

Z:\T-Drive (Projects)\Library\2023\C13102.00 - J&W Custom Homes - Lot 2 Horseshoe Road - Granville County - EOP Drip Drawings\C13102.00 - Cover.dwg Jul 25, 2023 12:54pm

J & W CUSTOM HOMES LLC.

LOT 2 HORSESHOE ROAD

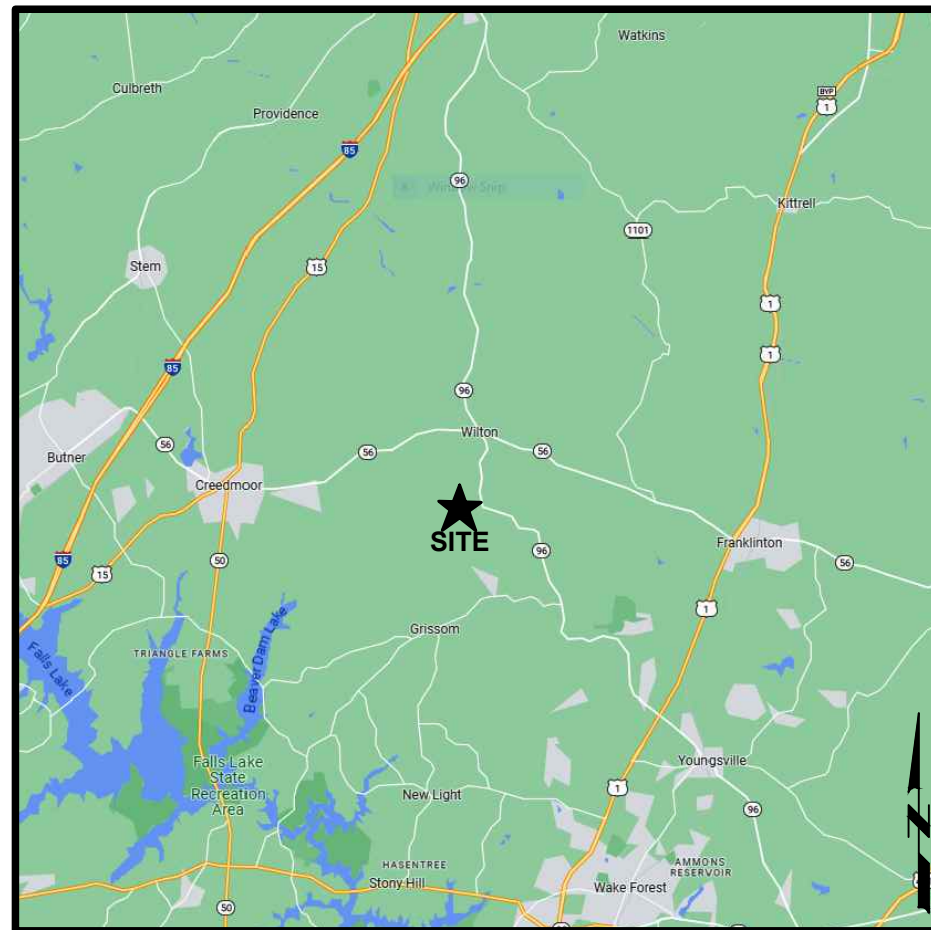
SUBSURFACE DRIP SYSTEM ENGINEERED OPTION PERMIT PROJECT No. C13102.00

3608 HORSESHOE ROAD
CREEDMOOR, NC 27522

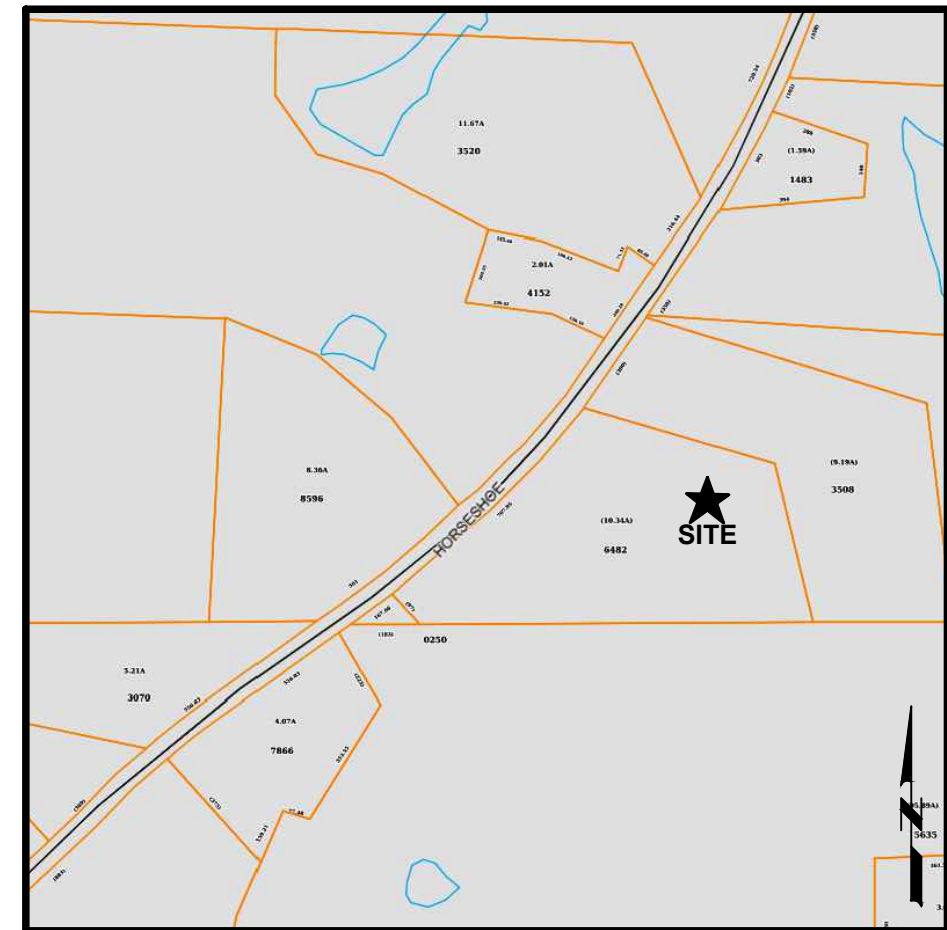
PIN#: 182500486482

SCHEDULE OF DRAWINGS:

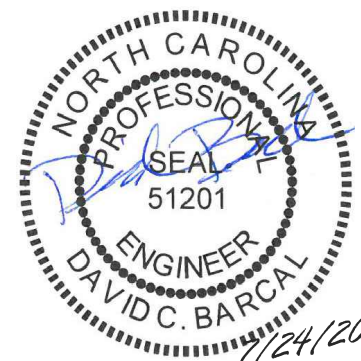
C-100	COVER SHEET
C-101	GENERAL NOTES
C-102	SYSTEM SCHEMATICS & MAINTENANCE SCHEDULE
C-103	PROPOSED SITE PLAN
C-104	TREATMENT, DISPOSAL AREA
C-105	SYSTEM SCHEMATICS
C-106	DOSING CALCULATIONS & DRIP LINE CHARTS
D-101	DETAILS 1 OF 11
D-102	DETAILS 2 OF 11
D-103	DETAILS 3 OF 11
D-104	DETAILS 4 OF 11
D-105	DETAILS 5 OF 11
D-106	DETAILS 6 OF 11
D-107	DETAILS 7 OF 11
D-108	DETAILS 8 OF 11
D-109	DETAILS 9 OF 11
D-110	DETAILS 10 OF 11
D-111	DETAILS 11 OF 11



VICINITY MAP



LOCATION MAP



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

MacCONNELL
& Associates, P. C.



BY: EEPA
JOB #: C13102.00
DATE: 7/24/2023

J & W CUSTOM HOME LLC.
3608 HORSESHOE ROAD
SUBSURFACE DRIP SYSTEM
ENGINEERED OPTION PERMIT

GRANVILLE COUNTY, NC

COVER
SHEET

C-100

Z:\T-Drive (Projects)\Library\2023\C13102.00 - J&W Custom Homes - Lot 2 Horseshoe Road - Granville County - EOP Drip\Drawings\C13102.00 - Base.dwg Jul 25, 2023 12:54pm

GENERAL NOTES

- CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF ALL TRADES AND SUBCONTRACTORS. CONTRACTOR IS ALSO RESPONSIBLE FOR FIELD VERIFYING DIMENSIONS, ELEVATIONS, AND LOCATIONS OF ALL EXISTING CONDITIONS AND UTILITIES.
- CONTRACTOR IS RESPONSIBLE FOR INSTALLING SYSTEM IN ACCORDANCE WITH ALL STATE & LOCAL REGULATIONS & POLICIES.
- CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SOIL EROSION AND SEDIMENTATION CONTROL REQUIREMENTS.
- CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE OSHA, NCDOT AND LOCAL SAFETY REQUIREMENTS.
- CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL CONSTRUCTION DAMAGE EXPEDITIOUSLY AND AT NO ADDITIONAL COST TO THE OWNER.
- LOCATION OF DRIPPER LINES AS SHOWN ARE APPROXIMATE. LINES SHALL LAY PARALLEL TO CONTOURS @ ±24”.
- SUPPLY AND RETURN LINES MAY BE LAID IN SAME TRENCH. SEPARATION IS FOR ILLUSTRATION PURPOSES ONLY.
- LAYOUT OF THE APPLICATION AREA IS BASED ON FIELD DELINEATION OF SOILS AREA BY A LICENSED SOILS CONSULTANT. ANY CHANGE IN LAYOUT BY THE CONTRACTOR OUTSIDE THE DELINEATED AREA SHALL BE APPROVED BY THE SOILS CONSULTANT, COUNTY HEALTH DEPARTMENT, AND THE ENGINEER.
- DRAIN ALL ROOF AND TOE DRAINS AWAY FROM DRIP FIELD AND TREATMENT UNITS.
- PROVIDE MINIMUM 100 FEET OF SEPARATION FROM ANY WELL TO WASTEWATER TREATMENT UNITS AND DISPOSAL SYSTEMS IF APPLICABLE.
- WASTEWATER AND IRRIGATION SYSTEMS SHALL COMPLY WITH IWWS–2015–3–R2
- ALL PIPE SHALL BE SCHEDULE 40 PVC UNLESS OTHERWISE NOTED.
- VORTEX FILTER IN HYDRAULIC UNIT SHALL BE INSPECTED UPON EACH REGULARLY SCHEDULED MAINTENANCE VISIT.
- INSTALLER IS RESPONSIBLE FOR ENSURING DISPERSAL AREA WAS PROPERLY CLEARED & SOIL MOISTURE CONDITIONS ARE CONDUCIVE FOR INSTALLATION PRIOR TO BEGINNING INSTALLATION.
- EJECTOR PUMP MAY BE REQUIRED FOR BASEMENT FIXTURES. INSTALLER IS RESPONSIBLE FOR VERIFICATION.
- KEEP ALL EXCAVATIONS 20’ FROM INSTALLATION AND RESERVE AREA.
- KEEP WELL AND SEPTIC SYSTEM OUT OF ANY UTILITY EASEMENTS AND AT LEAST 10’ FROM UTILITY LINES.
- DO NOT INSTALL LAWN IRRIGATION SYSTEMS WITHIN 20 FEET OF DISPERSAL AREA.
- DO NOT CONNECT WATER TREATMENT SYSTEMS, CONDENSATIONS DRAINS OR SUMP PUMPS TO ONSITE SYSTEM.
- IF A PRE–CONSTRUCTION MEETING REQUIRED BY PERMIT, PLEASE CALL TO SCHEDULE.
- ANY DEVIATION FROM THIS DESIGN MUST BE APPROVED BY THE LOCAL HEALTH DEPARTMENT AND THE ENGINEER PRIOR TO INSTALLATION.
- ELECTRICAL WIRING SHOULD BE INSTALLED BY A LICENSED ELECTRICAL CONTRACTOR, ACCORDING TO NEC, STATE AND LOCAL ELECTRICAL CODES, AS APPLICABLE.
- CONTRACTOR IS TO INSTALL TANKS ON UNIFORMLY FIRM AND STABLE COMPACTED GROUND, CRUSHED STONE IS RECOMMENDED TO PROVIDE UNIFORM SUPPORT TO TANK BOTTOM ESPECIALLY IN POOR, WET OR ROCKY SOILS.
- ALL TANKS MUST BE WATER–TIGHT AND CONFORM TO APPLICABLE LOCAL AND STATE REGULATIONS AND POLICIES.
- ALL PVC JOINTS SHALL BE PRIMED AND CHEMICALLY FUSED UNLESS THREADED.
- MAXIMUM COVER OVER TANKS AND DISTRIBUTION BOXES VARIES BY MANUFACTURER AND COUNTY.
- DISPERSAL FIELD CORNERS OR PROPERTY CORNERS SHOULD BE MARKED BY A LICENSED SURVEYOR PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATIONS MATCH THE CONSTRUCTION DRAWING.
- SHALLOW PLACED SYSTEMS (LESS THAN 18”) MUST BE HAND CLEARED AND STUMPS GREATER THAN 6” IN DIAMETER MUST BE GROUND OUT. STUMPS LESS THAN 6” MAY BE CAREFULLY REMOVED ON THE DAY OF INSTALLATION.
- REFER TO SITE DRAWING FOR ANY SPECIAL REQUIREMENTS.
- MACHINERY SHOULD AVOID PERCOLATION AREA.
- MACHINERY SHOULD NOT TRAVERSE EXCAVATED/EXPOSED PERCOLATION AREA.
- ALL SUPPLY AND RETURN LINES NOT DESIGNED TO DRAIN BACK SHOULD BE PROTECTED FROM FREEZING.

ELECTRICAL NOTES

- ONE CONTROL PANEL WILL CONTROL THE WASTEWATER SYSTEM.
- PANEL SHALL BE APPROXIMATELY 14.5” WIDE X 19.2” HIGH AND IS A NEMA 4X, UL RATED ENCLOSURE. PANEL SHALL BE SUPPLIED BY THE SYSTEM DISTRIBUTOR.
- THE PANEL 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.
- THE INSTALLER’S ELECTRICIAN SHALL MAKE THE INTERNAL PANEL CONNECTIONS OF THE PUMP/UV AND CONTROL CORDS. CONTROL PANEL SHALL CONTAIN A WIRING SCHEMATIC IDENTIFYING ALL TERMINAL CONNECTIONS. THE SYSTEM INSTALLER SHALL BUNDLE AND MARK EACH CORD WITH THE APPROPRIATE IDENTIFICATION AND SECURE IN THE ACCESS RISER AT THE DIFFERENT PUMP/UV POINTS.
- CONTROL PANEL REQUIRES A DEDICATED CIRCUIT OF 20 AMPS, 115 VOLTS, SINGLE PHASE SUPPLIED FOR THE PUMP.
- CONTROL PANEL REQUIRES A DEDICATED CIRCUIT OF 20 AMPS, 115 VOLTS SUPPLIED FOR THE BOTH ALARMS.
- CONTROL (DRIP) PANEL REQUIRES A DEDICATED CIRCUIT OF 20 AMPS, 115 VOLTS, SINGLE PHASE SUPPLIED FOR THE PUMPS.
- CONTROL PANEL REQUIRES A DEDICATED CIRCUIT OF 30 AMPS, 115 VOLTS SUPPLIED FOR SOLENOID VALVE HEATER.
- THE ULTRAVIOLET DISINFECTION UNIT REQUIRES A DEDICATED CIRCUIT OF 20 AMPS, 115 VOLTS.
- A MINIMUM CONDUIT SIZE OF 1 ½” SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICIAN AS A CONNECTION BETWEEN CONTROL PANEL AND EACH RESPECTIVE TERMINATION POINTS OUT IN THE TANK AREA.
- ALL OPEN CONDUIT ENDS SHALL HAVE REMOVABLE CLAY TYPE DUCT SEAL EMBEDDED TO PREVENT GASSES AND MOISTURE FROM ENTERING THE CONTROL PANEL. DO NOT USE PERMANENT SILICONE OR EXPANDABLE FOAM PRODUCTS.
- ALL PUMP AND FLOAT CONTROL CORDS SHALL 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.
- ALARMS SHALL BE AUDIBLE AND VISUAL.
- AUDIBLE/VISIBLE ALARMS SHALL BE EXTERNAL TO ANY STRUCTURE.

