Pump Selection for a Non-Pressurized System - Single Family Residence Project

Curtis Corner Road lot 3

Parameters

Discharge Assembly Size	1.25	inches
Transport Length	52	feet
Transport Pipe Class	40	
Transport Line Size	1.25	inches
Distributing Valve Model	None	
Max Elevation Lift	5	feet
Design Flow Rate	30	gpm
Flow Meter	None	inches
'Add-on' Friction Losses	0	feet

Calculations

Transport Velocity	6.5	fps

Frictional Head Losses

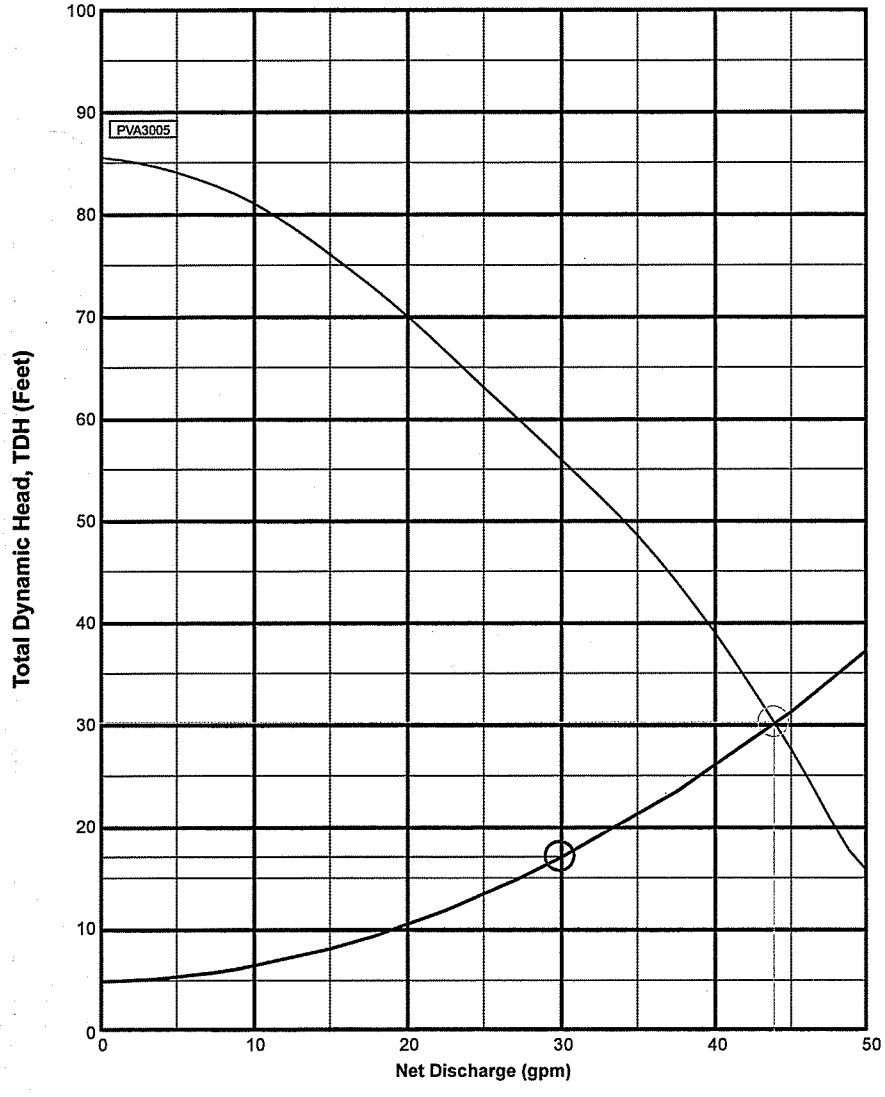
Loss through Discharge	6.3	feet
Loss in Transport	5.8	feet
Loss through Valve	0.0	feet
Loss through Flowmeter	0.0	feet
'Add-on' Friction Losses	0.0	feet

Pipe Volumes

Vol of Transport Line	4.0	gals

Minimum Pump Requirements

Design Flow Rate	30.0	gpm
Total Dynamic Head	17.1	feet



Environmental Management

DEC 13 2022

Office of Water Resources

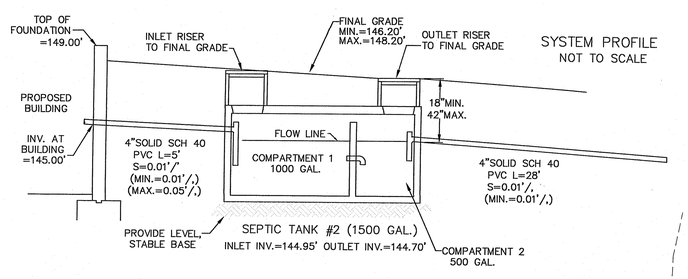
PumpData

PVA3005 High Head Effluent Pump
30 GPM, 1/2HP
115V 1Ø

Legend

System Curve:
Pump Curve:
Pump Optimal Range:
Operating Point:
Design Point:

Orenco SYSTEMS
PROTECTING THE WORLD'S WATER



MINIMUM LEACHFIELD AREA

1. DESIGN FLOW (RULE 21): 3 BEDROOM X 115 GPD/BEDROOM= 345 GPD
2. LOADING RATE (RULE 32.2.2): CATEGORY 7 SOILS, 0.52 GAL/SF/DAY
3. MIN. LEACHING AREA 345 GPD / 0.52 GAL/SF/DAY= 663.46 SF

