LHD Reference: SFC2102-0087

PART 3: Authorization to Operate (ATO)

Except for date received, the Section below is to be completed by the Owner or by the PE designated to act as their legal representative for the EOP.

LHD USE ONLY: Initial submittal of request for ATO received: 12-21-21 (Date) by JCM (Initials)

Date of Post-construction Conference: 12-17-21

The following items are included in this submittal for an Authorization to Operate under an EOP:

1. Signed and sealed copy of the Engineer's report that includes:
   a. Signed and sealed evaluation of soil conditions and site features — [X] Yes [ ] No
   b. Drawings, specifications, plans — [X] Yes [ ] No
   c. Reports on special inspections and final inspection — [X] Yes [ ] No
   d. Management Program manual — [X] Yes [ ] No
   e. On-site Wastewater Contractor's signed statement — [X] Yes [ ] No
   f. Signed and sealed statement pursuant to 15A NCAC 18A .1938(h) — [X] Yes [ ] No
2. Fee (as applicable) — [ ] Yes [X] No
3. Notarized letter documenting Owner's acceptance of the system from the PE — [X] Yes [ ] No

Attestation by the Owner or the PE for Authorization to Operate

I, David Bazzel (Print name of Owner or Professional Engineer) hereby attest that all items indicated above have been provided to the Harnett County LHD and the system shall meet applicable federal, State, and local laws, regulations, rules and ordinances in accordance with G.S. 130A-336.1(e)(6).

NORTH CAROLINA PROFESSIONAL SEAL 051201 ENGINEER CHRISTOPHER BAZZEL

(Signature of Owner or Professional Engineer) 12/20/21 (Date)

This section for LHD Use Only

LHD Review of required information for the ATO:

☐ INCOMPLETE

Based upon review of information submitted by the Owner or PE in the Section above, the following items are missing from the information required for an Authorization to Operate for an EOP: _____

Copies of this signed form were sent to the design PE and the Owner on _____ (Date) via _____ (Email, FAX, USPS, Hand-delivered).

_____ (Print name of authorized Agent of the LHD) _____ (Signature of authorized Agent of the LHD) _____ (Date)

☑ COMPLETE

Based upon review of information submitted by the Owner or PE in the Section above, this Authorization to Operate is hereby issued in accordance with G.S. 130A-336.1(m).

A copy of this complete NOI/ATO with tracking information was sent to the State on 12-21-21 (Date) via Email (Email, FAX, USPS, Hand-delivered).

James E Mankart III REHS (Print name of authorized Agent of the LHD) James E Mankart III REHS (Signature of authorized Agent of the LHD) 12-21-21 (Date)

ISSUANCE OF CERTIFICATE OF OCCUPANCY: Once the LHD determines completeness based upon the PE submission, the owner may apply to the local permitting agency for permanent electrical service to a residence, place of business or place of public assembly pursuant to G.S. 130A-339.

Evan & Patricia Germond

Authorization to Operate
Engineered Option Permit
Pressure Manifold System

1594 Josey Williams Road
Erwin, NC 28339
Harnett County, North Carolina

Project No.: A90401.00

Submittal Date: 12/20/2021

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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P.O. Box 129
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MacCONNELL & Associates, P.C.
"Engineering Today For Tomorrow's Future"

501 Cascade Pointe Lane
Suite 103
Cary, NC 27513

www.macconnellandassoc.com

December 20, 2021

To Local Health Department:

Please note the following Session Law:

WAIVER OF POST-CONSTRUCTION CONFERENCE FOR CERTAIN ENGINEERED WASTEWATER SYSTEMS
SECTION 12A. G.S. 130A-336.1(j) reads as rewritten: House Bill 366 Session Law 2021-117 Page 7.

Per the above reference Session Law, we request that the Post-Construction Conference be waived for the following project:

Client: Evan & Patricia Germond
Project: 1594 Josey Williams Rd.
Project: A90401.00

Requested By:
Engineer: David Barcal, P.E.

NORTH CAROLINA PROFESSIONAL SEAL 051201 ENGINEER DAVID CHRISTOPHER BARCAL

Signature 12/20/21

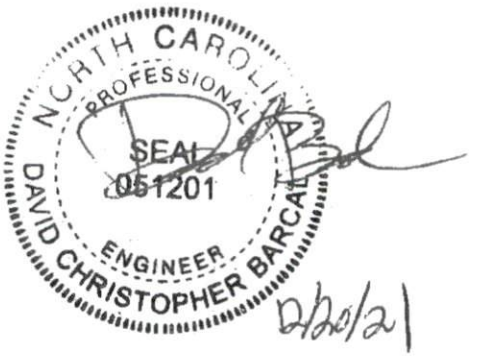
Approved By:
Owner or Owner's Representative:

Evan Germond
Print Name

Evan Germond
Signature

Evan & Patricia Germond
Engineered Option Permit

1. Common Form Part 3 – Authorization to Operate



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Evan & Patricia Germond
Engineered Option Permit

A. Evaluation of Soil Conditions & Site Features

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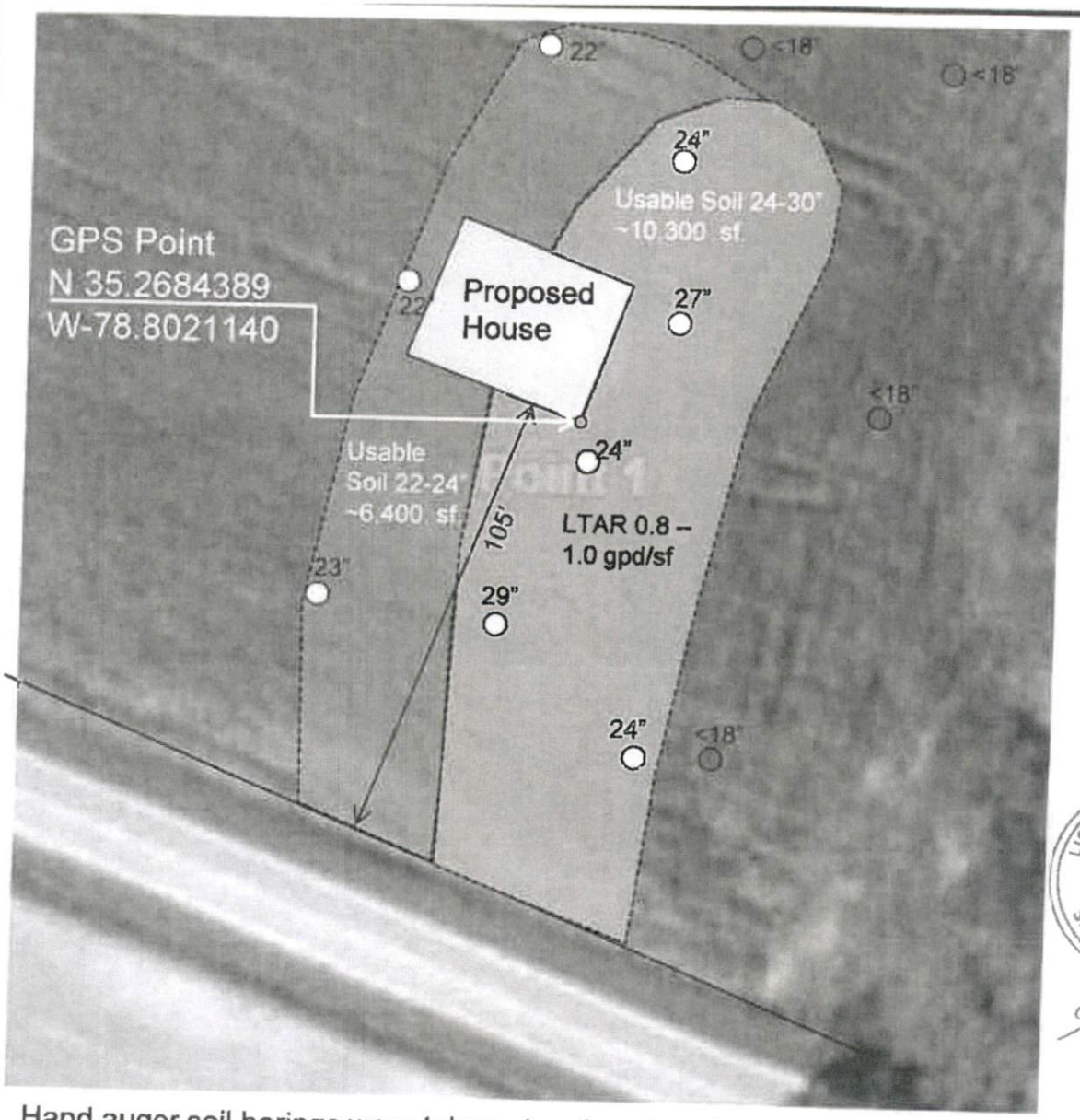
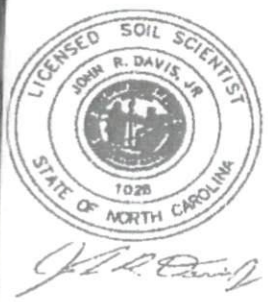




Hand auger soil borings were taken at various locations across the property for the purpose of determining septic system suitability. The "Usable" soil found on this site consists of sandy topsoil over a clayey subsoil. The best area is shown in "Orange" shading with soil depths to wetness or unsuitable clay between 24 to 30 inches. The soil loading rate in this area ranges from 0.8 to 1.0 gpd/sf. The other usable soil area shown in "Green" shading has depths between 22 and 24 inches with a similar soil loading rate. Both areas are usable for ultra shallow and low profile gravelless trenches for a single family dwelling with 3 or 4 bedrooms. The best area for a septic system appears to be the southeast corner of the house. Remaining soil area can be designated as repair area soil.

1" ~ 40'	**SOIL HORIZONS** **PO Box 1063** **Youngsville, NC 27596**	**Lot 3 Kemp Holdings** **Soil Map for Septic System Suitability** Harnett County, North Carolina
Date: Jan, 2021		**Figure 1**

MACCONNELL AND ASSOCIATES, P.C.
1594 JOSEY WILLIAMS ROAD
PRESSURE MANIFOLD DESIGN - INITIAL

Name: Evan and Patricia Germond P.I.N. #: 0555-93-1151 D#: N/A

Address: 1594 Josey Williams Road Harnett County Subdiv: Lot#:

# of BDR: 4 Daily Flow: 480 gal/day L.T.A.R.: 0.80 gal/day/sq.ft

Septic Tank: 1000 gals Pump Tank: 1000 gals Sq. Foot: 630 Stone Depth: N/A

Number of Taps: 3 Length of Trenches: 210 ft(See Tap Chart for Details)

Depth of Trenches: 12 in Manifold Length: 36 in (see comments below)

Manifold Diameter: 4 Tap Configuration: 1/2 in spacing 1 side(s) of manifold

Supply Line: length: 40 ft Diameter(Supply Line): 1-1/2 in. SCH40 PVC Pipe ID (Inch) 1.61

Friction Loss + Fitting Loss: 3.51 ft(supply line length + 70' for fittings in pump tank)

Design Head: 2 ft Elevation Head: 7.10 ft

Total Head: 12.61 ft Pump to Deliver: 21.3 gals/min at 12.6 ft head

Dosing Volume: 96 gals,

Pump Selection: Drawdown: 96 gals divided by 20.3 gals/in = 4.7 inches head

Pump Selection: As shown on the construction drawings.