SITE RESTORATION

- BACKFILL WITH SUITABLE LOOSE MATERIAL (SANDY LOAM TO SANDY CLAY LOAM) FREE OF LARGE OR DAMAGING OBJECTS, SEED AND STRAW BACKFILLED AREAS (OR SOD WHEN REQUIRED).
- PROVIDE EROSION PROTECTION FOR BACKFILL MATERIAL IN ACCORDANCE WITH STATE AND COUNTY STANDARDS AND MAINTAIN UNTIL PERMANENT PROTECTION IS ESTABLISHED.
- BACKFILL SHOULD BE GRADED TO PREVENT THE INFILTRATION OF SURFACE WATER AND DIVERT STORM WATER RUN–OFF AWAY FROM THE SYSTEM. WHEN ADDITIONAL FILL IS REQUIRED, IT SHOULD BE PLACED AFTER SYSTEM IS INSTALLED FROM THE EDGES CROWNED IN THE MIDDLE AND FEATHERED OUT 10’ BEYOND THE DISPERSAL AREA. FILL SHOULD BE TEXTURE GROUP II OR III AND FREE OF LARGE STONES AND ORGANIC DEBRIS. TOP 2” SHOULD BE SUITABLE FOR ESTABLISHMENT OF LAWN.

TREATMENT UNITS

- SAMPLING CHAMBER OR MEANS OF COLLECTING A FRESH SAMPLE SHALL BE PROVIDED FOR ALL TS–1 & TS–2 SYSTEMS. IT IS PREFERRED THAT THE INLET OF THE PUMP CHAMBER BE USED AS THE SAMPLING LOCATION WHEN A PUMP IS REQUIRED.
- SYSTEM INSTALLATION MUST COMPLY WITH ALL LOCAL ORDINANCES AND POLICIES.

OPERATING REGIME FOR DRIP IRRIGATION SYSTEM

- SYSTEM IS DESIGNED AND CONTROLS (MICROPROCESSORS) ARE PROVIDED TO DOSE THE E–Z TREAT TREATMENT UNITS. SEE SHEET C–106 FOR “ON” AND “OFF” TIME SETTINGS. PUMPED DRIP IRRIGATION FLOW SHALL PASS THROUGH A FLOW METER. WHEN THE PREPROGRAMMED VOLUME IS REACHED THE ACTIVE PUMP WILL BE DE–ENERGIZED. THE PUMP WILL ALSO DE–ENERGIZE IF THE LOW WATER LEVEL “PUMP OFF” SWITCH IS ACTIVATED. SEE SHEET C–106 FOR FIELD DOSING INFORMATION.
- IF THE HIGH WATER LEVEL “ALARM” FLOAT SWITCH IS ACTIVATED, THE SYSTEM WILL BEGIN ITS OPERATION OF DELIVERING THE PREDETERMINED DOSE VOLUME, AND SHALL ALSO ENERGIZE THE AUDIBLE AND FLASHING ALARM FIXTURES (ONCE ENERGIZED, THE FLASHING AND AUDIBLE ALARM UNITS WILL ONLY BE RESET MANUALLY OR BY REACHING LOW LEVEL CONDITIONS).
- THE MICROPROCESSOR WILL ALSO CONTROL THE PERIODIC BACK WASHING OF THE VORTEX FILTER AND THE FLUSHING OPERATION OF THE SUB–FIELD LATERAL NETWORK. FILTER BACK WASHING SHALL OCCUR AT THE END OF EACH DOSE CYCLE. SYSTEM LATERAL FLUSHING SHALL OCCUR WHEN THE MICROPROCESSOR SENSES RECOGNITION OF A PRESET ELAPSED TIME SINCE LAST SYSTEM FLUSH (USUALLY 28 DAYS). THE SYSTEM SHALL BE CONFIGURED TO ALLOW FOR MANUAL INITIATION OF BACK WASHING FILTERS OR SUB–FIELD SYSTEM FLUSHING.
- THE CONTROL PANEL SHALL INCLUDE, BUT NOT BE LIMITED TO, AN “AUTO/MANUAL” SYSTEM CONTROL SWITCH, STOP/START SWITCH FOR EACH PUMP, NON–RESETTABLE ELAPSED TIME RECORDER FOR EACH PUMP, AND INDIVIDUAL PUMP RUN LIGHTS.
- THE CONTROL PANEL SHALL BE A NEMA 4X ENCLOSURE. ALL SUPPORTING CONTROL UNITS, IF NOT HOUSED WITHIN THE CONTROL PANEL, SHALL BE IN A SEPARATE NEMA 4X ENCLOSURE.



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: EE/PA

JOB #:
C13102.00

DATE:
7/24/2023

J & W CUSTOM HOME LLC.
3608 HORSESHOE ROAD

SUBSURFACE DRIP SYSTEM
ENGINEERED OPTION PERMIT

GRANVILLE COUNTY, NC

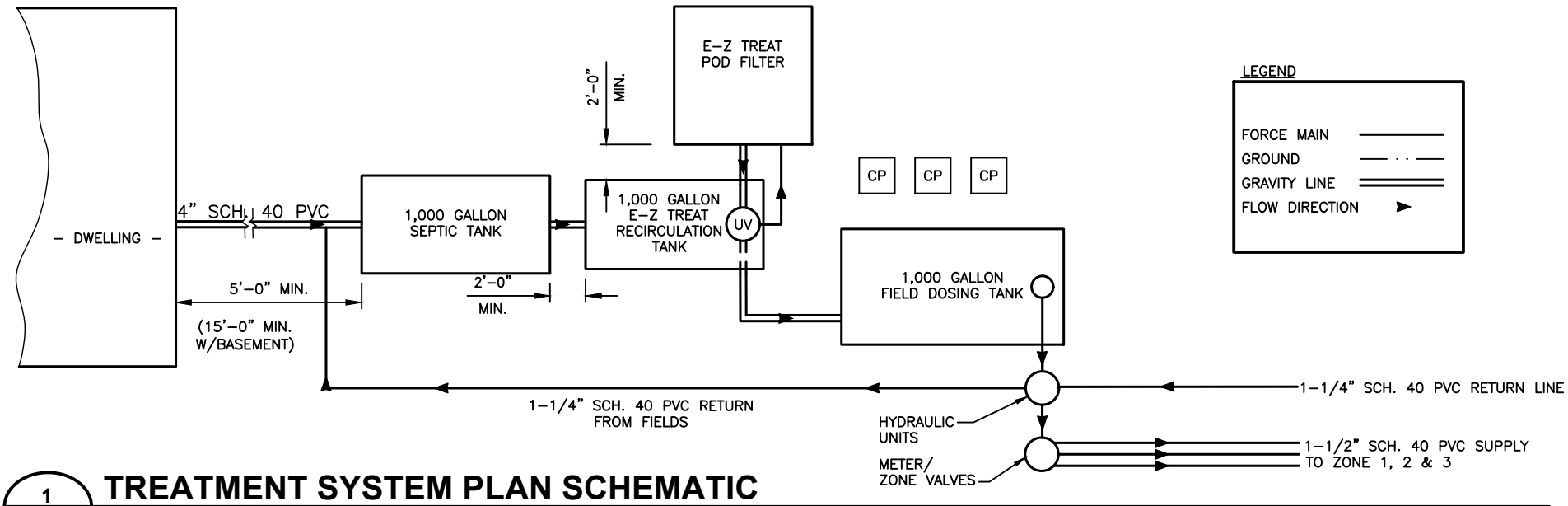
GENERAL
NOTES

C-101

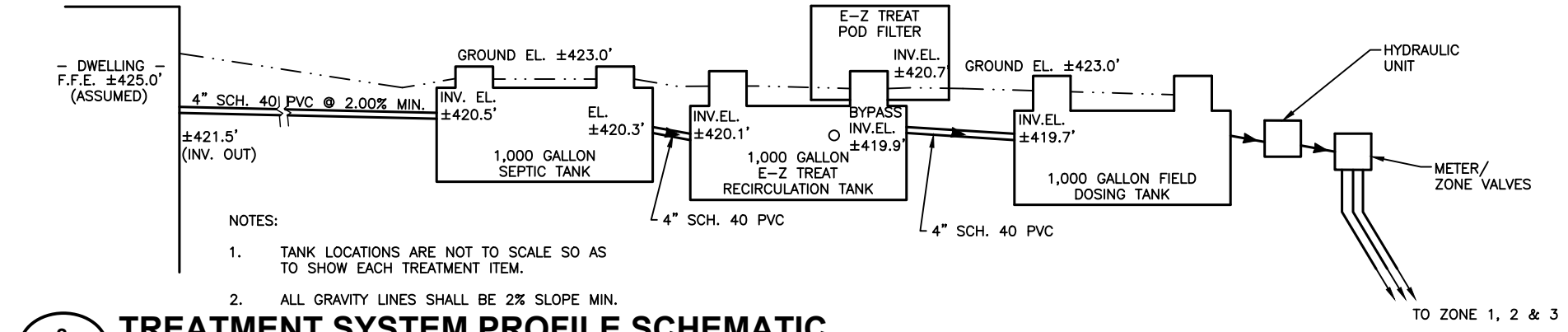
Z:\T-Drive (Projects)\Library\2023\C13102.00 - J&W Custom Homes - Lot 2 Horseshoe Road - Granville County - EOP Drip\Drawings\C13102.00 - Base.dwg Jul 25, 2023 12:54pm

MAINTENANCE SCHEDULE

ITEM	FREQUENCY	TASK
SEPTIC TANK	3 - 6 MONTHS	CHECK FOR SOLIDS ACCUMULATION, BLOCKAGES, OR BAFFLE DAMAGE, IN/EXFILTRATION, PUMP SEPTAGE. CLEAN EFFLUENT FILTER.
	12 MONTHS	PUMP OUT ACCUMULATED SOLIDS IF NECESSARY. REPLACE EFFLUENT FILTER EACH TIME SEPTIC TANK IS PUMPED.
RECIRCULATION TANK FIELD DOSING TANK	WEEKLY	CHECK PUMPS, CONTROLS, ALARMS, ELAPSED TIME METERS.
	3-6 MONTHS	CHECK FOR SOLIDS ACCUMULATION, IN/EXFILTRATION.
	12 MONTHS	PUMP OUT ACCUMULATED SOLIDS IF NECESSARY.
SUPPLY LINES, FORCE MAINS	6-12 MONTHS	CHECK FOR EXPOSED PIPE AND LEAKAGE.
DISTRIBUTION FIELDS	2-4 WEEKS	MOW VEGETATIVE COVER IF APPLICABLE.
	3-6 MONTHS	CHECK FOR EROSION, OR PONDING OF EFFLUENT.
PUMPS, FILTER SYSTEM, & DISTRIBUTION PIPING	MONTHLY	CHECK FLOW METER READOUT AND COMPARE TO RECORDED FLOWS, CHECK PUMPS AND FILTER SYSTEM FOR LEAKS.
	QUARTERLY	REMOVE FILTER COVERS AND INSPECT FOR ACCUMULATION OF DEBRIS. CHECK DIFFERENTIAL PRESSURE GAUGE BEFORE AND AFTER FLUSHING (D.P. SHOULD RETURN TO ORIGINAL OPERATING D.P.) CHECK PUMPS FOR ABNORMAL VIBRATION, TEST THE ALARM FUNCTIONS.
	SEMIANNUALLY	REMOVE AND LUBRICATE O-RINGS ON FILTER CANISTER, REPLACE IF DAMAGED, CLEAN 1-1/2" FILTER SCREEN AT HYDRAULIC UNIT.
	ANNUALLY	REMOVE FILTER SCREEN AND REPLACE, CLEAN USED FILTER SCREEN IN MILD ACID SOLUTION AND STORE FOR NEXT ANNUAL REPLACEMENT, FLUSH FIELD SUPPLY AND RETURN MANIFOLDS BY REMOVING (UNSCREWING) AIR/VACUUM BREAKERS.
E-Z TREAT TREATMENT SYSTEM	MONTHLY	INSPECT CONTROL/ALARM PANEL, PUMPING SYSTEM EFFLUENT FILTERS/PUMP SCREENS, RECIRCULATION TANK, AND E-Z TREAT POD FILTER. (TREATMENT UNIT)
ULTRAVIOLET DISINFECTION UNIT	ANNUALLY	CHECK AND/OR REPLACE BATTERIES IN FLOW METER. (IF APPLICABLE)
	3-6 MONTHS	WIPE (CLEAN) UV LAMPS.
	ANNUALLY	CHECK INTENSITY AND REPLACE LAMP WHEN REQUIRED. CHANGE BULB.



