

SITE SPECIFIC DATA*				
PROJECT NUMBER				
PROJECT NAME				
PROJECT LOCATION				
STRUCTURE ID				
WATER QUALITY FLOW RATE (CFS)		2.14		
PEAK FLOW RATE (CFS)				
PEAK STORM DURATION (YEARS)				
PIPE DATA	I.E.	MATERIAL	DIAMETER	
INLET PIPE 1				
OUTLET PIPE 1				
RIM ELEVATION				
SUMP ELEVATION				
SURFACE LOADING REQUIREMENT		HS-20		
FRAME AND COVER		Ø30"		
SKIMMER WALL HEIGHT		STANDARD		
KNOWN GROUNDWATER ELEVATION				
NOTES:				
*PER ENGINEER OF RECORD				

PERFORMANCE DATA				
TREATMENT FLOW RATE PER LOCAL REQUIREMENTS	2.14			
SETTLING AREA (SF)	38.47			
LOADING RATE (GPM/SF)				
SEDIMENT STORAGE CAPACITY (CF)	271.56			
STORAGE CAPACITIES				
SUMP CHAMBER CAPACITY				
	DIAMETER (FT)	AREA (SF)	HEIGHT (FT)	TOTAL (CF)
CHAMBER 1	7.00	38.47	7.06	271.56

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED NOV 08 2019 FILE # 17-0030  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

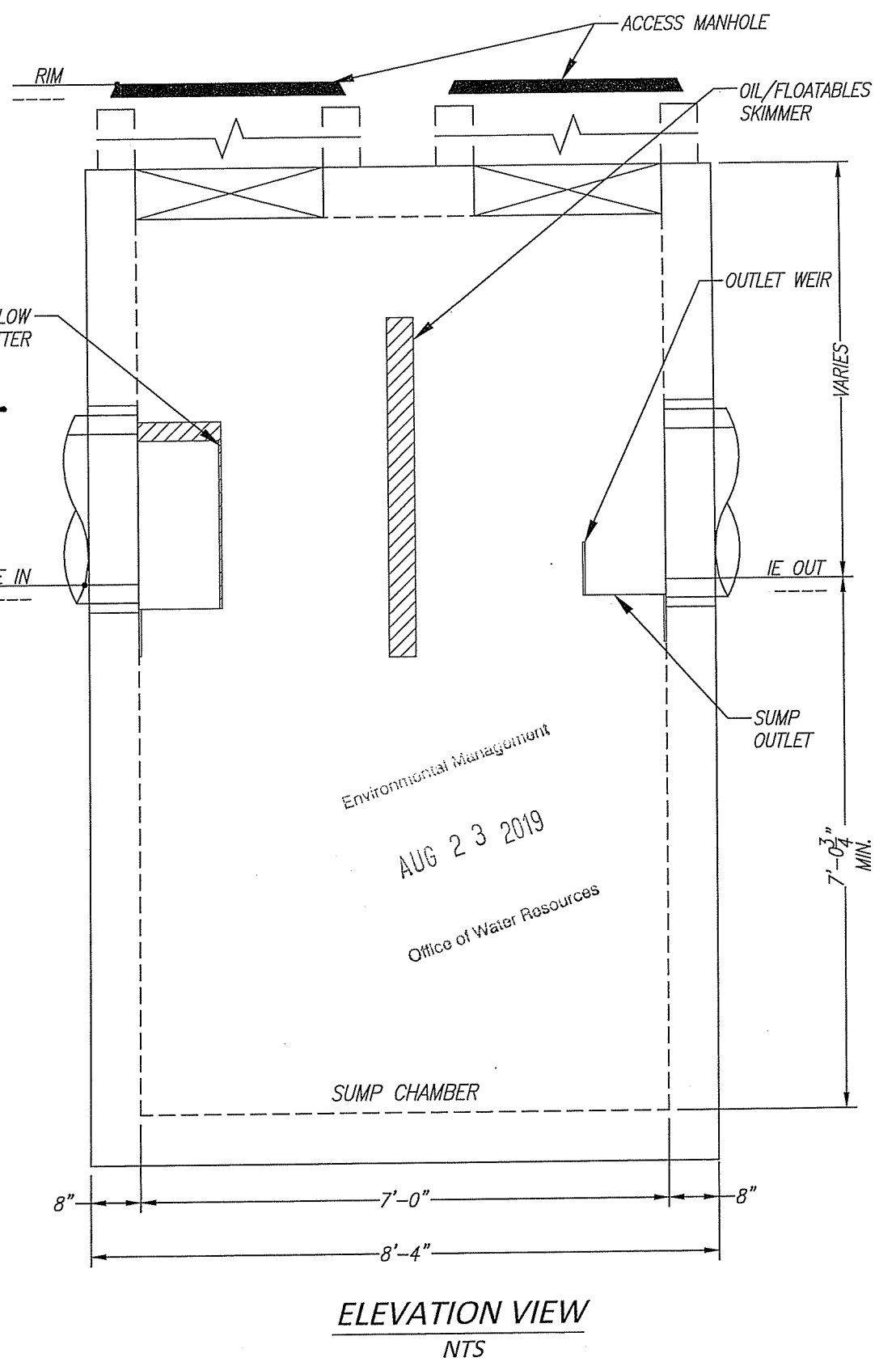
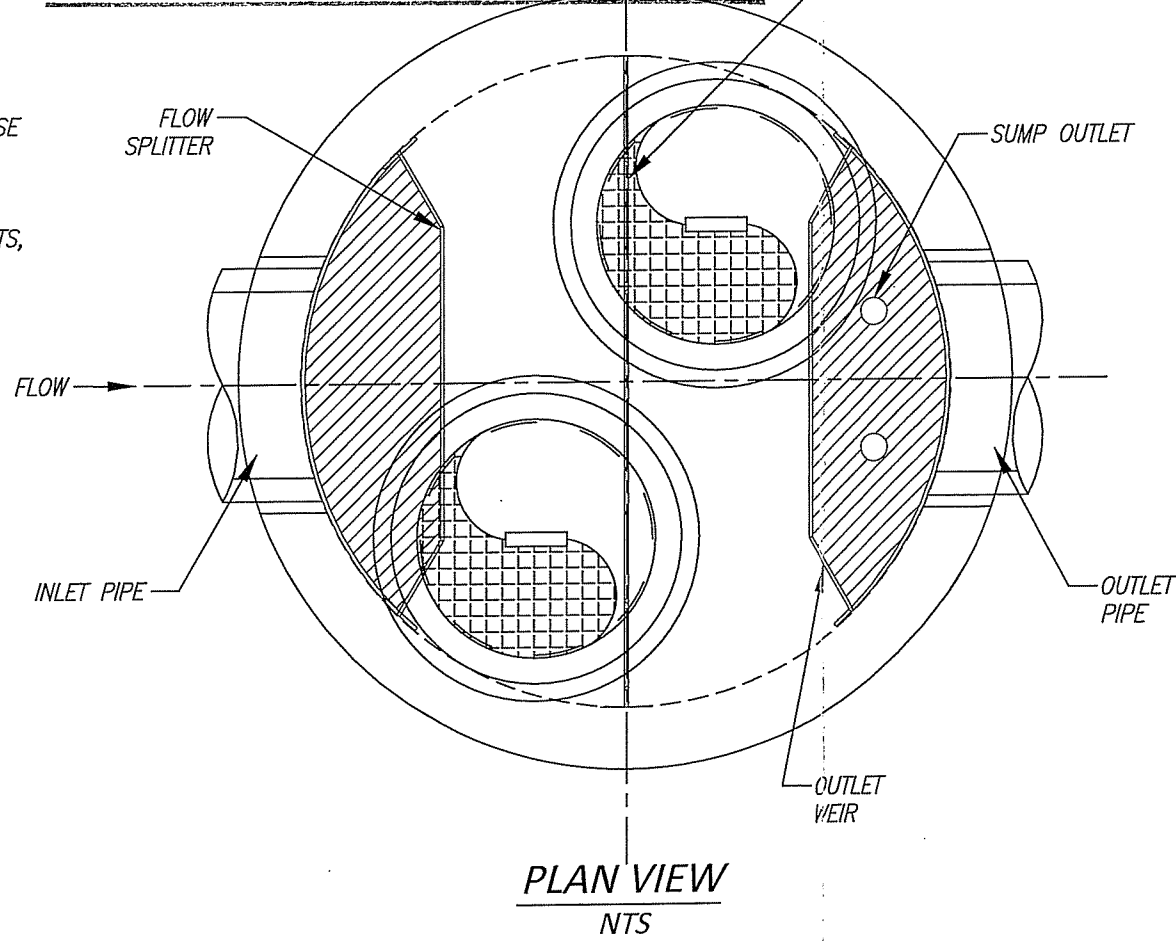
*John D. Wenzel*

**GENERAL NOTES**

- BIO CLEAN TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
- ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS, AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS, AND ACCESSORIES PLEASE CONTACT BIO CLEAN.
- ALTERNATIVE HATCHES OR MANHOLES AVAILABLE UPON REQUEST.

**INSTALLATION NOTES**

- CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE UNIT AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
- MANUFACTURER RECOMMENDS A 6"-12" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
- ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH).
- ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
- CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. ALL COVERS SHALL BE SHIPPED LOOSE. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.



12/19/2018 SHEET 1

THE PRODUCT DESCRIBED MAY BE PROTECTED BY ONE OR MORE US PATENTS, RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING

PROPRIETARY AND CONFIDENTIAL:  
 THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF BIO CLEAN ENVIRONMENTAL SERVICES, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF BIO CLEAN ENVIRONMENTAL SERVICES, INC. IS PROHIBITED.



SC-7  
 HYDRODYNAMIC SEPARATOR  
 STANDARD DETAIL

Zoning District

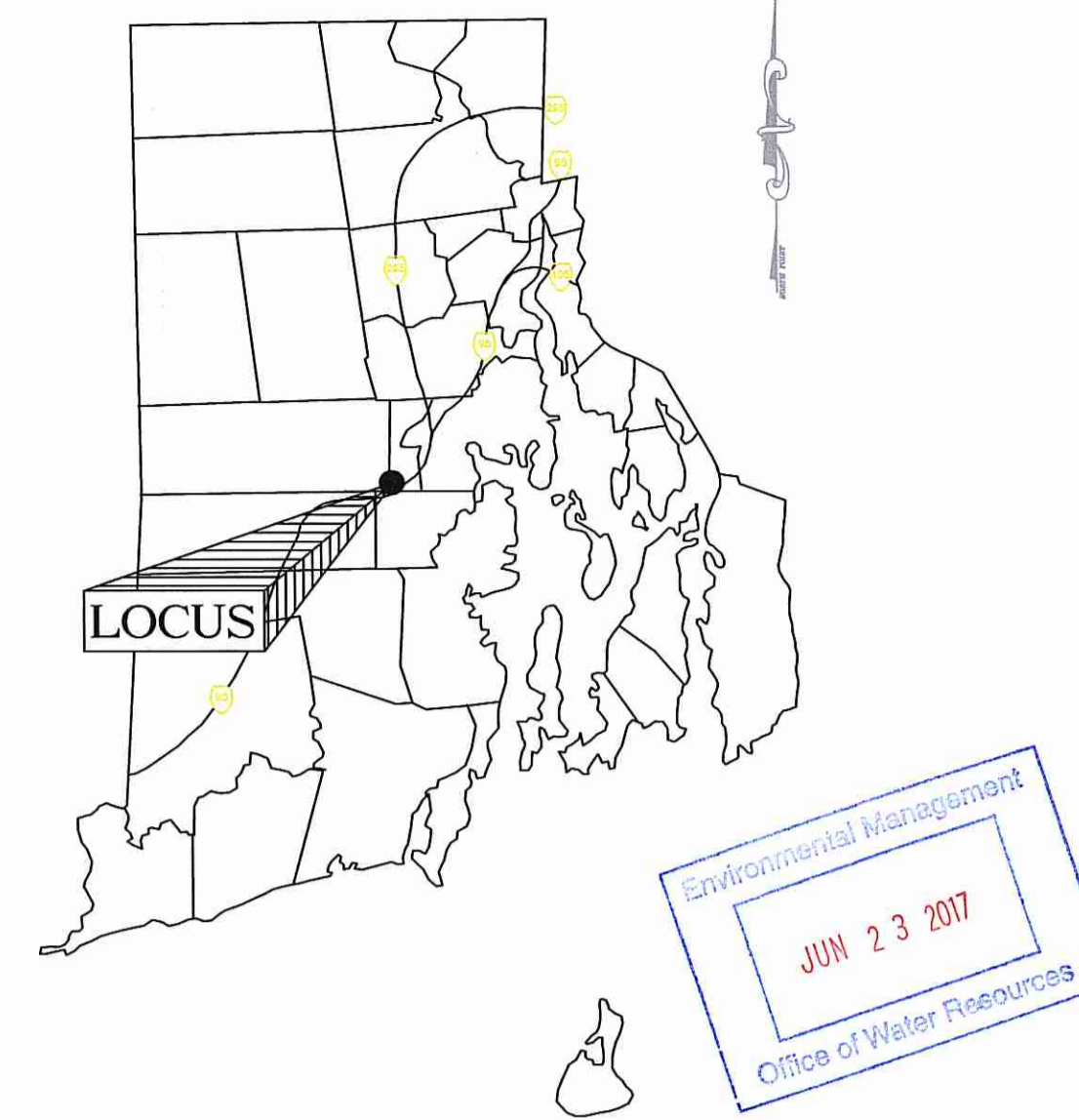
**R - 10**

MINIMUM AREA	10,000 SQ. FT.
FRONTAGE	80 FEET
BUILDING SETBACKS	
FRONT YARD	30 FEET
SIDE YARD	10 FEET
REAR YARD	30 FEET

# Matteson Ridge Condos

LOCATION  
**A.P. 12 Lot 20**  
**175 GREENBUSH ROAD**  
**WEST WARWICK, RHODE ISLAND 02893**

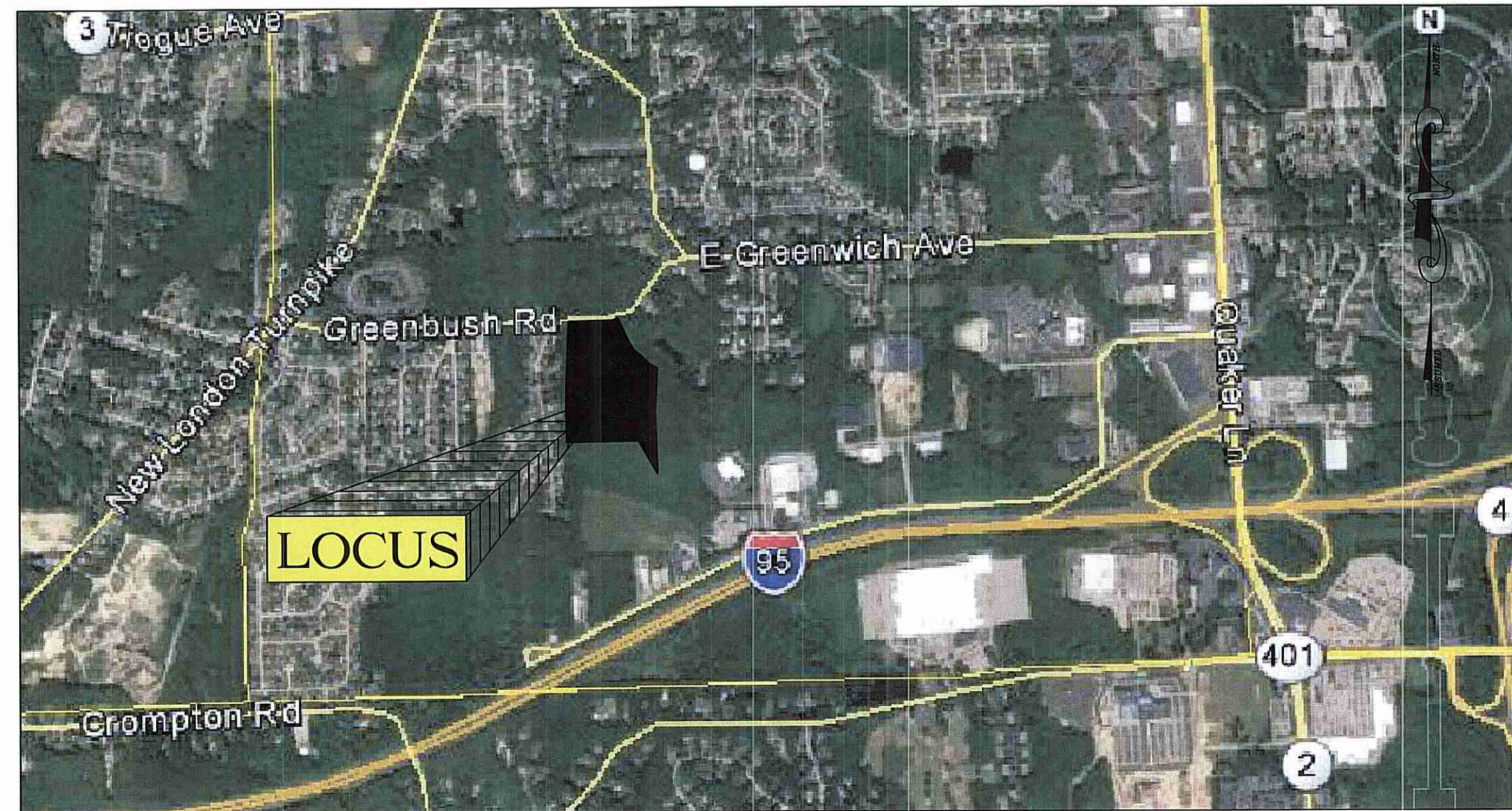
March, 2017



*State Insert Map*

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- Sheet 1 Matteson Ridge Cover Sheet
- Sheet 2 Half Mile Radius Plan
- Sheet 3 Existing Conditions Plan
- Sheet 4 Overall Layout Plan
- Sheet 5 Grading and Utility No. 1
- Sheet 6 Grading and Utility No. 2
- Sheet 7 Plan and Profile No. 1
- Sheet 8 Plan and Profile No. 2
- Sheet 9 Plan and Profile No. 3
- Sheet 10 Plan and Profile No. 4
- Sheet 11 Plan and Profile No. 5
- Sheet 12 Soil Erosion & Sediment Control Plan
- Sheet 13 Soil Erosion & Sediment Control Details
- Sheet 14 Drainage Details No. 1
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- Sheet 16 Drainage Details No. 3
- Sheet 17 Drainage Details No. 4
- Sheet 18 Drainage Details No. 5
- Sheet 19 Drainage Details No. 6
- Sheet 20 Kent County Water Authority Details
- Sheet 21 Misc. Details No. 1
- Sheet 22 Misc. Details No. 3
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- Sheet 24 Misc. Details No. 2



*Location Map*

NOT TO SCALE

Being: ASSESSORS' PLAT NO. 12 LOT NO. 20  
 COVER SHEET  
**Matteson Ridge Condos**  
 LOCATION  
 175 Greenbush Road  
 West Warwick, Rhode Island 02893

Checked By:	R.B.B.	Drawn By:	J.D.M.
Scale:	Not to Scale	Date:	March 23, 2017
REVISIONS			
NO.	REVISION	BY	DATE
1	RE: DEAL COMMENTS	JUL	6/21/17



**CIVIL DESIGN**

Crossman Engineering  
 151 Centerville Road  
 Warwick, RI 02886  
 Phone (401) 738-5660



**OWNER / APPLICANT**

C. Geoffrey Matteson  
 c/o John J. Kupa, Jr., Esquire  
 20 Oakdale Road  
 North Kingstown, RI 02852

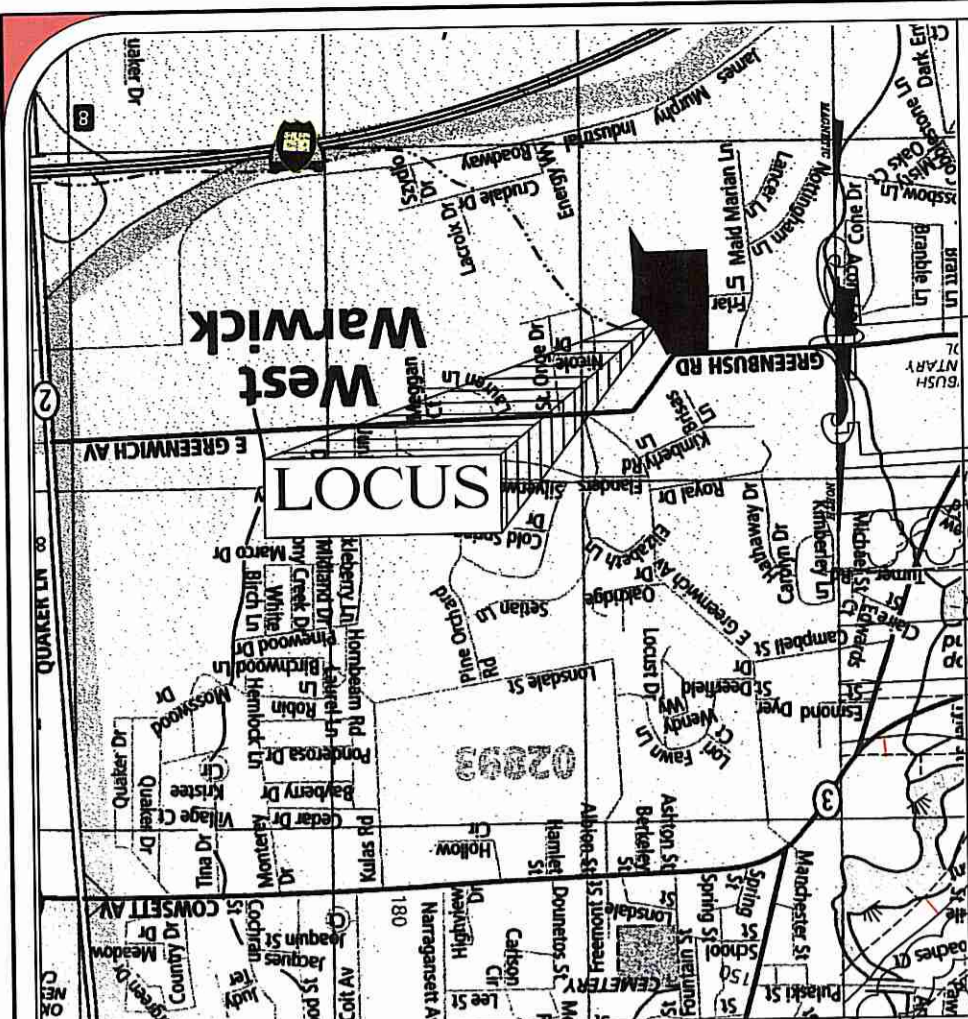
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
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 DATED JUL 25 2017 FILE # 17-00880  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*John J. Kupa, Jr.*

**BOYER ASSOCIATES**  
 1071 MAIN STREET  
 WEST WARWICK, RI 02893  
 TEL. (401)821-8872 FAX (401)826-1993

Sheet **1**  
 of **24** sheets





**Location Map**  
NOT TO SCALE

**Note:**  
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Dig Safe phone number is 1-888-344-7233

**CERTIFICATION**  
This survey has been conducted and the plan has been prepared pursuant to Section 9 of the Rules and Regulations adopted by the Rhode Island State Board of Registration for Professional Land Surveyors as follows on November 25, 2015, as follows:

**TYPE OF BOUNDARY SURVEY:** NOT A BOUNDARY SURVEY  
**MEASUREMENT SPECIFICATION:** N/A

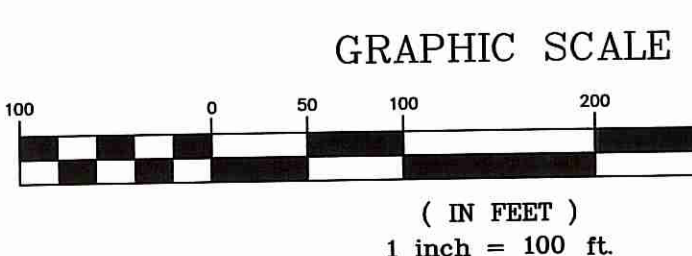
**OTHER TYPE OF SURVEY:** DATA ACCUMULATION SURVEY  
**TOPOGRAPHIC SURVEY ACCURACY:** T-2

The purpose for the conduct of this survey and for the preparation of this plan is to depict proposed condominiums and utilities in order to ensure that the project conform to all town regulations and to obtain a Wetlands Approval from RIDEM.

By: *Robert B. Boyer* 6/15/17  
Robert B. Boyer #1573  
Boyer Associates C.O.A. # A317

**LEGEND**

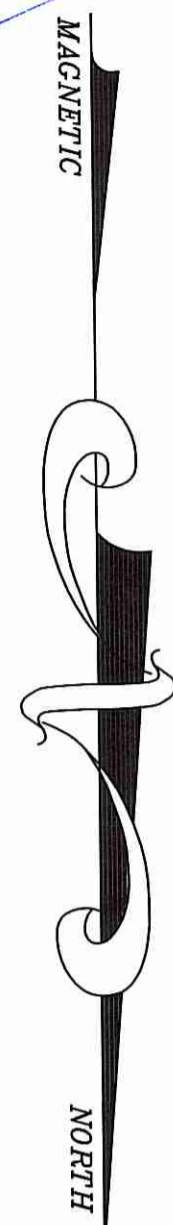
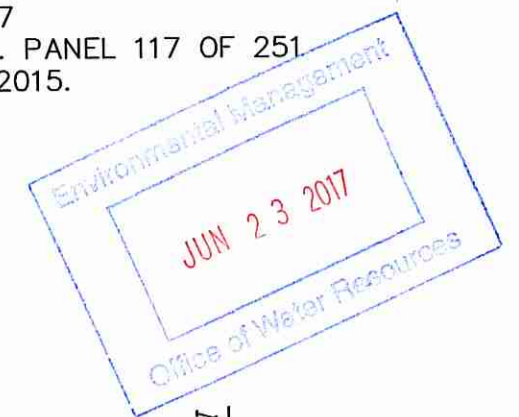
- 280- EXISTING CONTOURS
- ~ TREE LINE
- FLAGGED WETLAND EDGE
- STONE WALL
- - - APPROX. WATER LINE
- - - APPROX. SEWER LINE
- - - APPROX. GAS LINE
- CATCH BASIN
- ⊙ SEWER MANHOLE
- ⊗ GATE VALVE
- ⊕ UTILITY POLE



**A.P. 12 Lot 20**  
**Area = 39.4 Acres ±**

**GENERAL NOTES:**

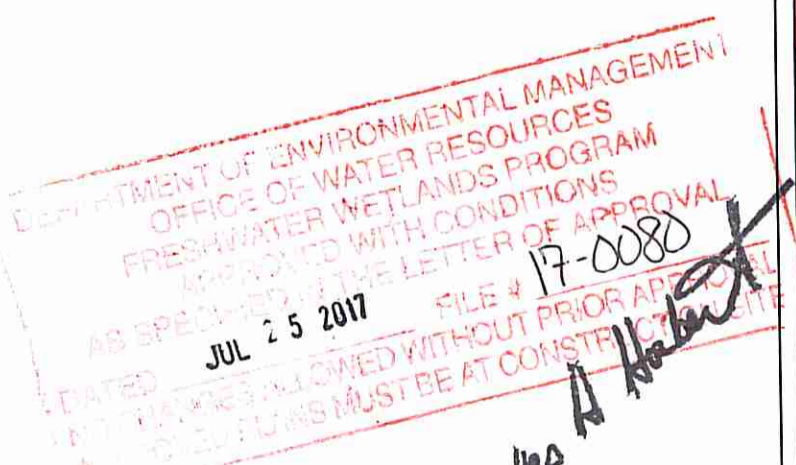
- 1) BY GRAPHIC PLOTTING ONLY THE SUBJECT PARCEL LIES WITHIN ZONE X—AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN AS DELINEATED ON FIRM FLOOD INSURANCE RATE MAP KENT COUNTY, RHODE ISLAND. COMMUNITY NUMBER 440007. MAP NUMBER 44003C0117H. PANEL 117 OF 251. MAP REVISED OCTOBER 2, 2015.



**General Notes**

1. PARCELS ARE LOCATED ON ASSESSORS PLAT 12 LOT NO. 12 IN THE TOWN OF WEST WARWICK.
2. THIS SURVEY DOES NOT LIE WITHIN A NATURAL HERITAGE AREA, HISTORIC DISTRICT OR ANY BOUNDARY PROTECTION DISTRICT.
3. WETLAND PERIMETER FLAGGED BY RIDEM, INC.
4. BASE OF LEVELS = NAVD 20.

**OWNER / APPLICANT**  
C. Geoffrey Matteson  
c/o John J. Kupa, Jr., Esquire  
20 Oakdale Road  
North Kingstown, RI 02852



**Zoning District**  
**R - 10**

MINIMUM AREA	10,000 SQ. FT.
FRONTAGE	80 FEET
BUILDING SETBACKS	
FRONT YARD	30 FEET
SIDE YARD	10 FEET
REAR YARD	30 FEET

**Street Index**  
Greenbush Road  
Friar Tuck Lane  
Lancer Lane  
Maid Marion Lane  
Nicole Drive  
Nottingham Drive

**Master Plan Submission**

Being: ASSESSORS PLAT NO. 12 LOT NO. 20  
**EXISTING CONDITIONS**  
**Matteson Ridge Condos**  
175 Greenbush Road  
West Warwick, Rhode Island 02893

Checked By:	R.B.B.	Drawn By:	J.D.M.
Scale:	1" = 100'	Date:	March 23, 2017
<b>REVISIONS</b>			
NO.	REVISION	BY	DATE
1	RIDEM COMMENTS		JUN 15/17

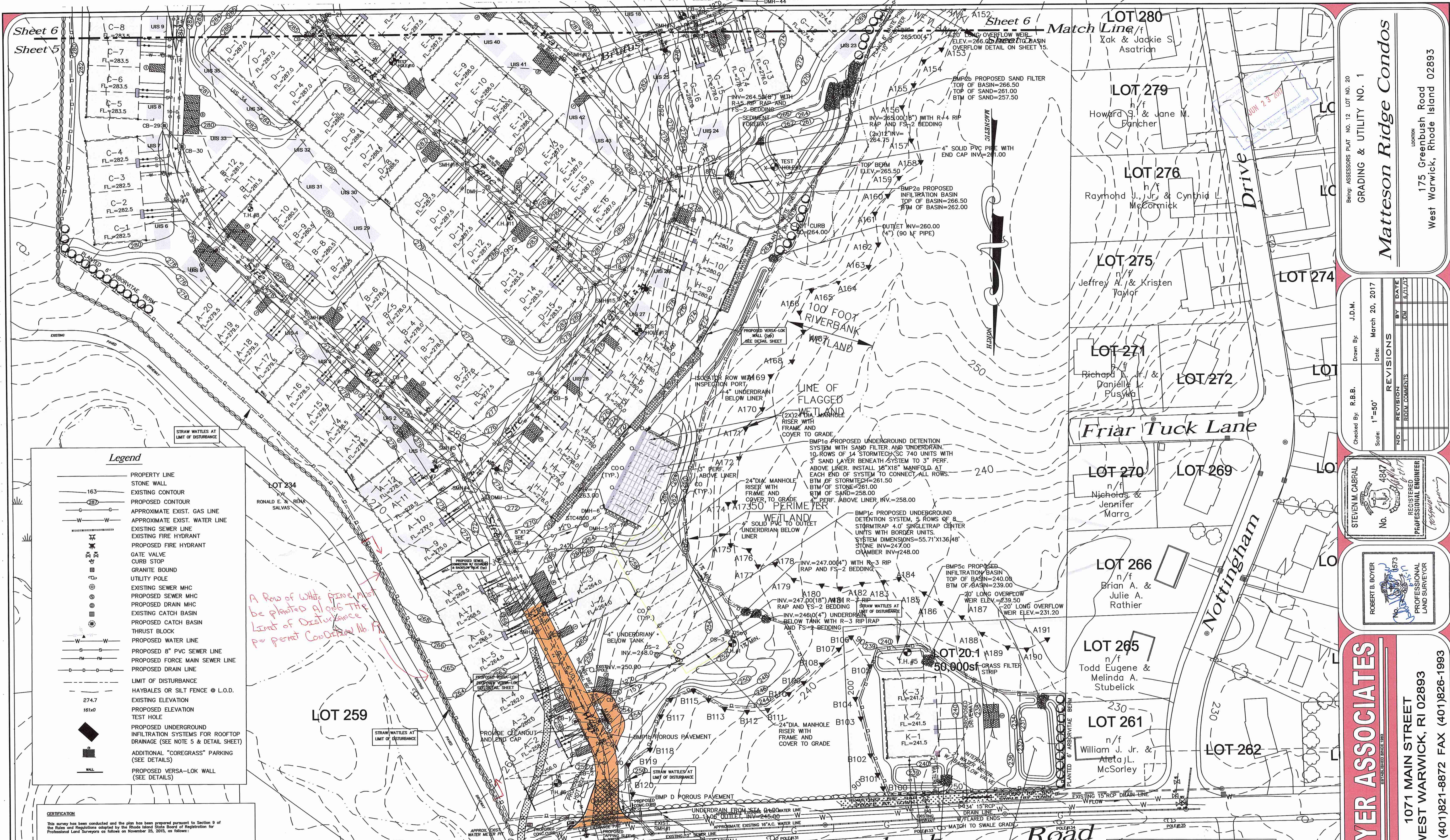
STEVEN M. CABRAL  
No. 4877  
REGISTERS  
PROFESSIONAL ENGINEER  
Environmental Management

ROBERT B. BOYER  
No. 1573  
REGISTERS  
PROFESSIONAL LAND SURVEYOR

**BOYER ASSOCIATES**  
1071 MAIN STREET  
WEST WARWICK, RI 02893  
TEL. (401)821-8872 FAX (401)826-1993

Sheet **3**  
of 24 sheets





Sheet 5

Sheet 6

Match Line

**Legend**

- PROPERTY LINE
- STONE WALL
- 163 — EXISTING CONTOUR
- 280 — PROPOSED CONTOUR
- APPROXIMATE EXIST. GAS LINE
- APPROXIMATE EXIST. WATER LINE
- EXISTING SEWER LINE
- EXISTING FIRE HYDRANT
- GATE VALVE
- CURB STOP
- GRANITE BOUND
- UTILITY POLE
- EXISTING SEWER MHC
- PROPOSED SEWER MHC
- PROPOSED DRAIN MHC
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- THRUST BLOCK
- PROPOSED WATER LINE
- PROPOSED 8" PVC SEWER LINE
- PROPOSED FORCE MAIN SEWER LINE
- PROPOSED DRAIN LINE
- LIMIT OF DISTURBANCE
- HAYBALES OR SILT FENCE @ L.O.D.
- 274.7 — EXISTING ELEVATION
- 161x0 — PROPOSED ELEVATION
- TEST HOLE
- PROPOSED UNDERGROUND INFILTRATION SYSTEMS FOR ROOFTOP DRAINAGE (SEE NOTE 5 & DETAIL SHEET)
- ADDITIONAL "COREGRASS" PARKING (SEE DETAILS)
- PROPOSED VERSA-LOK WALL (SEE DETAILS)

A Row of White Pine must be planted along the limit of disturbance per permit C002049 No. 12

**CERTIFICATION**

This survey has been conducted and the plan has been prepared pursuant to Section 9 of the Rules and Regulations adopted by the Rhode Island State Board of Registration for Professional Land Surveyors as follows on November 25, 2015, or before:

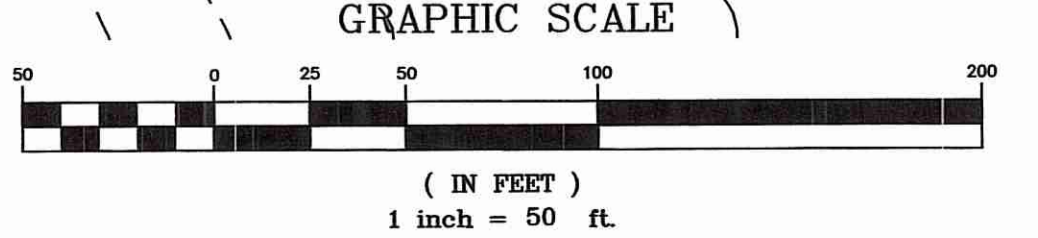
TYPE OF BOUNDARY SURVEY:	MEASUREMENT SPECIFICATION:
NOT A BOUNDARY SURVEY	
OTHER TYPE OF SURVEY:	
DATA ACCUMULATION SURVEY	
TOPOGRAPHIC SURVEY ACCURACY:	T-2

The purpose for the conduct of this survey and for the preparation of this plan is to depict proposed condominiums and utilities in order to ensure that the project can conform to all town regulations and to obtain a Wetlands Approval from RIDEM.

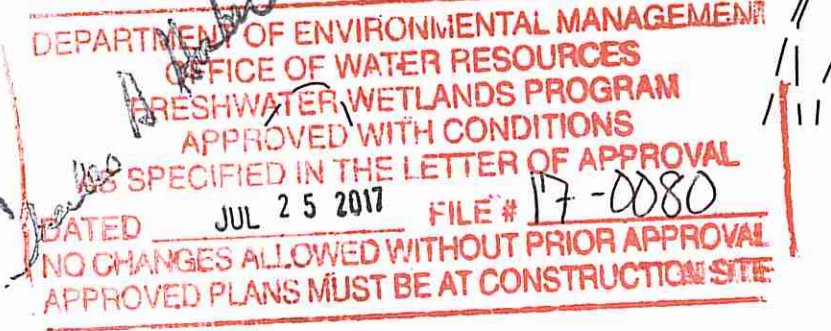
By: Robert B. Boyer 6-15-17  
 Robert B. Boyer #1573  
 Boyer Associates C.O.A. # A317

**General Notes**

1. PARCELS ARE LOCATED ON ASSESSORS PLAT 12 LOT NO. 12 IN THE TOWN OF WEST WARWICK.
2. THIS SUBDIVISION DOES NOT LIE WITHIN A NATURAL HERITAGE AREA, HISTORIC DISTRICT OR ANY GROUNDWATER PROTECTION OVERLAY DISTRICT.
3. WETLAND PERIMETER FLAGGED BY ECOTONES, INC.
4. BASE OF LEVELS = NGVD 29.
5. THE BUILDINGS WITH UNDERGROUND INFILTRATION SYSTEMS HAVE DOWNSPOUTS THAT TIE-IN AN UNDERGROUND CONVEYANCE PIPE TO THE INFILTRATION SYSTEMS. PIPES SHALL BE 4" TO 6" SOLID SCH 40 PVC.



Please Note: Lot 20.1 does not presently exist but is presently part of the lot 20 application. Upon approval, Lot 20.1 will be created as Lot 20.1 on Tax Assessor's Map No. 12.



**Matteson Ridge Condos**  
 GRADING & UTILITY NO. 1  
 Assessor's Plat No. 12 Lot No. 20  
 Location: 175 Greenbush Road West Warwick, Rhode Island 02893

Checked By: R.B.B. Drawn By: J.D.M. Scale: 1"=50' Date: March 20, 2017

NO.	REVISIONS	DATE

STEVEN M. CABRAL  
 No. 4847  
 REGISTERED PROFESSIONAL ENGINEER

ROBERT B. BOYER  
 No. 1573  
 REGISTERED PROFESSIONAL LAND SURVEYOR

**BOYER ASSOCIATES**  
 1071 MAIN STREET  
 WEST WARWICK, RI 02893  
 TEL: (401)821-8872 FAX (401)826-1993

Sheet 5 of 24 sheets



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Dig Safe phone number is 1-888-344-7233

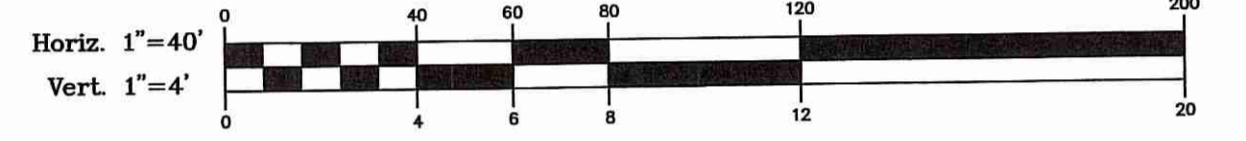
**WATERLINE NOTE:** 18" VERTICAL & 10' HORIZONTAL SEPARATION BETWEEN WATERLINE AND SEWER LINE MUST BE MAINTAINED.  
BASE OF LEVELS = NGVD 29.