ELJEN IN-DRAIN (TYPE B) DESIGN

1. ELJEN PER UNIT CREDIT= 28 SF
2. UNITS REQURIED: 663.46 SF / 28 SF/UNIT= 23.70 UNITS
3. SYSTEM LENGTH: W/ 2 ROWS, 9 UNITS PER ROW & 3 UNITS BTW. AT END & MIDDLE
   9 UNITS X 4 LF/UNIT + 6" SAND + 6" SAND= 37'
4. SYSTEM WIDTH: 3 UNITS X 4 LF/UNIT + 2 UNITS X 3 LF WIDE/UNIT
   + 6" SAND + 6" SAND= 19' WIDE
5. EFFECTIVE LEACHING AREA PROVIDED: 24 UNITS X 28 SF/UNIT= 672 SF
   672 SF > 663.46 SF

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

ZONING:

SEE PAGE TWO

LEGEND:

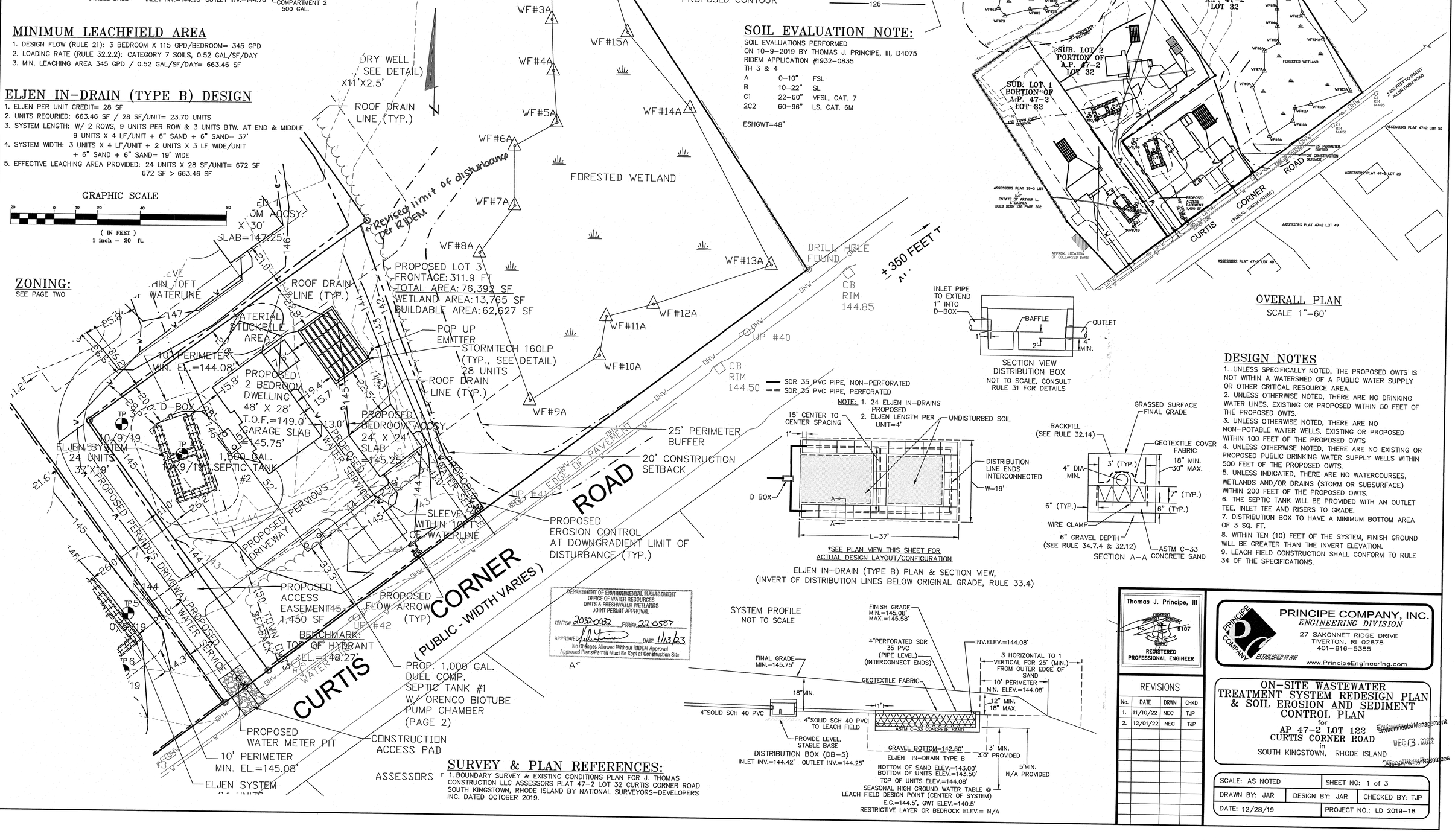
- PROPERTY PERIMETER
- ABUTTER LINE
- EDGE OF PAVEMENT
- STONEWALL
- EXISTING CONTOUR 170
- EXISTING WATER MAIN W
- EXISTING TREELINE
- EXISTING WETLAND FLAG WF#13A
- TEST HOLE TP
- PROPOSED LOT
- PROPOSED BUILDING SETBACK
- PROPOSED WATER SERVICE W
- PROPOSED SILT FENCE
- PROPOSED CONTOUR 126