1
C-102
TREATMENT SYSTEM PLAN SCHEMATIC
NTS



2
C-102
TREATMENT SYSTEM PROFILE SCHEMATIC
NTS



SYSTEM
SCHEMATICS &
MAINTENANCE
SCHEDULE

C-102

J & W CUSTOM HOME LLC.
3608 HORSESHOE ROAD

SUBSURFACE DRIP SYSTEM
ENGINEERED OPTION PERMIT

GRANVILLE COUNTY, NC

BY: EE/PA

JOB #: C13102.00

DATE: 7/24/2023

501 CASCADE POINTE LANE, SUITE 103
CARY, NORTH CAROLINA 27513
P. O. BOX 129

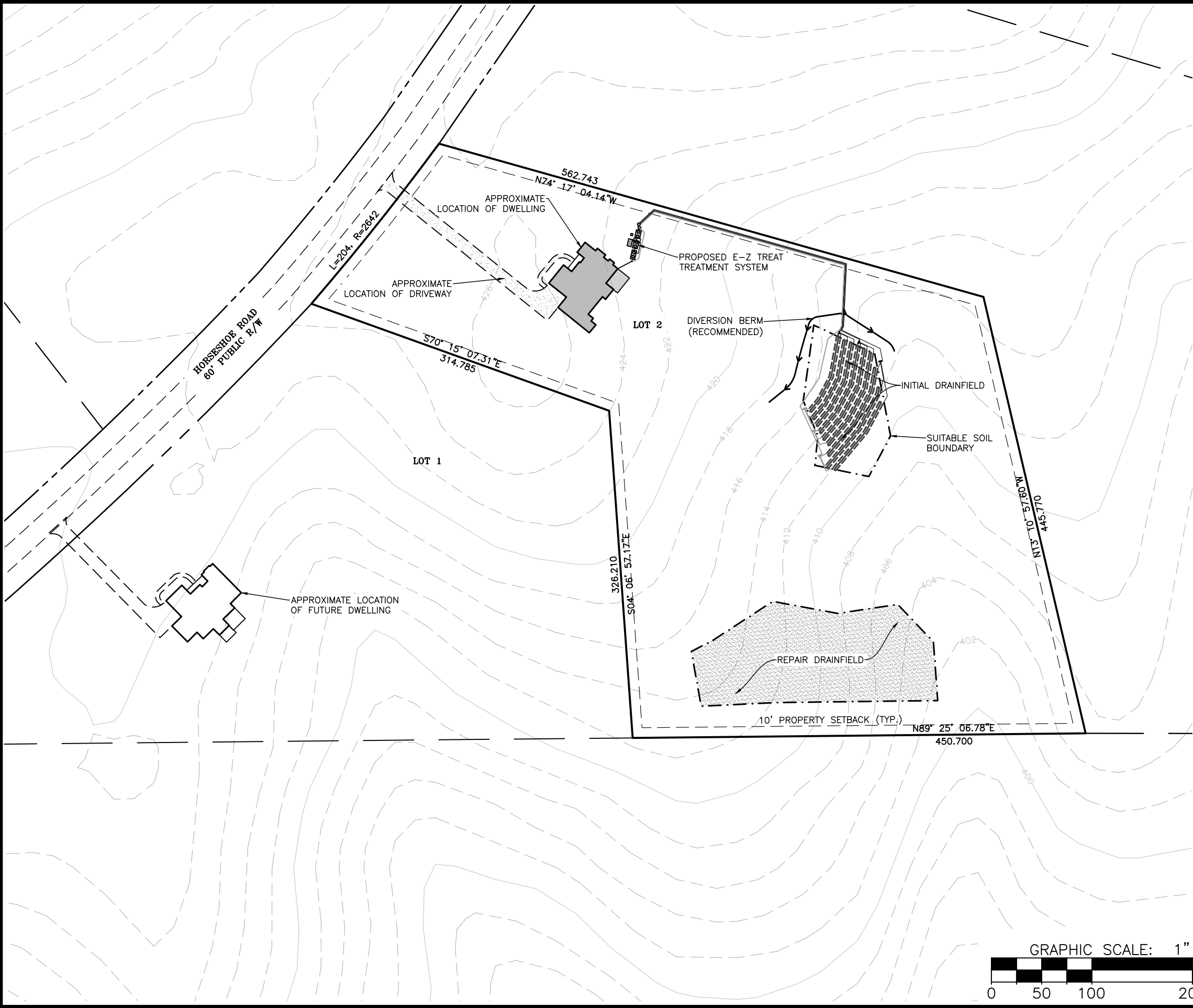
MacCONNELL
& Associates, P. C.

51201

7/24/2023

MORRISVILLE, NORTH CAROLINA 27560
TEL: (919) 467-1239 FAX: (919) 319-6510

Z:\T-Drive (Projects)\Library\2023\C13102.00 - J&W Custom Homes - Lot 2 Horseshoe Road - Granville County - EOP Drip\Drawings\C13102.00 - Base.dwg Jul 25, 2023 12:54pm

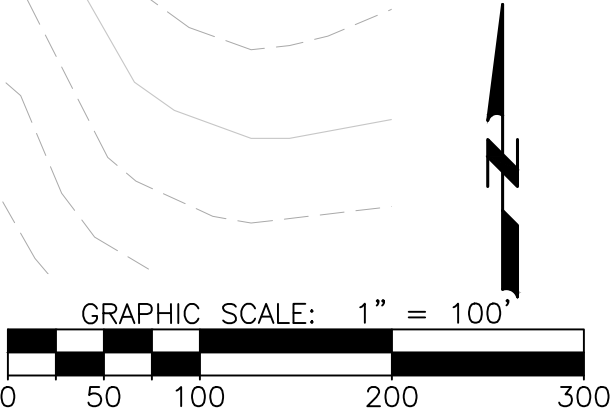


LEGEND

	ADJACENT BOUNDARY
	BOUNDARY (PROPERTY)
	RIGHT-OF-WAY
	CONTOURS - INDEX
	CONTOURS - INTERMEDIATE
	DRAIN FIELD (SEPTIC) AREA
	EXISTING STREAM
	INITIAL DRIP LINES (FLAGGED)
	INITIAL DRIP LINES (UNFLAGGED)
	REPAIR LINES (FLAGGED)
	REPAIR LINES (UNFLAGGED)
	UNUSED LINES (FLAGGED)
	RETURN LINES
	SUPPLY LINES
	DIVERSION BERM
	RETURN MANIFOLD
	SUPPLY MANIFOLD
	CLEAN OUT
	CONTROL PANEL
	E-Z TREAT RECIRC. TANK
	E-Z TREAT TREATMENT UNIT
	FIELD DOSING TANK
	SEPTIC TANK
	HYDRAULIC UNIT
	ULTRAVIOLET DISINFECTION
	METER
	ZONE VALVE

NOTES:

1. PARCELS AND TOPO TAKEN FROM NC ONEMAP. SITE PLAN AND SOILS INFORMATION TAKEN FROM SKETCH BY SOIL & ENVIRONMENTAL CONSULTANTS. P.A.
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 CONTOURS.



PROPOSED
SITE PLAN

C-103

J & W CUSTOM HOME LLC.
3608 HORSESHOE ROAD

SUBSURFACE DRIP SYSTEM
ENGINEERED OPTION PERMIT

BY: EE/PA

JOB #: C13102.00

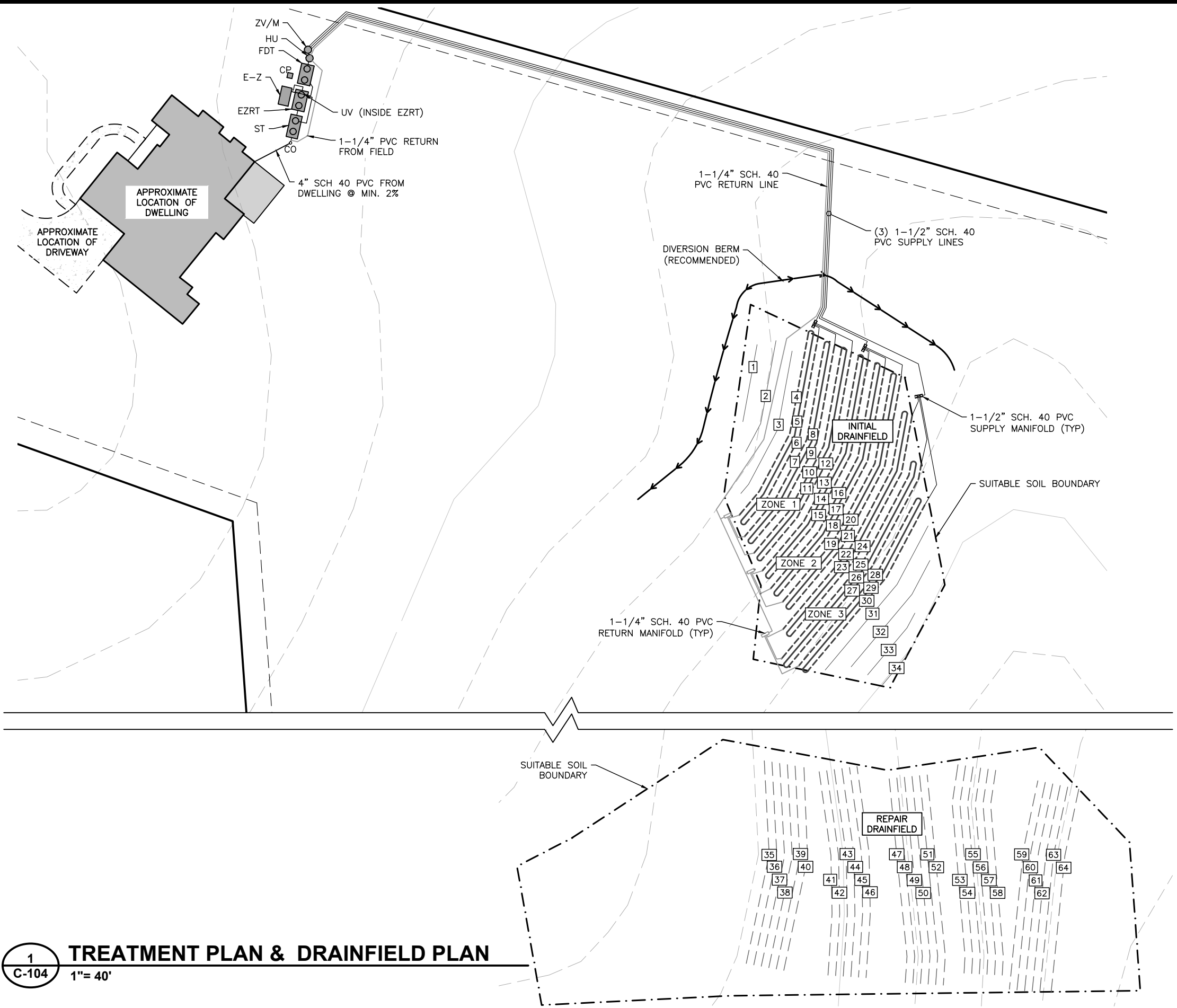
DATE: 7/24/2023

501 CASCADE POINTE LANE, SUITE 103
CARY, NORTH CAROLINA 27513
P. O. BOX 129

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

Z:\T-Drive (Projects)\Library\2023\C13102.00 - J&W Custom Homes - Lot 2 Horseshoe Road - Granville County - EOP Drip\Drawings\C13102.00 - Base.dwg Jul 25, 2023 12:54pm



LEGEND

	ADJACENT BOUNDARY
	BOUNDARY (PROPERTY)
	RIGHT-OF-WAY
	CONTOURS - INDEX
	CONTOURS - INTERMEDIATE
	DRAIN FIELD (SEPTIC) AREA
	EXISTING STREAM
	INITIAL DRIP LINES (FLAGGED)
	INITIAL DRIP LINES (UNFLAGGED)
	REPAIR LINES (FLAGGED)
	REPAIR LINES (UNFLAGGED)
	UNUSED LINES (FLAGGED)
	RETURN LINES
	SUPPLY LINES
	DIVERSION BERM
	RETURN MANIFOLD
	SUPPLY MANIFOLD
	CLEAN OUT
	CONTROL PANEL
	E-Z TREAT RECIRC. TANK
	E-Z TREAT TREATMENT UNIT
	FIELD DOSING TANK
	SEPTIC TANK
	HYDRAULIC UNIT
	ULTRAVIOLET DISINFECTION
	METER
	ZONE VALVE

NOTES:

1. PARCELS AND TOPO TAKEN FROM NC ONEMAP. SITE PLAN AND SOILS INFORMATION TAKEN FROM SKETCH BY SOIL & ENVIRONMENTAL CONSULTANTS. P.A.
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 CONTOURS.



1 TREATMENT PLAN & DRAINFIELD PLAN
C-104 1"= 40'

TREATMENT, DISPOSAL AREA

C-104

J & W CUSTOM HOME LLC.
3608 HORSESHOE ROAD

SUBSURFACE DRIP SYSTEM
ENGINEERED OPTION PERMIT

BY: EEPA

JOB #: C13102.00

DATE: 7/24/2023

501 CASCADE POINTE LANE, SUITE 103
CARY, NORTH CAROLINA 27513
P. O. BOX 129

MacCONNELL & Associates, P. C.

51201

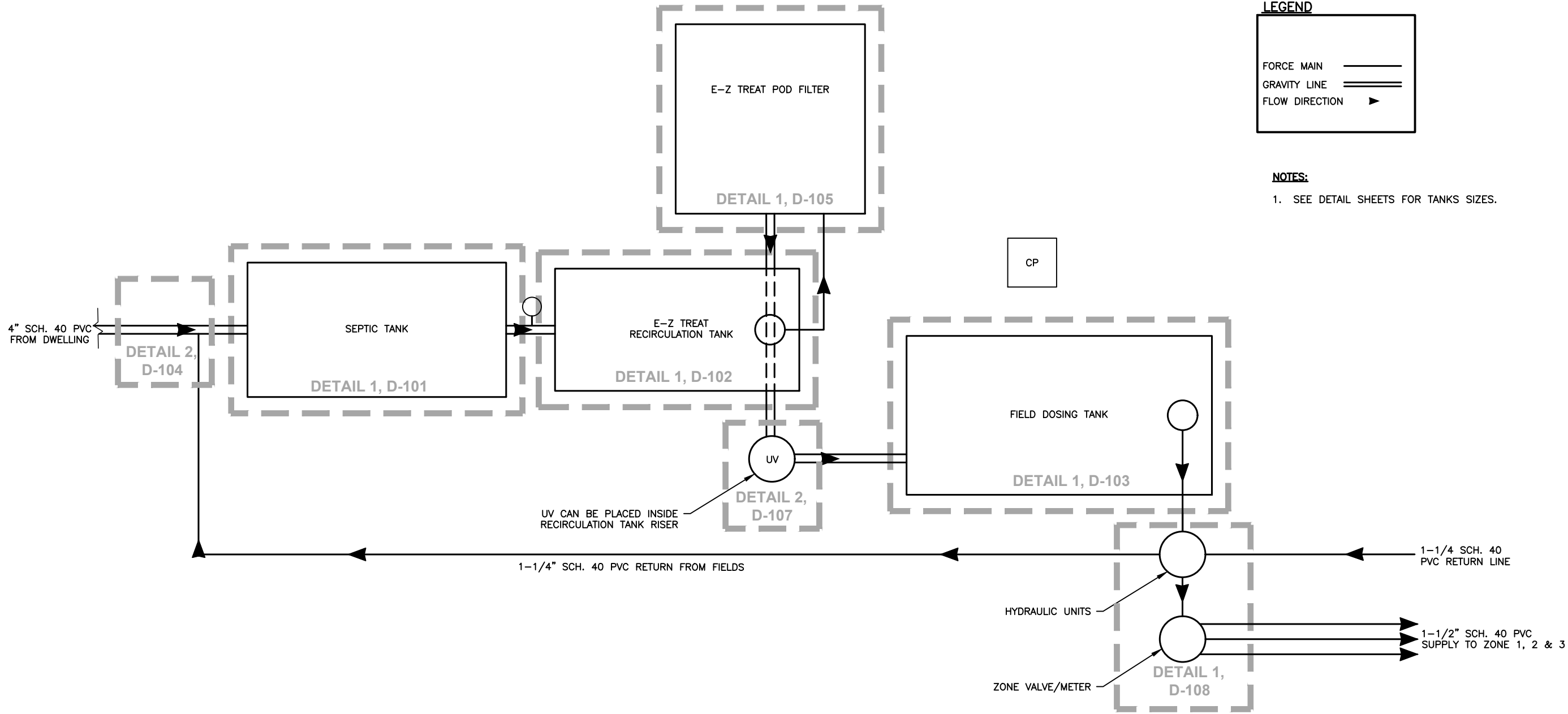
7/24/2023

501 CASCADE POINTE LANE, SUITE 103
CARY, NORTH CAROLINA 27513
P. O. BOX 129

MORRISVILLE, NORTH CAROLINA 27660
TEL: (919) 467-1239 FAX: (919) 319-6510

GRANVILLE COUNTY, NC

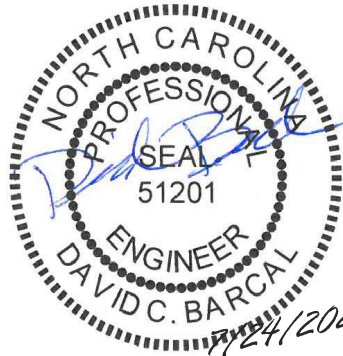
Z:\T-Drive (Projects)\Library\2023\C13102.00 - J&W Custom Homes - Lot 2 Horseshoe Road - Granville County - EOP Drip\Drawings\C13102.00 - Base.dwg Jul 25, 2023 12:54pm



1
C-105

TREATMENT SYSTEM DETAIL KEY

NTS



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: EE/PA
JOB #: C-13102.00
DATE: 7/24/2023

J & W CUSTOM HOME LLC.
3608 HORSESHOE ROAD
SUBSURFACE DRIP SYSTEM
ENGINEERED OPTION PERMIT

TREATMENT SYSTEM
DETAIL KEY

C-105

Z:\T-Drive (Projects)\Library\2023\C13102.00 - J&W Custom Homes - Lot 2 Horseshoe Road - Granville County - EOP Drip\Drawings\C13102.00 - Base.dwg Jul 25, 2023 12:55pm

BASE MAP INFO FROM:	GRANVILLE COUNTY GIS
SOILS MAP PROVIDED BY:	SOIL & ENVIRONMENTAL CONSULTANTS, PA.

