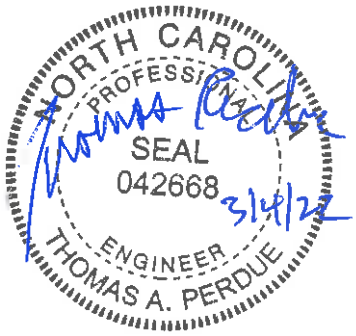
Bobbitt Design Build, Inc.

Conventional Gravity System

NW Harnett Fire Station 3
US Hwy 401 N
Harnett County, North Carolina

Project No.: A21303.00

Submittal Date: March 4, 2022



Prepared By:
MacConnell & Associates, P.C.

501 Cascade Pointe Lane, Suite 103
Cary, NC 27513
Phone: (919) 467-1239

P.O. Box 129
Morrisville, NC 27560
Fax: (919) 319-6510

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Bobbitt Design Build, Inc.
NW Harnett Fire Station 3
Harnett County, North Carolina

Conventional Gravity System

Application Form and Supporting Documents

MacConnell & Associates, P.C.
501 Cascade Pointe Lane, Suite 103
Cary, North Carolina 27513

P.O. Box 129
Morrisville, North Carolina 27560

Phone: (919) 467-1239
Fax: (919) 319-6510

Harnett COUNTY NORTH CAROLINA

Initial Application Date:_____ Application # _____

DRB # _____ CU # _____

COMMERCIAL

COUNTY OF HARNETT LAND USE APPLICATION

Central Permitting (Physical) 420 McKinney Pkwy, Lillington, NC 27546 (Mailing) PO Box 65 Lillington NC 27546 Phone: (910) 893-7525 opt # 1 Fax: (910) 893-2793 www.harnett.org/permits

LANDOWNER NORTHWEST HARNETT VOLUNTEER FIRE DEPT INC Mailing Address: 6015 CHRISTIAN LIGHT RD

City: FUQUAY VARINA State: NC Zip: 27526 Contact # (919) 552-8371 Email: cprince@nwharnettfire.com

APPLICANT*: (Same as LANDOWNER) Mailing Address: _____

City: _____ State: _____ Zip: ___ Contact # _____ Email: _____

*Please fill out applicant information if different than landowner

CONTACT NAME APPLYING IN OFFICE: Bobbitt; Attn: Brian Griffith Phone # 919-851-1980 ext 4230

Address: US 401 N FUQUAY-VARINA, NC 27526 PIN: 0653-68-0029.000

Zoning: RA-30 Watershed: Cape Fear River (Lillington) Class-WS-IV Flood: Minimal Flood Risk Deed Book Page: 4046 / 0223 .

Setbacks – Front: 35 **Back:** 25 **Side:** 10 **Corner:** _____

PROPOSED USE:

☐ Multi-Family Dwelling No. Units: _____ No. Bedrooms/Unit: _____

☒ Business Sq. Ft. Retail Space: 11,400 Type: Volunteer Fire Station # Employees: 7 per shift Hours of Operation: 24 hours

☐ Daycare # Preschoolers: _____ # Afterschoolers: _____ # Employees: _____ Hours of Operation: _____

☐ Industry Sq. Ft: _____ Type: _____ # Employees: _____ Hours of Operation:

☐ Church Seating Capacity: _____ # Bathrooms: _____ Kitchen: _____

☐ Accessory/Addition/Other (Size ____x____) Use: _____

Water Supply: X County ____ Existing Well ____ New Well *(# of dwellings using well _____)* ***Must have operable water before final**
(Need to Complete New Well Application at the same time as New Tank)

Sewage Supply: X New Septic Tank ____ Expansion ____ Relocation ____ Existing Septic Tank ____ County Sewer
(Complete Environmental Health Checklist on other side of application if Septic

Comments: Request review of site of new Volunteer Fire Station for Septic options.

If permits are granted I agree to conform to all ordinances and laws of the State of North Carolina regulating such work and the specifications of plans submitted.

I hereby state that foregoing statements are accurate and correct to the best of my knowledge. Permit subject to revocation if false information is provided.

Brian D. Griffith, AIA — 11/30/2021

Signature of Owner or Owner's Agent **Date**

****This application expires 6 months from the initial date if permits have not been issued****

RECORDED DEED (OR OFFER TO PURCHASE) AND PLAT ARE REQUIRED WHEN APPLYING FOR LAND USE APPLICATION

****It is the owner/applicants responsibility to provide the county with any applicable information about the subject property, including but not limited to: boundary information, house location, underground or overhead easements, etc. The county or its employees are not responsible for any incorrect or missing information that is contained within these applications.****

Harnett COUNTY NORTH CAROLINA

This application expires 6 months from the initial date if permits have not been issued

APPLICATION CONTINUES ON BACK

This application expires 6 months from the initial date if permits have not been issued

This application to be filled out when applying for a septic system inspection.

County Health Department Application for Improvement Permit and/or Authorization to Construct

IF THE INFORMATION IN THIS APPLICATION IS FALSIFIED, CHANGED, OR THE SITE IS ALTERED, THEN THE IMPROVEMENT PERMIT OR AUTHORIZATION TO CONSTRUCT SHALL BECOME INVALID. The permit is valid for either 60 months or without expiration depending upon documentation submitted. (Complete site plan = 60 months; Complete plat = without expiration

☒ ***Environmental Health New Septic System***

- **All property irons must be made visible.** Place "pink property flags" on each corner iron of lot. All property lines must be clearly flagged approximately every 50 feet between corners.
- Place "orange house corner flags" at each corner of the proposed structure. Also flag driveways, garages, decks, out buildings, swimming pools, etc. Place flags per site plan developed at/for Central Permitting.
- Place orange Environmental Health card in location that is easily viewed from road to assist in locating property.
- If property is thickly wooded, Environmental Health requires that you clean out the **undergrowth** to allow the soil evaluation to be performed. Inspectors should be able to walk freely around site. ***Do not grade property.***
- ***All lots to be addressed within 10 business days after confirmation. $25.00 return trip fee may be incurred for failure to uncover outlet lid, mark house corners and property lines, etc. once lot confirmed ready.***

☐ ***Environmental Health Existing Tank Inspections***

- Follow above instructions for placing flags and card on property.
- Prepare for inspection by removing soil over **outlet end** of tank as diagram indicates, and lift lid straight up (*if possible*) and then **put lid back in place.** (Unless inspection is for a septic tank in a mobile home park)
- **DO NOT LEAVE LIDS OFF OF SEPTIC TANK**

"MORE INFORMATION MAY BE REQUIRED TO COMPLETE ANY INSPECTION"

SEPTIC

If applying for authorization to construct please indicate desired system type(s): can be ranked in order of preference, must choose one.

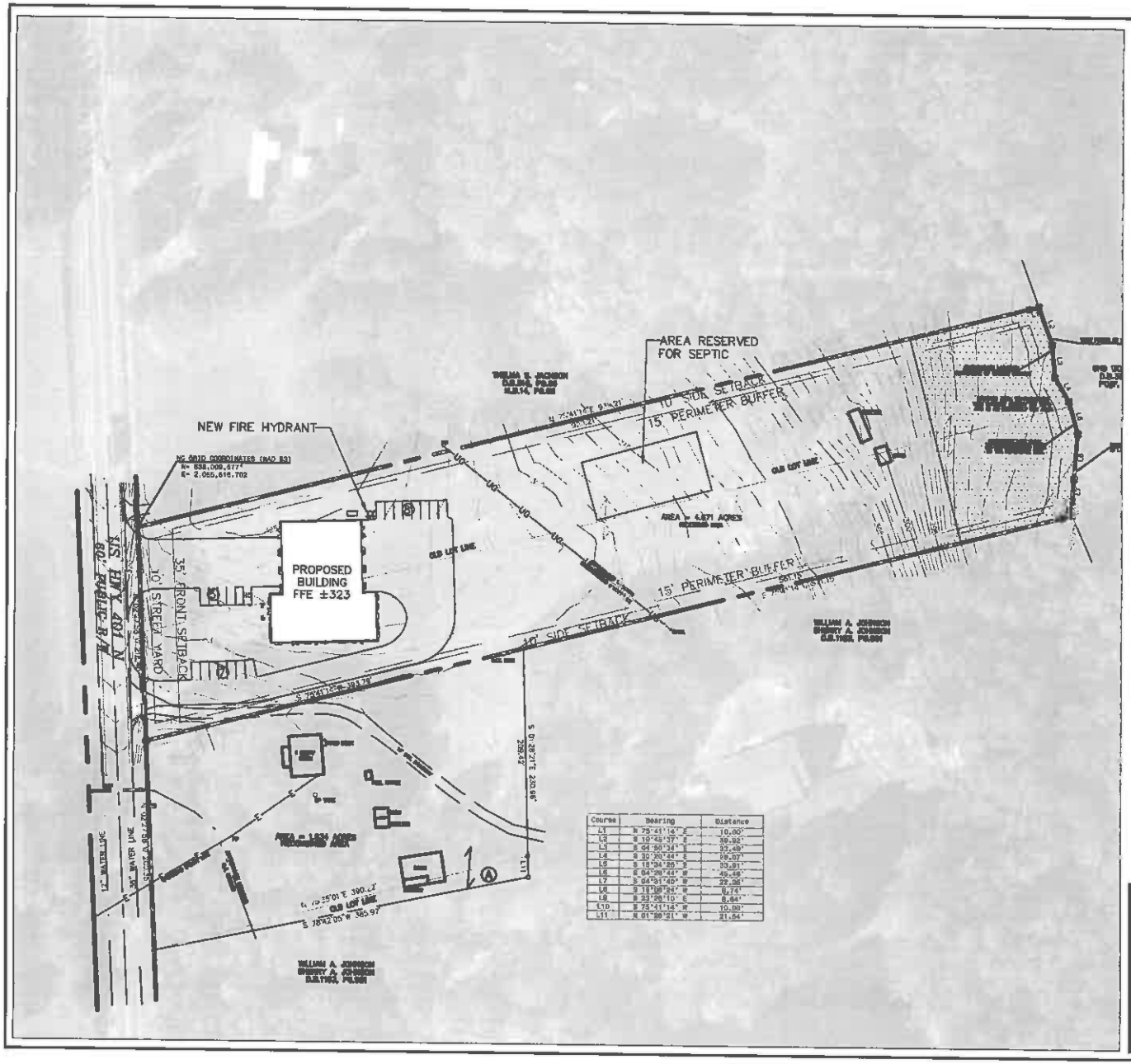
{__} Accepted {__} Innovative {1} Conventional {2} Any

{__} Alternative {__} Other _____

The applicant shall notify the local health department upon submittal of this application if any of the following apply to the property in question. If the answer is "yes", applicant **MUST ATTACH SUPPORTING DOCUMENTATION**:

{X}YES	{__} NO	Does the site contain any Jurisdictional Wetlands?
{__}YES	{X} NO	Do you plan to have an irrigation system now or in the future?
{X}YES	{__} NO	Does or will the building contain any drains? Please explain. Drains in Apparatus through Oil/water separator
{__}YES	{X} NO	Are there any existing wells, springs, waterlines or Wastewater Systems on this property?
{__}YES	{X} NO	Is any wastewater going to be generated on the site other than domestic sewage?
{X}YES	{__} NO	Is the site subject to approval by any other Public Agency?
{__}YES	{X} NO	Are there any Easements or Right of Ways on this property?
{X}YES	{__} NO	Does the site contain any existing water, cable, phone or underground electric lines?
		If yes please call No Cuts at 800-632-4949 to locate the lines. This is a free service.

I Have Read This Application And Certify That The Information Provided Herein Is True, Complete And Correct. Authorized County And State Officials Are Granted Right Of Entry To Conduct Necessary Inspections To Determine Compliance With Applicable Laws And Rules. I Understand That I Am Solely Responsible For The Proper Identification And Labeling Of All Property Lines And Corners And Making The Site Accessible So That A Complete Site Evaluation Can Be Performed.



Course	Bearing	Distance
L1	N 75°41'14" E	10.00'
L2	S 10°48'37" E	38.92'
L3	S 04°50'34" E	32.49'
L4	S 32°20'44" E	29.07'
L5	S 15°04'25" E	33.91'
L6	S 04°28'44" W	49.48'
L7	S 04°51'45" W	22.36'
L8	S 11°08'52" W	5.74'
L9	S 23°26'10" E	8.64'
L10	S 75°41'14" W	10.00'
L11	N 01°09'21" W	21.64'

PRELIMINARY SITE DATA

ZONING	RA-30
SITE AREA (APPROX.)	4.67 AC
BUILDING SIZE	±11,400 SF
PARKING REQUIRED	20 EMERGENCY SERVICES – 1 SP PER 350 SF ±6,800 SF (ASSUMED BAYS EXCLUDED) = 20 SP
PARKING PROPOSED	20 SP
DETENTION REQUIRED	WS-IV WATERSHED PROTECTED AREA
BUILDING SETBACKS	
STREET	= 35 FT
SIDE	= 10 FT
REAR	= 25 FT
LANDSCAPE BUFFERS	
STREET	= 10 FT
SIDE	= 15 FT
REAR	= 15 FT
DISTURBED AREA	±2.0 ACRES

NOTES

1. BASE INFORMATION FROM SURVEY BY MAULDIN – WATKINS SURVEYING, P.A.; AERIAL FROM AUTOCAD (VIA BING MAPS).
2. ASSUMED ADEQUATE FIRE APPARATUS ACCESS AND FIRE HYDRANT COVERAGE.
3. ASSUMED ADEQUATE FIRE FLOW AVAILABLE. RESULTS OF FIRE FLOW TEST MAY REQUIRE REVISIONS TO BUILDING OR SITE PLANS.
4. PUBLIC WATER IS AVAILABLE IN US 401, HOWEVER SEWER SERVICE IS NOT. ASSUMED PROJECT WILL REQUIRE SEPTIC. CHANGES TO SITE LAYOUT MAY BE REQUIRED BASED ON UTILITY DESIGN.
5. THE SITE HAS NOT BEEN FULLY EVALUATED FOR ADA COMPLIANCE. REVISIONS MAY BE REQUIRED BASED ON EVALUATION.
6. IMPERVIOUS AREA IS ±24% WHICH QUALIFIES THIS PROJECT TO BE LOW DENSITY. IF PROJECT MEETS THE REQUIREMENTS OF LOW-DENSITY DESIGN, A STORMWATER CONTROL MEASURE WILL NOT BE REQUIRED. ADDITIONAL REVIEW REQUIRED TO CONFIRM THAT THIS PROJECT MEETS THESE REQUIREMENTS.

SCHEMATIC DESIGN

NOT FOR CONSTRUCTION

0 50 100 200 300

1"=100'@11X17

NW HARNETT FIRE STATION 3

US HWY 401 N
HARNETT COUNTY, NORTH CAROLINA

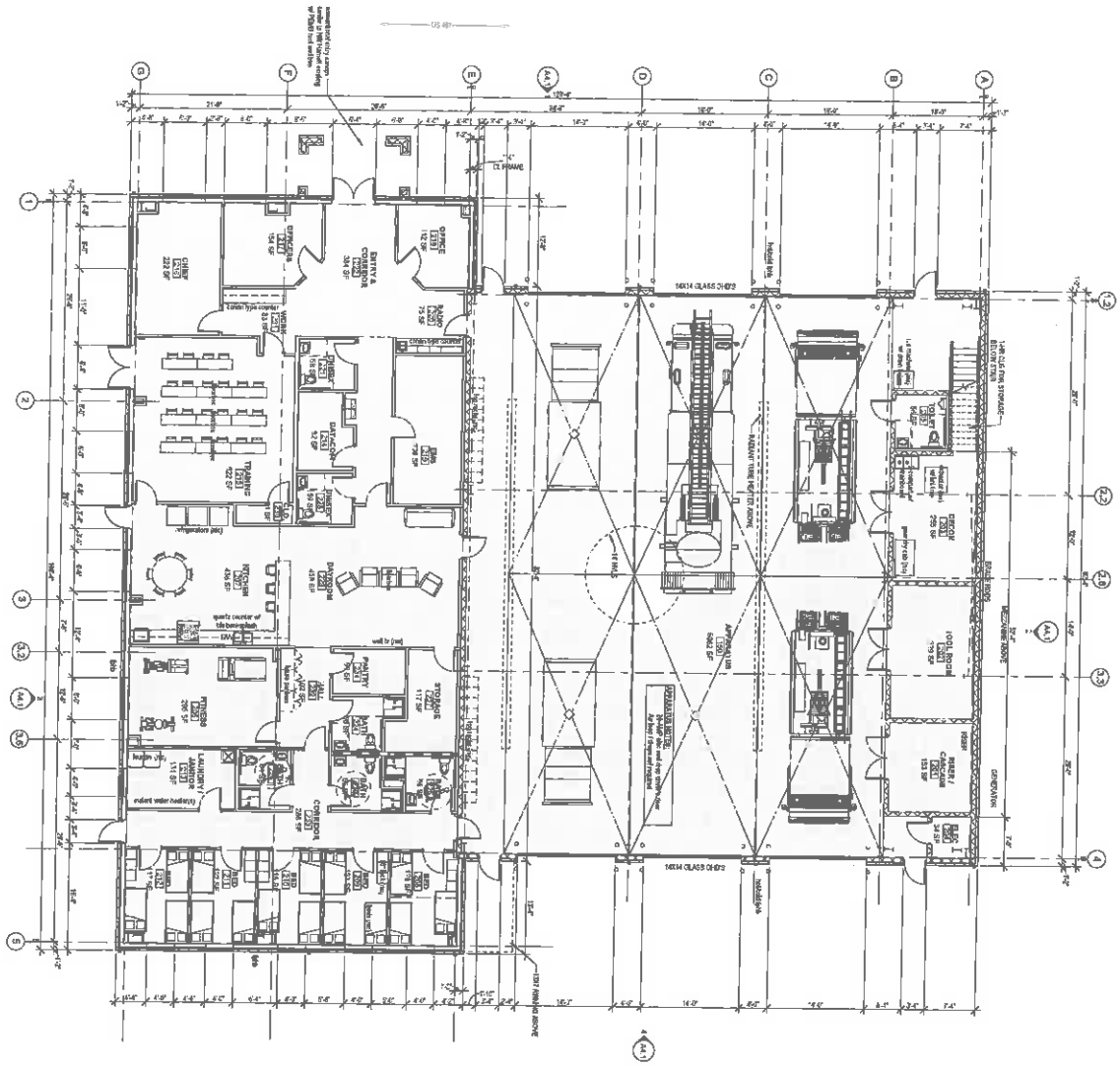
PROJECT #: 21-0337

SD4

27 OCT 2021

BOBBITT

BOBBITT CONSTRUCTION, INC.
800 GERMANTOWN ROAD
RALEIGH, NC 27607
PH. (919) 851-1090
E-MAIL: design@bobbitt.com
WWW.BOBBITT.COM
Firm Lic. # D-0491



① FLOOR PLAN
1/8" = 1'-0"

SCHEMATIC DESIGN

DRAWINGS ARE DIAGRAMMATIC ONLY AND HAVE NOT BEEN REVIEWED FOR CODE

NW HARNETT FIRE STATION 3

US 401

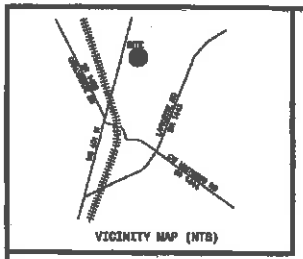
HARNETT COUNTY, NORTH CAROLINA

A1.1 OF 3	
FLOOR PLAN	
21-0037	
04/27/2021	
24 X 36	
1/8" = 1'-0"	
CHK BY: -	
DRAWN BY: BDG	
COORDINATOR: B. GRIFFITH	

BOBBITT
500 Gamestown Road | Raleigh, North Carolina 27607
Phone (919) 851-2880 | Fax (919) 851-2882
design@bobbitt.com

BOBBITT A&E, PLLC
Raleigh, North Carolina 27607

APPROVAL DATE



I, James W. Maulden, Professional Land Surveyor No. L-3247, certify to one or more of the following as indicated this date:

a. That this plat is of a survey that creates a subdivision of land within the area of a county or municipality that has an ordinance that regulates parcels of land.

b. That this plat is of a survey that is located in such portion of a county or municipality that is unregulated as to an ordinance that regulates parcels of land.

c. That this plat is of a survey of an existing parcel or parcels of land.

d. That this plat is of a survey of another category, such as the recombination of existing parcels, a court-ordered survey or other exception to the definition of subdivision.

e. That the information available to the surveyor is such that I am unable to make a certification to the best of my professional ability as to provisions contained in (a) through (d) above.

James W. Maulden, Professional Land Surveyor No. L-3247

I HEREBY CERTIFY THAT THE PROPERTY SHOWN HEREON IS EXEMPT FROM HARNETT COUNTY N.C. SUBDIVISION REGULATIONS AND THAT THIS PLAT HAS BEEN APPROVED FOR RECORDING IN THE REGISTER OF DEEDS IN HARNETT COUNTY.