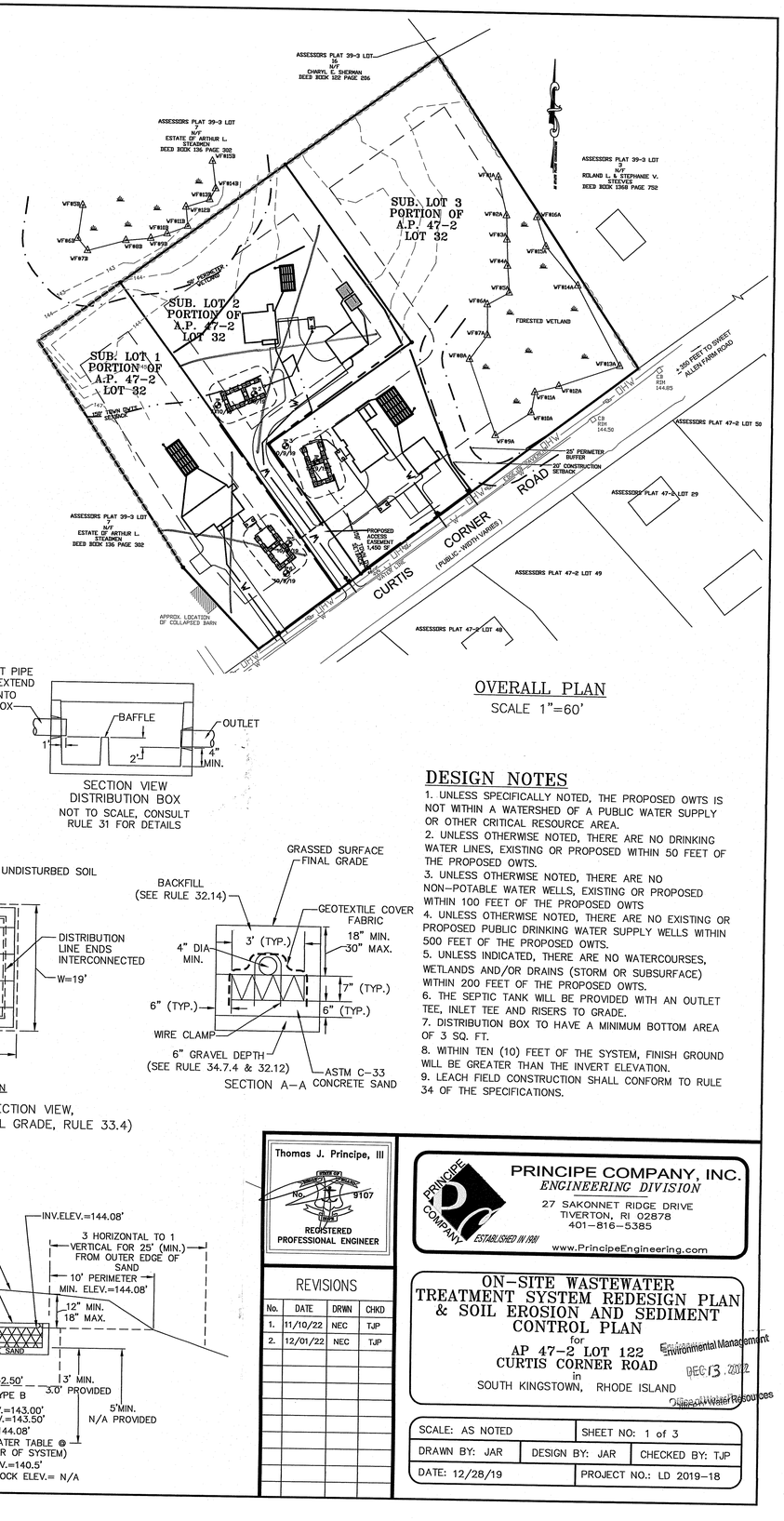
SOIL EVALUATION NOTE:

SOIL EVALUATIONS PERFORMED
ON 10-9-2019 BY THOMAS J. PRINCIPE, III, D4075
RIDEM APPLICATION #1932-0835
TH 3 & 4

A	0-10"	FSL
B	10-22"	SL
C1	22-60"	VFSL, CAT. 7
2C2	60-96"	LS, CAT. 6M

ESHGWT=48"





OVERALL PLAN

SCALE 1"=60'

SECTION VIEW DISTRIBUTION BOX
NOT TO SCALE, CONSULT RULE 31 FOR DETAILS

SDR 35 PVC PIPE, NON-PERFORATED
SDR 35 PVC PIPE, PERFORATED

NOTE: 1. 24 ELJEN IN-DRAINS PROPOSED
2. ELJEN LENGTH PER UNIT=4'

*SEE PLAN VIEW THIS SHEET FOR ACTUAL DESIGN LAYOUT/CONFIGURATION

ELJEN IN-DRAIN (TYPE B) PLAN & SECTION VIEW,
(INVERT OF DISTRIBUTION LINES BELOW ORIGINAL GRADE, RULE 33.4)