BASIS OF DESIGN				
BEDROOMS	GPD/BR	INITIAL DESIGN FLOW (GPD)	FLOW REDUCTION	FINAL DESIGN FLOW (GPD)
4	120	480	25%	360

TREATMENT TABLE		
E-Z TREAT PODS REQUIRED:	1	PODS
E-Z TREAT RE-CIRCULATION RATIO:	7	TIMES ADF
TOTAL E-Z TREAT FLOW PER DAY:	3376.6	GALLONS
E-Z TREAT RE-CIRCULATION CYCLES PER DAY:	99.31	CYCLES
E-Z TREAT VOLUME PER DOSE:	34	GALLONS
RE-CIRCULATION TIMER ON:	2.5	MINUTES
RE-CIRCULATION TIMER OFF:	12	MINUTES
RE-CIRCULATION DOSE CYCLE:	14.5	MINUTES
DENITRIFICATION GALLONS RETURNED:	993.1	GALLONS/DAY
DENITRIFICATION RETURN SETTING:	4	GPM
E-Z TREAT SURFACE AREA:	29	SQUARE FEET
E-Z TREAT LOADING RATE:	17	GPD/SQUARE FOOT

GEOFLOW FIELD DOISNG TABLE		
NUMBER OF DOSES PER DAY/ZONE:	1	DOSES/DAY
TIMER ON. PUMP RUN TIME PER DOSE/ZONE:	32.56	MINS:SECONDS
TIMER OFF. PUMP OFF TIME BETWEEN DOSES:	23:27	HRS:MINS
PER ZONE - PUMP RUN TIME PER DAY/ZONE:	0:32	HRS:MINS
ALL ZONES - NUMBER OF DOSES PER DAY / ALL ZONES:	3	DOSES/DAY
ALLOW TIME FOR FIELD TO PRESSURIZE:	0:00:30	HRS/MINS/SECS
FILTER FLUSH TIMER:	0:00:20	HRS/MINS/SECS
DRAIN TIMER:	0:05:00	HRS/MINS/SECS
FIELD FLUSH TIMER:	0:01:00	HRS/MINS/SECS
FIELD FLUSH COUNTER:	21	CYCLES
TIMER REQUIRED TO COMPLETE ALL FUNCTIONS PER DAY:	1:59	HRS:MINS
DOSE VOLUME PER ZONE:	120	GPD

EFFLUENT LIMITS PER TS-II SYSTEMS (15A NCAC 02T .0605)		
CARBONACEOUS BIOCHEMICAL OXYGEN DEMAND (CBOD):	≤30	MG/L
TOTAL SUSPENDED SOLIDS (TSS):	≤30	MG/L
AMMONIA NITROGEN - NH4-N	≤15	MG/L
FECAL COLIFORM:	≤200	/100 ML

LINE SEGMENT (INITIAL)						
LINE #	LENGTH	FLAG COLOR	ZONE	LATERAL #	LENGTH	TOTAL
4	80'	-	1	1		
5	80'	GREEN		1		
6	80'	-		1	240'	
7	85'	-		2		
8	85'	PINK		2		
9	85'	-		2	255'	
10	90'	-		3		
11	90'	ORANGE		3		
12	90'	-		3	270'	
ZONE 1 TOTAL						765'
13	95'	-	2	1		
14	95'	GREEN		1		
15	95'	-		1	285'	
16	100'	-		2		
17	100'	PINK		2		
18	100'	-		2	300'	
19	100'	-		3		
20	100'	ORANGE		3		
21	100'	-		3	300'	
ZONE 2 TOTAL						885'
22	100'	-	3	1		
23	100'	GREEN		1		
24	100'	-		1	300'	
25	95'	-		2		
26	95'	PINK		2		
27	95'	-		2	285'	
28	80'	-		3		
29	80'	ORANGE		3		
30	80'	-		3	240'	
ZONE 3 TOTAL						825'
TOTALS						2,475'

LINE SEGMENT (REPAIR)						
LINE #	LENGTH	FLAG COLOR	ZONE	LATERAL #	LENGTH	TOTAL
35	80'	N/F	1	1		
36	80'	N/F		1	160'	
37	80'	N/F		2		
38	80'	N/F		2	160'	
39	80'	N/F		3		
40	80'	N/F		3	160'	
41	80'	N/F		4		
42	80'	N/F		4	160'	
43	80'	N/F		5		
44	80'	N/F		5	160'	
ZONE 1 TOTAL						800'
45	80'	N/F	2	1		
46	80'	N/F		1	160'	
47	80'	N/F		2		
48	80'	N/F		2	160'	
49	80'	N/F		3		
50	80'	N/F		3	160'	
51	80'	N/F		4		
52	80'	N/F		4	160'	
53	80'	N/F		5		
54	80'	N/F		5	160'	
ZONE 2 TOTAL						800'
55	80'	N/F	3	1		
56	80'	N/F		1	160'	
57	80'	N/F		2		
58	80'	N/F		2	160'	
59	80'	N/F		3		
60	80'	N/F		3	160'	
61	80'	N/F		4		
62	80'	N/F		4	160'	
63	80'	N/F		5		
64	80'	N/F		5	160'	
ZONE 3 TOTAL						800'
TOTALS						2,400'

LINE SEGMENT (UNUSED)						
LINE #	LENGTH	FLAG COLOR	ZONE	LATERAL #	LENGTH	TOTAL
1	30'	GREEN		-		
2	45'	PINK		-		
3	60'	ORANGE		-		
31	70'	GREEN		-		
32	50'	PINK		-		
33	30'	ORANGE		-		
34	15'	GREEN		-		
TOTALS						300'



DOSING CALCULATIONS & DRIP LINE CHARTS

C-106

J & W CUSTOM HOME LLC.
3608 HORSESHOE ROAD

SUBSURFACE DRIP SYSTEM
ENGINEERED OPTION PERMIT

GRANVILLE COUNTY, NC

BY: EE/PA

JOB #: C13102.00

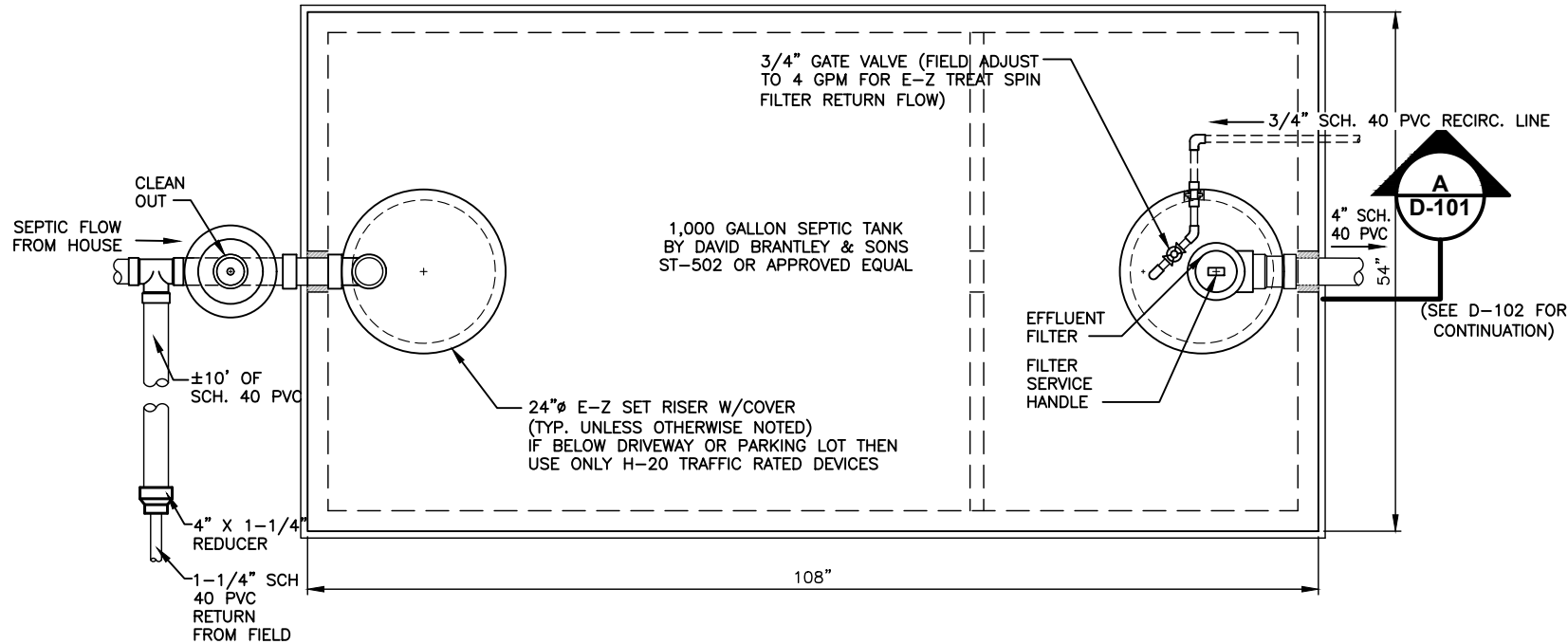
DATE: 7/24/2023

501 CASCADE POINTE LANE, SUITE 103
CARY, NORTH CAROLINA 27513
P. O. BOX 129

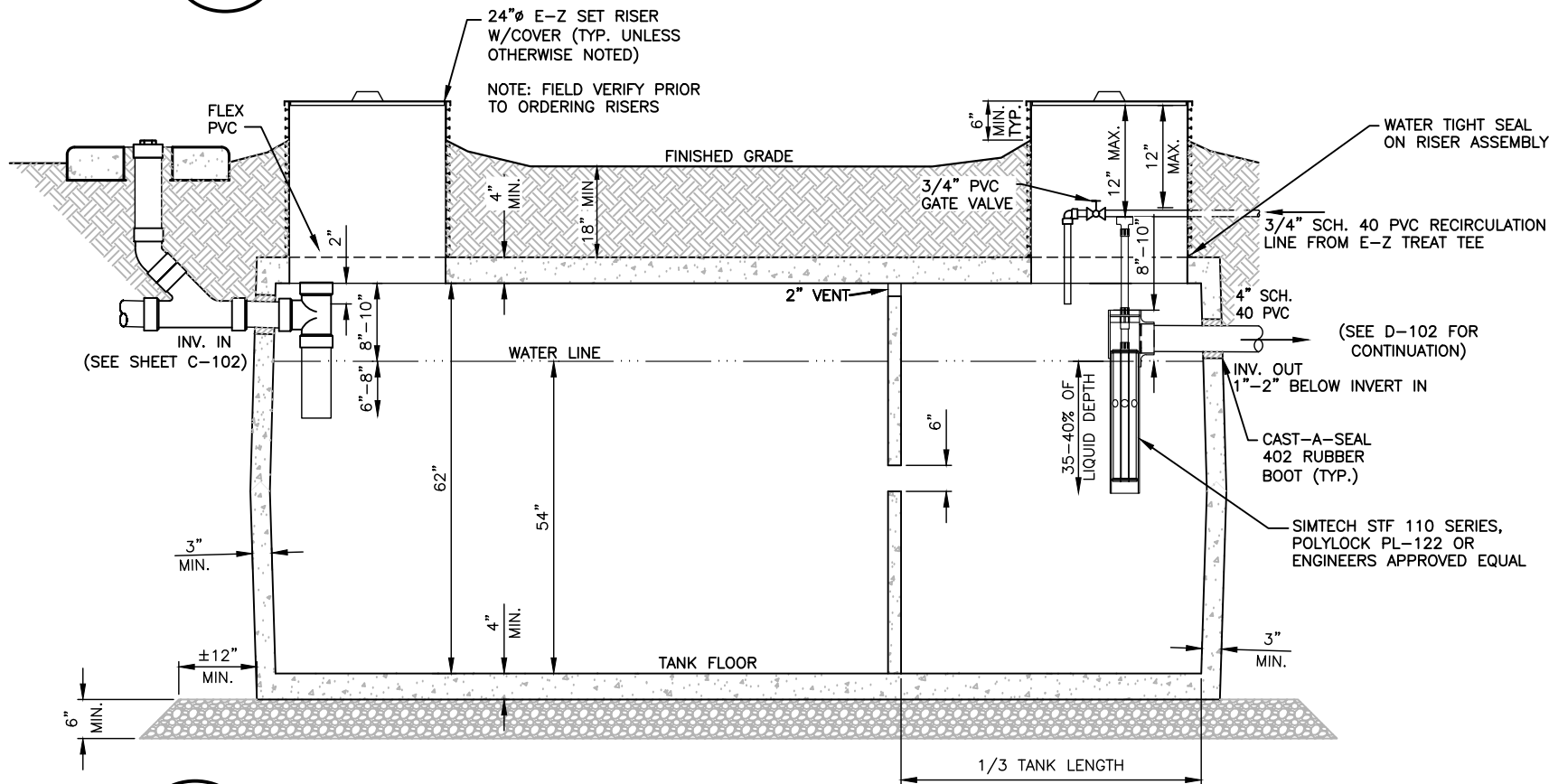
MacCONNELL & Associates, P. C.