Planning Director — DATE 3/25/21

STATE OF NORTH CAROLINA
COUNTY OF HARNETT

I, Tammy Ward, REVIEW OFFICER OF HARNETT COUNTY, CERTIFY THAT THE MAP OR PLAT TO WHICH THIS CERTIFICATION IS AFFIXED MEETS ALL STATUTORY REQUIREMENTS FOR RECORDING.

Review Officer — DATE 3-25-2021

NORTH CAROLINA - HARNETT COUNTY

FILED DATE 3/25/2021 TIME 2:53pm
MAP NUMBER 2021-123

REGISTER OF DEEDS
MATTHEW S. WILKE
BY: Stephanie C. Autry
ASST./DEPUTY REGISTER OF DEEDS

NORTH CAROLINA PROFESSIONAL SEAL L-3247 LAND SURVEYOR JAMES W. MAULDEN

State of North Carolina, Wake County

I, James W. Maulden, certify that this map was drawn under my supervision from an actual survey made under my supervision (deed description recorded in Book ____, page ____, etc.) (other); that the boundaries not surveyed are shown as broken lines plotted from information found in Book ____, page ____; that the ratio of precision as calculated is 1:10,000+; that this map was prepared in accordance with G.S. 47-30 as amended.

Witness my hand and seal this 15 day of March, 2021.

SIGNATURE: James W. Maulden
License Number: L-3247

NC GRID COORDINATES (NAD 83)
N = 630,009.677'
E = 2,088,818.708'

THELMA S. JACKSON
D.B.518, PG.68
M.B.14, PG.68

GHD WOODGROVE LLC
D.B.3668, PG.768
PC#F, SLIDE 1579

N 75°41'14"E 839.21'
839.21'

OLD LOT LINE

AREA = 4.671 ACRES

S 75°41'14"W 571.15'
561.15'

WILLIAM A. JOHNSON
SHERRY A. JOHNSON
D.B.1153, PG.981

INSTRUMENT # 2021006764

US HWY 401 N
60' PUBLIC R/W

S 75°41'14"W 393.79'

S 01°28'31"E 339.42'

AREA = 1.934 ACRES

N 75°38'01"E 380.32'
OLD LOT LINE
S 75°42'05"W 385.07'

WILLIAM A. JOHNSON
SHERRY A. JOHNSON
D.B.1163, PG.981

REFERENCES:
D.B.1153, PG.981
D.B.1163, PG.981
PC#F, SLIDE 1579
M.B.14, PG.68
OTHER REFERENCES AS SHOWN

HARNETT COUNTY
MINIMUM BUILDING
SETBACK REQUIREMENTS

FRONT: 35' FROM R/W
REAR: 25'
SIDE: 10'
CORNER LOT SIDE: 20'

LEGEND
- ○ Existing Iron Pipe (Control Point)
- Other State Set (unless otherwise noted)
- ⊞ Existing Concrete Monument(Control Point)
- ⊡ Concrete Monument Set
- ✕ Computed Point Only

All measurements shown are horizontal ground measurements unless otherwise noted.
Area computed by coordinates

Zone: RR-20

PIN	PID
0653-68-0029.000	000852 0061
0653-67-0938.000	000852 0094
0653-67-7785.000	000853 0018
0653-67-0859.000	000853 0018 03

PARENT TRACT
11.35 ACRES (OLD PARENT AREA)
-0.09 ACRES (AREA IN TRACT "A")
11.26 ACRES (NEW PARENT AREA)
OLD PARENT AREA TAKEN FROM D.B.1153, PG.981

Course	Bearing	Distance
L1	S 75°41'14" E	10.00'
L2	S 18°44'07" E	38.82'
L3	S 04°58'54" E	53.45'
L4	S 08°30'44" E	98.07'
L5	S 15°51'05" E	88.21'
L6	S 04°58'44" E	48.48'
L7	S 04°51'48" W	22.95'
L8	S 18°58'54" W	8.74'
L9	S 28°35'19" E	6.84'
L10	S 75°41'14" W	10.00'
L11	N 81°29'21" W	81.94'

NOTES:
(A.) THE PROPERTY SHOWN HEREON IS SUBJECT TO ALL EASEMENTS OF RECORD AFFECTING SAME.
(B.) NO TITLE SEARCH HAS BEEN PERFORMED BY THIS FIRM DURING THE COURSE OF THIS SURVEY.
(C.) THIS SURVEYOR DOES NOT CERTIFY TO THE EXISTENCE OR NON-EXISTENCE OF ANY UNDER GROUND UTILITIES THAT MAY OR MAY NOT BE PRESENT ON THIS SITE.
(D.) THIS PROPERTY LIES WITHIN THE WS-IV WATERSHED DISTRICT.
(E.) WATER LINE LOCATION SCALED FROM GIS MAPPING.

THE SURVEYOR RELIED UPON THE CITY OR COUNTY FOR APPROVAL OF ALL APPLICABLE ORDINANCE AND HAS MADE NO INTERPRETATIONS OF THE ORDINANCES.

60 0 60 120 180
GRAPHIC SCALE - FEET

CERTIFICATION OF OWNERSHIP, DEDICATION AND JURISDICTION

I(WE) HEREBY CERTIFY THAT I AM (WE ARE) THE OWNER(S) OR AGENT OF THE PROPERTY SHOWN AND DESCRIBED HEREON AND THAT I(WE) HEREBY ADOPT THIS PLAN OF SUBDIVISION WITH MY(OUR) FREE CONSENT, ESTABLISH THE MINIMUM BUILDING SETBACK LINES AND DEDICATE ALL STREETS, ALLEYS, WALKS, PARKS, AND OTHER SITES AND EASEMENTS TO PUBLIC OR PRIVATE USE AS NOTED, AND ALL OF THE LAND SHOWN HEREON IS WITHIN THE SUBDIVISION REGULATION JURISDICTION OF HARNETT COUNTY EXCEPT:

March 24 2021
DATE

TAX PARCEL ID NUMBER 0653-68-0029.000 0653-67-7785.000 0653-67-0938.000 0653-67-0859.000

OWNER William A. Johnson

OWNER Sherry A. Johnson

OWNER:
WILLIAM A. JOHNSON
SHERRY A. JOHNSON
8245 US 401 N
FUQUAY-VARINA, N.C. 27526

RECOMBINATION MAP FOR:
WILLIAM A. & SHERRY A. JOHNSON

HECTORS CREEK TOWNSHIP, HARNETT COUNTY, NORTH CAROLINA
SCALE 1" = 60' MARCH 2, 2021

MAULDIN - WATKINS SURVEYING, P.A.
P.O. BOX 444 / 139 N. MAIN ST.
FUQUAY VARINA, NORTH CAROLINA 27526
(919) 552-6328 C-628

JOB# 4817

RECORDED HARNETT COUNTY MAP NUMBER 2021 PAGE 123

Bobbitt Design Build, Inc.
NW Harnett Fire Station 3
Harnett County, North Carolina

Conventional Gravity System

Project Narrative

MacConnell & Associates, P.C.
501 Cascade Pointe Lane, Suite 103
Cary, North Carolina 27513

P.O. Box 129
Morrisville, North Carolina 27560

Phone: (919) 467-1239
Fax: (919) 319-6510

Project Narrative

Introduction

Owners	NW Harnett Volunteer Fire Department, Inc.
Developer	Bobbitt Design Build, Inc.
Property Address	US Hwy 401 N, Harnett County
Employees	7
Flow Reduction	0%
Design Flow (GPD)	940

Bobbitt Design Build, Inc. is developing the property located at US Hwy 401 N in Harnett County, North Carolina. The owners propose to construct a five-bedroom fire station with a maximum of 7 employees per shift and 3 shifts per day when the station is fully utilized. The owners have also recently been issued an Improvement Permit (IP) for an onsite wastewater system. MacConnell & Associates, P.C. has been contracted for the design with Thomas A. Perdue as the designated PE. The scope of this project is to design a conventional gravity system based on the Soils Evaluation Report prepared by Thomas J. Boyce, LSS.

The design proposes a conventional gravity system with one (1) 2,100-gallon septic tank. The septic tank has been sized for an unadjusted flow of 940 GPD.

The proposed wastewater treatment and disposal system does not have any conflicts with existing utilities in the area. The system also maintains all the buffers required in the 15A NCAC 18A .1900 rules amended Jun 1, 1999. The proposed systems shall meet all requirements and specifications outlined in: Innovative Wastewater System Approval No: IWWS-2015-03-R2 and Innovative Wastewater System Approval No: IWWS-2007-1-R1

Proposed System Design

Design daily flows and calculations:

Daily Design Flow:	7 Employees * 120 GPD/Employee = 840 GPD + 100 GPD (I&I) = 940 GPD (total wastewater for the facility)
System Type:	Septic Tank and EZ Flow Drain Lines.
Septic Tank Volume:	2,100 Gallons
Trench Type:	EZ Flow 1203 H type drainpipe
LTAR:	0.4 GPD/SF
Area Required:	940 GPD / 0.4 GPD/SF = 2350 SF
Linear Feet (with innov.):	2350 SF / 4 SF/LF = 587.5 LF
	Where 4 SF/LF is the equivalency factor for the EZ1203H-GEO system
Linear Feet Provided:	600 LF

Septic Tank

The proposed wastewater treatment system will provide both treatment and solids removal in a new 2,100-gallon septic tank. The tank will be manufactured by David Brantley and Sons, Inc. which has been previously approved by the On-Site Water Protection Branch (OSWP) or approved equal by engineer. This tank will provide greater than 2 days of detention time for adequate treatment and solids removal from the wastewater. Septic tank effluent will drain into the pump tank as wastewater flows into the septic tank. The septic tank will contain a POLYLOK PL-68 or SIM/TECK STF-110 effluent filter to prevent solids from reaching the pump tank.

EZ Flow Drain Lines

The EZ Flow drain lines will be EZflow 1203H – GEO type. The drain lines shall be installed per manufacturer's recommendations. Please note, the OSWP approved equivalency factor of 4.0 SF/LF allows for a 25 percent reduction of the minimum required linear feet for drain lines.

Project Contacts

Names, addresses, phone and fax numbers of the owner, soil scientist, and engineer are as follows:

Developer:
Bobbitt Design Build, Inc
600 Germantown Road
Raleigh, NC 27610
Phone: (910) 225-4291

Owners:
Northwest Harnett Volunteer Fire Department, Inc.,
a North Carolina Corporation
6015 Christian Light Rd.
Fuquay-Varina, NC 27526

Soil Scientist:
Thomas J. Boyce, L.S.S.
P.O. Box 81
Pittsboro, NC 27312
Phone: (919) 868-8135

Engineer:
Mr. Thomas A. Perdue, P.E.
MacConnell & Associates, P.C.
P.O. Box 129
Morrisville, NC 27560
Phone: (919) 467-1239
Fax: (919) 319-6510

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For Registration Matthew S. Willis
Register of Deeds
Harnett County, NC
Electronically Recorded
2021 Sep 17 11:25 AM NC Rev Stamp: $ 281.00
Book: 4046 Page: 223 - 224 Fee: $ 26.00
Instrument Number: 2021021844

HARNETT COUNTY TAX ID #
080652 0081

09-17-2021 BY: ED

STATE OF NORTH CAROLINA
COUNTY OF HARNETT

GENERAL WARRANTY DEED

Excise Tax: $281.00

PID: 080652 0081

Prepared by: Mercogliano & Associates, PA. P.O. Box 1381, Fuquay-Varina, NC 27526

Mail to: Grantee

THIS DEED made this 17th day of September, 2021 by and between

GRANTOR	GRANTEE
William Alton Johnson and Sherry A. Johnson, a married couple 8246 US 401N Fuquay Varina, NC 27526	Northwest Harnett Volunteer Fire Department, Inc., a North Carolina Corporation 6015 Christian Light Rd, Fuquay-Varina, NC 27526

The designation Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine or neuter as required by context.

WITNESSETH:

THAT the Grantor, for a valuable consideration paid by the Grantee, the receipt of which is hereby acknowledged, has and by these presents does grant, bargain, sell and convey unto the Grantee in fee simple, all that certain lot or parcel of land more particularly described as follows:

Being all of 4.671 acres, more or less, as shown in Book of Maps 2021, Page 123, Harnett County Registry.

Subject to easements, rights of way, protective covenants, and other matters of public record.

Subject to 2021 Ad Valorem taxes.

All or a portion of the property hereinabove described was acquired by Grantor by instrument recorded in Book 748, Page 589, Harnett County Registry and Book 1183, Page 981, Harnett County Registry.

TO HAVE AND TO HOLD the above-described lot or parcel of land and all privileges and appurtenances thereto belonging to the Grantee in fee simple.

AND the Grantor covenants with the Grantee, that Grantor is lawfully seized of the premises in fee simple, has the right and power to convey the same in fee simple, that title is marketable and free from any and all encumbrances and that Grantor will forever warrant and defend the title against the lawful claims of all persons whomsoever.

IN WITNESS WHEREOF, the Grantor has duly executed the foregoing as of the day and year first above written.

William Alton Johnson (SEAL)
William Alton Johnson

Sherry A. Johnson (SEAL)
Sherry A. Johnson

STATE OF NORTH CAROLINA
COUNTY OF HARNETT

I, Kathy A. Mercogliano, a Notary Public of Harnett County, North Carolina, certify that William Alton Johnson and Sherry A. Johnson, each personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

WITNESS my hand and notarial stamp or seal this 17th day of September, 2021.

Kathy A. Mercogliano, Notary Public

My Commission Expires: August 30, 2025

KATHY A. MERCOGLIANO
NOTARY PUBLIC
HARNETT COUNTY
NORTH CAROLINA

Bobbitt Design Build, Inc.
NW Harnett Fire Station 3
Harnett County, North Carolina

Conventional Gravity System

Soils Evaluation

MacConnell & Associates, P.C.
501 Cascade Pointe Lane, Suite 103
Cary, North Carolina 27513

P.O. Box 129
Morrisville, North Carolina 27560

Phone: (919) 467-1239
Fax: (919) 319-6510

Soil Evaluation - NW Harnett Fire Station 3-Fuquay-Varina

Usable Soils Area

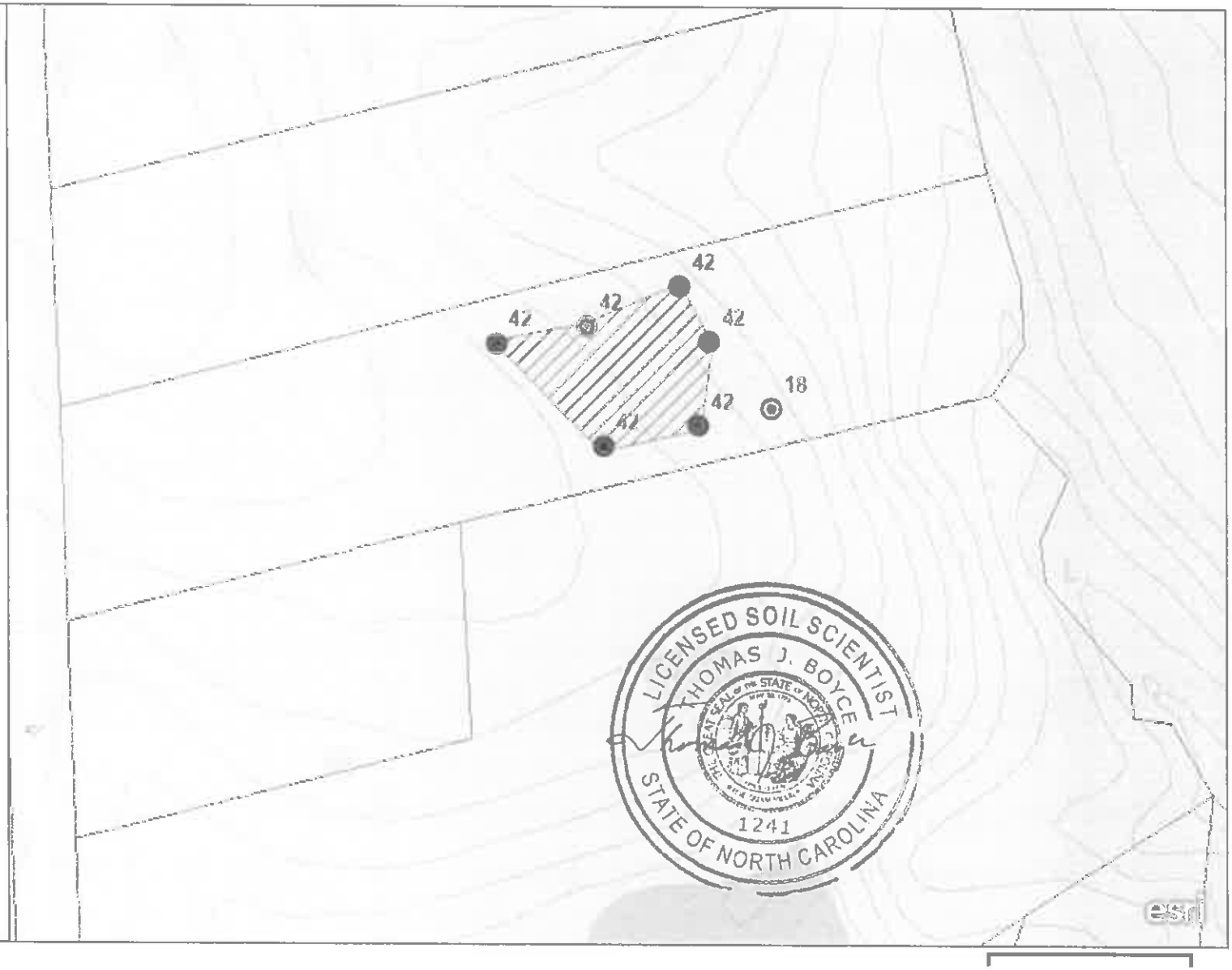
Contours

Borings

- Alt
- Conv
- LPC
- Out

Typical Soils

0-30 LS
30-42 SCL
.4 LTAR
30" Max Depth



All ratings and determinations were done in accordance with "Laws and Rules for Sewage Treatment and Disposal Systems, 15A NCAC .1900". This report does not guarantee or represent approval or issuance of permits by the local health department. This report only represents my opinion as a licensed soil scientist.