**Zoning District**  
**R-10**

MINIMUM AREA FRONTAGE 10,000 SQ. FT.  
80 FEET  
**BUILDING SETBACKS**  
FRONT YARD 30 FEET  
SIDE YARD 10 FEET  
REAR YARD 30 FEET

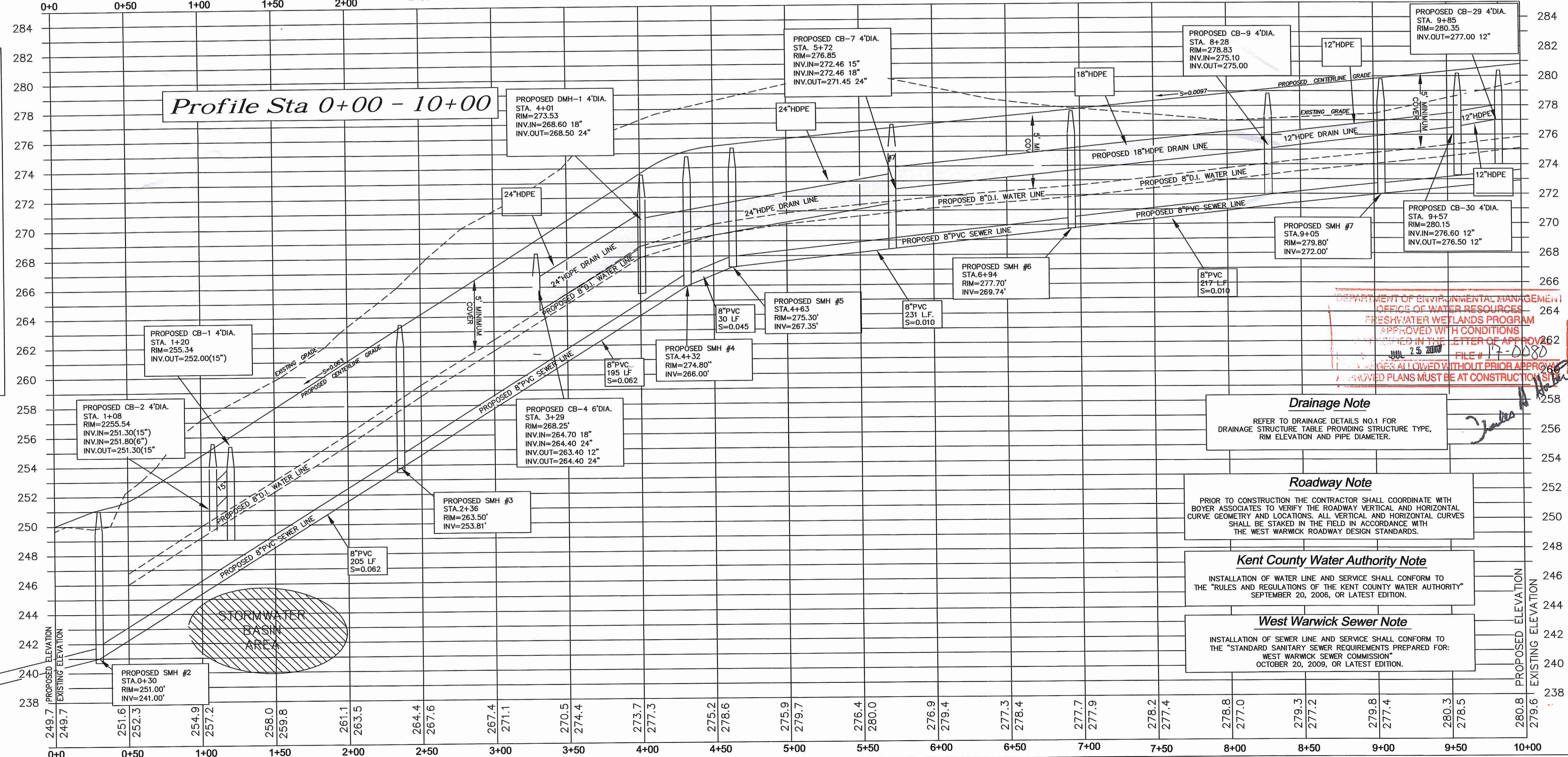
NOTE: AREA OF WATERLINE CONNECTION TO GREENBUSH RD. MUST BE EXPOSED PRIOR TO CONSTRUCTION

**Greenbush Road**  
APPROXIMATE EXISTING 16" A.C. WATER LINE  
APPROXIMATE EXISTING 12" A.C. SEWER LINE  
APPROXIMATE EXISTING 16" A.C. WATER LINE  
APPROXIMATE EXISTING 12" A.C. SEWER LINE



**Legend**

- PROPERTY LINE
- STONE WALL
- EXISTING CONTOUR
- PROPOSED CONTOUR
- APPROXIMATE EXIST. GAS LINE
- APPROXIMATE EXIST. WATER LINE
- EXISTING SEWER LINE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- GATE VALVE
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- PROPOSED FORCE MAIN SEWER LINE
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- LIMIT OF DISTURBANCE
- HAYBALES OR SILT FENCE @ L.O.D.
- PROPOSED ELEVATION
- TEST HOLE
- ADDITIONAL "COREGRASS" PARKING (SEE DETAILS)
- PROPOSED VERSA-LOK WALL (SEE DETAILS)



**Drainage Note**  
REFER TO DRAINAGE DETAILS NO.1 FOR DRAINAGE STRUCTURE TABLE PROVIDING STRUCTURE TYPE, RIM ELEVATION AND PIPE DIAMETER.

**Roadway Note**  
PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL COORDINATE WITH BOYER ASSOCIATES TO VERIFY THE ROADWAY VERTICAL AND HORIZONTAL CURVE GEOMETRY AND LOCATIONS. ALL VERTICAL AND HORIZONTAL CURVES SHALL BE STAKED IN THE FIELD IN ACCORDANCE WITH THE WEST WARWICK ROADWAY DESIGN STANDARDS.

**Kent County Water Authority Note**  
INSTALLATION OF WATER LINE AND SERVICE SHALL CONFORM TO THE "RULES AND REGULATIONS OF THE KENT COUNTY WATER AUTHORITY" SEPTEMBER 20, 2006, OR LATEST EDITION.

**West Warwick Sewer Note**  
INSTALLATION OF SEWER LINE AND SERVICE SHALL CONFORM TO THE "STANDARD SANITARY SEWER REQUIREMENTS PREPARED FOR THE WEST WARWICK SEWER COMMISSION" OCTOBER 20, 2009, OR LATEST EDITION.

Being: ASSESSORS' PLAN NO. 12 LOT NO. 20  
**Matteson Ridge Condos**  
175 Greenbush Road  
West Warwick, Rhode Island 02893

Checked By: R.B.B. AS NOTED  
Drawn By: J.D.M.  
Date: March 23, 2017  
Scale: 1" = 40' HORIZ. 1" = 4' VERT.

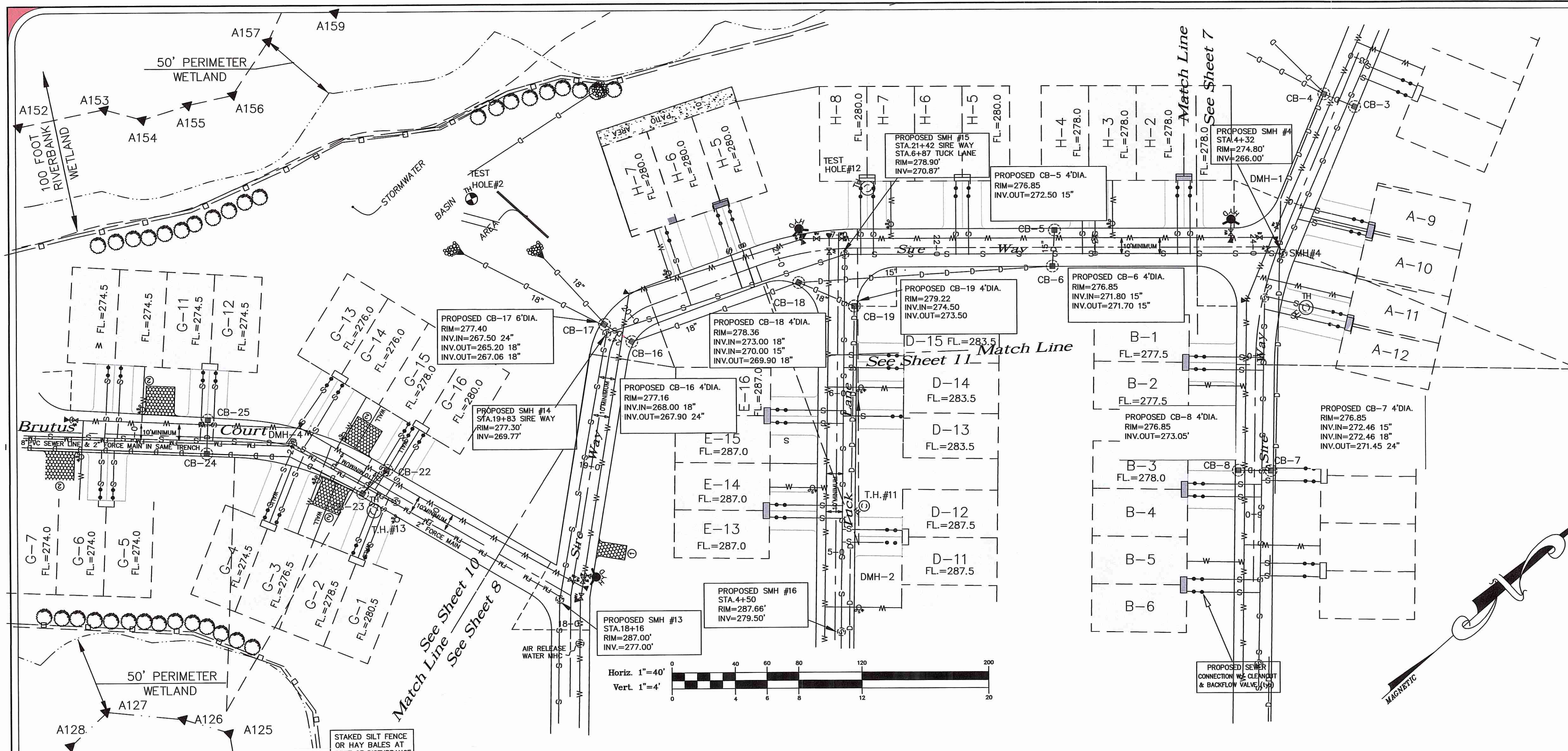
NO.	REVISION	DATE	BY
1	REVISION	JUN 23 2017	J.D.M.
2	ADJUST TAPPING SLEEVE AT	JUN 23 2017	J.D.M.
3	ADJUST COMMENTS	JUN 23 2017	J.D.M.

STEVEN M. CABRAL  
No. 4947  
REGISTERED PROFESSIONAL ENGINEER  
Professional Engineer  
No. 1573  
ROBERT B. BOYER  
REGISTERED PROFESSIONAL LAND SURVEYOR

**BOYER ASSOCIATES**  
1071 MAIN STREET  
WEST WARWICK, RI 02893  
TEL: (401)821-8872 FAX (401)826-1993

Sheet 7 of 24 sheets

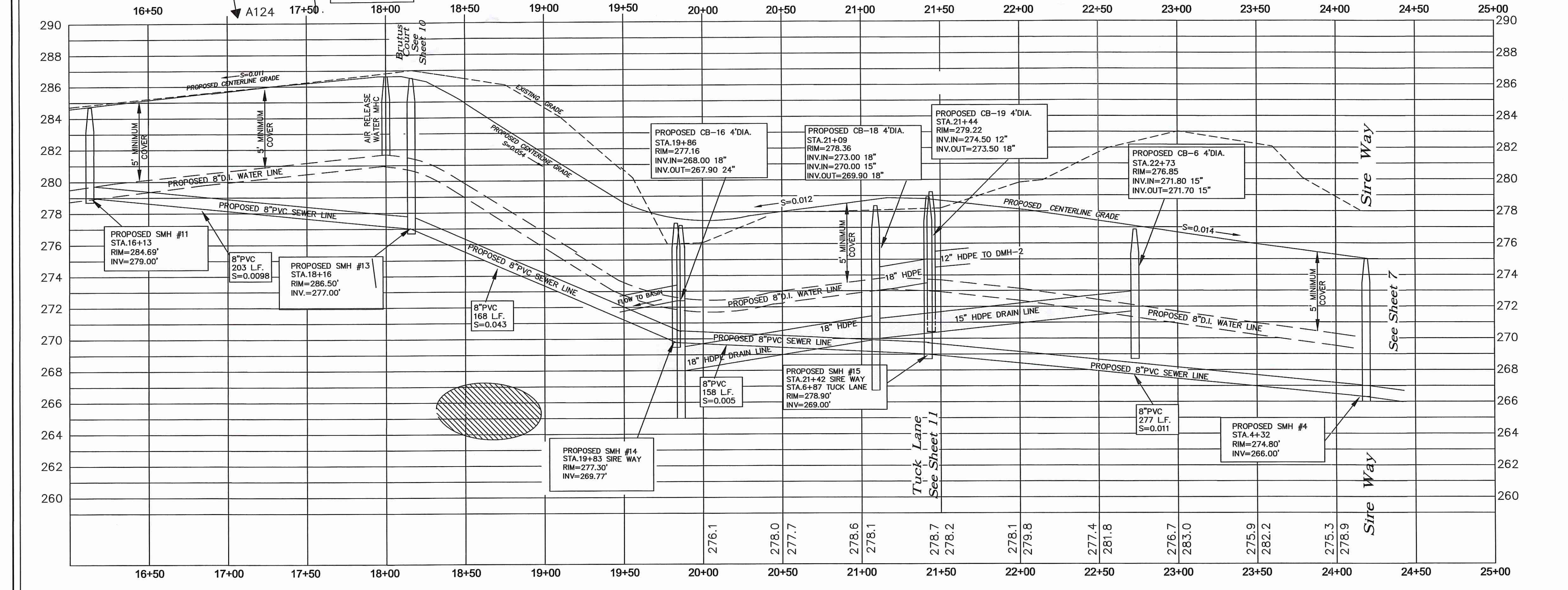
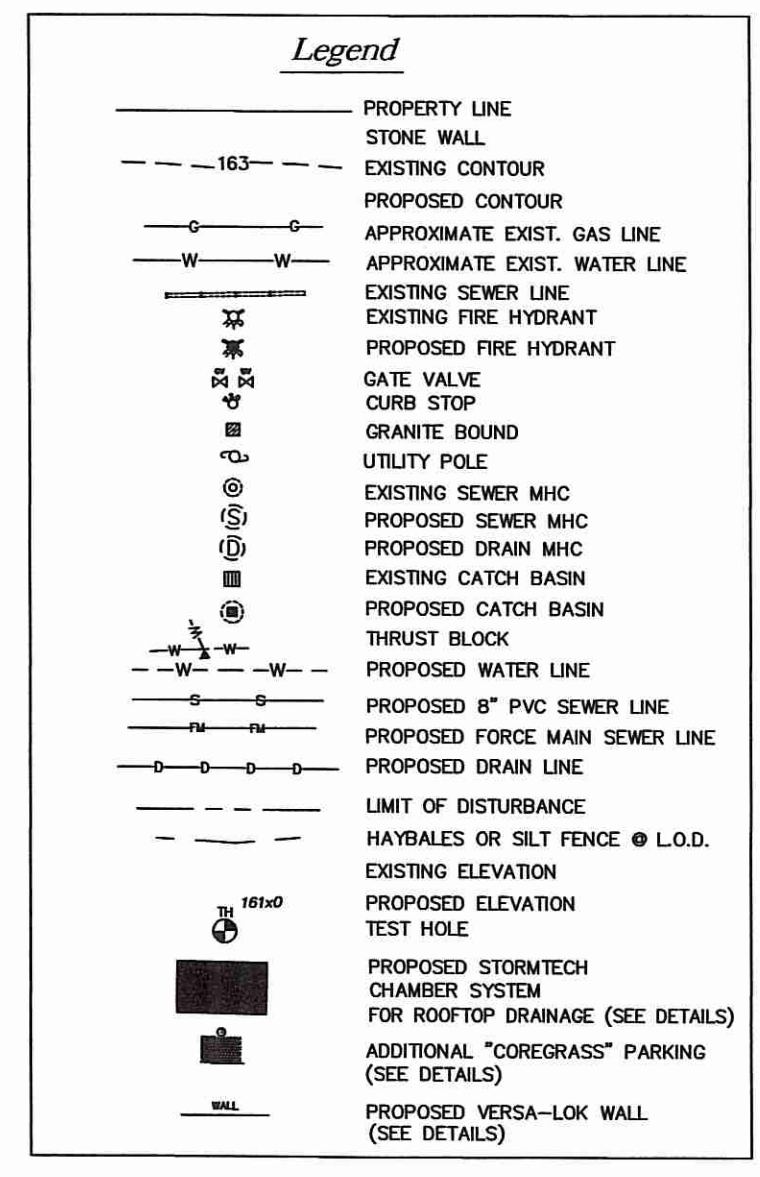




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BASE OF LEVELS = NGVD 29.



WATERLINE NOTE: 18" VERTICAL & 10' HORIZONTAL SEPARATION BETWEEN WATERLINE AND SEWER LINE MUST BE MAINTAINED.

**Drainage Note**

REFER TO DRAINAGE DETAILS NO.1 FOR DRAINAGE STRUCTURE TABLE PROVIDING STRUCTURE TYPE, RIM ELEVATION AND PIPE DIAMETER.

**Roadway Note**

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**West Warwick Sewer Note**

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DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
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SPECIFIED IN THE LETTER OF APPROVAL  
DATE: JUL 25 2017 FILE # 17-0080  
CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
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NOT A BOUNDARY SURVEY	
OTHER TYPE OF SURVEY:	
DATA ACCUMULATION SURVEY	II
TOPOGRAPHIC SURVEY ACCURACY:	T-2

The purpose for the conduct of this survey and for the preparation of this plan is to depict proposed conditions and utilities in order to ensure that the project can conform to all town regulations and to obtain a Wetlands Approval from RIEM.

By: Robert B. Boyer #1573  
Boyer Associates C.O.A. # A317

BEING: ASSESSORS PLAT NO. 12, LOT NO. 20  
**Matteson Ridge Condos**  
175 Greenbush Road  
West Warwick, Rhode Island 02893

Checked By: J.D.M.  
Drawn By: R.B.B.  
Scale: AS NOTED  
Date: March 23, 2017

NO.	REVISION	DATE
1	REVISION	JUN 21-17
2	REVISION	JUN 21-17

STEVEN M. CABRAL  
REGISTERED PROFESSIONAL ENGINEER  
151 Centerville Road  
Warwick, RI 02886

ROBERT B. BOYER  
REGISTERED PROFESSIONAL LAND SURVEYOR  
151 Centerville Road  
Warwick, RI 02886

**BOYER ASSOCIATES**  
1071 MAIN STREET  
WEST WARWICK, RI 02893  
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Sheet 9 of 24 sheets

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Dig Safe phone number is 1-888-344-7233

BASE OF LEVELS = NGVD 29.

**Drainage Note**

REFER TO DRAINAGE DETAILS NO.1 FOR DRAINAGE STRUCTURE TABLE PROVIDING STRUCTURE TYPE, RIM ELEVATION AND PIPE DIAMETER.

**Roadway Note**

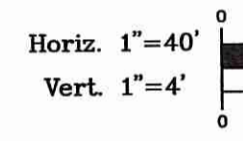
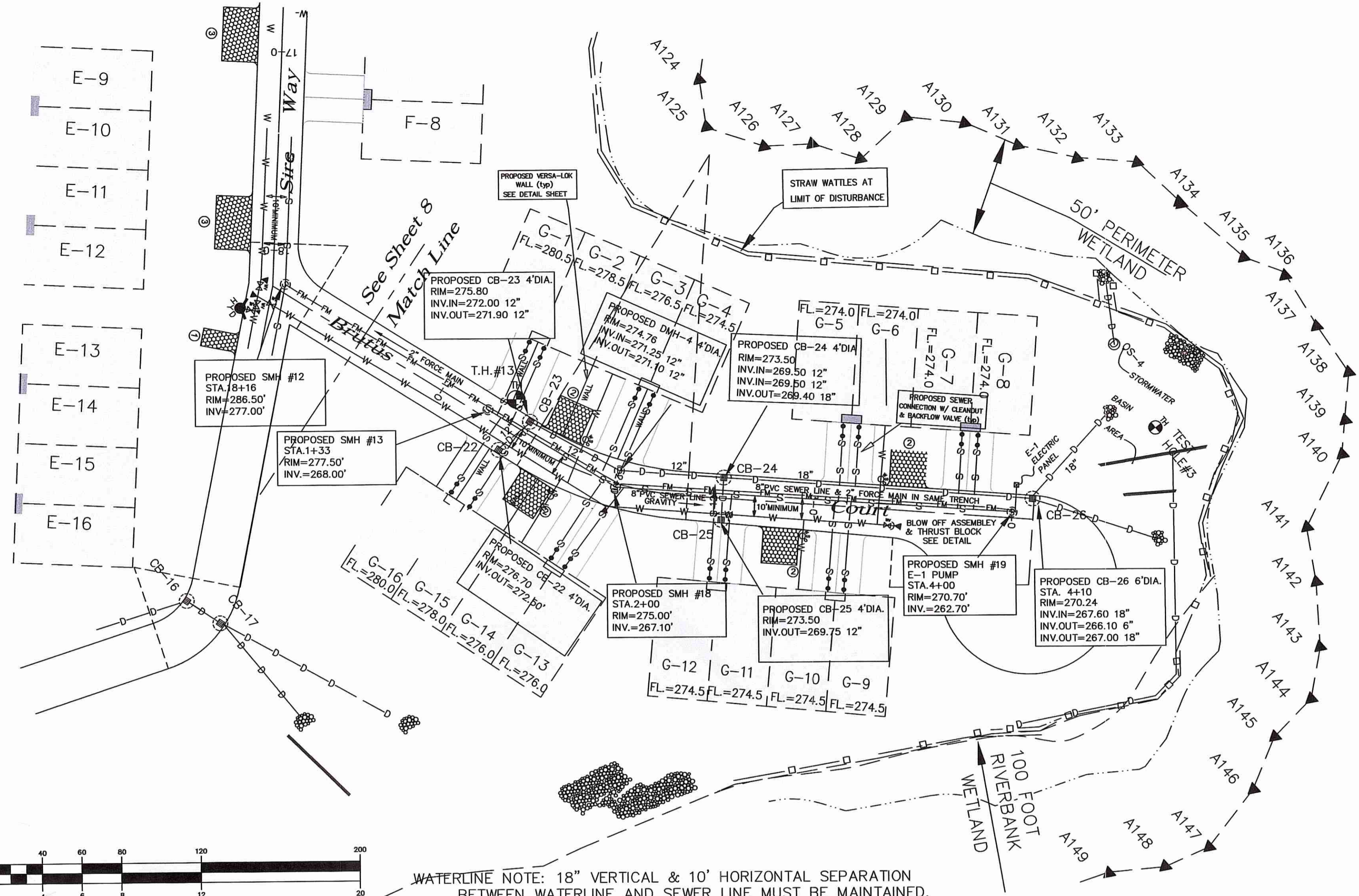
PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL COORDINATE WITH BOYER ASSOCIATES TO VERIFY THE ROADWAY VERTICAL AND HORIZONTAL CURVE GEOMETRY AND LOCATIONS. ALL VERTICAL AND HORIZONTAL CURVES SHALL BE STAKED IN THE FIELD IN ACCORDANCE WITH THE WEST WARWICK ROADWAY DESIGN STANDARDS.

**Kent County Water Authority Note**

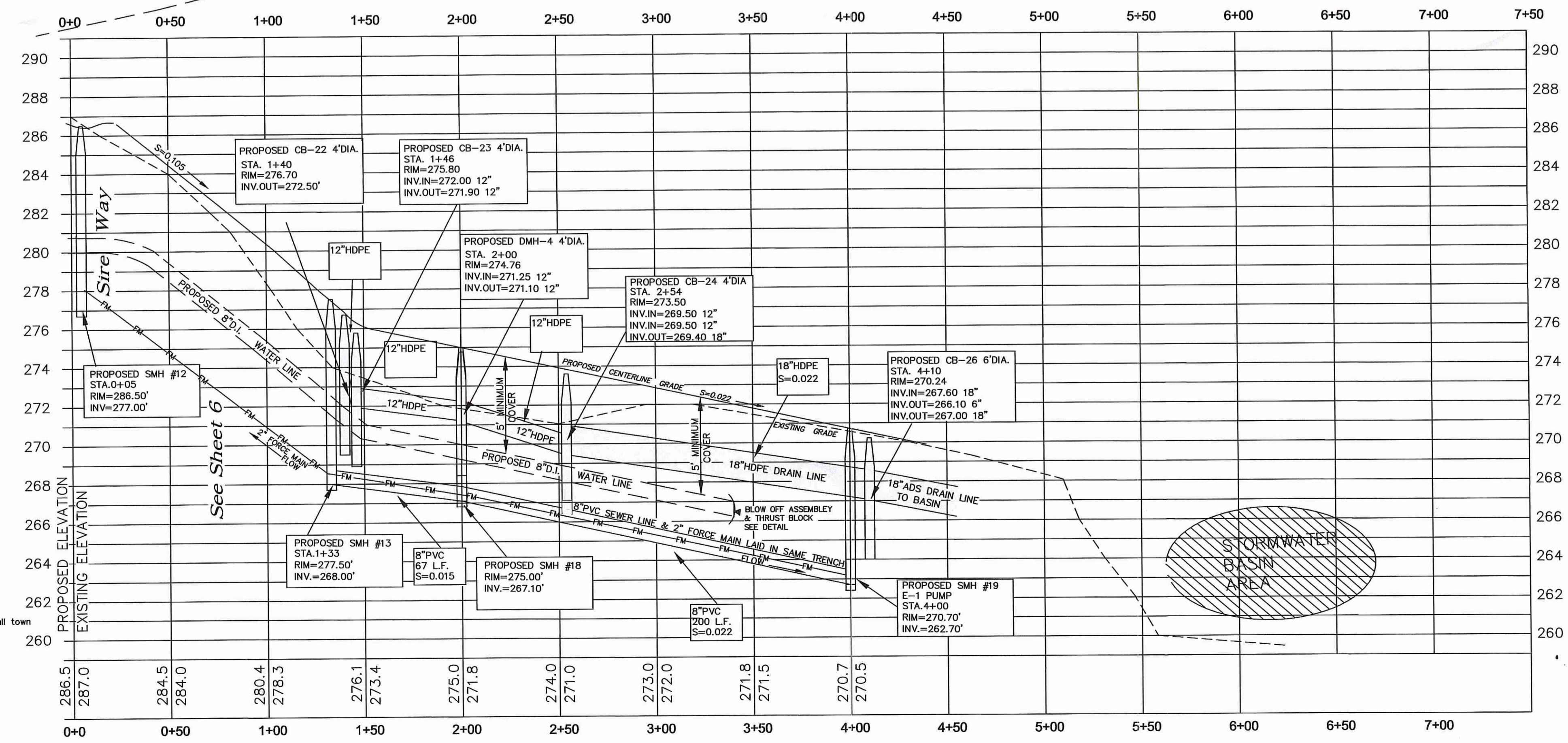
INSTALLATION OF WATER LINE AND SERVICE SHALL CONFORM TO THE "RULES AND REGULATIONS OF THE KENT COUNTY WATER AUTHORITY" SEPTEMBER 20, 2006, OR LATEST EDITION.

**West Warwick Sewer Note**

INSTALLATION OF SEWER LINE AND SERVICE SHALL CONFORM TO THE "STANDARD SANITARY SEWER REQUIREMENTS PREPARED FOR: WEST WARWICK SEWER COMMISSION" OCTOBER 20, 2009, OR LATEST EDITION.



WATERLINE NOTE: 18" VERTICAL & 10' HORIZONTAL SEPARATION BETWEEN WATERLINE AND SEWER LINE MUST BE MAINTAINED.



**Legend**

- PROPERTY LINE
- STONE WALL
- EXISTING CONTOUR
- APPROXIMATE EXIST. GAS LINE
- APPROXIMATE EXIST. WATER LINE
- EXISTING SEWER LINE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- GATE VALVE
- CURB STOP
- GRANITE BOUND
- UTILITY POLE
- EXISTING SEWER MHC
- PROPOSED SEWER MHC
- PROPOSED DRAIN MHC
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- THRUST BLOCK
- PROPOSED WATER LINE
- PROPOSED 8" PVC SEWER LINE
- PROPOSED FORCE MAIN SEWER LINE
- PROPOSED DRAIN LINE
- LIMIT OF DISTURBANCE
- STRAW WATTLE @ L.O.D.
- EXISTING ELEVATION
- PROPOSED ELEVATION
- TEST HOLE
- PROPOSED STORMWATER CHAMBER SYSTEM FOR ROOFTOP DRAINAGE (SEE DETAILS)
- ADDITIONAL "COREGRASS" PARKING (SEE DETAILS)
- PROPOSED VERSA-LOK WALL (SEE DETAILS)

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
FILE # 17-0080  
DATED JUL 23 2017  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**CERTIFICATION**

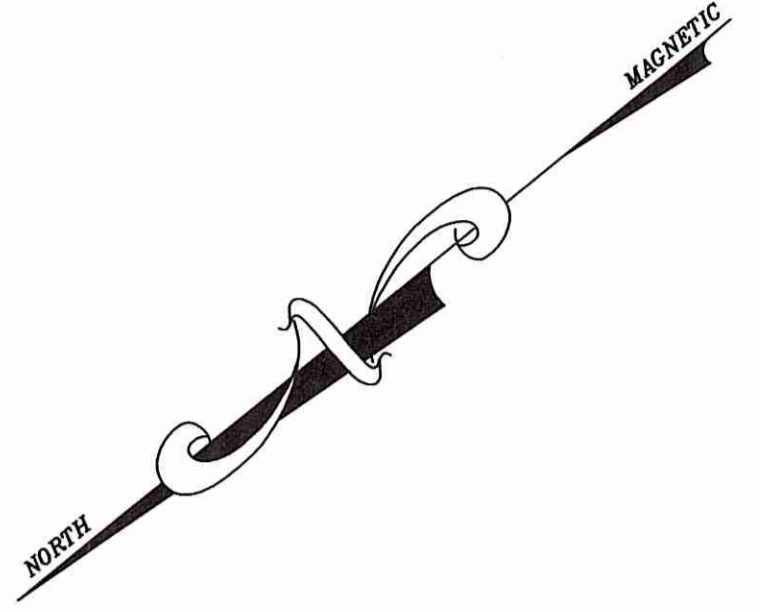
This survey has been conducted and the plan has been prepared pursuant to Section 9 of the Rules and Regulations adopted by the Rhode Island State Board of Registration for Professional Land Surveyors as follows on November 25, 2015, as follows:

TYPE OF BOUNDARY SURVEY:	MEASUREMENT SPECIFICATION:
NOT A BOUNDARY SURVEY	
OTHER TYPE OF SURVEY:	
DATA ACCUMULATION SURVEY	III
TOPOGRAPHIC SURVEY ACCURACY	T-2

The purpose for the conduct of this survey and for the preparation of this plan is to depict proposed condominiums and utilities in order to ensure that the project can conform to all town regulations and to obtain a Wetlands Approval from RIDEM.

By: *Robert B. Boyer* 6-15-17  
Robert B. Boyer #1573  
Boyer Associates C.O.A. # A317

Environmental Management  
JUN 23 2017  
Office of Water Resources



Being ASSESSORS PLAT NO. 12 LOT NO. 20  
**DRAINAGE & SEWER PLAN AND PROFILE NO. 4**  
**Matteson Ridge Condos**  
LOCATION  
175 Greenbush Road  
West Warwick, Rhode Island 02893

Checked By: R.B.B. Drawn By: J.D.M.  
Scale: AS NOTED Date: March 23, 2017

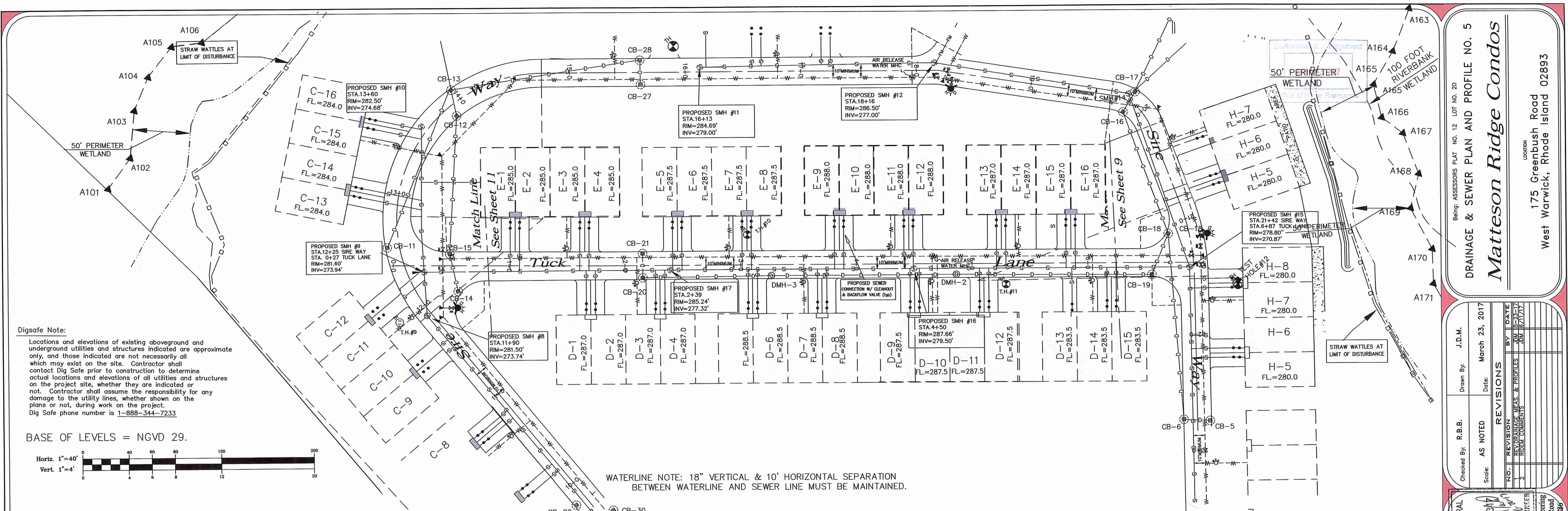
NO.	REVISION	DATE
1	REVISION	
2	REVISION	

STEVEN M. CABRAL  
No. 4947  
REGISTERED PROFESSIONAL ENGINEER  
151 Centerville Road  
Warwick, RI 02886

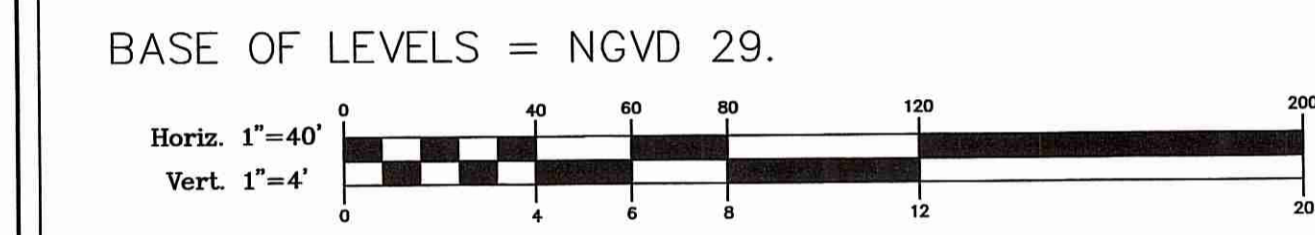
ROBERT B. BOYER  
No. 1573  
REGISTERED PROFESSIONAL LAND SURVEYOR

**BOYER ASSOCIATES**  
ESTABLISHED SINCE 1920  
1071 MAIN STREET  
WEST WARWICK, RI 02893  
TEL. (401)821-8872 FAX (401)826-1993

Sheet **10**  
of 24 sheets



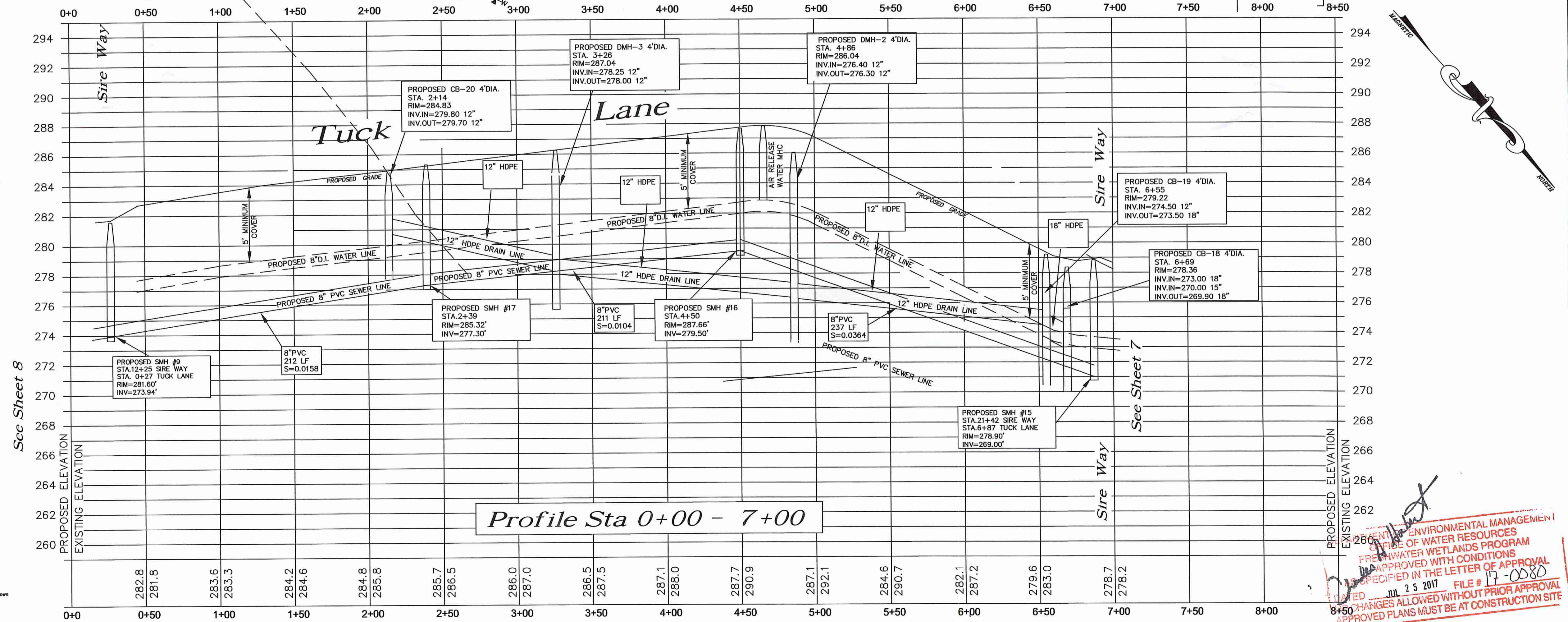
**Digsafe Note:**  
 Locations and elevations of existing aboveground and underground utilities and structures indicated are approximate only, and those indicated are not necessarily all which may exist on the site. Contractor shall contact Dig Safe prior to construction to determine actual locations and elevations of all utilities and structures on the project site, whether they are indicated or not. Contractor shall assume the responsibility for any damage to the utility lines, whether shown on the plans or not, during work on the project.  
 Dig Safe phone number is 1-888-344-7233



WATERLINE NOTE: 18" VERTICAL & 10' HORIZONTAL SEPARATION BETWEEN WATERLINE AND SEWER LINE MUST BE MAINTAINED.

**Legend**

- PROPERTY LINE
- STONE WALL
- EXISTING CONTOUR
- PROPOSED CONTOUR
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Profile Sta 0+00 - 7+00

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TYPE OF BOUNDARY SURVEY: MEASUREMENT SPECIFICATION:  
 NOT A BOUNDARY SURVEY

OTHER TYPE OF SURVEY:  
 DATA ACQUISITION SURVEY

TOPOGRAPHIC SURVEY ACCURACY: T-2

The purpose for the conduct of this survey and for the preparation of this plan is to depict proposed construction and utilities in order to ensure that the project conforms to all town regulations and to obtain a Wetlands Approval from RIDM.

by Robert B. Boyer #1573  
 Robert B. Boyer #1573  
 Boyer Associates C.O.A. # A317

**Drainage Note**  
 REFER TO DRAINAGE DETAILS NO.1 FOR DRAINAGE STRUCTURE TABLE PROVIDING STRUCTURE TYPE, RIM ELEVATION AND PIPE DIAMETER.

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 INSTALLATION OF SEWER LINE AND SERVICE SHALL CONFORM TO THE "STANDARD SANITARY SEWER REQUIREMENTS PREPARED FOR THE WEST WARWICK SEWER COMMISSION" OCTOBER 20, 2009, OR LATEST EDITION.

