# RAINWATER HARVESTING SYSTEM

# YOUR- RAINWATER SYSTEM

# YOUR ADDRESS

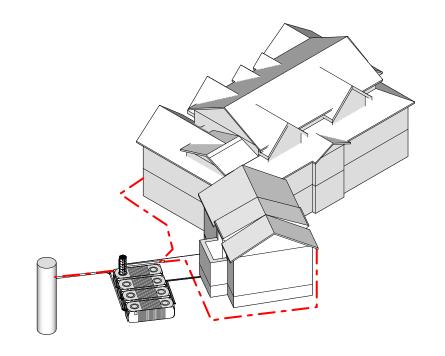
TAG	EQUIPMENT SCHEDULE
RSM	RAINSEEKER MAXIMUS 6000 USG SYSTEM - UNDERGROUND
RWT 1	- RAINWATER TANK 1500 USG
PRF	- RAINWATER PREFILTER
ACL	- SMOOTHING INLET
FLI	- FLOATING INTAKE
OVF	- SKIMMING OVERFLOW BACKWATER VALVE
TLS	- TANK LEVEL SENSOR
TLSD	- TANK LEVEL SENSOR DISPLAY
RWT 2	- RAINWATER TANK EXPANSION 1500 USG
RWT 3	- RAINWATER TANK EXPANSION 1500 USG
RWT 4	- RAINWATER TANK EXPANSION 1500 USG
RPMP	RAINWATER PUMP
FLTR	TRIPLE FILTRATION
UF	ULTRA FILTER
SOL1	UV SOLENOID SHUT-OFF
UV	UV SYSTEM- DUAL BULB
SOL2	WELL WATER MAKE UP SOLNOID VALVE
FOT	FLOAT SWITCH

TAG	PIPE AND WIRE SCHEDULE	
Α	GUTTER	EXISITING GUTTER
В	DOWNPIPE	EXISITING DOWNPIPE
С	UNDERGROUND	4" DIAMETER @ 1.5% SLOPE
D	UNDERGROUND	6" DIAMETER @ 0.75% SLOPE (OPTIONALLY 4" DIA. @ 4% SLOPE)
E	SUPPLY PIPE UNDERGROUND	1.0" DIAMETER (PVC, POLY OR COPPER)
F	SUPPLY PIPE INTERIOR	1.0" DIAMETER (PVC, PEX, POLY OR COPPER)
G	SENSOR WIRE	4 C - SHEILDED 16 AWG (4 CONDUCTOR)
I	PUMP POWERS	PROVIDED POWER CORD

CLEAN FLO WATER TECHNOLOGIES DESIGNED THE SYSTEM TO MEET THE CSA B805 STANDARDS TO PROVIDE A POTABLE RAINWATER HARVESTING WATER SYSTEM.

IF THE INSTALLTION IS IN ACCORDENCE WITH CLEANFLO WRITTEN INSTRUCTION THIS SYSTEM WILL PROVIDE POTABLE WATER. IT IS THE OWNER / OPERATORS RESPONSIBLITY TO ENSURE THE RAINWATER HARVESTING SYSTEM IS INSTALLED AND OPERATING PROPERLY. INITIAL AND ONGOING MAINTENANCE AND MONITORING IS REQUIRED AND MUST BE PERFORMED BY THE OWNER OR UNDER THE OWNER'S DIRECTION.

IF INSTRUCTIONS ARE NOT FOLLWED OR MAINTIANCE IS NOT PERFORMED OR UNKOWN SUBSTANCES ARE INTRUDCED INTO THE RAINWATER SYSTEM THE SYSTEM MAY NOT BE SAFE AND THERFORE REGULAR WATER TESTING IS REQUIRED. CLEANFLO IS NOT RESPONSIBLE FOR THE WATER QUALITY THIS SYSTEM PRODUCES. USE WATER AT YOUR OWN RISK.



TIERS	WATER USES	
R1	NON-POTABLE, TRAP PRIMERS, FIRE SUPPRESSION, IRRIGATION	
R2	NON-POTABLE, TOILETS/URINALS, LAUNDRY MACHINE	
R3	NON-POTABLE, HOSE BIBS, PRESSURE WASHING, VEHICLE WASHING	
	POTABLE, HUMAN CONSUMPTION, ORAL CARE, FOOD PREPARATION, DISHWASHING, BATHING/SHOWERING, POOL/HOT TUBS	

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#### DESCRIPTION

THIS SYSTEM IS DESIGN TO MEET CANADIAN PLUMBING CODES AND CSA STANDARDS FOR RAINWATER HARVESTING CSA B805.

THE OVERALL SYSTEM DESIGN EMPLOYS A MULTI BARRIER APPROACH TO WATER QUALITY. THE FIRST STEP IS THE PRE-FILTER. THE SECOND STEP IS THE RAINWATER TANK DESIGN. THE THIRD STEP IS THE WATER TREATMENT SYSTEM.