SECTION A-A

DESIGN NOTES

1. UNLESS SPECIFICALLY NOTED, THE PROPOSED OWTS IS NOT WITHIN A WATERSHED OF A PUBLIC WATER SUPPLY OR OTHER CRITICAL RESOURCE AREA.
2. UNLESS OTHERWISE NOTED, THERE ARE NO DRINKING WATER LINES, EXISTING OR PROPOSED WITHIN 50 FEET OF THE PROPOSED OWTS.
3. UNLESS OTHERWISE NOTED, THERE ARE NO NON-POTABLE WATER WELLS, EXISTING OR PROPOSED WITHIN 100 FEET OF THE PROPOSED OWTS
4. UNLESS OTHERWISE NOTED, THERE ARE NO EXISTING OR PROPOSED PUBLIC DRINKING WATER SUPPLY WELLS WITHIN 500 FEET OF THE PROPOSED OWTS.
5. UNLESS INDICATED, THERE ARE NO WATERCOURSES, WETLANDS AND/OR DRAINS (STORM OR SUBSURFACE) WITHIN 200 FEET OF THE PROPOSED OWTS.
6. THE SEPTIC TANK WILL BE PROVIDED WITH AN OUTLET TEE, INLET TEE AND RISERS TO GRADE.
7. DISTRIBUTION BOX TO HAVE A MINIMUM BOTTOM AREA OF 3 SQ. FT.
8. WITHIN TEN (10) FEET OF THE SYSTEM, FINISH GROUND WILL BE GREATER THAN THE INVERT ELEVATION.
9. LEACH FIELD CONSTRUCTION SHALL CONFORM TO RULE 34 OF THE SPECIFICATIONS.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
OWTS & FRESHWATER WETLANDS
JOINT PERMIT APPROVAL
OWTS# 20320032 PWP# 22-0507
APPROVED DATE 11/13/23
No Changes Allowed Without RIDEM Approval
Approved Plans/Permit Must Be Kept at Construction Site

SYSTEM PROFILE
NOT TO SCALE

SURVEY & PLAN REFERENCES:

1. BOUNDARY SURVEY & EXISTING CONDITIONS PLAN FOR J. THOMAS CONSTRUCTION LLC ASSESSORS PLAT 47-2 LOT 32 CURTIS CORNER ROAD SOUTH KINGSTOWN, RHODE ISLAND BY NATIONAL SURVEYORS-DEVELOPERS INC. DATED OCTOBER 2019.

Thomas J. Principe, III
No. 9107
REGISTERED PROFESSIONAL ENGINEER

REVISIONS

No.	DATE	DRWN	CHKD
1.	11/10/22	NEC	TJP
2.	12/01/22	NEC	TJP

PRINCIPE COMPANY, INC.
ENGINEERING DIVISION
27 SAKONNET RIDGE DRIVE
TIVERTON, RI 02878
401-816-5385
www.PrincipeEngineering.com

ON-SITE WASTEWATER TREATMENT SYSTEM REDESIGN PLAN & SOIL EROSION AND SEDIMENT CONTROL PLAN

for
AP 47-2 LOT 122
CURTIS CORNER ROAD
in
SOUTH KINGSTOWN, RHODE ISLAND

Environmental Management
DEC 13 2022
Office of Water Resources

SCALE: AS NOTED	SHEET NO: 1 of 3
DRAWN BY: JAR	DESIGN BY: JAR / CHECKED BY: TJP
DATE: 12/28/19	PROJECT NO.: LD 2019-18

EROSION CONTROL, SOIL STABILIZATION AND SEDIMENT CONTROL PLAN

1. PRIOR TO THE COMMENCEMENT OF ANY CLEARING, GRUBBING, DEMOLITION OR EARTHWORK ACTIVITY, TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED ON THE PLANS ARE TO BE INSTALLED BY THE CONTRACTOR.

2. CONSTRUCTION ACCESS STABILIZATION ENTRANCE PADS ARE TO BE INSTALLED PRIOR TO THE COMMENCEMENT OF SITE GRUBBING OR EARTHWORK ACTIVITY.

3. EXISTING CATCH BASINS ARE TO BE PROTECTED WITH HAY BALES AND/OR SILT SACS PRIOR TO THE START OF SITE GRUBBING, EARTHWORK OR UNDERGROUND UTILITY AND DRAINAGE INFRASTRUCTURE INSTALLATION TO SERVE THE DEVELOPMENT SITE.

4. THE PROJECT CONSTRUCTION SEQUENCE, TO THE EXTENT PRACTICAL, SHOULD REQUIRE THE INSTALLATION OF DOWN GRADE AND OFF SITE STORM DRAINAGE SYSTEM IMPROVEMENTS BEFORE THE START OF SITE GRUBBING AND EARTHWORK ACTIVITY.

5. TEMPORARY SITE SLOPE TREATMENTS FOR SOIL STABILIZATION SHALL CONSIST OF HAY, STRAW, FIBER MULCH, RIP RAP OR PROTECTIVE COVERS SUCH AS MAT OR FIBER LINING (BURLAP, JUTE, FIBERGLASS NETTING, AND EXCELSIOR OR EQUAL PRODUCTS). THESE AND OTHER ACCEPTABLE MEASURES SHALL BE INCORPORATED INTO THE SITE WORK AS WARRANTED OR AS ORDERED BY THE ENGINEER.

6. CONSTRUCTION SITES ARE DYNAMIC, THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION AND OR MOVEMENT AND MAINTENANCE OF EROSION CONTROLS, SOIL STABILIZATION AND SEDIMENT CONTROL MEASURES AS NEEDED TO MAXIMIZE THE INTENT OF THE PLAN FOR ALL SITE CONDITIONS THROUGHOUT THE CONSTRUCTION PERIOD.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERIODIC INSPECTION, MAINTENANCE, REPAIR, AND REPLACEMENT OF EROSION CONTROLS, SOIL STABILIZATION AND SEDIMENT CONTROL DEVICES UNTIL AN ACCEPTABLE PERMANENT VEGETATIVE GROWTH IS ESTABLISHED. THE CONTRACTOR SHALL MAINTAIN A DETAIL LOG OF ALL EROSION CONTROL INSPECTIONS, COMPLAINTS RELATED TO EROSION OR SEDIMENT, AND CORRECTIVE REMEDIAL MEASURES TAKEN THROUGHOUT THE COURSE OF THE PROJECT CONSTRUCTION.