MARLIN
WASTEWATER SERVICES

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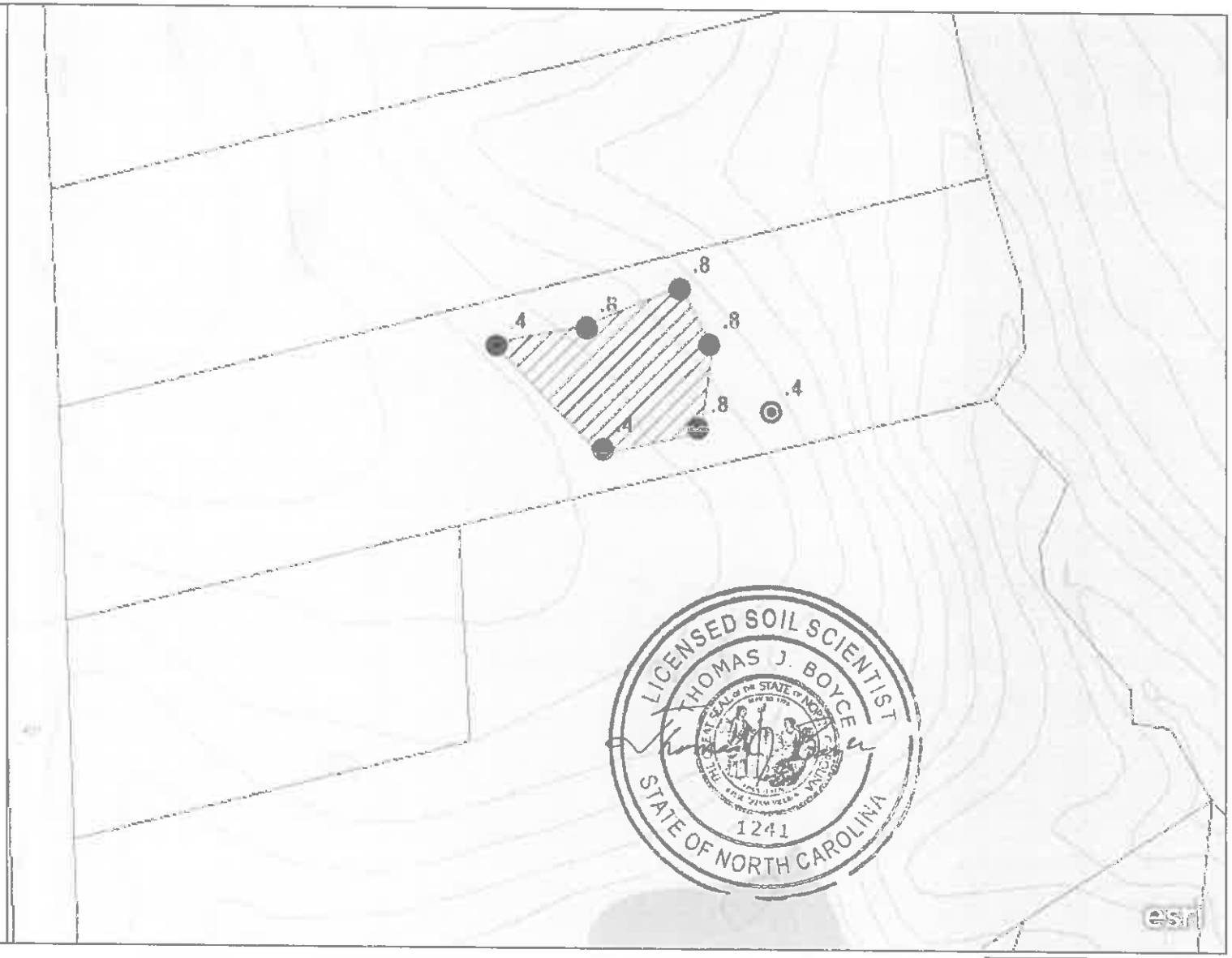

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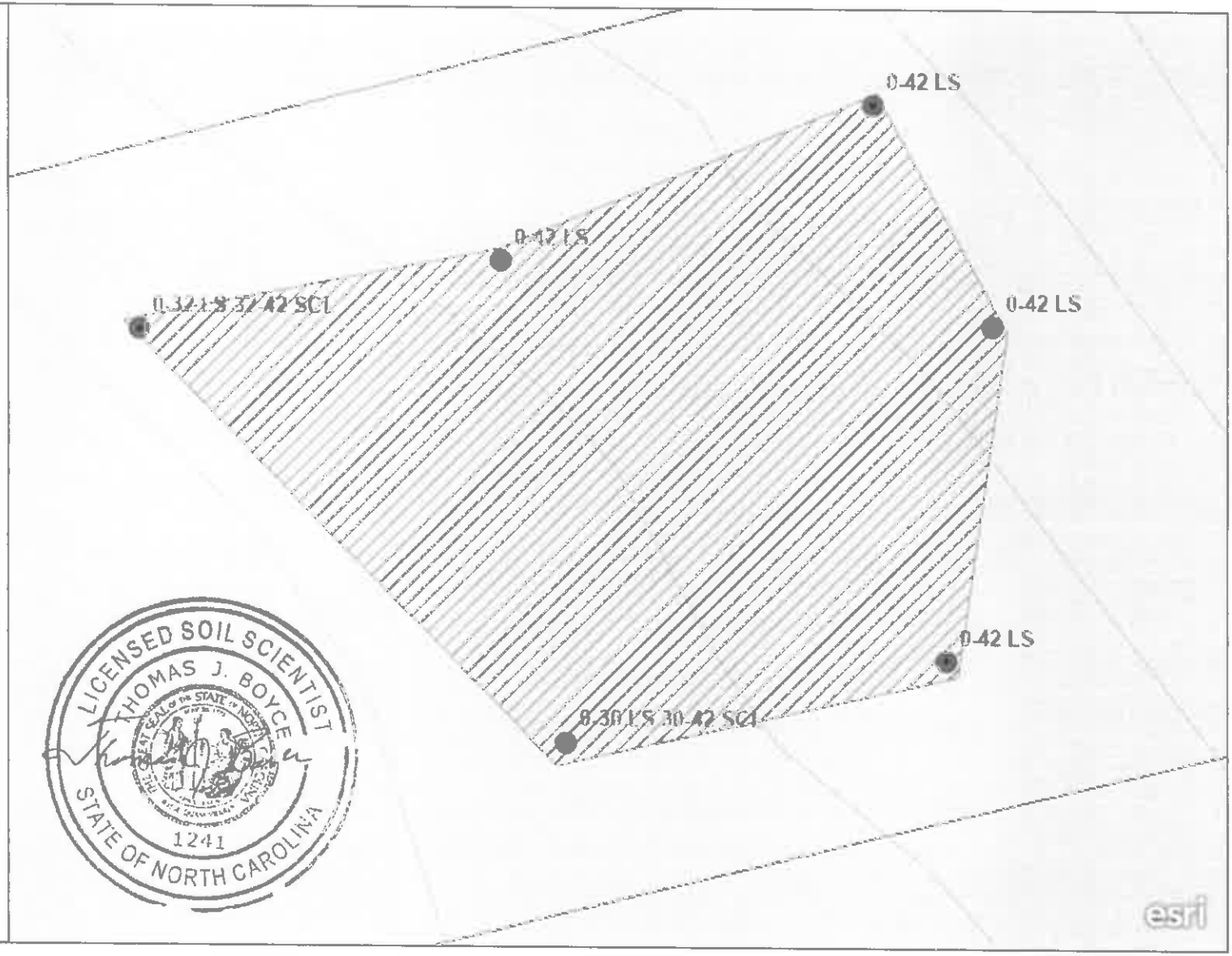

LICENSED SOIL SCIENTIST
THOMAS J. BOYCE
1241
STATE OF NORTH CAROLINA

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MARLIN
WASTEWATER SERVICES

Bobbitt Design Build, Inc.
NW Harnett Fire Station 3
Harnett County, North Carolina

Conventional Gravity System

Project Specifications

MacConnell & Associates, P.C.
501 Cascade Pointe Lane, Suite 103
Cary, North Carolina 27513

P.O. Box 129
Morrisville, North Carolina 27560

Phone: (919) 467-1239
Fax: (919) 319-6510

Project Specifications

Excavation and Backfilling

1. Excavated materials acceptable as backfill shall be stockpiled in a location approved by the Owner. The materials shall be located away from the edge of any excavations. Excavated materials shall not be stored where existing trees are located.

2. All open excavations shall be barricaded when construction in the area has stopped. Night barricading should include posted warning lights.

3. Protect existing structures, utilities, sidewalks, pavement, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations. Protect root systems from damage or dry-out to the greatest extent possible.

4. Soil materials shall be free of boulders, roots, sod, organic matter, and frozen material.

5. Bedding materials for pre-cast concrete structure installation shall be #57 washed stone to the dimensions and depth shown on the construction drawings.

6. All excavation is unclassified and includes excavation to subgrade elevations indicated on the construction drawings regardless of character of materials and obstruction encountered. In the event that rock is encountered, the Contractor shall remove it at no additional cost to the owner.

7. Stability of excavations shall be maintained by sloping of the sides and shall comply with local codes, ordinances, and requirements of agencies having jurisdiction. Where space restrictions prevent sloping of the sides, shoring and bracing of the walls shall be employed in full compliance with OSHA requirements. In the case of pipe installations, sheeting shall remain in place until backfilling progresses to a stage where no damage to the pipe will result from removal.

8. The Contractor shall attempt to prevent surface and subsurface water from flowing into excavations. The Contractor shall provide equipment, materials, and work necessary to dewater any accumulation of water in the excavation to prevent softening of the soils, undercutting of footings, and changes to the soils detrimental to the stability of the improvements.

9. Excavations for structures shall conform to dimensions and elevations shown on the construction drawings within a tolerance of plus or minus 0.10 feet and to the standards of ASTM C891-90.

10. Backfill shall be installed to excavated spaces in 8-inch lifts and tamped by hand or pneumatically around pipe or structures. Tamping shall be performed evenly on both sides

of pipe and around sides of structures to a depth such that damage to the pipe or structures is avoided as a result of subsequent methods of compaction. Extreme care shall be exercised in backfilling operations to avoid displacement of pipe and structures either horizontally or vertically. Backfill consolidation by ponding water is not permitted. Compaction of each layer of backfill and the top 6 inches of subgrade shall achieve a 90 percent maximum dry density as measured by AASHTO method T-99.

11. Remove all waste materials including unacceptable excavated material, trash, and debris and legally dispose of it off Owner's property. Where settling is measurable or observable at excavated areas during project warranty period, the Contractor shall remove surface finish, add backfill material, compact, and replace surface treatment to a quality and appearance matching adjacent areas of previous work.

Septic Tank Installation and Testing

1. Septic tanks shall conform to criteria in 15A NCAC 18A .1952-.1954. The septic tank should be installed on a 6-inch minimum layer of No. 57 washed stone aggregate.

2. Place bell ends of pre-cast sections or the groove end of the concrete facing down. In preparation for making joints, all surfaces of the portion of the section to be jointed and the factory-made jointing materials shall be clean and dry. Each joint, seam, and pipe penetration inside and outside of joints shall receive liberal applications of non-shrink grout as well as liberal amounts of bitumastic waterproof sealant.

3. Lifting holes and other penetrations of the pre-cast structure wall shall be sealed with nonshrinking grout. Pipe connections shall be made so that the pipe does not project beyond the inside wall of the structure. Grout connections as necessary to make smooth and uniform surfaces on the inside of the structure.

4. Before placing any tank into operation, remove any dropped grout, sand or other imperfections and obstructions from the interior of the structure. Specifically, the inside walls of the tank shall be smooth and uniform. Smooth-finish inverts so that wastewater flow is confined and directed through the inlet and outlet pipes with easy transition.

5. Tanks shall be backfilled in accordance with the applicable specifications herein before described.

6. All pipe penetrations shall be through Press-Seal Cast-A-Seal 402 rubber connectors or approved equal.

7. All joints (mid-seam, top-seam) shall be sealed using Concrete Sealants butyl sealant #CS-102 meeting ASTM C-990.

8. All service access openings will be a minimum of 24 inches. All access openings shall be fitted with E-Z Set riser assemblies.

9. A 24-hour static water test, in accordance with ASTM standards, shall be performed on all precast tanks in order to insure they are water tight.

    a. The testing shall be performed in the presence of the engineer or his representative.

    b. Each tank shall be filled with water and the initial water level shall be measured.

    c. At the end of the 24-hour period, the level of the water shall be measured again.

    d. The engineer shall pass the tank if the water level did not drop more than 0.5 inches or if the total volume of the displaced water is less than 1 percent of the total effective liquid capacity of the tank.

    e. Tanks may also be leak-tested by applying a vacuum of 5-inches of Hg with riser assemblies in place.

    f. Each failed tank shall be tested again. In the event that the tank does not pass the second test, the Contractor shall remove and replace the tank at no additional cost to the owner.

10. Septic Tank shall meet the following additional criteria:

    a. Minimum liquid depth of 36 inches.

    b. Minimum airspace of 9 inches.

    c. Length shall be at least twice as long as the width.

    d. Septic tank shall be constructed with a baffle wall dividing the tank interior $2/3^{rd}$ to $1/3^{rd}$. The baffle wall shall be constructed to permit passage of effluent through a slot or holes located between 45 and 55 percent of the interior depth.

11. Septic tank shall be fitted with either a POLYLOK PL-68 or SIM/TECK STF-110 effluent filter or engineer approved equal that extends down to 50 percent of the liquid depth of the tank.

12. Septic model shall be as shown on the construction drawings or approved equal by engineer.

Piping Installation and Testing

1. Piping shall be PVC and of type and size as shown on the construction drawings. Piping shall be installed with a minimum of three (3) feet of cover unless shown otherwise on the construction drawings.

2. Piping shall be installed to be able to meet a pressure test whereby the pressure remains constant for a minimum of two hours, and the allowable leakage is not more than 10 gpd/inch of pipe diameter/mile.

3. Any line installed under a driveway shall be sleeved in Class 52 Ductile Iron Pipe or encased in concrete and extend a minimum of 5 feet on either side and as shown on the construction drawings.

4. Forcemains installed under streams shall be sleeved in Class 52 Ductile Iron Pipe as shown on the construction drawings.

Distribution Box

1. Distribution box shall be watertight, not subject to excessive corrosion, and of adequate design as approved by the local health department.

2. Distribution box shall be separated from the septic tank and nitrification lines by a minimum of two feet of undisturbed or compacted soil and shall be placed level on a solid foundation of soil or concrete to prevent differential settlement of the device. The installer shall demonstrate that the distribution devices perform as designed.

3. If necessary, installer may employ the use of speed levels to achieve even distribution of flow.

4. Distribution box shall be installed per manufacturer's recommendations unless shown otherwise on the construction drawings.

EZflow Trench Lines

5. The trench lines shall be the EZflow drain lines (1203H – GEO type).

6. The EZflow trench lines shall be installed per manufacturer's recommendations unless shown otherwise on the construction drawings.

Bobbitt Design Build, Inc.
NW Harnett Fire Station 3
Harnett County, North Carolina

Conventional Gravity System

Design Calculations

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Septic Tank (2,100 ST 388)

*** * * ALL ORANGE CELLS MUST BE FILLED * * ***

Values for f, Ka, and e can be found in Tables 1, 2, and 3 in the accompanying document.

Disclaimer: Use of this calculator does not guarantee the proper function or performance of any product manufactured in accordance with the data herein. It is the user's responsibility to ensure their product is designed and manufactured to resist all forces applied.

Basic Dimensions		
Lid Thickness (L)	0.33	(feet)
Lid Hole Diameter (H1)	24.00	(inches)
Lid Hole Diameter (H2) - If tank has only one hole, leave blank.	24.00	(inches)
Lid Hole Diameter (H3) - If tank has only one hole, leave blank.		(inches)
Length of Tank (A)	13.17	(feet)
Width of Tank (B)	6.33	(feet)
Height of Tank Excluding Lid (C) - This value includes the base thickness but excludes the lid thickness.	5.17	(feet)
Depth of Bury (Y) - This measurement extends from the ground level to the top of the lid.	1.50	(feet)
Wall Thickness (T)	0.25	(feet)
Base Thickness (E)	0.33	(feet)
Distance to Groundwater (GW)	0.00	(feet)

Customizations To Add Ballast		
Add Concrete Inside the Tank:		
Initial Inside Height of Tank - This measurement is the value of C - E.	4.83	(feet)
Add concrete inside the tank to make thicker base? If yes, how much? (U) If no, enter a value of 0. Please note: The value entered must be less than the inside height of the tank.	0.00	(feet)
Increase Thickness of the Base:		
Initial Base Thickness - This measurement is the value of E.	0.33	(feet)
Add concrete below the base of the tank to make thicker base? If yes, how much? (F) If no, enter a value of 0.	0.00	(feet)
Create Lip:		
Extend the base horizontally to create a lip? - The lip will be the thickness of E plus F, below, and it will extend this horizontal distance, P, from all four tank walls. If yes, how much? (P) If no, enter a value of 0.	0.00	(feet)

Summary of Final Measurements after Ballast Customizations		
Final Base Thickness - This measurement is the sum of E and F.	0.33	(feet)
Lip Thickness - This measurement is the sum of E and F.	0.33	(feet)
Total Height of the Tank from the Top of the Lid to the Bottom of the Base - This measurement is the sum of L, C, and F. This is equivalent to the sum of L, C - E, E, and F.	5.50	(feet)
Final Inside Height of Tank - This measurement is the value of C - E - U.	4.83	(feet)
Final Volume of Tank	357.13	(cf)
Final Volume of Tank	2671.52	(gallons)

Unit Weights		
Unit Weight of Water	62.40	(lb/cf)
Unit Weight of Dry Soil	110.00	(lb/cf)
Unit Weight of Submerged Soil	47.60	(lb/cf)
Unit Weight of Saturated Soil	120.00	(lb/cf)
Unit Weight of Concrete	145.00	(lb/cf)

Changes in Total Concrete Weight Due to Customizations		
Weight of extra concrete inside tank used to create thicker base (Weight of extra concrete due to U)	0	(lb)
Weight of extra concrete on bottom of tank used to create thicker base (Weight of extra concrete due to F)	0	(lb)
Weight of extra concrete due to lip (Weight of extra concrete due to P)	0	(lb)
Weight of concrete removed due to lid hole	301	(lb)

Soil and Concrete Weights		
Weight of Soil on Lid	5954	(lb)
Weight of Soil on Lip	0	(lb)
Weight of Lid Alone	3690	(lb)
Weight of Empty Tank - This value is the sum of weights of the body of the tank, the tank lid, the lip (P, if applicable), the thickened base (F, if applicable), and the extra concrete inside tank (U, if applicable), minus the weight of the concrete removed due to the hole in the lid.	14378	(lb)

Water in Tank		
Water Level in Tank - Please note: The value entered must be less than the final inside height of the tank.	0.00	(feet)
Weight of Water in Tank	0	(lb)

Weight of System Components		
Total Weight of Soil on Tank	5954	(lb)
Total Weight of Concrete	14378	(lb)
Total Weight (Tank, Water in Tank, and Soil)	20332	(lb)

Sliding Resistance		
Specific Gravity of Soil, SG	2.75	
Friction Factor (Found in Table 1), f	0.30	
Void Ratio (Found in Table 3), e	0.85	
Ratio of Lateral to Vertical Earth Pressure (Found in Table 2), Ka	0.33	
Sliding Resistance	22368	(lb)

Uplift Force		
Uplift Force	28601.72	(lb)
Safety Factor	1.30	
Uplift Force with Safety Factor	37182.24	(lb)

Additional Ballast Required	**NONE**	**(lb)**

MacConnell & Associates, P.C.

Project:	**US Hwy. 401 N**
Project Number:	**A21303.00**
Location:	**Harnett County, North Carolina**
Subject:	**Tank Sizing Calculations**
Date:	**March 4, 2022**

Notes:
Input
Calculated

Assumptions And Calculations:

1. **Treatment flow is based on unadjusted flow.**
2. **Irrigation flow is based on reduced flow**

Number of Bedrooms:	**7.0**	**Employees**	**Given**
Average Daily Flow per Bedroom:	**120**	**GPD**	
Unadjusted Design Flow:	**940.0**	**GPD**	
Flow Reduction (House Fixtures):	**0**	**%**	**15A NCAC 18A .1949**
Adjusted Flow:	**940.0**	**GPD**	

SEPTIC TANK SIZING

Minimum Septic Tank Volume Required:	**1,600**	**Gallons**	**per 15A NCAC 18A .1952**
Septic Tank Volume Provided:	**2,100**	**Gallons**	

Septic Tank storage and effective volume calculations:

Septic Tank Total Void Volume = L * W * D:		
Tank length:	**12.4**	**foot**
Tank Width:	**5.8**	**foot**
Tank Depth:	**4.8**	**foot**
Total Void Volume:	**2,618.6**	**Gallons**
Septic Tank Effective Volume = L * W * Lowest Invert To Tank Bottom:		
Tank length:	**12.4**	**foot**
Tank Width:	**5.8**	**foot**
Lowest Invert:	**4.2**	**foot**
Effective Volume:	**2,257.4**	**Gallons**

Septic Tank Storage/Detention:	**2.40**	**Days**	**Effective Volume / ADF**

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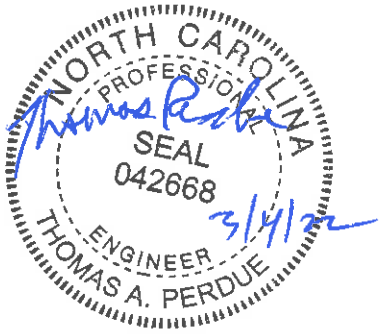
Equipment



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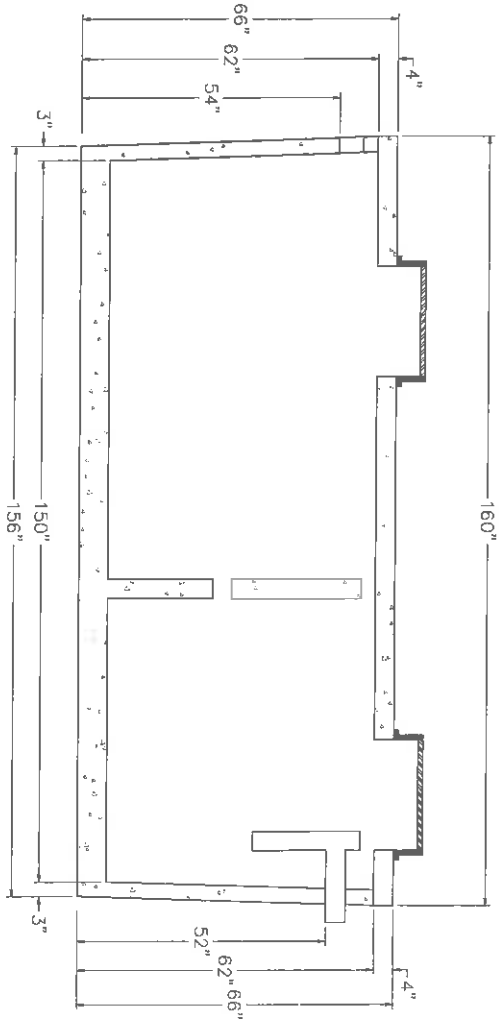
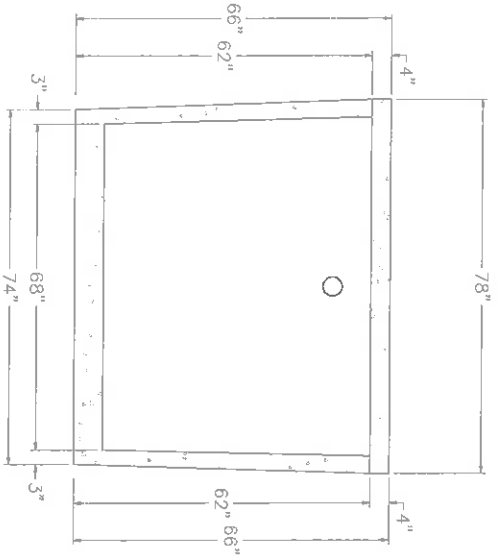




2,100 ST 388

NTS

NON TRAFFIC BEARING

DAVID BRANTLEY & SONS
37 Pine Ridge Rd.
Zebulon, NC 27597
Office 252-478-3721
Fax 919-573-0443
1installer@gmail.com

PREPARED FOR :	David Brantley & Sons 37 Pine Ridge Rd. Zebulon, NC 27597
DATE :	April 11, 2014
CONTACT:	CORY BRANTLEY

REVISION NO.	DATE
Original Submittal	April 11, 2014
Revision 1	
Revision 2	
Revision 3	
Master Set	—

BRANTLEY TANK MODEL
2,100 ST 388

SHEET NUMBER
1 of 1

CAST-A-SEAL® 402/402F

PRODUCT SPECIFICATION and SELECTION

Submittal Specification

A flexible pipe-to-structure connector shall be employed in the connection of the sanitary sewer pipe to precast structures. The connector shall be CAST-A-SEAL® 402/402F as manufactured by Press-Seal Corporation, Fort Wayne, Indiana, or approved equal. The connector shall be the sole element relied on to assure a flexible, watertight seal of the pipe to the precast structure. The connector shall consist of a rubber gasket and an external take-up clamp.