CLEAN FLO SYSTEMS ARE DESIGNED FROM "ROOF TO TAP"! WITH ATTENTION TO EVERY DETAIL OF YOUR RAINWATER HARVESTING SYSTEM. WHEN YOU PURCHASE THE COMPLETE SYSTEM FROM CLEAN FLO, IT IS PART OF A COMPLETE PACKAGE THAT WE WILL PROVIDE SUPPORT AND SERVICE FOR THE LIFE OF THE SYSTEM

THIS RAINWATER HARVESTING SYSTEM IS DESIGNED AS A PRIMARY SOURCE OF WATER FOR POTABLE PURPOSES, SUCH AS DRINNKING, COOKING, BATHING, TOILETS, LAUNDRY. WITH BACK-UP WATER SOURCE FROM HAULED BULK POTBALE WATER IF THE RAINWATER TANK IS EMPTY.

THE SYSTEM WILL PROVIDE WATER FOR WATER USES TIER: R4 - POTABLE DOMESTIC

# **ROOF**

THE SYSTEM WILL BE HARVESTING RAIN FROM ONE BUILDING THE ROOF IS ASHPALT..

#### **GUTTER, DOWNPIPES AND CONVEYANCE PIPING**

THE GUTTERS, DOWNPIPES, AND CONVEYANCE PIPING IS SIZED BASED ON SPECIFICATIONS FROM THE DESIGNS. WHEN USING THE RAINWATER FOR POTABLE WATER THE GUTTER, DOWNPIPE AND CONVEYANCE PIPING SHOULD BE NSF P151 APPROVED OR COATED WITH A NSF P151 APPROVED COATING.

#### **PREFILTER**

THE SYSTEM WILL REQUIRE TWO (2) PRE-FILTER. THESE PRE-FILTERS OPERATE AS BOTH A FIRST FLUSH DIVERTER AND PREFILTER, WITH A FILTER MESH SIZE OF 320 MICRONS. THE FULL CROSS-SECTION (PIPE DIAMETER) OF THE RAINWATER DRAINAGE SYSTEM REMAINS CONTINUOUSLY OPEN, AND THERE ARE NO REDUCTION IN THE CROSS-SECTION OF THIS APPLIANCE IN WHICH DIRT OR WATER CAN COLLECT.

#### **RAINWATER TANK / CISTERN**

THIS SYSTEM WILL PROVIDE A TOTAL OF 6000 USG OF RAINWATER STORAGE. WITH A TOTAL OF FOUR (4) BELOW GROUND TANK(S), MADE OF POLYETHYLENE. EACH TANK IS 1500 USG.

THE RAINWATER TANK IS DESIGNED TO PROVIDE SAFE STORAGE OR RAINWATER, WHICH IMPROVES WATER QUALITY BECAUSE OF IT'S DESIGN AND FUNCTION. THE CALMING INLET PREVENTS AGITATION OF SETTLED FINE DUST, THE SKIMMING OVERFLOW REMOVES FLOATING PARTICLES AND THE FLOATING FILTER ENSURES WATER IS DRAWN INTO THE PUMP FROM APPROXIMELY 150 mm (6.0") BELOW THE SURFACE OF THE WATER.

# WATER PUMPING AND TREATMENT SYSTEM

CLEAN FLO DETERMINED THE WATER DEMAND TO BE 8 GPM @ 60 PSI. THIS WILL BE PUMPED BY MULTI STAGE BOOSTER PUMP POWERED BY VFD. THE TREATMENT WILL BE THREE STAGES TO ENSURE WATER IS SAFE TO USE. STAGE ONE IS A SEDIMENT FILTER OF 15 MICRONS WHICH PROVIDES A SELF CLEANING FLUSH TO DRAIN. STAGE TWO A 10 CARBON FILTER. STAGE THREE A 1 MICRON SEDIMENT FILTER. STAGE FOUR IS ULTRAVIOLET SANITATION SYSYEM NSF 55 CLASS A.

# **WATER QUALITY AND TREATMENT**

CLEAN FLO DESIGNED THIS SYSTEM TO PRODUCE WATER THAT IS SAFE FOR CSA B805 R4 USES; NAMELY POTABLE DOMESTIC.

# WATER TESTING

### **DANGER!!**

IF THERE ARE ANY NOTICEABLE CHANGES IN WATER QUALITY (IE. COLOUR, SMELL, TASTE, ETC.)
STOP USING WATER AND PERFORM BOTH BACTERIOLOGICAL AND CHEMICAL TESTS IMMEDIATELY.

# **BACTERIOLOGICAL TEST**

THIS TEST SHOULD BE PERFORMED AT A FREQUENCY OF SIX MONTHS AT A LOCAL ACCREDITED WATER TESTING LAB. BACTERIOLOGICAL SAMPLES WILL RAPIDLY BECOME UNREPRESENTATIVE OF THE WATER SUPPLY IF THE TEST IS NOT PERFORMED SOON AFTER TAKING THE SAMPLE

THESE TESTS INCLUDE BUT ARE NOT LIMITED TO: E.COLI, AND TOTAL COLIFORMS

#### **CHEMICAL TEST**

THIS TEST SHOULD BE PERFORMED AT A FREQUENCY OF ONE YEAR AT AN ACCREDITED WATER TESTING LAB. WHILE CHEMICAL TESTS ARE LESS TIME SENSITIVE, IT IS ADVISED TO DELIVER YOUR SAMPLE TO THE LAB WITHIN 24 HOURS OF TAKING THE SAMPLE

THESE TEST INCLUDE BUT ARE NOT LIMITED TO: HEAVY METALS, TOTAL ORGANIC CARBON, PH, TURBIDITY, TOTAL DISSOLVED SOLIDS, NITRATES, HARDNESS, AND CONDUCTIVITY.

