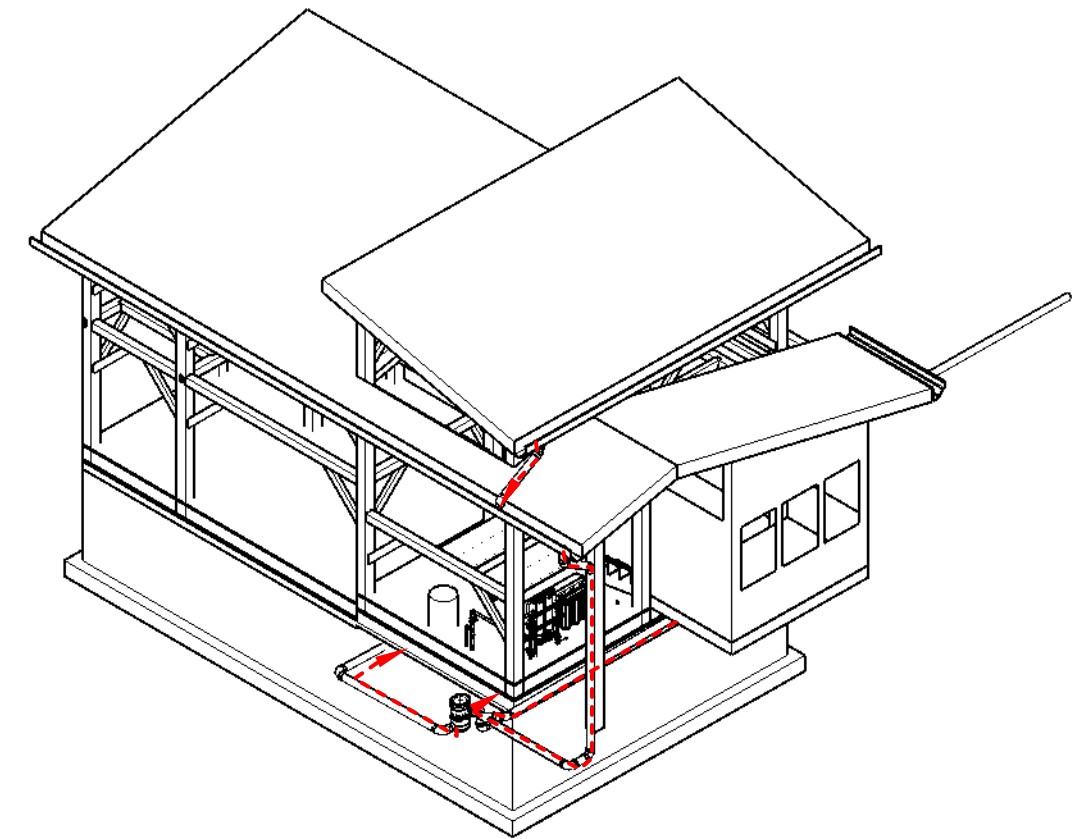


# RAINWATER HARVESTING SYSTEM

"Your" - RAINWATER SYSTEM

"Your Address"



| TAG  | EQUIPMENT SCHEDULE                            |
|------|---|
| RSM  | RAINSEEKER MAXIMUS SYSTEM - UNDERGROUND       |
| RWT  | - RAINWATER TANK 11,000 LITERS BY OTHERS      |
| PRF  | - RAINWATER PREFILTER                         |
| ACL  | - SMOOTHING INLET                             |
| OVF  | - SKIMMING OVERFLOW BACKWATER VALVE           |
| RPMP | RAINWATER PUMP                                |
| UF   | TRIPLE FILTRATION AND ULTRA FILTRATION SYSTEM |

| TAG   | PIPE AND WIRE SCHEDULE   |   |
|---|--------------------------|---|
| <b>** ENSURE ALL SURFACES IN CONTACT WITH THE RAINWATER ARE SAFE FOR POTABLE DRINKING WATER**</b> |                          |   |
| A   | GUTTER                   | 4" or 5" GUTTER (ALUMINUM, STEEL, COPPER, PVC )   |
| B   | DOWNPIPE                 | 3" or 4" DOWNPIPE (ALUMINUM, STEEL, COPPER, PVC ) |
| C   | UNDERGROUND              | 4" DIAMETER @ 1.5% SLOPE (PVC)                    |
| D   | UNDERGROUND              | 6" DIAMETER @ 0.75% SLOPE (PVC)                   |
| 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 - TANK LEVEL | 4 C - SHIELDED 16 AWG (4 CONDUCTOR)               |
| I   | PUMP POWERS              | PROVIDED POWER CORD (50 FT)                       |

| 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  |
| R4    | POTABLE, HUMAN CONSUMPTION, ORAL CARE, FOOD PREPARATION, DISHWASHING, BATHING/SHOWERING, POOL/HOT TUBS |

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 RESPONSIBILITY 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 THEREFORE REGULAR WATER TESTING IS REQUIRED. CLEANFLO IS NOT RESPONSIBLE FOR THE WATER QUALITY THIS SYSTEM PRODUCES. USE WATER AT YOUR OWN RISK.

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| 3                 | GENERAL INFORMATION SHEET | TECHNICAL SPECIFICATIONS OF SYSTEM                                |
| 4                 | SCHEMATIC                 | RAINWATER HARESTING SYSTEM SCHEMATIC                              |
| 5                 | SITE PLAN                 | SITE PLAN DRAWING- LOCATION OF MAJOR EQUIPMENT.                   |
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| 11-13             | INSTALLATION              | INSTALLTION SPECIFICATIONS  |



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**A 01**

**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 DRINKING, COOKING, BATHING, TOILETS, LAUNDRY. WITH BACK-UP WATER SOURCE FROM HAULED BULK POTABLE 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. THE ROOF IS PROVIDED BY OTHERS AND SHOULD BE SUITABLE FOR INTENDED USE.