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APPROVED FOR CONSTRUCTION  
 JUL 25 2017 FILE # 17-0080  
 CHANGES ALLOWED WITHOUT PRIOR APPROVAL APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Being: ASSESSORS PLAT NO. 12 LOT NO. 20  
**DRAINAGE & SEWER PLAN AND PROFILE NO. 5**  
**Matteson Ridge Condos**  
 LOCATION  
 175 Greenbush Road  
 West Warwick, Rhode Island 02893

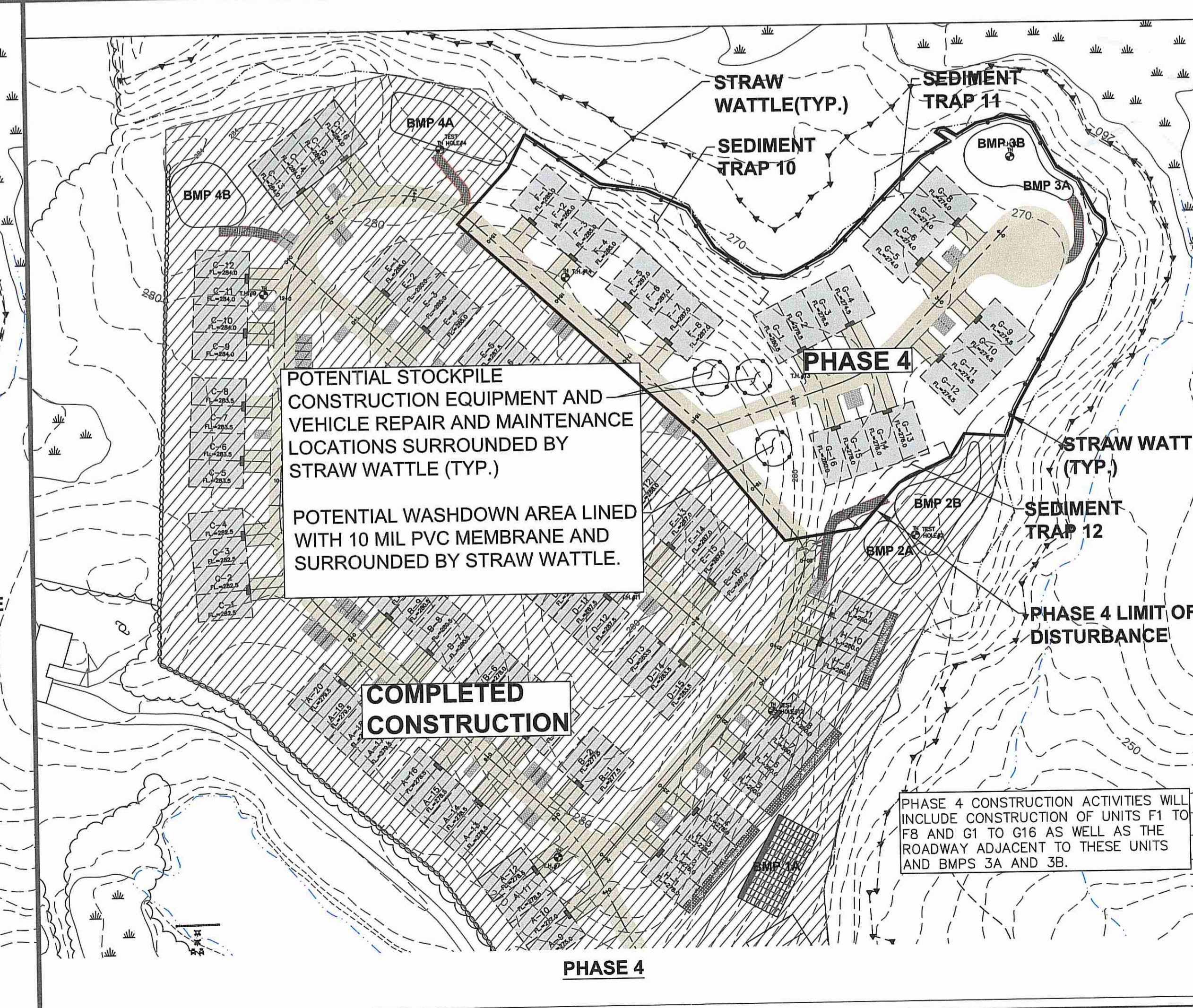
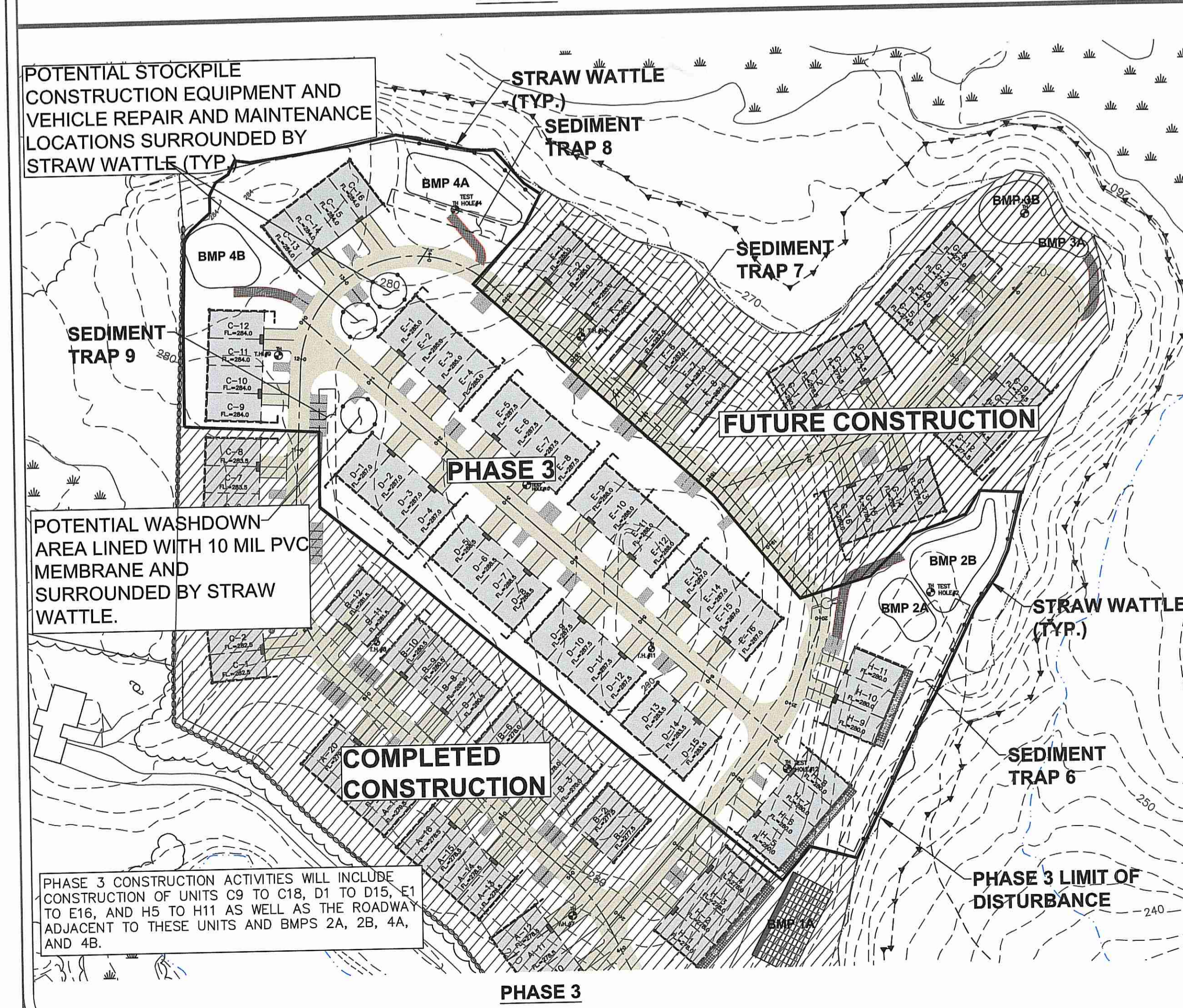
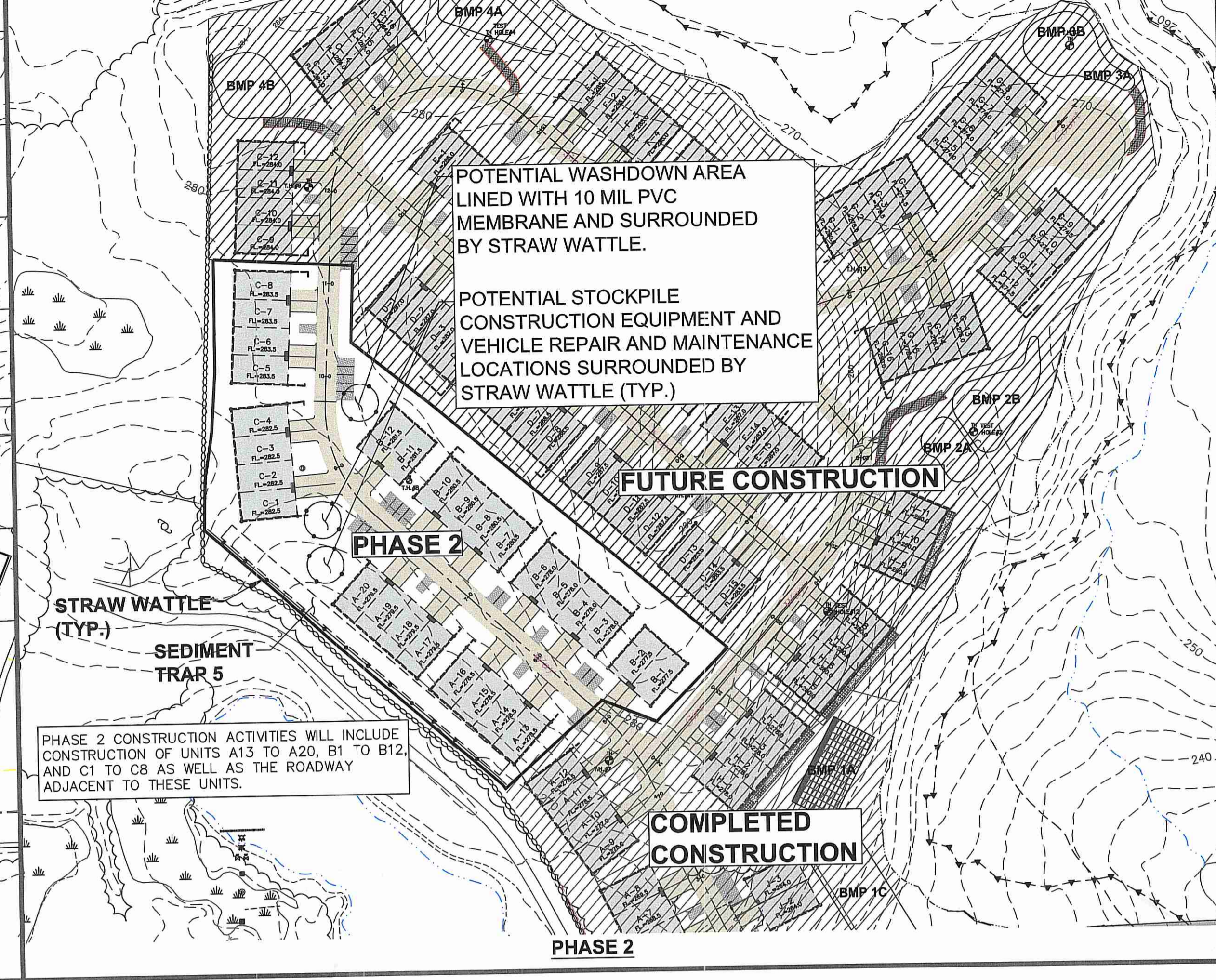
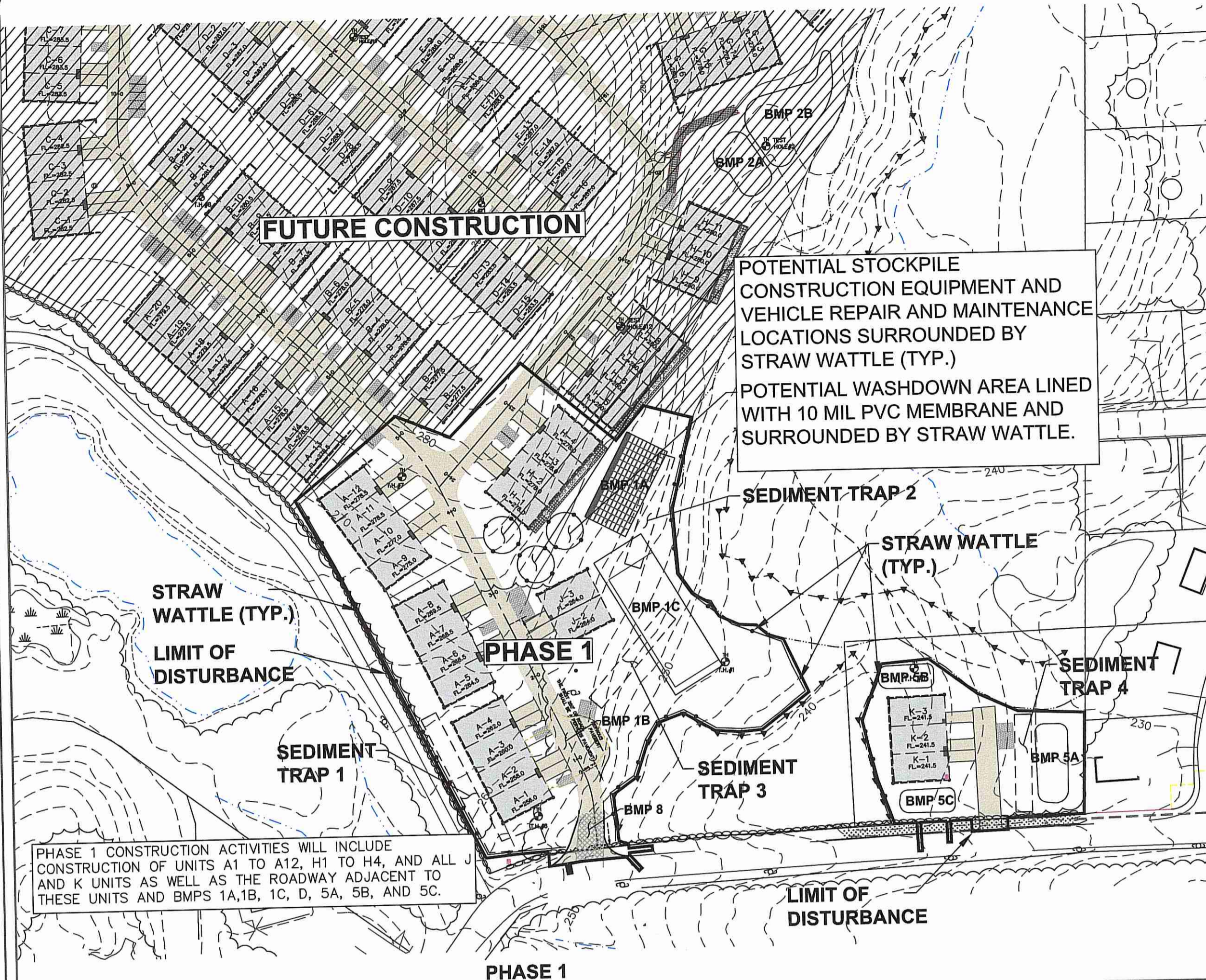
Checked By: J.D.M.  
 Drawn By: R.B.B.  
 Scale: AS NOTED  
 Date: March 23, 2017

NO.	REVISION	DATE
1	REPLACEMENT MEAS. & PROFILES	JUL 25 2017
2	ROSEM COMMENTS	JUL 27 2017

STEVEN H. CASPARI  
 No. 4847  
 REGISTERED PROFESSIONAL ENGINEER  
 Crossman Engineering  
 151 Centerville Road  
 Warwick, RI 02886

ROBERT B. BOYER  
 No. 1573  
 REGISTERED PROFESSIONAL LAND SURVEYOR  
 Boyer Associates C.O.A. # A317

**BOYER ASSOCIATES**  
 1071 MAIN STREET  
 WEST WARWICK, RI 02893  
 TEL. (401)821-8872 FAX (401)826-1993



**GENERAL PROJECT WIDE NOTES**

1. STRAW WATTLE SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, MAINTAINED ON A REGULAR BASIS, AND SHALL BE PLACED TO PREVENT SEDIMENTATION ONTO ADJACENT PROPERTY AND WETLANDS.
2. THE CONTRACTOR MUST REPLACE AND/OR RESEED ANY VEGETATION THAT DOES NOT DEVELOP/SURVIVE WITHIN THE PERIOD OF ONE YEAR AND HE SHALL DO SO AT NO ADDITIONAL EXPENSE TO THE OWNER.
3. ALL PERIMETER CONTROLS OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED AND POTENTIAL SEDIMENTATION SOURCES ARE REMOVED.
4. TREES AND OTHER EXISTING VEGETATION SHALL BE RETAINED WHENEVER FEASIBLE; THE AREA BEYOND THE DRIFLINE SHALL BE FENCED OR ROPED OFF TO PROTECT TREES FROM CONSTRUCTION EQUIPMENT.
5. AREAS DAMAGED DURING CONSTRUCTION SHALL BE RESEDED, RESEED, OR OTHERWISE RESTORED AT THE CONTRACTOR'S EXPENSE.
6. STOCKPILES SHALL HAVE NO SLOPE STEEPER THAN 2:1 AND SHALL BE SURROUNDED BY STRAW WATTLE.
7. STOCKPILES EXPOSED FOR EXCESSIVE PERIODS SHALL RECEIVE TEMPORARY TREATMENT CONSISTING OF HAY, STRAW, FIBER MATTING OR APPROVED EQUAL.

**CONSTRUCTION SEQUENCING**

CONSTRUCTION WILL BE SEPARATED INTO FOUR PHASES. IN GENERAL, THE SEQUENCE OF CONSTRUCTION FOR EACH PHASE WILL BE AS FOLLOWS:

1. SITE PREPARATION CONSISTING OF INSTALLING EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO ANY SOIL DISTURBANCE. INSTALL PERIMETER CONTROLS ALONG THE PHASING LINE/LIMIT OF DISTURBANCE AND SILT SACK IN CATCH BASINS IN THE VICINITY OF CONSTRUCTION.
2. MARKING OF ALL AREAS TO BE LEFT UNDISTURBED OR TO BE PROTECTED.
3. INSTALLATION OF CONSTRUCTION ENTRANCE AT THE PHASE'S PRIMARY ACCESS.
4. CLEARING AND GRUBBING OF ALL TREES, STUMPS AND VEGETATION WITHIN PHASE AREA, AND INSTALL TEMPORARY SEDIMENT BASINS.
5. STRIPPING AND STOCKPILING OF TOPSOIL AT DESIGNATED LOCATION.
6. EARTHWORK INCLUDING CUT AND FILL WORK.
7. INSTALLATION OF UTILITIES AND GRADING OF STORMWATER BASINS.
8. GRADING OF ROADWAY AND BITUMINOUS BINDER COURSE.
9. BUILDING AND UNDERGROUND INFILTRATION SYSTEM CONSTRUCTION
10. PLACE STOCKPILED LOAM AND SEED DISTURBED AREAS.
11. ESTIMATED DURATION OF SOIL EXPOSURE FOR EACH PHASE IS ONE CONSTRUCTION SEASON, 6 MONTHS.

**DUST CONTROL NOTES**

ON AN AS-NEEDED BASIS OR AS DIRECTED BY R.I.D.E.M. OR OWNER, THE CONTRACTOR SHALL UTILIZE ONE OF THE FOLLOWING METHODS (AS RECOMMENDED BY THE "R.I. SOIL EROSION AND SEDIMENT CONTROL HANDBOOK") TO CONTROL DUST:

A. THE EXPOSED SOIL SURFACE SHOULD BE MOISTENED PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST.

B. CALCIUM CHLORIDE SHOULD BE EITHER LOOSE DRY GRANULES OR FLAKES FINE ENOUGH TO FEED THROUGH A SPREADER AT A RATE THAT WILL KEEP SURFACE MOIST BUT NOT CAUSE POLLUTION OR PLANT DAMAGE.

THE METHODS SHOULD BE REPEATED AS NEEDED, AND SPECIAL ATTENTION MUST BE GIVEN TO THE ACCESS DRIVES.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
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JUL 25 2017 FILE # 17-0080  
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Soil Erosion and Sediment Control Plan  
**Matteson Ridge Condos**  
175 Greenbush Road  
West Warwick, Rhode Island 02893

Checked By: R.B.B. Drawn By: J.D.M.  
Scale: 1"=100' Date: March 23, 2017

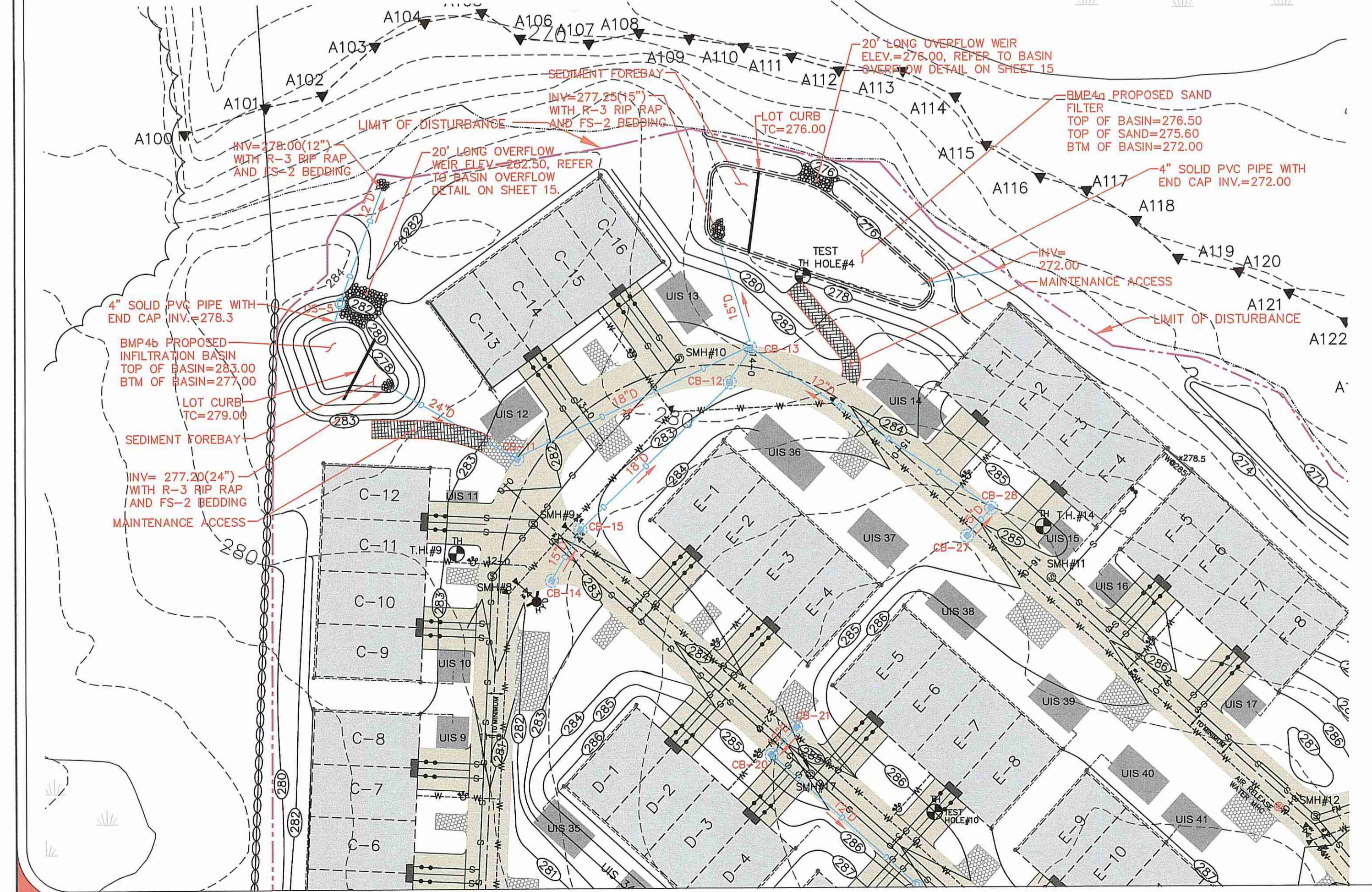
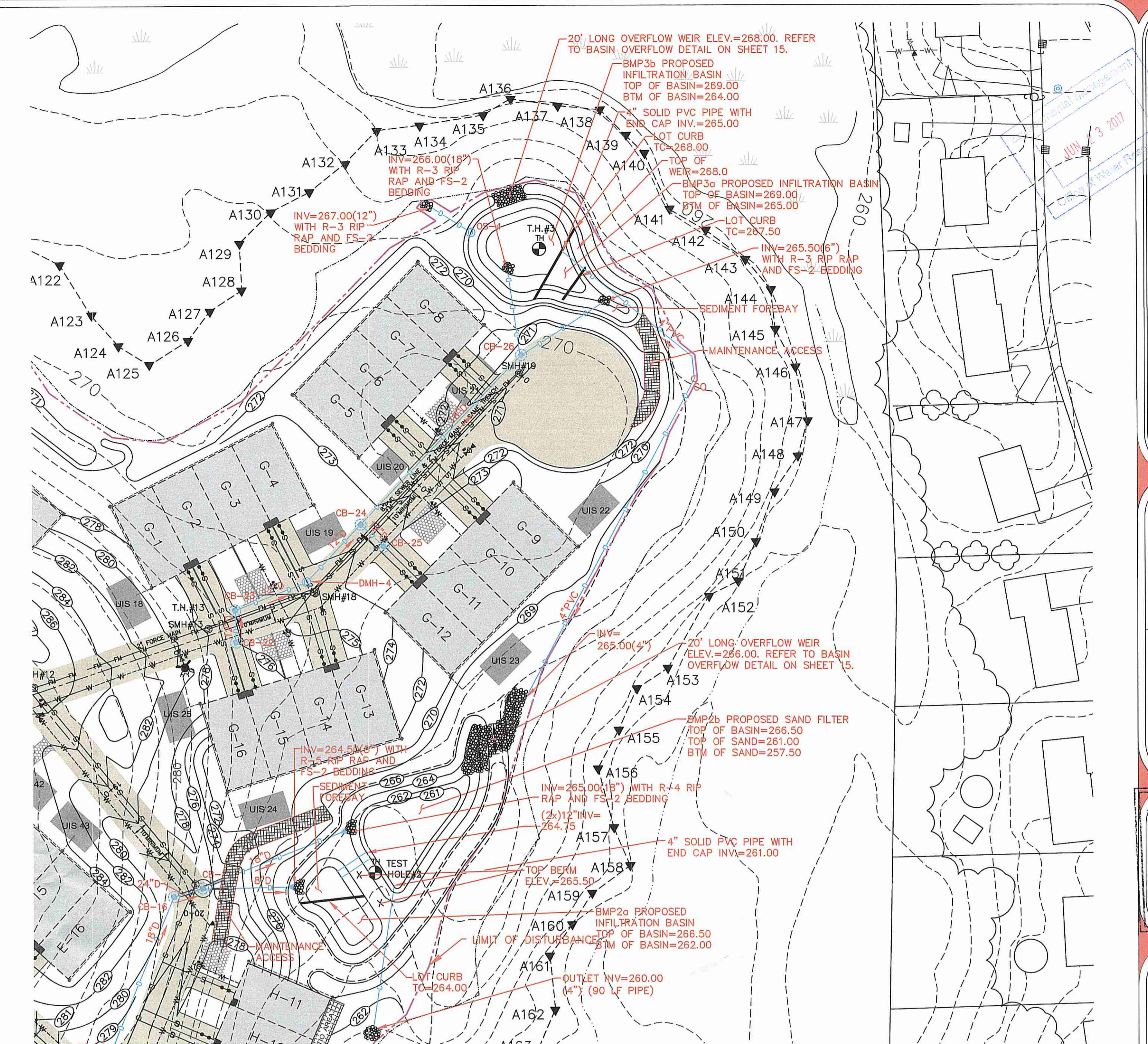
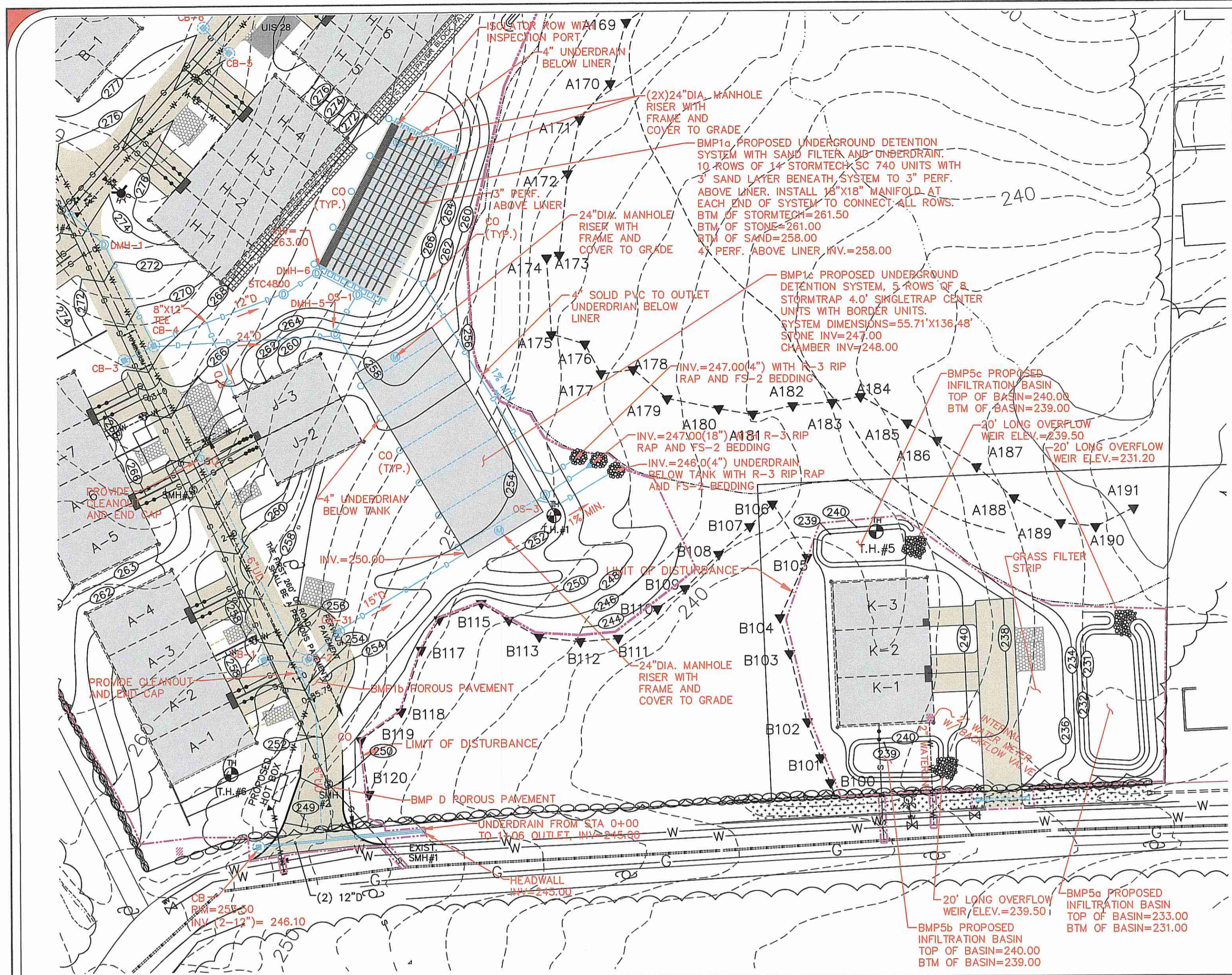
NO.	REVISION	DATE	BY
1	REVISION		
1	REVISION		

STEVEN M. CABRAL  
REGISTERED PROFESSIONAL ENGINEER  
Civil/Structural Engineering  
151 Centreville Road  
Warwick, RI 02886

**BOYER ASSOCIATES**  
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TEL: (401)821-8872 FAX (401)826-1993

Sheet **12**  
of 24 sheets





**DRAINAGE STRUCTURE TABLE**

NUMBER	STRUCTURE	RIM	INVERT (IN)	INVERT (OUT)
CB 1	PRECAST CONCRETE (4' DIA.)	255.34	---	252.00 (15")
CB 2	PRECAST CONCRETE (4' DIA.)	255.54	251.30 (15") 251.80 (6")	251.30 (15")
CB 3	PRECAST CONCRETE (4' DIA.)	268.25	---	264.88 (18")
CB 4*	PRECAST CONCRETE (6' DIA.)	268.25	264.70 (18") 264.40 (24")	263.40 (12") 264.40 (24")
CB 5	PRECAST CONCRETE (4' DIA.)	276.85	---	272.50 (15")
CB 6	PRECAST CONCRETE (4' DIA.)	276.85	271.80 (15")	271.70 (15")
CB 7	PRECAST CONCRETE (4' DIA.)	276.85	272.46 (15")	271.45 (24")
CB 8	PRECAST CONCRETE (4' DIA.)	276.85	---	273.05 (12")
CB 9	PRECAST CONCRETE (4' DIA.)	278.83	275.10 (12")	275.00 (18")
CB 10	PRECAST CONCRETE (4' DIA.)	278.83	275.50 (15")	275.28 (15")
CB 11	PRECAST CONCRETE (4' DIA.)	281.80	277.60 (18")	277.60 (24")
CB 12	PRECAST CONCRETE (4' DIA.)	282.35	278.50 (18")	278.40 (18")
CB 13*	PRECAST CONCRETE (6' DIA.)	282.36	278.30 (18") 278.40 (12")	277.90 (8")** 278.30 (18")
CB 14	PRECAST CONCRETE (4' DIA.)	282.50	---	279.50 (15")
CB 15	PRECAST CONCRETE (4' DIA.)	282.50	278.20 (15")	279.10 (18")

**DRAINAGE STRUCTURE TABLE**

NUMBER	STRUCTURE	RIM	INVERT (IN)	INVERT (OUT)
DMH 1	PRECAST CONCRETE (4' DIA.)	273.53	268.60 (18")	268.50 (24")
DMH 2	PRECAST CONCRETE (4' DIA.)	286.04	276.40 (12")	276.30 (12")
DMH 3	PRECAST CONCRETE (4' DIA.)	287.04	278.25 (12")	278.00 (12")
DMH 4	PRECAST CONCRETE (4' DIA.)	274.76	271.25 (12")	271.10 (12")
DMH 5	PRECAST CONCRETE (4' DIA.)	262.00	257.50 (18") 253.00 (24")	248.50 (42")
DMH 6	PRECAST CONCRETE (6' DIA.)	267.00	263.00 (12")	REFER TO DETAIL ON SHEET 19
STC	STORMCEPTOR STC 4800	267.00	263.03 (12")	263.03 (12")

**DRAINAGE STRUCTURE TABLE**

NUMBER	STRUCTURE	RIM	INVERT (IN)	INVERT (OUT)
CB 16	PRECAST CONCRETE (4' DIA.)	277.16	268.00 (18")	267.90 (24")
CB 17*	PRECAST CONCRETE (6' DIA.)	277.40	267.50 (24")	265.20 (8") 267.08 (18")
CB 18	PRECAST CONCRETE (4' DIA.)	278.36	273.00 (18")	269.90 (18")
CB 19	PRECAST CONCRETE (4' DIA.)	279.22	274.50 (12")	273.50 (18")
CB 20	PRECAST CONCRETE (4' DIA.)	284.83	279.80 (12")	279.70 (12")
CB 21	PRECAST CONCRETE (4' DIA.)	284.83	---	280.10 (12")
CB 22	PRECAST CONCRETE (4' DIA.)	276.70	---	272.50 (12")
CB 23	PRECAST CONCRETE (4' DIA.)	275.80	272.00 (12")	271.90 (12")
CB 24	PRECAST CONCRETE (4' DIA.)	273.50	269.50 (12") 269.50 (12")	269.40 (18")
CB 25	PRECAST CONCRETE (4' DIA.)	273.50	---	269.75 (12")
CB 26*	PRECAST CONCRETE (6' DIA.)	270.24	267.60 (18")	266.10 (8") 267.00 (18")
CB 27	PRECAST CONCRETE (4' DIA.)	283.88	---	280.50 (15")
CB 28	PRECAST CONCRETE (4' DIA.)	283.88	280.10 (15")	280.00 (12")
CB 29	PRECAST CONCRETE (4' DIA.)	280.35	---	277.00 (12")
CB 30	CONCRETE (4' DIA.)	280.15	276.60 (12")	276.50 (12")
CB 31	PRECAST CONCRETE (4' DIA.)	254.73	251.00 (15")	251.00 (15")

\*CATCH BASIN IS A DIVERSION STRUCTURE. REFER TO SHEET 19 FOR DETAILS.  
 \*\*THE 15" PIPE SHALL BE EXTENDED INTO THE CB AND CAPPED. INSTALL A 8" DRIP IN THE 15" PIPE CAP.  
 NOTE: OUTLET STRUCTURE NO. 2 HAS BEEN REMOVED AS PART OF THIS REVISION.

**DRAINAGE NOTES**

- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR UNDERGROUND STORAGE TANKS. PRECAST STRUCTURES SHALL BE SUBMITTED WITH CERTIFICATION FROM PROFESSIONAL ENGINEER.
- CONTRACTOR TO VERIFY THAT ALL STRUCTURES ARE COMPATIBLE WITH FRAME AND GRATE.
- CONTRACTOR IS RESPONSIBLE TO PROVIDE SHOP DRAWINGS AND SPECIFICATIONS FOR ALL DRAINAGE RELATED ITEMS FOR REVIEW AND APPROVAL BY THE ENGINEER, PRIOR TO ORDERING. CONCRETE MANUFACTURER SHALL REVIEW RIM TO TOP OF PIPE ELEVATIONS AND PROVIDE SPECIFIC DETAILS.
- ALL STRUCTURES SHALL BE DESIGNED FOR H-20 LOADING.
- ALL CATCH BASINS SHALL BE PRECAST CONCRETE WATER TIGHT STRUCTURES (NO WEEP HOLES) AND SHALL HAVE A 3" SUMP.
- CATCH BASINS SHALL BE RI STD. 4.4.0- PRECAST (DIAMETER AS NOTED IN TABLE) ROUND CATCH BASIN WITH RI STD. 6.3.0-SQUARE FRAME AND GRATE. MANHOLES SHALL BE RI STD. 4.2.0- PRECAST 4'-0" ROUND MANHOLE WITH RI STD. 6.2.1-HEAVY DUTY ROUND FRAME AND COVER.
- UNLESS OTHERWISE NOTED, ALL SOLID DRAINAGE PIPE SHALL BE ADS N-12 HOPE OR APPROVED EQUAL. PIPE BEDDING SHALL BE IN CRUSHED STONE OR GRAVEL BORROW COMPACTED TO 95% DRY DENSITY (MODIFIED PROCTOR METHOD). ADS PIPE SHALL BE INSTALLED ACCORDING TO MANUFACTURERS' REQUIREMENTS. PIPES SHALL BE INSTALLED WITH CLAY TRENCH DAMS EVERY 50' (MINIMUM 1 PER PIPE).
- ALL ROOF DRAINS SHALL BE INSTALLED AT A 1.0% MINIMUM SLOPE.
- CONTRACTOR MAY NEED TO RELOCATE PIPE TO AVOID CONFLICTS WITH EXISTING UTILITIES. COORDINATE RELOCATION WITH ENGINEER. NO ADDITIONAL PAYMENT WILL BE PROVIDED FOR DAMAGE TO EXISTING UTILITIES. CONTRACTOR IS RESPONSIBLE TO INCLUDE ALL WORK NECESSARY TO INSTALL THIS PIPE, INCLUDING TRANSPORTING OR PLANTING NEW TREES IF NECESSARY.
- THE CONTRACTOR SHALL PROVIDE AS-BUILT PLANS THAT INCLUDE DRAINAGE SYSTEM (PIPE INVERTS, SAND FILTER LOCATION AND GRADES, AND OUTLET STRUCTURE INVERTS).
- WATER QUALITY CHAMBER MAY BE SUBSTITUTED FOR AN APPROVED EQUAL STRUCTURE. CONTRACTOR SUBMITTAL REQUIREMENTS INCLUDE TSS REMOVAL CALCULATIONS FOR THIS SPECIFIC SITE.
- EACH PIPE RUN (BETWEEN STRUCTURES) SHALL BE ENVIRONMENTAL MANAGEMENT (EMM) INSTALLED. USE 12" WIDE CLAY BAY OR GEOMEMBRANE WITH 3" SUMP COLLAR.
- RIP RAP SIZE NOT SPECIFICALLY IDENTIFIED SHALL BE R-3 UNLESS APPROVED OTHERWISE BY ENGINEER. ALL STRUCTURES SHALL BE INSTALLED IN ACCORDANCE WITH THE LETTER OF APPROVAL DATED JUL 25 2017 FILE # 17-0080. STRUCTURES ALLOWED WITHOUT PRIOR APPROVAL APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Boyer Associates, Inc. 1071 MAIN STREET WEST WARWICK, RI 02893 TEL: (401)821-8872 FAX (401)826-1993

Checked By: R.B.B. Drawn By: J.D.M. Date: March 23, 2017 Scale: 1"=50'

REVISIONS BY DATE  
 1. R.B.B. 5/17  
 2. J.D.M. 5/17

STEVEN M. CADRAL  
 No. 487  
 REGISTERS PROFESSIONAL ENGINEER  
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Checked By: R.B.B. Drawn By: J.D.M. Date: March 23, 2017 Scale: 1"=50'

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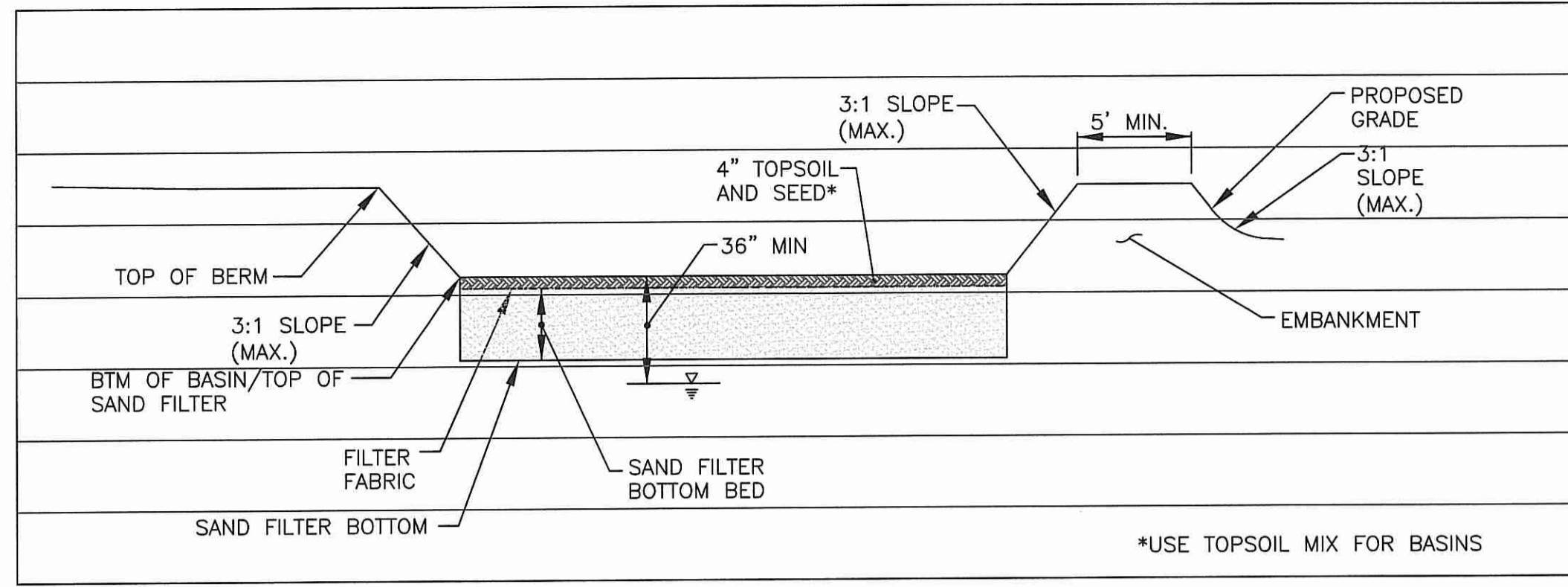
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**SAND FILTER TYPICAL SECTION**  
NOT TO SCALE

**SAND FILTER SUMMARY**

BMP NO.	TOP OF BERM	BOTTOM OF BASIN/ TOP OF SAND FILTER	SAND BOTTOM	OVERFLOW WEIR CREST ELEVATION	GROUNDWATER ELEVATION	SEPARATION TO GROUNDWATER
2b	266.50	261.00	257.50	266.00	257.00	4.00'
4a	276.50	275.60	272.00	276.00	271.60	4.00'

**SAND FILTER BOTTOM BED NOTE**

THE SAND FILTER BOTTOM BED SHALL BE AASHTO M6 OR ASTM 33 CONCRETE SAND.