The rubber gasket element shall be constructed solely of synthetic or natural rubber, and shall meet or exceed the physical property requirements of ASTM C 923.

The external take-up clamp shall be constructed of Series 300 non-magnetic stainless steel and shall utilize no welds in its construction. The clamp shall be installed by torquing the adjusting screw using a torque-setting wrench available from the connector manufacturer.

Selection of the proper size connector for the structure and pipe requirement, and installation thereof, shall be in strict conformance with the recommendations of the connector manufacturer. Any dead end pipe stubs installed in connectors shall be restrained from movement per ASTM C 923.

The finished connection shall provide sealing to 13 psi (minimum) and shall accommodate deflection of the pipe to 7 degrees (minimum) without loss of seal.

Vacuum testing shall be conducted in strict conformance with ASTM C 1244 prior to backfill. Other testing shall be conducted in strict conformance with the requirements of the connector manufacturer.

CAST-A-SEAL 402	PIPE SIZE	PIPE O.D. RANGE	WALL THICKNESS*	APPLICATION
452.0250	1.25" - 2" (31 - 51 mm)	1.5" - 2.75" (38 - 70 mm)	2.5" - 6" (64 - 150 mm)	STANDARD
452.0450	4" (100 mm)	4.2" - 4.7" (107 - 119 mm)	2.5" - 6" (64 - 150 mm)	STANDARD
452.0402F1	4" (100 mm)	4.2" - 4.7" (107 - 119 mm)	2.5" - 4.0" (64 - 102 mm)	Closed Face
452.0650	6" (150 mm)	6.2" - 6.7" (157 - 170 mm)	2.5" - 6" (64 - 150 mm)	STANDARD
CAS ADAPTER	3" (75 mm)	3.2" - 3.8" (81 - 91 mm)	---	Use with 4" CAST-A-SEAL

PRODUCT PERFORMANCE

CAST-A-SEAL402/402F meets and/or exceeds all requirements of ASTM C 923, including physical properties of materials and performance testing, including:

- 13 psi minimum in straight alignment
- 10 psi at minimum 7°angle
- 10 psi minimum under shear load of 150 lbs/in. pipe diameter

CAST-A-SEAL 402/402F meets and/or exceeds the requirements of the following Standards, Specifications, Codes, and Test Methods:

- ASTM C 923 *Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals*
- ASTM C 1644 *Standard Specification for Resilient Connectors Between Reinforced Concrete On-Site Wastewater Tanks and Pipes*
- ASTM C 1478 *Standard Specification for Storm Drain Resilient Connectors Between Reinforced Concrete Storm Sewer Structures, Pipes and Laterals*
- ASTM C 1244 *Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test*
- IAPMO/ANSI Z1000 *Standard for Prefabricated Septic Tanks*
- IAPMO/ANSI Z1001 *Standard for Prefabricated Gravity Grease Interceptors*
- *NPCA Best Practices Manual for Precast Concrete On-Site Wastewater Tanks*
- *NOWRA Model Code Framework*

TYPICAL TEST RESULTS for CAST-A-SEAL 402/402F (as in ASTM C 1644, C 923, and C 1478)			
Test	ASTM Test Method	Test Requirements	Typical Result
CHEMICAL RESISTANCE; 1N SULFURIC ACID and 1N HYDROCHLORIC ACID	D 534, AT 22°C FOR 48 HRS	NO WEIGHT LOSS NO WEIGHT LOSS	NO WEIGHT LOSS NO WEIGHT LOSS
TENSILE STRENGTH	D 412	1200 PSI, MIN.	2100 PSI
ELONGATION AT BREAK	D 412	350%, MIN.	525%
HARDNESS	D 2240 (SHORE A DUROMETER)	±5 FROM THE MANUFACTURER'S SPECIFIED HARDNESS	<2
ACCELERATED OVEN-AGING	D 573, 70± 1°C FOR 7 DAYS	DECREASE OF 15%, MAX. OF ORIGINAL TENSILE STRENGTH, DECREASE OF 20%, MAX. OF ELONGATION	-13% TENSILE CHANGE, -14% ELONGATION CHANGE
COMPRESSION TEST	D 395, METHOD B, AT 70°C FOR 22 HRS	DECREASE OF 25%, MAX. OF ORIGINAL DEFLECTION	13%
WATER ABSORPTION	D 471 IMMERSE 0.75 BY 2-IN.SPECIMEN IN DISTILLED WATER AT 70°C FOR 48 hrs	INCREASE OF 10%, MAX. OR ORIGINAL BY WEIGHT	3.50%
OZONE RESISTANCE	D 1171	RATING 0	PASS
LOW-TEMP, BRITTLE POINT	D 746	NO FRACTURE AT -40°C	PASS
TEAR RESISTANCE	D 624, METHOD B	200 LBF/IN. (MIN.)	450 LBF/IN.

Phone: 800-348-7325
Fax: (260) 436-1908

PRESS-SEAL CORPORATION
Protecting Our Planet's Clean Water Supply
ISO 9001:2008 Registered • ISO/IEC 17025 Accredited

Email: sales@press-seal.com
Web: www.press-seal.com

CAST-A-SEAL® 402/402F

CAST-IN BOOT-TYPE CONNECTOR
for 1-1/4" to 6"PVC Pipe
(32 mm - 150 mm)

What It Is

CAST-A-SEAL 402/402F is a watertight flexible connector that is cast into the structure when the concrete is poured. The connector is folded into the casting position and placed on the reusable heavy-duty solid plastic mandrel that is installed directly to the form. After the concrete is cured, the form is opened, removing the mandrel from the gasket, but leaving the **CAST-A-SEAL 402/402F** connector embedded in the concrete. The gasket is then simply unfolded at the jobsite and is tightened around the pipe using the supplied stainless steel take-up clamp.

Why It's Better

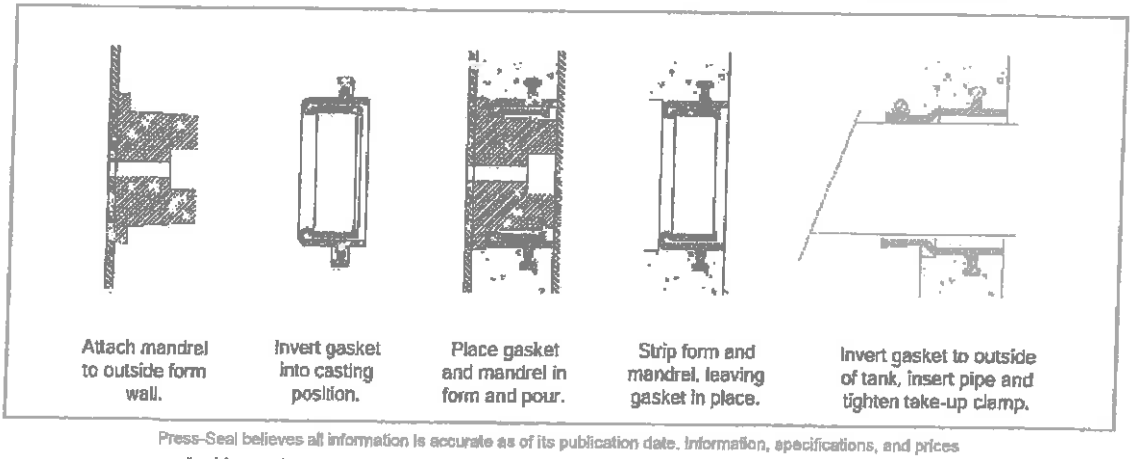
- Simple cast-in design provides flexible watertight connection.
- Eliminates infiltration and exfiltration.
- Improves on-site system performance and minimizes maintenance.
- Protects groundwater from unintended discharges.
- Use in on-site treatment structures, grease interceptors, manholes, wet wells, pump and lift stations, stormwater structures, or any application requiring a flexible watertight connector.

How It Performs

CAST-A-SEAL 402/402F meets or exceeds all requirements of the following Standards, Codes, Specifications and/or Test Methods:

ASTM C 1227	***IAPMO Z1000***
ASTM C 1644	***IAPMO Z1001***
ASTM C 923	***NPCA Best Practices***
ASTM C 1244	***NOWRA Model Code***
ASTM C 1478	

Scan (or click) Here To View More Info On This Product On The Web!



Phone: 800-348-7325
Fax: (260) 436-1908

PRESS-SEAL CORPORATION
Protecting Our Planet's Clean Water Supply
ISO 9001:2008 Registered • ISO/IEC 17025 Accredited

Email: sales@press-seal.com
Web: www.press-seal.com

EZset by INFILTRATOR

EZset by Infiltrator risers and lids are made from glass reinforced polypropylene, providing superior strength and durability. They come in green or black and in 20", 24", and 30" diameters making them ideal for use with any concrete or plastic tank. The slip resistant lids are fastened using stainless steel screws and can be further secured by installing locking rings.

20" Riser System

- 20" x 6" Risers (Green or Black)
- 20" x 12" Risers (Green or Black)
- 20" Lids (Green or Black)

20" x 6" Riser

20" x 12" Riser

20" Lid

Adapter Flange

24" Riser System

- 24" x 6" Risers (Green or Black)
- 24" x 12" Risers (Green or Black)
- 24" x 18" Risers (Green or Black)
- 24" Lids (Green or Black)

24" x 6" Riser

24" x 12" Riser

24" x 18" Riser

24" Lid

30" Riser System

- 30" x 12" Risers (Green or Black)
- 30" Lids (Green or Black)

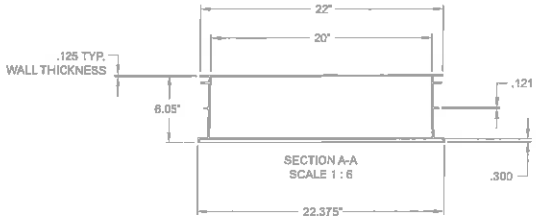
30" x 12" Riser

30" Lid

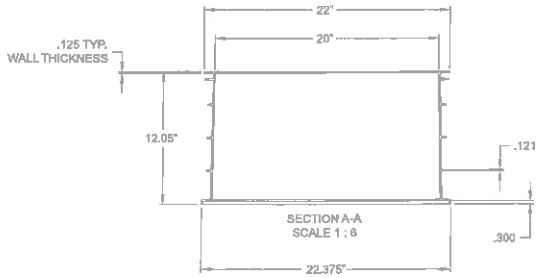
- Adhesive Sealant
- 20" Locking Rings
- 20" Safety Pans
- 24" Locking Rings
- 24" Safety Pans
- 24" Adapter Rings
- 30" Locking Rings

EZset by INFILTRATOR

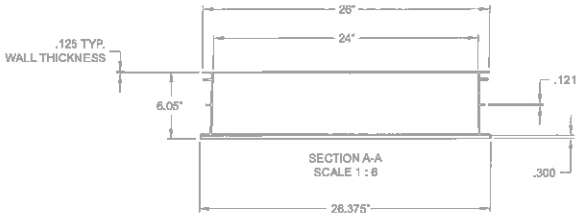
Riser Specifications



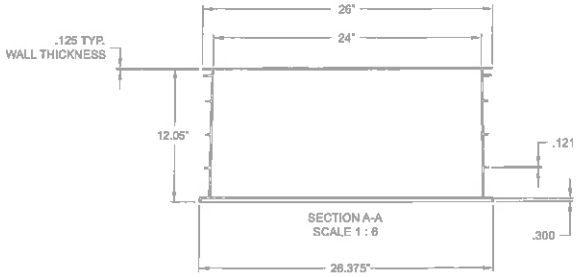
20" x 6" Riser Cutaway



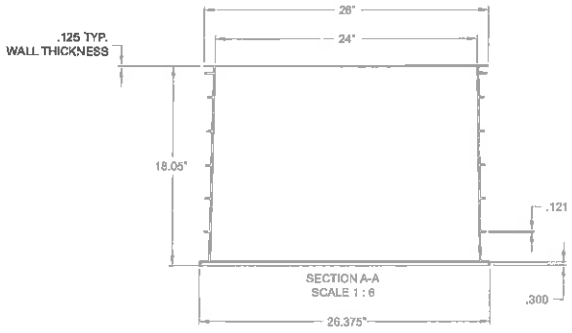
20" x 12" Riser Cutaway



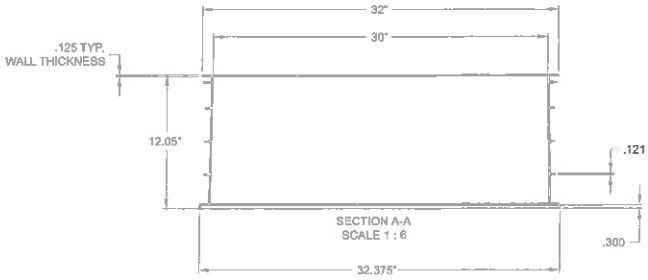
24" x 6" Riser Cutaway



24" x 12" Riser Cutaway



24" x 18" Riser Cutaway



30" x 12" Riser Cutaway

INFILTRATOR WATER TECHNOLOGIES, LLC ("Infiltrator")
EZset by Infiltrator LIMITED WARRANTY
ONE (1) YEAR MATERIALS AND WORKMANSHIP LIMITED WARRANTY

(a) This limited warranty is extended to the end user of an EZset by Infiltrator riser and lid system and other accessories. An EZset system manufactured by Infiltrator, when installed and operated in accordance with Infiltrator's installation instructions and local regulation by a licensed installer, is warranted to you: (i) against defective materials and workmanship for one (1) years after installation. Infiltrator will, at its option, (i) repair the defective product or (ii) replace the defective materials. Infiltrator's liability specifically excludes the cost of removal and/or installation of the EZset system.

(b) In order to exercise its warranty rights, you must notify Infiltrator in writing at its corporate headquarters in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect.

(c) YOUR EXCLUSIVE REMEDY WITH RESPECT TO ANY AND ALL LOSSES OR DAMAGES RESULTING FROM ANY CAUSE WHATSOEVER SHALL BE SPECIFIED IN SUBPARAGRAPH (a) ABOVE. INFILTRATOR SHALL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES OF ANY KIND, HOWEVER OCCASIONED, WHETHER BY NEGLIGENCE OR OTHERWISE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES. SO THIS LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

(d) THIS LIMITED WARRANTY IS THE EXCLUSIVE WARRANTY GIVEN BY INFILTRATOR AND SUPERSEDES ANY PRIOR, CONTRARY, ADDITIONAL, OR SUBSEQUENT REPRESENTATIONS, WHETHER ORAL OR WRITTEN. INFILTRATOR DISCLAIMS AND EXCLUDES TO THE GREATEST EXTENT ALLOWED BY LAW ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, OR STATUTORY, INCLUDING ANY WARRANTY OF MERCHANTABILITY, FINESSE FOR A PARTICULAR PURPOSE AND ANY IMPLIED WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE. NO PERSON (INCLUDING ANY EMPLOYEE, AGENT, DEALER, OR REPRESENTATIVE) IS AUTHORIZED TO MAKE ANY REPRESENTATION OR WARRANTY CONCERNING THIS PRODUCT. EXCEPT TO REFER YOU TO THIS LIMITED WARRANTY. EXCEPT AS EXPRESSLY SET FORTH HEREIN, THIS WARRANTY IS NOT A WARRANTY OF FUTURE PERFORMANCE, BUT ONLY A WARRANTY TO REPAIR OR REPLACE.

(e) YOU MAY ASSIGN THIS LIMITED WARRANTY TO A SUBSEQUENT PURCHASER OF YOUR HOME.

(F) NO REPRESENTATIVE OF INFILTRATOR HAS THE AUTHORITY TO CHANGE THIS LIMITED WARRANTY IN ANY MANNER WHATSOEVER, OR TO EXTEND THIS LIMITED WARRANTY.

CONDITIONS AND EXCLUSIONS

There are certain conditions or applications over which Infiltrator has no control. Defects or problems as a result of such conditions or applications are not the responsibility of Infiltrator and are NOT covered under this warranty. They include failure to install the EZset system in accordance with instructions or applicable regulatory requirements or guidance, altering the EZset system contrary to the installation instructions and disposing of chemicals or other materials contrary to normal EZset system usage.

The above represents the Standard Limited Warranty offered by Infiltrator. A limited number of states and counties have different warranty requirements. Any purchaser of an EZset system should contact Infiltrator's corporate headquarters in Old Saybrook, Connecticut, prior to such purchase to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of an EZset system.

INFILTRATOR systems inc.

4 Business Park Road
P.O. Box 768
Old Saybrook, CT 06475
860-577-7000 • Fax 860-577-7001
1-800-221-4436
www.infiltratorwater.com

SET01 0613ISI

Contact Infiltrator Water Technologies' Technical Services Department for assistance at 1-800-221-4436

SIM/TECH FILTER

Toll Free: 888-999-3290

Bristle Filter Instructions For STF-110 4" (Installation & Maintenance)

Instructions for installation in standard 4" outlet "Tee" of septic tank.

Installed Filter

- Orient the filter so that the wire handle faces opposite the discharge outlet.
- Push filter into top of "Tee" until the 90 degree wire handle touches the top of the "Tee". The filter is now "installed", as shown in the picture to the right.
- The flexibility of the STF-110 bristle filter allows it to be used in just about any situation. If you need help with a custom installation please call Sim/Tech Filter toll free at 888-999-3290.

Recommended maintenance schedule

For maximum protection, it is recommended that the filter be replaced annually. If not, it should be inspected at least once per year. The filter is capable of lasting three years under normal conditions. Such factors as garbage disposals, pets, laundry, etc. may cause the need for more frequent inspection or service.

Instructions for performing maintenance in standard 4" outlet "Tee" of septic tank.

STF-130 Maintenance Sleeve

- Before removing filter, one of two options must be performed. These options need to be performed to prevent any outflow of unfiltered effluent from the tank while the filter is removed.

  Option 1

  Insert a STF-130 maintenance sleeve (sold separately) with the handle coupling on the same side of the "Tee" as the outlet hole. Push the sleeve into the "Tee" until the handle coupling hits the top of the "Tee". Do not remove the sleeve until a filter has been put back in the "Tee".

  Option 2

  Have the tank pumped down by a professional septic service company.

- After performing one of the options above, remove filter by pulling up on the filter handle.
- Place the used filter in the provided plastic bag for proper disposal.
- Install a new replacement filter as described in the installation instructions at the top of the page.
- If a maintenance sleeve was used (option 1), remove the sleeve from the outlet "Tee".