**GUTTER, DOWNPIPES AND CONVEYANCE PIPING**

THE GUTTERS, DOWNPIPES, AND CONVEYANCE PIPING IS SIZED BASED ON SPECIFICATIONS FROM THE DESIGNS. THE GUTTERS, DOWNPIPE AND CONVEYANCE PIPING IS PROVIDED BY OTHERS AND SHOULD BE SUITABLE FOR INTENDED USE.

**PREFILTER**

THE SYSTEM WILL REQUIRE ONE (1) PRE-FILTER. THIS 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 11,000 LITERS OF RAINWATER STORAGE. WITH A TOTAL OF ONE (1) BELOW GROUND TANK(S), MADE OF CONCRETE POUR IN PLACE. THE TANK WILL BE A POURED INTO THE BUILDING FOUNDATION BY OTHERS.

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 APPROXIMATELY 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 25. STAGE TWO A 10 CARBON FILTER. STAGE THREE A 5 MICRON SEDIMENT FILTER OF 25. STAGE FOUR IS ULTRAFILTRATION MEMBRANE.

**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.

**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 RECORDED BELOW AS THE BASELINE WATER TEST.

| BASELINE TEST DATE<br>(DD/MM/YYYY) | TEST COMPLETE DATE<br>(DD/MM/YYYY) | TEST RESULT |
|------------------------------------|------------------------------------|-------------|
|                                    |                                    |             |



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**A 02**

**SYSTEM NAME:**

YOUR- RAINWATER SYSTEM

**SYSTEM TYPE:**

R4-POTABLE

**OWNERS:**

YOUR NAME

**LOCATION:**

123 your address

**EMERGENCY CONTACT****FIRST POINT - INSTALLERS**

OWNERS CONTACTORS

**SECOND POINT - DESIGNER**CLEANFLO WATER TECHNOLOGIES, CANADA  
1-877-306-2146**MAINTENANCE PERSONS**

OWNER

**SCOPE OF SYSTEM SUPPLY****WATER USES TEIR:**

R4 POTBALE

**PRIMARY WATER SOURCE:**

RAINWATER

**SECONDARY WATER SOURCE:**

HAULED BULK WATER

**NUMBER OF PEOPLE SERVED:**

2 / DAY

**NUMBER OF FIXTURES****HOSE BIBS:** 1**YARD HYDRANT:** 0**FAUCETS:** 2**LAUNDRY:** 1**TOILETS:** 1**DISHWASHER:** 1**BATH/SHOWER:** 1**MECH. EQUIPMENT:** 1**FIRE SUPPRESSION:** 0**SECONDARY WATER SOURCE****TYPE:**

HAULED BULK POTABLE WATER

**AUTOMATIC BY-PASS SYSTEM**

N/A

**SYSTEM DESIGN AND SPECS.****DESIGNER:**

CLEANFLO WATER TECHNOLOGIES, 1-877-306-2146

**DATE COMPLETED:**

NOV 2021

**SYSTEM SPECIFICATIONS****ROOF COLLECTION AREA:**

~ 724 SQFT

**ROOF MATERIAL:**

PAINTED STEEL (NSF 61 OR NSF P151 COATING)

**GUTTER MATERIAL:**

PAINTED STEEL (NSF 61 OR NSF P151 COATING)

**DOWNSPOUT MATERIAL:**

ALUMINUM, PVC SDR 35, PVC DRAIN PIPE (NSF 61 OR NSF P151 INTERIOR COATING)

**CONVEYANCE PIPING MATERIAL:**

ALUMINUM, PVC SDR 35, PVC DRAIN PIPE (NSF 61 OR NSF P151 INTERIOR COATING)

**STORAGE TANK SPECIFICATIONS****TOTAL VOLUME:**

11,000 LITERS

**NUMBER OF TANKS:**

1

**VOLUME OF EACH TANK:**

11, 000 LITERS

**TANK TYPE:**

BELOW GROUND. POURED INTO BUILDING FOUNDATION

**TANK MATERIAL:**

CONCRETE, POURED IN PLACE

**TANK DIMENSIONS****LENGTH:**

240"

**WIDTH:**

82"

**HIEGHT:**

36 "

**DIAMETER:**

NA

**PRE-FILTER SPECIFICATIONS****TYPE OF PREFILTER:**

WISY VORTEX

**NUMNER OF PRE-FILTERS:**

1

**PRE-FILTRATION MESH SIZE:**

320 MICRONS

**MAXIMUM INLET FLOW RATE:**

12 LITERS PER SECOND

**PUMP SPECIFICATIONS****BRAND:**

CLEANFLO PRESSURE SYSTEM

**MODEL:**

DC POWER PUMP

**DESIGN FLOW RATE:**

~ 5 USGPM

**MAXIMUM PSI @ 10 GPM:**

65 PSI

**POWER SPECIFICATIONS****HORSE POWER:**

144 W DC MOTOR

**VOLTAGE:**

12 / 24 VDC

**AMPS:**

12 A / 6 A

**WATTS:**

144 W

**WATER TREATMENT SPECIFICATIONS****TYPE:**

CLEANFLO

**BRAND:**

VIDA REUSE

**MODEL:**

COMR3

**AGE OF EQUIPMENT:**

NEW

**7 MIN PEAK WATER DEMAND**

| FIXTURES           | QUANTITY | FLOW RATE (LPM) | RUN TIME   | 7 MIN PEAK |
|--------------------|----------|-----------------|------------|------------|
| SHOWER OR BATH     | 1        | 8.3             | 7 MIN      | 58.1 L     |
| LAVATORY           | 1        | 5.3             | 0.5 MIN    | 2.7 L      |
| 1 FLUSH PER TOILET | 1        | 2.7             | 6.0L/FLUSH | 6.0 L      |
| KITCHEN SINK       | 0        | 1.6             | 0.5 MIN    | 0          |
| WASHING MACHINE    | 0        | 19              | 100L/CYCLE | 0          |
| DISHWASHER         | 1        | 7.6             | 30L/CYCLE  | 30 L       |