FILTER FABRIC PLACED BETWEEN SAND FILTER BOTTOM BED AND TOPSOIL LAYERS SHALL BE MIRAFI 180-N OR APPROVED EQUAL.

**SAND FILTER/GRASS SWALE AND INFILTRATION BASIN SEED MIX (SEED MIX NO. 3)**

APPLICATION RATE = 15-25 LBS. / ACRE (SEASONALLY FLOODED MIX) (SAND FILTER BOTTOM AREA)

- 20% FOX SEDGE, PA ECOTYPE (CAREX VULPINOIDEA, PA ECOTYPE)
- 16% VIRGINIA WILD RYE, PA ECOTYPE (ELYMUS VIRGINICUS, PA ECOTYPE)
- 15% RIVERBANK WILD RYE, PA ECOTYPE (ELYMUS RIPARIUS, PA ECOTYPE)
- 15% JAPANESE MILLET (ECHINOCHLOA CRUSGALLI VAR. FRUMENTACEA)
- 15% DEER TONGUE, 'TIOGA' (PANICUM CLANDESTINUM (DICHTANTHELIUM C.), 'TIOGA')
- 9% BLUNT BROOM SEDGE, PA ECOTYPE (CAREX SCOPARIA, PA ECOTYPE)
- 5% SWITCHGRASS, 'CAVE-IN-ROCK' (PANICUM VIRGATUM, 'CAVE-IN-ROCK')
- 2% GREEN BULRUSH, PA ECOTYPE (SCIRPUS ATROVIRENS, PA ECOTYPE)
- 2% AWL SEDGE, PA ECOTYPE (CAREX STIPATA, PA ECOTYPE)
- 1% AUTUMN BENTGRASS, APB (AGROSTIS PERENNANS, APB)

**SAND FILTER NOTES**

1. SAND FILTER BASIN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE RHODE ISLAND STORMWATER DESIGN AND INSTALLATION STANDARDS MANUAL, APPENDIX F.5, CONSTRUCTION STANDARDS/SPECIFICATIONS FOR FILTER BMP'S.
2. MATERIAL USED SHALL MEET THE REQUIREMENTS OF TABLE F-16 IN APPENDIX F.5.
3. THE CONTRACTOR IS RESPONSIBLE TO BECOME FAMILIAR WITH THE ABOVE REFERENCED MANUAL. THE MANUAL CAN BE FOUND FOUND AT <http://www.dem.ri.gov/pubs/regs/water/swmanual.pdf>.
4. CONTRACTOR IS RESPONSIBLE TO SUBMIT SHOP DRAWINGS AND SPECIFICATIONS FOR SAND FILTER MATERIAL PRIOR TO START OF CONSTRUCTION.
5. FILTER FABRIC SHALL BE MARIFI 160 N OR APPROVED EQUAL.
6. AS NOTED, BASIN SHALL HAVE 2 PLY FILTER FABRIC; 1 FOR UPPER MEMBRANE PROTECTION AND 1 FOR WRAPPING BASIN UNDERDRAIN SYSTEM.

**TOPSOIL MIX FOR BASINS**

PLANTING SOIL SHALL MEET THE BELOW COMPOSITION;

SAND: 85-88%  
SOIL FINES: 8-12% (NO MORE THAN 2% CLAY)  
ORGANIC MATTER: 3-5%

**EMBANKMENT NOTES:**

1. THE SAND FILTER AND INFILTRATION BASIN EMBANKMENTS ARE TO BE CONSTRUCTED WITH APPROVED COMMON BORROW. NO SOIL/ROCK GRATER THAN 2" SHALL BE UTILIZED. COMMON BORROW SHALL MEET OR EXCEED AN IN-PLACE DENSITY OF 100 lb./cf. ALL MATERIAL SHALL BE PLACED IN 8 TO 12 INCH LIFTS AND COMPACTED TO 95% MAXIMUM DENSITY. FILL MATERIAL WILL NOT CONTAIN FROZEN MATERIALS OR BE PLACED ON FROZEN SURFACES. COMMON BORROW SHALL MEET SPECIFICATION SECTION 202.20 IN THE RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2013 EDITION.
2. UPON COMPLETION OF CLEARING AND GRUBBING OPERATIONS, THE EMBANKMENT AREAS ARE TO BE EXCAVATED. IF ANY ORGANIC OR UNSUITABLE MATERIAL IS ENCOUNTERED, THE CONTRACTOR SHALL CONTACT THE ENGINEER FOR REVIEW OF EXCAVATION AREA. THE DEPTH OF EXCAVATION WILL BE DETERMINED BY THE ENGINEER BASED UPON THE LOCAL CONDITIONS. NO FILL MATERIAL SHALL BE PLACED UNTIL THE FOUNDATION PREPARATION HAS BEEN COMPLETED. ALL WATER SHALL BE REMOVED FROM THE FOUNDATION PRIOR TO PLACING THE EMBANKMENT.
3. THE FILL MATERIAL MUST BE SPREAD IN UNIFORM LAYERS AND FALL WITHIN THE SPECIFIED OPTIMUM WATER CONTENT RANGE IN ORDER TO ACHIEVE THE REQUIRED COMPACTION. EACH LAYER IS TO BE COMPACTED PRIOR TO LAYING AN ADDITIONAL LAYER. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER HIS SELECTED METHOD OF COMPACTION, COMPACTION EQUIPMENT AND THE SEQUENCE OF OPERATIONS NECESSARY TO OBTAIN THE REQUIRED DENSITY. THE WATER CONTENT AT COMPACTION SHOULD BE IN THE RANGE BETWEEN ONE PERCENTAGE POINT BELOW AND TWO PERCENTAGE POINTS ABOVE STANDARD AASHTO OPTIMUM WATER CONTENT. THE MATERIAL SHALL BE PROCESSED TO A UNIFORM WATER CONTENT BY ADDING WATER TO THE MATERIAL IN ADVANCE OF THE FILL PLACEMENT.
4. BACKFILL MATERIAL AROUND STRUCTURES AND PIPE IS TO BE PLACED TO PREVENT THE MOVEMENT OF WATER. THE OPTIMUM WATER CONTENT MUST BE MAINTAINED IN THE SAME RANGE AS IN THE EMBANKMENT. THE BACKFILL MUST BE PLACED IN LAYERS LESS THAN 4 INCHES IN THICKNESS AND DISTRIBUTED UNIFORMLY AROUND THE STRUCTURE/PIPE. ALL COMPACTION WILL BE TO 95% MAXIMUM DENSITY AND MAY REQUIRE HAND TAMPERS OR SMALL POWER EQUIPMENT.
5. EMBANKMENT DAMAGE COMMONLY RESULTS FROM IMPROPER CONSTRUCTION OF CONDUIT AND STRUCTURAL BACKFILL WITHIN THE EMBANKMENT BECAUSE SEEPAGE WILL OCCUR WITH IMPROPER BACKFILL AND COMPACTION. THEREFORE, STRUCTURES AND PIPES ARE TO BE CONSTRUCTED AS THE EMBANKMENT CONSTRUCTION RISES TO THE RESPECTIVE PIPE OR STRUCTURE. THIS WILL PREVENT THE DISTURBANCE OF CONSTRUCTED EMBANKMENT MATERIAL. PIPES FROM THE OUTLET STRUCTURE TO THE OUTFALL SHALL HAVE AN ANTI-SEEP COLLAR.

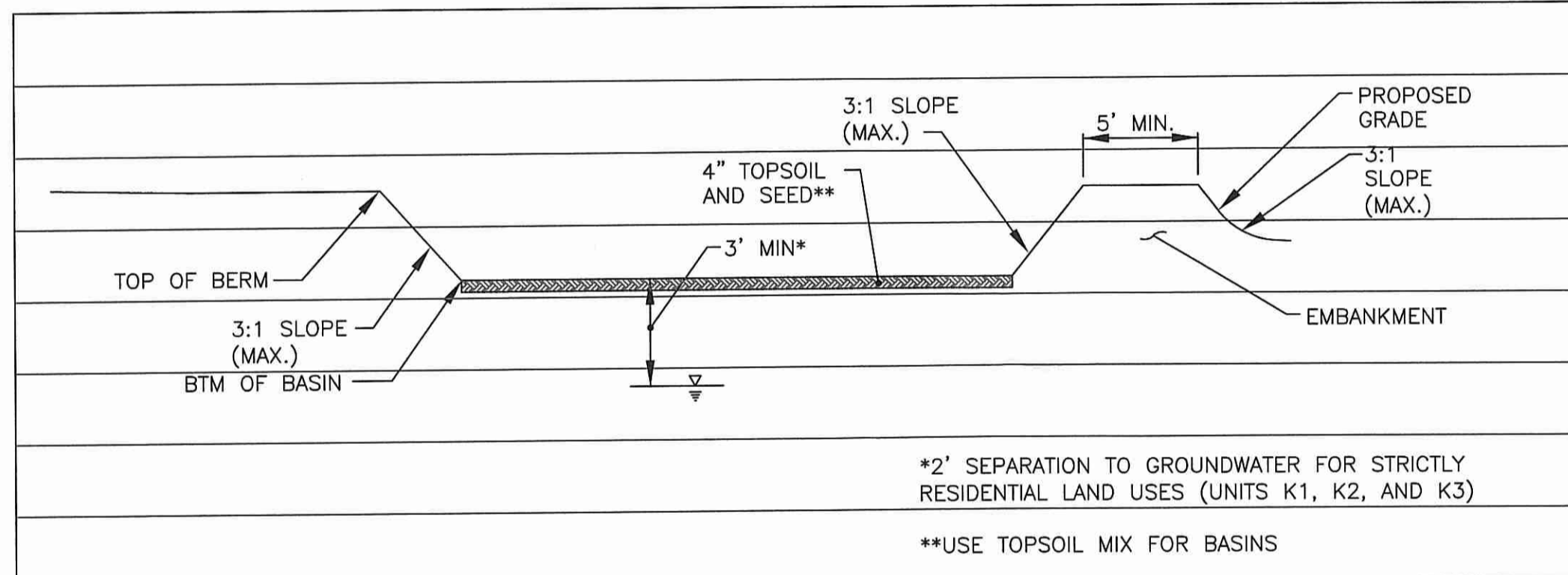
**DRAINAGE NOTES**

1. CONTRACTOR TO VERIFY THAT ALL STRUCTURES ARE COMPATIBLE WITH FRAME AND GRATE.
2. CONTRACTOR IS RESPONSIBLE TO OBTAIN SHOP DRAWINGS AND SPECIFICATIONS FOR ALL DRAINAGE RELATED ITEMS FOR REVIEW AND APPROVAL BY THE ENGINEER, PRIOR TO ORDERING. CONCRETE MANUFACTURER SHALL REVIEW RISE TO TOP OF PIPE ELEVATIONS AND PROVIDE SPECIFIC DETAILS.
3. ALL STRUCTURES SHALL BE DESIGNED FOR H-20 LOADING.
4. ALL CATCH BASINS SHALL BE PRECAST CONCRETE WATER TIGHT STRUCTURES. (NO WEEP HOLES)
5. UNLESS OTHERWISE NOTED, ALL SOLID DRAINAGE PIPE SHALL BE ADS N-12 HDPE OR APPROVED EQUAL. PIPE BEDDING SHALL BE IN CRUSHED STONE OR GRAVEL BORROW COMPACTED TO 95% DRY DENSITY (MODIFIED PROCTOR METHOD). ADS PIPE SHALL BE INSTALLED ACCORDING TO MANUFACTURERS' REQUIREMENTS.
6. ALL ROOF DRAINS SHALL BE INSTALLED AT A 1.0% MINIMUM SLOPE.
7. CONTRACTOR SHALL SUBMIT PRECAST CONCRETE TANK FOR BMP 1c-UNDERGROUND DETENTION SYSTEM TO ENGINEER FOR APPROVAL.
8. THE SLOPE OF THE GRASS FILTER STRIP UPGRADIENT FROM BMP 5a-INFILTRATION BASIN SHALL NOT EXCEED 6%. INSTALL EROSION CONTROL MATTING WITHIN FILTER STRIP AREA AND LOAM AND SEED WITH SEED MIX NO. 3.
9. A FIXED VERTICAL SEDIMENT DEPTH MARKER SHOULD BE INSTALLED IN EACH SEDIMENT FOREBAY TO MEASURE SEDIMENT DEPOSITS AND INDICATE WHEN MAINTENANCE IS REQUIRED. PROVIDED BELOW ARE THE DESIGN DEPTH AND HALF OF DESIGN DEPTH ELEVATIONS. SEDIMENT REMOVAL AND MAINTENANCE IS REQUIRED WHEN SEDIMENT ACCUMULATES TO HALF THE DESIGN DEPTH.

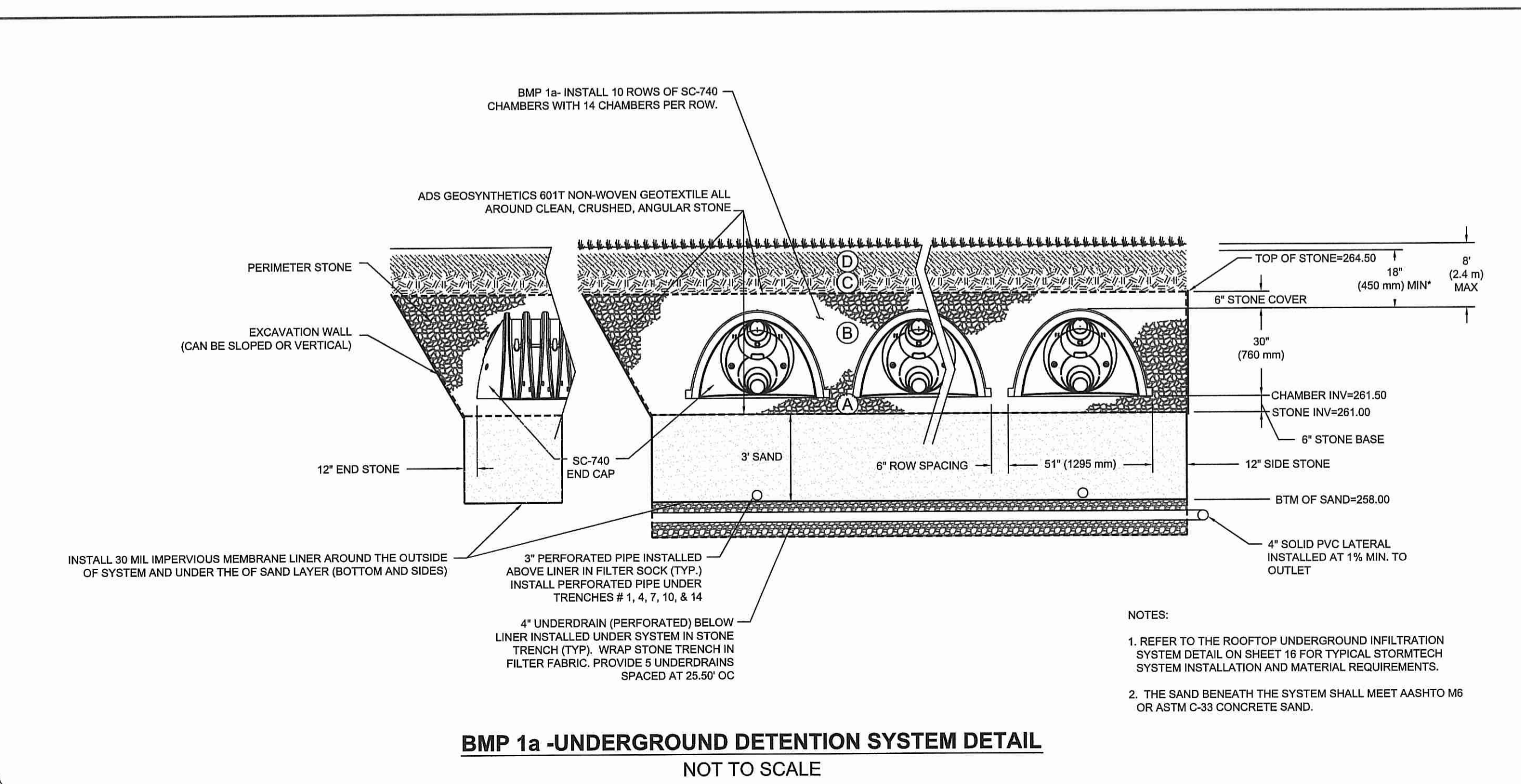
BMP NO.	BOTTOM OF BASIN ELEVATION	1/2 OF DESIGN DEPTH ELEVATION	DESIGN DEPTH ELEVATION
2a (SEDIMENT FOREBAY)	262.00	263.00	264.00
3a (SEDIMENT FOREBAY)	265.00	266.00	267.00
4a (SEDIMENT FOREBAY)	275.60	275.80	276.00
4b (SEDIMENT FOREBAY)	277.00	278.00	279.00

**INFILTRATION BASIN SUMMARY**

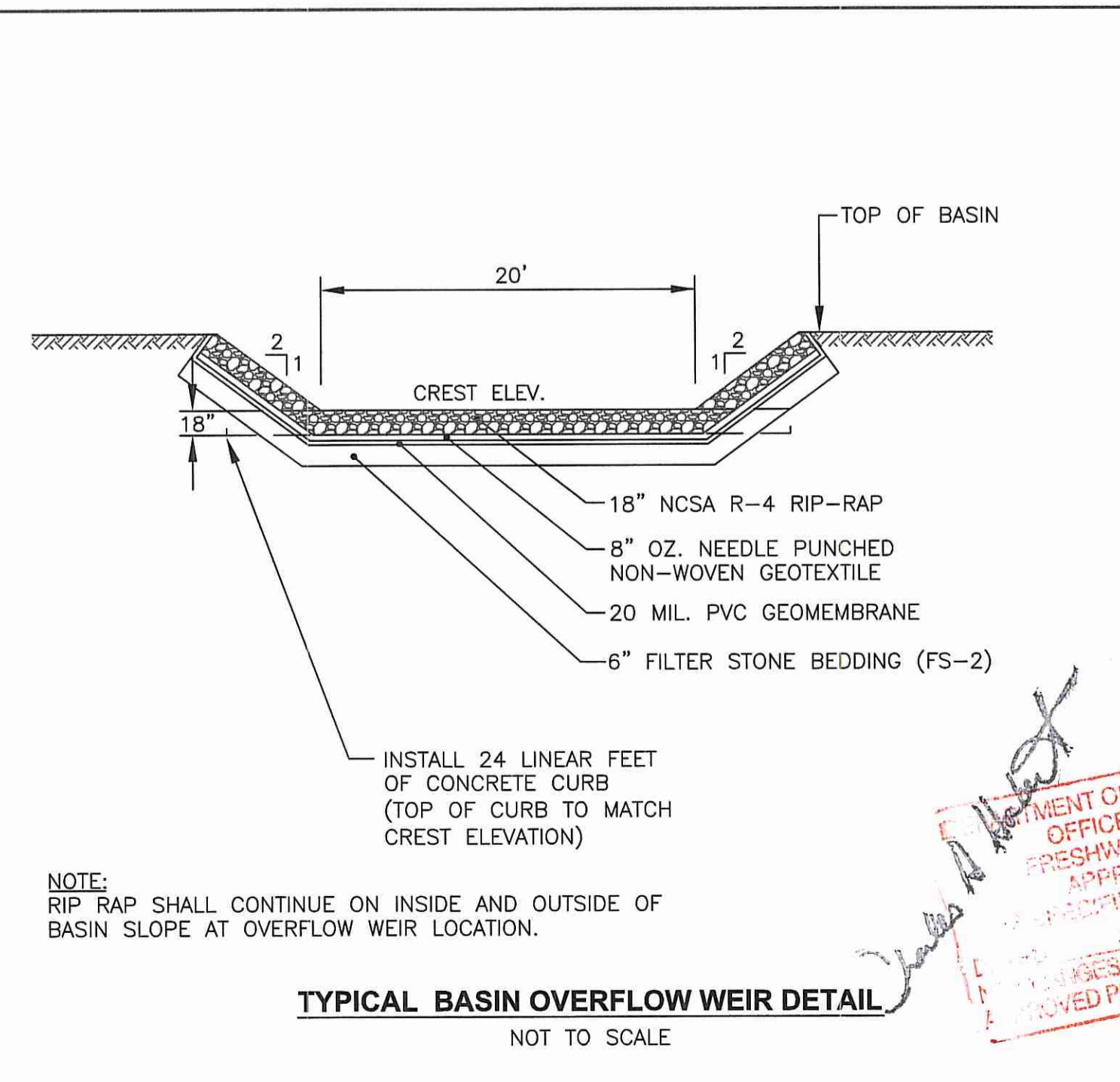
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2a	266.50	262.00	265.50	257.00	5.00
3a	269.00	265.00	268.00	260.00	5.00
3b	269.00	264.00	268.00	260.00	4.00
4b	283.00	277.00	282.50	273.00	4.00
5a	233.00	231.00	231.30	229.00	2.00
5b	240.00	239.00	239.50	237.00	2.00
5c	240.00	239.00	239.50	237.00	2.00



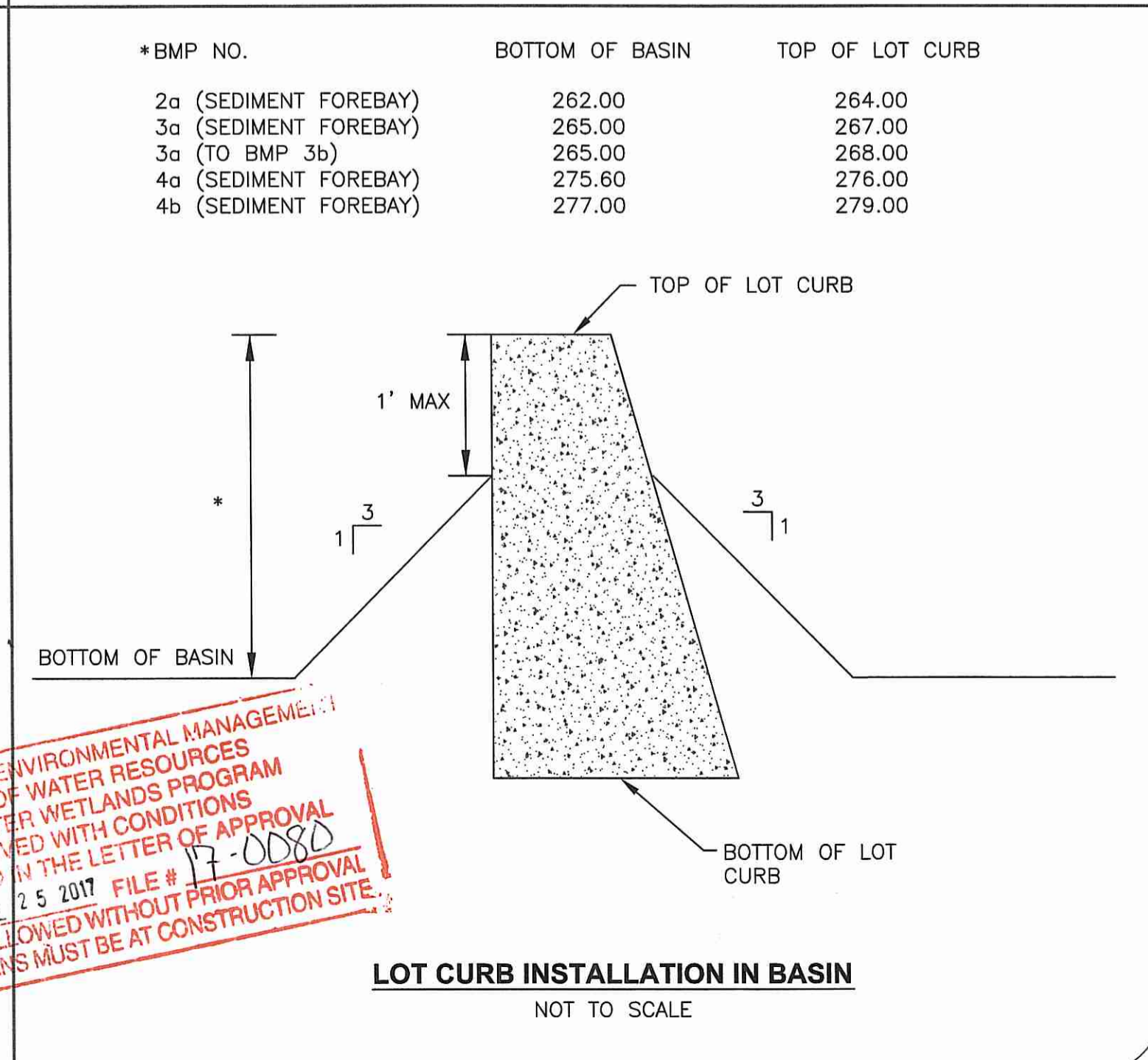
**INFILTRATION BASIN TYPICAL SECTION**  
NOT TO SCALE



**BMP 1a - UNDERGROUND DETENTION SYSTEM DETAIL**  
NOT TO SCALE



**TYPICAL BASIN OVERFLOW WEIR DETAIL**  
NOT TO SCALE



**LOT CURB INSTALLATION IN BASIN**  
NOT TO SCALE

Being: ASSESSORS PLAT NO. 12 LOT NO. 20  
**DRAINAGE DETAILS NO. 2**  
**Matteson Ridge Condos**  
 LOCATION  
 175 Greenbush Road  
 West Warwick, Rhode Island 02893

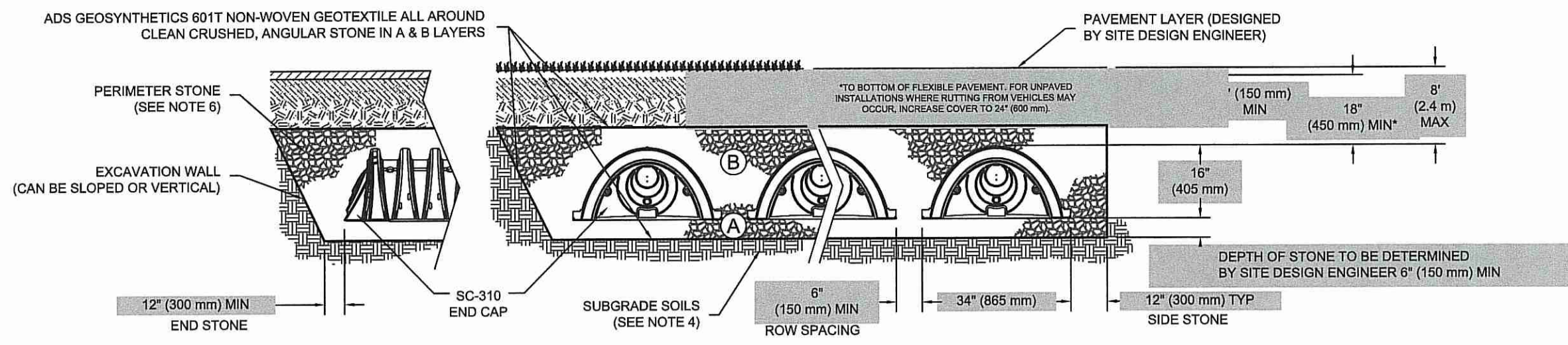
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NO.	REVISION	DATE
1	REVISION	5/17

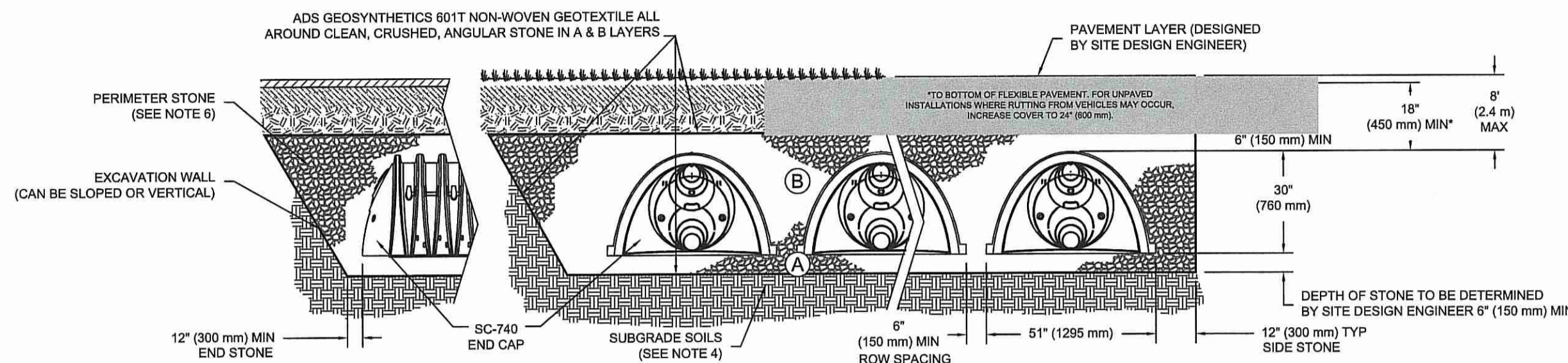
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DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 PREPARED IN THE LETTER OF APPROVAL  
 JUL 25 2017 FILE # 17-0080  
 CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 REVISED PLANS MUST BE AT CONSTRUCTION SITE



**STORMTECH SC-310 CHAMBER SYSTEMS**



**STORMTECH SC-740 CHAMBER SYSTEMS**

**ACCEPTABLE FILL MATERIALS**

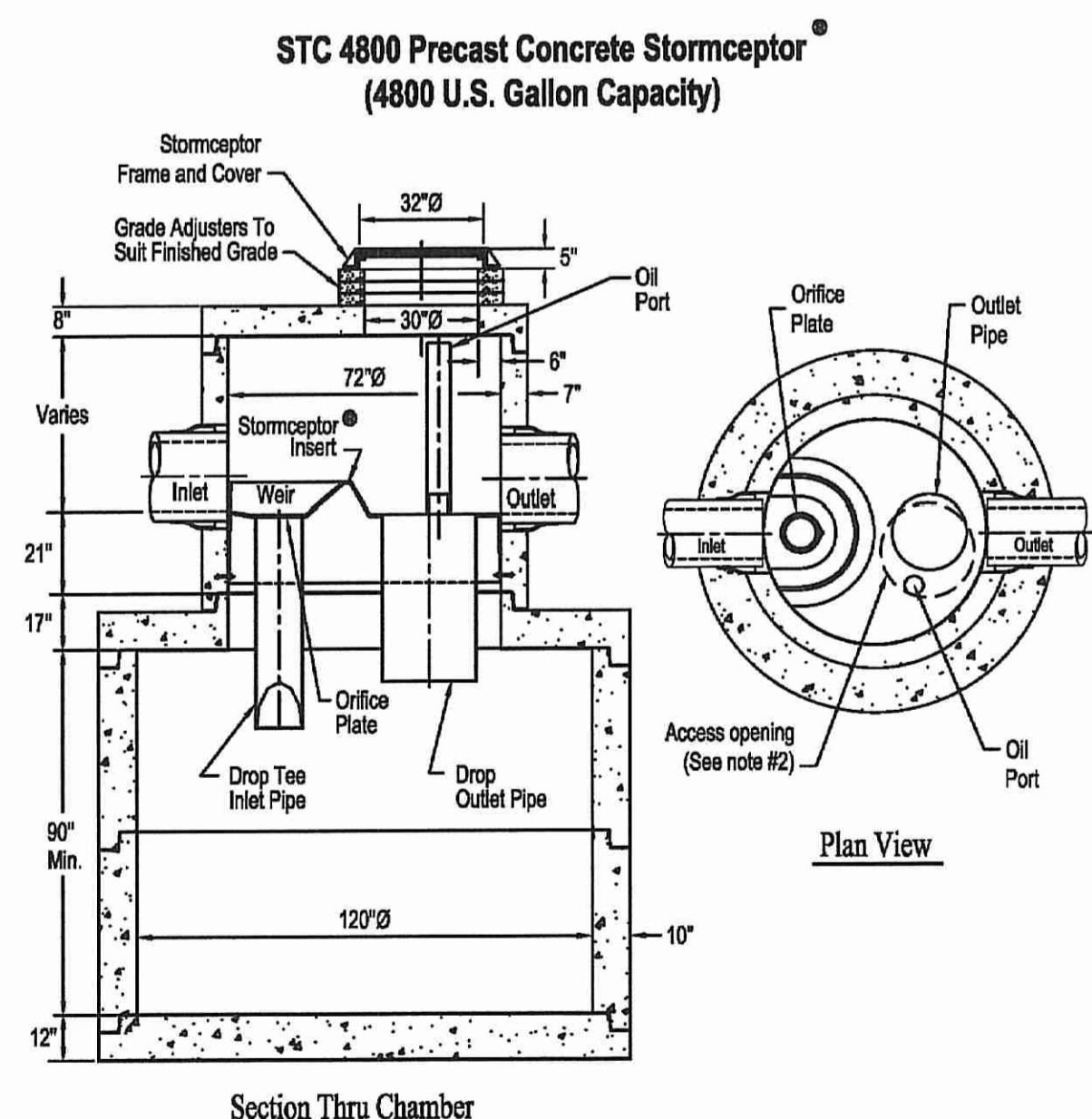
- PLEASE NOTE:
- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE.
  - STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) MAX LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
  - WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.

**NOTES:**

- SC-CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- SC-CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- ONCE LAYER 'C' IS PLACED, ANY SOIL MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
- THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION. SHOP DRAWINGS SHALL REFERENCE AN ISOLATOR ROW FOR EACH SYSTEM AS RECOMMENDED BY THE MANUFACTURER.

**ROOFTOP UNDERGROUND INFILTRATION SYSTEM TYPICAL DETAIL**  
NOT TO SCALE

**Rinker** Concrete Pipe Division



- Notes:
- The Use Of Flexible Connection is Recommended at The Inlet and Outlet Where Applicable.
  - The Cover Should be Positioned Over The Outlet Drop Pipe and The Oil Port.
  - The Stormceptor System is protected by one or more of the following U.S. Patents: #5753115, #5849181, #6068765, #6371690, #7382216, #7666303.
  - Contact a Concrete Pipe Division representative for further details not listed on this drawing.

**STORMCEPTOR STC4800 TYPICAL DETAIL**  
NOT TO SCALE

Matteson Ridge Condominiums- Rooftop Underground Infiltration System Summary														2/17/2017	
UIS #	Chamber Type	# Rows	# Chambers per Row	Row Spacing	Side Stone	End Stone	System Dimensions	Existing Grade	Design Groundwater Elevation	Chamber Invert	Bottom of Stone	Top of Stone	Minimum Pr Grade	Maximum Pr Grade	Roofpots to System
UIS 1	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	278.00	268.00	271.50	271.00	274.50	276.00	282.00	A11,12
UIS 2	SC-310	5	6	6"	12"	12"	18.17' X 45.16'	279.00	269.00	272.50	272.00	274.33	275.83	281.83	A13,14
UIS 3	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	277.00	267.00	272.00	271.50	275.00	276.50	282.50	A15,16
UIS 4	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	277.00	267.00	272.50	272.00	275.50	277.00	283.00	A17,18
UIS 5	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	275.00	265.00	273.50	273.00	276.50	278.00	284.00	A19,20
UIS 6	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	276.00	266.00	273.50	273.00	276.50	278.00	284.00	C1,2
UIS 7	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	279.00	269.00	275.00	274.50	278.00	279.50	285.50	C3,4
UIS 8	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	279.00	269.00	275.50	275.00	278.50	280.00	286.00	C5,6
UIS 9	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	280.00	270.00	276.00	275.50	279.00	280.50	286.50	C7,8
UIS 10	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	280.25	270.25	276.50	276.00	279.50	281.00	287.00	C9,10
UIS 11	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	281.00	271.00	277.25	276.75	280.25	281.75	287.75	C11,12
UIS 12	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	282.00	272.00	278.00	277.50	281.00	282.50	288.50	C13,14
UIS 13	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	279.00	274.67	278.17	277.67	281.17	282.67	288.67	C15,16
UIS 14	SC-310	5	6	6"	12"	12"	18.17' X 45.16'	282.50	278.17	281.67	281.17	283.50	285.00	291.00	F1,2
UIS 15	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	284.30	274.30	279.25	278.75	282.25	283.75	289.75	F3,4
UIS 16	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	284.00	274.00	280.00	279.50	283.00	284.50	290.50	F5,6
UIS 17	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	286.00	276.00	281.00	280.50	284.00	285.50	291.50	F7,8
UIS 18	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	281.00	271.00	275.50	275.00	278.50	280.00	286.00	G1,2
UIS 19	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	272.00	262.00	269.00	268.50	272.00	273.50	279.50	G3,4
UIS 20	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	272.00	262.00	266.50	266.00	269.50	271.00	277.00	G5,6
UIS 21	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	272.00	262.00	266.50	266.00	269.50	271.00	277.00	G7,8
UIS 22	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	270.25	260.25	264.50	264.00	267.50	269.00	275.00	G9,10
UIS 23	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	268.25	259.25	262.75	262.25	265.75	267.25	273.25	G11,12
UIS 24	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	271.00	263.00	266.50	266.00	269.50	271.00	277.00	G13,14
UIS 25	SC-310	5	6	6"	12"	12"	18.17' X 45.16'	282.00	272.00	275.50	275.00	277.33	278.83	284.83	G15,16
UIS 26	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	276.00	266.00	273.00	272.50	276.00	277.50	283.50	H9,10,11
UIS 27	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	277.00	267.00	273.00	272.50	276.00	277.50	283.50	H7,8
UIS 28	SC-310	5	6	6"	12"	12"	18.17' X 45.16'	280.00	270.00	273.67	273.17	275.50	277.00	283.00	H5,6
UIS 29	SC-310	5	6	6"	12"	12"	18.17' X 45.16'	284.50	274.50	277.50	277.00	279.33	280.33	286.83	B7,8
UIS 30	SC-310	5	6	6"	12"	12"	18.17' X 45.16'	284.25	274.25	277.25	276.75	279.08	280.08	286.58	D7,8
UIS 31	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	283.00	273.00	276.50	276.00	279.50	280.50	287.00	B9,10
UIS 32	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	284.00	274.00	277.50	277.00	280.50	282.00	288.00	D5,6
UIS 33	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	281.50	271.50	275.50	275.00	278.50	280.00	286.00	B11,12
UIS 34	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	283.75	273.75	277.50	277.00	280.50	282.00	288.00	D3,4
UIS 35	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	283.00	273.00	277.50	277.00	280.50	282.00	288.00	D1,2
UIS 36	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	283.50	273.50	278.50	278.00	281.50	283.00	289.00	E1,2
UIS 37	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	286.00	276.00	279.50	279.00	282.50	284.00	290.00	E3,4
UIS 38	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	286.00	276.00	280.50	280.00	283.50	285.00	291.00	E5,6
UIS 39	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	286.50	276.50	281.00	280.50	284.00	285.50	291.50	E7,8
UIS 40	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	287.50	277.50	281.50	281.00	284.50	286.00	292.00	E9,10
UIS 41	SC-740	3	4	18"	12"	12"	17.75' X 30.92'	289.00	279.00	282.00	281.50	285.00	286.50	292.50	E11,12
UIS 42	SC-310	5	6	6"	12"	12"	18.17' X 45.16'	289.00	279.00	282.00	281.50	283.83	285.33	291.33	E13,14
UIS 43	SC-310	5	6	6"	12"	12"	18.17' X 45.16'	288.50	278.50	281.50	281.00	283.33	284.83	290.83	E13,14

**NOTES:**

- DESIGN GROUNDWATER ELEVATIONS ARE BASED UPON SOIL TEST PIT DATA PROVIDED BY GEORGE B. DUPONT, RHODE ISLAND LICENSED PROFESSIONAL ENGINEER AND LAND SURVEYOR.
- UNITS B-1 & B-2 AND D-9 THROUGH D-15 WILL TIE-INTO CB 6, UNITS B-3 THROUGH B-6 WILL TIE INTO CB8, UNITS H-1 THROUGH H-4 WILL TIE-INTO CB 5, UNITS A-I THROUGH A-4 WILL OUTLET ABOVE GROUND AT THE SOUTHWESTERLY CORNER OF UNIT A-4, UNITS A-5 THROUGH A-8 WILL TIE INTO CB 3 AND UNITS J-2 & J-3 WILL TIE-INTO ADJACENT 12" D PIPE TO BMP 1g. PIPES FROM UNITS TO CB TIE-IN LOCATIONS SHALL BE A 6" SOLID PVC PIPE INSTALLED AT A 1% MINIMUM SLOPE, AND INSTALLED ABOVE THE CB OUTLET PIPE INVERT.