Maintenance Sleeve partially inserted into "Tee"

U.S. Patent # 6,811,692


The STF-110 series
Effluent Filters
STF-110
4" dia.
It's Superior
Superior to slotted, uniform designs.
It's Flexible
Flexible bristle-design, is easily installed.
It's Versatile
Versatile - residential, commercial and industrial applications.
STF-110-6W
6" dia.
It's Economical
Economical - a fraction of the cost of inferior designs.
It's Easy
Easy to service or replace.
It's The Best
The best passive effluent filtration for the most common debris.
STF-110-7R
7" dia.
It's Simple
Simply the only choice in effluent filters.
STF-110-8B
8" dia.
SIM/TECH
FILTER
simple solutions for technical problems
www.simtechfilter.com - 888-999-3290

STF-110 series
Effluent Filers

- **Superior filtration** of the most common solids found in today's wastewater systems
- **Versatile design** has applications for residential, commercial and industrial systems and fit many different types of tees and housings
- **Flexible bristle-design** is simple to install and service, even in systems with limited access
- **Self-locking bristles** hold the filter firmly in place with no need for receivers or canisters and eliminate filter float-up
- **Debris separation area** naturally sorts solids according to size and mass for longer filter life
- **Allows biological maturing** necessary in wastewater treatment systems
- **Durable** enough to be serviced and economical enough to be replaced
- **Economical solution** for protecting and servicing all types of wastewater systems at a fraction of the cost of inferior designs

Designed after our proven STF-110 effluent filter that currently protects residential septic systems all over the world, the latest additions to this series of filters were designed with more demanding residential, commercial and industrial systems with larger housings and pre-cast tanks with built in square baffles in mind.

We achieve superior filtration of the most common solids found in today's wastewater systems with our non-uniform bristle design. This design is much more efficient than uniform / slotted designs which can pass larger more harmful debris into the system.

The flexible self-locking bristles make it simple to install and service, even in systems with limited access. They also hold the filter firmly in place with no need for receivers or canisters and eliminate filter float-up.

The filters employs a debris separation space which naturally sorts solids according to size and mass. This makes the filter function more efficiently and greatly increases its life-span. It also allows for biological maturing which is necessary in all wastewater treatment systems.

STF-110-7R in 4"-6" sanitary Tee(cut-a-way)

STF-110-7R in pre-cast septic tank with square baffle.

The STF-110 series filters use triangular polypropylene bristles wound together with a 316 stainless-steel core. This makes them durable enough to be serviced and economical enough to be replaced. This provides an economical solution for protecting and servicing all types of wastewater systems at a fraction of the cost of inferior designs.

STF-130 changing sleeve is required to block effluent flow while servicing without the need to pump down the tank.

STF-110 in 4" sanitary Tee (cut-a-way view)

Solutions We offer free CAD detail drawings in DXF format to cover our complete product line.

For the protection and performance of wastewater systems by

proudly made in the USA

SIM/TECH FILTER

www.geg-simtech.com

888-999-3290

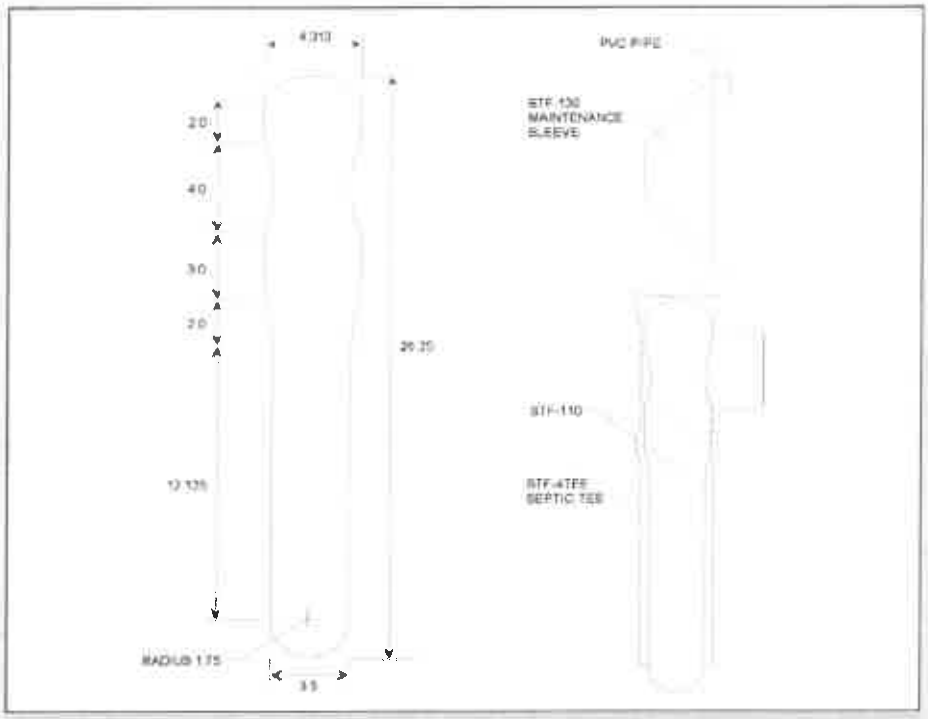
US Patent # 6,811,692

STF-110 SIMTECH

septic tank bristle filter 4" yellow

FEATURES

- Easy, affordable solution for servicing septic tanks
- Designed with non-directional bristles for unrestricted flow of effluent
- Allows biological maturing and sloughing to maximize septic tank efficiency
- Provides well over ½ mile of filtration media with over 319 cu. in. of open area to eliminate clogging
- 2,215 sq. in. of filtering surface allow a flow rate of over 1200 GPD, filtering to 1/16" diameter
- Filtering surface is achieved with unique triangular bristle that more than doubles the filtering surface, with no uniform holes or slots to plug
- 90 degree handle for easy installation and removal
- Adapts to all types of 4" pipe
- Self-locking bristles hold the filter firmly in place, eliminating 'filter float up'
- Flexible design makes it easy to install in hard to reach places and makes replacing the filter a breeze
- Constructed of polypropylene bristles, wound together with a 316 S.S. core
- The filters designed shape creates a debris separation space which naturally sorts debris according to size and mass, ensures even filter usage for a long lifespan and maximizes circular flow



Order part No. STF-110
STF-130

CAD detail drawing available in DXF format

RELATED PRODUCTS

STF-110-6W page 4
STF-110-7R page 4
STF-110-8B page 4
STF-130 page 14
STF-4TEE page 14

U.S. Patent # 6, 811, 692

Toll Free 888-999-3290 Office 231-582-1020 Fax 231-582-7324 Email simtech@freeway.net Web www.gag-simtech.com

THIRD PARTY VERIFICATION
GARY B. JOHNSON
MICHIGAN # 32831
WISCONSIN # E-25985
MINNESOTA # 41217

SIM/TECH FILTER

NEW STF-110 DISPOSABLE SEPTIC TANK FILTER
THIRD PARTY VERIFICATION

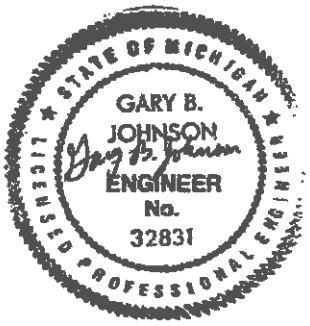
The Disposable Septic Tank Filter is constructed as a twisted-in-wire brush with 26" long brush body, ¼" tip and 2 ¾" long handle end with 90 degree bend. Brush body will have a major diameter of 4.313" for a length of 9 ½" starting ½" from the 90 degree handle bend, then will transition down to 3 ½" diameter over the next 2 ½" and held at 3 ½" diameter for the next 14".

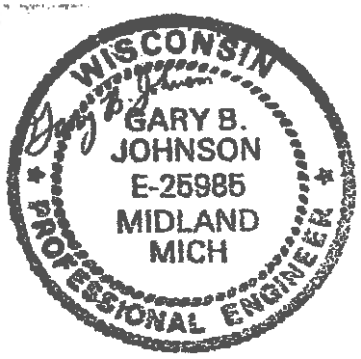
There will be a scallop cut into the O.D. in the major diameter beginning 2 ½" from the top, transitioning down to 3 ½" over the next 2", and then transitioning up to the major diameter over the next 2".

The stem will be 11-gauge stainless steel and the fill material will be .012 yellow polypropylene.

The filter has a total of 2,962 lineal feet of bristle equaling 35,544 lineal inches of bristle. By calculating the total length x the total perimeter of Sim/Tech's uniquely shaped bristle, it gives us a **filtering surface of 2,215 square inches.**

Volume of a 4"x26" Septic Tee	326.7 cubic inches
Volume of the STF-110 Filter	4.265 cubic inches
Volume as open for fluid	322.435 cubic inches





JRi

THIRD PARTY VERIFICATION OF FILTRATION ON THE STF-110 AND THREE OTHER GRAVITY SEPTIC TANK FILTERS

- Test was checking for filtering qualities with particulate that could be found in septic tank effluent
- This test used five types of particulate added to a clean tank
- The five types of particulate were hair, seeds, tissue paper, lint, and chain saw chips (see table A below)
- Test tank was riled manually every five minutes while performing tests to represent a large influx of water
- Water was introduced into the test tank at 210 gallons per hour
- Test was run to a 2" head height above outlet flow
- Recorded length of time to achieve a 2" head height (see table B below)
- Recorded what was caught in a 1500 micron sieve during the total run time (see table B below)
- Recorded what was caught in a 600 micron sieve below the 1500 micron sieve during total run time (see table B below)
- Recorded particulate caught while changing filters 15 minutes after ending test using manufacturers recommended instructions (see table B below)
- Recorded particulate removed with filters themselves (all filters were removed slowly) (see table B below)
- All particulate was recorded in grams using a OHAUS Scout II Scale (Serial #BJ380398) with capacity 400 times 0.1g (purchased scale 11/17/01)

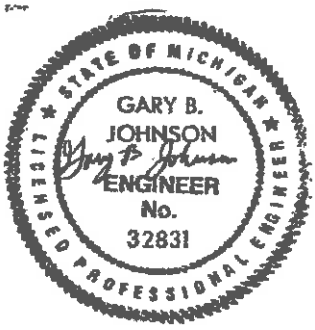


TABLE A	Grams
Human hair	2
Horse hair	2
Dog hair	1
Cat hair	1
Tomato seeds	2
Pepper seeds	2
Cucumber seeds	2
Dill seeds	2
Charmin tissue paper	2
Scott tissue paper	2
Northern tissue paper	2
Lint	2
Chainsaw chips	4

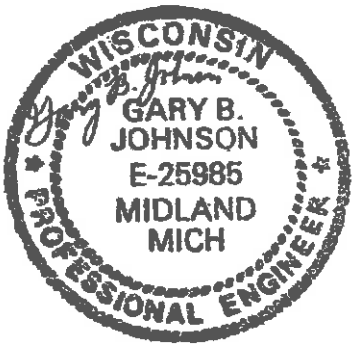


TABLE B	Sim/Tech	Tuff-Tite	Zabel	Zoeller
Time to achieve 2" head height	1 hr. 40 min.	7 min.	6 min.	* 2 hrs.
Particulate caught in 1500 micron sieve	0	0	0	0
Particulate caught in 600 micron sieve	0	0.2	0.3	1.2
Particulate caught while changing filter	0	0.3	0	0
Particulate contained within or on filter itself	15.0	6.3	2.2	2.3

*Ended test at 2 hours, total head height was at 1 ¾"

Note: All filters except Sim/Tech caught seeds in 1500 micron sieve but was not recordable in 1/10g scale

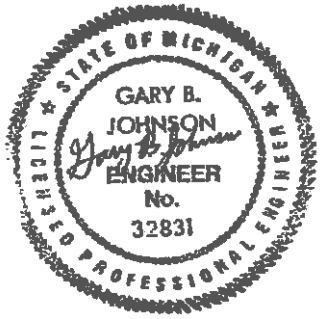
JRi

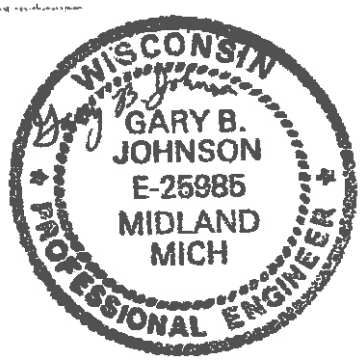
THIRD PARTY VERIFICATION OF FLOW RATES ON THE STF-110 AND THREE OTHER GRAVITY SEPTIC TANK FILTERS

- Test done with clean water and no particulate
- Filters placed in a standard outlet tee of S & D type with a 17" tailpiece to outlet level
- Test tank was a plastic 55 gallon drum
- There was an accurate method to measure head height above outlet level
- Test was done for a ½" and 1" head height above outlet level
- All filters tested using the above conditions

FILTER FLOW RATES

	Sim/Tech	Tuff-Tite	Zabel	Zoeller
½" head height above outlet flow	1, 800 GPD	1, 440 GPD	1, 195 GPD	900 GPD
1" head height above outlet flow	5, 040 GPD	4, 680 GPD	4, 858 GPD	1, 800 GPD





It is my opinion that the Sim/Tech filter will prove to be a superior septic tank filter because of it's basic design; bristles to catch any "paper like" debris on the outside surface (guided there because of the bristle's bending at the ends under pressure of the flow). A dead zone near the center to collect small particles as they fall out of the flow. Plus the incalculable water paths through, and around, the filter fibers.

Gary B. Johnson P.E.
363 Silver Creek Rd
Petoskey, Mi 49770

POLYLOK™ Inc.
Innovations in Precast, Drainage & Wastewater Products
Zabel® A Division of Polylok Inc.

PL-68 Effluent Filter

PL-68 Filter and Tee

PL-68 is much more than just an effluent filter. The housing can also be used as an inlet baffle (tee) or an outlet baffle. The housing is designed to accept Polylok's snap in gas deflector to deflect gas bubbles away from the tee and to keep the solids in the tank.

Features:

- Offers 68 linear feet of 1/16" filter slots, which significantly extends time between cleaning.
- Accepts 3/4" PVC handle.
- Locks in any 360° position when used with PL-68 Tee.
- PL-68 Housing can be used as an inlet or outlet tee.
- Gasket prevents bypass.

PL-68 Installation:

Ideal for residential waste flows up to 800 gallons per day (GPD). Easily installs in any new or existing 4" outlet tee.

1. Locate the outlet of the septic tank.
2. Remove the tank cover and pump tank if necessary.
3. Glue the filter housing to the outlet pipe, or use a Polylok Extend & Lok if not enough pipe exists.
4. Insert the PL-68 filter into tee.
5. Replace and secure the septic tank cover.

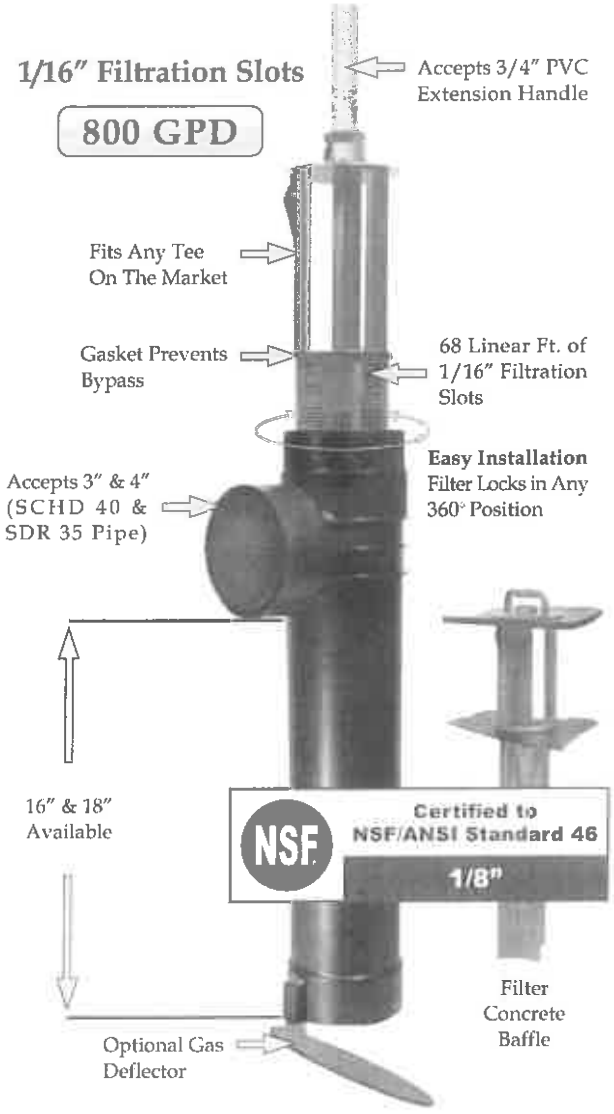
PL-68 Maintenance:

The PL-68 Effluent Filter will operate efficiently for several years under normal conditions before requiring cleaning. It is recommended that the filter be cleaned every time the tank is pumped, or at least every three years.

1. Do not use plumbing when filter is removed.
2. Pull PL-68 out of the tee.
3. Hose off filter over the septic tank. Make sure all solids fall back into septic tank.
4. Insert filter back into tee/housing.

Related Products:

PL-68 Filter Concrete Baffle
Extend & Lok™

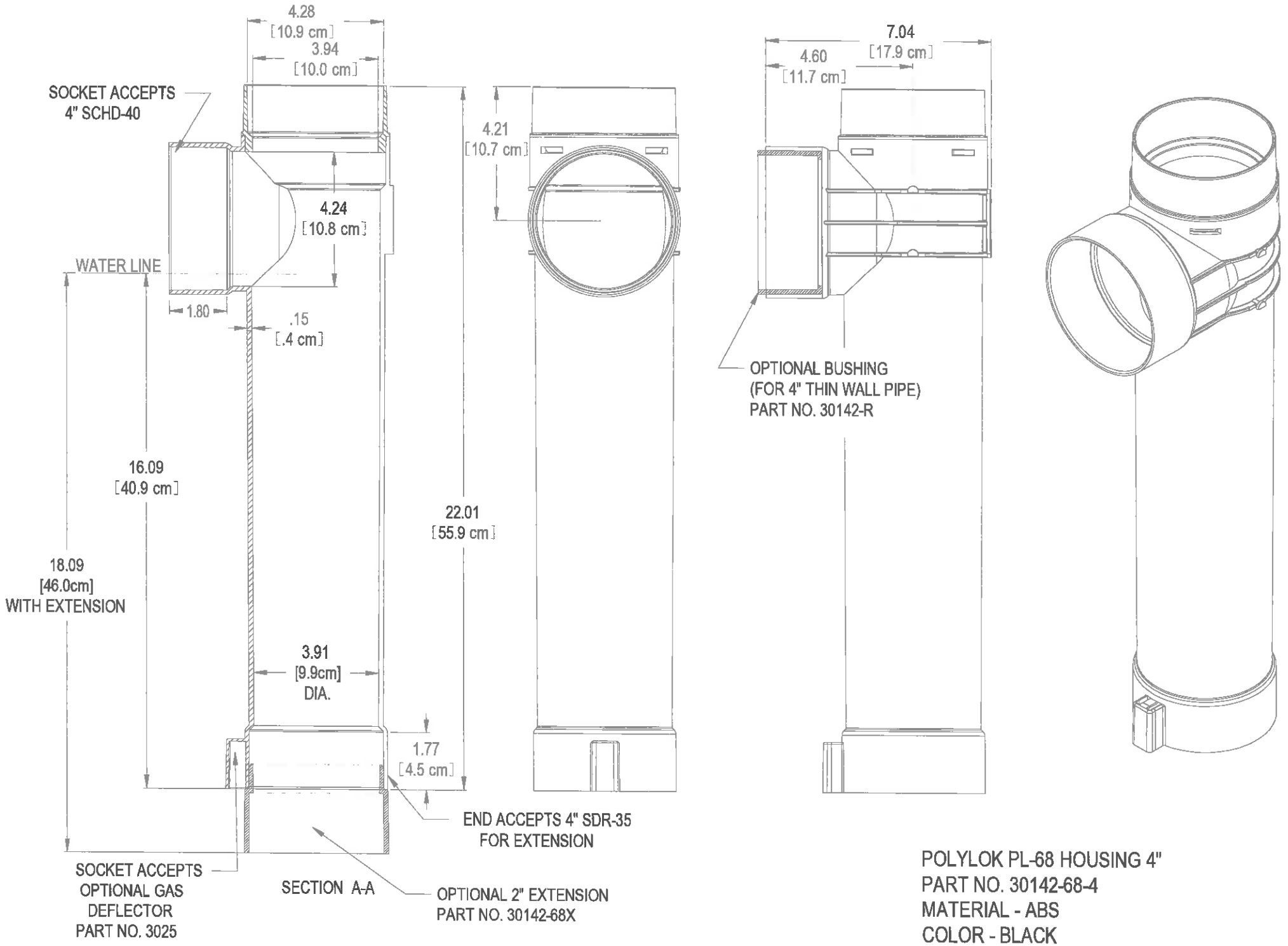


Extend & Lok™ Easily installs into existing tanks.