8. SOIL EROSION AND SEDIMENT CONTROL IS NOT LIMITED TO DAMAGES CAUSED BY WATER BUT ALSO INCLUDES EROSION AND SEDIMENT RESULTING FROM WINDS. MEASURES, SUCH AS TEMPORARY GROUND COVERS, WATER AND CALCIUM APPLICATIONS ARE TO BE UNDERTAKEN AS NEEDED TO MINIMIZE WIND RELATED SOIL AND DUST CONTROL.

9. STOCK PILES OF EARTH MATERIALS SHALL NOT BE LOCATED NEAR WATERWAYS OR WETLANDS. STOCK PILES SHALL HAVE SIDE SLOPES NO GREATER THAN THIRTY PERCENT (30%). STOCK PILES SHALL BE SURROUNDED ON THE DOWN GRADIENT OF THE EXISTING GROUND SURFACE BY HAY BALES OR SILT FENCE. THE STOCK PILES SHALL ALSO BE SEEDED OR STABILIZED IN SOME MANOR TO PREVENT SOIL EROSION.

10. THE SMALLEST POSSIBLE SITE AREAS SHALL BE DISTURBED OR EXPOSED AT ONE TIME AND DENUDED SLOPES OR WORK AREAS SHALL NOT BE LEFT EXPOSED FOR EXCESSIVE PERIODS OF TIME, SUCH AS INACTIVE PERIODS OR SITE WORK SHUT DOWNS.

11. TO THE EXTENT POSSIBLE, ALL DISTURBED AREAS MUST BE SEEDED OR STABILIZED WITHIN THE CONSTRUCTION SEASON. STABILIZATION OF ONE FORM OR ANOTHER SHALL BE ACHIEVED WITHIN FIFTEEN (15) DAYS OF FINAL GRADING.

12. EXPOSED STEEP OR LONG SLOPES SHOULD BE TREATED WITH "CRIMPING" OR "TRACKING" TO REDUCE EROSION AND SEDIMENT AND TO TACK DOWN SEEDING OR MULCH APPLICATIONS.

13. IF CONCRETE IS TO BE USED ON SITE, THE CONTRACTOR MUST ESTABLISH AND MAINTAIN SPECIFIC WASHOUT AREAS FOR THE CONCRETE TRUCKS WITH APPROPRIATE PROTECTION CONTROLS.

14. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND MAINTAINING COLLECTION AND STORAGE LOCATIONS ON-SITE FOR ALL CONSTRUCTION DEBRIS AND TRASH SO THAT THIS MATERIAL DOES NOT BECOME A NEIGHBORHOOD NUISANCE.

15. EXISTING TREES AND VEGETATION WILL BE RETAINED WHENEVER FEASIBLE.

16. SITE SOIL EROSION AND SOIL STABILIZATION AND SEDIMENT CONTROLS MUST CONFORM TO ALL REQUIREMENTS OF THE APPLICABLE LOCAL COMMUNITY ORDINANCES AND STATE REGULATIONS.

VEGETATIVE COVER AND PLANTING

1. THE NORMAL ACCEPTABLE SEASONABLE SEEDING DATES ARE APRIL 1ST THROUGH OCTOBER 15TH.

2. TOP SOIL FOR PERMANENT OR LONG TERM TEMPORARY SEEDING SHOULD HAVE A SANDY LOAM TEXTURE, RELATIVELY FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS. TOP SOIL SHALL CONFORM WITH RHODE ISLAND SPECIFICATIONS M18.01.

3. THE DESIGN SEED MIX UTILIZED IN ALL DISTURBED AREAS TO BE SEEDED SHALL BE COMPRISED OF THE FOLLOWING:

TYPE	% BY WEIGHT	SEEDING DATE
CREEPING RED FESCUE	70	
ASTORIA BENTGRASS	5	APRIL 1 – JUNE 15
BIRDFOOT TREFOIL	15	AUG. 15 – OCT. 15
PERENNIAL RYE GRASS	10	

APPLICATION RATE – 100 LBS PER ACRE

SEED MIX SHALL BE INOCULATED WITHIN 24 – HOURS BEFORE MIXING AND PLANTING, WITH APPROPRIATE INOCULATION FOR EACH SEED VARIETY. ALTERNATE SEED TYPES DUE TO SITE SPECIFIC CONDITIONS AND SOILS ARE ACCEPTABLE WITH THE ENGINEER'S APPROVAL.

4. IN TOPSOIL SEEDING AREAS, THE CONTRACTOR WILL LIME AND FERTILIZE AS REQUIRED TO COMPLIMENT OR UPGRADE SOIL CONDITIONS.

5. THE CONTRACTOR MUST REPAIR AND/OR RESEED ANY PERMANENT VEGETATIVE COVER AREAS THAT DO NOT DEVELOP OR WHICH ERODE WITHIN A ONE (1) YEAR PERIOD.

GENERAL NOTES:

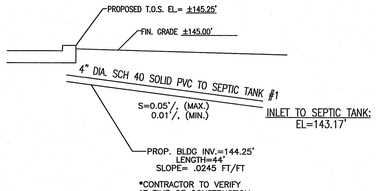
1. FLOOD ZONE X IN AREA OF CONSTRUCTION BASED ON FIRM PANEL.