JUN 23 2017  
City of Warwick

Being: ASSESSORS PLAT NO. 12 LOT NO. 20  
**DRAINAGE DETAILS NO. 3**  
**Matteson Ridge Condos**  
LOCATION  
175 Greenbush Road  
West Warwick, Rhode Island 02893

Checked By: J.D.M.  
Drawn By: R.B.B.  
Scale: Not to Scale  
Date: March 23, 2017

NO.	REVISION	DATE
1	REVISION	5/17

STEVEN M. CABRAL  
No. 0677  
REGISTERED PROFESSIONAL ENGINEER  
Crossman Engineering  
151 Centerville Road  
Warwick, RI 02886

**BOYER ASSOCIATES**  
ESTABLISHED SINCE 1932  
1071 MAIN STREET  
WEST WARWICK, RI 02893  
TEL. (401)821-8872 FAX (401)826-1993

Sheet **16**  
of **24** sheets

JUL 25 2017 FILE # 17-0080  
OFFICE OF WATER RESOURCES  
FRESH WATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
ALL FIELD PLANS MUST BE AT CONSTRUCTION SITE



**STORMTRAP INSTALLATION SPECIFICATION**

- STORMTRAP MODULES SHALL BE MANUFACTURED ACCORDING TO SHOP DRAWINGS APPROVED BY THE INSTALLING CONTRACTOR AND ENGINEER. THE SHOP DRAWINGS SHALL INDICATE SIZE AND LOCATION OF ROOF OPENINGS AND INLET/OUTLET PIPE OPENINGS.
- STORMTRAP SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C891-09, STANDARD PRACTICE FOR INSTALLATION OF UNDERGROUND PRE-CAST CONCRETE UTILITY STRUCTURES. THE FOLLOWING ADDITIONS AND/OR EXCEPTIONS SHALL APPLY:
  - SPECIFICATIONS ON THE ENGINEER'S DRAWINGS SHALL TAKE PRECEDENCE.
  - THE STONE FOUNDATION HAS BEEN DESIGNED BASED ON THE FOLLOWING ASSUMPTIONS. THESE ASSUMPTIONS WILL NEED TO BE VERIFIED BY A GEOTECHNICAL ENGINEER WHICH WILL NEED TO BE EMPLOYED BY THE OWNER.
    - A QUALIFIED GEOTECHNICAL ENGINEER WILL BE EMPLOYED, BY OWNER, TO PROVIDE ASSISTANCE IN EVALUATING THE EXISTING SOIL CONDITIONS AT THE ELEVATION THE STONE FOUNDATION IS TO BE PLACED. IF A STONE FOUNDATION IS TO BE USED FOR THIS CONDITION, THE BEARING PRESSURE OF THE SOILS AT THIS LEVEL WILL NEED TO MEET OR EXCEED 3500 PSF ALLOWABLE CAPACITY. IF THIS IS NOT POSSIBLE, THE GEOTECHNICAL ENGINEER MUST MAKE REMEDIAL RECOMMENDATIONS IN ORDER TO REACH THIS CAPACITY. IF THIS IS NOT POSSIBLE, THE STONE FOUNDATION MAY NOT BE AN OPTION FOR THIS LOCATION.
    - A QUALIFIED GEOTECHNICAL ENGINEER WILL BE EMPLOYED, BY OWNER, TO EVALUATE A SOURCE OF STONE AGGREGATES THAT WILL BE PLACED ON THE PROPERLY COMPACTED 3500 PSF ALLOWABLE CAPACITY SOILS. THE STONE BASE COURSE FOR WHICH THE STORMTRAP SYSTEM WILL BEAR DIRECTLY ON WILL NEED TO ATTAIN A MINIMUM 20,000 PSF ALLOWABLE BEARING CAPACITY. STORMTRAP HAS RECOMMENDED A MINIMUM BED OF 3/4" DIAMETER ANGULAR STONE WELL COMPACTED AND SEATED WITH NO FINES AT A 3" THICKNESS AND AN ADDITIONAL 3 INCH DIAMETER CRUSHED ANGULAR STONE WELL COMPACTED AND SEATED, WITH NO FINES AT A 15 INCH THICKNESS. PLEASE NOTE THAT THESE ARE ONLY MINIMUM RECOMMENDATIONS AND A QUALIFIED GEOTECHNICAL ENGINEER SHALL BE USED TO DETERMINE THE EXACT REQUIREMENTS FOR THE LOCATIONS THAT THE STORMTRAP SYSTEM IS TO BE LOCATED.
    - THE CONTRACTOR SHALL REMOVE ANY AND ALL EXPANDABLE OR COLLAPSIBLE SOILS AT THE DIRECTION OF A QUALIFIED GEOTECHNICAL ENGINEER.
    - THE STONE SHALL BE INSTALLED A MINIMUM OF 2'-0" BEYOND THE LIMITS OF THE STORMTRAP MODULES PERIMETER.
    - USE CRUSHED ANGULAR STONE AND COMPACT THE STONE USING A VIBRATING ROLLER WITH ITS FULL DYNAMIC FORCE APPLIED TO ACHIEVE A FLAT SURFACE.
    - DISK DRY, AND COMPACT THE TOP 8" OF THE SUBGRADE SOILS TO 95 % OF THE STANDARD DRY DENSITY AND 110 % OPTIMUM MOISTURE CONTENT.
  - AGGREGATE SHALL BE GRADED TO WITHIN +/- 1/4" OF THE GRADE SHOWN ON THE PLANS.
  - MINIMUM 3500 PSF SOIL BEARING CAPACITY. SOIL STRENGTHS TO BE VERIFIED IN FIELD BY OTHERS.
  - THE STORMTRAP MODULES SHALL BE PLACED SUCH THAT THE MAXIMUM SPACE BETWEEN ADJACENT MODULES DOES NOT EXCEED 3/4" IF THE SPACE EXCEEDS 3/4", THE MODULES SHALL BE RESET WITH APPROPRIATE ADJUSTMENT MADE TO LINE AND GRADE TO BRING THE SPACE INTO SPECIFICATION.
  - ALL EXTERIOR JOINTS BETWEEN ADJACENT STORMTRAP MODULES SHALL BE SEALED WITH PRE-FORMED, COLD-APPLIED, SELF-ADHERING ELASTOMERIC RESIN BONDED TO A WOVEN HIGHLY PUNCTURE RESISTANT POLYMER WRAP CONFORMING TO ASTM C891-09 AND SHALL BE 0'-8" WIDE WITH INTEGRATED PRIMER SEALANT AS APPROVED BY STORMTRAP. THE ADHESIVE EXTERIOR JOINT WRAP SHALL BE INSTALLED ACCORDING TO THE FOLLOWING INSTALLATION INSTRUCTIONS:
    - USE A BRUSH OR WET CLOTH TO THOROUGHLY CLEAN THE OUTSIDE SURFACE AT THE POINT WHERE THE JOINT WRAP IS TO BE APPLIED.
    - A RELEASE PAPER PROTECTS THE ADHESIVE SIDE OF THE JOINT WRAP. PLACE THE ADHESIVE TAPE (ADHESIVE SIDE DOWN) AROUND THE STRUCTURE, REMOVING THE RELEASE PAPER AS YOU GO. PRESS THE JOINT WRAP FIRMLY AGAINST THE STORMTRAP MODULE SURFACE WHEN APPLYING.
  - THE FILL PLACED AROUND THE STORMTRAP UNITS MUST BE DEPOSITED ON BOTH SIDES AT THE SAME TIME AND TO APPROXIMATELY THE SAME ELEVATION. AT NO TIME SHALL THE FILL BEHIND ONE SIDE BE MORE THAN 2'-0" HIGHER THAN THE FILL ON THE OPPOSITE SIDE. BACKFILL SHALL BE COMPACTED TO 95 % STANDARD PROCTOR DENSITY OR OTHERWISE SPECIFIED BY ENGINEER. CARE SHALL BE TAKEN TO PREVENT ANY WEDGING ACTION AGAINST THE STRUCTURE, AND ALL SLOPES BOUNDED OR WITHIN THE AREA TO BE BACKFILLED MUST BE STEPPED OR SERRATED TO PREVENT WEDGING ACTION. (REFERENCE ARTICLE 502.10 I.D.O.T. S.S.R.B.C.) CARE SHALL ALSO BE TAKEN AS NOT TO DISRUPT THE JOINT WRAP FROM THE JOINT DURING THE BACKFILL PROCESS. BACKFILL MATERIAL SHALL BE CLEAN, CRUSHED, ANGULAR No.5 (ASTM M43) AGGREGATE.
  - DISTRIBUTE THE FILL OVER THE SYSTEM WITH A TRACKED CONSTRUCTION VEHICLE, DO NOT EXCEED THE MAXIMUM ALLOWABLE GROUND PRESSURE SHOWN IN TABLE 1.
 

FILL DEPTH	TRACK WIDTH	MAX GROUND PRESSURE
12"	12"	1690 psf
	18"	1219 psf
	24"	1111 psf
	30"	1000 psf
	36"	924 psf

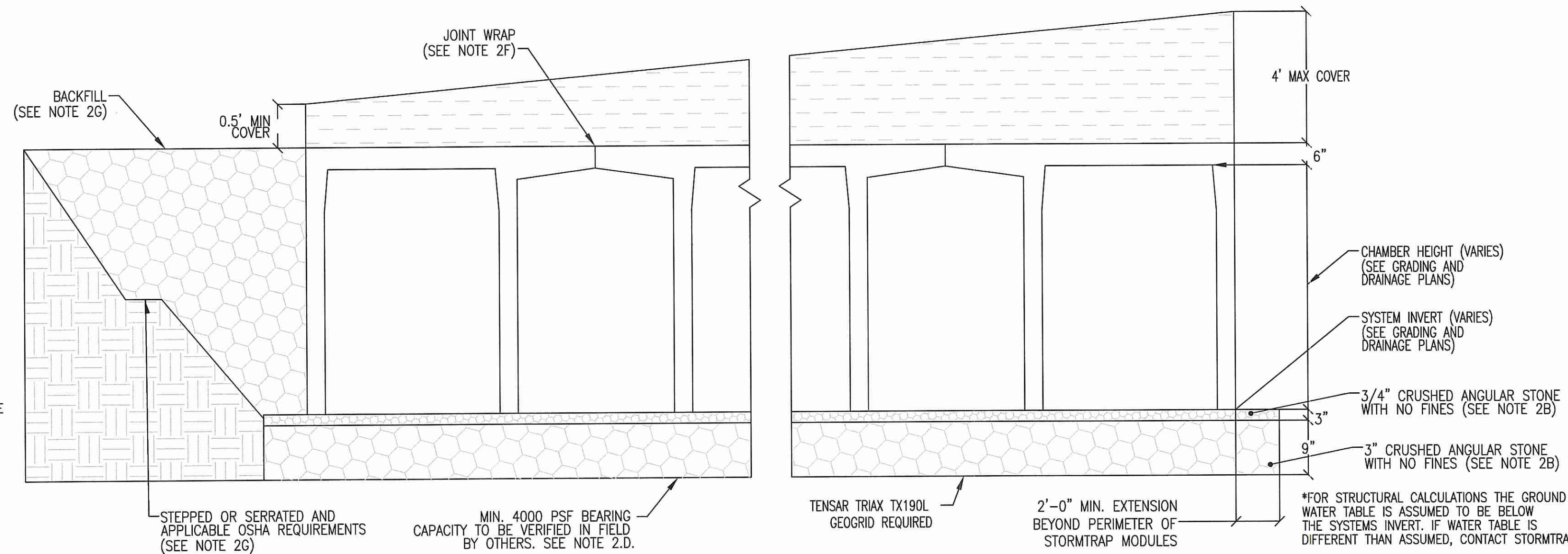
MAXIMUM ALLOWABLE GROUND PRESSURE IS THE VEHICLE OPERATING WEIGHT DIVIDED BY THE TOTAL VEHICLE TRACK-GROUND CONTACT AREA, FOR BOTH TRACKS.

USE A WALK-BEHIND OR VIBRATORY ROLLER, NOT TO EXCEED A MAXIMUM GROSS VEHICLE WEIGHT OF 12,000# AND A MAXIMUM DYNAMIC FORCE OF 20,000#, WITH A MINIMUM OF 12" (COMPACTED) OVER THE SYSTEM.

FULL DUMP TRUCKS MUST NOT BE DRIVEN OR DUMP STONE OVER THE SYSTEM. RISKING THE BODY TO DUMP STONE SIGNIFICANTLY INCREASES THE REAR WHEEL LOADS.

**STORMTRAP SPECIFICATION**

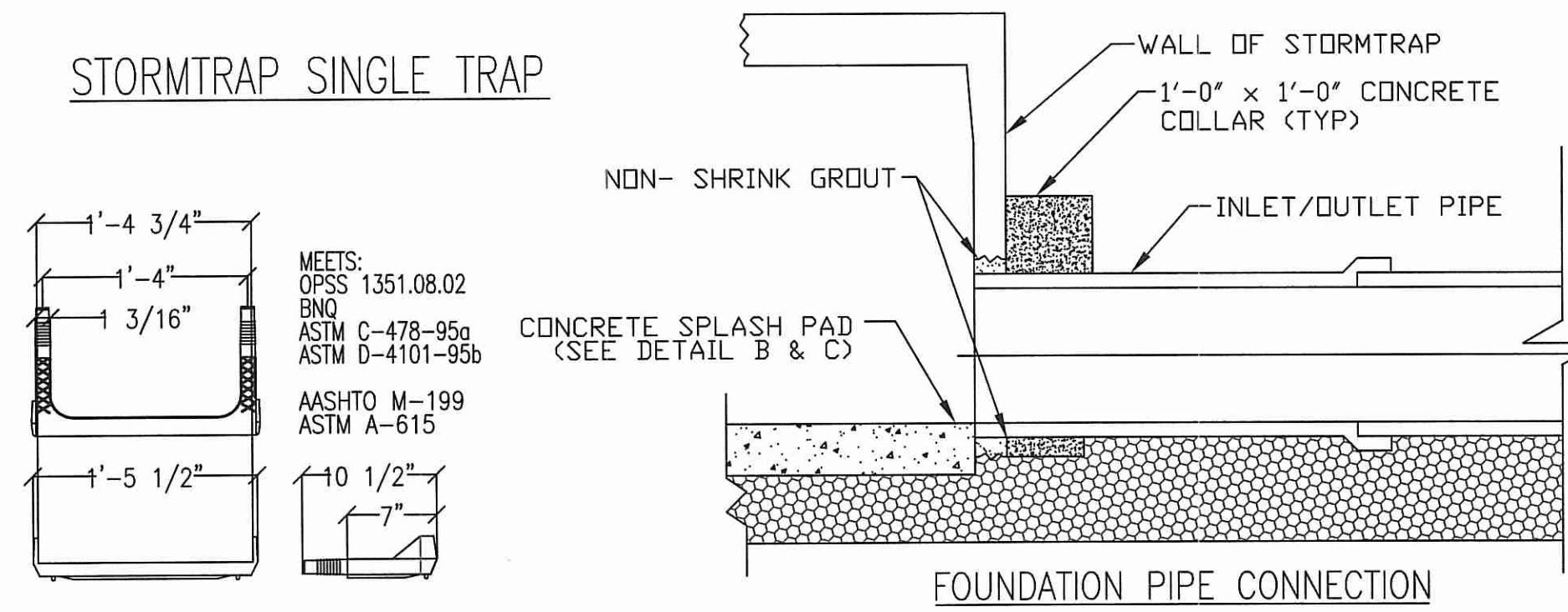
- TOTAL COVER: MIN. 0.5' MAX. 4' CONSULT STORMTRAP FOR ADDITIONAL COVER OPTIONS.
- CONCRETE CHAMBER DESIGNED FOR AASHTO HS-20 HIGHWAY LOADING. MIN. SOIL PRESSURE 3500 PSF.
- ALL DIMENSIONS AND SOIL CONDITIONS, INCLUDING BUT NOT LIMITED TO GROUNDWATER AND SOIL BEARING CAPACITY ARE TO BE VERIFIED IN THE FIELD BY OTHERS PRIOR TO STORMTRAP INSTALLATION.
- FOR STRUCTURAL CALCULATIONS THE GROUND WATER TABLE IS ASSUMED TO BE BELOW THE SYSTEMS INVERT. IF WATER TABLE IS DIFFERENT THAN ASSUMED, CONTACT STORMTRAP.
- FOR STRUCTURAL CALCULATIONS THE SOIL DENSITY IS ASSUMED TO BE 120 PCF.



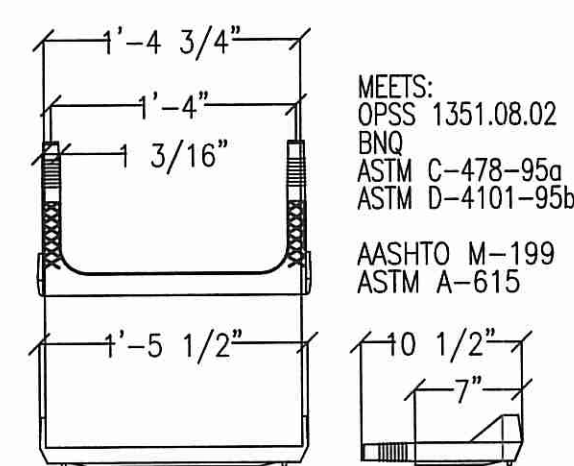
**RECOMMENDED ACCESS OPENING SPECIFICATION**

- TYPICAL ACCESS OPENINGS FOR THE STORMTRAP SYSTEM ARE 2'-0" IN DIAMETER. ACCESS OPENINGS LARGER THAN 2'-0" IN DIAMETER NEED TO BE APPROVED BY STORMTRAP. ALL OPENINGS MUST RETAIN AT LEAST 1'-0" OF CLEARANCE IN ALL DIRECTIONS FROM THE EDGE OF THE STORMTRAP UNITS.
- PLASTIC COATED STEEL STEPS PRODUCED BY M.A. INDUSTRIES PART #PS3-PFC (SEE DETAIL TO THE RIGHT) ARE PROVIDED INSIDE ANY UNIT WHERE DEEMED NECESSARY. THE RIGHT STEP IN THE UNIT IS TO BE PLACED A DISTANCE OF 1'-0" FROM THE INSIDE EDGE OF THE STORMTRAP UNITS. ALL ENSURING STEPS SHALL BE PLACED WITH A MAXIMUM DISTANCE OF 1'-4" BETWEEN STEPS. STEPS MAY BE MOVED OR ALTERED TO AVOID OPENINGS OR OTHER IRREGULARITIES IN THE UNIT.
- STORMTRAP LIFTING INSERTS MAY BE RELOCATED TO COINCIDE WITH THE ACCESS OPENING OR THE CENTER OF GRAVITY OF THE UNIT AS NEEDED.
- STORMTRAP ACCESS OPENINGS MAY BE RELOCATED TO AVOID INTERFERENCE WITH INLET AND/OR OUTLET PIPE OPENINGS SO PLACEMENT OF STEPS IS ATTAINABLE.
- ACCESS OPENINGS SHOULD BE LOCATED IN ORDER MEET THE APPROPRIATE MUNICIPAL REQUIREMENTS. STORMTRAP RECOMMENDS AT LEAST ONE ACCESS OPENING PER SYSTEM FOR ACCESS AND INSPECTION.
- USE PRECAST ADJUSTING RINGS AS NEEDED TO MEET GRADE. STORMTRAP RECOMMENDS FOR COVER OVER 2' TO USE PRECAST BARREL OR CONE SECTIONS. (BY OTHERS)

**STORMTRAP SINGLE TRAP**



**STEP DETAIL**



**RECOMMENDED PIPE OPENING SPECIFICATION**

- PIPE OPENINGS SHALL MAINTAIN A MINIMUM 1'-0" OF CLEARANCE FROM A VERTICAL EDGE OF THE STORMTRAP UNIT.
- MAXIMUM OPENING SIZE TO BE DETERMINED BY UNIT HEIGHT. PREFERRED OPENING SIZE # 36" OR LESS. ANY OPENING NEEDED THAT DOES NOT FIT THIS CRITERIA SHALL BE BROUGHT TO THE ATTENTION OF STORMTRAP FOR REVIEW.
- CONNECTING PIPES SHALL BE INSTALLED WITH A 1'-0" CONCRETE COLLAR AND A AGGREGATE GRADE FOR AT LEAST ONE PIPE LENGTH AS SHOWN. A STRUCTURAL GRADE CONCRETE OR GROUT WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI SHALL BE USED.
- THE ANNULAR SPACE BETWEEN THE PIPE AND THE HOLE SHALL BE FILLED WITH NON-SHRINK GROUT.

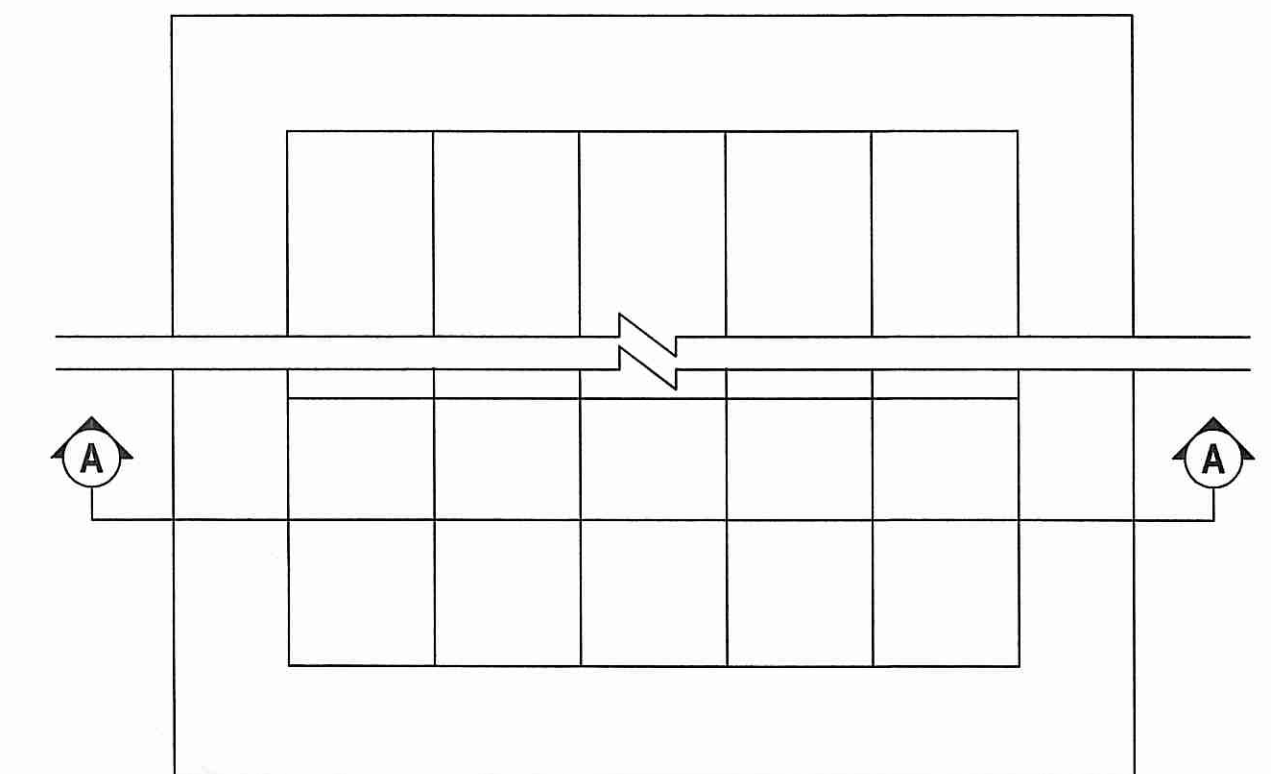
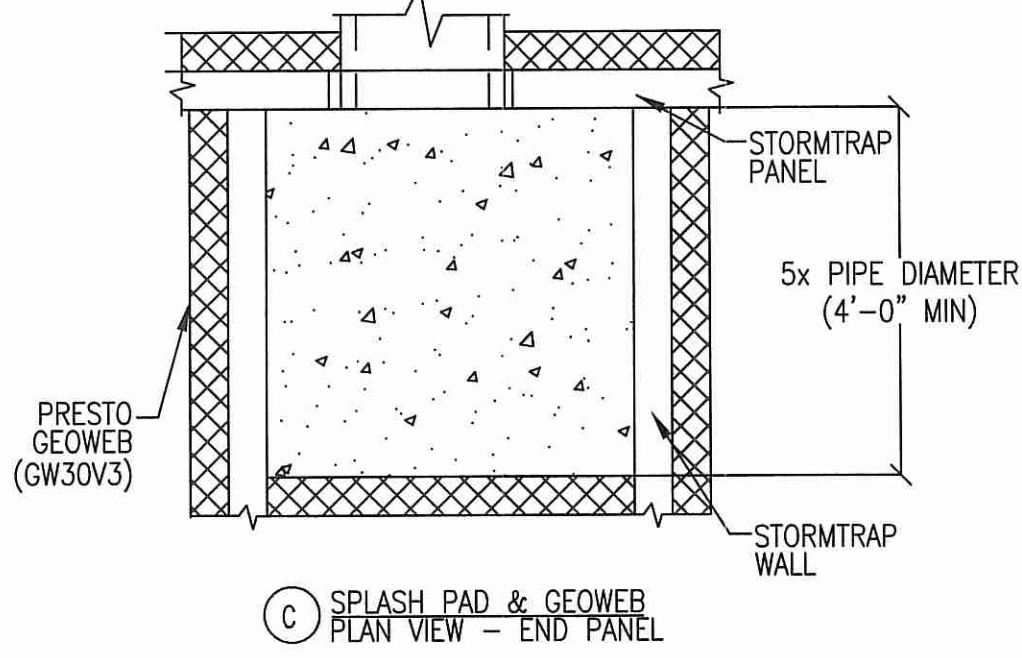
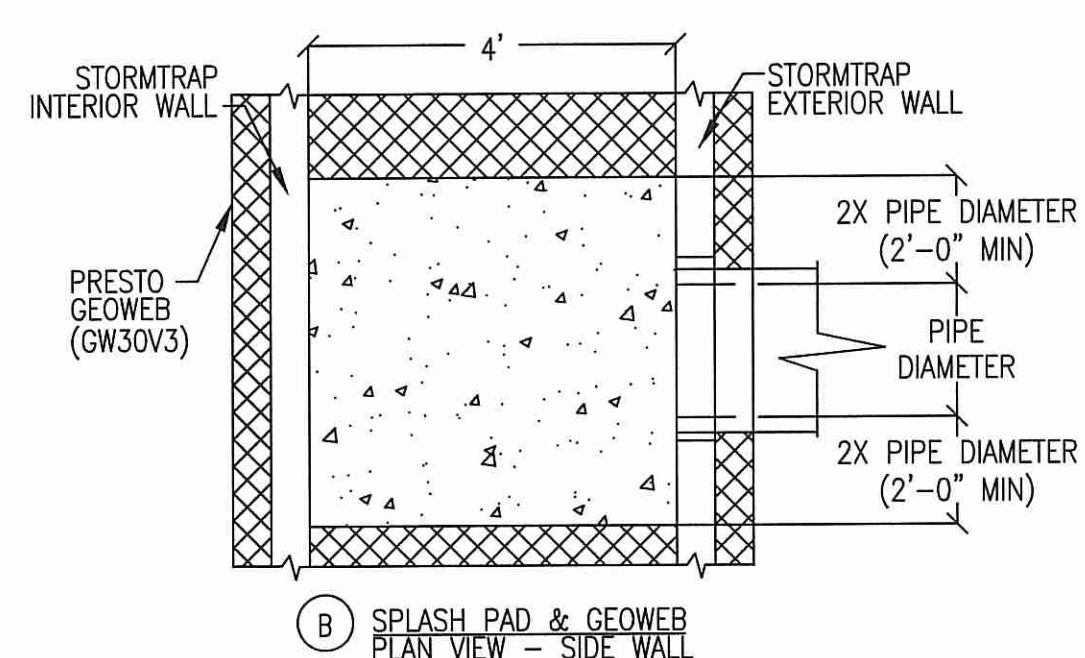
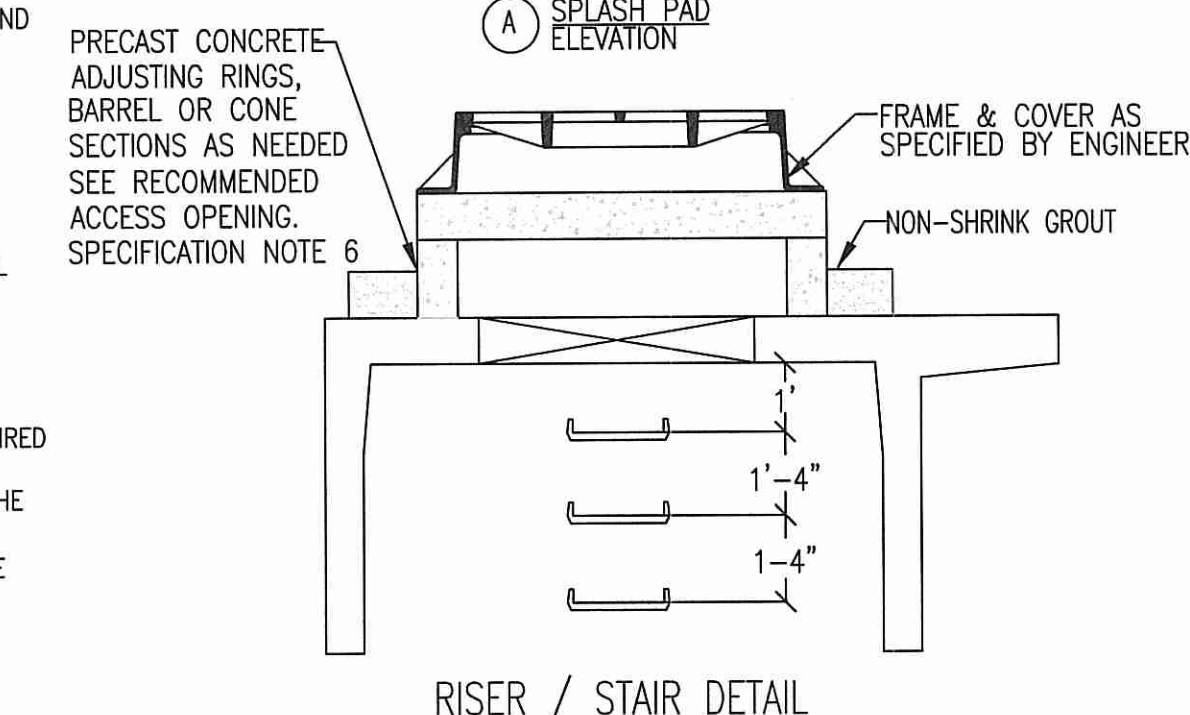
**RECOMMENDED PIPE INSTALLATION INSTRUCTIONS**

- CLEAN AND LIGHTLY LUBRICATE ALL OF PIPE TO BE INSERTED INTO STORMTRAP.
- IF PIPE IS CUT, CARE SHOULD BE TAKEN TO ALLOW NO SHARP EDGES. BEVEL AND LUBRICATE LEAD END OF PIPE.
- ALIGN CENTER OF PIPE TO CORRECT ELEVATION AND INSERT INTO OPENING.

**SPLASH PAD & GEOWEB SPECIFICATION**

- THE APPROVED GEOWEB SHALL BE PRESTO GEOWEB (GW30V3). THE GEOWEB NOMINAL DIMENSIONS SHALL BE 9'-FT X 25'-FT.
- SPLASH PAD AND GEOWEB SHALL BE INSTALLED PRIOR TO INSTALLATION OF THE STORMTRAP UNITS.
- THE GEOWEB INFILL MATERIAL SHALL BE AASHTO M43 #5 AGGREGATE(SEE DETAIL A).
- THE CONCRETE SPLASH PAD SHALL BE INSTALLED WITHIN THE GEOWEB AND IS REQUIRED AT ALL PIPE ENTRY LOCATIONS. SEE DETAIL B & C.
- THE GEOWEB EDGE SHALL BE INSTALLED 1-FT BEYOND THE OUTER PERIMETER OF THE STORMTRAP SYSTEM.
- THE GEOWEB LONGITUDINAL DIMENSION (25'-FT) SHALL BE INSTALLED PARALLEL TO THE STORMTRAP LEGS.
- THE CONCRETE SPLASH PAD AND GEOWEB SHALL BE CENTERED AT THE PIPE PENETRATION.
- SPLASH PAD DIMENSIONS COULD VARY IN UNITS THAT ARE LESS THAN 15'-4" IN LENGTH.

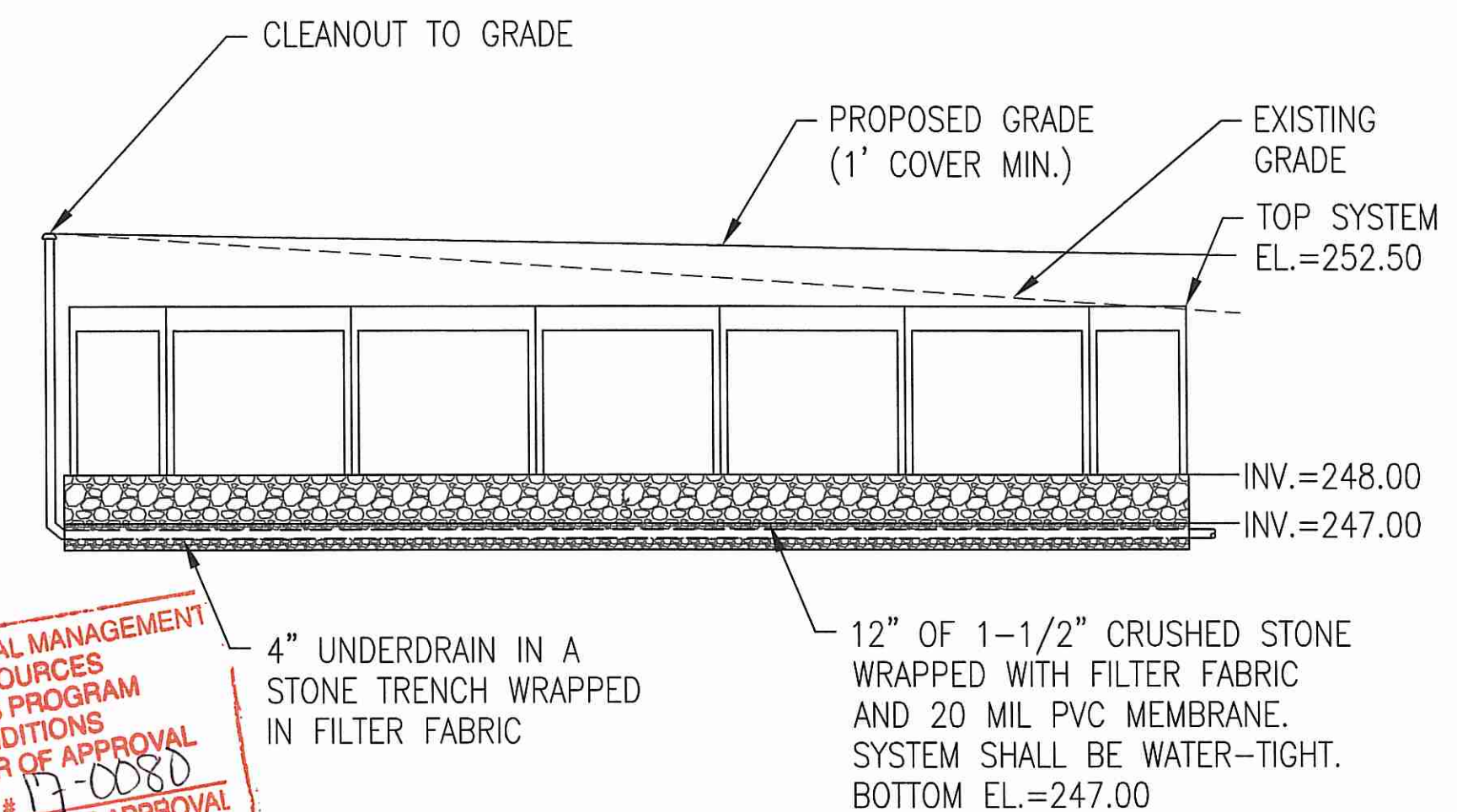
**RISER / STAIR DETAIL**



**SYSTEM DIMENSIONS**  
5 ROWS OF 8 4'-0" SINGLE TRAP UNITS WITH BORDER UNITS  
136.48'x55.71'

**UNDERGROUND DETENTION SYSTEM DETAIL**

NOT TO SCALE



**UNDERGROUND DETENTION SYSTEM CROSS-SECTION A-A**

NOT TO SCALE

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
SPECIFIED IN THE LETTER OF APPROVAL  
JUL 25 2017 FILE # 17-0080  
ALL CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Consultation & Construction  
JUN 23 2017  
Office of Public Resources

Being: ASSESSORS PLAT NO. 12 LOT NO. 20  
**DRAINAGE DETAILS NO. 5**  
**Matteson Ridge Condos**  
LOCATION  
175 Greenbush Road  
West Warwick, Rhode Island 02893

Checked By: J.D.M.  
Drawn By: R.B.B.  
Scale: Not to Scale  
Date: March 23, 2017