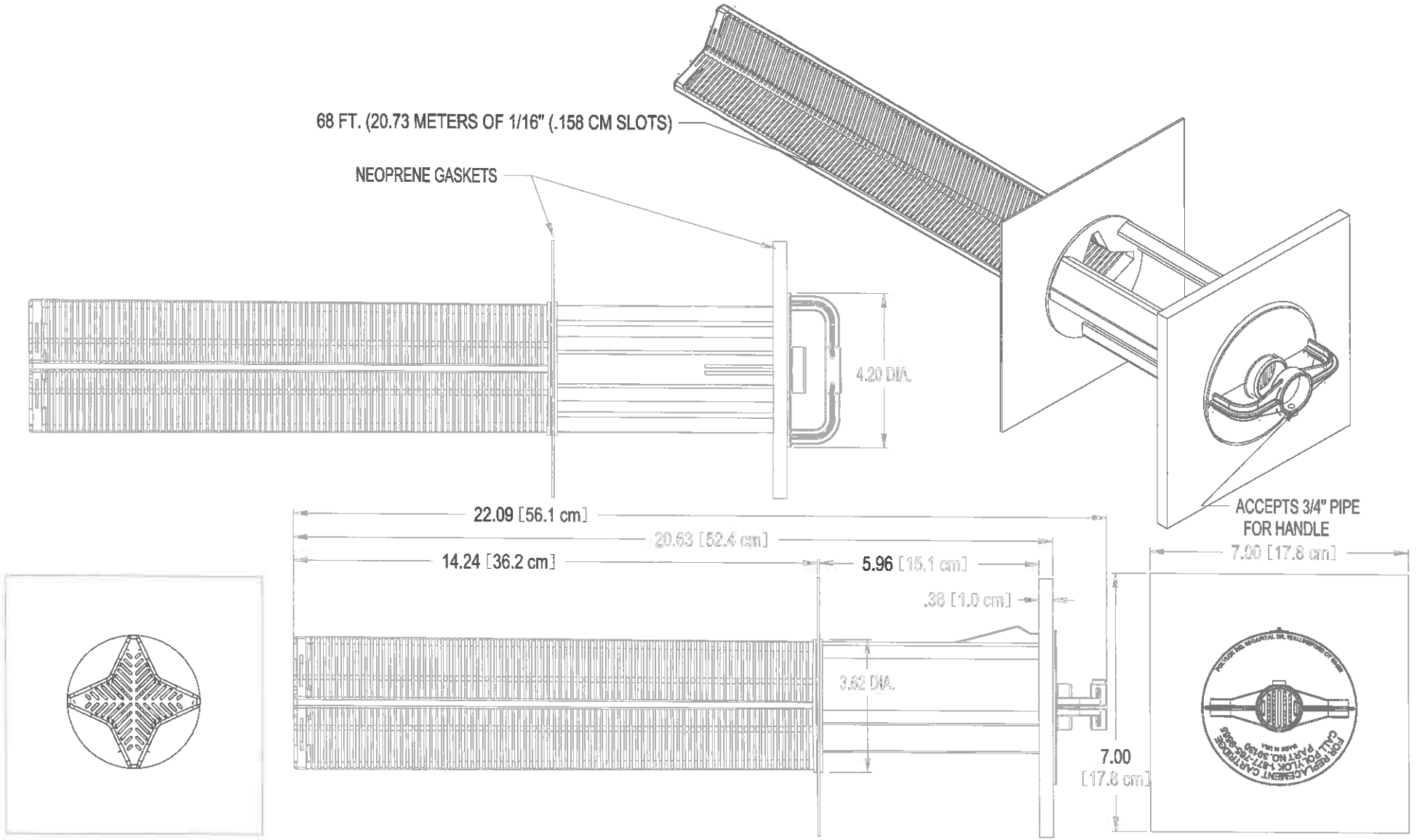
Spacer Bushing 4" SCHD 40 to SDR 35

Spacer Bushing 4" SCHD 40 to 110mm Pipe

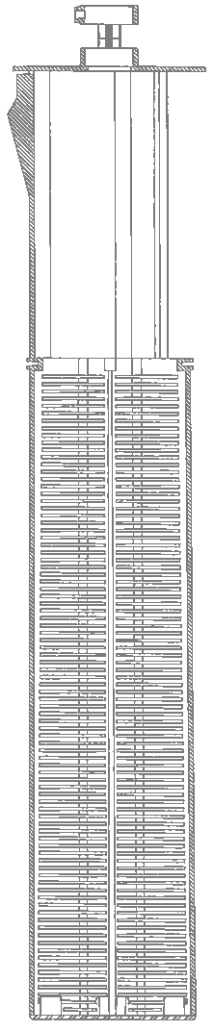
2" Extender



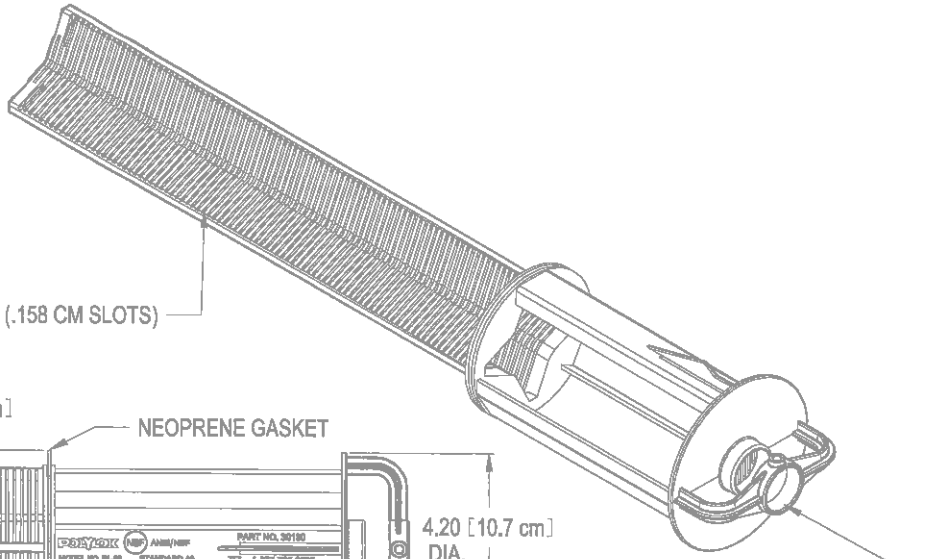
POLYLOK PL-68 HOUSING 4"
PART NO. 30142-68-4
MATERIAL - ABS
COLOR - BLACK

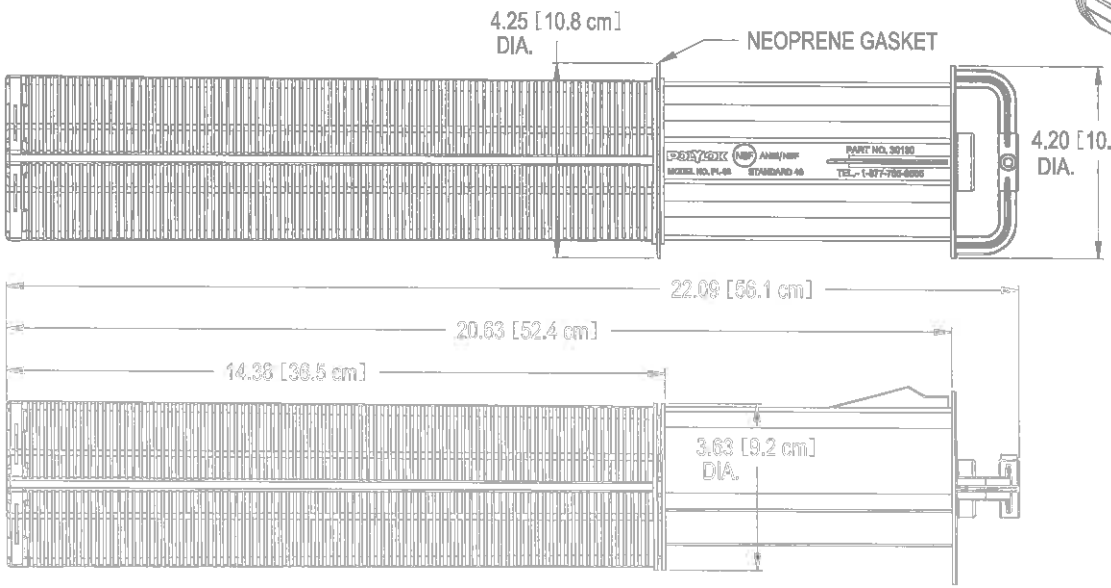


PL-68 FILTER CARTRIDGE (FOR USE IN A CONCRETE BAFFLE)
PART NO. - 30130-CB
MATERIAL - POLYPROPYLENE



SECTION A-A





PL-68 FILTER CARTRIDGE
PART NO. - 30130
MATERIAL - POLYPROPYLENE
COLOR - RED
TOTAL FILTER AREA - 1.1 SQ. FT.(1021 SQ. CM)

The Public Health and Safety Organization

NSF Product and Service Listings

These NSF Official Listings are current as of **Wednesday, April 06, 2016** at 12:15 a.m. Eastern Time. Please contact NSF International to confirm the status of any Listing, report errors, or make suggestions.

Alert: NSF is concerned about fraudulent downloading and manipulation of website text. Always confirm this information by clicking on the below link for the most accurate information: http://info.nsf.org/Certified/Wastewater/Listings.asp?Standard=046&Company=79580&

NSF/ANSI 46
Evaluation of Components and Devices Used in Wastewater Treatment Systems

Polylok Inc.
3 Fairfield Boulevard
Wallingford, CT 06492
United States
877-765-9565
203-265-6340

Facility : Cheshire, CT

Septic Tank Effluent Filters[1]

PL-122	PL-250	PL-525	PL-625	PL-68

[1] Performance tested using bead size 0.338 cm ± 0.005 cm (1/8" ± 0.002"). Meets the full requirements of NSF/ANSI 46-2010.

Facility : Evansville, IN

Septic Tank Effluent Filter Components[1]

A101-12x20	A101-12x28	A101-12x36	A101-8x18	A101-8x26
A101-8x32	A1801-4x18[4]	A1801-4x22[4] [5]	A301-12x20	A301-12x28
A301-12x36	A301-8x18	A301-8x26	A301-8x32	

[1] Septic Tank Effluent Filter Components are exempt from bearing the NSF Component Mark and shall bear the NSF Unit Mark.

[4] Filter cartridges Certified in ABS and PVC materials.

[5] Failure sensing and signaling equipment of this product not evaluated by NSF.

Septic Tank Effluent Filters[2] [3]

A100-12x20	A100-12x20-VC	A100-12x20/BALL	A100-12x28-VC	A100-12x36-VC
A100-8x18-VC	A100-8x26-VC	A100-8x32-VC	A1800-4x18-30142-68	A1800-4x18-VT-B35
A1800-4x18-VT-B40	A1800-4x18-VTF-B35	A1800-4x18-VTF-B40	A1800-4x22-30142-68	A1800-4x22-VT-B35
A1800-4x22-VT-B40	A1800-4x22-VTF-B35	A1800-4x22-VTF-B40	A300-12x20	A300-12x20-VC
A300-12x20/BALL	A300-12x28-VC	A300-12x36-VC	A300-8x18-VC	A300-8x26-VC
A300-8x32-VC	A600-12x20	A600-12x20/BALL	A600-12x28-VC	A600-12x36-VC
A600-8x18-VC	A600-8x26-VC	A600-8x32-VC		

[2] Suffix VC denotes a filter cartridge with Versa-Case assembly.

[3] Performance tested using bead size 0.338 cm ± 0.005 cm (1/8" ± 0.002"). Meets the full requirements of NSF/ANSI 46-2010.

NOTE: All filters come Smartfilter ready.

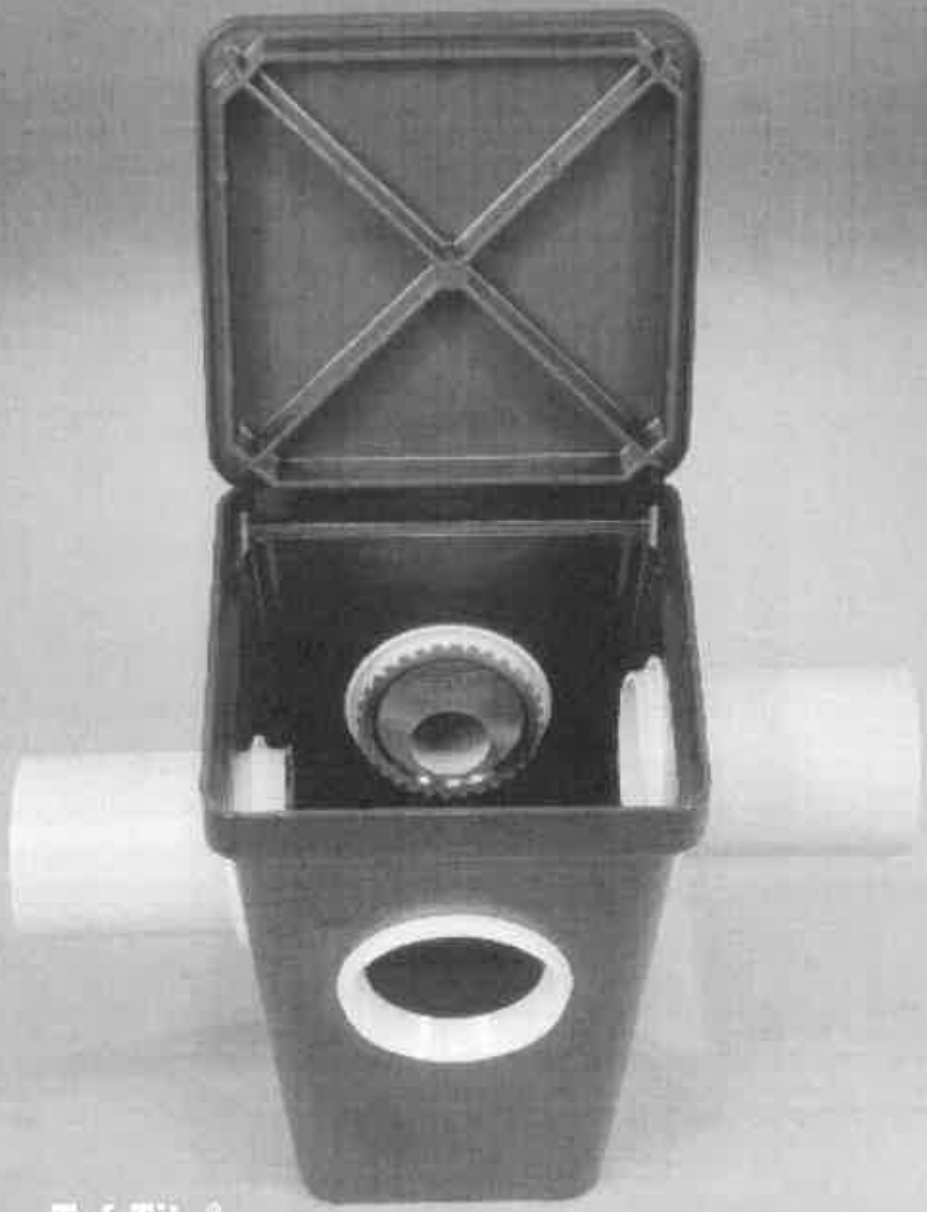
Number of matching Manufacturers is 1

Number of matching Products is 52

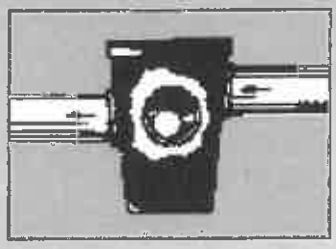
Processing time was 0 seconds

TUF-TITE®

4-Hole Distribution Box



Tough Problem
Providing a simple, reliable, and permanent means for dividing septic tank effluent flow.



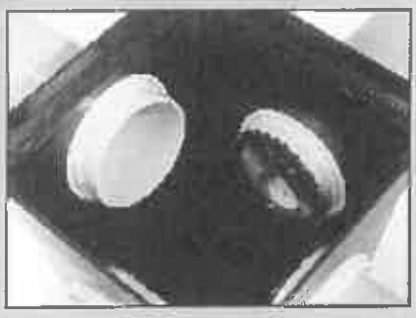
TUF-TITE Solution
A strong, stable, permanent, non-corrosive Tuf-Tite Distribution Box, with a Tuf-Tite Speed Leveler in each outlet.

Tuf-Tite® Distribution Box. THE TOUGH ONE!

- **Injection molded HDPE**
- **Non-corrosive**
- **Simple to install**
- **Easy to level**

In a septic environment, no other material can match High Density Polyethylene in delivering a lifetime of trouble-free service. Tuf-Tite Distribution Boxes are injection molded, using only premium HDPE which contains no fillers or foam.

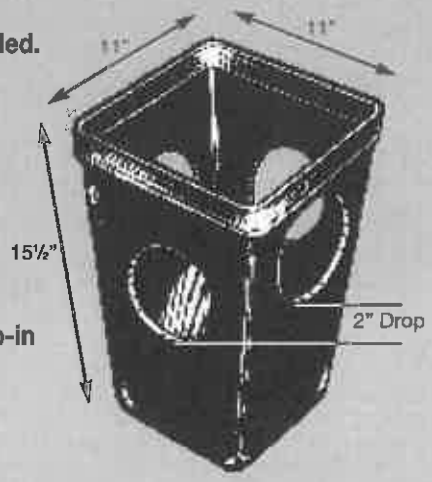
Snap-in pipe seals
They're patented. Simply insert your PVC pipe and push it through the flexible, polyethylene Tuf-Tite seal. Pipes fit watertight. Installation couldn't be easier.

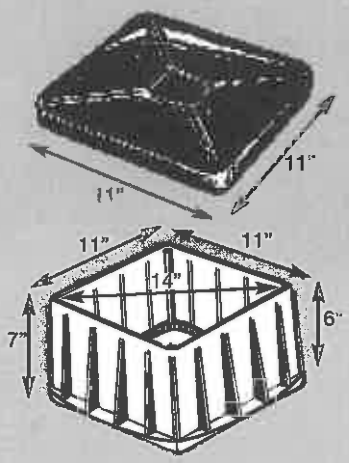


They're permanent
Unlike cement-based pipe grout, Tuf-Tite seals will not crack or corrode in septic conditions. They stay pliable and watertight permanently.

TUF-TITE 4-Hole Distribution Box 4HD2

- **Injection molded. Exceptionally strong.**
- **HDPE is non-corrosive in a septic environment.**
- **Patented snap-in pipe seals simplify installation.**





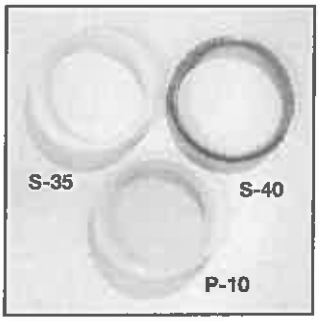
Interlocking Lid. Heavy-duty HDPE Lid is ribbed for added strength and rigidity. Slotted sides interlock on the Distribution Box to assure a tight fit.

The 4HD2 Distribution Box comes complete with a Regular Lid or an Inspection Port Lid, and 5 snap-in fittings of your choice.

Model B1 Riser. For series B1 Box. Stackable HDPE Risers extend to grade in 6" increments. Accept 11" x 11" lids and grates.

INSTALLATION IS JUST THIS SIMPLE

1. Position the Distribution Box on level virgin soil. **Do not place box on a concrete slab.**
2. Install the inlet pipe and outlet pipes. Be sure the bottoms of all pipes rest on virgin soil.
3. Level the Distribution Box and all pipes as needed.
4. Backfill the pipes to within two feet of the Distribution Box. Recheck the level of the box, then backfill up to the top lid ridge.
5. Install and adjust Tuf-Tite Speed Levelers.
6. Place lid on the Distribution Box and finish backfilling.



Choice of Fittings

S-35 Pipe Seal, for:
- Sewer and Drain
- SDR 35
- ASTM 3034
- Thin Wall
- 1500 Lb. Crush

S-40 Pipe Seal, for:
- Schedule 40
- 4" Corrugated

P-10 Plug, for unused holes

Choice of Lids

Regular Lid. Molded of rugged HDPE.

Inspection Port Lid. For easy access and inspection. Models available to accept either 4" or 6" extension pipes.

Tuf-Tite Speed Levelers™

Control the flow of effluent from the Distribution Box. Simply insert a Speed Leveler into each outlet pipe. Rotate each Speed Leveler so the flow is distributed as desired. Available for 3" or 4" PVC pipe.