### POTENTIAL LOCAL TEST FACILITY

WHEN USING THE SERVICES OF A LOCAL TESTING FACILITY THEY WILL ENSURE THE TEST RESULTS AND TOLERANCES CONFORM TO LOCAL REGULATIONS ON WATER QUALITY.

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#### **WATER TEST RESULTS**

PLEASE KEEP A LOG OF TEST RESULTS IN THE TABLE AT THE BACK OF THIS DOCUMENT. PLEASE FILE THE ORIGINAL WATER TEST RESULT DOCUMENTATION IN THE FOLDER AT THE BACK OF THESE DOCUMENTS.

# WATER TESTING LOG

PERFORM A BACTERIOLOGICAL TEST ON THE WATER EVERY 6 MONTHS PERFORM A CHEMICAL TEST ON THE WATER EVERY YEAR

STORE THE ORIGINAL WATER QUALITY TEST RESULTS IN FOLDER AT BACK

THE FIRST WATER TEST SHOULD BE RECORED BELOW AS THE BASELINE WATER TEST.

BASELINE TEST DATE (DD/MM/YYYY)	TEST COMPLETE DATE (DD/MM/YYYY)	TEST RESULT



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**SYSTEM NAME:** - RAINWATER SYSTEM

R4-POTABLE **SYSTEM TYPE:** 

YOU OWNERS:

123 abc st. LOCATION:

**EMERGENCY CONTACT** 

**FIRST POINT - INSTALLERS** OWNERS BUILDER

CLEANFLO WATER TECHNLOGIES, CANADA **SECOND POINT - DESIGNER** 

1-877-306-2146

**MAINTENANCE PERSONS** OWNER

**SCOPE OF SYSTEM SUPPLY** 

**R4 POTBALE WATER USES TEIR:** PRIMARY WATER SOURCE: **RAINWATER** 

HAULED BULK WATER **SECONDARY WATER SOURCE:** 

4 / DAY NUMBER OF PEOPLE SERVED:

**NUMBER OF FIXTURES** 

**HOSE BIBS:** 

YARD HYDRANT:

**FAUCETS:** LAUNDRY:

**TOILETS: DISHWASHER:** 

BATH/SHOWER:

**MECH. EQUIPMENT:** FIRE SUPRESSION:

**SECONDARY WATER SOURCE** 

HAULED BULK POTABLE WATER

**AUTOMATIC BY-PASS SYSTEM** N/A

**SYSTEM DESIGN AND SPECS.** 

CLEANFLO WATER TECHNLOGIES, 1-877-306-2146 **DESIGNER:** 

DATE COMPLETED: MAY, 2022 SYSTEM SPECIFICATIONS

**ROOF COLLECTION AREA:** ~ 3500 SQFT

PAINTED STEEL (NSF 61 OR NSF P151 COATING) **ROOF MATERIAL:** 

PAINTED STEEL (NSF 61 OR NSF P151 COATING) **GUTTER MATERIAL:** 

ALUMINUM, PVC SDR 35, PVC DRAIN PIPE (NSF 61 OR **DOWNSPOUT MATERIAL:** 

NSF P151 INTERIOR COATING)

ALUMINUM, PVC SDR 35, PVC DRAIN PIPE (NSF 61 **CONVEYANCE PIPING MATERIAL:** 

ORNSF P151 INTERIOR COATING

**STORAGE TANK SPECIFICATIONS** 

**TOTAL VOLUME:** 6000 USG

**NUMBER OF TANKS:** 4

**VOLUME OF EACH TANK:** 1500 USG

TANK TYPE: **BELOW GROUND POLYETHYLENE** TANK MATERIAL:

**TANK DIMENSIONS** 

LENGTH: 177" 62" WIDTH: HIEGHT: 51 " DIAMETER: NA

**PRE-FILTER SPECIFICATIONS** 

**TYPE OF PREFILTER: WISY VORTEX 150** 

**NUMNER OF PRE-FILTERS:** 

**PRE-FILTRATION MESH SIZE:** 320 MICRONS

**MAXIMUIM INLET FLOW RATE:** 12 LITERS PER SECOND

**PUMP SPECIFICATIONS** 

BRAND: CLEANFLO VFD CONSTANT PRESSURE SYSTEM

DABS DTRON 2 MODEL: **DESIGN FLOW RATE:** 8 USGPM MAXIMUN PSI @ 10 GPM: 74 PSI

**POWER SPECIFICATIONS** 

1.1 HP HORSE POWER: **VOLTAGE:** 115 VAC AMPS: ~ 7.5 A WATTS: 1500 W

WATER TREATMENT SPECIFICATIONS

**CLEANFLO** TYPE: VIDA REUSE BRAND:

MODEL: COMR3 AGE OF EQUIPMENT: NEW

**7 MIN PEAK WATER DEMAND** 

FLOW RATE

QUANTITY (LPM) RUN TIME 7 MIN PEAK **FIXTURES** 8.3 SHOWER OR BATH 7 MIN 116.6 L 5.3 0.5 MIN **LAVATORY** 5.3L 2.7 1 FLUSH PER TOILET 6.0L/FLUSH 18L 1.6 O.5 MIN KITCHEN SINK 0 19 0 100L/CYCLE WASHING MACHINE 0 7.6 DISHWASHER 30L/CYCLE