MORRISVILLE, NORTH CAROLINA 27560
TEL: (919) 467-1239 FAX: (919) 319-6510

Z:\T-Drive (Projects)\Library\2023\C13102.00 - J&W Custom Homes - Lot 2 Horseshoe Road - Granville County - EOP Drip\Drawings\C13102.00 - Details.dwg Jul 25, 2023 12:55pm



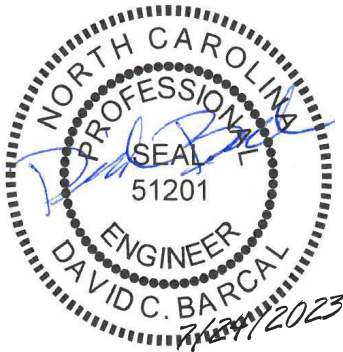
1
D-101
NTS
SEPTIC TANK



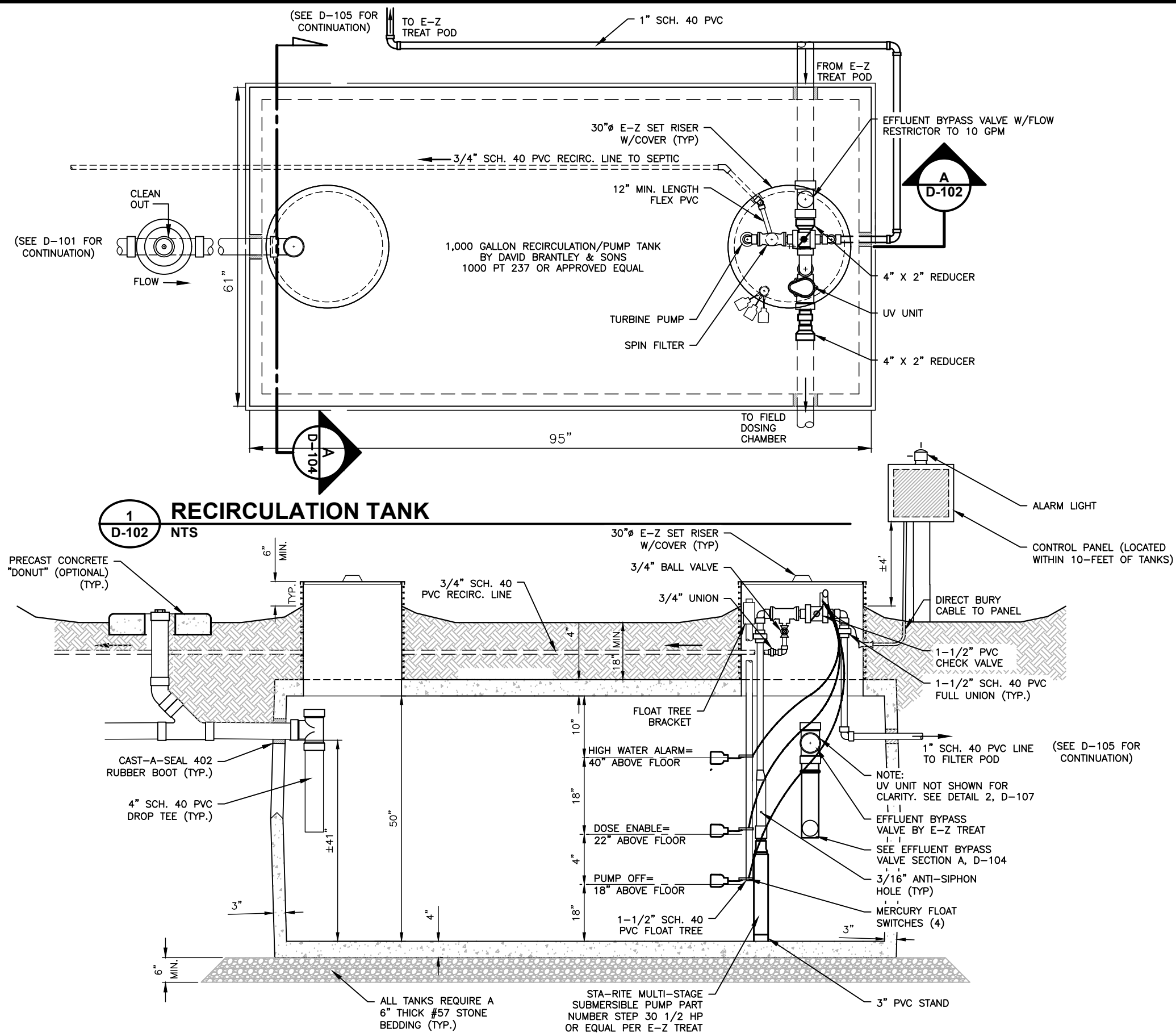
A
D-101
NTS
SEPTIC TANK SECTION

NOTES

- ALL PIPING SHALL BE SCH 40 PVC UNLESS OTHERWISE NOTED ON PLANS. ALL PVC PIPES SHALL BE BURIED A MINIMUM OF 3 FEET UNLESS SHOWN OTHERWISE.
- ALL TANKS SHALL HAVE A MINIMUM 28-DAY CONCRETE STRENGTH OF 4500 PSI.
- TANKS SHALL MEET REINFORCING REQUIREMENTS TO ACCOMMODATE 300 POUNDS PER SQUARE FOOT. EITHER STEEL REINFORCING WIRE, REBAR OR APPROVED FIBER MAY BE USED.
- 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 PRIOR WRITTEN APPROVAL. ALL ACCESS OPENINGS SHALL BE FITTED WITH E-Z SET RISER ASSEMBLIES. SERVICE ACCESS OPENINGS FOR THE RECIRCULATION CYLINDER SHALL BE A 30-INCH OPENING AND FITTED WITH AN E-Z SET 30-INCH RISER ASSEMBLY. TRAFFIC RATED TANKS SHALL HAVE CONCRETE RISERS.
- ALL JOINTS (TOP-SEAM) SHALL BE SEALED USING CONCRETE SEALANTS BUTYL SEALANT # CS-102 MEETING ASTM C-990.
- TANKS SHALL BE LEAK-TESTED PRIOR TO SYSTEM START UP BY APPLYING A VACUUM OF 4-INCHES OF MERCURY WITH RISER ASSEMBLIES IN PLACE OR WITH APPROVAL BY E-Z TREAT, A 24-HOUR STATIC WATER TEST, IN ACCORDANCE WITH ASTM STANDARDS.
- NON-CONCRETE TANKS SHALL NOT BE USED IN CONJUNCTION WITH THE E-Z TREAT SYSTEM WITHOUT PRIOR WRITTEN APPROVAL BY E-Z TREAT.
- ALL PIPE PENETRATIONS THROUGH PRECAST CONCRETE TANKS SHALL BE PRESS-SEAL CAST-A-SEAL 402 RUBBER BOOTS AND GROUTED.
- THE FILTER POD INVERT OUT SHALL BE A MINIMUM OF 6" ABOVE THE INVERT IN OF THE RECIRCULATION TANK OR 1/4-INCH PER FOOT SLOPE, WHICHEVER IS GREATER.
- CONTRACTOR MAY USE LARGER TANKS.
- MAXIMUM COVER OVER NON H-20 TANKS SHALL BE 30" OR AS SPECIFIED BY MANUFACTURER.
- SYSTEM INFLUENT SAMPLE SHOULD BE TAKEN FROM INLET TEE IN SEPTIC TANK RISER
- SEE C-101 FOR GENERAL NOTES.
- LENGTH, WIDTH, AND DEPTH OF TANKS WILL VARY PER MANUFACTURER.
- MAY USE COMBINATION SEPTIC TANKS AND RECIRCULATION TANKS RATHER THAN SEPARATE IF NECESSARY OR DESIRED BY OWNER.
- IN AREAS WITH LOW ALKALINITY WATER, INSTALL ±55 LBS. OF MARBLE ROCK (1"-3" DIAMETER) IN 24"x24" MESH BAGS. USE 1 BAG PER E-Z TREAT POD. PLACE MARBLE ABOVE "BEAD" PILLOWS.



DETAILS 1 OF 11		D-101	
J & W CUSTOM HOME LLC. 3608 HORSESHOE ROAD		SUBSURFACE DRIP SYSTEM ENGINEERED OPTION PERMIT	
BY: EEPA	JOB #:	DATE:	
	C13102.00	7/24/2023	
501 CASCADE POINTE LANE, SUITE 103 CARY, NORTH CAROLINA 27513 P. O. BOX 129		MacCONNELL & Associates, P. C. MORRISVILLE, NORTH CAROLINA 27660 TEL: (919) 467-1239 FAX: (919) 319-6510	



RECIRCULATION TANK SECTION

A
D-102

NTS

NTS

102

1

RECIRCULATION TANK

NTS

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

MacCONNELL
& Associates, P. C.

BY:	EE/PA
JOB #:	C13102.00
DATE:	7/24/2023

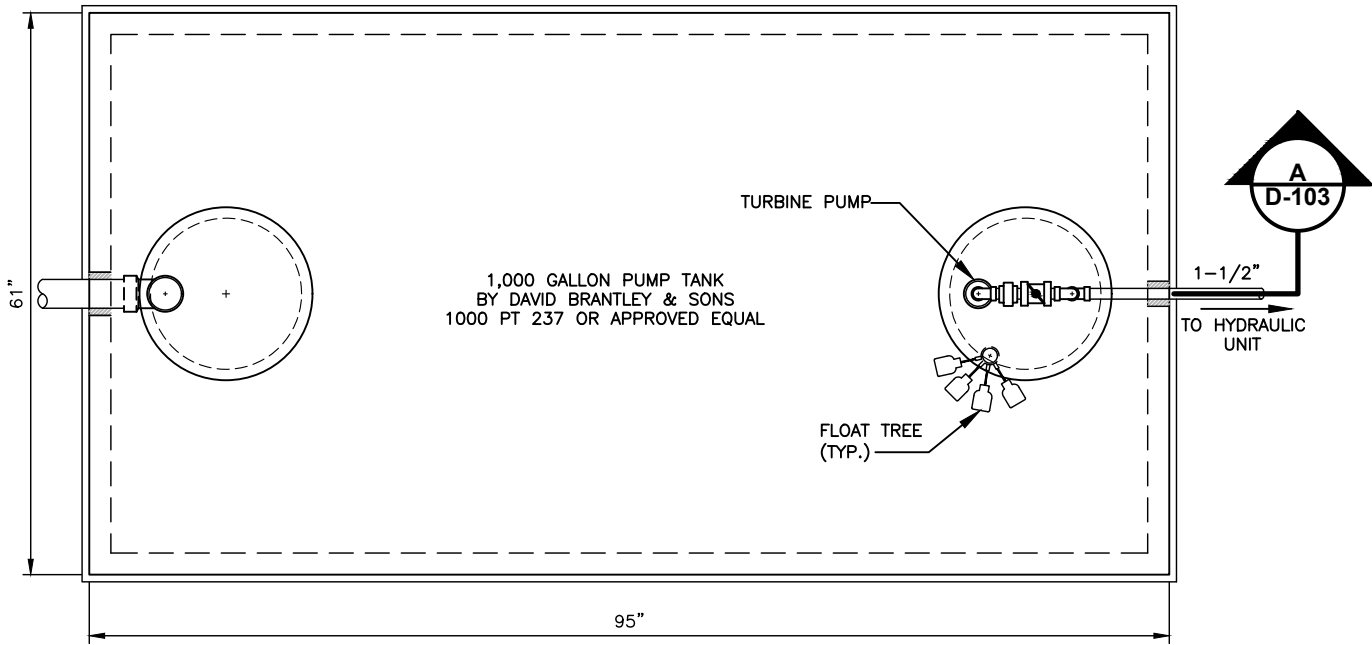
**J & W CUSTOM HOME LLC,
3608 HORSESHOE ROAD
SUBSURFACE DRIP SYSTEM
ENGINEERED OPTION PERMIT
GRANVILLE COUNTY, NC**

DETAILS
2 OF 11

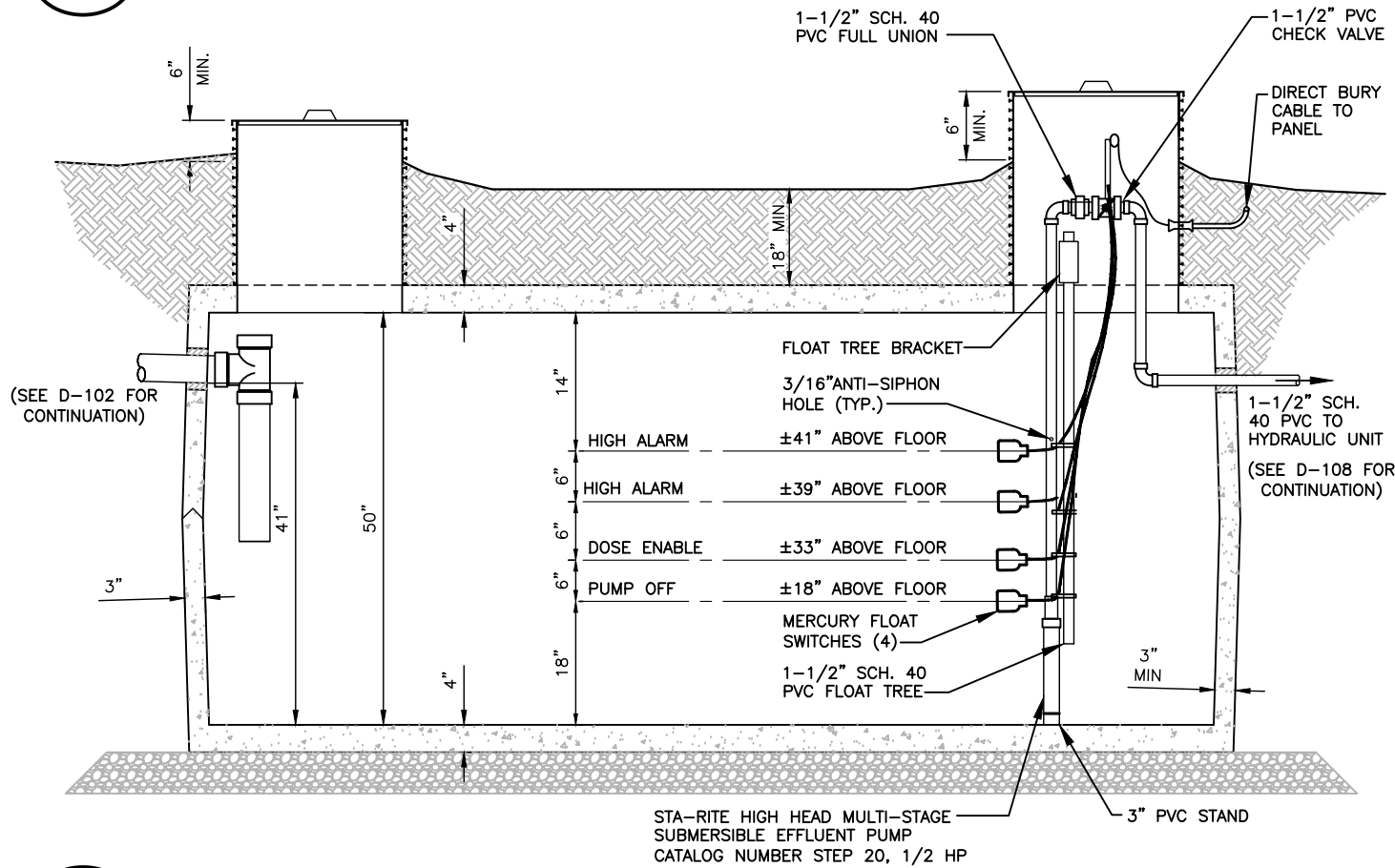
D-102

GRANVILLE COUNTY, NC

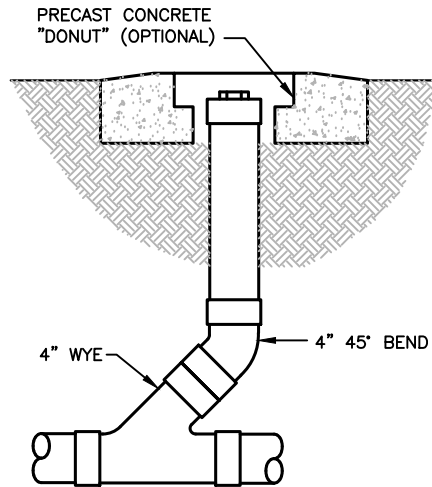
Z:\T-Drive (Projects)\Library\2023\C13102.00 - J&W Custom Homes - Lot 2 Horseshoe Road - Granville County - EOP Drip\Drawings\C13102.00 - Details.dwg Jul 25, 2023 12:55pm



1
D-103
FIELD DOSING TANK PLAN
NTS



A
D-103
FIELD DOSING TANK SECTION
NTS



NOTE:
PIPING TO BE 4" SCH. 40 PVC

2
D-103
GRAVITY CLEANOUT
NTS



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

MacCONNELL
& Associates, P. C.