**TOTAL 7 MIN PEAK 96.8 L**

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

**LPM 14**  
**US GPM 3.6**

**TOTAL DYNAMIC HEAD****DESIGN FLOW RATE: 8 GPM****SUPPLY PIPE**1.0" @ 50FT (2.5 PSI LOSS/100FT)  
(NPSH MUST BE MET FOR BOOSTER PUMP)

1.25 PSI / 2.9 FT HEAD

**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)  
4 GPM - 0.5" @ 50FT (10.5 PSI LOSS/100FT)  
TOTAL 0.5 + 4.4 + 5.3 = 10.2

10.2 PSI / 24 FT HEAD

**MINOR LOSSES: VALVES, FITTINGS**

~ 20FT (10.5 PSI LOSS/100FT)

2.1 PSI / 4.9 FT HEAD

**ELEVATION HEAD**

20FT (1.0 PSI LOSS/2.33FT)

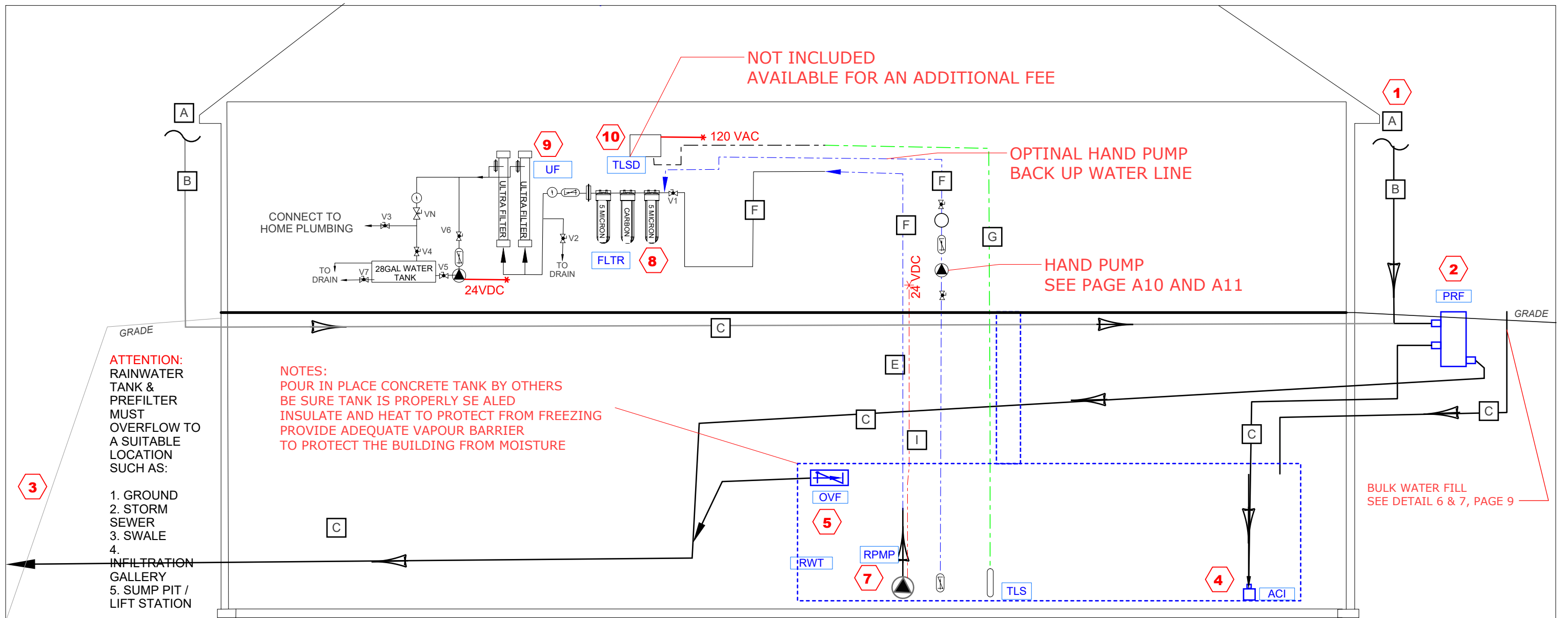
8.6 PSI / 20 FT HEAD

**STATIC PSI**

30 PSI

30 PSI / 70 FT HEAD

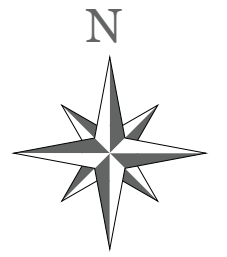
**TOTAL****62 PSI / 144 FT HEAD**



### SEQUENCE OF OPERATION

|           |   |
|-----------|---|
| <b>1</b>  | 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.   |
| <b>2</b>  | RAINWATER ENTERS PREFILTER SELF CLEANING 3 IN1. PROVEN BASKETLESS TECHNOLOGY PROVIDES: 1) FIRST FLUSH ACTION 2) CONTINUOUS FILTRATION 320 MICRONS 3) AERATOR.   |
| <b>3</b>  | RAINWATER OVERFLOWS FROM PREFILTER AND RAINWATER TANK TO A SAFE LOCATION SUCH AS: GROUND, STORM SEWER, SWALE, INFILTRATION GALLERY OR SUMP PIT/ LIFT STATION.   |
| <b>4</b>  | 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. |
| <b>5</b>  | 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.  |
| <b>6</b>  | WHEN REUSING RAIN IT IS PRESSURIZED BY THE RAINWATER PUMP IN THE BOTTOM OF THE TANK   |
| <b>7</b>  | WHEN THERE IS A DROP IN PRESSURE IN THE PLUMBING SYSTEM THE RAINWATER PUMP IS ACTIVATED ON. RAINWATER IS PRESSURIZED INTO THE BUILDING BY THE PUMP SYSTEM.  |
| <b>8</b>  | 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 A 5 MICRON SEDIMENT FILTER.          |
| <b>9</b>  | RAINWATER IS SANITIZED BY A UF ULTRA FILTRATION MEMBRANE SYSTEM. THE UF SYSTEM IS DESIGNED TO REPLACE CHLORINE AS A PRIMARY DISINFECTION STAGE.   |
| <b>10</b> | 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.   |