TUF-TITE®

Drainage and Septic Products

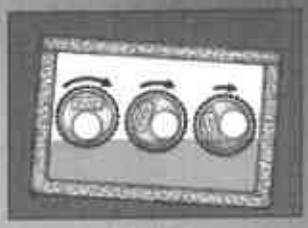
Tuf-Tite® Corporation
1200 Flex Court
Lake Zurich, Illinois 60047

A full line of innovations for better septic systems

Form 4HD2-3. Printed in USA

TUF-TITE® Speed Levelers™

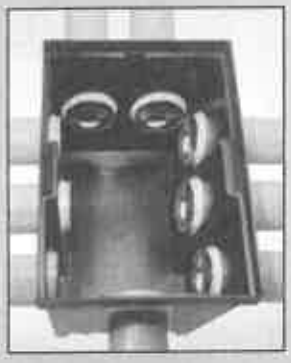
Tough Problem
The distribution box is out of alignment. Effluent does not flow equally into the outlet pipes.



TUF-TITE Solution
Insert Tuf-Tite Speed Levelers into the outlet pipes. Simply adjust each Leveler so the flow is equally distributed.

There Is No Faster, Easier, Better, Or More Economical Way To Equalize Distribution Box Flow

There's no need to dig up and re-level tilted distributions boxes. Or to struggle with makeshift pipe dams. Now, with Tuf-Tite Speed Levelers, you can do the job in a fraction of the time, for a fraction of the cost.



For all size and shape concrete distributions boxes, as well as polyethylene boxes from Tuf-Tite.

For 3" or 4" PVC pipes

Speed Levelers are precision engineered to fit commonly used Schedule 40 Thick-Wall, SDR 35 (3034), and 2729 Thin-Wall PVC pipes. Simply press the Levelers into the pipe ends. They fit water-tight. No tools are necessary.

Non-corrosive Polyethylene

Tuf-Tite Speed Levelers are molded of specially formulated polyethylene that is highly chemical resistant. They are actually more corrosion resistant than the PVC pipe in which they're used.

They're hand-adjustable

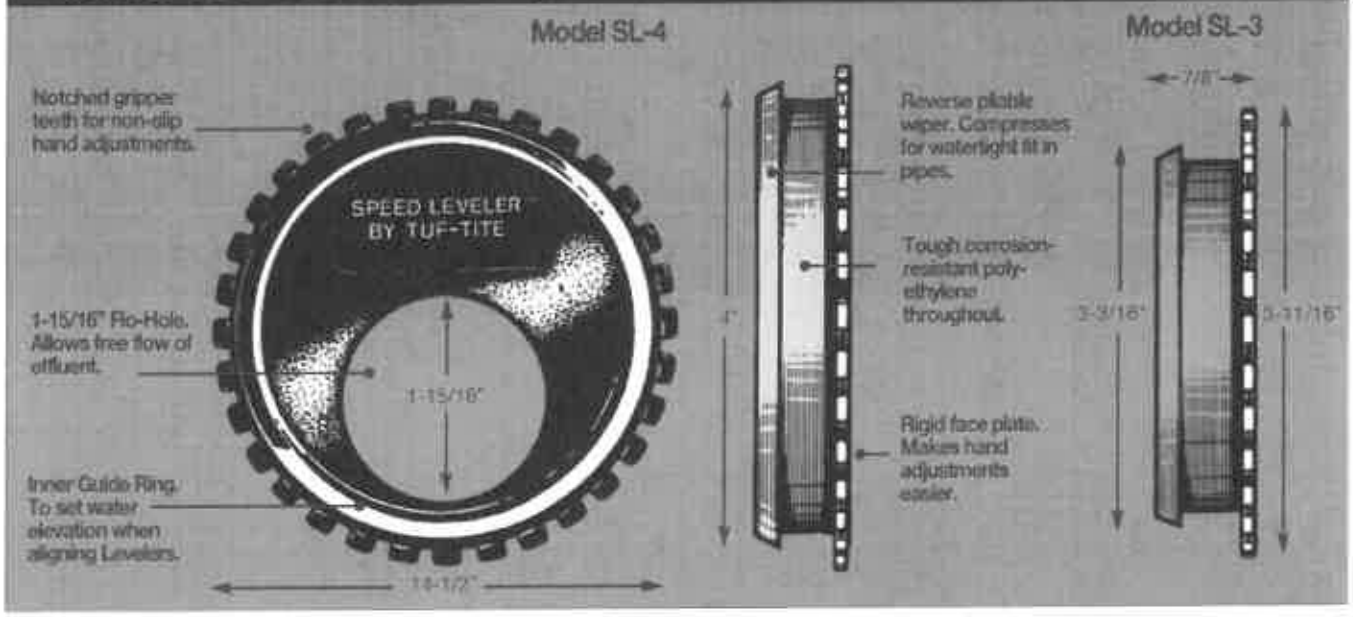
Easily rotate Speed Levelers by hand. The Flo-Hole can be positioned to admit effluent at the precise level you desire. The range of settings is infinitely variable. And Levelers can be reset easily, anytime.

Tested. Proved. Preferred

Test after test show that Tuf-Tite Speed Levelers significantly improve distribution in gravity-flow septic systems. There simply is no other way this can be accomplished as effectively, quickly, easily, or economically.

TUF-TITE Speed Levelers™ SL-4

One size fits all 4" PVC pipe. Model SL-3, for 3" PVC pipe, also available.



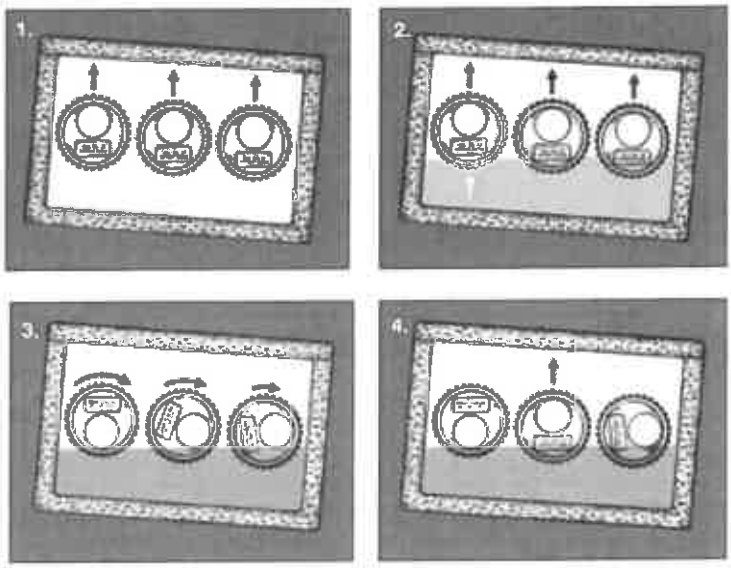
HOW TO SET SPEED LEVELERS

1. Insert a Speed Leveler into each outlet pipe inside the Distribution Box. Rotate each Leveler until the Flo-Hole is at the 12 o'clock position.

2. Start filling the Distribution Box with water. Stop when the water level touches the "Inner Guide Ring" of the highest Speed Leveler.

3. Rotate all the Speed Levelers until each of the Flo-Holes is aligned just above the water level. Slowly add more water to see if it enters all the Flo-Holes simultaneously. Make fine-tune adjustments if necessary.

4. You can alternate fields, or rest failed lines anytime. Simply rotate the Leveler on the appropriate pipe until the Flo-Hole is at the 12 o'clock position to stop the flow.



TUF-TITE

Drainage and Septic Products

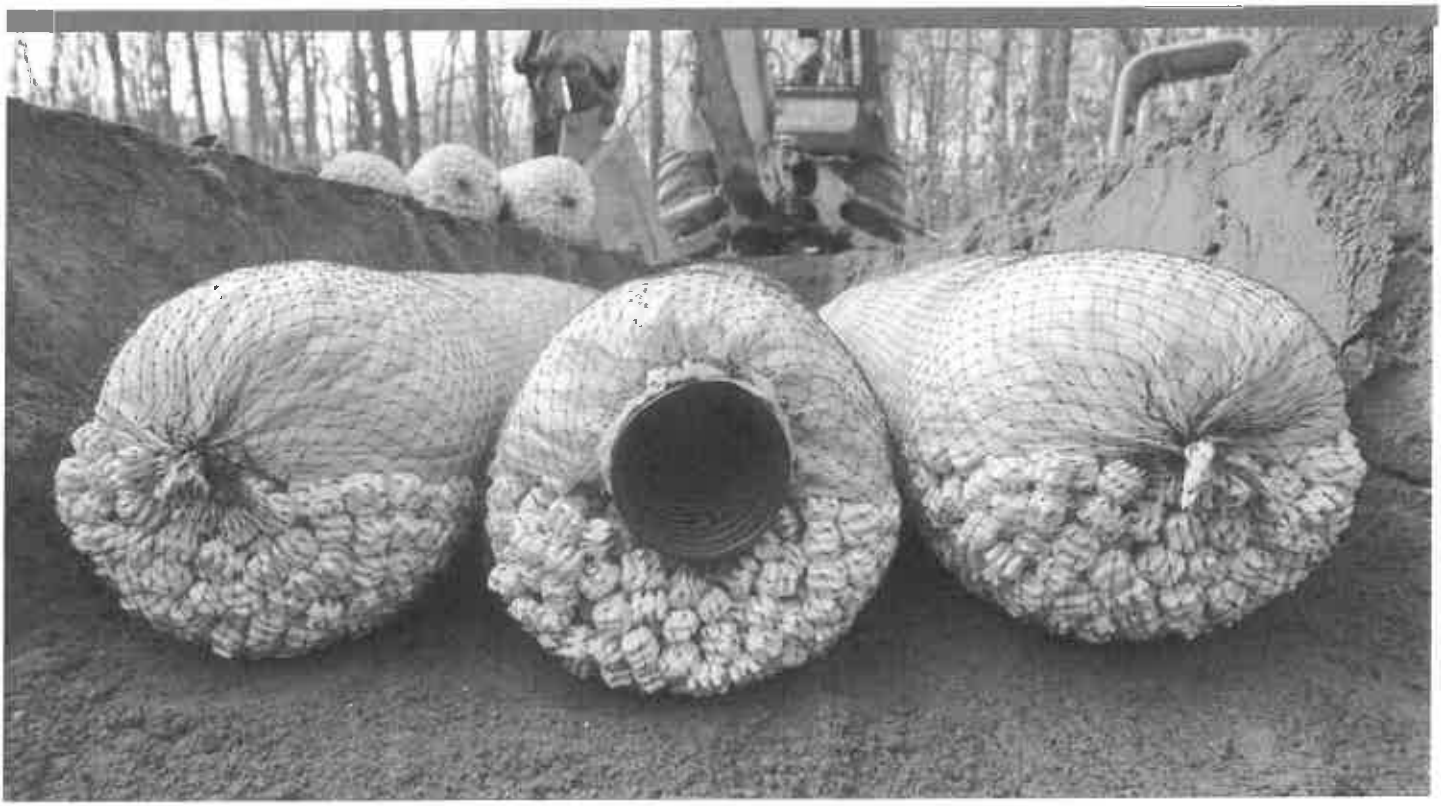
Tuf-Tite® Corporation
500 Capital Drive
Lake Zurich, Illinois 60047

Water-tight Lids and Risers by Tuf-Tite®

Form SL4-4.
SL-5M Printed in USA

EZflow by INFILTRATOR

GEOSYNTHETIC AGGREGATE TECHNOLOGY



EZflow by Infiltrator is an environmentally friendly replacement to traditional stone and pipe drainfields using an engineered geosynthetic aggregate modular design. The EZflow system is designed to improve infiltration performance by eliminating the fines associated with crushed stone, and reducing compaction and embedment associated with stone. Preassembled units include a 3" or 4" perforated pipe surrounded by aggregate and held in place with a durable high-strength netting. This product comes in easy-to-contour 5' and 10' lengths and in diameters of 7, 8, 9, 10, 12, 13, or 14 inches.

Lightweight expanded polystyrene construction offers structural integrity and resists compaction. Engineered flow-channels increase void space creating improved water flow and greater storage.

Compared with stone and pipe, benefits include:

- Always clean and free of fines
- Bundles are quick to install, saving costs on heavy machinery and labor
- Modular construction allows configurations to match trench dimensions for most system shapes and sizes
- Engineered for optimal storage and absorption efficiencies
- Ability to contour along sloped sites and around trees or landscaping
- Lightweight system is perfect for repairs and tight job sites
- Easily hand-carried into position reducing time and labor
- 5' or 10' lengths with simple snap, internal couplers
- Easier cleanup at the job site with the elimination of stone
- Manufactured from recycled materials rather than a mined natural resource
- A wide variety of diameters and configurations to meet any installation professional's needs
- Approved in many jurisdictions with an increased efficiency rating, reducing drainfield size
- Backed by the leader in the onsite wastewater industry

INFILTRATOR®
water technologies

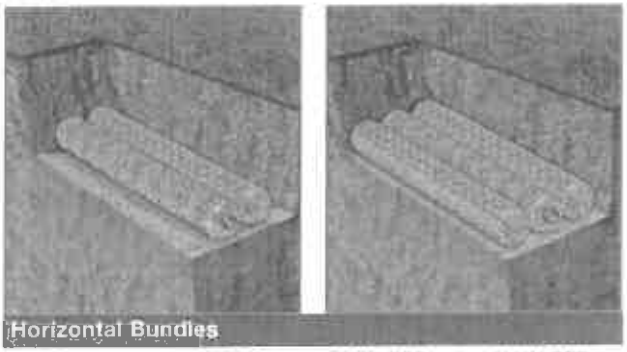
Bundle System Configurations: Available in 7", 8", 9", 10", 12", 13" and 14" diameter bundles.

Single Bundle

0701P-GEO 1201P-GEO
0801P-GEO 1401P-GEO
1201P-GEO 1801P-GEO
1001P-GEO

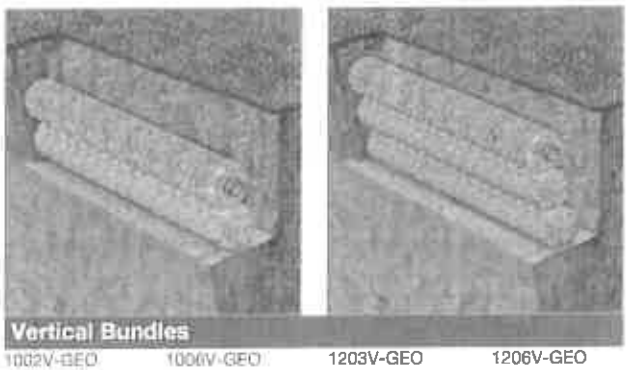
Triangular Bundle

1003T-GEO 1303T-GEO
1203T-GEO 1403T-GEO



Horizontal Bundles

0705H-GEO 1303H-GEO 1206H-GEO 1402H-GEO
0904H-GEO 1203H-GEO 1303H-GEO 1802H-GEO
1002H-GEO 1203H-GEO



Vertical Bundles

1002V-GEO 1006V-GEO 1203V-GEO 1206V-GEO
1003V-GEO 1202V-GEO 1204V-GEO 1402V-GEO
1004V-GEO

Notes:

1. Other systems include 10" and 12" bed systems. Bed size will dictate the number of bundles.
2. System dimensions are dependent upon bundle diameter and configuration.
3. LLP is for "Low Pressure Pipe" in which a pressurized distribution pipe is field installed within the corrugated pipe.
4. Internal pipe and couplings meet the requirements of ASTM F405.
5. Bundles are also available without geotextile between the netting and synthetic aggregrate.

INFILTRATOR WATER TECHNOLOGIES STANDARD LIMITED WARRANTY

(a) The structural integrity of each EZflow by Infiltrator expanded polystyrene drainfield system and other accessories manufactured by EZflow by Infiltrator ("Units"), when installed and operated in a leachfield of an onsite septic system in accordance with Infiltrator's instructions, is warranted to the original purchaser ("Holder") against defective materials and workmanship for one year from the date that the septic permit is issued for the septic system containing the Units; provided, however, that if a septic permit is not required by applicable law, the warranty period will begin upon the date that installation of the septic system commences. To exercise its warranty rights, Holder must notify Infiltrator in writing at its Corporate Headquarters in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect. Infiltrator will supply replacement Units for Units determined by EZflow by Infiltrator to be covered by this Limited Warranty. EZflow by Infiltrator's liability specifically excludes the cost of removal and/or installation of the Units.

(b)THE LIMITED WARRANTY AND REMEDIES IN SUBPARAGRAPH (a) ARE EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE UNITS, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE

(c) This Limited Warranty shall be void if any part of the EZflow system is manufactured by anyone other than EZflow by Infiltrator. The Limited Warranty does not extend to incidental, consequential, special or indirect damages. Infiltrator shall not be liable for penalties or liquidated damages, including loss of production and profits, labor and materials, overhead costs, or other losses or expenses incurred by the Holder or any third party. Specifically excluded from Limited Warranty coverage are damage to the Units due to ordinary wear and tear, alteration, accident, misuse, abuse or neglect of the Units; the Units being subjected to vehicle traffic or other conditions which are not permitted by the installation instructions; failure to maintain the minimum ground covers set forth in the installation instructions; the placement of improper materials into the system containing the Units; failure of the Units or the septic system due to improper siting or improper sizing, excessive water usage, improper grease disposal, or improper operation; or any other event not caused by Infiltrator. This Limited Warranty shall be void if the Holder fails to comply with all of the terms set forth in this Limited Warranty. Further, in no event shall Infiltrator be responsible for any loss or damage to the Holder, the Units, or any third party resulting from installation or shipment, or from any product liability claims of Holder or any third party. For this Limited Warranty to apply, the Units must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and Infiltrator's installation instructions.

(d) No representative of Infiltrator has the authority to change or extend this Limited Warranty. No warranty applies to any party other than the original Holder.

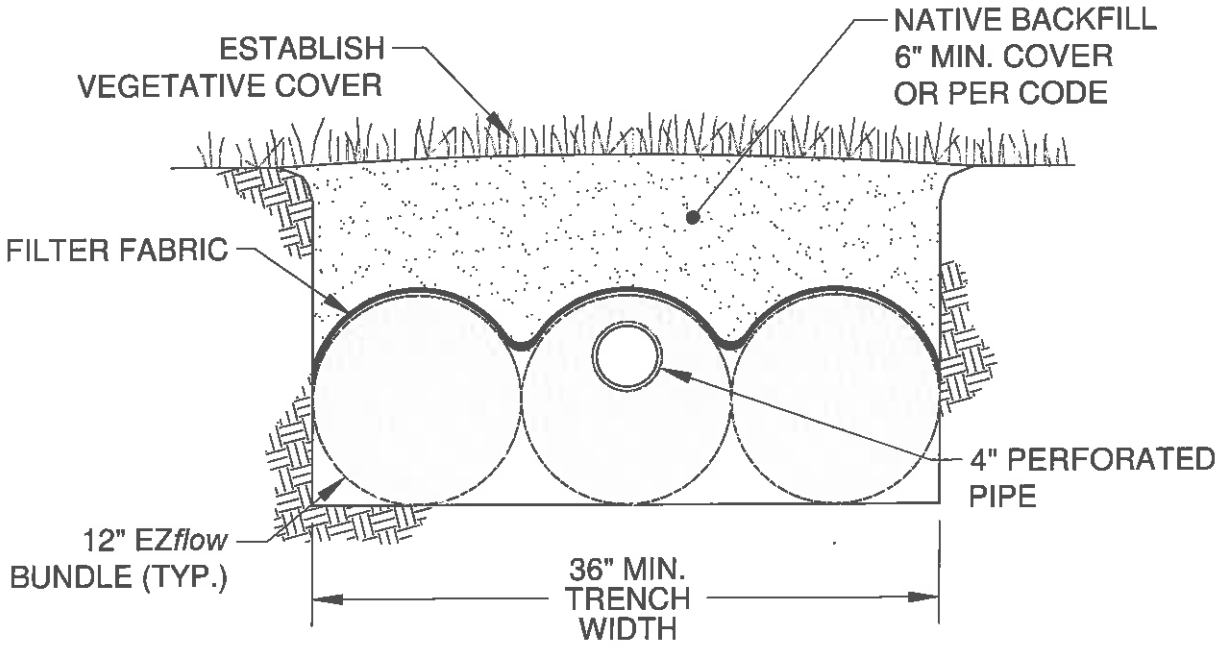
The above represents the Standard Limited Warranty offered by Infiltrator. A limited number of states and counties have different warranty requirements. Any purchaser of Units should contact Infiltrator's Corporate Headquarters in Old Saybrook, Connecticut, prior to such purchase, to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of Units.

INFILTRATOR®
water technologies

4 Business Park Road
P.O. Box 768
Old Saybrook, CT 06475
860-577-7000 • Fax 860-577-7001
1-800-221-4436
www.infiltratorwater.com

Contact Infiltrator Water Technologies' Technical Services Department for assistance at 1-800-221-4436

EZflow 1203H - GEO



NOTE:
PRODUCT CONFIGURATION AND INSTALLATION DEPTH MUST COMPLY WITH APPLICABLE REGULATORY REQUIREMENTS.