BY: EEPA
JOB #: C13102.00
DATE: 7/24/2023

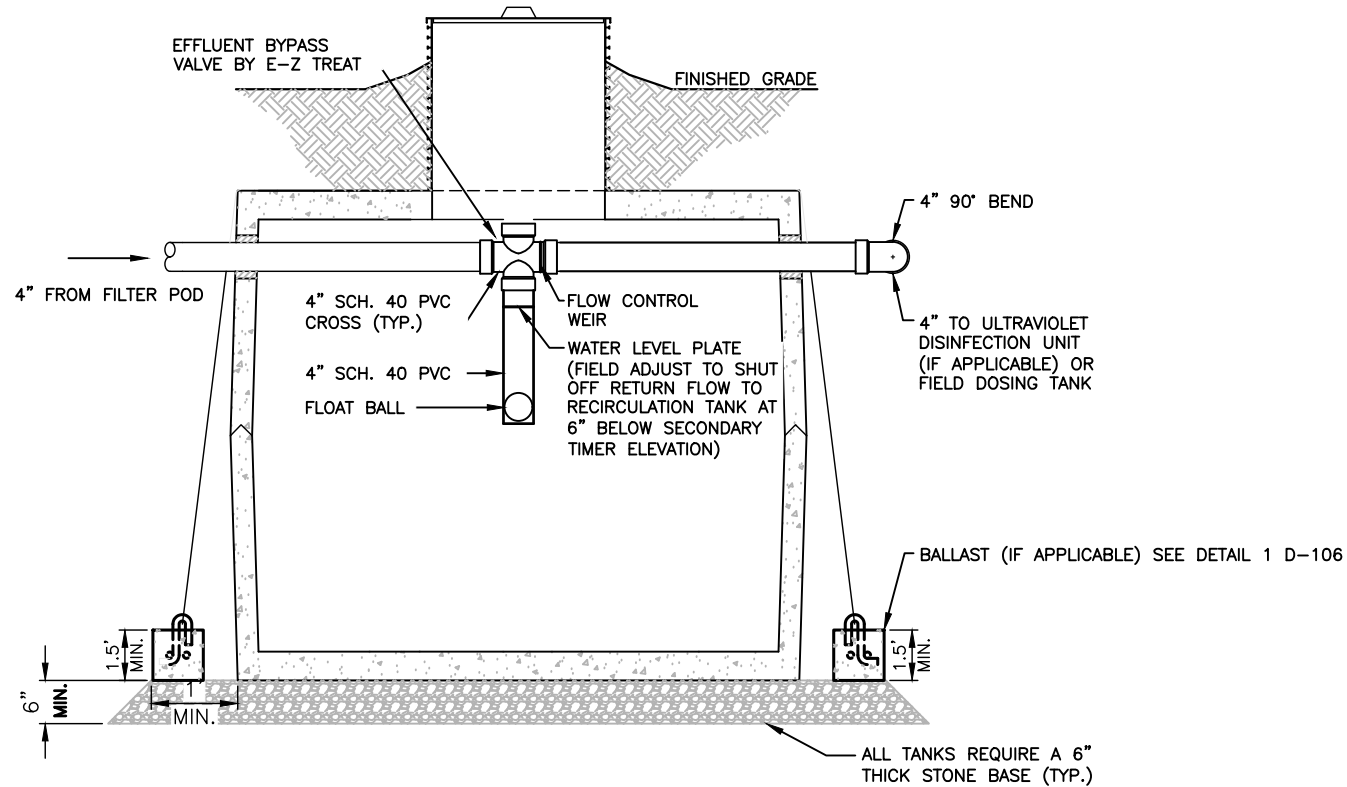
J & W CUSTOM HOME LLC.
3608 HORSESHOE ROAD
SUBSURFACE DRIP SYSTEM
ENGINEERED OPTION PERMIT

GRANVILLE COUNTY, NC

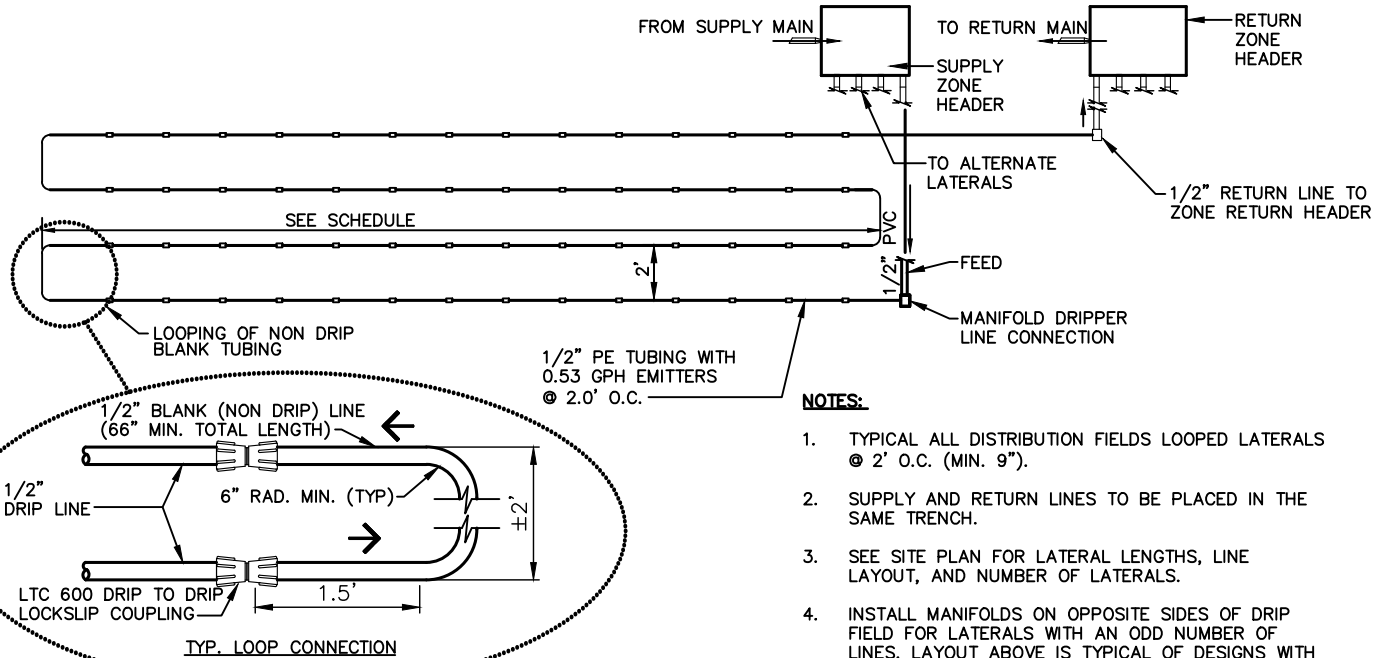
DETAILS
3 OF 11

D-103

Z:\T-Drive (Projects)\Library\2023\C13102.00 - J&W Custom Homes - Lot 2 Horseshoe Road - Granville County - EOP Drip\Drawings\C13102.00 - Details.dwg Jul 25, 2023 12:55pm



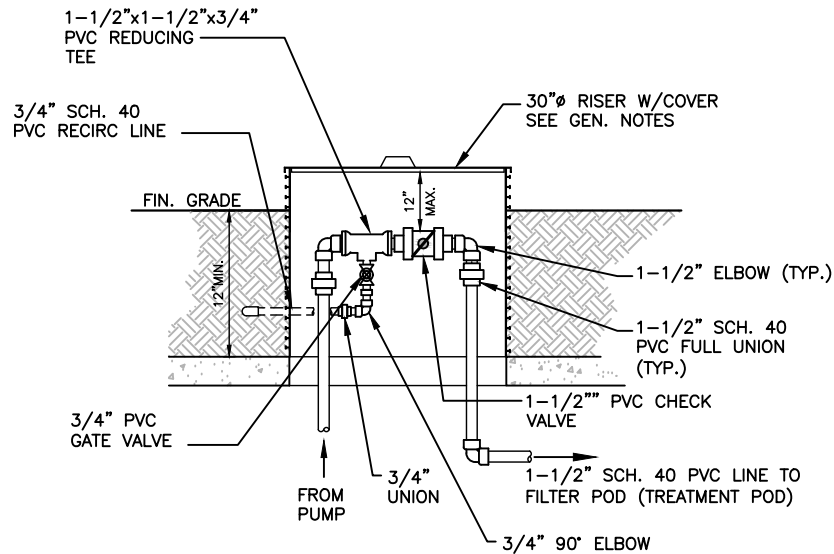
A
D-104 NTS
EFFLUENT BYPASS VALVE SECTION



1
D-104 NTS
DISTRIBUTION FIELD PLAN (TYPICAL)

NOTES:

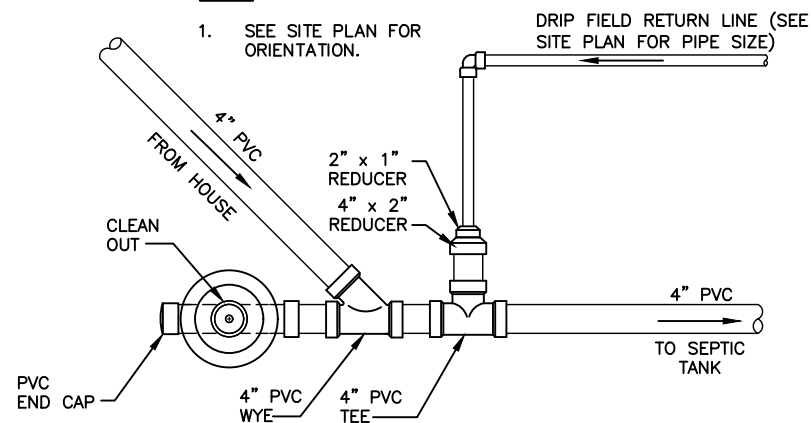
1. TYPICAL ALL DISTRIBUTION FIELDS LOOPED LATERALS @ 2' O.C. (MIN. 9").
2. SUPPLY AND RETURN LINES TO BE PLACED IN THE SAME TRENCH.
3. SEE SITE PLAN FOR LATERAL LENGTHS, LINE LAYOUT, AND NUMBER OF LATERALS.
4. INSTALL MANIFOLDS ON OPPOSITE SIDES OF DRIP FIELD FOR LATERALS WITH AN ODD NUMBER OF LINES. LAYOUT ABOVE IS TYPICAL OF DESIGNS WITH AN EVEN NUMBER OF LINES PER LATERAL.
5. PROVIDE PRESSURE REGULATOR IF REQUIRED TO MAINTAIN PRESSURE BELOW 40 PSI.



B
D-104 NTS
RECIRCULATION TEE SECTION

NOTE:

1. SEE SITE PLAN FOR ORIENTATION.



2
D-104 NTS
FIELD RETURN LINE DETAIL



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

MacCONNELL
& Associates, P. C.

DETAILS
4 OF 11

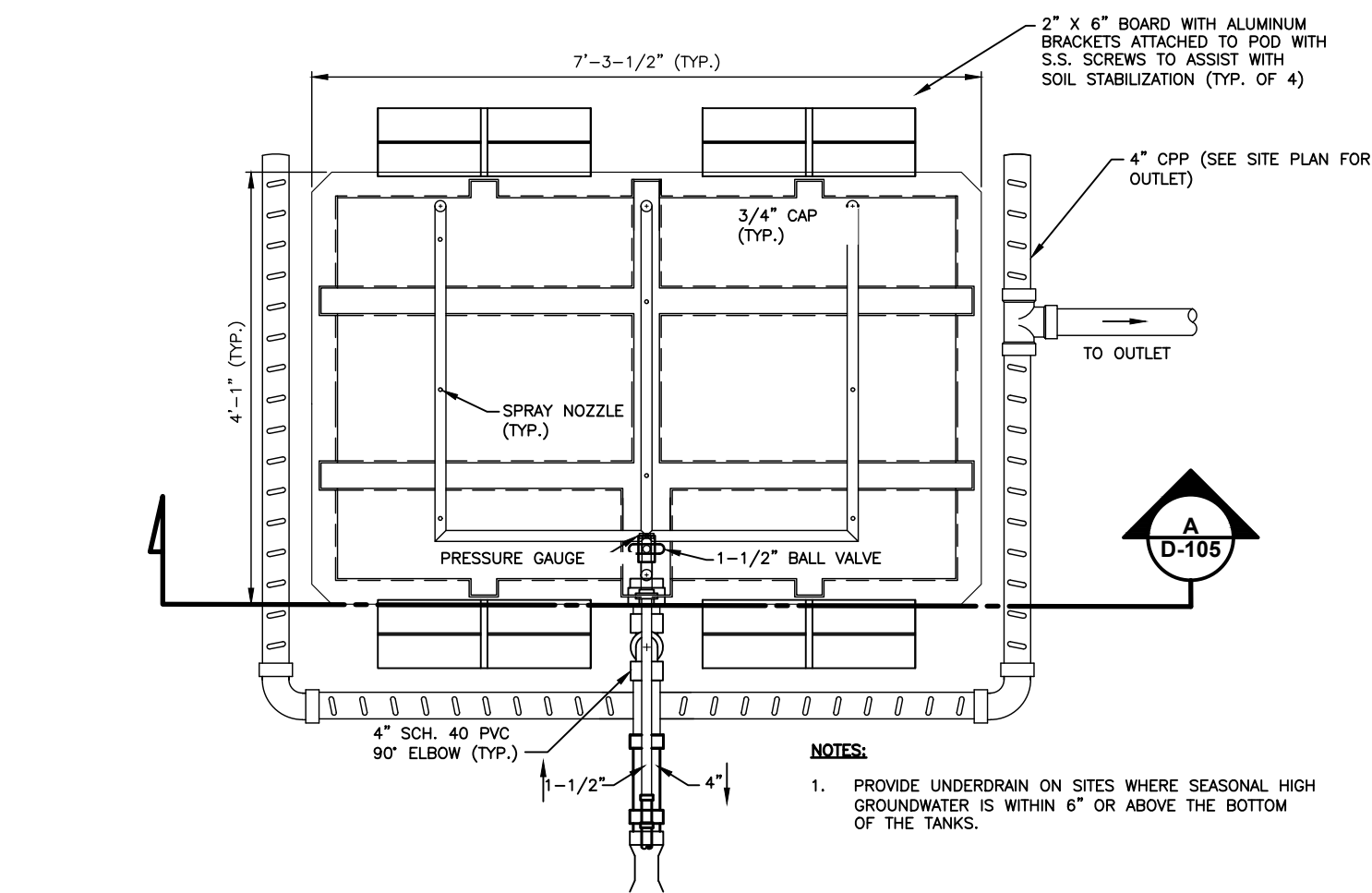
J & W CUSTOM HOME LLC.
3608 HORSESHOE ROAD
SUBSURFACE DRIP SYSTEM
ENGINEERED OPTION PERMIT