**TOTAL 7 MIN PEAK 140L** 

LPM 20 **US GPM 5.3** 

BASED ON THIS PEAK DEMAND CLEANFLO SPECIFIES A MAX FLOW RATE OF 8 US GPM.

**TOTAL DYNAMIC HEAD** 

DESIGN FLOW RATE: 8 GPM

1.25 PSI / 2.9 FT HEAD 1.0" @ 50FT (2.5 PSI LOSS/100FT) (NPSH MUST BE MET FOR BOOSTER PUMP)

TREATMENT SKID

PSI LOSS VARIES AS WATER FILTERS BECOME CLOGGED 10 PSI / 23 FT HEAD

**DISTRIBUTION PIPE** 8 GPM - 1.0" @ 20FT (2.5 PSI LOSS/100FT) 8 GPM - 0.75" @ 50FT (8.7 PSI LOSS/100FT) 10.2 PSI / 24 FT HEAD 4 GPM - 0.5" @ 50FT (10.5 PSI LOSS/100FT)

TOTAL 0.5 + 4.4 + 5.3 = 10.2

**MINOR LOSSES: VALVES, FITTINGS** 2.1 PSI / 4.9 FT HEAD

**ELEAVATION HEAD** 8.6 PSI / 20 FT HEAD

**STATIC PSI** 30 PSI / 70 FT HEAD

TOTAL **62 PSI / 144 FT HEAD** 

**CLEAN FLO** WATER TECHNOLOGIES

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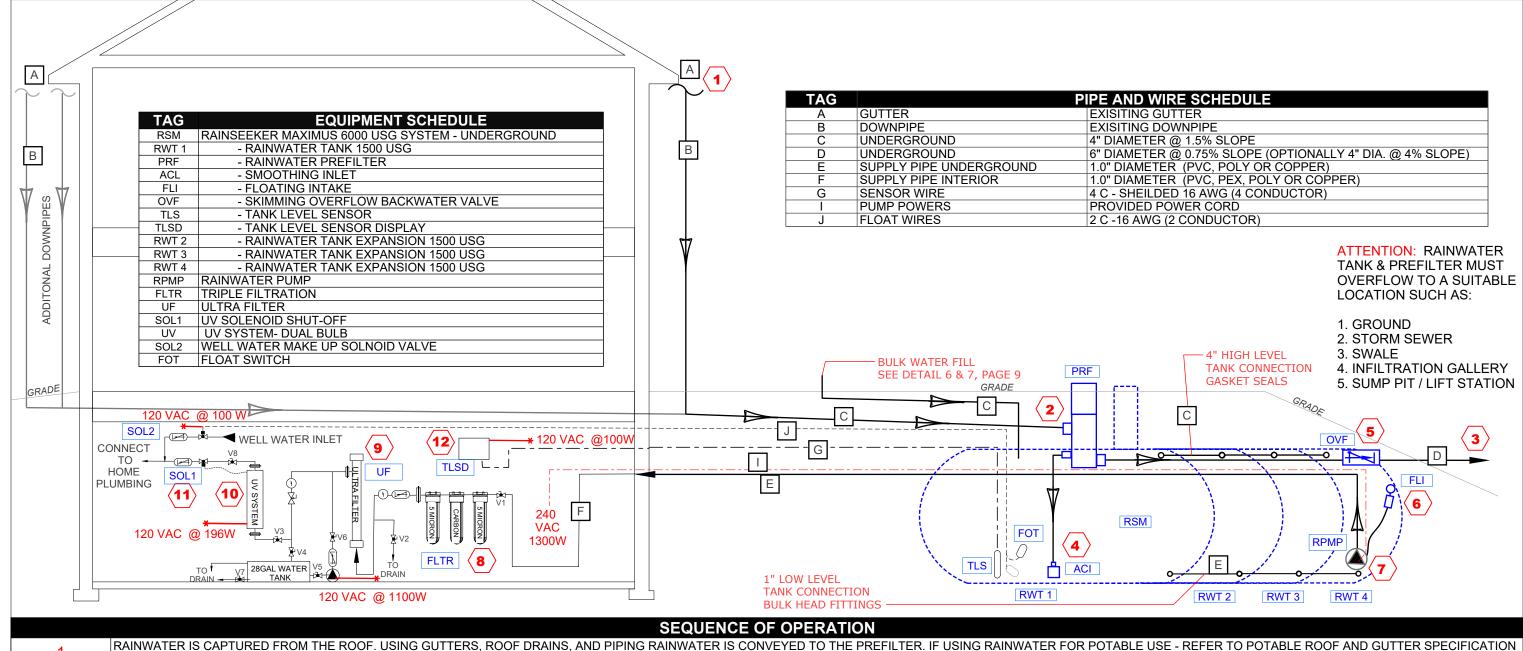
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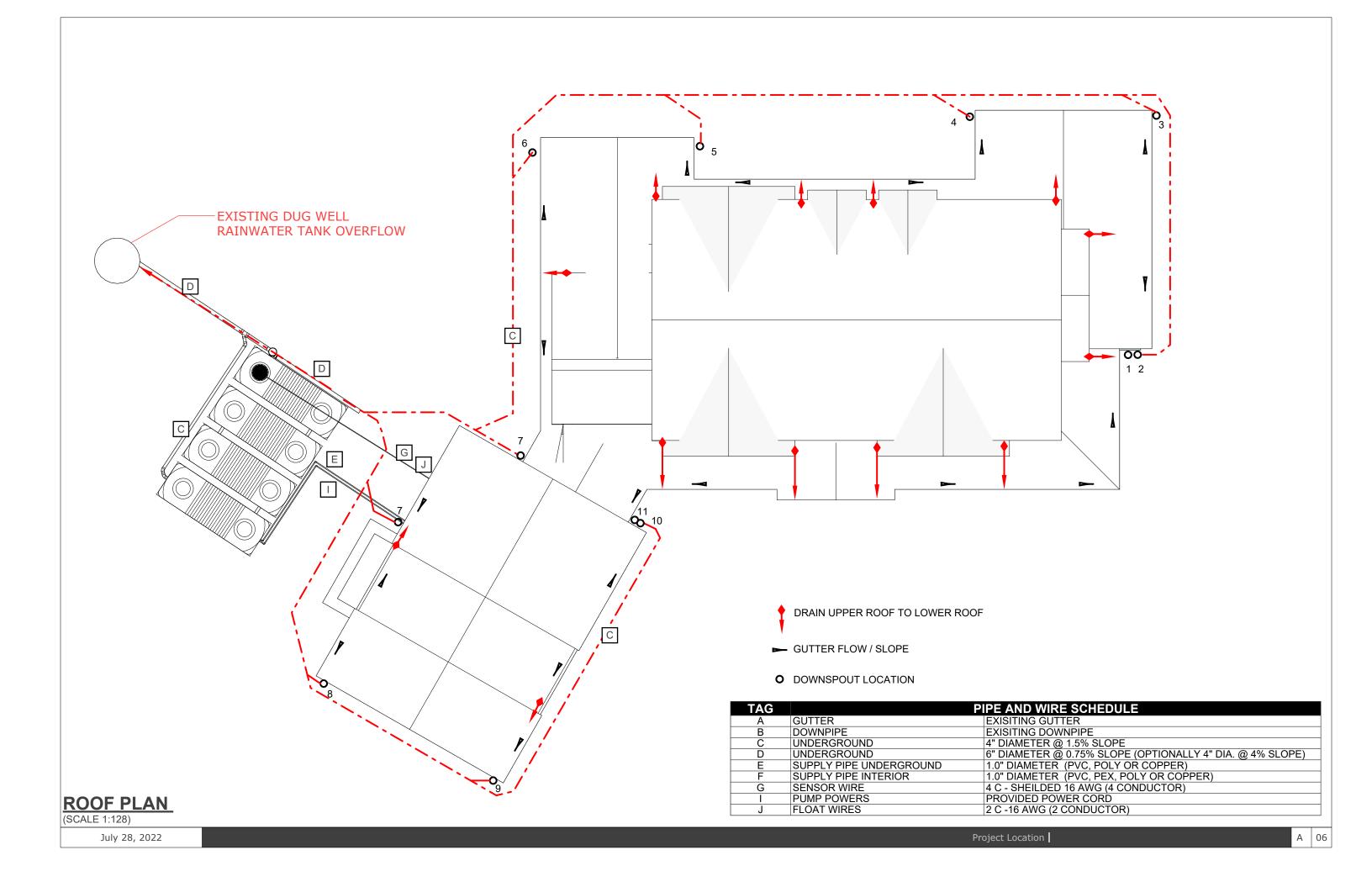