NO.	REVISION	DATE
1	ISSUE FOR PERMIT	5/17

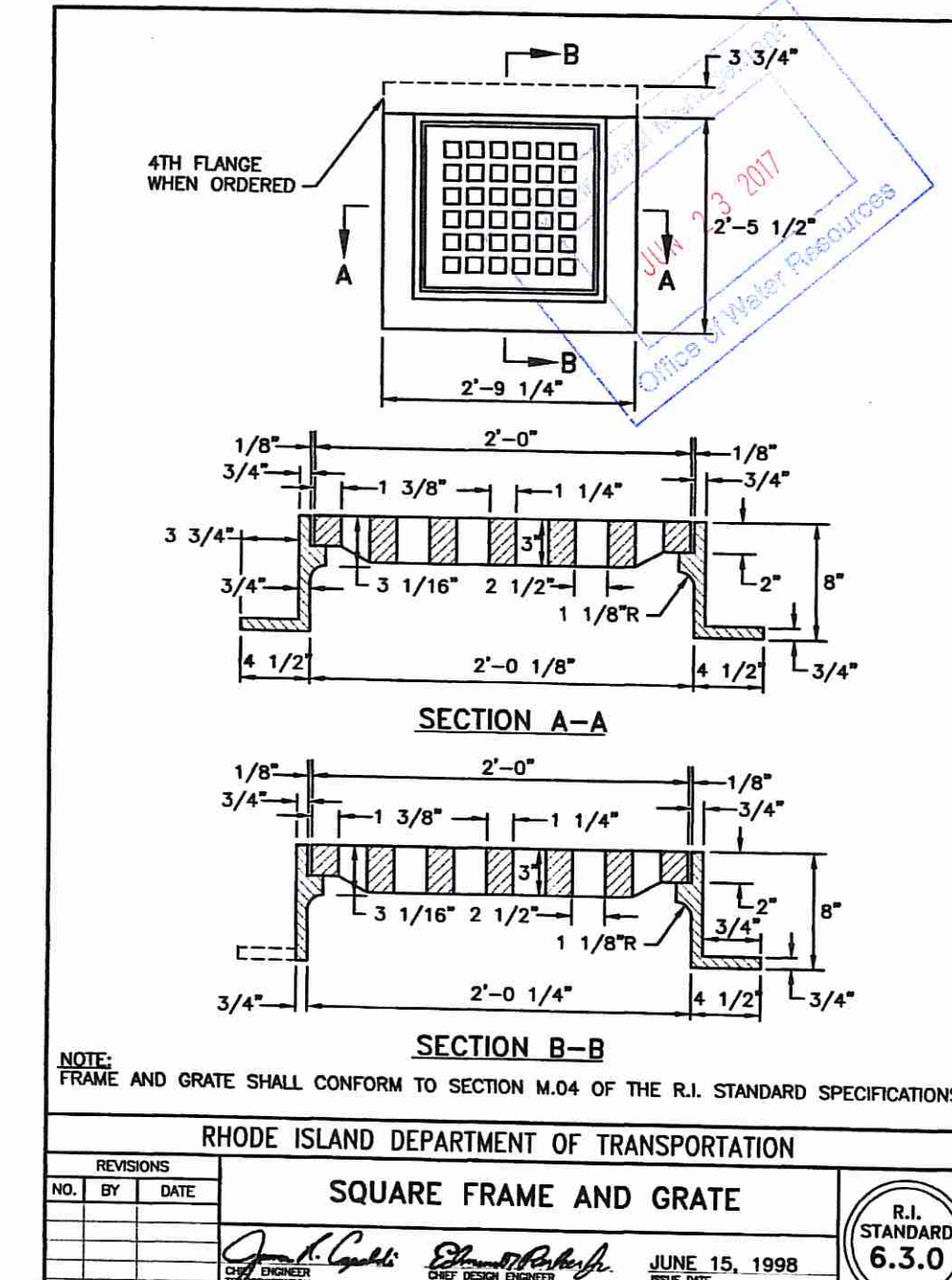
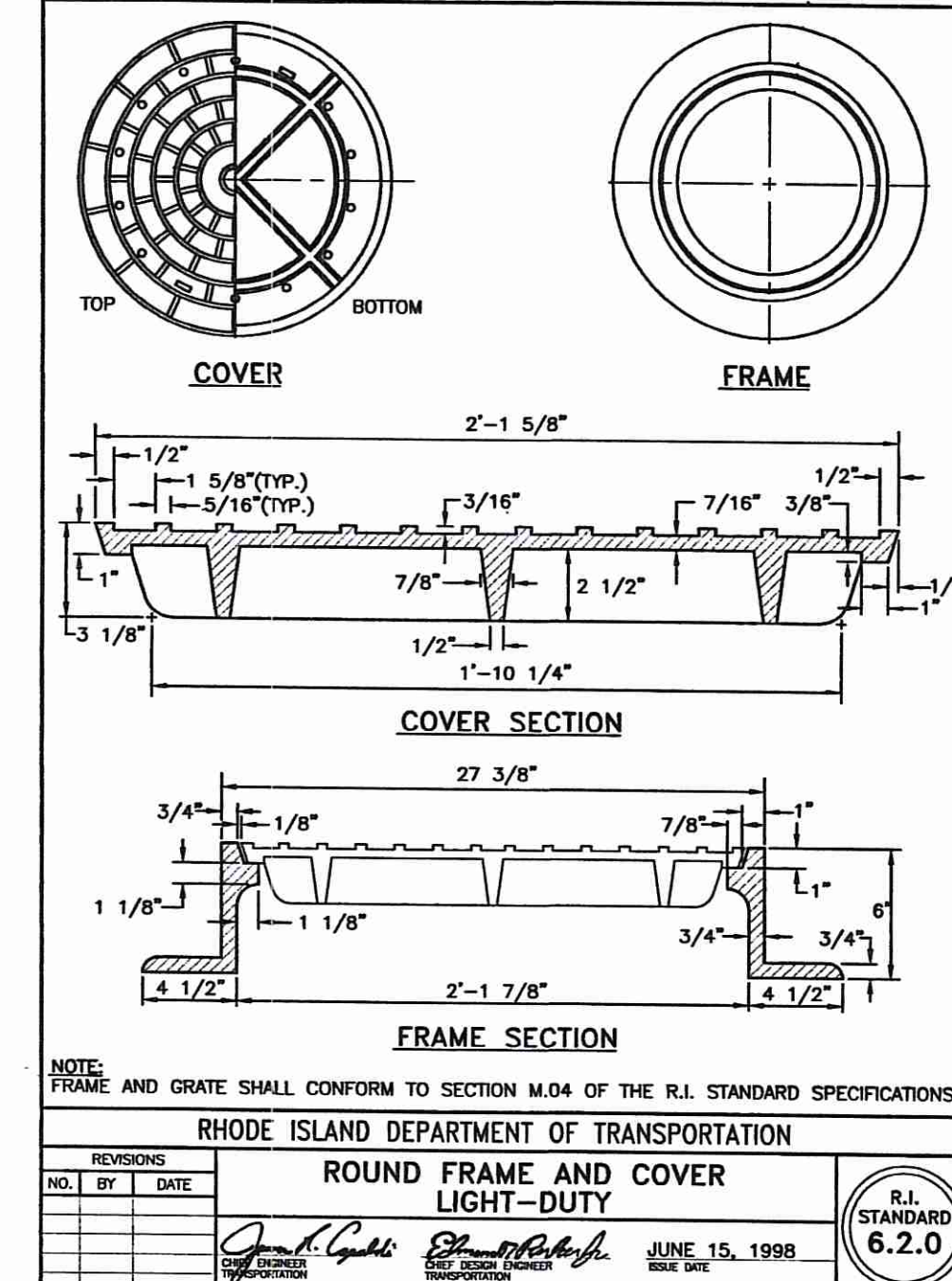
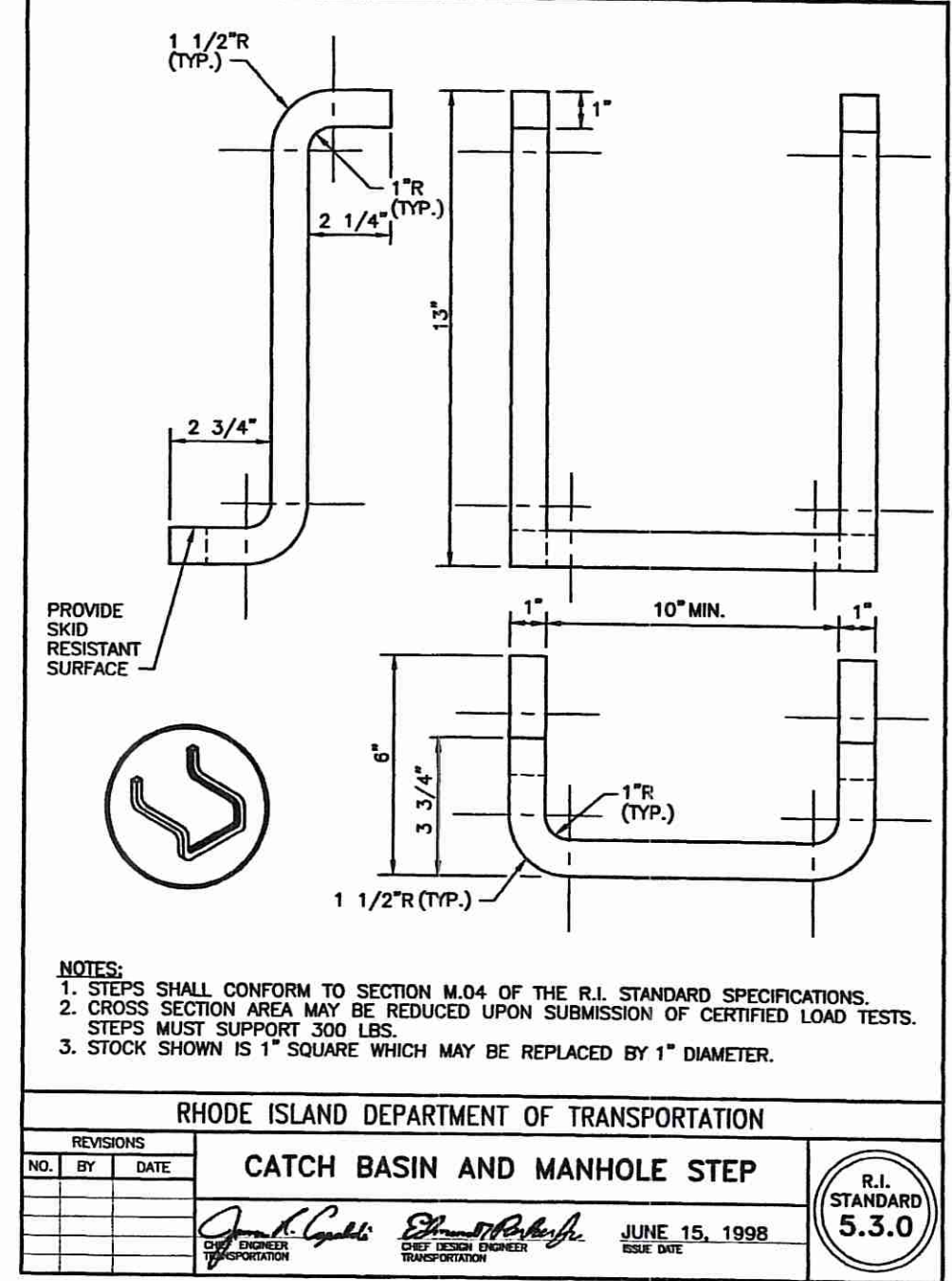
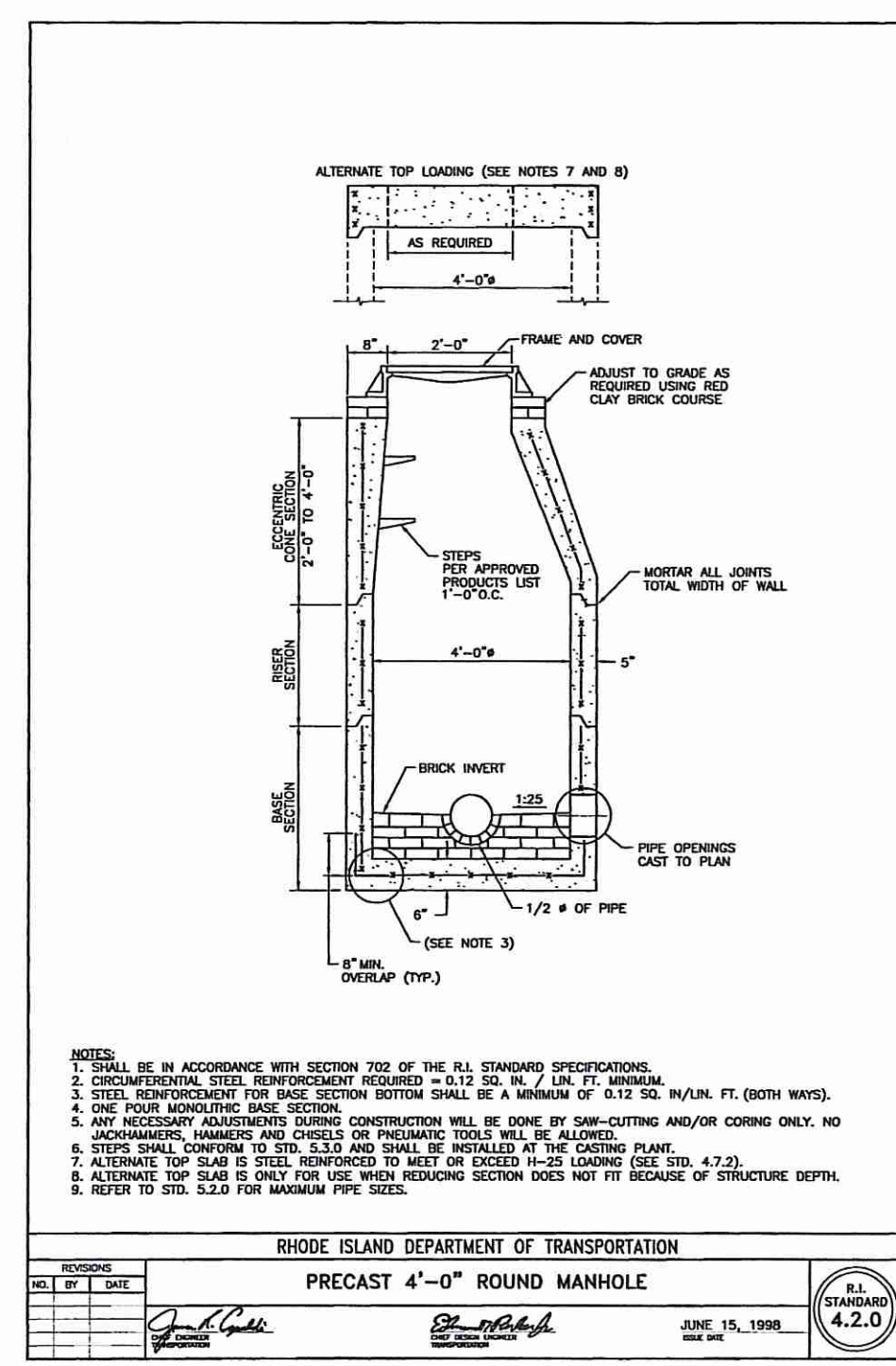
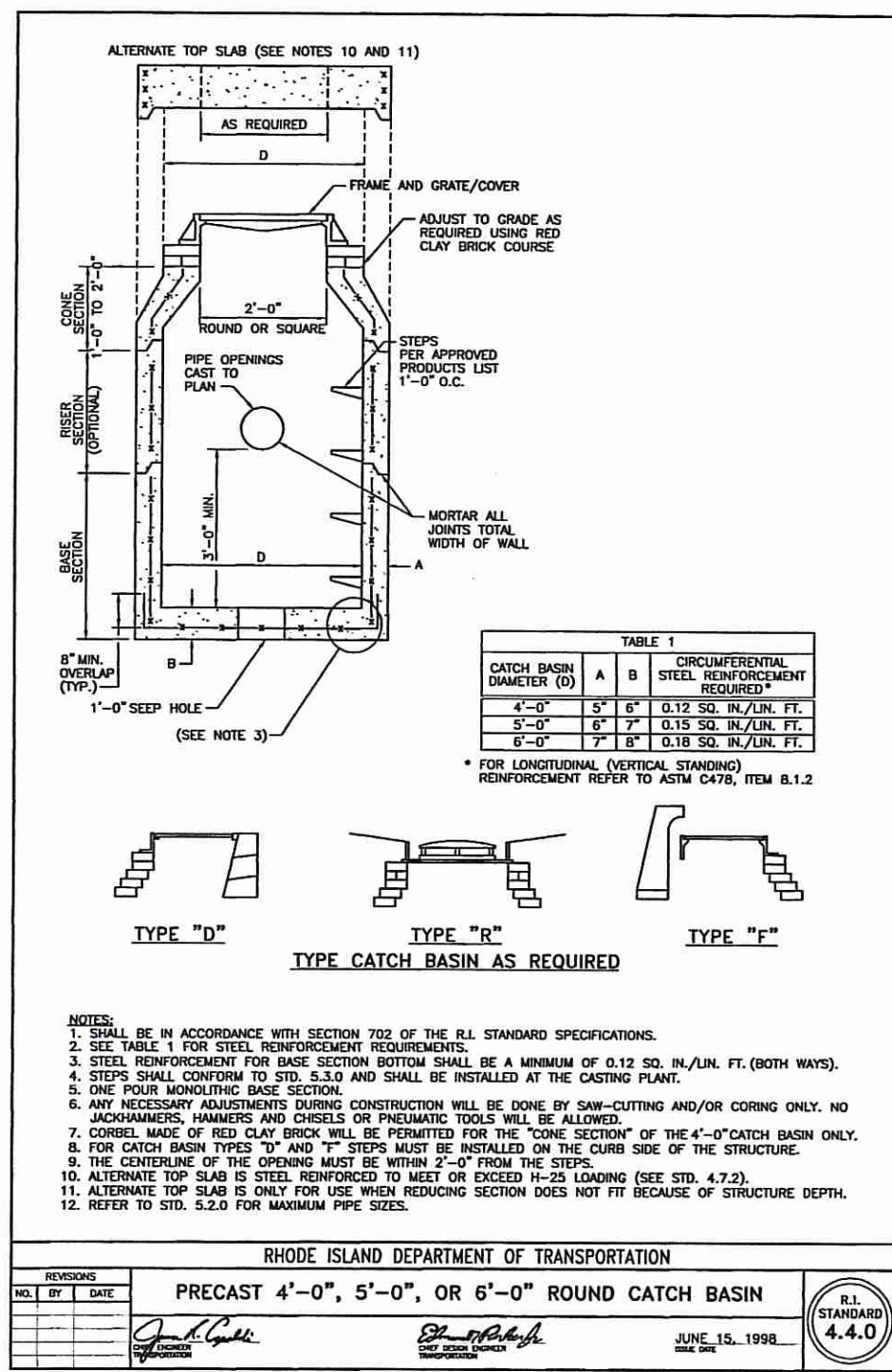
STEVEN M. CARVAL  
No. 4947  
REGISTERED PROFESSIONAL ENGINEER  
Cross-section Engineering  
151 Centerville Road  
Warwick, RI 02886

**BOYER ASSOCIATES**  
1071 MAIN STREET  
WEST WARWICK, RI 02893  
TEL: (401)821-8872 FAX (401)826-1993

Sheet **18** of 24 sheets







**ADS**  
ADVANCED DRAINAGE SYSTEMS, INC.

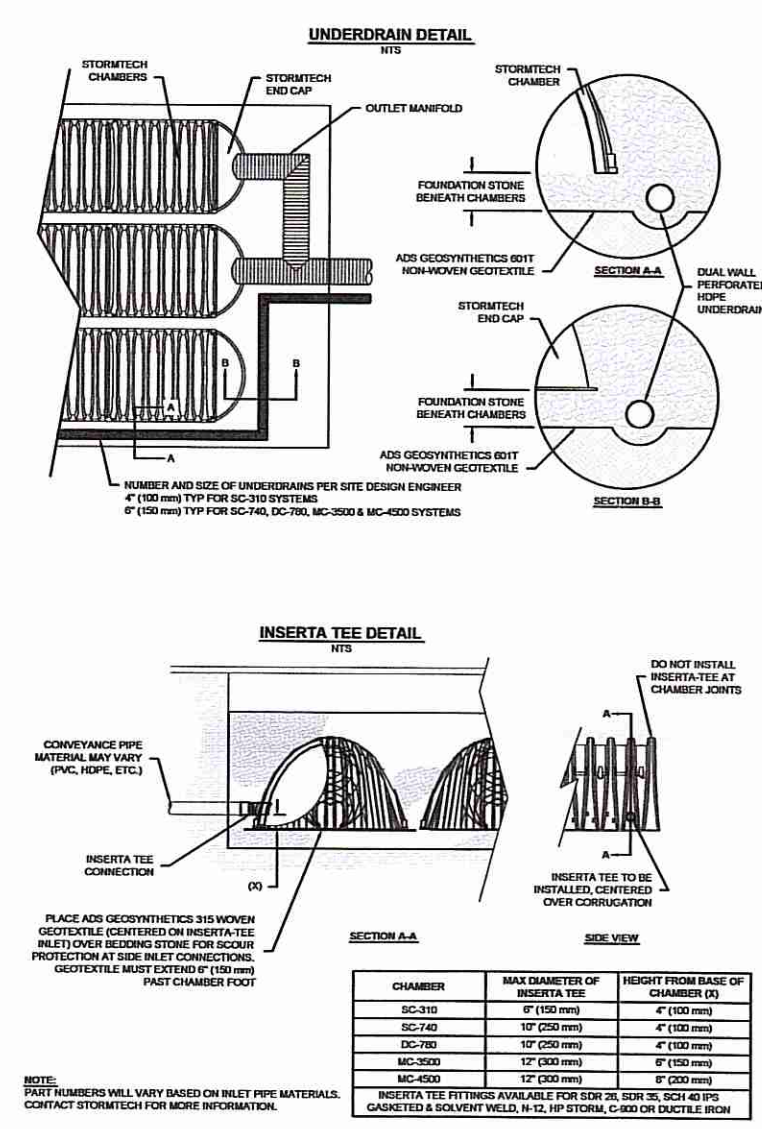
**matteson ridge**

**STORMWATER CHAMBER SPECIFICATIONS**

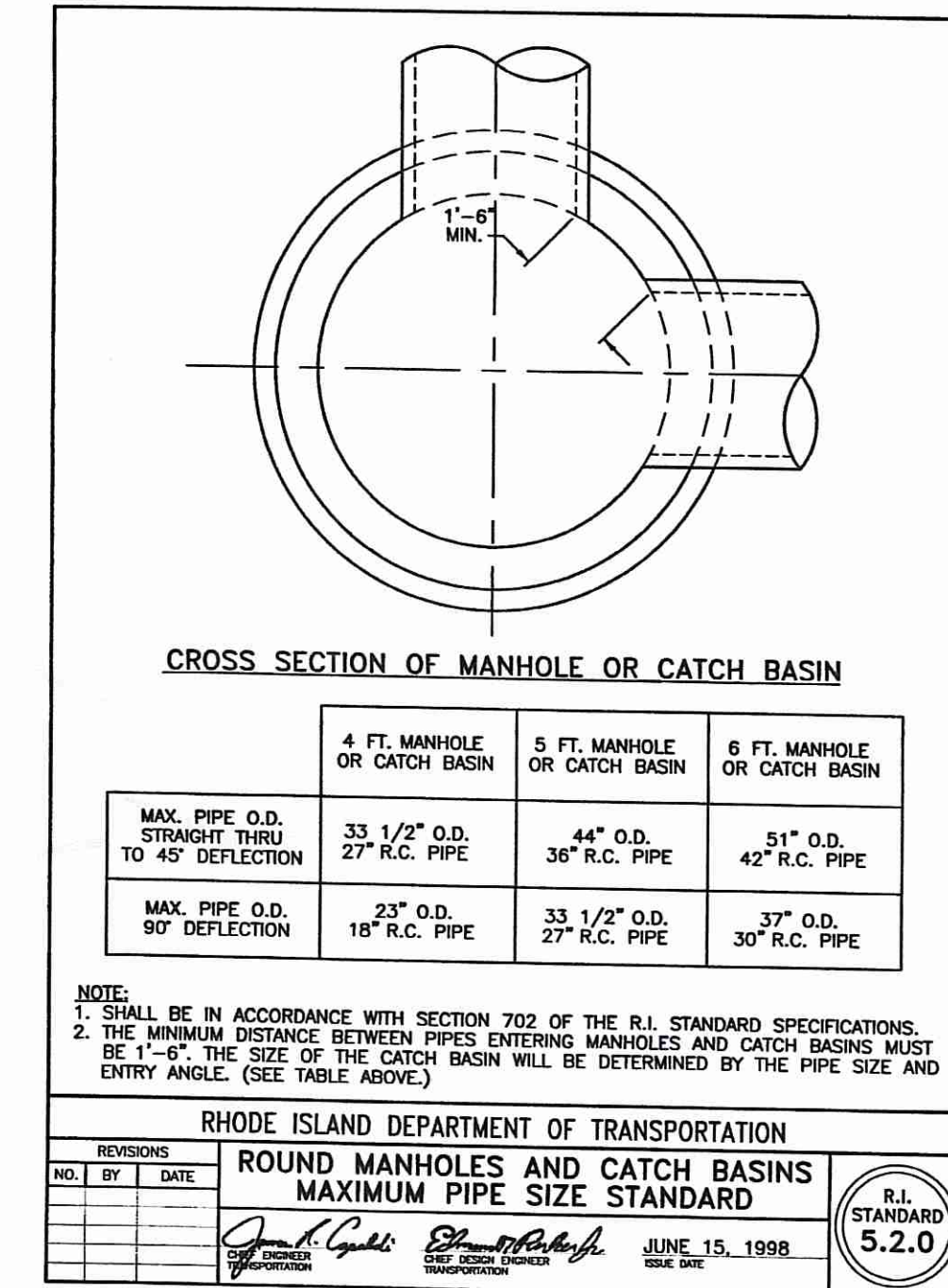
- CHAMBERS SHALL BE INSTALLED TO THE MINIMUM OR APPROVED EQUAL.
- CHAMBERS SHALL BE MANUFACTURED BY THE MANUFACTURER WHOSE NAME IS ON THE PRODUCT LABEL.
- CHAMBERS SHALL BE MANUFACTURED WITH REINFORCED CONCRETE OR POLYESTER FIBER REINFORCED POLYMER (FRP) WITH A MINIMUM TENSILE STRENGTH OF 100,000 PSI.
- THE STRUCTURAL DESIGN OF THE CHAMBER, THE STRUCTURAL ANALYSIS, AND THE INSTALLATION REQUIREMENTS SHALL ASSURE THAT THE CHAMBER WILL BE ABLE TO SUPPORT THE FULL LOADS OF THE OVERLAPPING CHAMBER ABOVE AND THE FULL LOADS OF THE OVERLAPPING CHAMBER BELOW.
- CHAMBERS SHALL BE MANUFACTURED WITH A MINIMUM OF 10% OVERLAP BETWEEN CHAMBERS.
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**IMPORTANT NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-3100C-768 SYSTEM**

- CHAMBERS SHALL BE MANUFACTURED BY THE MANUFACTURER WHOSE NAME IS ON THE PRODUCT LABEL.
- CHAMBERS SHALL BE MANUFACTURED WITH REINFORCED CONCRETE OR POLYESTER FIBER REINFORCED POLYMER (FRP) WITH A MINIMUM TENSILE STRENGTH OF 100,000 PSI.
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NOTE: THE BUILDINGS WITH UNDERGROUND INFILTRATION SYSTEMS HAVE DOWNSPOUTS THAT TIE-IN AN UNDERGROUND CONVEYANCE PIPE TO THE INFILTRATION SYSTEMS. PIPES SHALL BE 4" TO 6" SOLID SCH 40 PVC.



NOTE: 1. SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS. 2. THE MINIMUM DISTANCE BETWEEN PIPES ENTERING MANHOLES AND CATCH BASINS MUST BE 1'-0" THE SIZE OF THE CATCH BASIN WILL BE DETERMINED BY THE PIPE SIZE AND ENTRY ANGLE. (SEE TABLE ABOVE.)

Being: ASSESSORS PLAT NO. 12 LOT NO. 20  
MISC. DETAILS SHEET 1

**Matteson Ridge Condos**

175 Greenbush Road  
West Warwick, Rhode Island 02893

Checked By: R.B.B. Drawn By: J.D.M.  
Scale: NO SCALE Date: March 20, 2017

NO.	REVISION	DATE
1	REVISIONS	JUN 15 2017
2	REVISIONS	JUN 15 2017
3	REVISIONS	JUN 15 2017
4	REVISIONS	JUN 15 2017
5	REVISIONS	JUN 15 2017
6	REVISIONS	JUN 15 2017
7	REVISIONS	JUN 15 2017
8	REVISIONS	JUN 15 2017
9	REVISIONS	JUN 15 2017
10	REVISIONS	JUN 15 2017

STEVEN M. CABRAL  
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ROBERT BOYER  
REGISTERED PROFESSIONAL LAND SURVEYOR

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Sheet 21 of 24 sheets

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
SPECIFIED IN THE LETTER OF APPROVAL  
JUL 25 2017 FILE # 17-0080  
PERMITS ALLOWED WITHOUT PRIOR APPROVAL  
OTHER PLANS MUST BE AT CONSTRUCTION SITE

# COREgrass<sup>®</sup> Technical Data

COR Sub-base Guide

Application	CR (g)	Sub-base Thickness (mm)	CR (g)	Sub-base Thickness (mm)
Hand-applied aggregate through filter	26	100	26	100
Machine-applied aggregate	26	130	26	130
Machine-applied aggregate	26	150	26	150
Machine-applied aggregate	26	180	26	180
Machine-applied aggregate	26	210	26	210
Machine-applied aggregate	26	240	26	240
Machine-applied aggregate	26	270	26	270
Machine-applied aggregate	26	300	26	300
Machine-applied aggregate	26	330	26	330
Machine-applied aggregate	26	360	26	360
Machine-applied aggregate	26	390	26	390
Machine-applied aggregate	26	420	26	420
Machine-applied aggregate	26	450	26	450
Machine-applied aggregate	26	480	26	480
Machine-applied aggregate	26	510	26	510
Machine-applied aggregate	26	540	26	540
Machine-applied aggregate	26	570	26	570
Machine-applied aggregate	26	600	26	600
Machine-applied aggregate	26	630	26	630
Machine-applied aggregate	26	660	26	660
Machine-applied aggregate	26	690	26	690
Machine-applied aggregate	26	720	26	720
Machine-applied aggregate	26	750	26	750
Machine-applied aggregate	26	780	26	780
Machine-applied aggregate	26	810	26	810
Machine-applied aggregate	26	840	26	840
Machine-applied aggregate	26	870	26	870
Machine-applied aggregate	26	900	26	900
Machine-applied aggregate	26	930	26	930
Machine-applied aggregate	26	960	26	960
Machine-applied aggregate	26	990	26	990
Machine-applied aggregate	26	1020	26	1020
Machine-applied aggregate	26	1050	26	1050
Machine-applied aggregate	26	1080	26	1080
Machine-applied aggregate	26	1110	26	1110
Machine-applied aggregate	26	1140	26	1140
Machine-applied aggregate	26	1170	26	1170
Machine-applied aggregate	26	1200	26	1200

The above table showing sub-base thicknesses is intended as a general guide in accordance with BS7533. For further details on permeable paving design refer to BS7533 Part 13; for installation refer to BS7533 Part 3. The design for pavements should satisfy two parts – to support the traffic load and to manage surface water. To determine CBR (California Bearing Ratio) of site ground please refer to the table below.

Subgrade Field Assessment

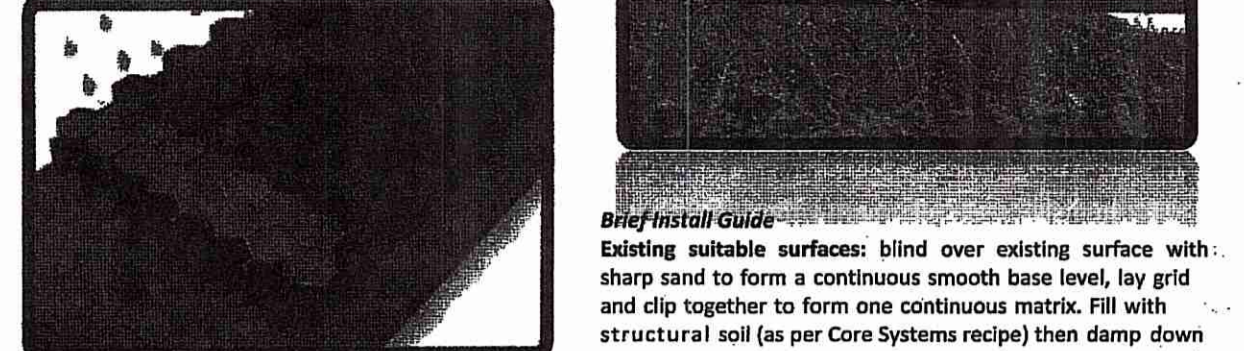
Subgrade	Tactile (Feel)	Visual (Observation)	Mechanical (test) SPT	CBR %	CU MN/m <sup>2</sup>
Very Soft	Hand-applied aggregate through filter	Man standing in 100mm	2-4	Around 1	Around 25
Soft	Easily moulded by finger pressure	Man walking sinks 50-70mm	4-8	2-4	50-100
Medium	Hand-applied aggregate through filter	Man walking sinks 25-50mm	8-15	4-8	100-200
Hard	Moulded by strong finger pressure	Utility truck ruts 10-25mm	15-30	8-15	200-400
Very Hard	Cannot be moulded by finger pressure	Loaded commercial vehicle ruts 10-25mm	30-50	15-30	400-800

Product Data

Property	Value	Property	Value
Material	100% recycled polypropylene or virgin polypropylene	Weight	7.7 lbs/sq. ft. (3.5 kg/m <sup>2</sup> )
Color	Green	Cell Shape	Honeycomb
Grid Dimension (in)	47.25" x 28.35" x 1.45" (1200mm x 720mm x 35mm)	Cell Dimension (in)	2.4" x 1.6" x 0.1" (60mm x 40mm x 2.5mm)
Grid Weight (lbs)	7.7 lbs/sq. ft. (3.5 kg/m <sup>2</sup> )	Cell Wall Thickness	0.08" (2mm)
Cell Shape	Honeycomb	Crush Resistance (unfilled)	> 30 700 lbs/sq. ft. (150 ton/m <sup>2</sup> )
Cell Dimension (in)	2.4" x 1.6" x 0.1" (60mm x 40mm x 2.5mm)	Load Bearing Capacity (filled)	> 51 200 lbs/sq. ft. (over 250 ton/m <sup>2</sup> )
Cell Wall Thickness	0.08" (2mm)	Temperature Range	-32°C to +90°C
Crush Resistance (unfilled)	> 30 700 lbs/sq. ft. (150 ton/m <sup>2</sup> )	Chemical Resistance	Excellent
Load Bearing Capacity (filled)	> 51 200 lbs/sq. ft. (over 250 ton/m <sup>2</sup> )	UV Resistance	Excellent
Temperature Range	-32°C to +90°C	Suggested Aggregate Size (in)	0.2" - 0.9" (5-15mm)
Chemical Resistance	Excellent		
UV Resistance	Excellent		
Suggested Aggregate Size (in)	0.2" - 0.9" (5-15mm)		

# COREgrass<sup>®</sup> 50-35MM / 60-40MM

The sheets should be laid on a suitable sub-base (see CBR sub-base guide table below). Alternatively they can be laid over existing tarmac, concrete or gravel driveways as follows.



**Brief Install Guide**  
Existing suitable surfaces: blind over existing surface with sharp sand to form a continuous smooth base level, lay grid and clip together to form one continuous matrix. Fill with structural soil (as per Core Systems receipt) then damp down with water to allow soil to settle into cells, this forms a soil/loam mix. Surface dress the cells and cover by approximately 10-15mm, seed the area and water thoroughly. Laying COREgrass with required excavation work: excavate to required sub-base depth, lay 1001 50mm of suitable sub-base material (crushed type 1 or washed aggregate) and follow steps from install guide above.

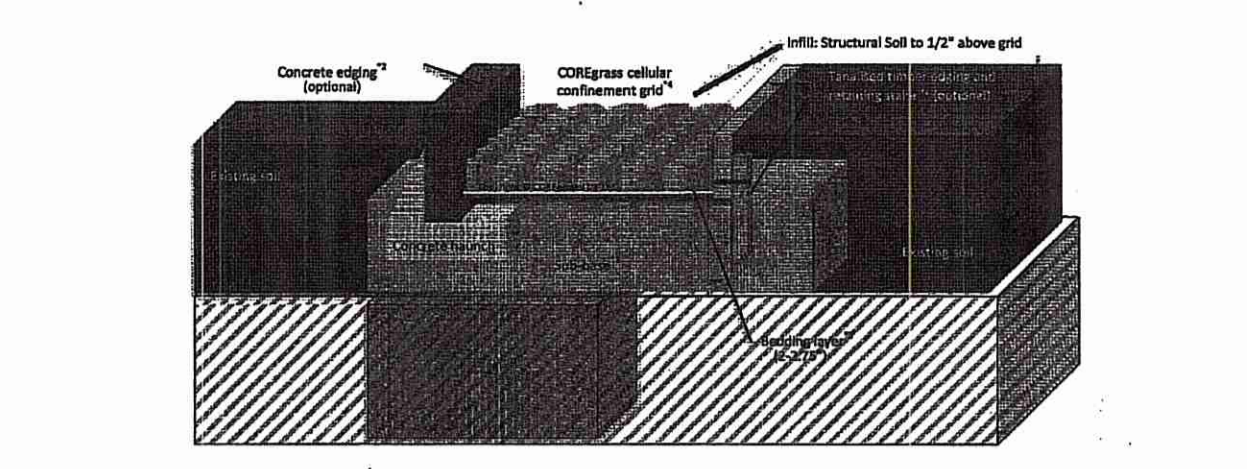
**Coverage:**  
COREgrass 50-35 = 0.86m<sup>2</sup> per 1200x720mm sheet.  
COREgrass 60-40 = 1.15m<sup>2</sup> per 1150x1000mm sheet.

**Load Bearing:**  
COREgrass 50-35 = 150 tons p/m<sup>2</sup> empty and 250 tons p/m<sup>2</sup> full (approximately 20 tons of axle weight).  
COREgrass 60-40 = 200 tons p/m<sup>2</sup> empty and 300 tons p/m<sup>2</sup> full (approximately 25 tons of axle weight).

**Summary**

- Easy to self-install.
- Easy to manage sheet size or large sheets for quicker install time on larger projects.
- Easy to cut using small angle grinder or disc cutter.
- The sheets are highly flexible, allowing them to bend slightly and follow the contour of the ground.

# COREgrass<sup>®</sup> Install Guide



**Sub-base** = Once the CBR has been established lay the sub-base at the required depth for the intended traffic load. Standard sub-base could be DOT type 1; scalping; crushed limestone; firm existing surface i.e. old gravel driveway, asphalt or concrete. Sharp sand or road crush should be laid (10-20mm) to form a bedding layer and iron out any minor deformities in the sub-base. SUDS compliant sub-base should contain no fines (nothing smaller than 2mm). This prevents the base from binding together; allowing water to penetrate freely i.e. clean angular gravel or clean crushed aggregate. The smaller aggregate should be laid to form a bedding layer on top of the larger aggregate, when compacted this will form a suitable surface on which the grid system can be laid.

**Edging** = The choice of edge restraint is partly dependent on the intended application and the intended traffic load. Concrete, timber, metal and recycled plastic are all suitable.

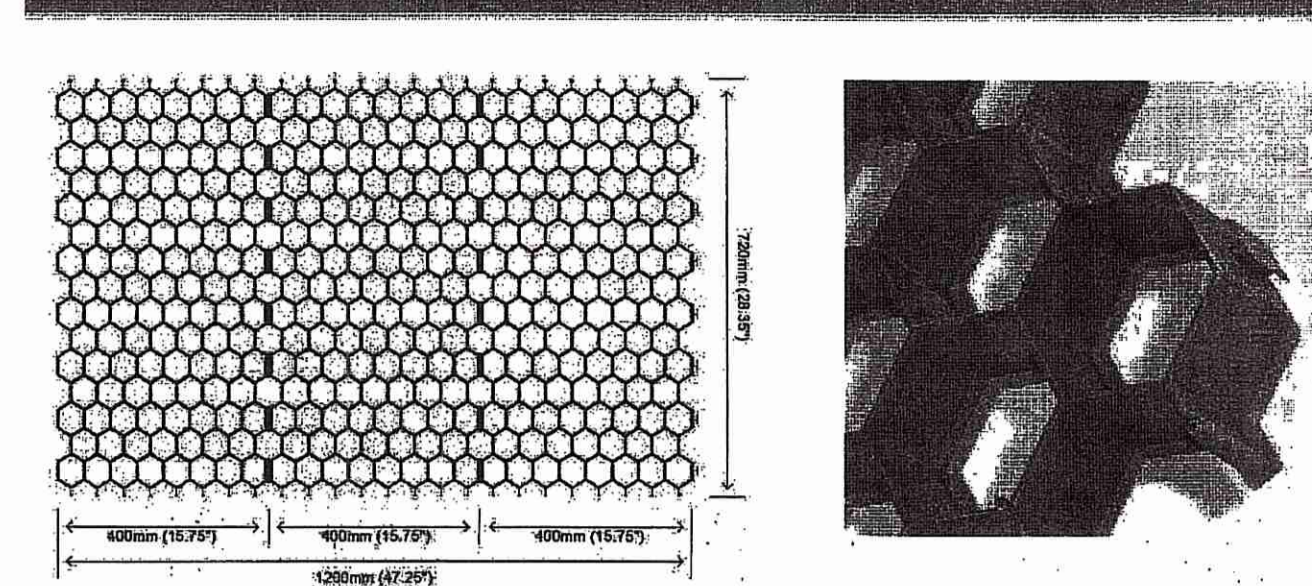
**Bedding Layer** = Sharp sand (not recommended for extreme cold weather environments) or road crush should be used for non SUDS compliant installs. 3-6mm clean crushed aggregate should be used for a truly SUDS compliant install.