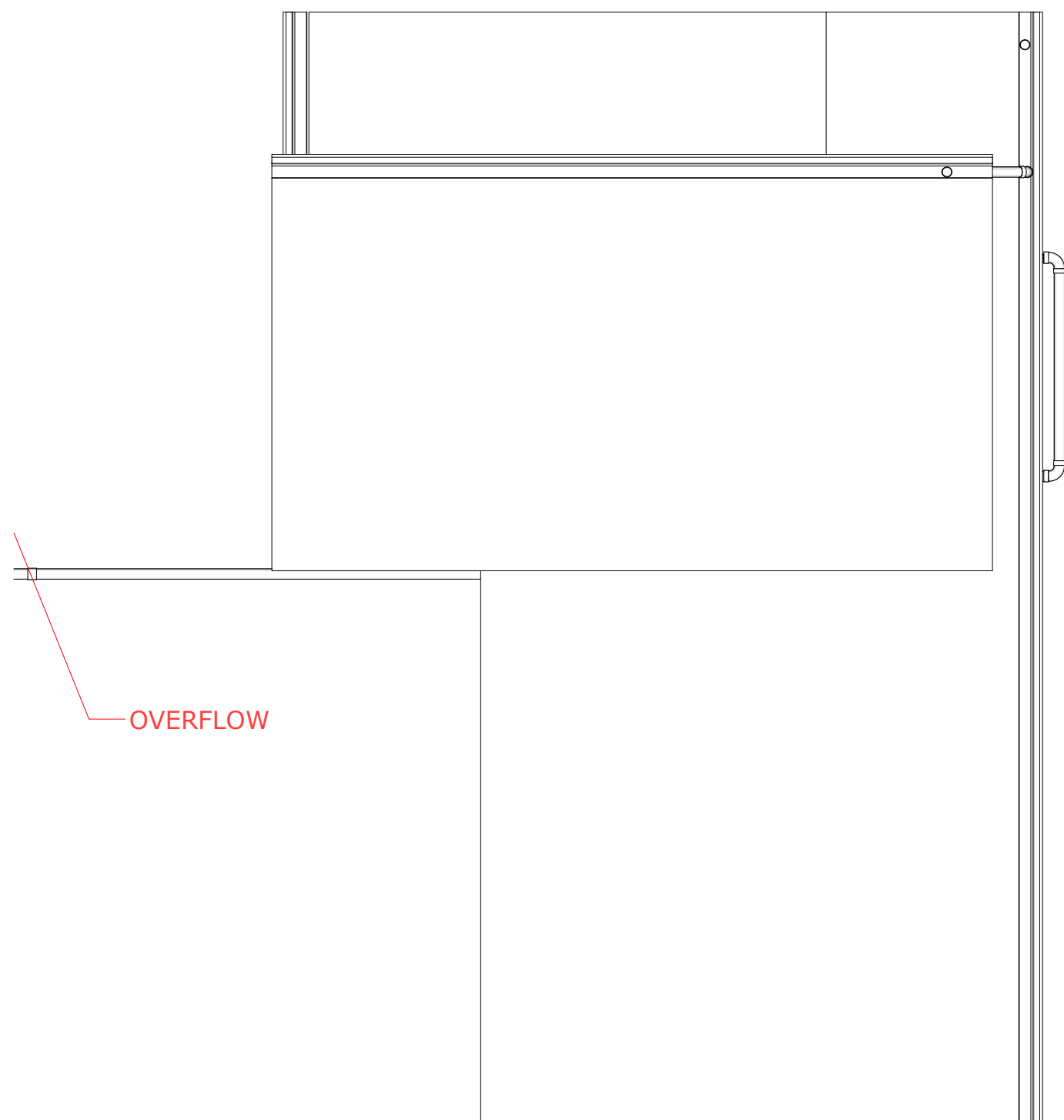




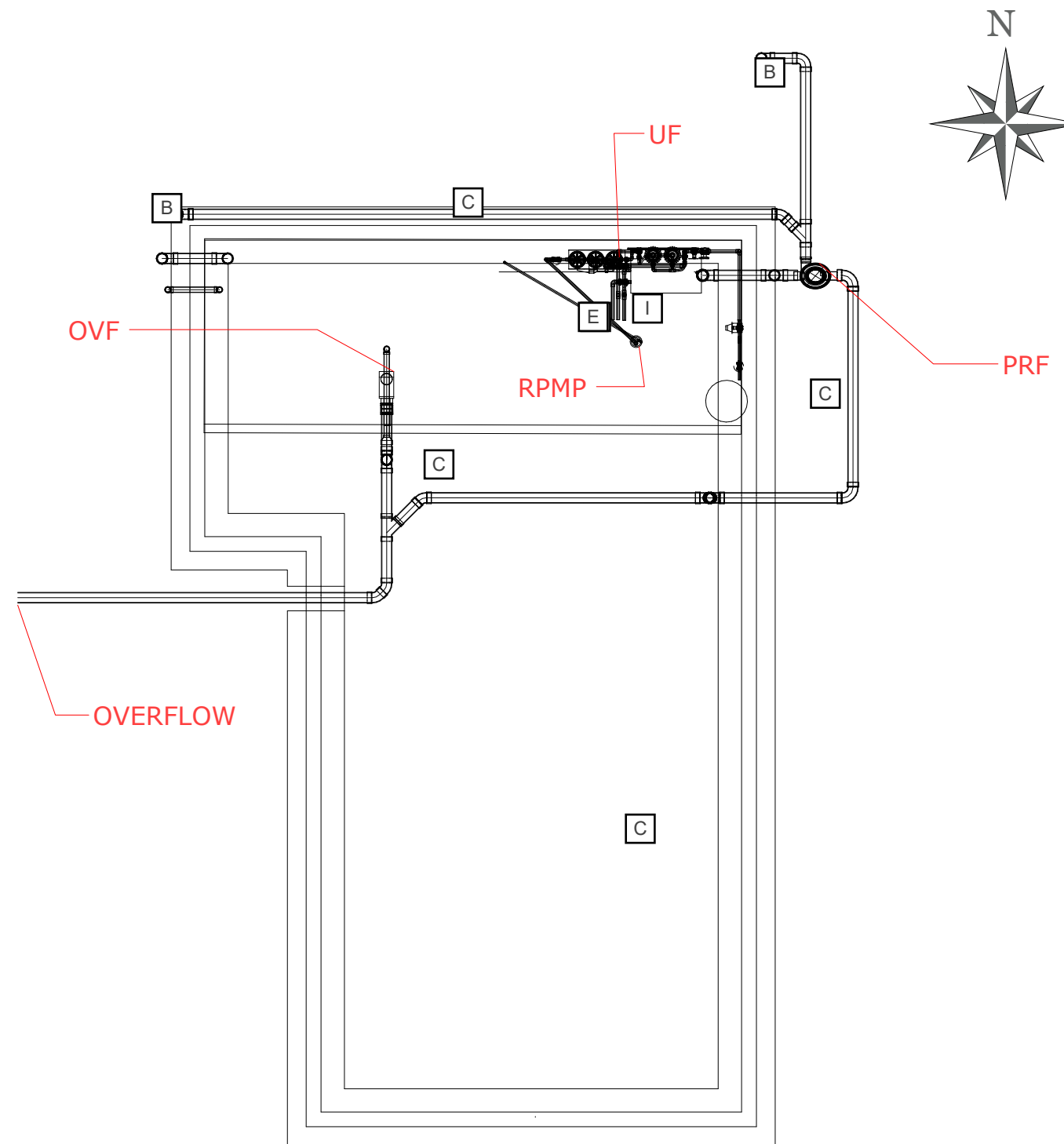
HOUSE LOCATION

OVERFLOW

**SITE PLAN**  
(SCALE 1:200)

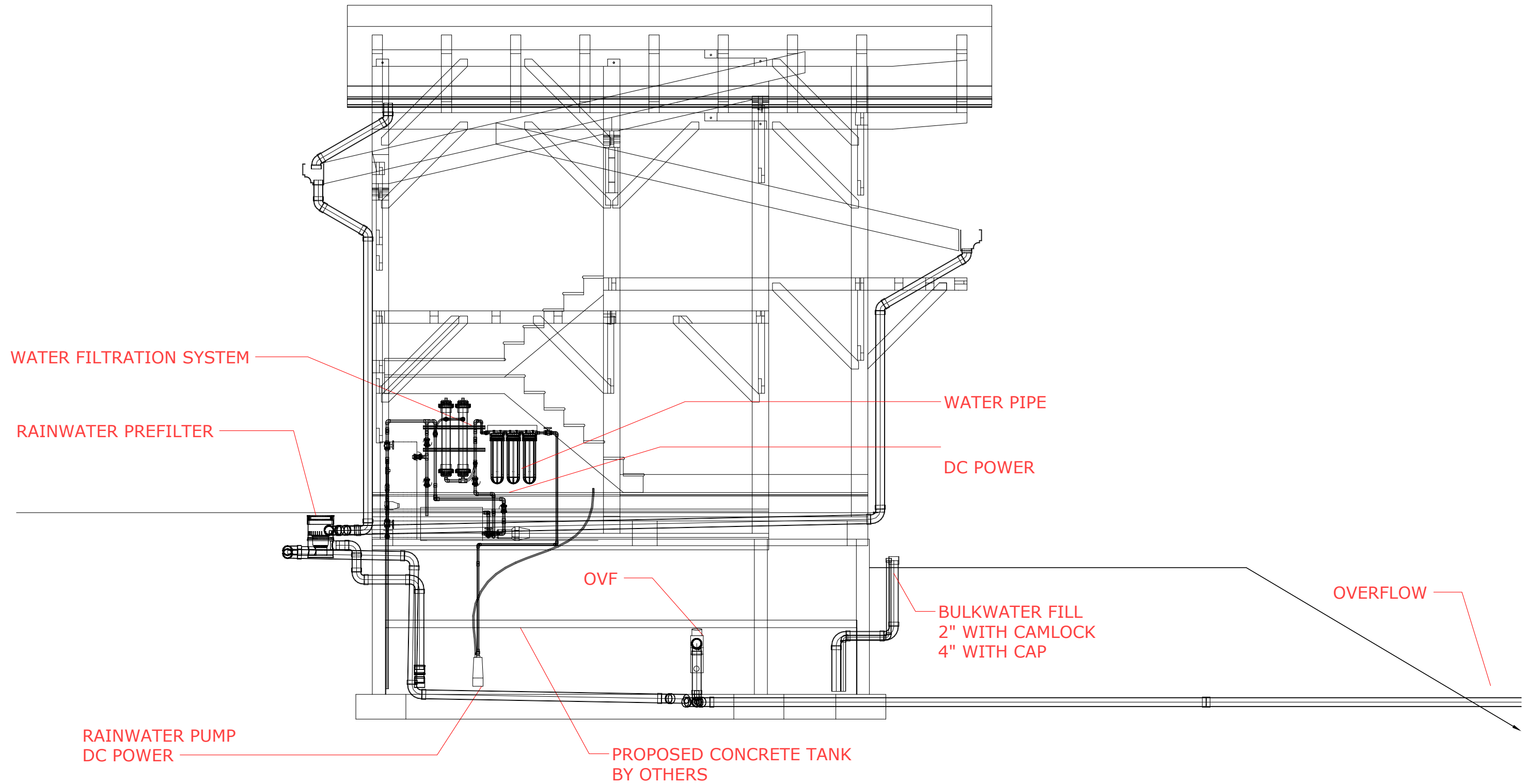


**ROOF PLAN**  
(SCALE 1:64)

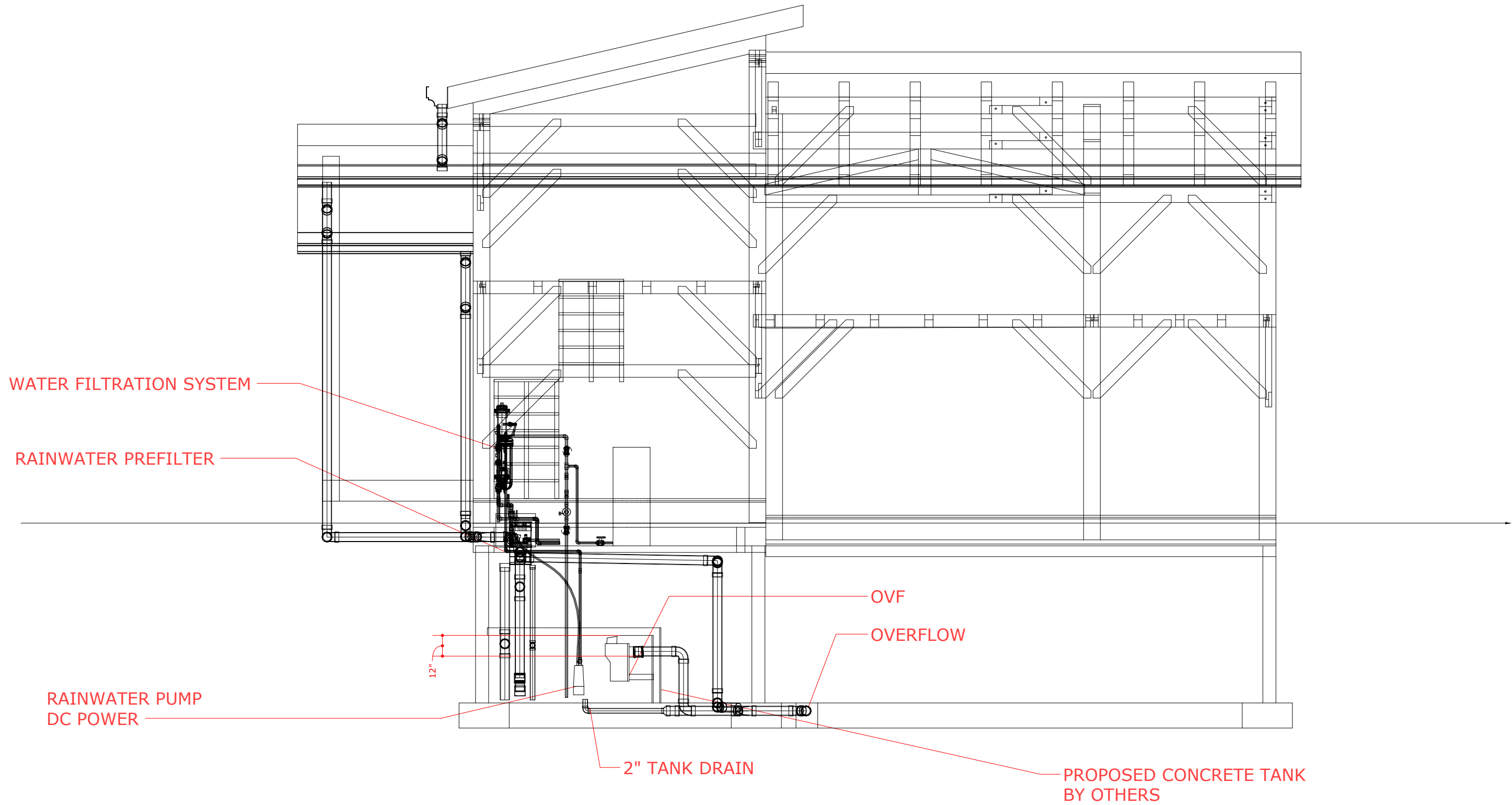


**PIPE PLAN**  
(SCALE 1:64)

| TAG | PIPE AND WIRE SCHEDULE  |   |
|-----|---|---|
|     | <b>** ENSURE ALL SURFACES IN CONTACT WITH THE RAINWATER ARE SAFE FOR POTABLE DRINKING WATER**</b> |   |
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| B   | DOWNPIPE  | 3" or 4" DOWNPIPE (ALUMINUM, STEEL, COPPER, PVC ) |
| C   | UNDERGROUND   | 4" DIAMETER @ 1.5% SLOPE (PVC)                    |
| D   | UNDERGROUND   | 6" DIAMETER @ 0.75% SLOPE (PVC)                   |
| 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 - TANK LEVEL  | 4 C - SHIELDED 16 AWG (4 CONDUCTOR)               |
| I   | PUMP POWERS   | PROVIDED POWER CORD (50 FT)                       |