TAP CHART

Bench Mark 100.0 — Design Head: 2
Pump tank elev. 120.6 — Manifold elev. 120.5
Pump elev. 113.4

line	color	rod read	Elevation**	length	hole size	flow/tap	gal/day	trench area	LINE LTAR
1	Red	10.3	99.7	70	1/2in SCH 40	7.11	160	210	0.762
2	Orange	10.5	99.5	70	1/2in SCH 40	7.11	160	210	0.762
3	Red	10.5	99.5	70	1/2in SCH 40	7.11	160	210	0.762
		total	feet =	210	gal/min =	21.33		LTAR =	0.80
% of Dose Vol.		70.00%		Des. Flow	480			(ltar + 5%)	0.84
Dose Volume		96		Pump Run=	22.50		Ezflow	(ltar W/ INOV)	1.07
Dose Pump Time		4.50		Tank Gal/IN	20.3			(ltar + 5%)	1.12
Drawdown in Inches		4.7		Elev. Head	7.1				
Supply Line Length		40		Velocity fps	3.36				

Comments: **at grade

Hydraulic Profile

Manifold Elevation	120.5
Pump tank elev.	120.6
Pump elev.	113.4

1 D-106 **PRESSURE MANIFOLD CALCULATIONS (INITIAL)**

MACCONNELL AND ASSOCIATES, P.C.
1594 JOSEY WILLIAMS ROAD
PRESSURE MANIFOLD DESIGN - REPAIR

Name: Evan and Patricia Germond P.I.N. #: 0555-93-1151 D#: N/A

Address: 1594 Josey Williams Road Harnett County Subdiv: 0 Lot#: 0

# of BDR: 4 Daily Flow: 480 gal/day L.T.A.R.: 0.80 gal/day/sq.ft

Septic Tank: 1000 gals Pump Tank: 1000 gals Sq. Foot: 630 Stone Depth: N/A

Number of Taps: 3 Length of Trenches: 210 ft(See Tap Chart for Details)

Depth of Trenches: 12 in Manifold Length: 36 in

Manifold Diameter: 4 inches Tap Configuration: 1/2 in spacing 1 side(s) of manifold

Supply Line: length: 125 ft Diameter(Supply Line): 1-1/2 in. SCH40 PVC Pipe ID (Inch) 1.61

Friction Loss + Fitting Loss: 6.23 ft(supply line length + 70' for fittings in pump tank)

Design Head: 2 ft Elevation Head: 7.10 ft

Total Head: 15.33 ft Pump to Deliver: 21.3 gals/min at 15.3 ft head

Dosing Volume: 96 gals,

Pump Selection: Drawdown: 96 gals divided by 20.3 gals/in = 4.7 inches head

TAP CHART

Bench Mark 100.0 — Design Head: 2
Pump tank elev. 120.6 — Manifold elev. 120.5
Pump elev. 113.4

line	color	rod read	Elevation**	length	hole size	flow/tap	gal/day	trench area	LINE LTAR
4	Red	11.0	99.0	70	1/2in SCH 40	7.11	160	210	0.762
5	Orange	11.0	99.0	70	1/2in SCH 40	7.11	160	210	0.762
6	Red	11.0	99.0	70	1/2in SCH 40	7.11	160	210	0.762
		total	feet =	210	gal/min =	21.33		LTAR =	0.80
% of Dose Vol.		75.0%		Des. Flow	480			(ltar + 5%)	0.84
Dose Volume		96		Pump Run=	22.50			(ltar W/ INOV)	1.07
Dose Pump Time		4.82		Tank Gal/IN	20.26			(ltar + 5%)	1.12
Drawdown in Inches		4.7		Elev. Head	7.10				
Supply Line Length		125		Velocity fps	3.36				

Comments: **at grade

Hydraulic Profile

Manifold Elevation	120.5
Pump tank elev.	120.6
Pump elev.	113.4

THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED UPON INFORMATION FURNISHED BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, THE DESIGN PROFESSIONAL CANNOT ASSURE ITS ACCURACY, AND THUS IS NOT RESPONSIBLE FOR THE ACCURACY OF THIS RECORD DRAWING OR FOR ANY ERRORS OR OMMISSIONS WHICH MAY HAVE BEEN INCORPORATED INTO IT AS A RESULT. THOSE RELYING ON THIS RECORD DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY BEFORE APPLYING IT FOR ANY PURPOSE.

RECORD DRAWING
DECEMBER 16, 2021

NORTH CAROLINA PROFESSIONAL SEAL 17069 ENGINEER GARY S. MACCONNELL
12/16/2021

2 D-106 **PRESSURE MANIFOLD CALCULATIONS (REPAIR)**

MacCONNELL & Associates, P. C.
501 CASCADE POINTE LANE, SUITE 103
CARY, NORTH CAROLINA 27513
P. O. BOX 129
MORRISVILLE, NORTH CAROLINA 27560
TEL: (919) 467-1239 FAX: (919) 319-6510

BY: DCB, JDH
JOB #: A90401.00
DATE: 05/12/2021

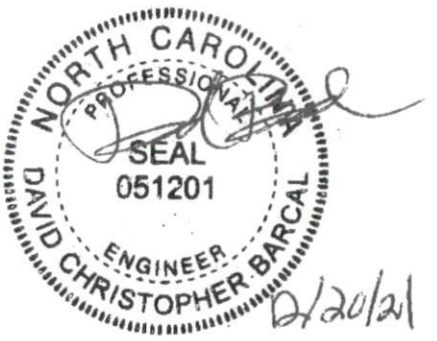
EVAN & PATRICIA GERMOND
1594 JOSEY WILLIAMS RD
(LOT 3 KEMP HOLDINGS)
EOP-PRESSURE MANIFOLD
HARNETT COUNTY, NC

DETAILS - 6 OF 6

D-106

Evan & Patricia Germond
Engineered Option Permit

B. Drawings, Specifications, and Plans



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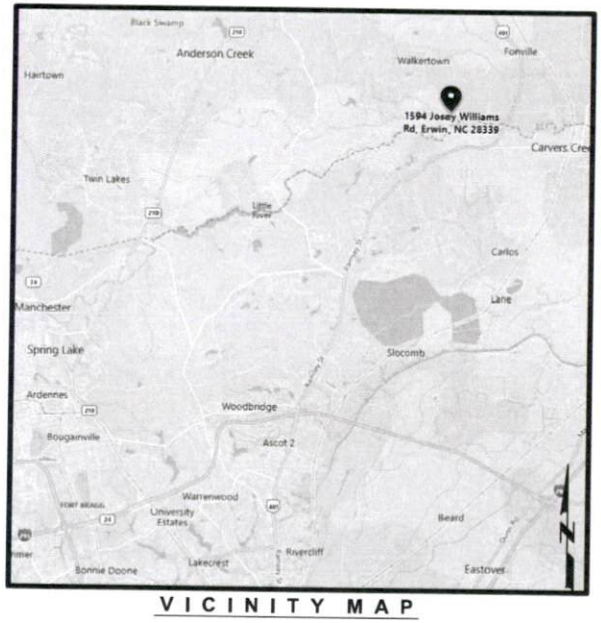
EVAN & PATRICIA GERMOND

EOP-PRESSURE MANIFOLD



VICINITY MAP

PROJECT No. A90401.00

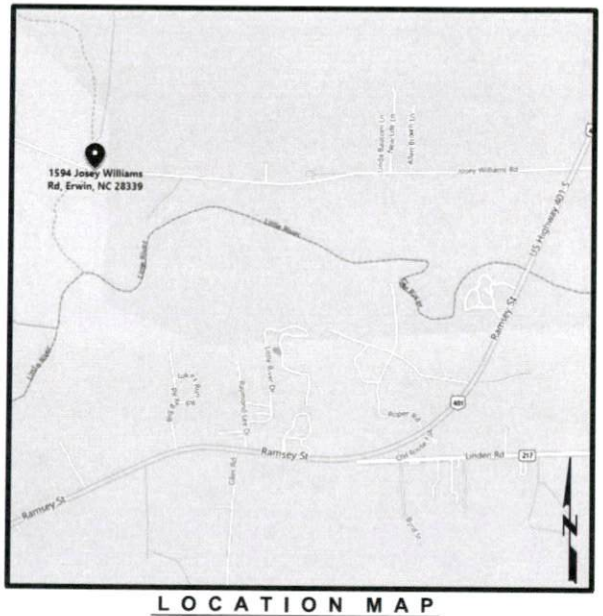
1594 JOSEY WILLIAMS RD.
ERWIN, NC 28339

HARNETT COUNTY, NC

PIN: 0555-93-1151.000

SCHEDULE OF DRAWINGS:

C-100	COVER SHEET
C-101	SEPTIC SYSTEM LAYOUT
C-102	GENERAL NOTES
D-101	DETAILS 1 OF 6
D-102	DETAILS 2 OF 6
D-103	DETAILS 3 OF 6
D-104	DETAILS 4 OF 6
D-105	DETAILS 5 OF 6
D-106	DETAILS 6 OF 6
E-101	ELECTRICAL DETAILS



