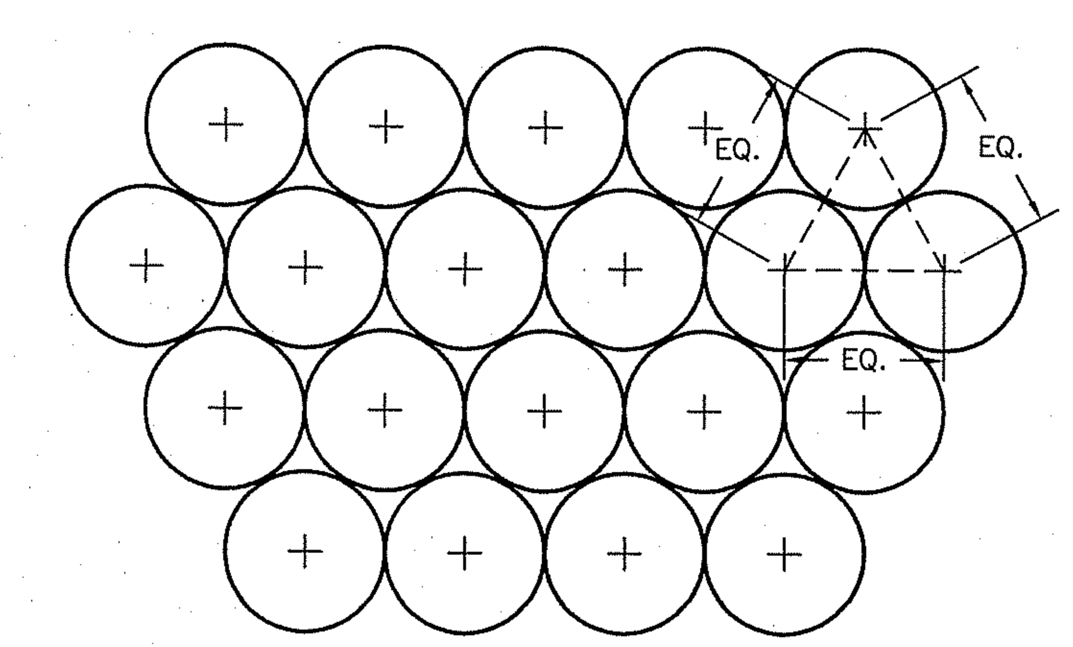


NOTES:
1. PLANTING BACKFILL: 1/3 LOAM, 1/3 SAND, 1/3 PEAT, BY VOLUME.
2. WHEN PLANTING ON SLOPE–MODIFY SLOPE AS SHOWN.

SHRUB PLANTING ON SLOPE DETAIL
NOT TO SCALE



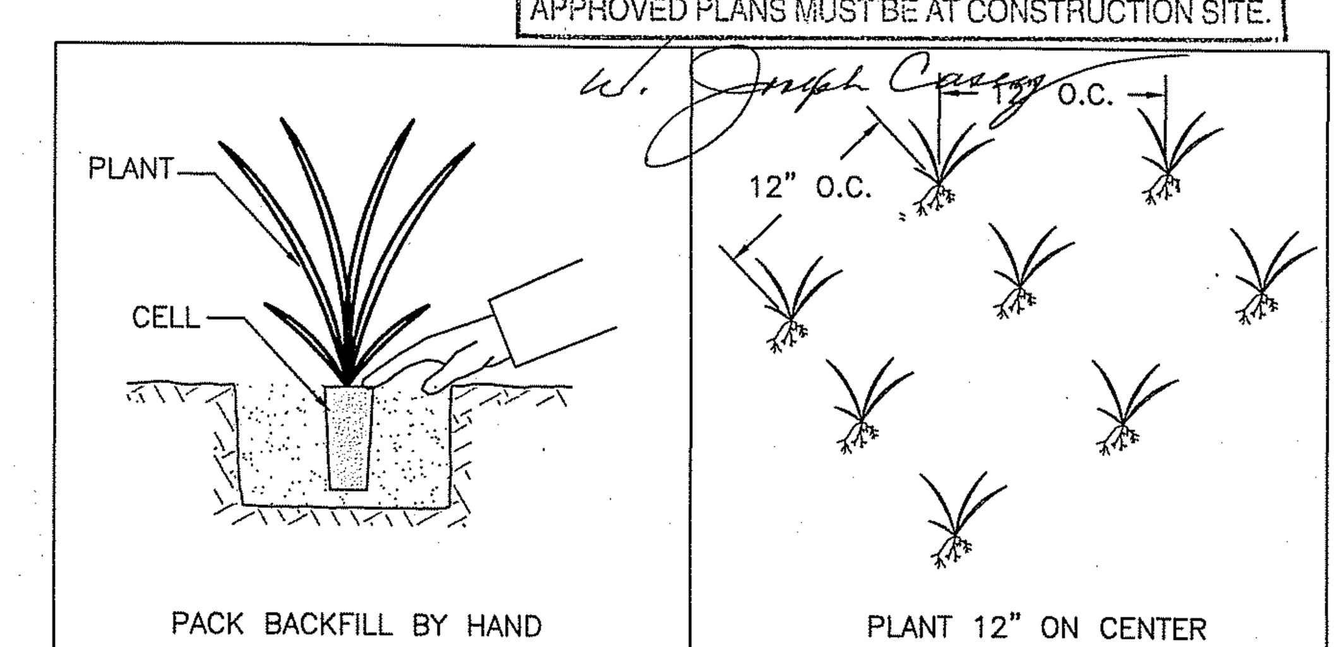
EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE



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

PLANTING SPACING DETAIL
NOT TO SCALE

RI DEPT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED MAY 24 2011 FILE # 10-0224
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL.
APPROVED PLANS MUST BE AT CONSTRUCTION SITE.



PLUG PLANTING DETAIL
NOT TO SCALE

Revisions

Rev.	Date	By	Appr.	Description
1				
2				
3				
4				
5				
6				
7				

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

Date: NOV. 24, 2010 | Designed By: DTO | Drawn By: MJC | Checked By: BRK

Plan Set: CHEPACHET VILLAGE STORMWATER SYSTEM RETROFIT GLOCESTER, RHODE ISLAND

Plan Title: LANDSCAPE DETAILS

PrepAROed For:
Town of Glocester
Planning Department
1145 Putnam Pike
Chepachet, RI 02814
Phone: (401)-568-6206
Fax: (401)

Survey Provided By:
Narragansett Engineering, Inc.
3102 East Main Road
Portsmouth, RI 02871
Phone: (401)-683-6630
Fax: (401)-
Dated: MAROch 14, 2008

Environmental Management
MAY 11 2011
Office of Water Resources

Registration: REGISTERED LANDSCAPE ARCHITECT NO. 372
3-23-11

Project Number: 8003 | Sheet: 11 of 11

Drawing Number: CV- 11

last modified: 05/09/11 printed: 05/10/11 by bk H:\Projects\2008\8003 Glocester_RI-Chepachet\Drawings-8003\8003-LA.dwg