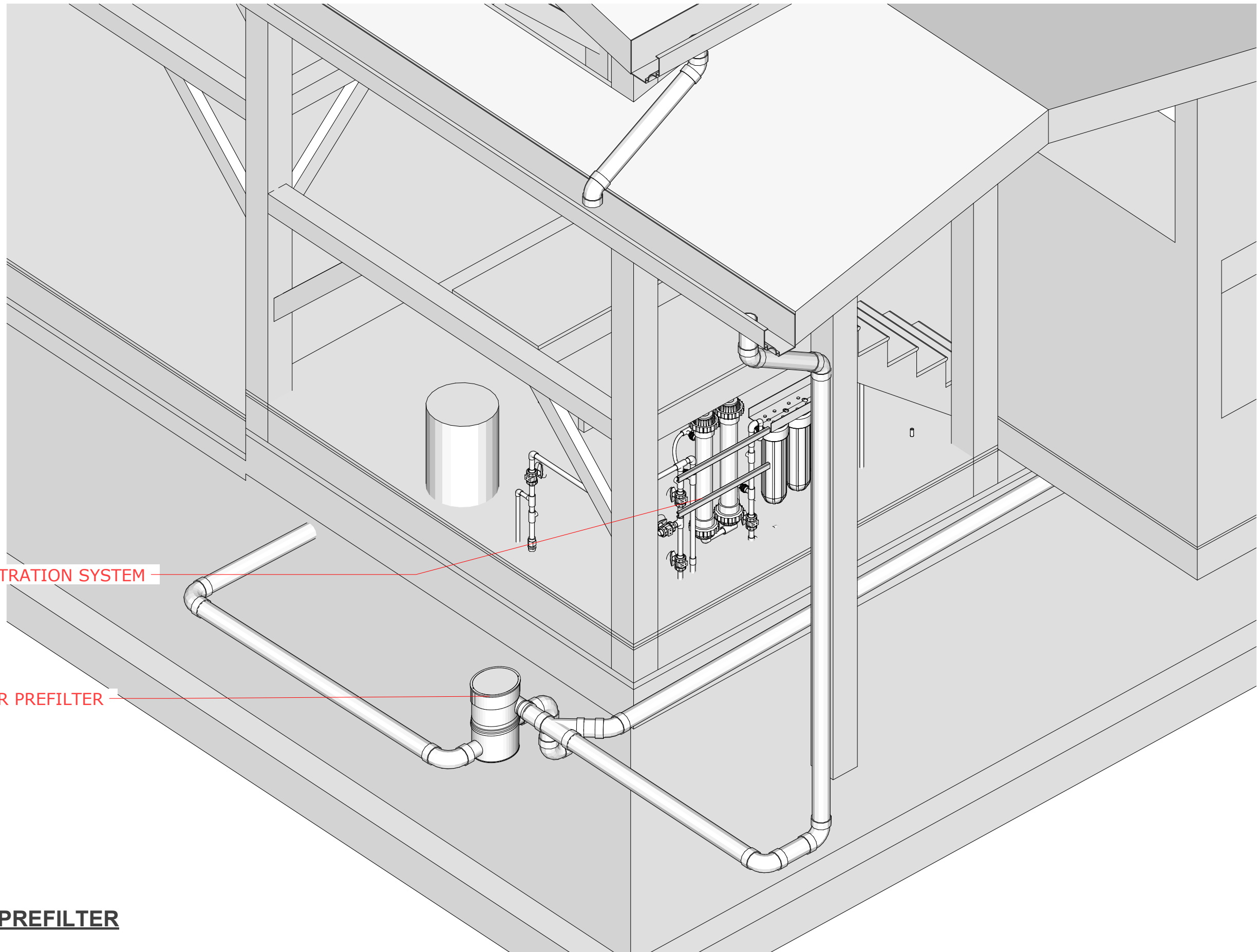


**RIGHT VIEW**  
(SCALE 1:48)



**FRONT VIEW**  
(SCALE 1:48)

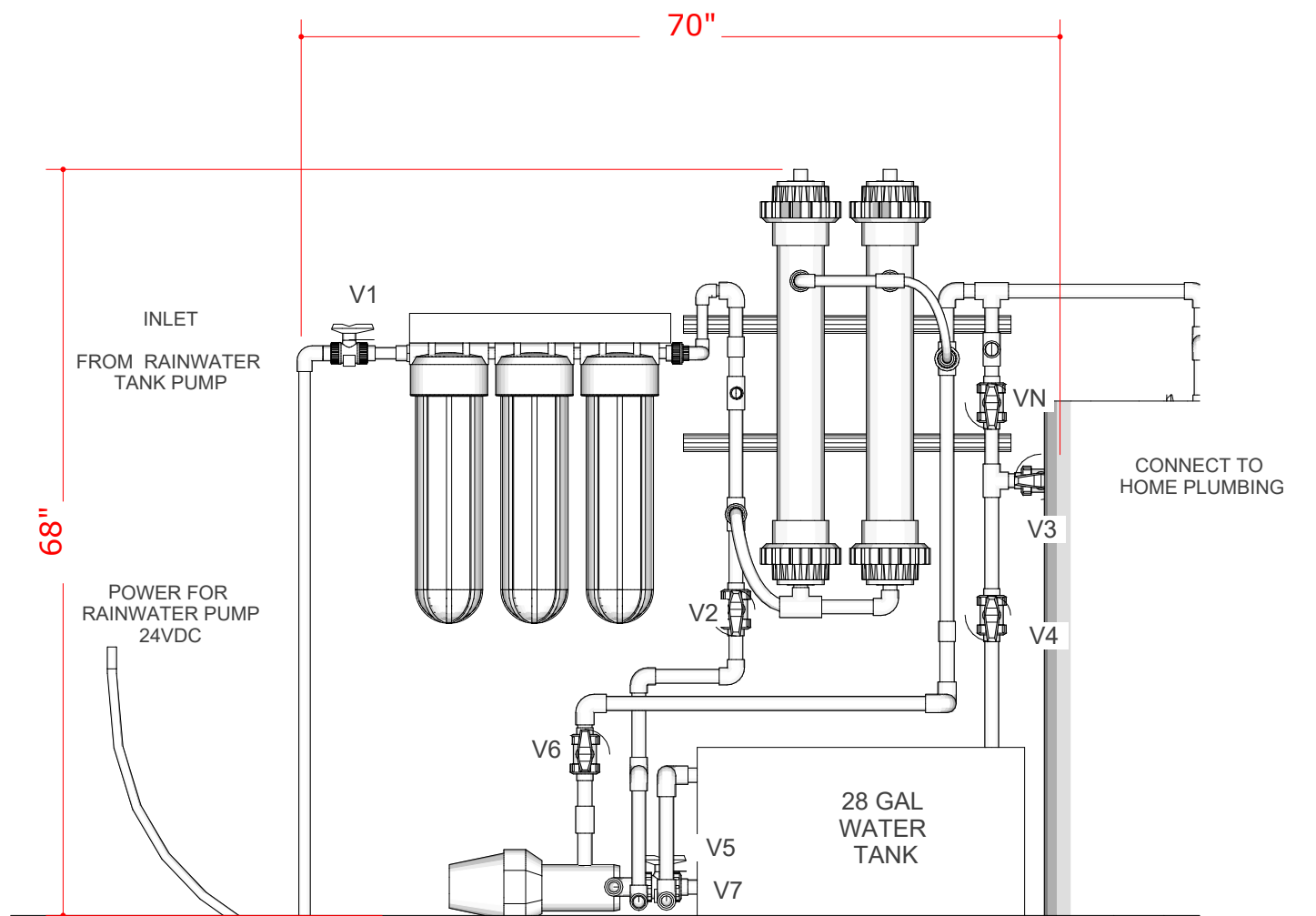