**Specific advice on the use of COREdrive on steep slopes, drainage sustainability and Sustainable Urban Drainage Systems (SUDS) applications can be obtained from CORE systems.**

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1.855.777.1673 (CORE) | info@coregrass.co.uk | www.coregrass.co.uk

# CORE DRIVEWAY



**TECHNICAL SPECIFICATIONS**

Material	100% recycled polypropylene or virgin polypropylene
Colour	Green
Grid Dimension (in)	47.25" x 28.35" x 1.45" (1200mm x 720mm x 35mm)
Grid Weight (lbs)	7.7 lbs/sq. ft. (3.5 kg/m <sup>2</sup> )
Cell Shape	Honeycomb
Cell Dimension (in)	2.4" x 1.6" x 0.1" (60mm x 40mm x 2.5mm)
Cell Wall Thickness	0.08" (2mm)
Crush Resistance (unfilled)	> 30 700 lbs/sq. ft. (150 ton/m <sup>2</sup> )
Load Bearing Capacity (filled)	> 51 200 lbs/sq. ft. (over 250 ton/m <sup>2</sup> )
Temperature Range	-32°C to +90°C
Chemical Resistance	Excellent
UV Resistance	Excellent
Suggested Aggregate Size (in)	0.2" - 0.9" (5-15mm)

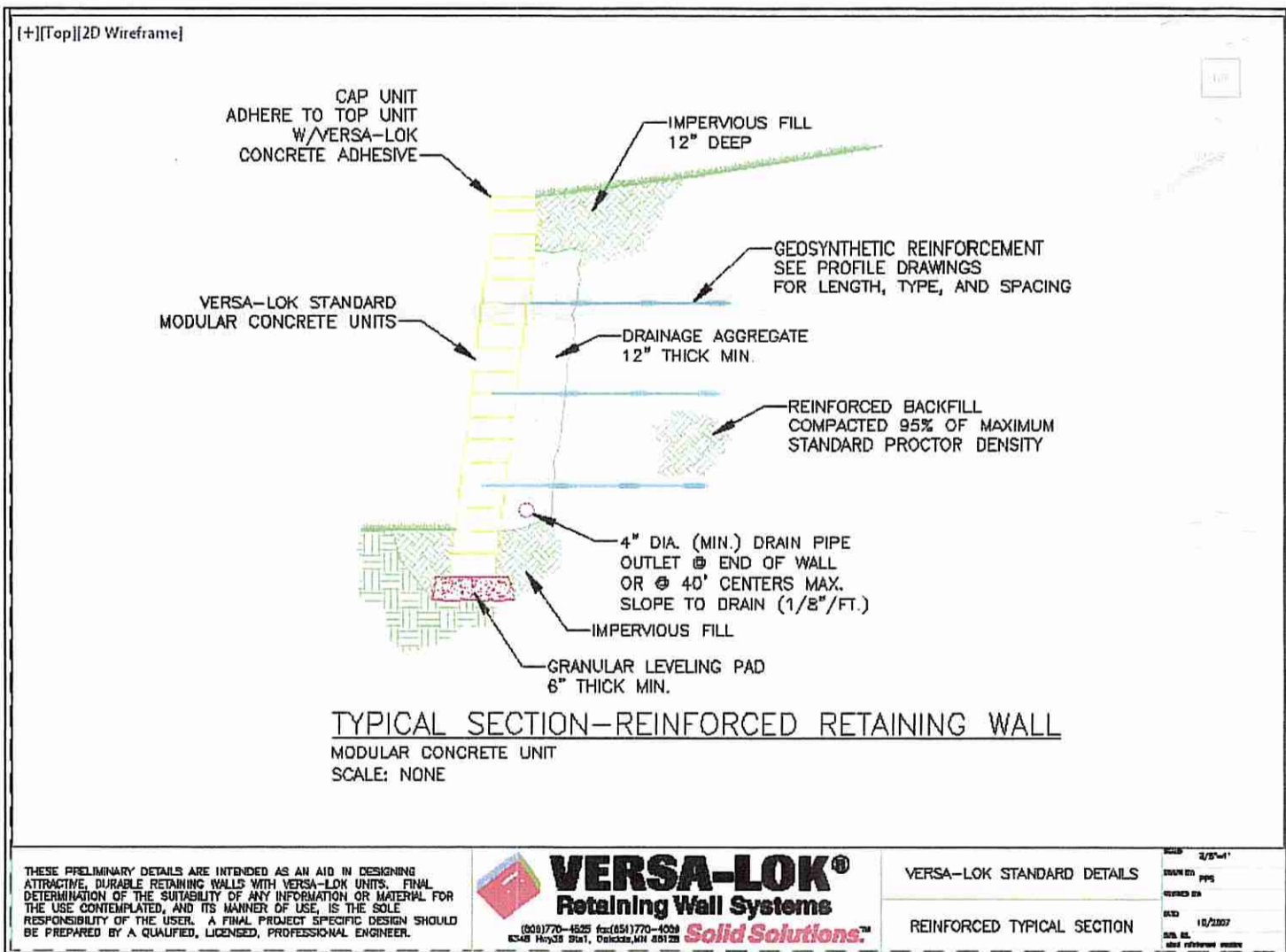
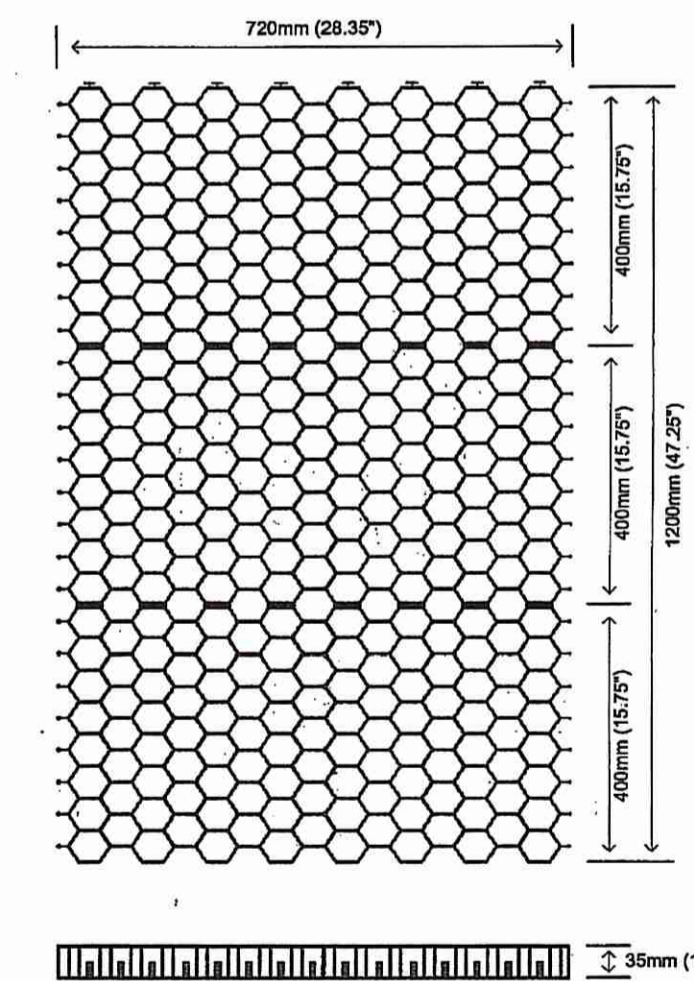
**SUITABLE FOR**  
Residential parking, living driveways, RV parking/access lanes, public pedestrian applications, bicycle trails, lawn reinforcement, garden paths, slope stabilization, etc.

Web: coregrass.co.uk  
Email: info@coregrass.co.uk  
Phone: 1.855.777.2673 (CORE)

## CERTIFICATES/COMPLIANT

AFNOR: NF EN ISO 844:2009 (determination of compressive properties).  
SES: ASTM D1621-04A (compressive test standard).  
LEED: Used in SUDS and LEED compliant porous paving BMPs for ideal drainage and minimal environmental impact.  
ADA Compliant: Used in ADA disability compliant surfaces for pedestrians, bicycles, & wheelchair traffic.  
Environmentally Approved: Maryland Department of the Environment, Montgomery County, and City of Victoria, British Columbia.

Showcasing the strength of our grid:  
youtube.com/watch?v=P8dXBiggJ0g

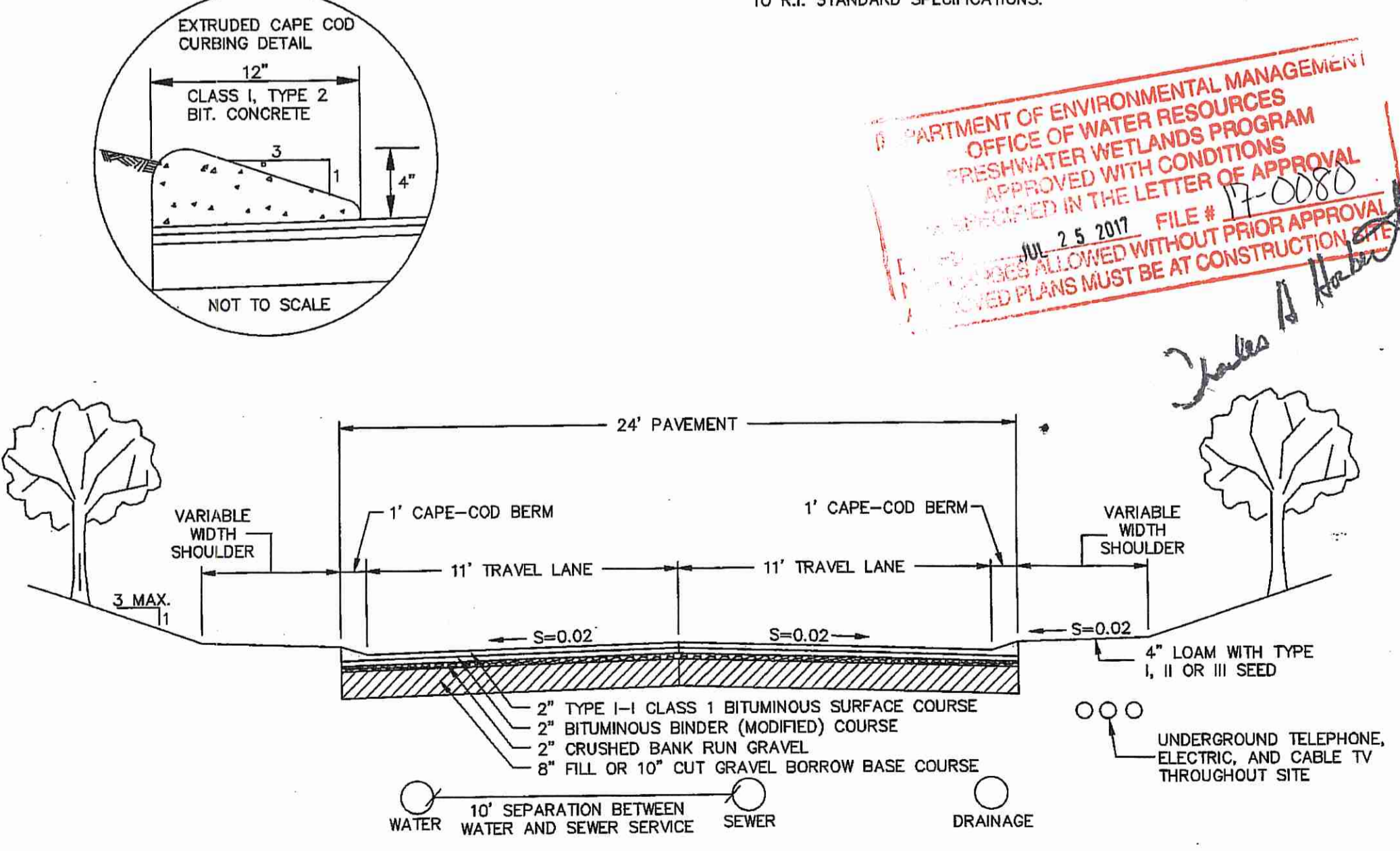


**WALL NOTES**

- 1) PRIOR TO CONSTRUCTION THE CONTRACTOR IS RESPONSIBLE TO SUBMIT WALL DESIGN PLANS STAMPED BY A PROFESSIONAL ENGINEER-STRUCTURAL LICENSED IN RHODE ISLAND.
- 2) ALTERNATE WALL TYPES AND DESIGNS MAY BE USED IF ACCEPTED BY THE OWNER AND UPON SUBMITTAL OF STAMPED PLANS AND CALCULATIONS BY A PROFESSIONAL ENGINEER LICENSED IN RHODE ISLAND.

- GENERAL NOTES:**
1. ROADWAY CROSS SECTION AND MATERIALS SHALL CONFORM TO TOWN OF WEST WARWICK STANDARDS FOR ROAD CONSTRUCTION AND UTILITY LOCATIONS.
  2. CAPE COD CURBING HALL MANUFACTURING CO. MOLD JEX OR D.P.W. APPROVED EQUAL SLOPE FACED PRECAST CONCRETE CURBING REQUIRED AT ALL INTERSECTION FILLET CURVES. SEE R.I. DOT STD. 7.2.0.
  3. WATER MAIN LOCATION SUBJECT TO APPROVAL OF THE DIRECTOR OF PUBLIC WORKS.
  4. STORM DRAIN MATERIALS AND METHODS SHALL CONFORM TO APPLICABLE TOWN OF WEST WARWICK AND R.I.D.O.T. STANDARDS.
  5. UNDERGROUND UTILITY TRENCH CONSTRUCTION TO CONFORM TO THE NATIONAL GRID DEVELOPER/CONTRACTOR/CUSTOMER RESPONSIBILITIES & CONSTRUCTION SPECIFICATIONS FOR UNDERGROUND RESIDENTIAL DEVELOPMENTS.
  6. SEWER FORCE MAIN SEPARATION TO WATER MAIN TO BE LOCATED 10' HORIZONTAL OR 2' VERTICAL BELOW WATER MAIN.

- CONSTRUCTION NOTES:**
1. CLEARING & GRUBBING: ALL ROOT SYSTEMS, TREES, STUMPS, BUSHES, AND OTHER OBJECTIONABLE MATERIALS SHALL BE REMOVED AND DISPOSED OF AS INDICATED BY THE MUNICIPAL ENGINEER. HEALTHY TREES WITHIN THE RIGHTS-OF-WAY WIDTH AND OUTSIDE THE PAVEMENT WIDTH MAY BE LEFT STANDING, PROVIDED SAID TREES ARE NOT MORE THAN 5' (FIVE FEET) FROM THE RIGHT-OF-WAY LINE, EXCEPT WHERE SIDEWALKS ARE REQUIRED.
  2. EARTH EXCAVATIONS SHALL INCLUDE, BUT NOT BE LIMITED TO, THE REMOVAL OF CLAY, SAND, GRAVEL, LOAM, SOFT OR DISINTEGRATED ROCK WHICH CAN BE REMOVED WITHOUT BLASTING; BOULDERS OF LESS THAN ONE-HALF CUBIC YARD IN VOLUME; AND OTHER UNACCEPTABLE MATERIALS WITHIN THE LIMITS OF ROADWAY, DRAINAGE, OR OTHER EXCAVATION.
  3. ROCK AND LEDGE EXCAVATION SHALL INCLUDE REMOVAL AND DISPOSAL OF ALL BOULDERS OF ONE-HALF CUBIC YARD OR MORE IN VOLUME AND ALL HARD LEDGE ROCK WHICH CAN BE REMOVED ONLY BY DRILLING AND SPLITTING MECHANICALLY BY HAND OR BLASTING.
  4. PAVEMENT SHALL BE CONSTRUCTED SO AS TO PROVIDE A MINIMUM CROSS-SECTION AFTER COMPACTION OF 8" (EIGHT INCHES) GRAVEL BORROW BASE COURSE SUB-BASE IN CUTS WITH 2" (TWO INCHES) OF CRUSHED BANK RUN GRAVEL (MEETING TOWN SPECIFICATIONS) AND HOT-MIX ASPHALTIC AND BITUMINOUS CONCRETE MATERIALS CONFORMING TO R.I. STANDARD SPECIFICATIONS.



TYPICAL ROAD CONSTRUCTION (PRIVATE ROAD)  
NOT TO SCALE

**CORE GRASS 50-35**  
A 100% PERMEABLE GREEN PAVING ALTERNATIVE.  
Web: coregrass.co.uk | Email: info@coregrass.co.uk

Being: ASSESSORS PLAT NO. 12 LOT NO. 20  
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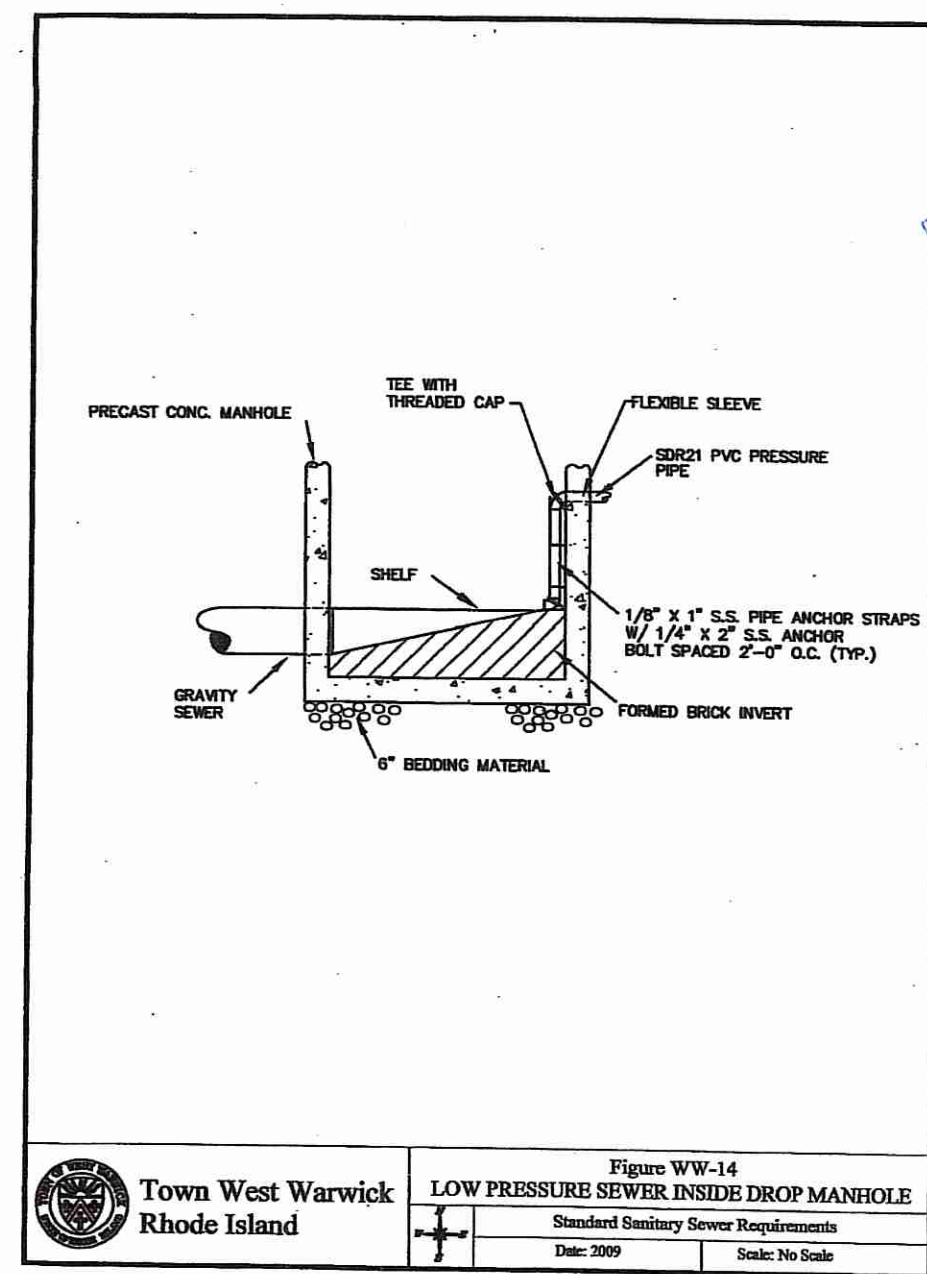
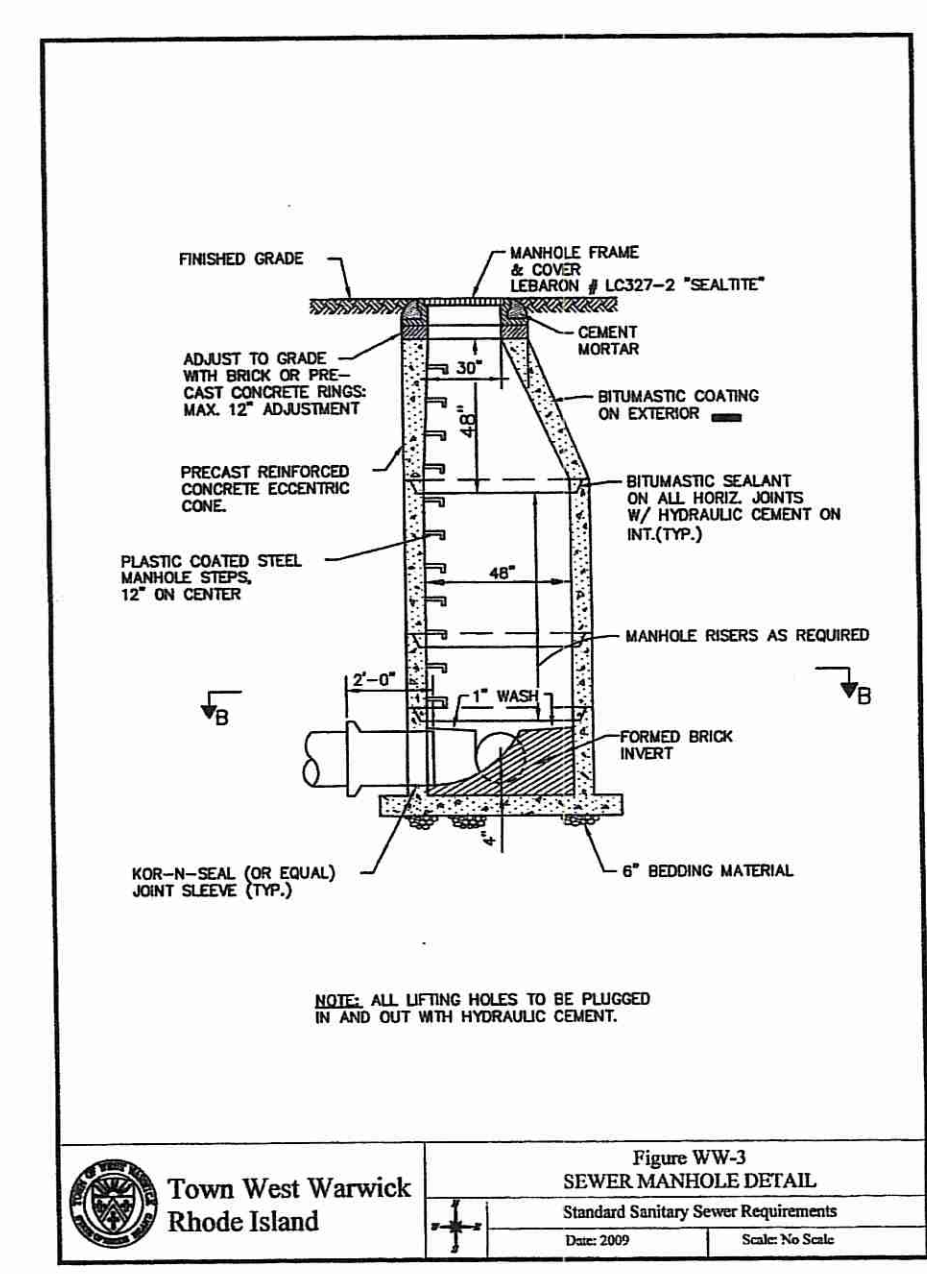
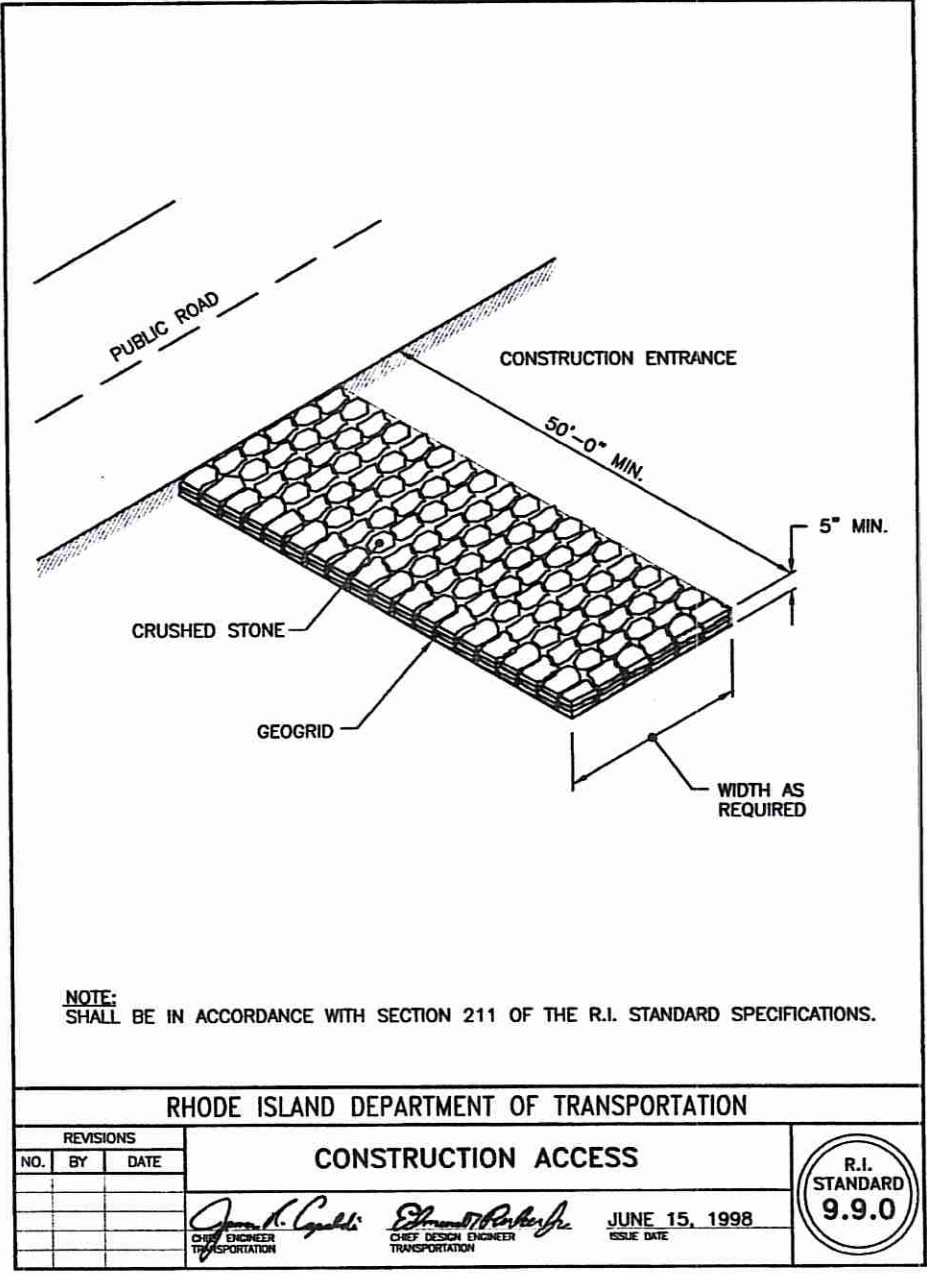
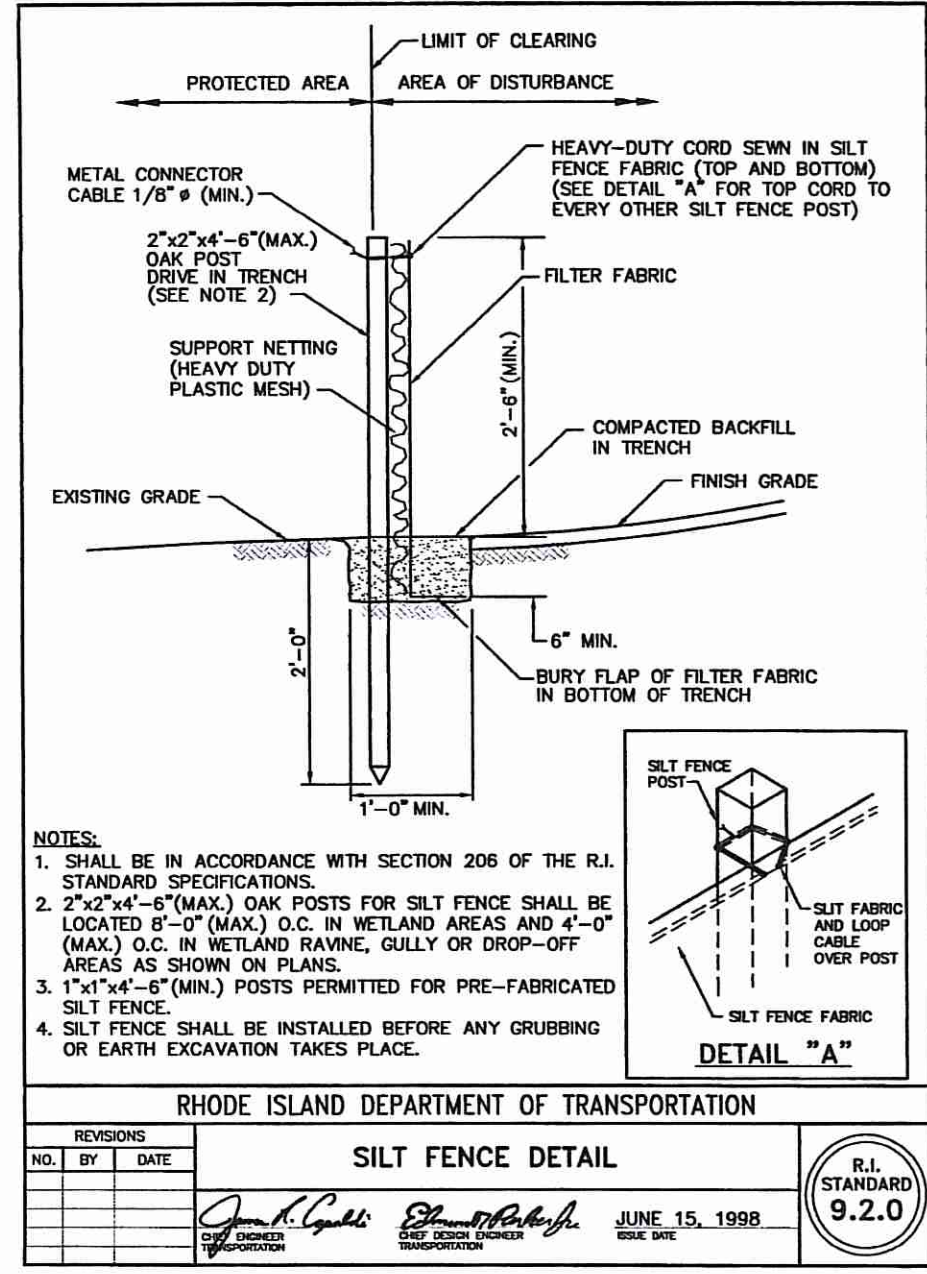
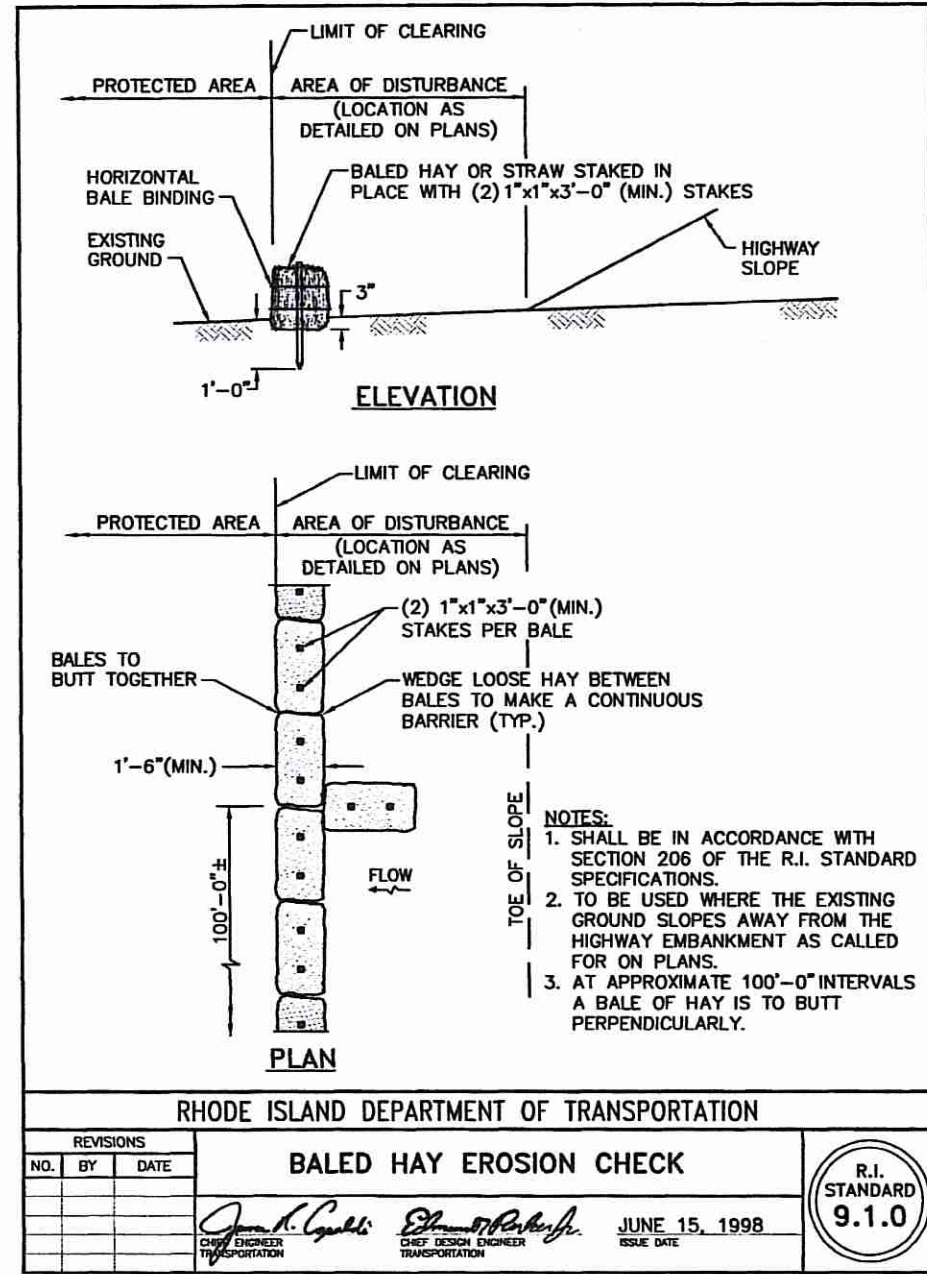
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Sheet 22 of 24 sheets



Office of Water Resources  
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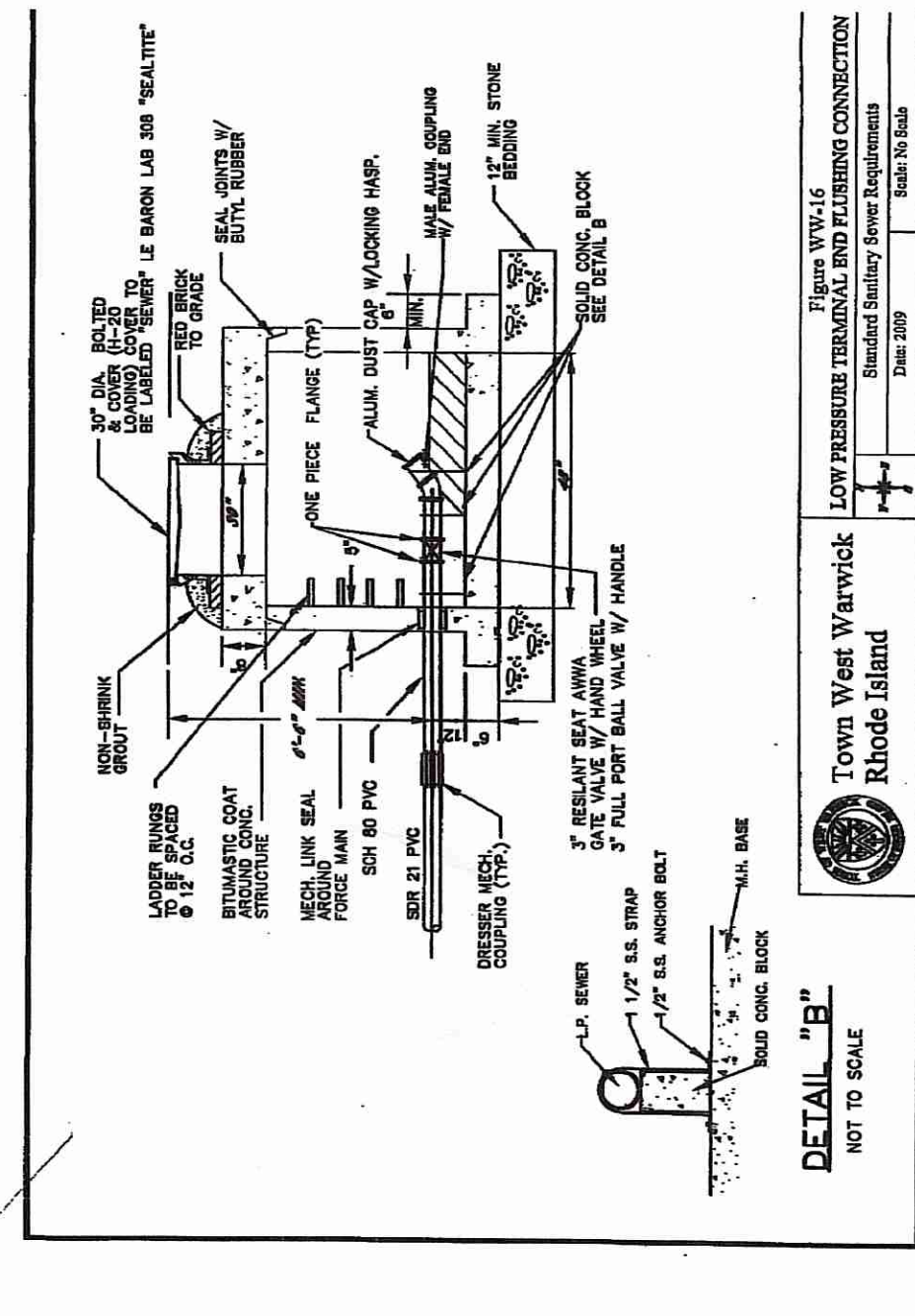
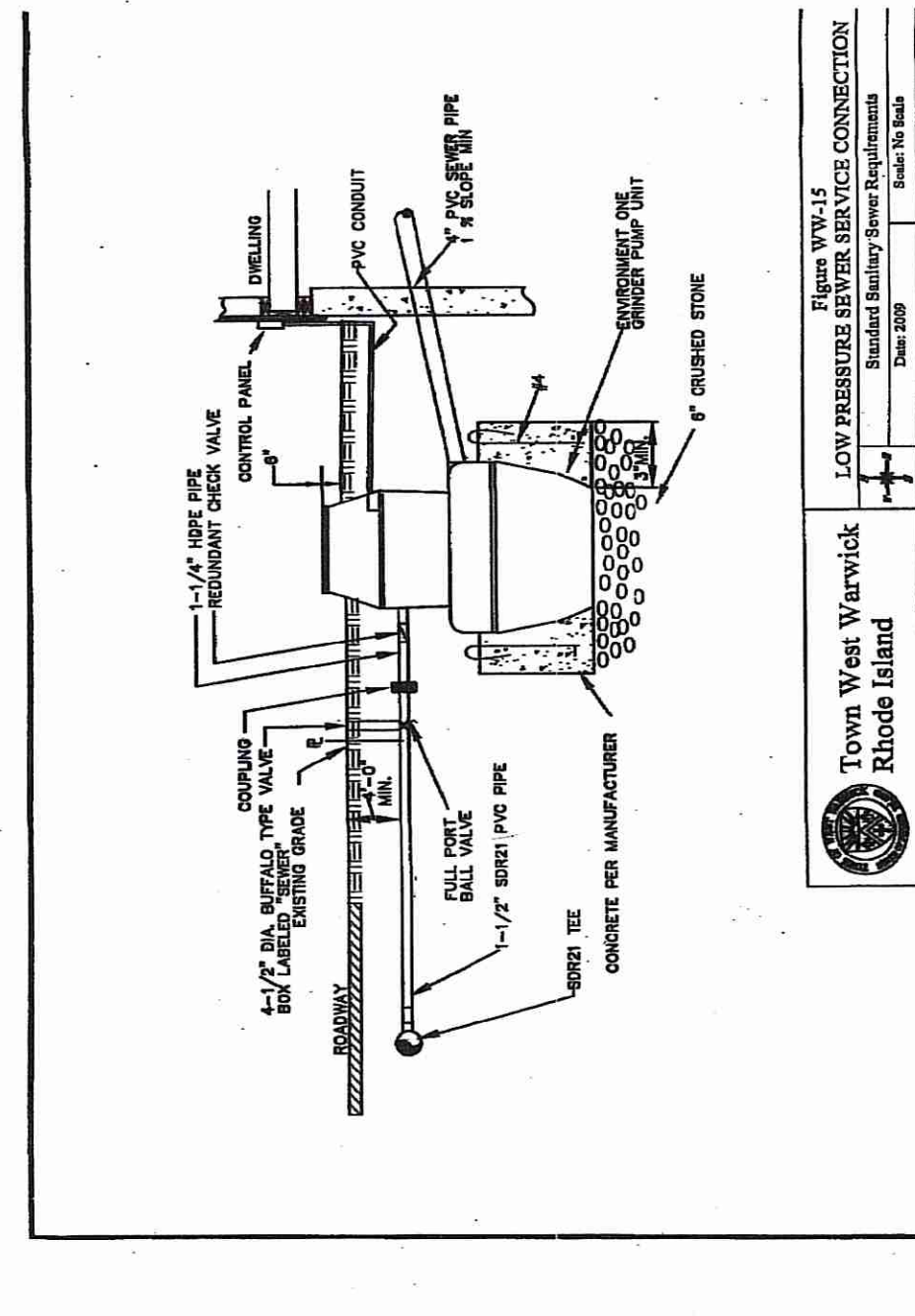
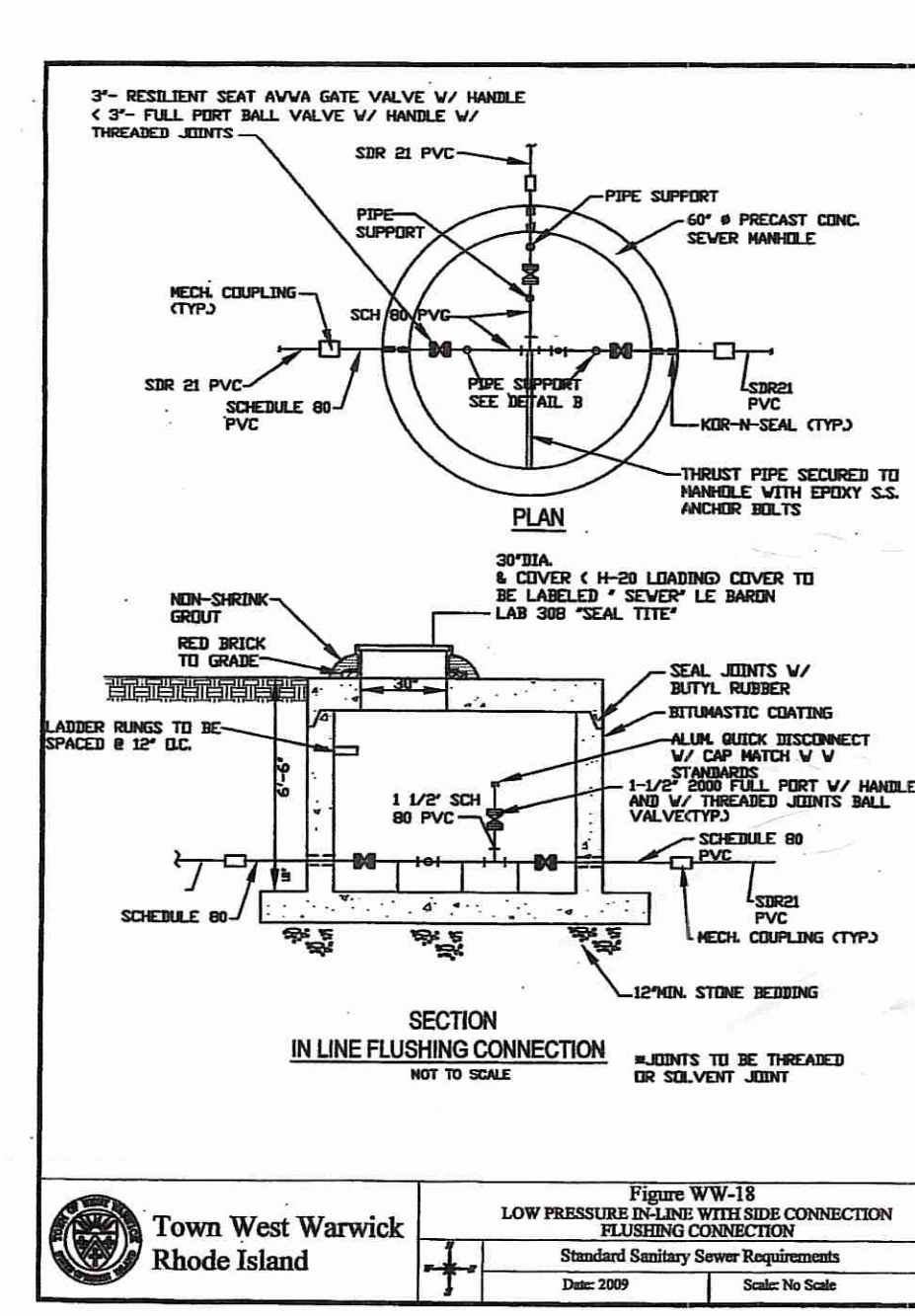
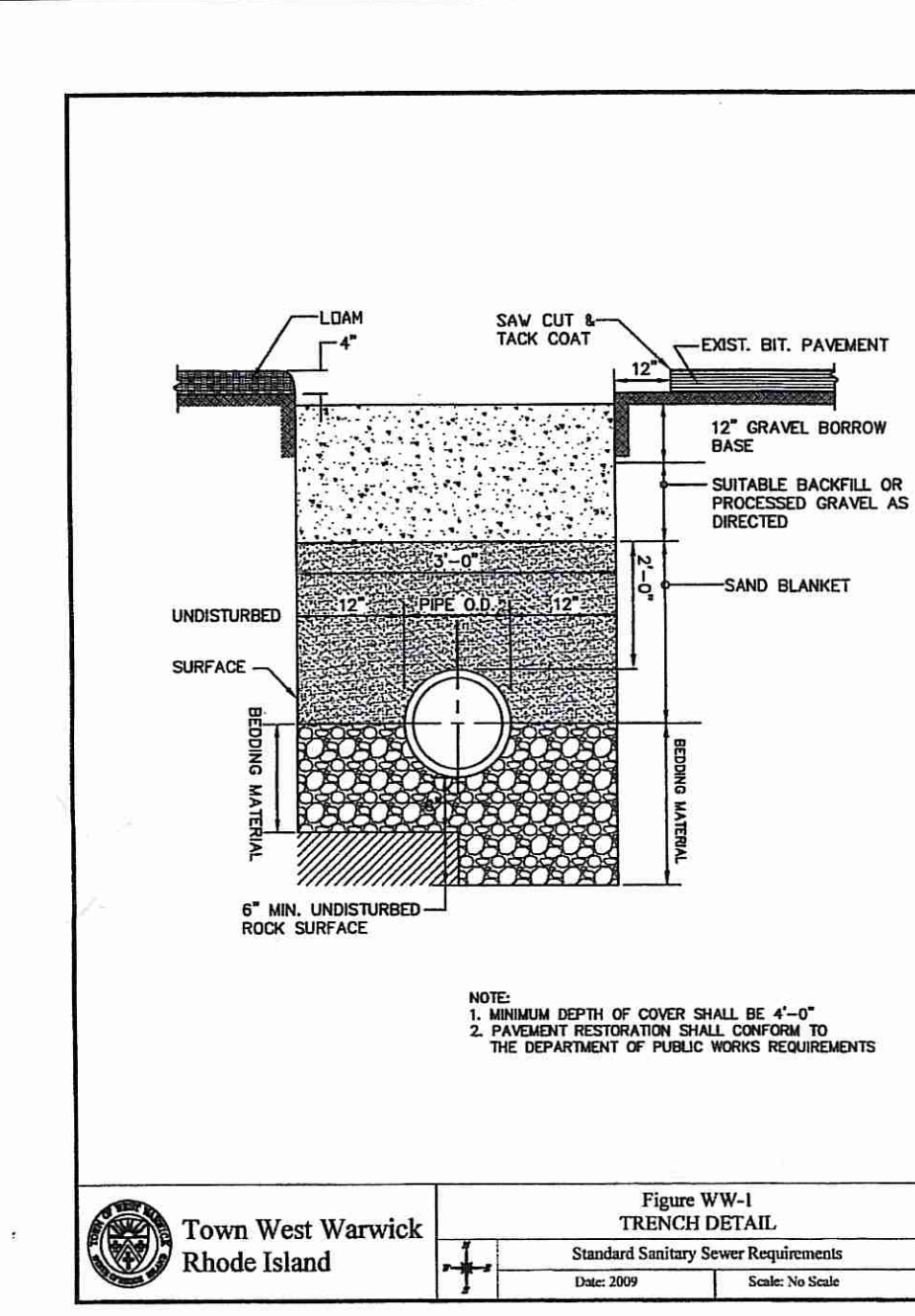
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**Matteson Ridge Condos**  
 LOCATION  
 175 Greenbush Road  
 West Warwick, Rhode Island 02893