2. ALL CONSTRUCTION WILL BE UNDERTAKEN IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF THE TOWN OF SOUTH KINGSTOWN.

3. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO MAINTAIN THE INTEGRITY OF ALL EXISTING UTILITIES, STRUCTURES, AND ABUTTING PROPERTIES. THE COST OF ANY REPAIR OR REPLACEMENT OF DAMAGED ITEMS SHALL BE BORNE BY THE CONTRACTOR.

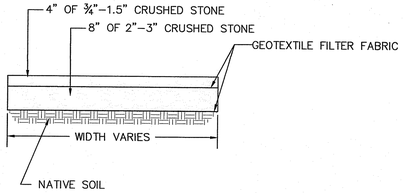
4. IF CEMENT CONCRETE MIX TRUCKS ARE TO BE WASHED OUT ON SITE, THE CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING AND MAINTAINING A WASH OUT AREA WITH APPROPRIATE PROTECTION CONTROLS.

5. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND MAINTAINING COLLECTION AND STORAGE LOCATIONS ON-SITE FOR ALL CONSTRUCTION DEBRIS AND TRASH SO THAT THIS MATERIAL DOES NOT BECOME A NEIGHBORHOOD NUISANCE.



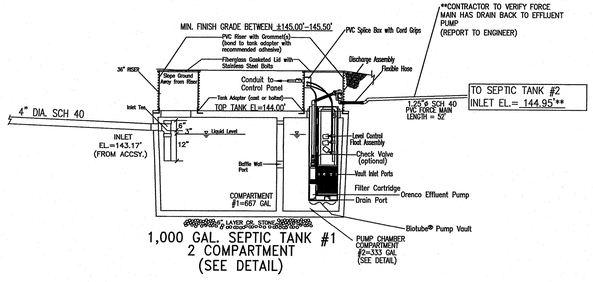
PROPOSED ACCESSORY DETAIL

NOT TO SCALE



PERVIOUS DRIVEWAY TYPICAL CROSS SECTION

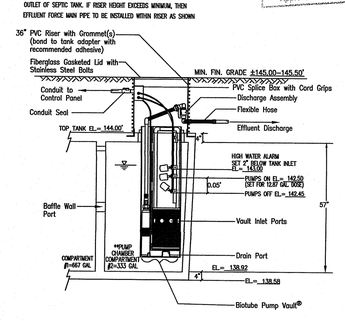
NOT TO SCALE



1,000 GAL. SEPTIC TANK #1
2 COMPARTMENT
(SEE DETAIL)

EFFLUENT PUMP DETAIL #1

BIO-TUBE NOTE: MIN. RISER HEIGHT IS 12"-18". IF RISER HEIGHT FALLS WITHIN THE MIN. THEN EFFLUENT PIPE TO BE INSTALLED IN OUTLET OF SEPTIC TANK. IF RISER HEIGHT EXCEEDS MINIMUM, THEN EFFLUENT FORCE MAIN PIPE TO BE INSTALLED WITHIN RISER AS SHOWN



DISCHARGE PUMP FLOAT SETTING CALCULATIONS:
TOTAL DAILY FLOW = 115 GALLON/DAY
GALLON DOSE = 115 GAL./DAY / 12.00 CYCLES/DAY = 9.58 GALLON DOSE
VOLUME OF FORCE MAIN: ((3.14 X (1.25"/2)^2)/144) X 52' = 0.44 CUBIC FEET
0.44 CU. FT. X 7.48 GAL./CU. FT. = 3.29 GALLONS
9.58 GAL. + 3.29 GAL. = 12.87 GALLONS PER DOSE
DOSE SETTINGS: 12.87 GALLONS PER DOSE / (4.33 FT. x 8 FT. x 7.48 GAL./CU. FT.) = 0.05 FT.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
OWTS & FRESHWATER WETLANDS
JOINT PERMIT APPROVAL
OWTS# 2022-0032 RWW# 22-0507
APPROVED DATE 1/13/23
No Changes Allowed Without RIDEM Approval
Approved Plans/Permit Must Be Kept at Construction Site

ZONING:

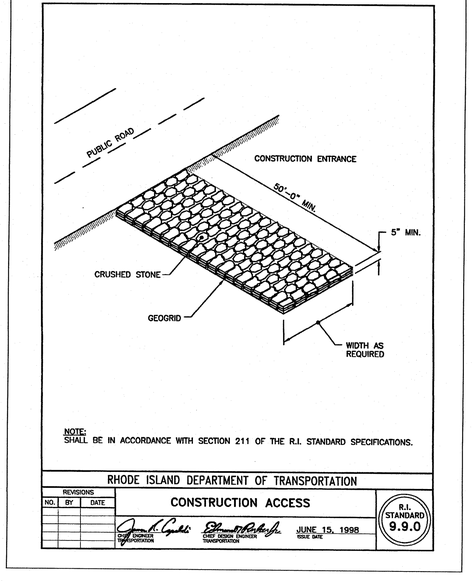
R-30

MIN. LOT SIZE	30,000 SF	±76,396 SF
MIN. FRONT SETBACK	40 FT	> 40 FT
MIN. SIDE SETBACK	20 FT	21 FT
MIN. REAR SETBACK	40 FT	> 40 FT
MAX. PRINCIPAL BUILDING HEIGHT	35 FT	< 35 FT
MIN. ACCSY. FRONT SETBACK	40 FT	41 FT
MIN. ACCSY. SIDE SETBACK	15 FT	> 15 FT
MIN. ACCSY. REAR SETBACK	10 FT	> 10 FT
MAX. ACCSY. BUILDING HEIGHT	20 FT	< 20 FT
MAX. BUILDING COVERAGE	20%	2.53%

BUILDING COVERAGE

EX. BUILDING COVERAGE = 0 SF
TOTAL LOT AREA = ±76,396 SF
PROPOSED DWELLING = 1,357 SF
PROPOSED ACCSY. = 576 SF

TOTAL PROPOSED BUILDING COVERAGE
1,933 SF / 76,396 SF = 0.0253 X 100% = 2.53%
2.53% < 20% O.K.