LOCATION MAP

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DECEMBER 16, 2021

NORTH CAROLINA PROFESSIONAL SEAL 17069 ENGINEER GARY S. MACCONNELL
12/16/2021

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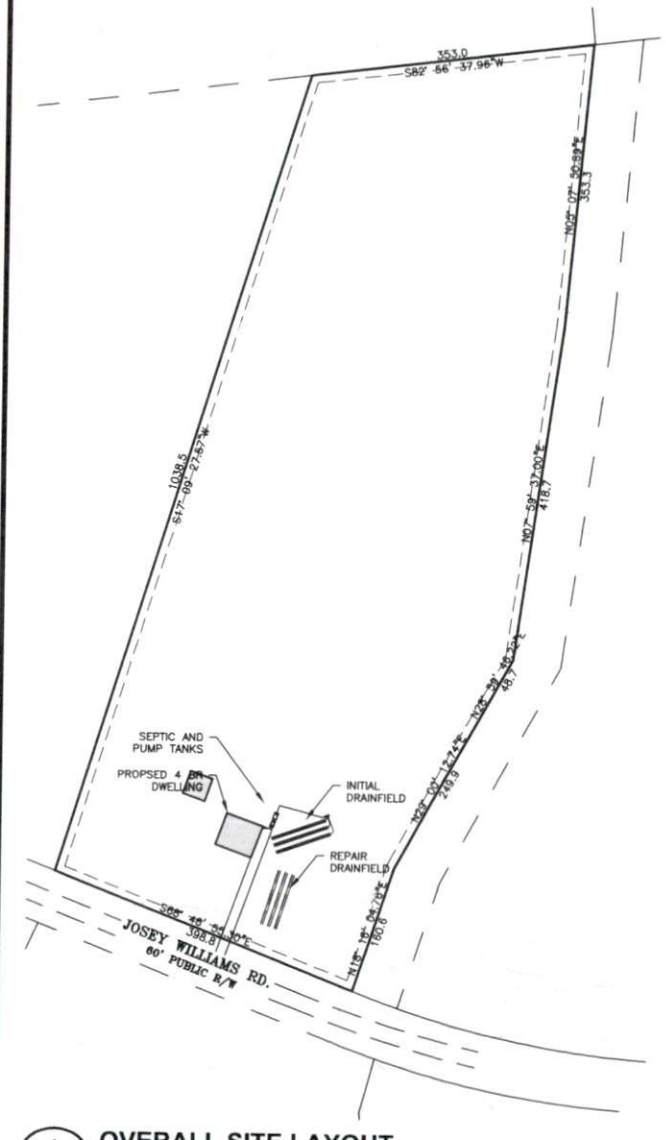
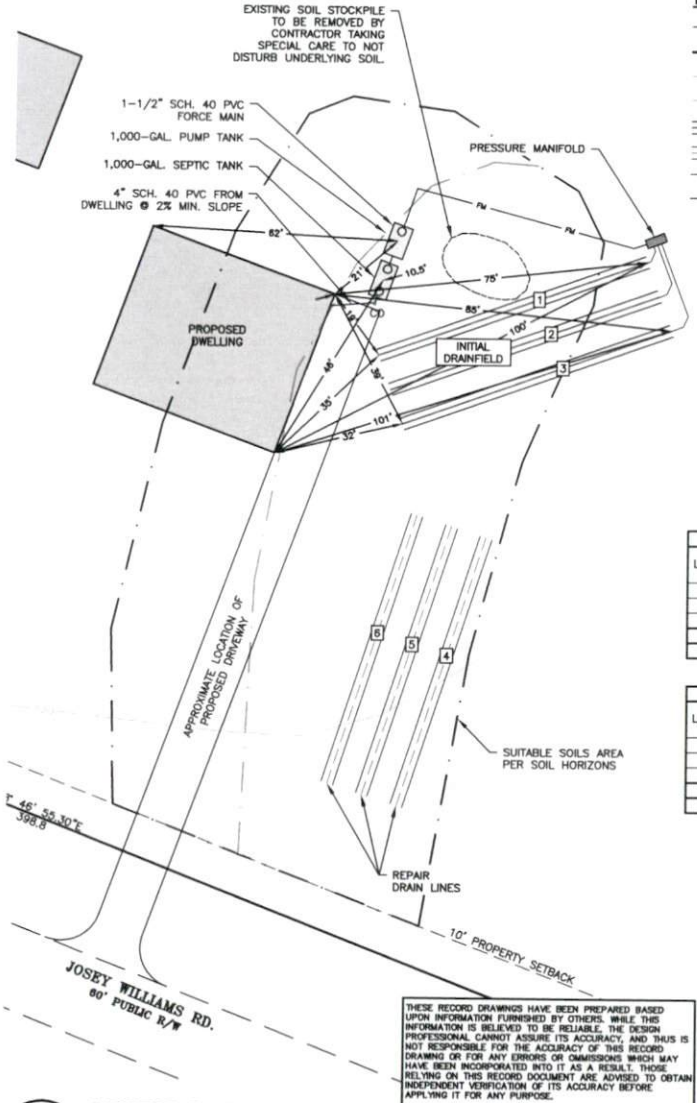
1594 JOSEY WILLIAMS RD
(LOT 3 KEMP HOLDINGS)
EOP - PRESSURE MANIFOLD
HARNETT COUNTY, NC

COVER SHEET

C-100



1 C-101 **OVERALL SITE LAYOUT**
1" = 150'



2 C-101 **SEPTIC SYSTEM LAYOUT**
1" = 30'

LEGEND

- ADJACENT BOUNDARY
- BOUNDARY (PROPERTY)
- CONTOURS – INDEX
- CONTOURS – INTERMEDIATE
- PROPOSED DRAIN LINES/TRENCHES
- PROPOSED REPAIR DRAIN LINES/TRENCHES
- SETBACKS
- FM — FORCE MAIN
- CO — CLEAN OUT

NOTES

1. PARCELS AND TOPO TAKEN FROM HARNETT COUNTY GIS.
2. KEEP TANKS AND DRAIN LINES A MINIMUM OF 10' OFF OF PROPERTY LINES.
3. KEEP SUPPLY LINES A MINIMUM OF 5' OFF OF PROPERTY LINES
4. INSTALL DRAINLINES ON CONTOUR WITH TRENCH BOTTOM AT 12".
5. THIS IS NOT A SURVEY.

INITIAL DRAIN LINE LENGTHS				
LINE #	FLAG COLOR	LENGTH	EXISTING GRADE	TRENCH BOTTOM DEPTH*
1	RED	70'	120.0'	12" BELOW EGS (±119.0')
2	ORANGE	70'	120.0'	12" BELOW EGS (±119.0')
3	RED	70'	120.0'	12" BELOW EGS (±119.0)
TOTAL	210'			

REPAIR DRAIN LINE LENGTHS				
LINE #	FLAG COLOR	LENGTH	EXISTING GRADE	TRENCH BOTTOM DEPTH*
4	RED	70'	120.0'	12" BELOW EGS (±119.0')
5	ORANGE	70'	120.0'	12" BELOW EGS (±119.0')
6	RED	70'	120.0'	12" BELOW EGS (±119.0)
TOTAL	210'			

THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED UPON INFORMATION FURNISHED BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, THE DESIGN PROFESSIONAL CANNOT ASSURE ITS ACCURACY, AND THUS IS NOT RESPONSIBLE FOR THE ACCURACY OF THIS RECORD DRAWING OR FOR ANY ERRORS OR OMMISSIONS WHICH MAY HAVE BEEN INCORPORATED INTO IT AS A RESULT. THOSE RELYING ON THIS RECORD DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY BEFORE APPLYING IT FOR ANY PURPOSE.

RECORD DRAWING
DECEMBER 16, 2021

NORTH CAROLINA PROFESSIONAL SEAL 17069 ENGINEER GARY S. MACCONNELL
12/16/2021

GRAPHIC SCALE: 1" = 30'
0 15 30 60 90

SEPTIC SYSTEM LAYOUT — C-101

EVAN & PATRICIA GERMOND
1594 JOSEY WILLIAMS RD
(LOT 3 KEMP HOLDINGS)
EOP - PRESSURE MANIFOLD
HARNETT COUNTY, NC

BY: DCB, JDH
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MAINTENANCE SCHEDULE

ITEM	FREQUENCY	TASK
WATER CONSUMPTION	MONTHLY	RECORD TOTAL GALLONS USED FROM METER AT POTABLE WATER SUPPLY SOURCE.
		PUMP OUT ACCUMULATED GREASE AND DISPOSE OF IN A STATE-PERMITTED MANNER/FACILITY.
SEPTIC TANKS	WEEKLY	CHECK EFFLUENT FILTERS AND CLEAN AS REQ'D.
	MONTHLY	CHECK FOR SOLIDS ACCUMULATION, BLOCKAGES, AND BAFFLE AND/OR EFFLUENT FILTER DAMAGE. CHECK FOR IN/EXFILTRATION OF LIQUID.
	12 MONTHS OR AS REQ'D	PUMP OUT ACCUMULATED SOLIDS AND DISPOSE OF IN A STATE-PERMITTED MANNER/FACILITY.
PUMP TANKS	WEEKLY	CHECK PUMPS FOR FUNCTIONALITY AND ABNORMAL VIBRATIONS. TEST CONTROL AND ALARM FUNCTIONS. RECORD PUMP ELAPSED TIME AND CYCLE COUNTER READINGS.
	MONTHLY	CHECK FOR SOLIDS ACCUMULATION, BLOCKAGES, AND BAFFLE DAMAGE. CHECK FOR IN/EXFILTRATION OF LIQUID.
	12 MONTHS OR AS REQ'D	PUMP OUT ACCUMULATED SOLIDS AND DISPOSE OF IN A STATE-PERMITTED MANNER/FACILITY.
COLLECTION SYSTEM	6 MONTHS OR AS REQ'D	USE CLEAN-OUTS TO CHECK VISUALLY FOR BLOCKAGES. REMOVE AND DISPOSE OF BLOCKED SOLIDS IN A STATE-PERMITTED MANNER/FACILITY.
PRESSURE MANIFOLDS	6 MONTHS OR AS REQ'D	MEASURE AND RECORD PUMP DOSING RATES FOR EACH FIELD. CHECK RESIDUAL PRESSURE AND ADJUST AS NECESSARY TO HEAD OF 3'-0". FLUSH OUT MANIFOLD AS NECESSARY.
DISPOSAL FIELDS	MONTHLY OR AS REQ'D	MOW VEGETATIVE COVER. CHECK FOR EROSION OR SURFACING OR PONDING OF EFFLUENT.
	MONTHLY	WATER LEVELS IN THE FIELD TRENCH OBSERVATION PORTS SHOULD BE INSPECTED/RECORDED.

DOSING CONTROL

SYSTEM SHALL DOSE ±2 TIMES PER DAY AT 96 GALLONS PER DOSE OR 4.5 MIN. AT 21.3 GPM.

FIELD DOSING OPERATING SEQUENCE

EFFLUENT FROM THE SEPTIC TANKS SHALL ENTER THE FIELD DOSING PUMP TANK, CAUSING THE WATER LEVEL TO RISE. AS THE LEVEL REACHES A FLOAT, DESIGNATED AS THE PUMP ON, A MERCURY SWITCH SHALL CLOSE, INDICATING THAT THE SYSTEM SHALL DOSE THE FIELD UNTIL THE LEVEL REACHES THE PUMP OFF LEVEL.