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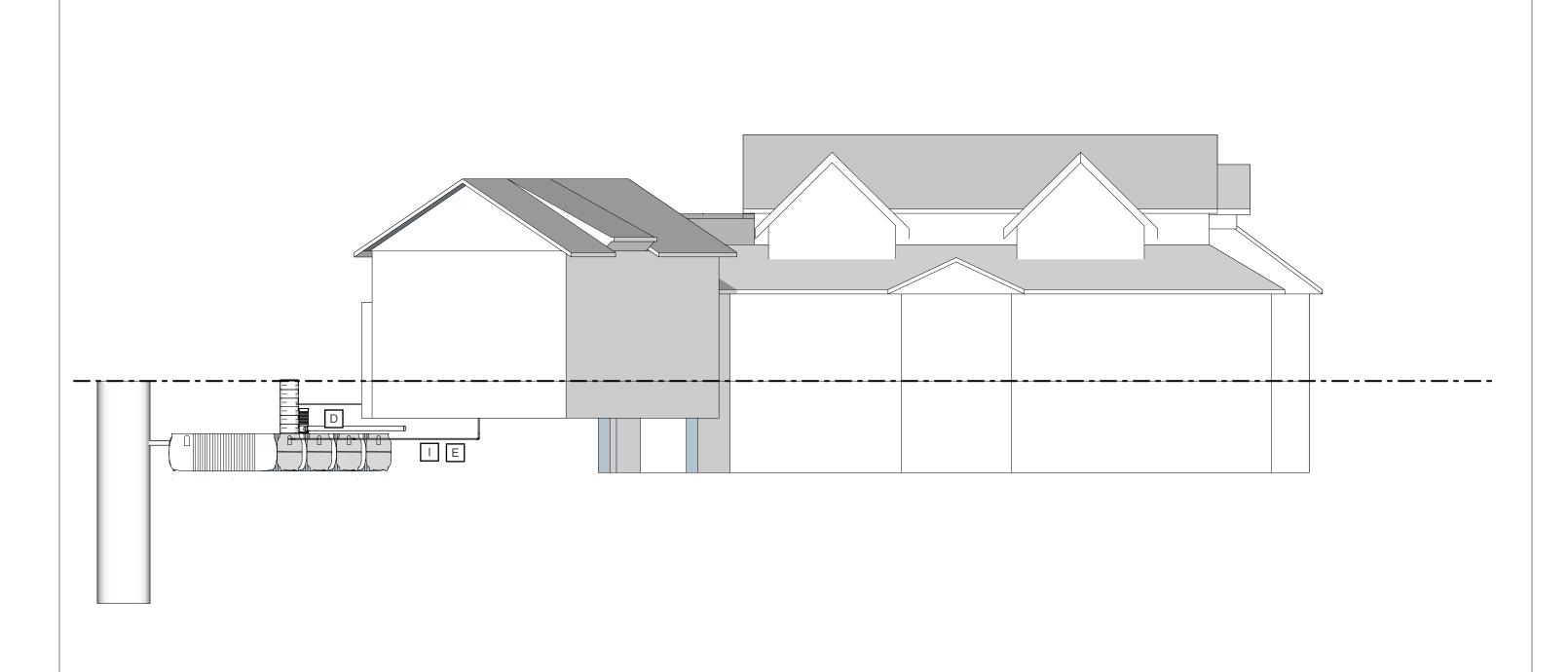
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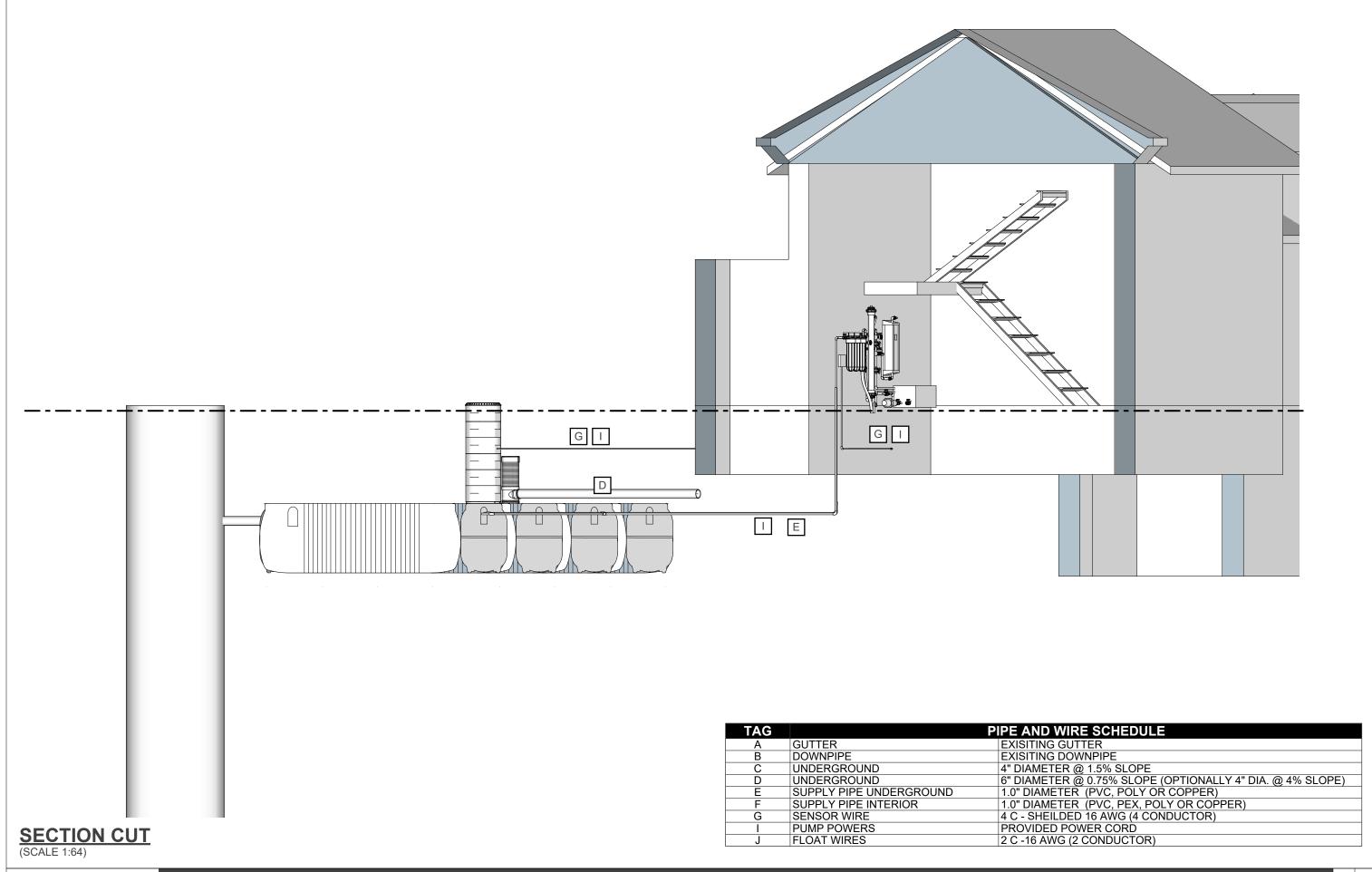
- 1 RAINWATER IS CAPTURED FROM THE ROOF. USING GUTTERS, ROOF DRAINS, AND PIPING RAINWATER IS CONVEYED TO THE PREFILTER. IF USING RAINWATER FOR POTABLE USE REFER TO POTABLE ROOF AND GUTTER SPECIFICATION SHEETS.
- 2 RAINWATER ENTERS PREFILTER SELF CLEANING 3 IN1. PROVEN BASKETLESS TECHNOLOGY PROVIDES: 1) FIRST FLUSH ACTION 2) CONTINUOUS FILTRATION 320 MICRONS 3) AERATOR.
- RAINWATER OVERFLOWS FROM PREFILTER AND RAINWATER TANK TO A SAFE LOCATION SUCH AS: GROUND, STORM SEWER, SWALE, INFILTRATION GALLERY OR SUMP PIT/ LIFT STATION.
- FILTERED RAINWATER LEAVES THE PREFILTER AND ENTERS THE TANK VIA STAINLESS STEEL AERATOR AND CALMING INLET DEVICE. WHICH ADDS OXYGEN TO THE RAINWATER AND REDUCES VELOCITY OF INCOMING RAINWATER TO PREVENT AGITATION OF SEDIMENT ON RAINWATER TANK FLOOR.