EZflow by INFILTRATOR

INFILTRATOR SYSTEMS INC.
4 Business Park Rd. Old Saybrook, CT 06475
(800) 221-4436

EZflow 1203H - GEO

Drawn by: EMB		Date: 08/07/2013
Scale: NOT TO SCALE	Checked by: DFH	Sheet: 1 of 1

Q:TECHNICAL RESOURCES NEW/PRODUCTS/EZ Flow/1203H - GEO

NORTH CAROLINA DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SECTION
ON-SITE WATER PROTECTION BRANCH

ACCEPTED WASTEWATER SYSTEM APPROVAL

Accepted Wastewater System Approval Number: AWWS-2005-02-R6

Issued To: EZflow, LP, a wholly owned subsidiary of Infiltrator Water Technologies, LLC
PO Box 768
Old Saybrook, CT 06475
800-221-4436; Fax: 860-577-7001
www.ezflowlp.com

Contact: David Lentz, P.E.

For: "EZflow by Infiltrator" Bundled Expanded Polystyrene Synthetic Aggregate Units (EZ1203H and EZ1203H-GEO)

Approval Date:		
	April 2, 2005	Accepted Status Granted for Model EZ1203H
	February 6, 2008	Addition of EZ1203H-GEO and 5-foot units
	August 18, 2010	Addition of 3-foot and 7-foot units
	May 1, 2012	Clarification of Approval Language
	August 15, 2012	Addition of Sizing for LTARs Greater Than 1.0 gpd/sq ft
	February 20, 2015	Elimination of Particle Density Specification
	August 21, 2015	Add alternating dual-field systems, update trench levelness requirements, and change company name from Infiltrator Systems, Inc. to Infiltrator Water Technologies, LLC

In accordance with G.S. 130A-343(h) and 15A NCAC 18A .1969(h), a petition to the Commission for Public Health by EZflow, LP, a wholly owned subsidiary of Infiltrator Water Technologies, LLC (previously Ring Industrial Group of Oakland, TN), for modification of its approved accepted status for EZflow Drainfield Systems has been reviewed by the Department and approved by the Commission. The EZflow systems have been found to perform in a manner that is equal to or superior to a conventional wastewater system and to meet the standards of an accepted system when all of the conditions of this approval are met.

I. General

A. Scope of this Accepted Approval
   1. Use, design, and installation requirements for the EZflow polystyrene aggregate drainfield systems.

B. The following polystyrene aggregate drainfield system models have been found to meet the standards of an accepted system:
   - EZ1203H
   - EZ1203H-GEO

II. System Description

A. Minimum pretreatment by septic tank as required in 15A NCAC 18A .1952.

B. EZflow expanded polystyrene aggregate particles (EPS) shall meet the following requirements:
   1. EPS shall consist of three dimensional rectangular shapes resembling capital E's placed back-to-back (also known as the "double E") with void channels and surface area protuberances.
   2. EPS shall range in size from 0.75 inches to 1.75 inches along any axis.

C. The EZflow drainfield system units (also referred to as cylindrical units) shall meet the following general specifications:
   1. EPS shall be contained in cylindrical high strength netting.
   2. The physical and chemical properties of the netting shall be durable and resistive enough to retain the shape of the units and to withstand system installation, backfilling, corrosion, and loss of aggregate under intended use.
   3. Cylindrical units shall be 12-inches in diameter +/- ½ inch.
   4. Cylindrical units shall be manufactured in 3-, 5-, 7-, and 10-foot long sections, +/- 2 inches.
   5. The taper, or reduction in diameter, at each end of the cylindrical units shall not begin more than 3 inches from the point of enclosure, as measured along the linear axis of the unit.
   6. Cylindrical units shall be able to withstand an AASHTO H-10 axle load of 16,000 pounds when covered with 12 inches of compacted soil and a shallow cover axle load of 4,000 pounds when covered with 6 inches of compacted soil without collapsing, fracturing or breaking when installed in a trench equaling the product configuration width.

D. The EZ1203H shall meet the following description and specifications:
   1. The product shall be comprised of three 12-inch-diameter units 3-, 5-, 7-, or 10-feet long placed side-by-side across the bottom of a 36-inch-wide trench.
   2. The outer units shall contain aggregate only, with the netting tied off at both ends to prevent the escape of aggregate.
   3. The central unit shall contain aggregate and a 4-inch-diameter perforated flexible plastic pipe as is typically used in nitrification lines.
   4. The pipe shall be certified as complying with ASTM F 405, Standard Specifications for Corrugated Polyethylene (PE) Tubing and Fittings, and shall be in accordance with 15A NCAC 18A .1955(f).
   5. The netting for the central unit shall be tied off at both ends of the pipe.
   6. The 4-inch pipe shall be offset from center towards the top of the unit whereby 5 to 6 inches of aggregate is located between the bottom of the pipe and the bottom of the unit, and 1 ¼- to 2 ½- inches of aggregate is located between the top of the pipe and the top of the unit.
   7. The pipe shall be connected by an internal coupling device to allow continuous connection from one section to the next.
   8. The end-to-end gap distance between pipe containing cylinders, as measured from the straps fixing the netting to the pipe or from the face edges of aggregate on adjoining cylinders, shall be no greater than 3 inches.

E. The EZ1203H-GEO shall meet the same product specifications as the EZ1203H as described in paragraph D, above, with the addition of geotextile fabric pre-inserted between the netting and aggregate spanning 180 degrees +/- 15 degrees along the top of each cylinder. The geotextile shall have the minimum average value specifications described in Table I.

Table I - Minimum Geotextile Barrier Material Specifications for EZ1203H-GEO

Property	Value
Unit Weight	0.5 ounces per square yard
Tensile Strength	Cross Direction: 40 N/2.54cm +/- 20% Machine Direction: 50 N/2.54cm +/- 20%
Air Permeability	775 cubic feet per minute +/- 20%

III. Siting Criteria

The EZflow drainfield system shall be sited equivalently to rock aggregate and pipe in accordance with the following criteria:

A. Sites which are classified Suitable or Provisionally Suitable for a conventional nitrification field system in accordance with 15A NCAC 18A .1948(a) and (b).

B. Sites which have been reclassified as Provisionally Suitable in accordance with 15A NCAC 18A .1956(1), (2), (4), (5), and (6).

C. Sites which meet the criteria for new or existing fill in accordance with 15A NCAC 18A .1957(b). The provisions of Rule .1957(b) are applicable whenever any portion of the aggregate cylinders in an EZflow nitrification trench system extends into fill material. There shall be no reduction in trench length compared to conventional gravel trench. This reference to "fill material" applies to the site fill and not the backfill placed between the trench and the cylinder sidewall.

D. The required vertical separation shall be measured from the trench bottom.

IV. EZflow Drainfield System Sizing

A. The maximum long-term acceptance rate (LTAR) shall be as follows:

Table II

Textural Group		LTAR (GPD/ft^2)	
		Natural	Saprolite
Soil/Group I (Sands)	Sand	0.8-1.0*	0.6-0.8
	Loamy Sand		0.5-0.7
Soil Group II (Coarse Loams)	Sandy Loam	0.6-0.8	0.4-0.6
	Loam		0.2-0.4
Soil Group III (Fine Loams)	Silt Loam	0.3-0.6	0.1-0.3
	Other Fine Loams		NA
Soil Group IV	Clays	0.1-0.4	NA

*When the LTAR exceeds 1.0 gpd/sq ft, the nitrification trench system shall be sized using the Equivalency Factors in Table IV.

B. The LTAR shall be based on the most hydraulically limiting naturally occurring soil horizon within three feet of the ground surface or to a depth of one foot below the trench bottom whichever is deeper.

C. For LTAR values equal to or less than 1.0, the minimum total trench bottom area (ft ^{2}) required shall be determined by dividing the design daily sewage flow by the applicable LTAR shown in Table II above. The minimum linear footage for EZflow drainfield systems shall be determined by dividing the total trench bottom area by the following equivalency factor:

Table III

EZflow Product Configuration	Excavated Trench Width	Equivalency Factor* (SF/LF)
EZ1203H	36 inches	4.0
EZ1203H-GEO	36 inches	4.0

*Reduction in nitrification trench length allowed by use of this Equivalency Factor, as compared to sizing requirements delineated in Rule .1955 for conventional systems, apply only to drainfields receiving effluent of domestic strength or better quality. The system may be used in an alternating dual field application pursuant to 15A NCAC 18A .1955(p) provided that the equivalency factor for sizing each of the two complete nitrification fields does not exceed 4.61 SF/LF. Any proposed use of the system for facilities producing higher strength wastewater shall be sized in adherence with conditions set forth in Rule .1969(m).

Example:
Three bedroom residence with a design daily sewage flow of 360 gallons on a sandy clay loam (Group III) soil

Total computed trench bottom area is:
360 gpd/0.5 gpd/square foot (LTAR) = 720 ft^2

The minimum required linear footage for the accepted EZflow drainfield system is:
720 ft^2/4.0 ft = 180 linear ft.
Where 4.0 SF/LF is the equivalency factor for the accepted EZflow EZ1203H

D. For LTAR values greater than 1.0, the minimum total trench bottom area (ft^2) required shall be determined by dividing the design daily sewage flow by the applicable LTAR shown in Table II above. The minimum linear footage for EZflow drainfield systems shall be determined by dividing the total trench bottom area by the following equivalency factors:

Table IV

EZflow Product Configuration	Excavated Trench Width	Equivalency Factor (SF/LF)
EZ1203H	36 inches	3.0
EZ1203H-GEO	36 inches	3.0

E. The EZflow drainfield system may be used in a bed system with the three cylindrical bundles placed in rows next to each other. The minimum area (without reduction or equivalency factor) for a bed system shall be determined as required in 15A NCAC 18A. 1955(d).The available space requirements of Rule .1945 shall be met, and this approved accepted system may be designated as the required replacement system.

V. Special Site Evaluation

A special site evaluation may be required based on the proposed ground absorption system. Refer to Rule .1970(p).

VI. Design Criteria

Refer to Siting Criteria (Section III) and Installation (Section VII) for design details.

VII. Installation

A. The EZflow drainfield system shall be configured in accordance with Section II, above, installed in excavated trenches constructed with the following minimum center-to-center spacing, trench widths, and soil cover. Dimensional minimums are included for installation and inspection guidance.

Table IV

Product Configuration	Minimum Trench Spacing (ft on center)	Maximum Trench Width (in)	Minimum Soil Cover[1] (in)	Minimum Trench Depth (in)	Minimum Pipe Depth Below Grade[2] (in)
EZ1203H	9	36	6	18	12
EZ1203H-GEO	9	36	6	18	12

[1] On sloping lots, minimum required trench depths may be greater
[2] Measurements for pipe height are to the pipe invert or bottom of pipe

B. A backfill barrier shall be placed over the EZ1203H cylinders to prevent the infiltration of backfill material into the trench void spaces. The backfill barrier shall be 60 pound weight untreated building paper provided by the manufacturer or alternate with equal or better performance characteristics. An alternate backfill barrier shall be approved in writing by the manufacturer on a case-by-case basis. The barrier shall not be placed along the trench sidewalls below the pipe invert elevation. The barrier shall be protected from becoming wet enough to tear until backfilling is completed. The EZ1203H-GEO units are prefabricated with a geotextile backfill barrier between the netting and aggregate. The EZ1203H-GEO units shall be oriented in the trench with the geotextile covering the top of the system. No additional backfill barrier material shall be required.

C. Native soil removed from the trench excavation may be used as backfill. Backfill shall be free of trash or debris. Vehicular traffic and excavation equipment shall not travel over any uncovered drainfield. The latest version of the manufacturer's installation procedures shall be followed.

D. EZflow trenches shall be installed level in all directions with a plus or minus one-half-inch tolerance from side-to-side and maximum fall in a single trench bottom not exceeding one-fourth inch in 10 feet end-to-end for any continuous contoured segment. Trenches shall follow the contour of the ground surface elevation (uniform depth). Trenches shall be constructed with all continuous adjoining 3-, 5-, 7- or 10-foot units placed end-to-end, with the central cylinder distribution pipe interconnected, without any dams, stepdowns or other water stops.

E. The 10-foot-long units shall be used to make up the majority of the line length, with the 3-, 5-, and 7-foot units being used only at the distal end of the trench. A maximum of three 3-, 5-, or 7-foot units may be used in any one line length. Examples: A 65-foot trench would utilize six 10-foot units and one 5-foot unit. A 71-foot trench would utilize six 10-foot units, one 5-foot unit, and two 3-foot units.

F. EZflow drainfield systems installed on sloping sites may use distribution devices or step downs as described in 15A NCAC 18A .1955(j) and (l) when it is necessary to change level nitrification line segments from upper to lower elevations.

G. Manufacturer's installation instructions for the EZflow drainfield systems shall be followed, except as required herein or by 15A NCAC 18A .1900 et. seq.

H. The system shall be installed by a contractor authorized in writing by EZflow LP or its designated representative for EZflow drainfield systems.

VIII. Operation, Maintenance, and Monitoring

The accepted EZflow drainfield system shall have a classification equivalent to a conventional trench system in accordance with Table V(a) of 15A NCAC 18A .1961(b).

IX. Responsibilities and Permitting

A. The local health department shall permit these accepted system in an equivalent manner as a conventional system, when the requirements of 15A NCAC 18A .1900 et. Seq., laws, and conditions of this accepted system approval are met.

B. When use of one or more of these accepted systems is requested in the application for a Construction Authorization, the local health department shall include a design for the designated accepted system(s) in accordance with the approved siting, sizing, and design criteria on the Construction Authorization.

C. When a permit or authorization is issued for a conventional system, the permit or authorization shall contain a statement that indicates that an accepted system may also be used. These accepted systems may be installed without permit/authorization modification, prior approval of the health department, or separate sign-off, if the accepted system can be placed in the permitted/authorized trench footprint and the installation is in accordance with the accepted system approval, without unauthorized product alteration.

D. When substitution with one of these accepted systems for a conventional system or another accepted system is made, permit modification, prior approval of the health department or separate owner sign-off is not required as long as no changes are necessary in the location of each nitrification line (except reduction in line length and/or number as allowed for in this approval), trench depth, or effluent distribution method.

E. Notwithstanding paragraphs C and D above, when a substitution in system type compared to a previously permitted or authorized system type or types shall result in a change in the location of any nitrification line (including any increase in line length), trench depth, or effluent distribution method, prior approval by the local health department is required before system installation. The local health department shall modify the permit/authorization upon a finding that all provisions of this approval and all other applicable rules shall be met.

F. The type of system installed shall be indicated on the Operation Permit, including designation of the manufacturer and model or unique code.

X. Repair of Systems

The provisions of 15A NCAC 18A .1961(l) shall govern the use of the EZflow drainfield systems for repairs to existing malfunctioning wastewater systems.

Approved By:_____ Date:_____

HOMEOWNER GUIDE FOR UTILIZATION AND MAINTENANCE OF ON-SITE WASTEWATER DISPOSAL SYSTEMS

What is an On-site Wastewater Disposal System?

There are a number of different types of on-site wastewater disposal systems each designed for a specific set of site conditions. However, there are several system components that are common to most systems. These include the following:

1. A septic tank - a concrete tank that is designed to receive wastewater from the house and to provide a degree of pretreatment for the waste, chiefly through removal of some of the solids in the waste. Note that these solids accumulate over time and necessitate periodic pumping of the septic tank. Currently septic tanks are equipped with two access risers (normally constructed of concrete), which are designed to be at least 6 inches above the ground surface to prevent surface and shallow groundwater from entering the septic tank and to provide access for maintenance. **Care must be taken not to damage or cover these risers so that water inflow / infiltration can be prevented and the tank can be accessed for maintenance.**
2. In some installations, a pump tank - a concrete tank, very similar to the septic tank, which contains a pump along with the associated controls / componentry. The pump tank and pump is designed to receive effluent from the septic tank, and pump the effluent to a disposal field located at a higher elevation and/or to a pressurized distribution network in the disposal field. **The pump tank also has an access riser which must be protected in a similar manner to that indicated for the septic tank.** Servicing of the pump tank components often necessitates the assistance of a professional such as a septic tank installer or Certified Subsurface System Operator. The latter is required for operation and maintenance of certain types of systems.
3. A disposal field - a series of subsurface trenches and lines that are designed to distribute the effluent into the soil and provide for the ultimate treatment and disposal of the effluent. There are numerous variations on the design of the disposal field, related chiefly to the type of system chosen, site constraints, etc. Dependent on the type of disposal system, you may have to maintain a contract with a Certified Subsurface System Operator for operation and maintenance of your wastewater disposal system.

Utilization of Your Wastewater Disposal System

In order to obtain the maximum efficiency and life expectancy from your system, the following simple procedures must be adhered to:

1. **Practice water conservation.** This can include many practical considerations such as not leaving the water running while you brush your teeth, not overfilling the tub, limiting time in the shower, not replacing low flow fixtures with those of higher flows, over rinsing dishes (allow the dishwasher to do its job), immediate repair of any leaking fixtures, running washing machines and dishwashers only when full, etc.

NOTE: Washing machines generate significant volumes of wastewater. As a result, laundry activities should be spread over the week as opposed to accumulating all of laundry until the weekend.

2. **Do not utilize your wastewater disposal system as a trash can by dumping nondegradables down your drains or toilet.** These include cigarette butts, sanitary products, grease, plastics, disposable diapers, etc. Avoid use of garbage disposals. Do not retrofit garbage disposals unless the system is specifically permitted for their use. Also, do not dump harmful chemicals down the drain. These include petroleum products, paint, paint thinner, pesticides, antifreeze, etc.

Maintenance of Your Wastewater Disposal System

Every wastewater disposal system requires maintenance in order to function properly. The specific maintenance required is related to the type of system. The following are general considerations that apply to all systems.

1. **Protect your wastewater disposal system components including the tanks, access risers, disposal field and associated components.** Do not drive or park on any portion of the system. The area over the disposal field should be left undisturbed with the grass cover being maintained as you would your lawn. Location of trees and shrubs on or in close proximity to the disposal field is not recommended since roots may clog or damage your drain lines. Additionally, great care must be exercised when considering the addition of any structure(s) to the site. The location of any appurtenances cannot encroach on the installation or repair areas for your system. It is not recommended that irrigation systems be located in proximity to the disposal system since their construction can cause system damage and/or result in additional hydraulic load on the disposal field.
2. **Protect the system from excess surface and shallow groundwater.** The land surface on and around the wastewater disposal system should be landscaped to shed rainfall and runoff and prevent ponding. Be sure that foundation drains, runoff from roofs and drives, etc. are diverted away from the disposal system.
3. **Regularly have the septic tank / pump tank pumped and cleaned by a permitted septage hauler.** Although the necessary frequency of pumping varies with the household and system, most tanks need **pumping at a frequency of 3-5 years** and at any time solids occupy one-fourth to one-third of the septic tank liquid depth.

Note that all septic tanks being currently installed incorporate an effluent filter within the outlet compartment of the septic tank. This filter is to be cleaned anytime the septic tank is pumped. If plumbing becomes sluggish, this filter should be checked. If filter service is found to be necessary, the tank is to pumped, the filter cleaned and the filter reinstalled.

4. **Be alert to warning signs that your system may not be functioning properly.** These include sewage surfacing over the disposal system, sewage backups / slow draining in the house, lush growth over the disposal system, sewage odors, etc.
5. **Do not make or allow repairs to your system unless all necessary permits are obtained from Wake County Department of Environmental Services.**
6. **Commercial additives for septic tank systems** - It has generally not been demonstrated that these additives enhance the function of septic systems or reduce the need for tank pumping and other necessary maintenance.
7. **Special maintenance considerations** - As already alluded to, some of the more complex wastewater disposal systems require that you retain / maintain the services of a Certified Wastewater System Operator in order to comply with Laws and Rules and maintain a valid operation permit for your system. In Wake County this maintenance requirement should be recorded with Register of Deeds if applicable.

Where Do I Obtain Information and Assistance?

If you are purchasing a new home, you should request a copy of your wastewater system permit from the builder / seller along with information regarding any special maintenance requirements. You may also obtain information and assistance from the **Wake County Department of Environmental Services,** 336 Fayetteville Street Mall, Raleigh, NC, Telephone (919) 856-7400. The County also maintains an Internet web site at http://www.wakegov.com/environment. This site contains much useful information and a number of links.

BSM 12/14/05

Bobbitt Design Build, Inc.
NW Harnett Fire Station 3
Harnett County, North Carolina

Conventional Gravity System

Operation and Maintenance Procedures

MacConnell & Associates, P.C.
501 Cascade Pointe Lane, Suite 103
Cary, North Carolina 27513

P.O. Box 129
Morrisville, North Carolina 27560

Phone: (919) 467-1239
Fax: (919) 319-6510

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BSM 12/14/05

Operation and Maintenance Procedures shall be as contained in the following Approvals:

Innovative Wastewater System No.: IWWS-2015-03-R2