NOTE:
SHALL BE IN ACCORDANCE WITH SECTION 211 OF THE R.I. STANDARD SPECIFICATIONS.

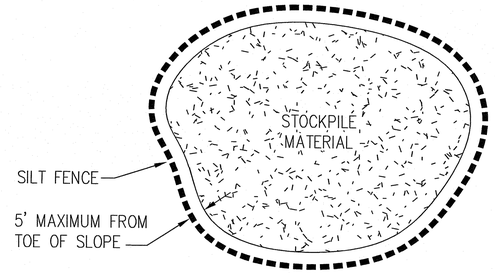
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS		
NO.	BY	DATE

CONSTRUCTION ACCESS

Chief Engineer, Operations Division — Chief Design Engineer, Transportation — JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 9.9.0



STOCKPILE DETAIL

NOT TO SCALE

OWTS SPECIFICATIONS

1. THE SYSTEM FOR SUBSURFACE DISPOSAL OF SANITARY SEWAGE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS, DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, "RULES ESTABLISHING MINIMUM STANDARDS RELATING TO LOCATION, DESIGN, CONSTRUCTION, AND MAINTENANCE OF ON-SITE WASTEWATER TREATMENT SYSTEMS" RULE 1 THROUGH RULE 55.
2. THE PIPE FROM THE BUILDING TO THE SEPTIC TANK SHALL BE SDR-35 PVC PIPE OR EQUIVALENT. SDR-40 PVC OR EQUIVALENT TO BE USED FOR ALL PORTIONS SUBJECT TO VEHICULAR TRAFFIC.
3. SOLID WALL PIPE AND FITTINGS SHALL BE SCHEDULE 35 PVC (POLYVINYL CHLORIDE) MANUFACTURED IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF ASTM D 3034. JOINTS SHALL BE SOLVENT WELDED TYPE.
4. THE SEPTIC TANK MUST HAVE TWO COMPARTMENTS WITH THE FIRST COMPARTMENT HAVING A LIQUID VOLUME THAT IS TWO THIRDS THE REQUIRED VOLUME OF THE ENTIRE TANK. THE SEPTIC TANK SHALL BE WATER TIGHT, AND CONSTRUCTED OF PRECAST REINFORCED CONCRETE, FIBERGLASS, POLYETHYLENE OR OTHER MATERIALS APPROVED BY THE RIDEM. OUTLET TEES MUST BE EQUIPPED WITH AN EFFLUENT SCREEN. THE INLET AND OUTLET TEES MUST HAVE A MINIMUM OF 20 INCH ACCESS OPENINGS. THE OUTLET TEE RISER MUST BE AT FINISH GRADE, AND THE INLET TEE RISER WITHIN 12 INCHES OF FINISH GRADE.
5. THE DISTRIBUTION BOX SHALL BE A WATERTIGHT PRECAST CONCRETE STRUCTURE OR OTHER DURABLE MATERIAL MEETING THE REQUIREMENTS OF THE SPECIFICATIONS WITH A BAFFLE AND SUITABLE PIPE PENETRATION KNOCKOUTS.
6. WASHED STONE AND OTHER SOIL MATERIALS SHALL BE IN CONFORMANCE WITH THE STATE RULES AND REGULATIONS, RULE 32.0.
7. WHENEVER THE SYSTEM IS TO BE CONSTRUCTED WHOLLY OR PARTIALLY IN FILL, THE PROCEDURE AS DEFINED IN RULE 33.5 OF THE STATE RULES AND REGULATIONS SHALL APPLY.
8. THE DESIGN INTENT IS TO MEET THE STATE STANDARDS. THE SYSTEM OPERATION IS DEPENDENT ON PROPER USAGE, AND IT'S OPERATION IS NOT GUARANTEED BY THIS PLAN.

NOTE :
CONTRACTOR TO VERIFY BENCHMARK & EXISTING CONDITIONS PRIOR TO CONSTRUCTION. ANY DISCREPANCIES BETWEEN FIELD AND DESIGN DATA SHOWN HEREON TO BE REPORTED TO THE ENGINEER

Thomas J. Principe, III
No. 9107
REGISTERED PROFESSIONAL ENGINEER

REVISIONS			
No.	DATE	DRWN	CHKD
1.	11/10/22	NEC	TJP
2.	12/01/22	NEC	TJP

PRINCIPE COMPANY, INC.
ENGINEERING DIVISION
27 SAKONNET RIDGE DRIVE
TIVERTON, RI 02878
401-816-5385
www.PrincipeEngineering.com