- 5 WHEN THE RAINWATER TANKS ARE FULL OVERFLOWED RAINWATER IS DIRECTED THROUGH THE LAST TANK TO THE SKIMMING OVERFLOW, BACKWATER VALVE AND VERMIN GUARD THEN EXITS THE SYSTEM.
- 6 WHEN REUSING RAIN IT FIRST PASSESS THROUGH A STAINLESS STEEL FLOATING INTAKE DEVICE. WHICH DRAWS IN RAINWATER TO THE PUMP FROM 150MM(6.0") BELOW WATER SURFACE WHICH IS THE CLEANEST LENS (LAYER) OF WATER IN TANK.
- 7 WHEN THERE IS A DROP IN PRESSURE IN THE PLUMBING SYSTEM THE RAINWATER PUMP IS ACTIVATED ON. THE PUMP WITH ADJUST SPEED TO MAINTAIN A CONSTANT PRESSURE AND MINIMIZE ENERGY USE. RAINWATER IS PRESSURIZED INTO THE BUILDING BY THE PUMP SYSTEM.
- RAINWATER UNDER PRESSURE FROM THE PUMP WILL FLOW THROUGH THREE STAGES OF FILTRATION. EACH FILTER IS 4.5" DIAMETER x 20" LONG. STAGE 1 IS 5 MICRON SEDIMENT FILTER, STAGE 2 IS 10 MICRON CARBON FILTER AND STAGE 3 IS 5 MICRON SEDIMENT FILTER.
- 9 NEXT RAINWATER WILL FLOW THORUGH AN ULTRA FILTER MEMBRANE FOR ADNVANCE FILTRATION. EQUIPMENT WITH AN MANUAL BACKWASH PUMP AND STORAE TANK.