**STANDARD SANITARY SEWER REQUIREMENTS**

PREPARED FOR:  
**West Warwick Sewer Commission**  
 One Pontiac Avenue  
 West Warwick, Rhode Island 02893

PREPARED BY:  
**JAMES J. GEREMIA & ASSOCIATES, INC.**  
 272 WEST EXCHANGE STREET, SUITE 201  
 PROVIDENCE, RHODE ISLAND 02903-1061

ADOPTED BY: SEWER COMMISSION OCTOBER 20, 2009

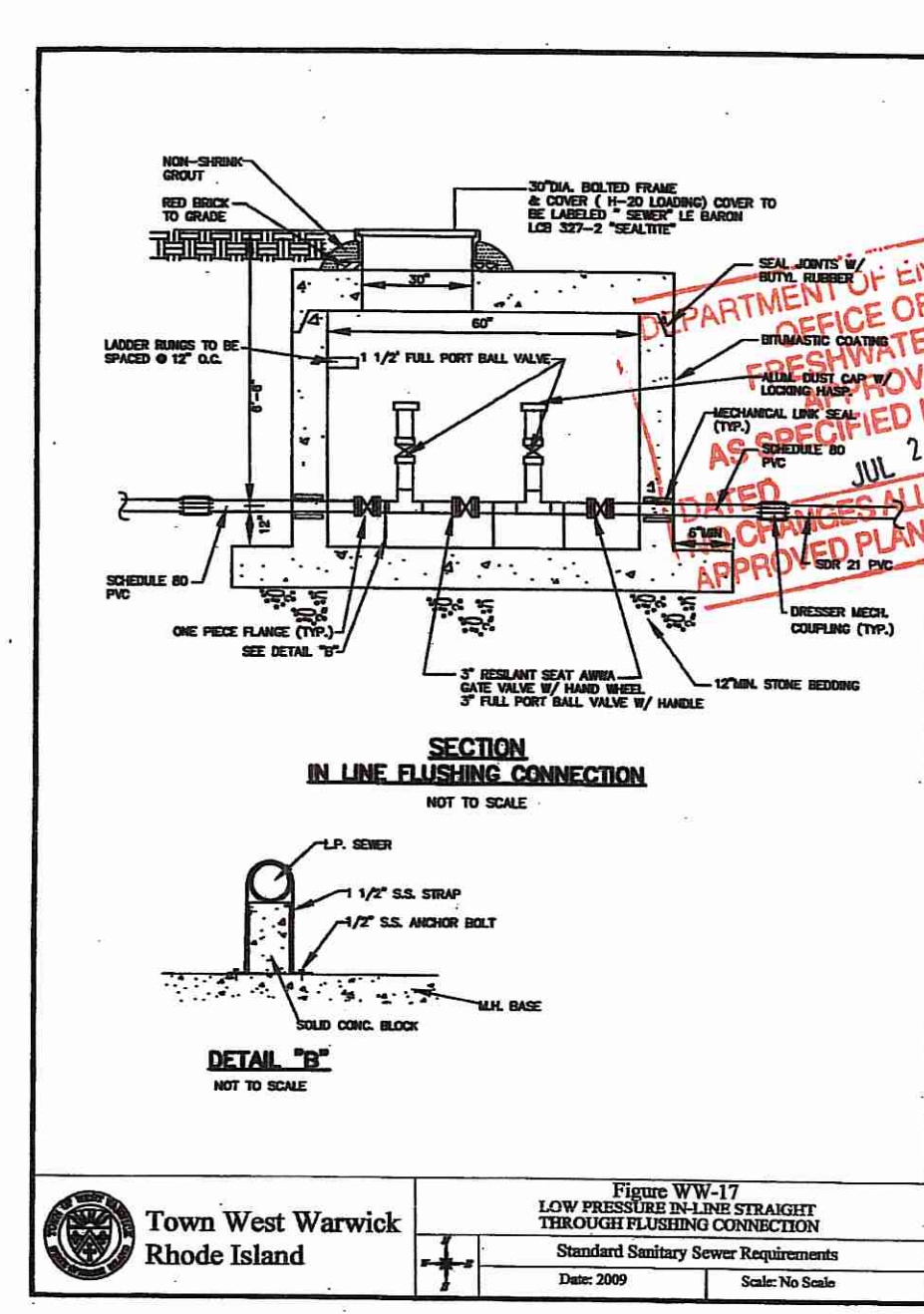
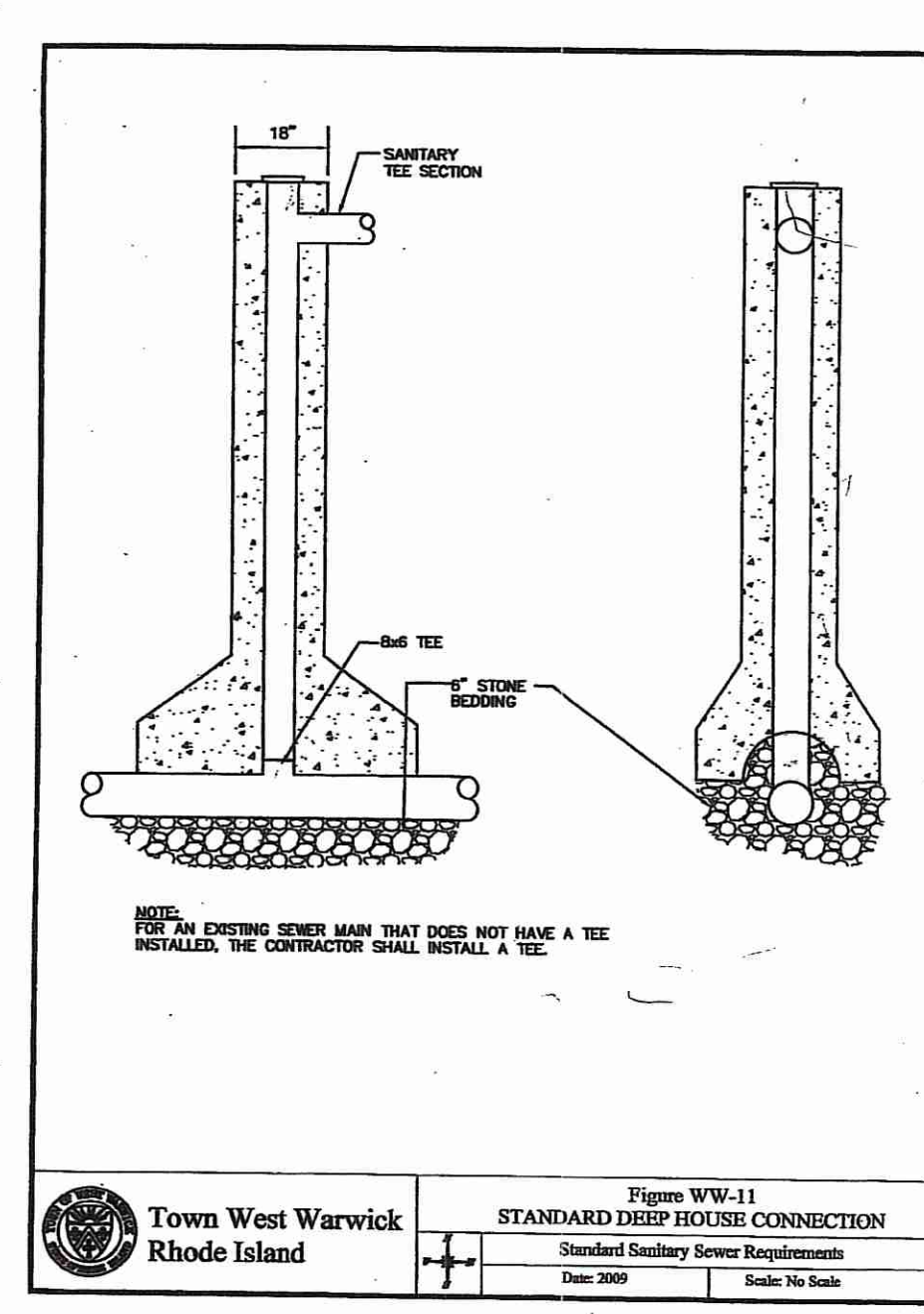
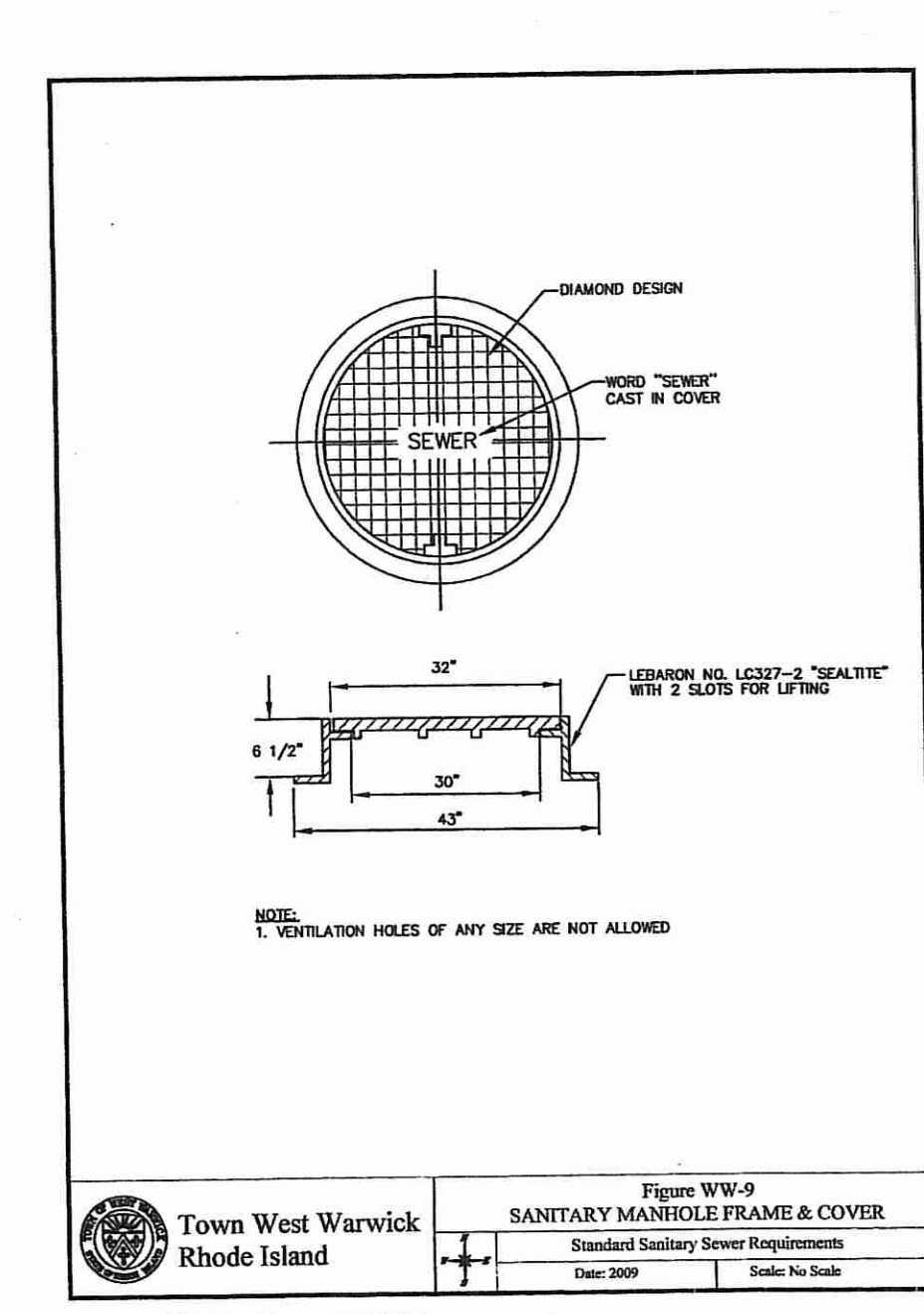
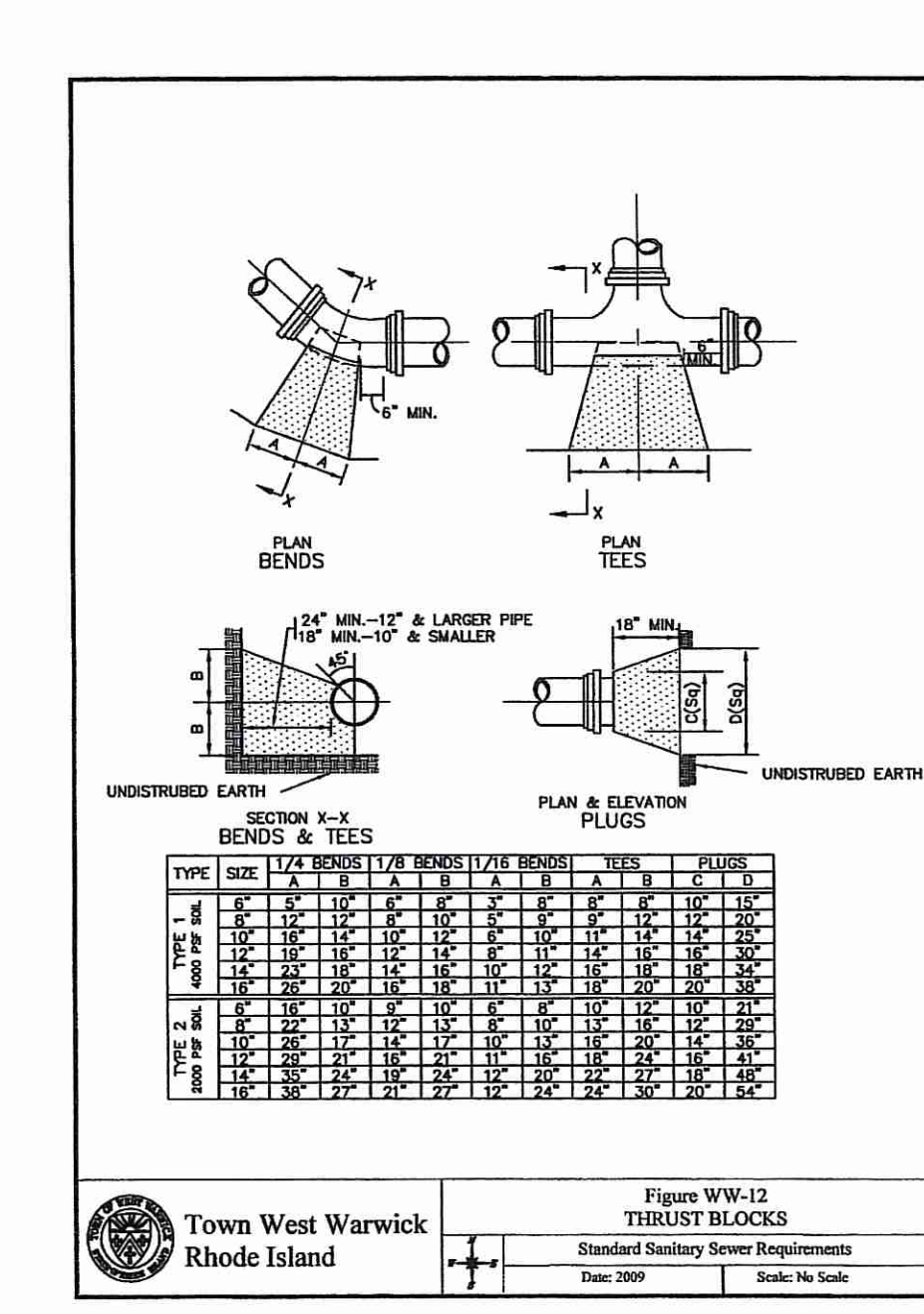
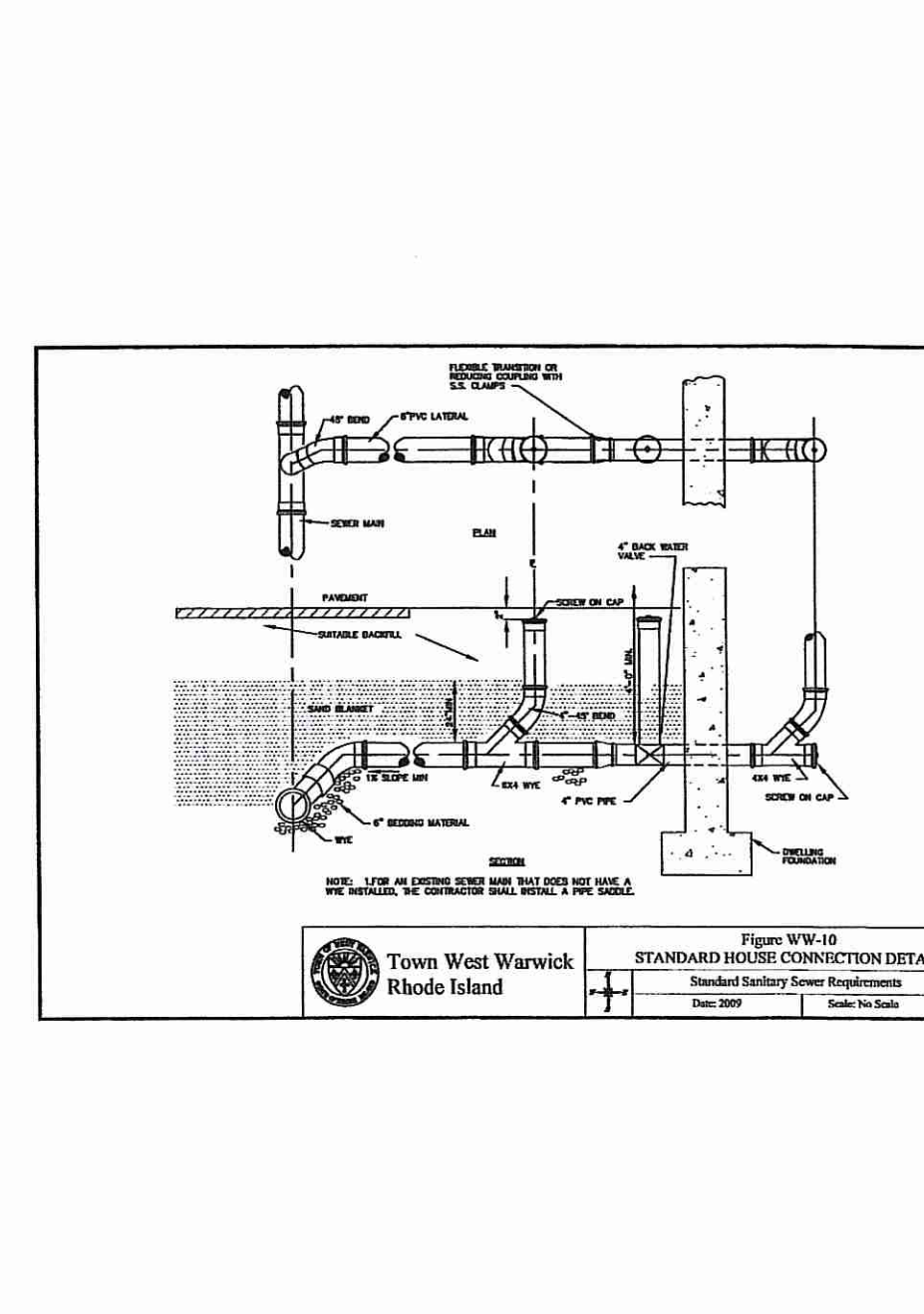


Checked By: J.D.M.  
 Drawn By: R.B.B.  
 Date: March 23, 2017  
 Scale: NO SCALE

NO.	REVISION	DATE
1	REVISION	JUN 5/17/17

STEVEN M. CABRAL  
 No. 4847  
 REGISTERED PROFESSIONAL ENGINEER  
 Crossman Engineering  
 151 Centerville Road  
 West Warwick, RI 02893

ROBERT B. BOYER  
 No. 1573  
 REGISTERED PROFESSIONAL LAND SURVEYOR



**BOYER ASSOCIATES**  
 ESTABLISHED SINCE 1973  
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DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 FILE # 17-0001  
 JUL 25 2017  
 APPROVED PLANS ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Sheet 23  
 of 24 sheets

**SEEDING NOTES**

- LOAM SHALL BE SPREAD TO A MINIMUM DEPTH OF 4" OVER ALL AREAS DESIGNATED ON PLANS.
- SHAPE AND SMOOTH THE SURFACE TO THE LINES AND GRADES AS SHOWN ON PLANS.
- FERTILIZE WITH 10-10-10 OR EQUIVALENT ANALYSIS. AT LEAST 40% OF THE FERTILIZER NITROGEN SHALL BE IN A SLOW RELEASE FORM. INCORPORATE THE FERTILIZER INTO THE TOP 3 TO 4 INCHES OF THE PLANTING SOIL. APPLY AT THE RATE OF 8 POUNDS PER 1,000 SQUARE FEET AT SEEDING.
- LIME: SPREAD EVENLY AND WORK INTO THE SOIL DURING PREPARATION OF SEED BED AT THE RATE OF ONE TON PER ACRE. INCORPORATE INTO THE SOIL BY DIGGING OR OTHER APPROVED METHOD. DISTRIBUTE LIME UNIFORMLY AND WORK INTO TOP 4 INCHES OF TOP SOIL (MINIMUM) AND UNIFORMLY BLEND BY DIGGING OR ROTOTILLING.
- APPLICATION OF SEED:
  - RATE OF APPLICATION OF SEED SHALL BE 8 POUNDS PER 1,000 SQUARE FEET OR AS INDICATED ON PLANS.
  - SEEDING SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS, AND ONLY DURING THE FOLLOWING DATES:  
 SPRING SEEDING: MARCH 15 TO MAY 31  
 FALL SEEDING: AUGUST 15 TO OCTOBER 15
  - THE CONTRACTOR SHALL KEEP ALL SEEDED AREAS WATERED AND IN GOOD CONDITION, RESEEDING IF AND WHEN NECESSARY FOR AN 8 WEEK PERIOD OR UNTIL A GOOD, HEALTHY, UNIFORM GROWTH IS ESTABLISHED OVER THE ENTIRE AREA. THE CONTRACTOR SHALL ALSO MAINTAIN THESE AREAS IN AN APPROVED CONDITION UNTIL PROVISIONAL ACCEPTANCE.
  - DURING THIS PERIOD, WATER TURF AS NECESSARY TO MAINTAIN AN ADEQUATE SUPPLY OF MOISTURE WITHIN THE ROOT ZONE. AN ADEQUATE SUPPLY OF MOISTURE IS EQUIVALENT OF ONE INCH OF ABSORBED WATER PER WEEK THAT IS DELIVERED AT WEEKLY INTERVALS IN THE FORM OF NATURAL RAIN OR IS AUGMENTED AS REQUIRED BY PERIODIC WATERING.
  - OVERSEED WHEN NECESSARY TO PROMOTE GRASS GROWTH.
  - REPLANT AREAS VOID OF TURF ONE SQUARE FOOT OR LARGER.
  - SEED:
    - SEED ALL AREAS DESIGNATED ON PLAN AS WELL AS ALL DISTURBED EXISTING AREAS WITH THE FOLLOWING SEED MIX:

**SEED MIX No. 1**

(SLOPES)

TYPE	% BY WEIGHT
CREeping RED FESCUE	70
ASTORIA BENTGRASS	5
BIRDFOOT TREFOLI	15
PERENNIAL RYE GRASS	10

APPLICATION RATE = 200 lbs. / ACRE

**SEED MIX No. 2**

(MOWED/LAWN AREAS)

TYPE	% BY WEIGHT
NASSAU KENT BLUE	60
JAMESTOWN CHEWINGS FESCUE	20
PALMER PERENNIAL RYE GRASS	20

APPLICATION RATE = 200 lbs. / ACRE

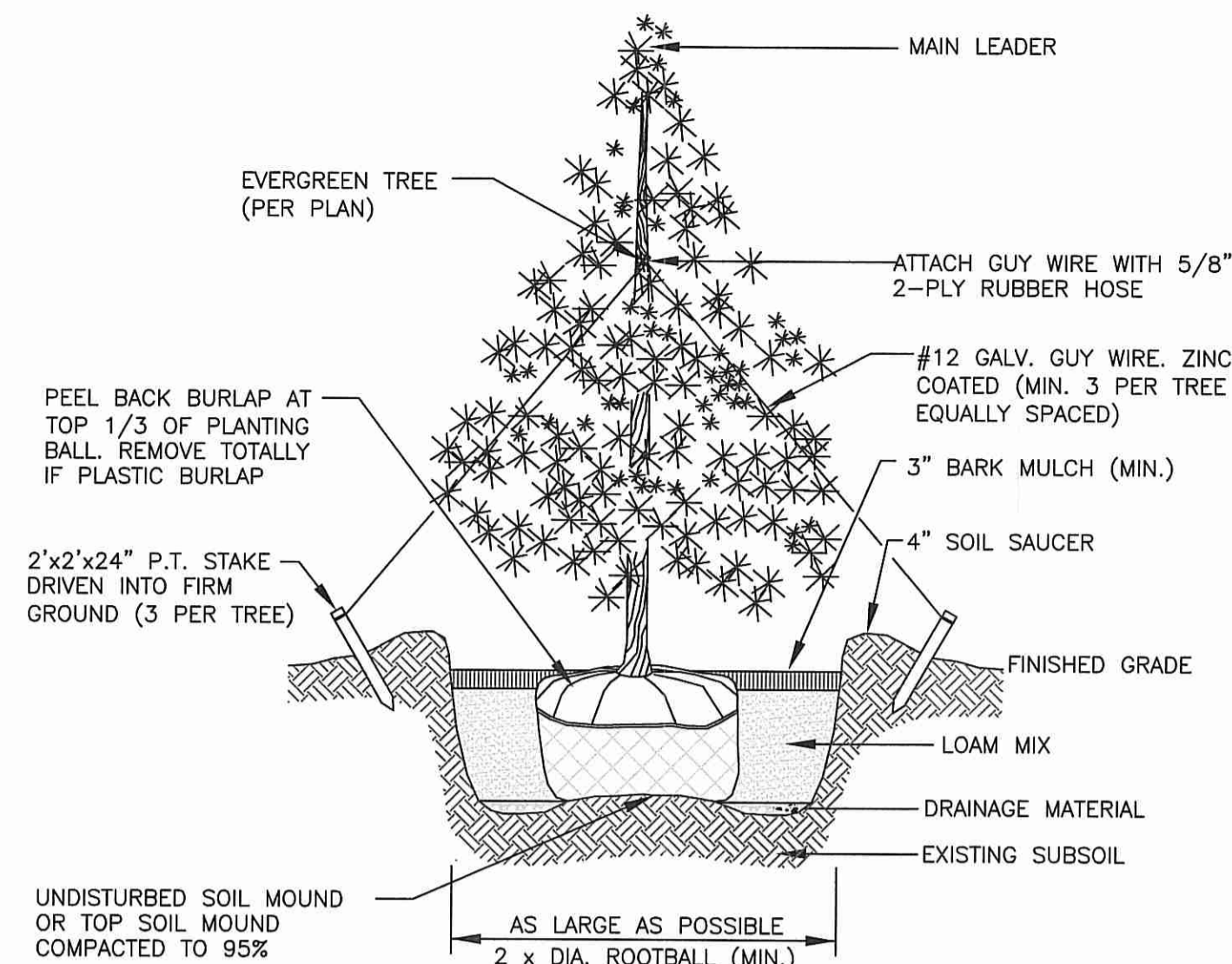
**SEED MIX No. 3**

(SAND FILTER/GRASS SWALE AND INFILTRATION BASIN AREAS)

REFER TO SAND FILTER DETAIL (SHEET 15) FOR SEED MIX

**LANDSCAPE CONSTRUCTION NOTES**

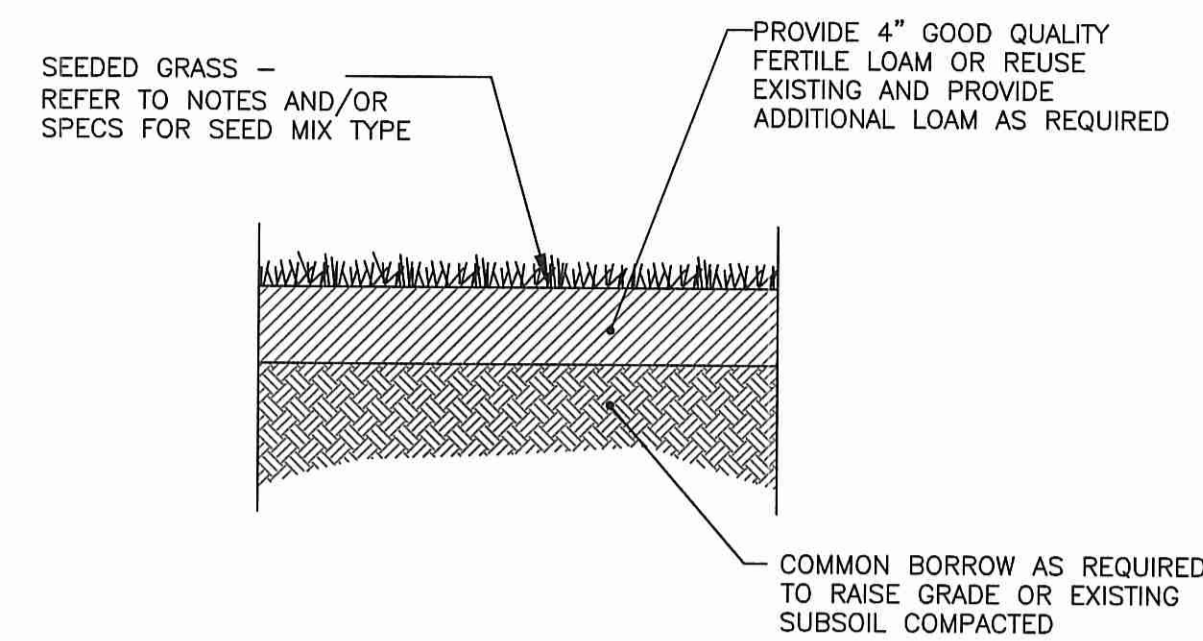
- FURNISH AND INSTALL ALL PLANTS SHOWN ON THE DRAWINGS SPECIFIED HEREIN, AND IN THE QUANTITIES LISTED ON THE PLANT LIST. NO SUBSTITUTIONS WILL BE PERMITTED, UNLESS APPROVED BY THE LANDSCAPE ARCHITECT.
- LOAM TO BE SCREENED, GOOD QUALITY, FERTILE, FREE OF WEEDS, STICKS, STONES OVER 3/4", AND ROOTS. SPREAD TO A MINIMUM OF 4" OVER ALL PLANTED AREAS.
- NURSERY STOCK SHALL MEET THE STANDARDS OF THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION AS TO GRADING AND QUALITY.
- ONLY NURSERY-GROWN PLANTS, GROWN IN ACCORDANCE WITH ACCEPTED HORTICULTURAL PRACTICES, AND GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCALITY OF THE PROJECT FOR AT LEAST TWO (2) YEARS, WILL BE ACCEPTED.
- SET PLANTS PLUMB AND AT A LEVEL THAT AFTER SETTLEMENT THEY BEAR THE SAME RELATION TO THE SURROUNDING GROUND AS THEY BORE TO THE GROUND FROM WHICH THEY WERE DUG. SETTLE BACKFILL MATERIAL FOR PLANTS, THOROUGHLY AND PROPERLY BY FIRING OR TAMPING. FORM SAUCERS, CAPABLE OF HOLDING WATER ABOUT INDIVIDUAL PLANTS, BY PLACING RIDGES OF PLANTING SOIL AROUND EACH.
- STAKE ALL TREES OVER 5 FEET AS SHOWN ON PLANS. REMOVE STAKES AT THE END OF THE GUARANTEE PERIOD.
- WATERING: WATER ALL PLANTS WITHIN 48 HOURS AFTER PLANTING. IF CONDITIONS WARRANT, AND AS MANY TIMES THEREAFTER TO SUSTAIN HEALTHY CONDITIONS UNTIL LANDSCAPE INSTALLATION IS COMPLETED. SATURATE THE SOIL AROUND EACH PLANT THOROUGHLY AT EACH WATERING.
- PRUNING: PRUNE PLANTS, AS DIRECTED BY OWNER, AT THE PROJECT SITE BEFORE OR IMMEDIATELY AFTER PLANTING IN ACCORDANCE WITH THE BEST HORTICULTURAL PRACTICE. CUT BROKEN, DEAD OR INJURED BRANCHES IMMEDIATELY ABOVE THE STEM COLLAR ON THE TRUNK OR LIMB. PRUNE ALL BROKEN ROOTS ON THE PLANT SIDE OF THE BREAK. PAINT CUTS OVER 3/4" IN DIAMETER WITH TREE WOUND PAINT. PRUNING SHALL NOT DEFORM OR OTHERWISE DESTROY THE TYPICAL SHAPE OR SYMMETRY OF THE PLANT, AND SHALL NOT REDUCE THE HEIGHT BY MORE THAN ONE-THIRD. DO NOT CUT BACK THE LEADER OF THE PLANT UNLESS DIRECTED BY THE LANDSCAPE ARCHITECT.
- FERTILIZING: FERTILIZE SHRUB BEDS WITH 10-6-4 FERTILIZER BROADCAST AT A RATE OF THREE POUNDS PER 100 SQUARE FEET OF SURFACE AREA BROADCAST. APPLY THE FERTILIZER UNIFORMLY TO THE SURFACE BEDS AND WORK INTO THE UPPER TWO INCHES OF SOIL. FERTILIZE INDIVIDUAL TREES AT A RATE OF ONE AGRIFORM PELLETT PER INCH OF TRUNK DIAMETER (FOLLOW MANUFACTURER'S WRITTEN INSTRUCTIONS). APPLY A SECOND APPLICATION OF FERTILIZER TO ALL PLANT ITEMS AT THE SAME SPECIFIED RATES OVER THE MULCH AT THE END OF AN EIGHT WEEK PERIOD.
- LIMING: ADD POWDERED LIME EVERY SIX MONTHS - OR SLOW RELEASE GRANULAR LIME-AS PER MANUFACTURER'S INSTRUCTION.
- MULCHING: WITHIN A 72 HOUR PERIOD AFTER PLANTING, COVER ALL PLANTED AREAS WITH 3" DARK HEMLOCK MULCH. NO RED OR DYED MULCH IS TO BE USED. MULCH SHOULD BE PULLED ONE INCH AWAY FROM PLANT TRUNK OR STEM, AND NOT ALLOWED TO REST DIRECTLY AGAINST THE TRUNK OR STEM.
- GUARANTEE: ALL PLANTS FURNISHED BY THE CONTRACTOR SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER PRELIMINARY INSPECTION AND SHALL BE ALIVE AND IN SATISFACTORY GROWTH AT THE END OF THE GUARANTEE PERIOD. ALL DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED AT ONCE BY THE CONTRACTOR, FREE OF CHARGE.



NOTE:  
TREE STAKING OR SUPPORT NECESSARY ONLY WHERE WIND IS A PROBLEM. REMOVE AFTER SIX (6) MONTHS.

**EVERGREEN TREE PLANTING DETAIL**

NOT TO SCALE



**NOTE:**

THE CONTRACTOR WILL BE RESPONSIBLE FOR WATERING LAWN DURING THE COURSE OF THE GROWING SEASON FOR A PERIOD OF ONE (1) YEAR.

**LOAM-SEED DETAIL**

NOT TO SCALE

APPROVED FOR CONSTRUCTION  
**JUN 23 2017**  
 Office of Water Resources

Being ASSESSORS' PLAN NO. 12 LOT NO. 20  
**MISCELLANEOUS DETAILS NO. 2**  
**Matteson Ridge Condos**  
 175 Greenbush Road  
 West Warwick, Rhode Island 02893

Checked By: R.B.B.	Drawn By: J.D.M.	Date: March 23, 2017	
Scale: Not to Scale	REVISIONS		
	NO.	DATE	BY
	1	5/17	[Signature]
	REVISION COMMENTS		

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