ON-SITE WASTEWATER TREATMENT SYSTEM REDESIGN PLAN & SOIL EROSION AND SEDIMENT CONTROL PLAN

for

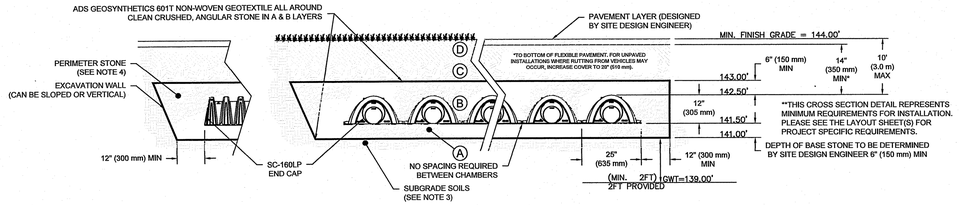
AP 47-2 LOT 122
CURTIS CORNER ROAD
in
SOUTH KINGSTOWN, RHODE ISLAND

SCALE: AS NOTED		SHEET NO: 2 of 3
DRAWN BY: JAR	DESIGN BY: JAR	CHECKED BY: TJP
DATE: 12/28/19		PROJECT NO.: LD 2019-18

ACCEPTABLE FILL MATERIALS: STORMTECH SC-160LP CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 14" (355 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

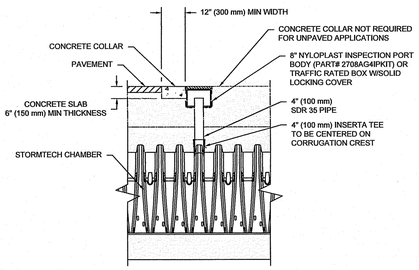
PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. 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.
4. 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.



NOTES:

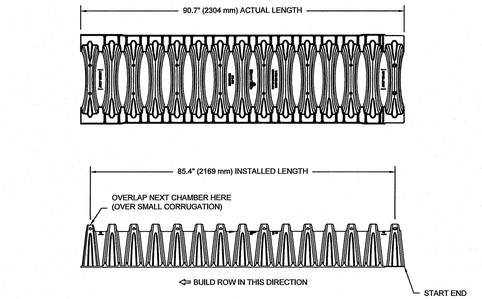
1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
3. 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.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 1.5"
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 400 LBS/FT/%, AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

1 | SC-160LP CROSS SECTION DETAIL



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

4 | 4" PVC INSPECTION PORT DETAIL (SC SERIES CHAMBER)

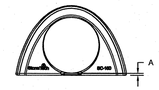


NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	25.0" X 12.0" X 85.4"	(635 mm X 305 mm X 2169 mm)
CHAMBER STORAGE	6.85 CUBIC FEET	(0.19 m³)
MINIMUM INSTALLED STORAGE*	16.0 CUBIC FEET	(0.45 m³)
WEIGHT	24.0 lbs.	(10.9 kg)

*ASSUMES 6" (152 mm) ABOVE, 6" (152 mm) BELOW, AND STONE BETWEEN CHAMBERS WITH 40% STONE POROSITY.

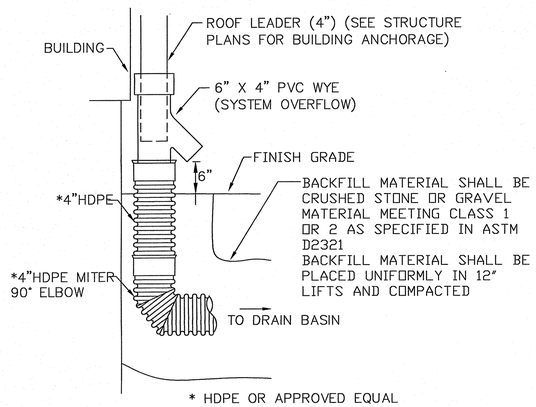
PART #	STUB	A
SC160EPP	6" (150 mm)	0.66" (16 mm)
	8" (200 mm)	0.80" (20 mm)
SC160EPP08	8" (200 mm)	0.96" (24 mm)



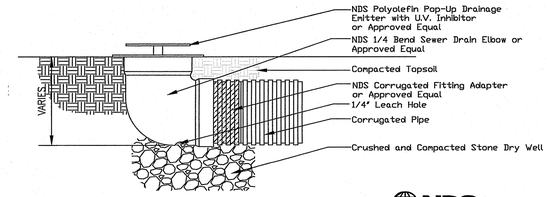
ALL STUBS ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

NOTE: ALL DIMENSIONS ARE NOMINAL

2 | SC-160LP TECHNICAL SPECIFICATIONS



ROOF LEADER COLLECTOR DETAIL
NOT TO SCALE



NDS POP-UP DRAINAGE EMITTER
NOT TO SCALE

SHOP DRAWINGS REQUIRED

Advanced Drainage Systems, Inc.

Thomas J. Principe, III
No. 9107
REGISTERED PROFESSIONAL ENGINEER

PRINCIPE COMPANY, INC.
ENGINEERING DIVISION
27 SAKONNET RIDGE DRIVE
TIVERTON, RI 02878
401-816-5385
www.PrincipeEngineering.com

REVISIONS

No.	DATE	DRWN	CHKD
1.	11/10/22	NEC	TJP
2.	12/01/22	NEC	TJP

ON-SITE WASTEWATER TREATMENT SYSTEM PLAN & SOIL EROSION AND SEDIMENT CONTROL PLAN
for
AP 47-2 LOT 122
CURTIS CORNER ROAD
in
SOUTH KINGSTOWN, RHODE ISLAND

SCALE: AS NOTED	SHEET NO: 3 of 3	
DRAWN BY: JAR	DESIGN BY: JAR	CHECKED BY: TJP
DATE: 12/28/19	PROJECT NO.: LD 2019-18	