- RAINWATER IS SANITIZED BY A NSF 55 CLASS "A" UV SYSTEM. THE UV SYSTEM IS DESIGNED TO REPLACE CHLORINE AS A PRIMARY DISINFECTION STAGE PROVIDING UPTO 68 mJ/cm2 UV DOSE. IF THE UV DOSE FALLS BELOW 40 mJ/cm2 THEN THE UV WILL GO INTO ALARM AS THE WATER IS NOT SAFE TO USE. UV ALARM INDICATED THE FILTERS MAY HAVE NOT BEEN CHANGED AT THE SCHEDULED MAINTENANCE.
- 11 IF THE UV SYSTEM ENTERS AN ALARM FOR UV DOSE BELOW 40 mJ/cm2 THEN THE SOLENOID LOCK VALVE WILL TRIGGER CLOSED, STOPPING ALL WATER SUPPLY
- THE TANK LEVEL IS MEASURED BY A LEVEL SENSOR INSIDE THE RAINWATER TANK. THE CURRENT AND HISTORICAL RAINWATER TANK LEVEL IS DISPLAYED ON THE TOUCH SCREEN
- WHEN FLOAT SWITCH IN RAINWATER TANK IS DOWN IT CLOSE THE SWITCH AND ENERGIZES THE SOLNEOID VALVE SOL2 AND PROVIDE WELL WATER TO THE BUILDING. WHEN FLOAT SWITCH IN RAINWATER IS UP IT OPNES THE SWITCH AND DE-ENERGIZES THE SOLENOID VAVEL SOL2 AND CLOSES THE VAVLE AND WELL WATER TO THE BUILDING STOPS.