IF THE WATER LEVEL CONTINUES TO RISE HIGH ENOUGH FOR THE "HIGH WATER ALARM" MERCURY FLOAT SWITCH TO CLOSE, A RELAY SHALL CAUSE A FLASHING RED LIGHT ON THE PANEL FACE TO ENERGIZE, WHICH MAY ONLY BE RESET MANUALLY. ALSO, AN AUDIBLE ALARM WILL BE ENERGIZED.

THE PUMP TANK SHALL CONTAIN ONE PUMP. PUMP SHALL HAVE "HAND-OFF-AUTO" SWITCH, GREEN RUN LIGHT AND ELAPSED TIME METER.

NOTES

1. THE CONTRACTOR IS REQUIRED TO VERIFY ALL DIMENSIONS, ELEVATIONS, AND UTILITIES BEFORE BEGINNING ANY CONSTRUCTION.
2. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SOIL EROSION AND SEDIMENTATION CONTROL REQUIREMENTS OF THE COUNTY AND STATE.
3. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE OSHA, NCDOT, AND SAFETY REQUIREMENTS OF THE COUNTY AND STATE.
4. CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL CONSTRUCTION DAMAGE EXPEDITIOUSLY AND AT NO ADDITIONAL COST TO THE OWNER.
5. FOUR OR SIX-INCH DIAMETER CORRUGATED PLASTIC TUBING SHALL COMPLY WITH ASTM F405 AND G.S. 150B-21.6.
6. NITRIFICATION TRENCH SHALL FOLLOW THE CONTOUR OF THE GROUND.
7. SURFACE WATER RUNOFF AND PONDING SHALL BE PROHIBITED AT ALL TIME.
8. SOIL COVER SHALL BE PLACED OVER A NITRIFICATION FIELD ONLY AFTER PROPER PREPARATION OF THE ORIGINAL GROUND SURFACE. THE TYPE OF SOIL COVER SHALL BE APPROVED BY THE LOCAL HEALTH DEPARTMENT.
9. ALL SERVICE ACCESS OPENINGS WILL BE A MINIMUM OF 24 INCHES UNLESS OTHERWISE SHOWN.
10. ALL JOINTS (MID-SEAM, TOP-SEAM) SHALL BE SEALED USING CONCRETE SEALANTS BUTYL SEALANT # CS-102 MEETING ASTM C-990.
11. TANKS SHALL BE LEAK-TESTED PRIOR TO SYSTEM START UP BY APPLYING A VACUUM OF 5-INCHES OF MERCURY WITH RISER ASSEMBLIES IN PLACE OR A 24-HOUR STATIC WATER TEST, IN ACCORDANCE WITH ASTM STANDARDS
12. ALL PIPE PENETRATIONS THROUGH PRECAST CONCRETE TANKS SHALL BE PRESS-SEAL CAST-A-SEAL 402 RUBBER BOOTS OR EQUAL AND GROUTED.
13. ANY CHANGES TO TANK LAYOUT AND INVERTS MAY BE ADJUSTED AS NECESSARY TO COMPLY WITH ACTUAL FIELD CONDITIONS UPON APPROVAL BY THE ENGINEER.
14. CONTRACTOR SHALL NOTIFY THE ENGINEER WHEN TANK INSTALLATION WILL OCCUR SO FIELD INSPECTION CAN TAKE PLACE.
15. CONTRACTOR SHALL DIVERT SURFACE WATER FROM ALL TANK AREAS. (SEPTIC TANKS, ETC.)
16. VEGETATIVE COVER SHALL BE ESTABLISHED IMMEDIATELY AFTER FIELD INSTALLATION.
17. ALL COMPONENTS TO BE ACCESSIBLE AT GRADE WITHOUT ENTERING INTO THE RISER/TANK.
18. CONTRACTOR MAY USE LARGER TANKS WITH ENGINEER'S APPROVAL. PT DOSE VOLUME ETC. WILL CHANGE.
19. PRE-CAST CONCRETE SEPTIC AND PUMP TANKS DIMENSIONS SHOWN ARE BASED ON DAVID BRANTLEY & SONS. OTHER MANUFACTURERS ARE ACCEPTABLE, PROVIDED THEIR PRODUCTS COMPLY WITH APPLICABLE NCDENR-DEH RULES AND HAVE BEEN ASSIGNED A STATE APPROVAL NUMBER.
20. CONCRETE SHALL HAVE A MINIMUM 4,500 PSI AT 28 DAYS. CONCRETE SHALL BE WATERPROOFED WITH BITUMINOUS MASTIC OR OTHER APPROVED COATING SYSTEM.
21. EXCAVATE AREA FOR SEPTIC AND PUMP TANKS TO FIRM EARTH. LEVEL ON STONE. TANKS SHALL BE CAREFULLY BACKFILLED TO MAXIMUM 95% DENSITY. BACK FILL SHALL DIRECT WATER AWAY FROM ACCESS RISERS. IF MORE THAN 5 FEET OF COVER IS PROPOSED, CONSULT ENGINEER AND TANK MANUFACTURER TO DEVELOP STRUCTURAL AMENDMENTS.
22. FIELD VERIFY ACCESS RISERS BEFORE ORDERING.
23. VERIFY PUMP PLACEMENT WITH PUMP MANUFACTURER BEFORE ORDERING TANK, RISERS, AND HATCHES.
24. ALL PRESSURE PIPE AND FITTINGS IN TANKS SHALL BE SCH. 80 PVC UNLESS OTHERWISE SHOWN.
25. BALL AND CHECK VALVES SHALL BE RATED AT A MIN. OF 235 PSI.

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RECORD DRAWING
DECEMBER 16, 2021

NORTH CAROLINA PROFESSIONAL SEAL 17069 ENGINEER GARY S. MACCONNELL

12/16/2021

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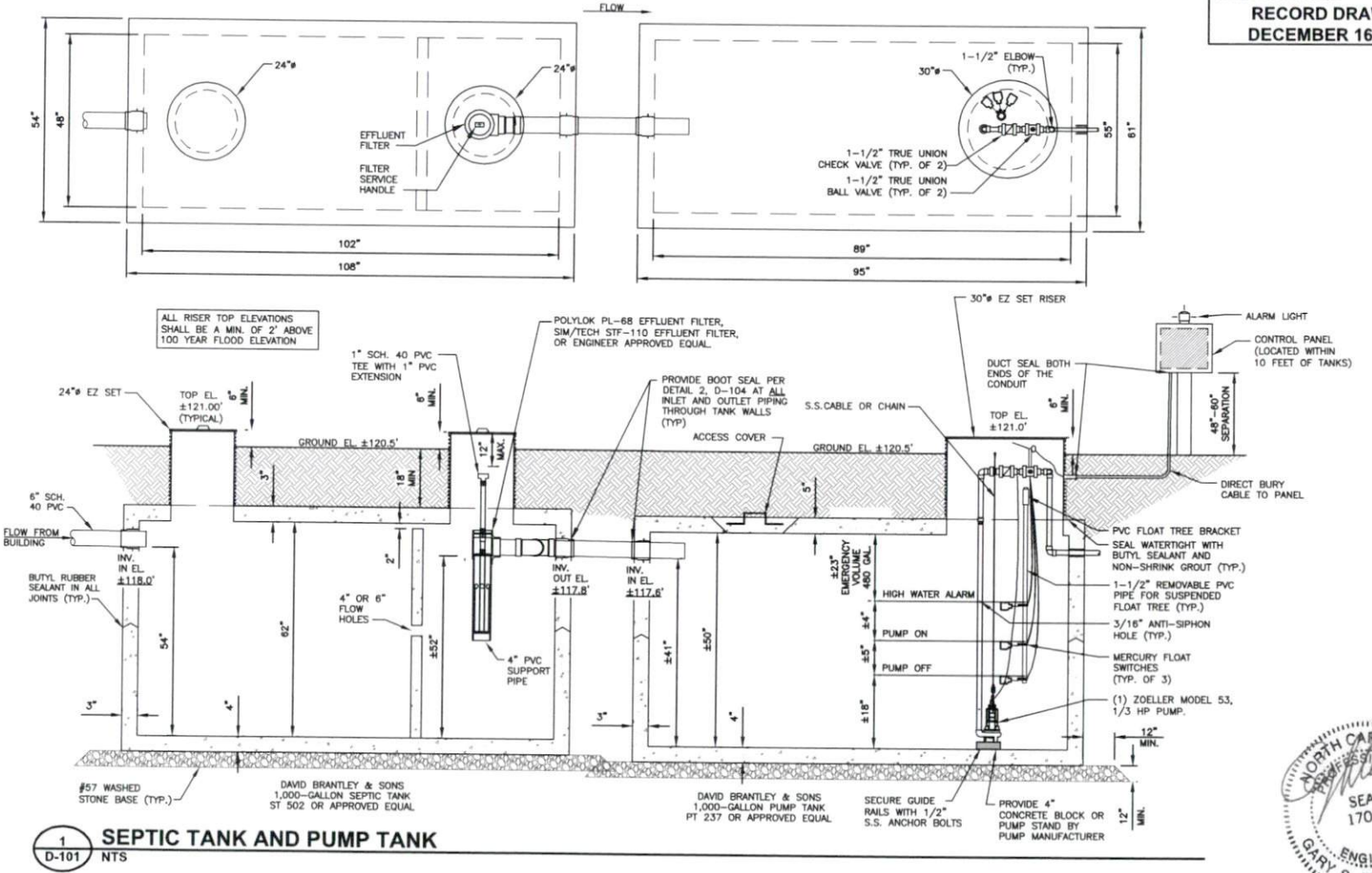
BY: DCB, JDH
JOB #: A90401.00
DATE: 05/12/2021

EVAN & PATRICIA GERMOND
1594 JOSEY WILLIAMS RD
(LOT 3 KEMP HOLDINGS)
EOP - PRESSURE MANIFOLD
HARNETT COUNTY, NC

NOTES

C-102



1 D-101 **SEPTIC TANK AND PUMP TANK**
NTS

NORTH CAROLINA PROFESSIONAL SEAL 17069 ENGINEER GARY S. MACCONNELL
12/16/2021

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EOP-PRESSURE MANIFOLD
HARNETT COUNTY, NC