BY: EEPA
JOB #: C13102.00
DATE: 7/24/2023

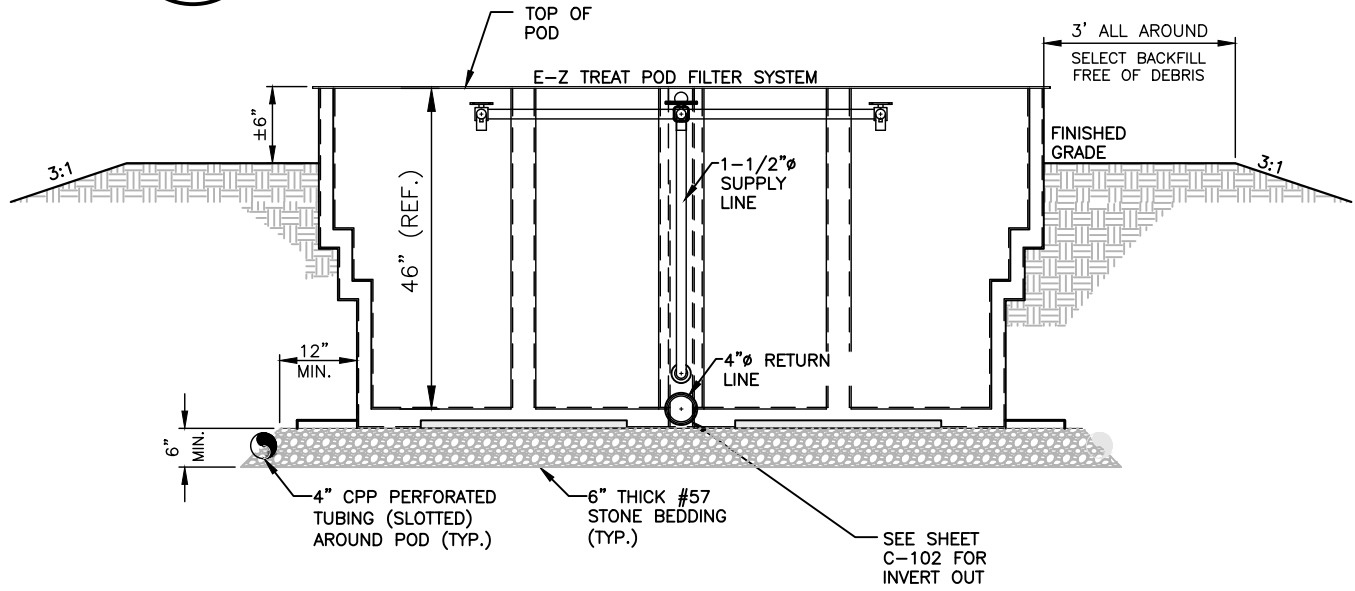
D-104

GRANVILLE COUNTY, NC

Z:\T-Drive (Projects)\Library\2023\C13102.00 - J&W Custom Homes - Lot 2 Horseshoe Road - Granville County - EOP Drip\Drawings\C13102.00 - Details.dwg Jul 25, 2023 12:55pm



1 E-Z TREAT TREATMENT UNIT PLAN
D-105 NTS



A E-Z TREAT TREATMENT UNIT SECTION
D-105 NTS

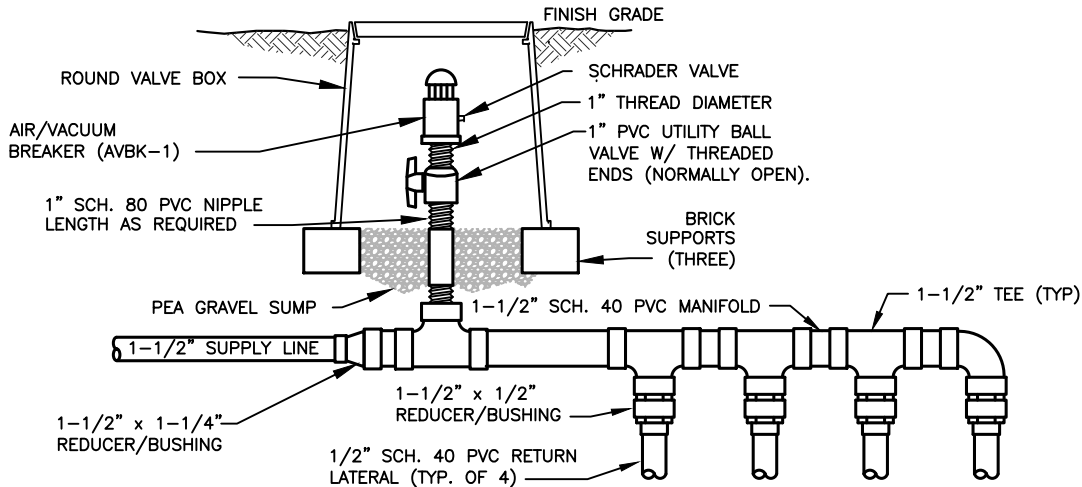


 MacCONNELL & Associates, P. C.		501 CASCADE POINTE LANE, SUITE 103 CARY, NORTH CAROLINA 27513 P. O. BOX 129 MORRISVILLE, NORTH CAROLINA 27560 TEL: (919) 467-1239 FAX: (919) 319-6510		BY: EE/PA		J & W CUSTOM HOME LLC. 3608 HORSESHOE ROAD		DETAILS 5 OF 11	
				JOB #:		SUBSURFACE DRIP SYSTEM ENGINEERED OPTION PERMIT			
				C13102.00					
				DATE:				D-105	
				7/24/2023		GRANVILLE COUNTY, NC			

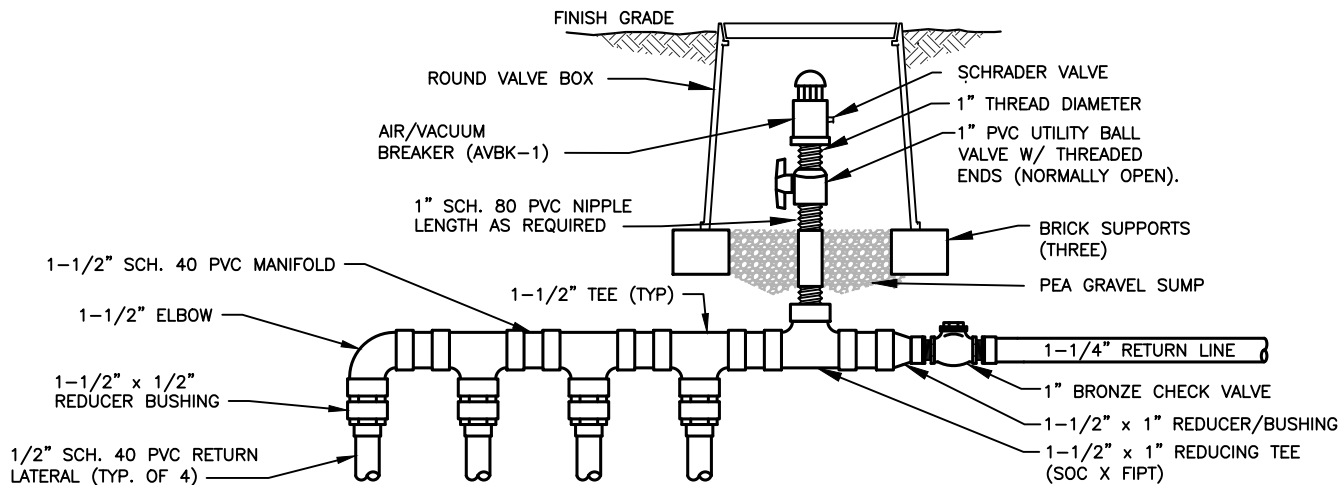
Z:\T-Drive (Projects)\Library\2023\C13102.00 - J&W Custom Homes - Lot 2 Horseshoe Road - Granville County - EOP Drip\Drawings\C13102.00 - Details.dwg Jul 25, 2023 12:55pm

NOTE:

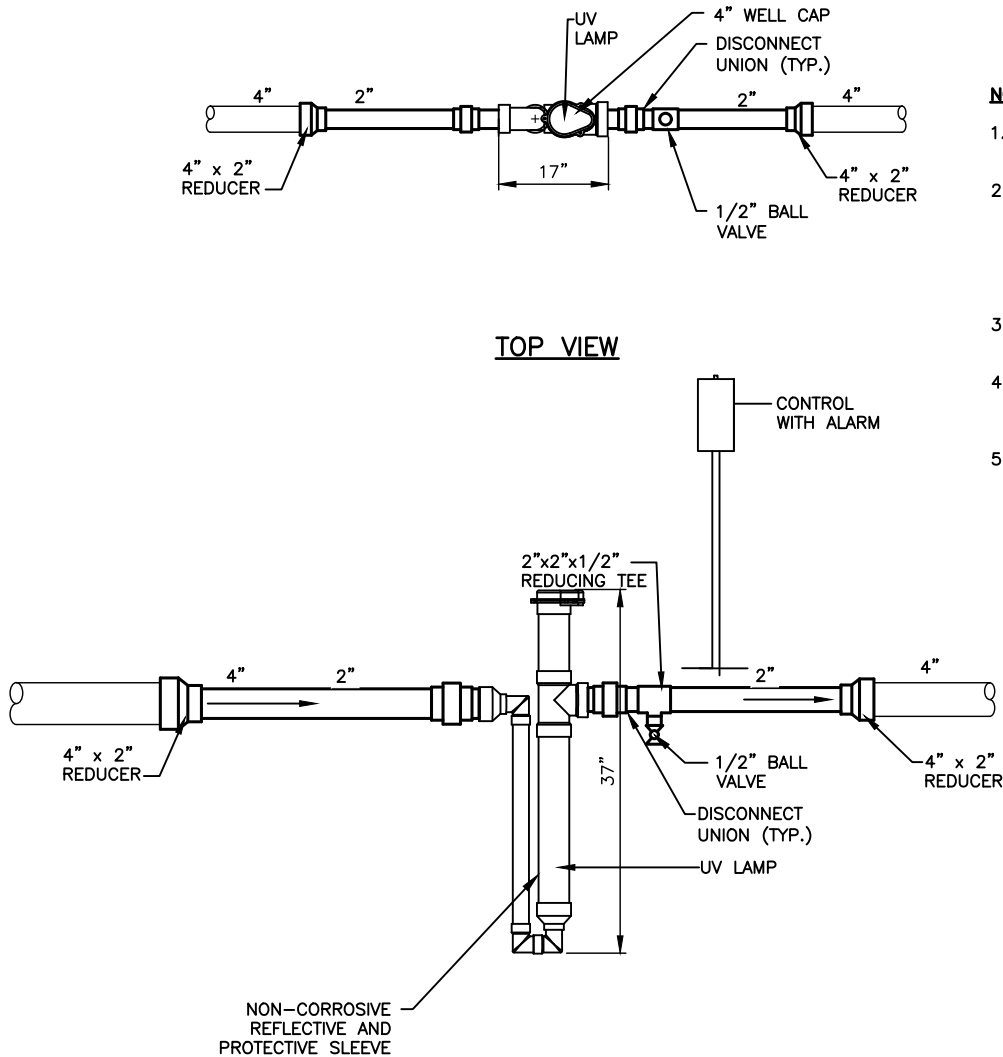
1. NUMBER OF LATERALS TO MATCH SITE CONDITION. CAP FITTINGS NOT NEEDED.
2. ALL PIPE SHALL BE SCH. 40 PVC UNLESS OTHERWISE INDICATED.
3. SEE SITE PLAN FOR NUMBER OF LATERALS.
4. SEE SITE PLAN FOR SUPPLY LINE, RETURN LINE, AND MANIFOLD SIZES.
5. AIR VACUUM BREAKER VALVES SHALL BE INSTALLED ON EACH SUPPLY AND RETURN MANIFOLD AT THE HIGH POINT.



SUPPLY



RETURN



TOP VIEW

SECTION VIEW

NOTES:

1. ULTRAVIOLET LIGHT PURIFIER UV-101 BY E-Z TREAT.
2. PROVIDE DUAL GFI RECEPTACLE FOR UNIT AND HEAT TAPE. FIELD ROUTE 2-#12,1-#12G, IN 3/4 inch PVC CONDUIT TO 120 VOLT SINGLE PHASE 20 AMP BREAKER AT HOUSE.
3. ORIENTATION PER SITE REQUIREMENTS.
4. INSTALL 1/2 inch BALL VALVE FOR SAMPLING DOWNSTREAM OF U.V. UNIT.
5. TO BE INSTALLED IN RECIRCULATION TANK DOWNSTREAM FROM BYPASS VALVE

1 D-107 SUPPLY / RETURN ZONE HEADER NTS

2 D-107 ULTRAVIOLET DISINFECTION UNIT NTS



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

MacCONNELL
& Associates, P. C.