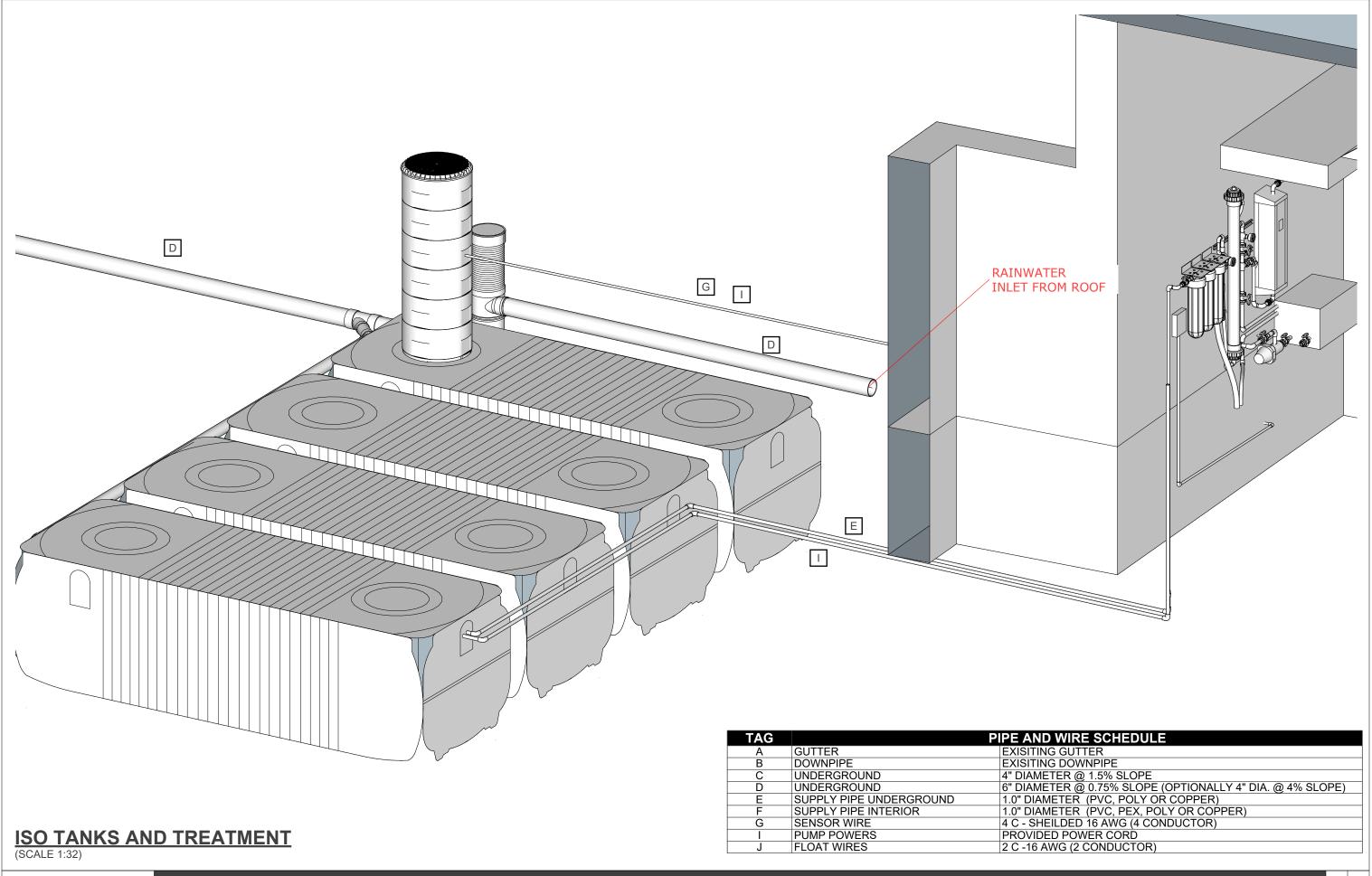
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FRONT VIEW (SCALE 1:128)



July 28, 2022

Project Location



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