DETAILS - 1 OF 6

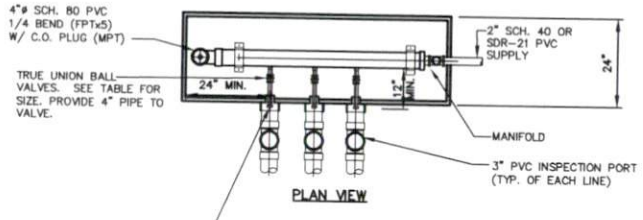
D-101

PRESSURE MANIFOLD (INITIAL LINES) TAP CHART

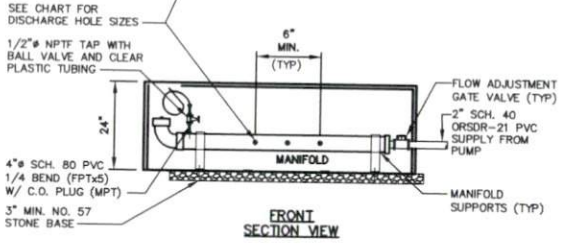
MANIFOLD TAP	LINES	FLAG COLOR	HOLE SIZES	LENGTH
1	1	RED	1/2" SCH. 40	70'
2	2	ORANGE	1/2" SCH. 40	70'
3	3	RED	1/2" SCH. 40	70'

PRESSURE MANIFOLD (REPAIR LINES) TAP CHART

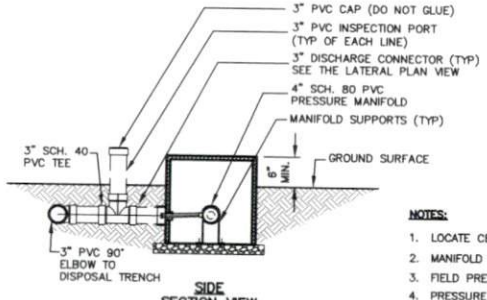
MANIFOLD TAP	LINES	FLAG COLOR	HOLE SIZES	LENGTH
1	4	RED	1/2" SCH. 40	70'
2	5	ORANGE	1/2" SCH. 40	70'
3	6	RED	1/2" SCH. 40	70'



PLAN VIEW



FRONT SECTION VIEW



SIDE SECTION VIEW

SUPPLY FROM PUMP TANK CONNECTED TO MANIFOLD OPPOSITE END.

NOTES:

1. LOCATE CENTERLINE OF BALL VALVE 4" FROM MANIFOLD.
2. MANIFOLD DISCHARGE PIPES SHALL EXTEND 2" FROM EDGE OF BOX INTO 3" PVC GRAVITY PIPE.
3. FIELD PRESSURE SHALL BE SET TO TWO FEET OF HEAD.
4. PRESSURE MANIFOLD SHALL BE CONCRETE OR BY EZ SET, PRESSBOX, OR AN APPROVED EQUAL.
5. PLACE MANIFOLD IN CENTER OF BOX.
6. ALL FEEDER LINES TO BE INSTALLED ON AT LEAST 1% POSITIVE GRADE.
7. CONTRACTOR MAY USE 2 SIDED MANIFOLD AND POSITION MANIFOLD IN FIELD FOR GRAVITY FLOW.

1 / D-102 **PRESSURE MANIFOLD**
NTS

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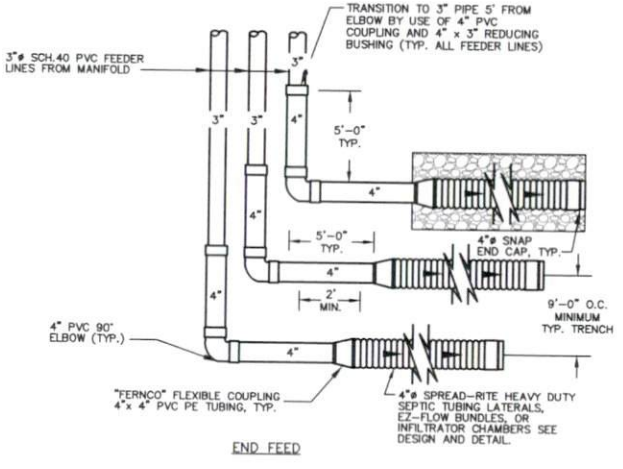
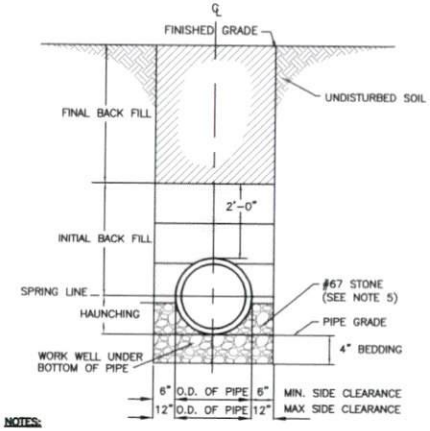
EOP-PRESSURE MANIFOLD
HARNETT COUNTY, NC

DETAILS - 2 OF 6

D-102



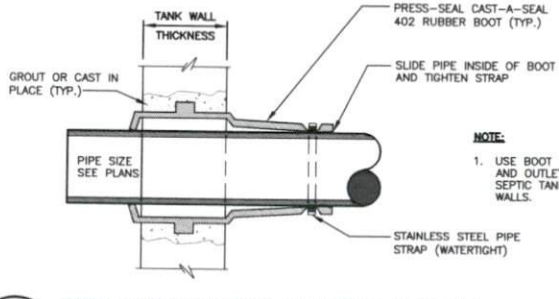
1 / D-103 **LATERAL PLAN VIEW**
NTS



NOTES:

1. FOR TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND THE BRACING.
2. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
3. ALL BACK FILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
4. BACK FILL SHALL BE TAMPED IN 6" LAYERS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.
5. STONE BEDDING TO BE USED IF ROCK IS ENCOUNTERED.

2 / D-103 **GRAVITY SEWER INSTALLATION DETAIL**
NTS



NOTE:

1. USE BOOT SEAL ON ALL INLET AND OUTLET PIPING THROUGH SEPTIC TANK AND PUMP TANK WALLS.

3 / D-103 **PIPE THRU TANK PENETRATIONS**
NTS

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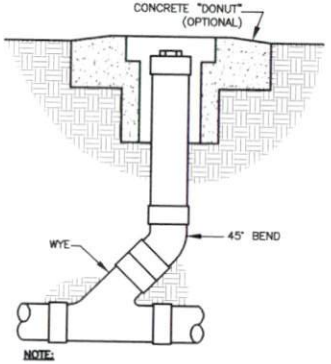
(LOT 3 KEMP HOLDINGS)
EOP-PRESSURE MANIFOLD
HARNETT COUNTY, NC

DETAILS - 3 OF 6

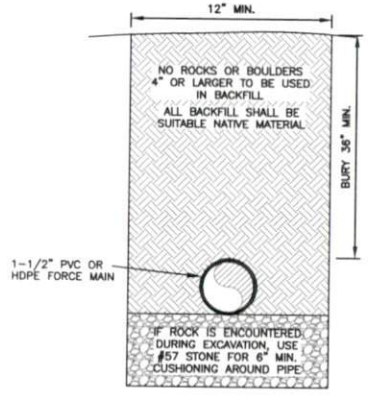
D-103



NOTE:

1. PIPING TO BE SCH. 40 PVC.
2. SEE SITE PLAN FOR PIPE SIZE.

1 / D-104 **GRAVITY CLEANOUT**
NTS



2 / D-104 **FORCE MAIN PIPE LAYING TRENCH**
NTS

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12/16/2021

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HARNETT COUNTY, NC

DETAILS - 4 OF 6

D-104

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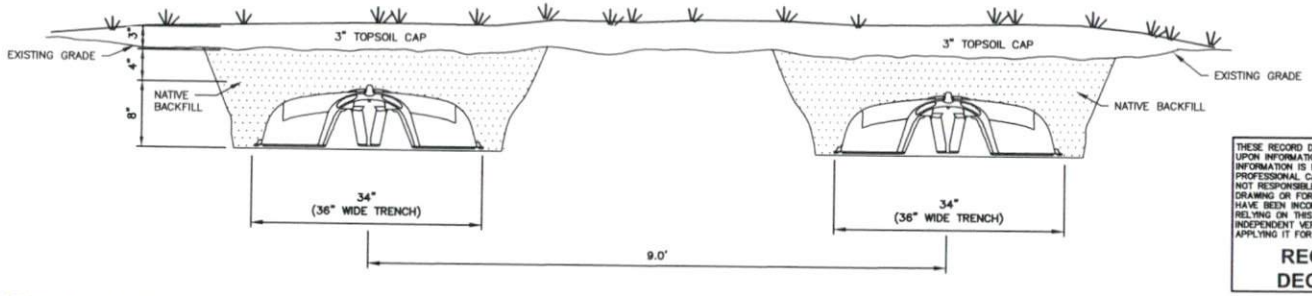

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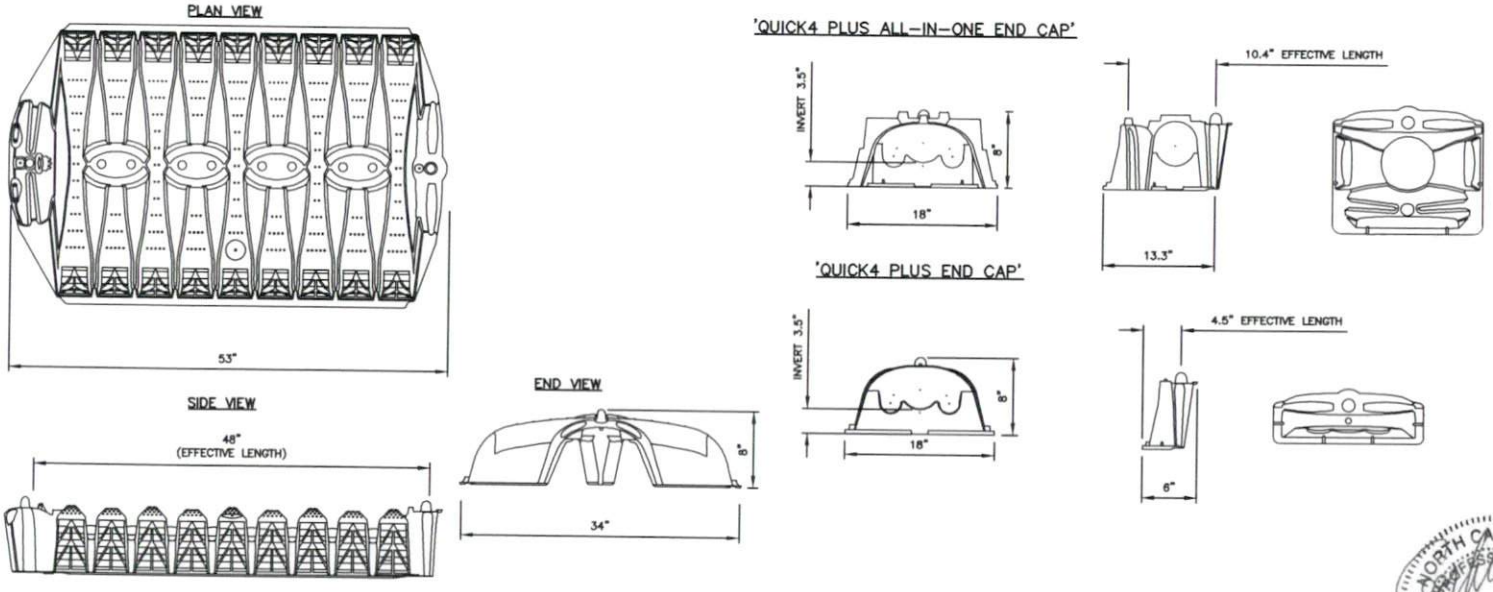
RECORD DRAWING
DECEMBER 16, 2021