J & W CUSTOM HOME LLC.
3608 HORSESHOE ROAD
SUBSURFACE DRIP SYSTEM
ENGINEERED OPTION PERMIT

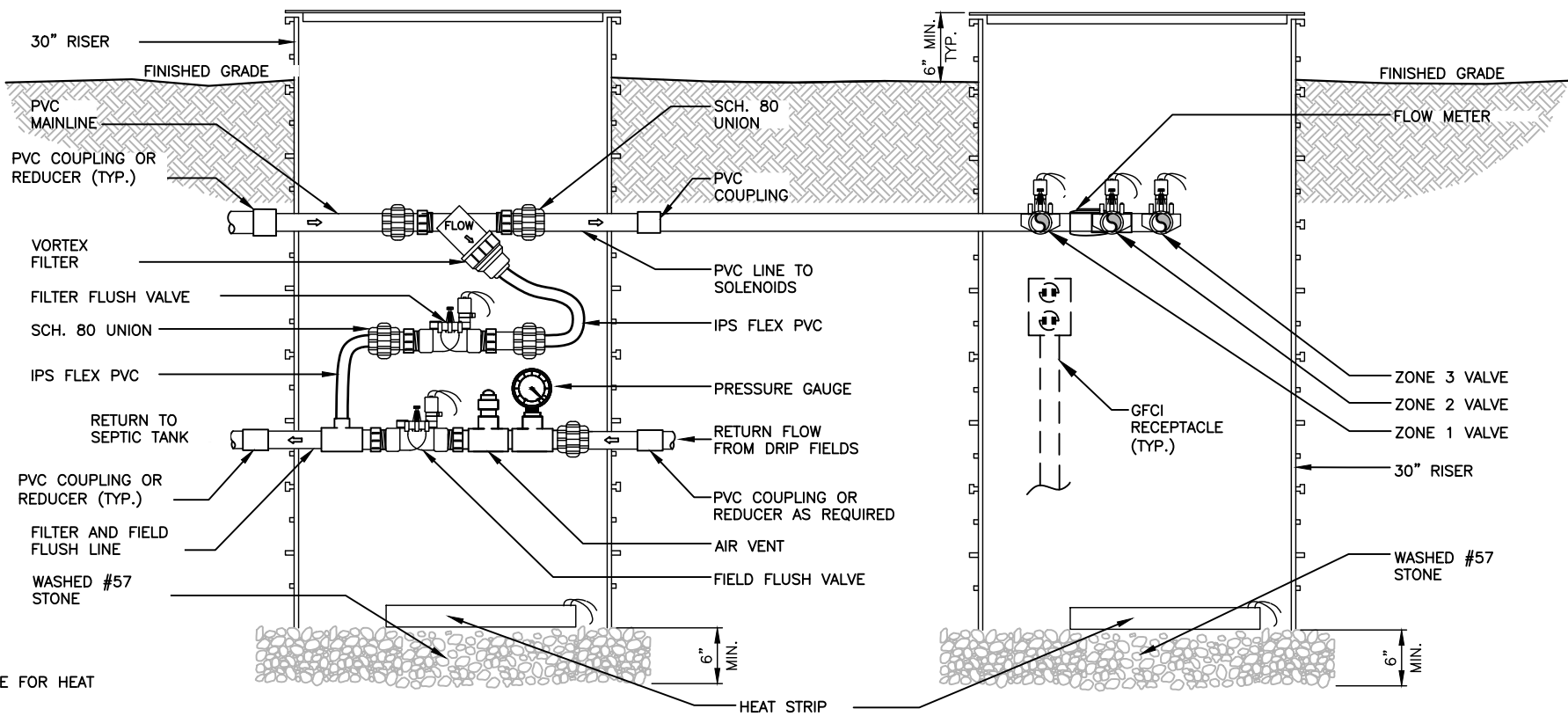
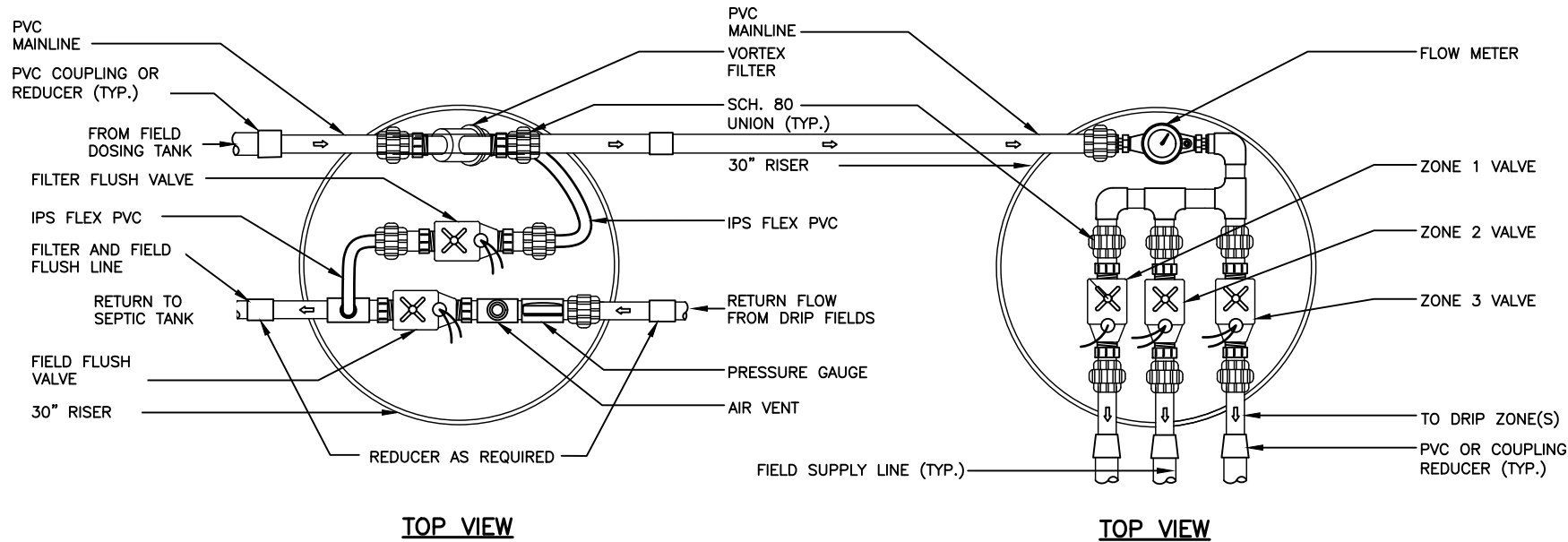
BY: EEPA
JOB #: C13102.00
DATE: 7/24/2023

DETAILS
7 OF 11

D-107

GRANVILLE COUNTY, NC

Z:\T-Drive (Projects)\Library\2023\C13102.00 - J&W Custom Homes - Lot 2 Horseshoe Road - Granville County - EOP Drip\Drawings\C13102.00 - Details.dwg Jul 25, 2023 12:55pm



NOTES:

1. PROVIDE DUAL GFCI RECEPTACLE FOR HEAT TRACING IN EACH RISER.
2. PROVIDE 1 BATT OF FIBERGLASS INSULATION IN EACH RISER.
3. SEE SITE PLAN AND CALCULATIONS FOR SUPPLY AND RETURN PIPE SIZES AND NUMBER OF PIPES (ZONES).
4. SEE PLAN VIEW FOR ORIENTATION.

1
D-108
HYDRAULIC UNIT
NTS



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: EEPA
JOB #: C13102.00
DATE: 7/24/2023

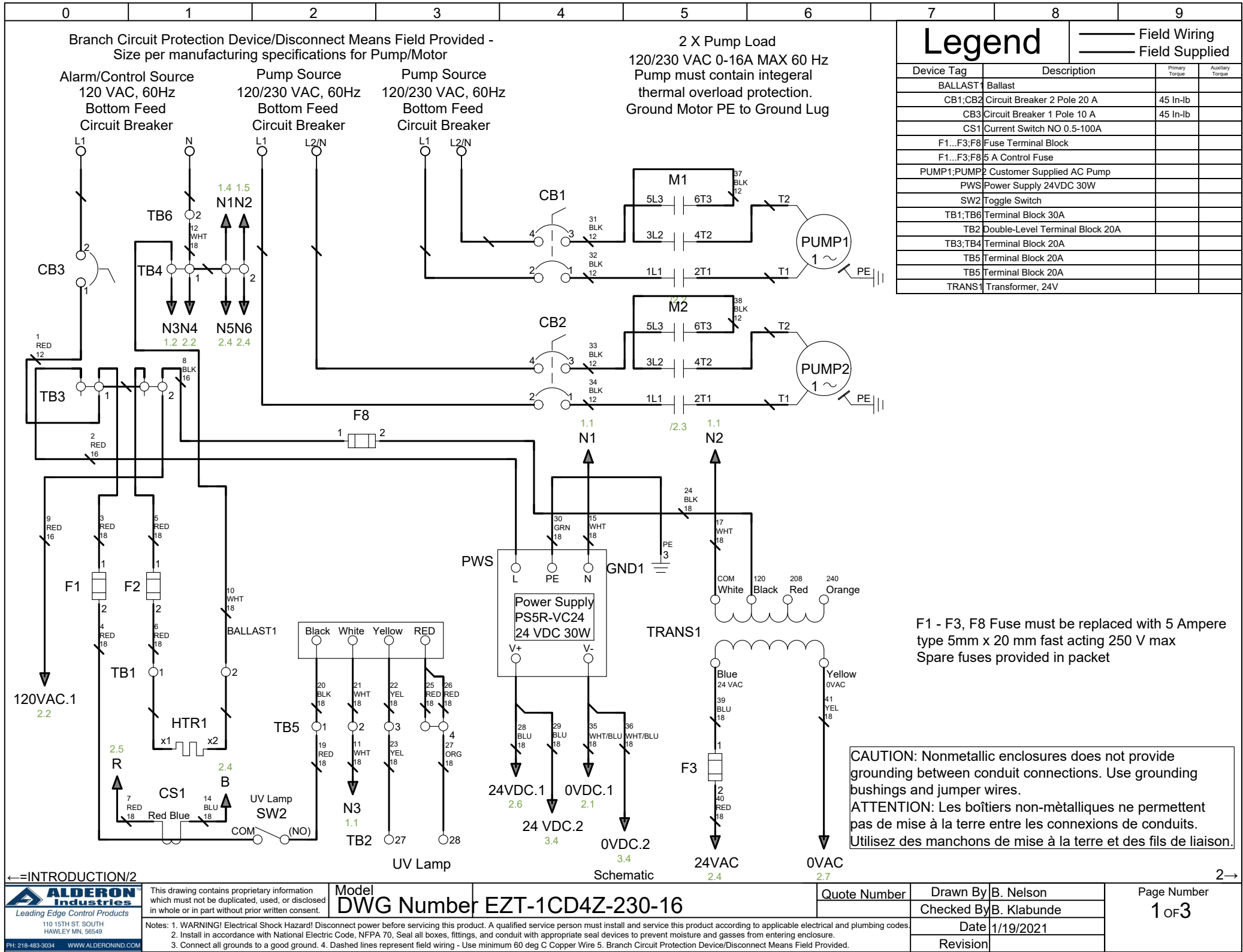
J & W CUSTOM HOME LLC.
3608 HORSESHOE ROAD
SUBSURFACE DRIP SYSTEM
ENGINEERED OPTION PERMIT

GRANVILLE COUNTY, NC

DETAILS
8 OF 11

D-108

Z:\T-Drive (Projects)\Library\2023\C13102.00 - J&W Custom Homes - Lot 2 Horseshoe Road - Granville County - EOP Drip\Drawings\C13102.00 - Details.dwg Jul 25, 2023 12:55pm



1
D-109

E-Z TREAT COMBO DRIP CONTROL PANEL (1 OF 3)

NTS

DETAILS
9 OF 11

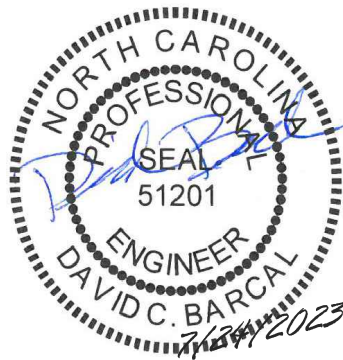
D-109

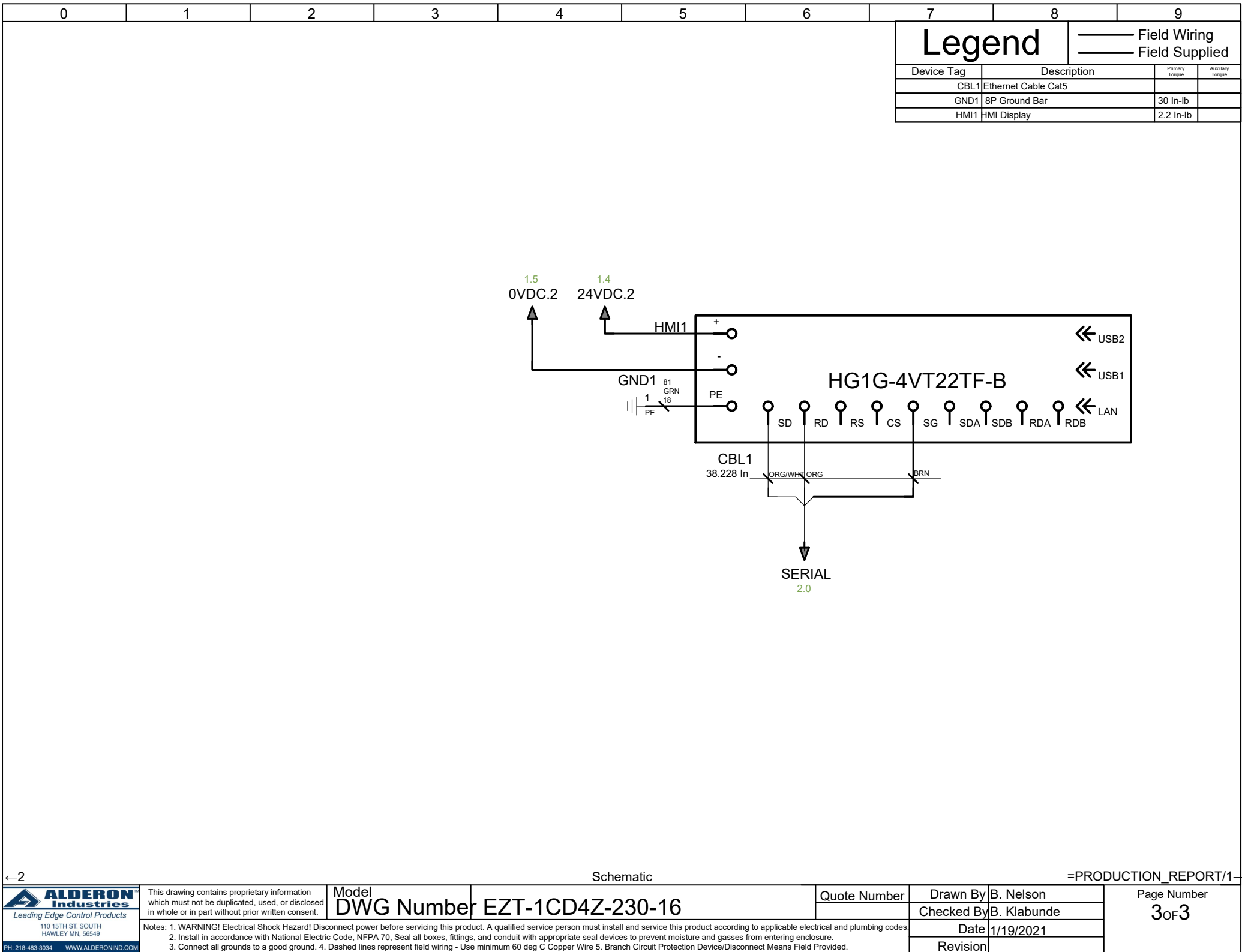
J & W CUSTOM HOME LLC.
3608 HORSESHOE ROAD
SUBSURFACE DRIP SYSTEM
ENGINEERED OPTION PERMIT

BY: EEPA
JOB #: C13102.00
DATE: 7/24/2023

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

MacCONNELL
& Associates, P. C.





1 D-111 NTS E-Z TREAT COMBO DRIP CONTROL PANEL (3 OF 3)



**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

EE/PA
JOB #:
C13102.00
DATE:
7/24/2023

3608 HORSESHOE ROAD
SUBSURFACE DRIP SYSTEM
ENGINEERED OPTION PERMIT
GRANVILLE COUNTY, NC

DETAILS
11 OF 11

D-111