1 / D-105 INFILTRATOR SYSTEMS INC. QUICK4 STANDARD LOW PROFILE CHAMBER TYPICAL TRENCH DETAIL

NTS



2 / D-105 INFILTRATOR SYSTEMS INC. QUICK4 STANDARD LOW PROFILE CHAMBER PRODUCT SPECIFICATION

NTS

NORTH CAROLINA PROFESSIONAL SEAL 17069 ENGINEER GARY S. MACCONNELL
12/16/2021

DETAILS - 5 OF 6

D-105

EVAN & PATRICIA GERMOND
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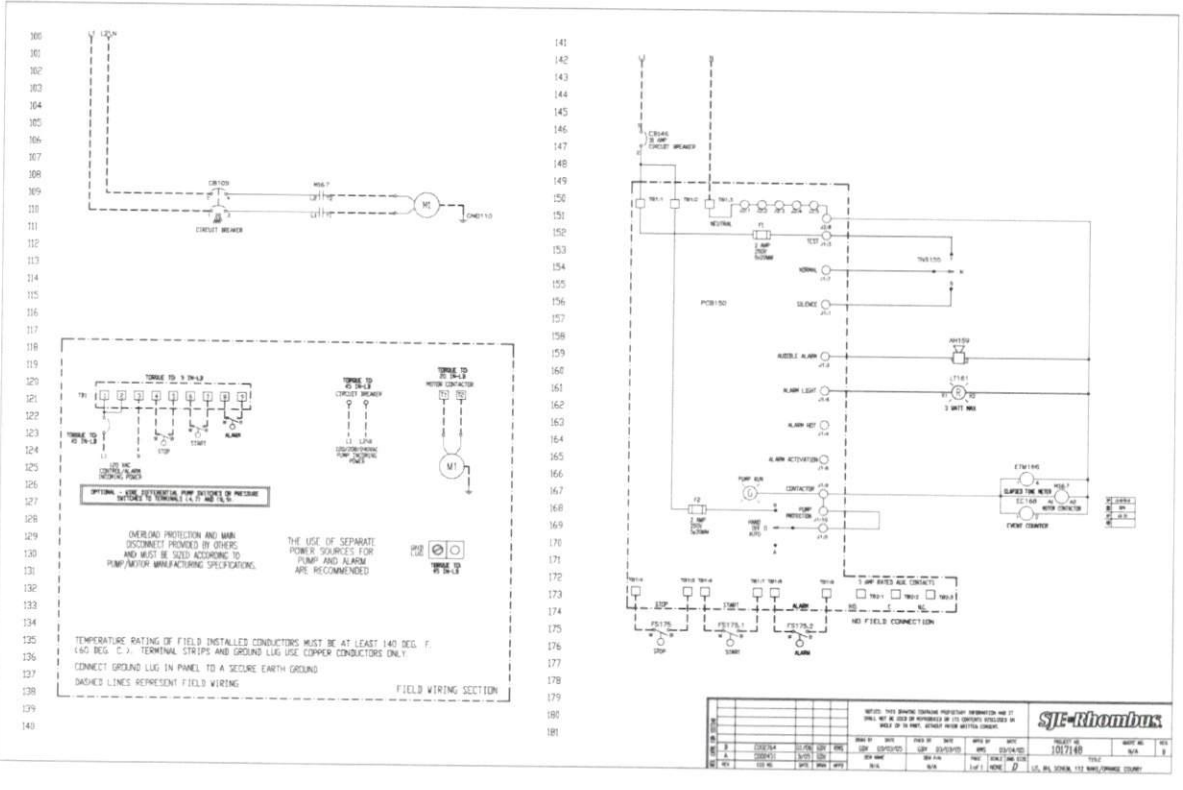

ELECTRICAL SPECIFICATIONS

1. CONTROL PANEL(S) WILL BE APPROXIMATELY 12"X10"X6" AND A NEMA 4X, UL RATED ENCLOSURE. PANEL(S) WILL BE SUPPLIED BY SJE RHOMBUS MODEL 112 CONTROL PANEL 1121W124H8AC10E15AI7J.
2. PANEL(S) SHALL BE MOUNTED, BY THE ELECTRICIAN WITHIN 10' OF THE TANK UNITS AND 48" – 60" OFF THE FINISHED GRADE TO THE BOTTOM OF THE ENCLOSURE.
3. THE ELECTRICIAN SHALL MAKE THE INTERNAL PANEL CONNECTIONS OF THE PUMP AND CONTROL CORDS. CONTROL PANELS WILL CONTAIN A WIRING SCHEMATIC IDENTIFYING ALL TERMINAL CONNECTIONS. THE SYSTEM INSTALLER WILL BUNDLE AND MARK EACH CORD WITH THE APPROPRIATE IDENTIFICATION AND SECURE IN THE ACCESS RISER AT THE PUMP POINT.
4. THE SIMPLEX DEMAND DOSE CONTROL PANEL REQUIRES DEDICATED CIRCUITS OF 15 AMPS, 115 VOLTS, SINGLE PHASE SUPPLIED FOR THE PUMP.
5. THE CONTROL PANEL REQUIRES A DEDICATED CIRCUIT OF 15 AMPS, 115 VOLTS SUPPLIED FOR THE ALARM/CONTROL SIDE OF THE PANEL.
6. A MINIMUM CONDUIT SIZE OF 1½" SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICIAN AS A CONNECTION BETWEEN THE CONTROL PANEL AND THEIR RESPECTIVE TERMINATION POINTS OUT IN THE TREATMENT AREA.
7. ALL OPEN CONDUIT ENDS SHALL HAVE REMOVABLE CLAY TYPE DUCT SEAL EMBEDDED TO PREVENT GASES AND MOISTURE FROM ENTERING THE CONTROL PANEL. DO NOT USE PERMANENT SILICONE OR EXPANDABLE FOAM PRODUCTS.
8. ALL PUMP AND FLOAT CONTROL CORDS WILL BE SUPPLIED WITH EITHER 30' OR 50' LEADS. THIS WILL HELP KEEP SPLICES TO A MINIMUM AND SHOULD BE AVOIDED IF AT ALL POSSIBLE. IF A SPLICE MUST BE USED, IT MUST BE MADE ABOVE GRADE IN A PLASTIC NEMA 4X JUNCTION BOX.
9. ALARMS SHALL BE AUDIBLE AND VISUAL.
10. AUDIBLE/VISIBLE ALARMS SHALL BE EXTERNAL TO ANY STRUCTURE.
11. PROVIDE DISCONNECT PER N.C.B.C.
12. ALL ELECTRICAL INSTALLATION SHALL BE PER N.C.B.C.
13. PROVIDE MANUAL TRANSFER SWITCH AND PLUG FOR PORTABLE EMERGENCY GENERATOR. PROVIDE DISCONNECT PER NCBC AND NEC.

1 / E-101 DEMAND DOSED SIMPLEX CONTROL PANEL
NTS

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12/16/2021

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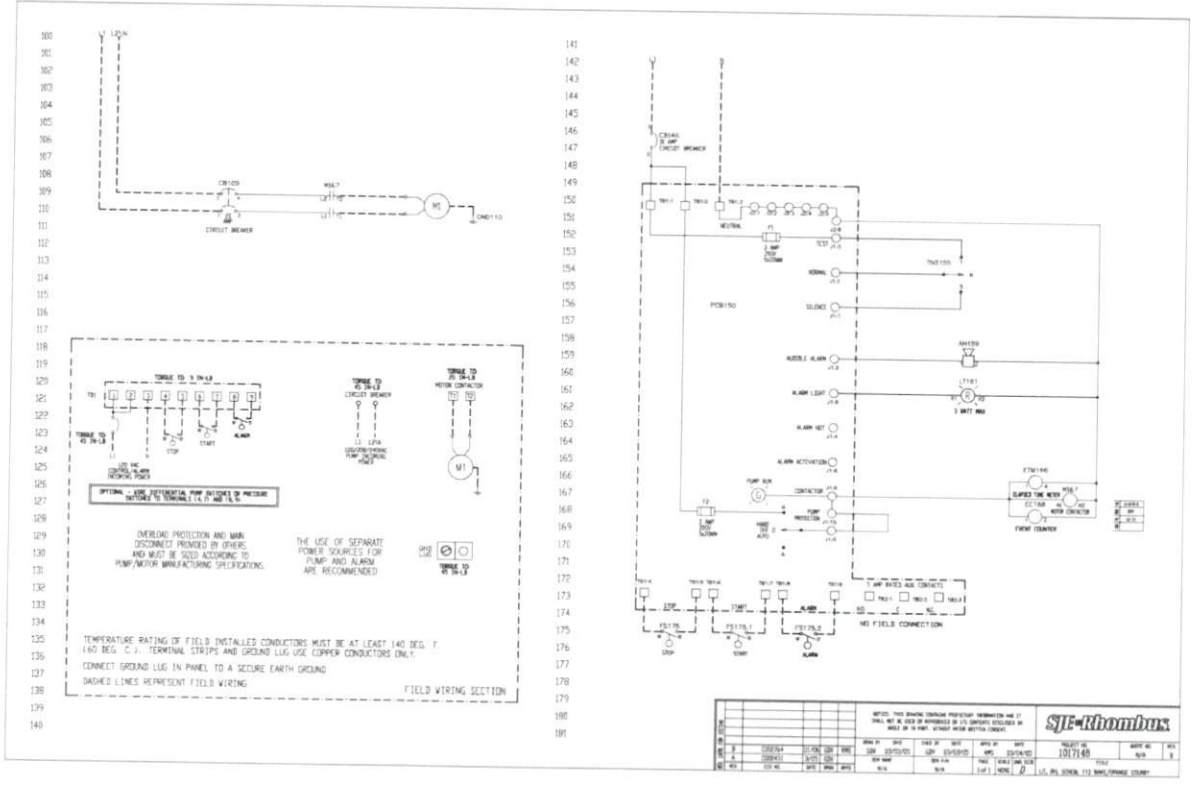
EOP-PRESSURE MANIFOLD
HARNETT COUNTY, NC

ELECTRICAL DETAILS
E-101



1 E-101 DEMAND DOSED SIMPLEX CONTROL PANEL

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4. THE SIMPLEX DEMAND DOSE CONTROL PANEL REQUIRES DEDICATED CIRCUITS OF 15 AMPS, 115 VOLTS, SINGLE PHASE SUPPLIED FOR THE PUMP.
5. THE CONTROL PANEL REQUIRES A DEDICATED CIRCUIT OF 15 AMPS, 115 VOLTS SUPPLIED FOR THE ALARM/CONTROL SIDE OF THE PANEL.
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EOP-PRESSURE MANIFOLD
HARNETT COUNTY, NC

ELECTRICAL DETAILS

E-101

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 and Field Dosing Tank Installation and Testing

1. Septic tanks shall conform to criteria in 15A NCAC 18A .1952-.1954. The septic and field dosing tanks 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. Exceptions may be made on a case by case basis with E-Z Treat's and engineer's prior written approval. 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 and Field Dosing Tank shall meet the following additional criteria:

    a. Minimum liquid depth of 36 inches.

    b. Minimum airspace of 8 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 a POLYLOK PL-122 effluent filters, or engineer approved equal, that extends down to 50 percent of the liquid depth of the tank.

12. Septic and field dosing tank 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.

Manifold Control Panel and Pumps

1. The control panel shall be by the EZ Series Demand Dosed Duplex Control Panel by SJE Rhombus, or approved equal by engineer. The control panel will have the dose volume to be set as shown on the construction drawings.

2. The control panel shall be as specified on the construction drawings and installed per manufacturer's recommendation.

3. Manifold pumps will be Zoeller 53 Series, 1/3 HP, 115 Volts or approved equal by engineer.

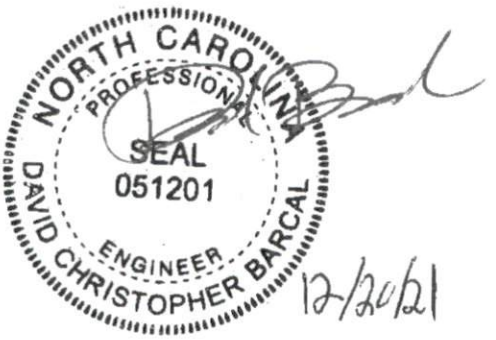
4. Disposal field is designed to receive 91-gallon adjusted daily design flow from the dwelling. The flow will be controlled with the use of a simplex control panel as shown on the construction drawings.

Infiltrator Systems Inc. Quick4 Standard Low Profile Chambers

1. The trench lines shall be the Standard Low Profile (LP) Chamber.

2. The Standard Low Profile (LP) Chamber trench lines shall be installed per manufacturer's recommendations unless shown otherwise on the construction drawings.

Evan & Patricia Germond
Engineered Option Permit



C. Reports on Special Inspections & Final Inspections

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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Morrisville, NC 27560
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Site Inspection Report For Pressure Manifold System

Client: Evan and Patricia Gaskamp Date: 12-16-2021

Address: 1594 Josie Williams Rd Arrival Time: 3:15 pm

Project #: A90401.00 Departure Time: 4:00pm

Weather Conditions: Sunny 60°F

Inspector (print) Tyler MacConnell Signature: Tyler MacConnell

Septic Tank

Is the septic tank the same manufacturer/model as specified on drawings? Yes ☒ No ☐

If no, record the following:

Manufacturer/Model MCP STB-814

Capacity 1000

If preapproved tank is used, is there a M&A stamp to verify a leak test was already performed and inspected at manufacturer's site? Yes ☐ No ☒

If yes, M#: _____

If no, perform and record leak test (see below):

Leak test date 10-25 to 26-2021 Test start time 9:45 AM Test end time 9:45 AM

Static Test		Vacuum Test *(Minimum Hold Time = 2 mins at 5 inches of Hg)*	
Starting water level	18" inches	Starting negative pressure	_____ inches of Hg
Ending water level	18" inches	Ending negative pressure	_____ inches of Hg
Water level difference	0" inches	Negative pressure difference	_____ inches of Hg
1% of tank liquid capacity	_____ inches	10% of starting negative pressure	
Difference ≤ 0.5" or 1% of tank capacity	☐ Yes ☒ No	Difference ≤ 10% of starting pressure	☐ Yes ☐ No

Septic Tank Effluent Filter (check one):

- [x] Polylok PL-68
- [ ] Simtech STF-110
- [ ] Other (manufacturer/model): _____
- [ ] None installed

Septic Tank Conditions	Satisfactory	N/A	Problem
Tank is installed on a 12-inch minimum layer of No. 57 washed stone aggregate.	[x]	[ ]	[ ]
Condition of the exterior walls and top of the tanks	[x]	[ ]	[ ]
Air vents present and open	[x]	[ ]	[ ]
Condition of risers and access lids	[x]	[ ]	[ ]
Condition of the interior walls (inlet/outlet/baffle/bottom)	[x]	[ ]	[ ]
Inlets and outlets are at proper location	[x]	[ ]	[ ]
Inlet and outlet tees on center line	[x]	[ ]	[ ]

Comments: _____

Pump Tank

Is the pump tank the same manufacturer/model as specified on drawings? Yes [x] No [ ]

If no, record the following:

Manufacturer/Model MCP - PT-53

Capacity 1000

Gallons per Inch _____

If a preapproved tank is used, is there a M&A stamp to verify a leak test was already performed and inspected at manufacturer's site? Yes [ ] No [x]

If yes, M#: _____

If no, perform and record leak test (next page):

Leak test date 10-25026-2021 Test start time 9:45 A.M. Test end time 9:45 A.M.

Static Test		Vacuum Test *(Minimum Hold Time = 2 mins at 5 inches of Hg)*	
Starting water level	21" inches	Starting negative pressure	inches of Hg
Ending water level	21" inches	Ending negative pressure	inches of Hg
Water level difference	0" inches	Negative pressure difference	inches of Hg
1% of tank liquid capacity	inches	10% of starting negative pressure	
Difference ≤ 0.5" or 1% of tank capacity	☐ Yes ☒ No	Difference ≤ 10% of starting pressure	☐ Yes ☐ No

Pump Tank Conditions	Satisfactory	N/A	Problem
Tank is installed on a 6-inch minimum layer of No. 57 washed stone aggregate.	☒	☐	☐
Tank is required size/loading per plan	☒	☐	☐
Condition of the exterior walls and top of the tank	☒	☐	☐
Air vent present and open	☒	☐	☐
Condition of risers and access lids	☒	☐	☐
Pump access is lockable, screwed, or secured to prevent unauthorized entry	☒	☐	☐
Pump access riser extends to at least 6" above finished grade	☒	☐	☐
Condition of the interior walls (inlet, outlet, baffle, and bottom)	☒	☐	☐
Inlet and outlet are at proper location	☒	☐	☐
Pump assembly is reachable from the surface without tank entry	☒	☐	☐
Pump removal rope, chain, or lifting device	☒	☐	☐
Independent float support system (float tree or bracket)	☒	☐	☐
Valves (check and shut-off) and vent installed /properly functioning	☒	☐	☐
Pump disconnects (unions) are accessible without tank entry	☒	☐	☐

Comments: _____

Control Panel

Is the control panel the same manufacturer/model as specified on drawings? Yes ☐ No ☒

If no, record the following:

Manufacturer/Model Alderon APS15-AB-X-X

Control Panel Conditions	Satisfactory	N/A	Problem
Enclosure watertight	☒	☐	☐
NEMA 4X rated enclosure	☒	☐	☐
Installed a minimum of 12" above finished grade	☒	☐	☐
HAND-OFF-AUTO (H-O-A) switch operable	☒	☐	☐
Pump and alarm on separate circuits	☒	☐	☐
Water/gas/corrosion-proof conduit or sealed putty	☒	☐	☐
No internal splices	☒	☐	☐
Alarm (visual and audible) and floats functioning properly	☒	☐	☐
Manual disconnect present and accessible	☒	☐	☐
Electrical inspection conducted	☒	☐	☐
Timer operable	☒	☐	☐
Elapsed time meter operable	☒	☐	☐
Cycle counter operable	☒	☐	☐

Control Panel - Dispersal Field Pump/Dosing Tank

(Choose One)

☒ Demand Dosed ☐ Timed Dosed

H-O-A switch set at: ☒ Auto ☐ Hand/Manual ☐ Off

Why:

Timer Setting: On Mode setting _____ minutes

Off Mode setting _____ ☐ minutes ☐ hours

Elapsed Time Meter Reading: _____ ☐ N/A

Cycle Counter Reading: _____ ☐ N/A

Comments: _____

Pump

Is the pump the same manufacturer/model as specified on site plans? Yes ☐ No ☒

If no, record the following:

Manufacturer/Model Liberty 280-2 1/2hp

Pump Conditions	Satisfactory	N/A	Problem
Pumps are operable	☒	☐	☐
Pump access is a minimum of 6" above finished grade	☒	☐	☐
Pump assembly is reachable from the surface without tank entry	☒	☐	☐
Quick disconnects are operable	☒	☐	☐
Isolation valves are operable	☒	☐	☐
Anti-siphon/air release devices are operable	☒	☐	☐
Backflow prevention (check valves) are operable	☒	☐	☐
Air releases located below check valves are operable	☒	☐	☐
Drain back devices are operable	☒	☐	☐
Inline filters are operable	☒	☐	☐
Pressure gauges/ports are operable	☒	☐	☐
Sampling ports are operable	☒	☐	☐

Pump removal system installed/in place

☐ Stainless steel pull chain ☒ Pull rope ☐ Pump rails

☐ Other _____

Water Level Sensor Conditions	Satisfactory	N/A	Problem
Float trees/assemblies are removable	☒	☐	☐
Alarm floats/sensors operate audible alarm	☒	☐	☐
Alarm floats/sensors operate visible alarm	☒	☐	☐
Pumps are submerged at OFF elevations/levels	☒	☐	☐

Dosing Design Parameters

Demand Dosing	Timed Dosing	Dosing Volume
☒	☐	_____ gals

Pump Draw Down Test

Ending Depth – Beginning Depth = Drawdown, inches

Drawdown, inches X Tank gpi = Drawdown, gallons

Drawdown, gallons ÷ Pump Run, minutes = Pump, gpm

Beginning Depth	Ending Depth	Drawdown, inches	Tank gpi	Drawdown, gallons	Pump Run, minutes	Pump, gpm
30 3/4"	33 1/2"	2 3/4"	20	55	3 min	18 gallons a minute

Comments: _____

Supply Line

Same material as specified on site plans? Yes ☒ No ☐ If no, record: _____

Same diameter as specified on site plans? Yes ☒ No ☐ If no, record: _____

Same length as specified on site plans? Yes ☒ No ☐ If no, record: _____

Same discharge pressure* as specified on site plans? Yes ☒ No ☐ If no, record: _____
*"design head" on tap chart

Distribution Device

(Choose One)

☒Pressure Manifold ☐Pressure Manitee ☐Other: _____

Distribution Device Conditions	Satisfactory	N/A	Problem
Distribution devices are watertight	☒	☐	☐
Minimum of 2 feet undisturbed soil to trench	☒	☐	☐
Proper center to center trench spacing maintained	☒	☐	☐
Devices installed on solid foundations	☒	☐	☐
All outlet inverts properly adjusted	☒	☐	☐
Turnups/cleanouts/valves are accessible	☒	☐	☐
Devices perform according to design specifications	☒	☐	☐

Comments: _____

Drain Field

Is the trench product the same manufacturer/model as specified on site plans? yes

If no: manufacturer/model_____

Measure trench depth from downhill side

Line	Line Length	Inlet Depth	Middle Point Depth	End Point Depth
1	70'	15"	15"	15"
2	70'	15"	15"	15"
3	70'	15"	15"	15"
4				
5				
6				
7				

Trench Conditions

	Satisfactory	N/A	Problem
Installation depth per approved plans and specifications	☒	☐	☐
Soil cover adequate and per approved plans and specifications	☒	☐	☐
Trench spacing per approved plans and specifications	☒	☐	☐
Proper effluent distribution	☒	☐	☐
Pressure head meets parameters in approved specifications	☒	☐	☐
Product installation meets manufacturers specifications	☒	☐	☐

Is the area for repair field undisturbed? Yes ☒ No ☐

Comments:_____

System Layout

Is the location and orientation of the tank(s), supply line, and drain lines accurately recorded on the site plans? Yes ☒ No ☐

If no, record any variations on site plans for record drawings.

Measure locations of tanks, distribution devices, and drain lines using triangulation (two points) with respect to house (and/or property lines) and record distances on site plans for final record drawings.

Verify all setback requirements are met below, measure and record any distances that are close to the minimum limit on site plans for record drawings.

Setbacks	Satisfactory	N/A	Problem
Distance from system to any wells (100ft)	☒	☐	☐
Distance from system to foundation (5ft)	☒	☐	☐
Distance from system to basement (15ft)	☐	☒	☐
Distance from septic tank/ drain lines to all property lines (10ft)	☒	☐	☐
Distance from distribution box to all property lines (10ft)	☒	☐	☐
Distance from system to pool (15ft)	☐	☒	☐
System meets all other applicable setback requirements Rule .1950 (check back page)	☒	☐	☐

****For As-Built/record drawings measure and mark up the following ****
(measure two distances for each)

- ☐ Distance from septic tank to house 10.5'
- ☐ Distance from pump tank to house 21'
- ☐ Distance from pressure manifold/manitee to house 78'
- ☐ Distance from house to closest line 19'
- ☐ Distance from house to farthest line 101'

Comments: _____

15A NCAC 18A .1950 LOCATION OF SANITARY SEWAGE SYSTEMS

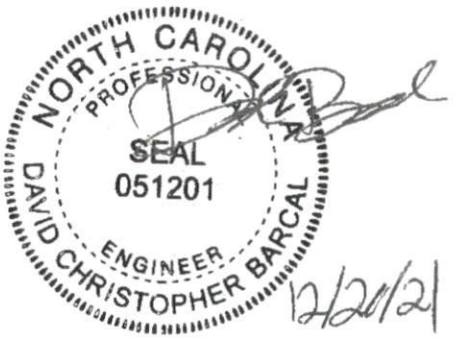
(a) Every sanitary sewage treatment and disposal system shall be located at least the minimum horizontal distance from the following:

(1)	Any private water supply source, including any well or spring	100 feet;
(2)	Any public water supply source	100 feet;
(3)	Streams classified as WS-I	100 feet;
(4)	Waters classified as S.A.	100 feet, from mean high water mark;
(5)	Other coastal waters	50 feet, from mean high water mark;
(6)	Any other stream, canal, marsh, or other surface waters	50 feet;
(7)	Any Class I or Class II reservoir	100 feet, from normal pool elevation;
(8)	Any permanent storm water retention pond	50 feet, from flood pool elevation;
(9)	Any other lake or pond	50 feet, from normal pool elevation;
(10)	Any building foundation	5 feet;
(11)	Any basement	15 feet;
(12)	Any property line	10 feet;
(13)	Top of slope of embankments or cuts of 2 feet or more vertical height	15 feet;
(14)	Any water line	10 feet;
(15)	Drainage Systems:	
	(A) Interceptor drains, foundation drains, and storm water diversions	
	(i) upslope	10 feet.
	(ii) sideslope	15 feet, and
	(iii) downslope	25 feet;
	(B) Groundwater lowering ditches and devices	25 feet;
(16)	Any swimming pool	15 feet;
(17)	Any other nitrification field (except repair area)	20 feet;

(b) Ground absorption sewage treatment and disposal systems may be located closer than 100 feet from a private water supply, except springs and uncased wells located downslope and used as a source of drinking water, for repairs, space limitations, and other site-planning considerations but shall be located the maximum feasible distance and in no case less than 50 feet.

(c) Nitrification fields and repair areas shall not be located under paved areas or areas subject to vehicular traffic. If effluent is to be conveyed under areas subject to vehicular traffic, ductile iron or its equivalent pipe shall be used. However, pipe specified in Rule .1955 (c) may be used if a minimum of 30 inches of compacted cover is provided over the pipe.

Evan & Patricia Germond
Engineered Option Permit



D. Management Program Manual

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

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Morrisville, North Carolina 27560

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

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

Evan & Patricia Germond
Engineered Option Permit

E. On-site Wastewater Contactor's Signed Statement

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

Avila Construction LLC
1250 SE Maynard Rd Ste 102
Cary, NC 27511-6947

December 16, 2021

Mr. James Manhart, R.E.H.S
Harnett County Department of Environmental Services
307 W Cornelius Harnett Boulevard (Mail)
Lillington, 27546

Re: 1594 Josey Williams Road – Evan & Patricia Germond
Pressure Manifold System - EOP – Certification
MacConnell & Associates, P.C. Project No.: A90401.00

Dear Mr. Manhart:

I certify that the above referenced project was installed with due care and to acceptable construction standards. The installation was contructed in conformance to the original construction documents. Any minor modifications were approved by the Engineer as noted on the record drawings. I trust that this letter meets your requirements for approving this system. Thank you.

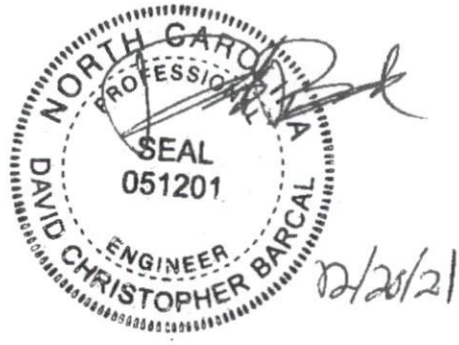
Sincerely,

Thomas Avila
Owner

cc: Gary MacConnell, PE, MacConnell & Associates, PC

Evan & Patricia Germond
Engineered Option Permit

F. Statement Pursuant to 15A NCAC 18A. 1938(h)



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MacCONNELL & Associates, P.C.
"Engineering Today For Tomorrow's Future"

501 Cascade Pointe Lane
Suite 103
Cary, NC 27513
www.macconnellandassoc.com

December 20, 2021

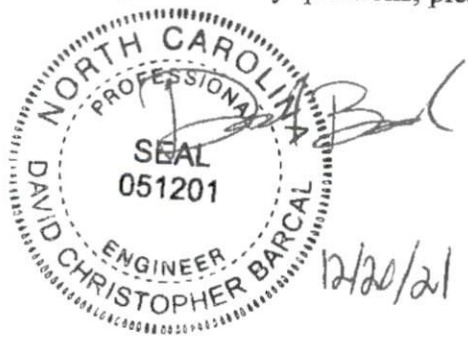
Mr. James Manhart, R.E.H.S
Harnett County Department of Environmental Services
307 W Cornelius Harnett Boulevard
Lillington, NC 27546

Re: 1594 Josey Williams Rd – Evan & Patricia Germond
Pressure Manifold System - EOP – Certification
MacConnell & Associates, P.C. Project No.: A90401.00

Dear Mr. Manhart:

Upon inspection and start-up of the system of the above referenced system, I certify that the above referenced project was installed with due care and to acceptable construction standards, pursuant to 15A NCAC 18A .1938(h). The installation was constructed in conformance to the original construction documents with any approved minor modifications noted on the record drawings. I trust that this letter meets your requirements for approving this system. Thank you for your continued assistance, and if you have any questions, please do not hesitate to call me (919) 467-1239.

Sincerely,



David Barcal, P.E.
Senior Engineer

cc: Thomas Avila, Avila Construction LLC
Evan and Patricia Germond, Owners

Evan & Patricia Germond
Engineered Option Permit

Item 2. Noterized Letter Documenting Owner's Acceptence of System from the PE

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

December 17, 2021

Mr. James Manhart., R.E.H.S
Harnett County Department of Environmental Services
307 W Cornelius Harnett Boulevard
Lillington, 27546

Re: 1594 Josey Williams Rd – Evan & Patricia Germond
Pressure Manifold System - EOP – Certification
MacConnell & Associates, P.C. Project No.: A90401.00

Dear Mr. Manhart:

I certify Evan and Patricia Germond are accepting the above referenced project from the Engineer: MacConnell & Associates, P.C. I trust that this letter meets your requirements for our acceptance of this system. Thank you.

Sincerely,

Evan and Patricia Germond
Owner

cc: Gary S. MacConnell, PE, MacConnell & Associates, P.C.

Acknowledgement

I certify that Evan Germond personally appeared before me this day, acknowledging to me that he or she signed the foregoing document.

Date: 12/17/2021

Katherine E. Hockaday, Notary Public

My commission expires:

4/24/2023

KATHERINE E HOCKADAY
NOTARY PUBLIC
Wake County
North Carolina
My Commission Expires April 24, 2023