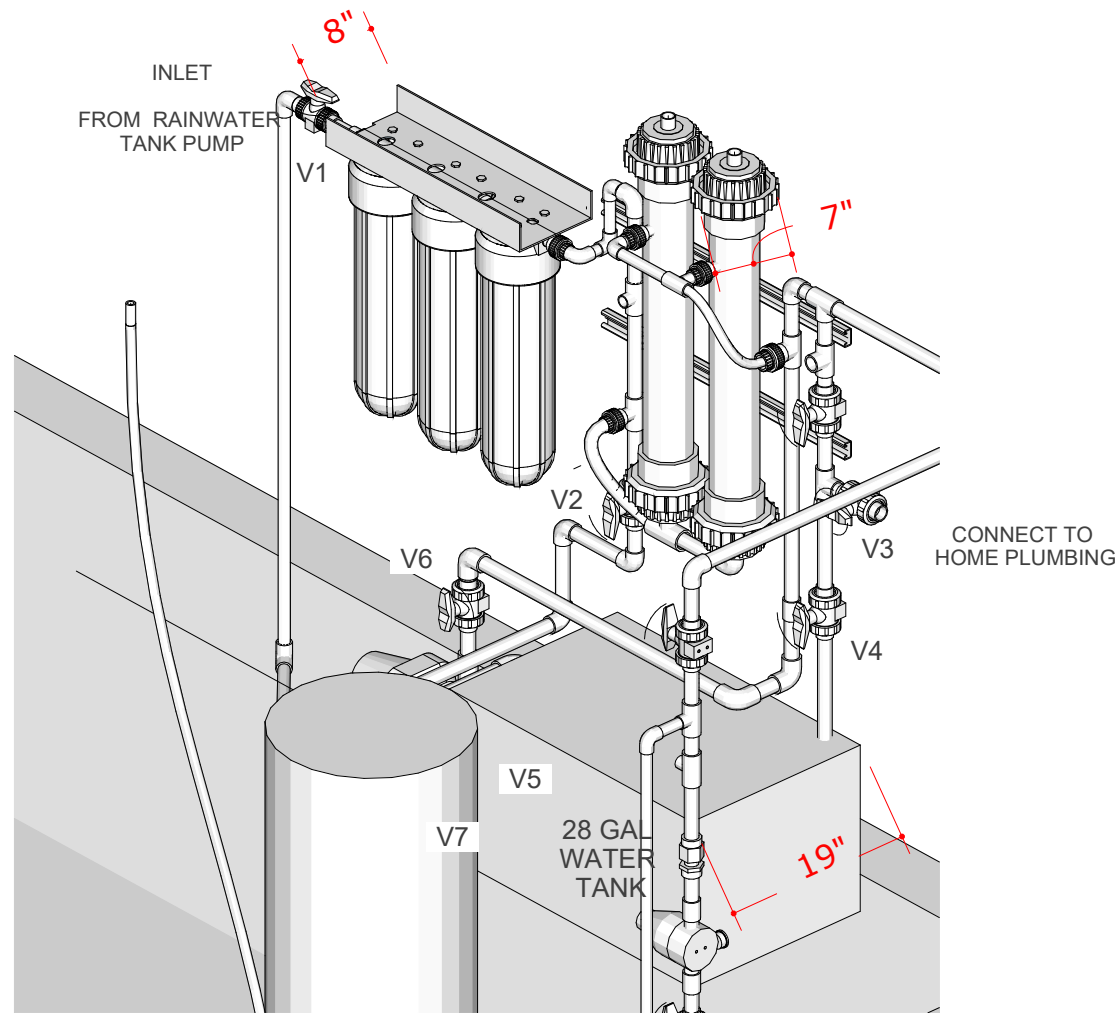




WATER FILTRATION SYSTEM

RAINWATER PREFILTER

**ISO VIEW PREFILTER**  
(SCALE 1:24)



### TREATMENT SYSTEM ISO

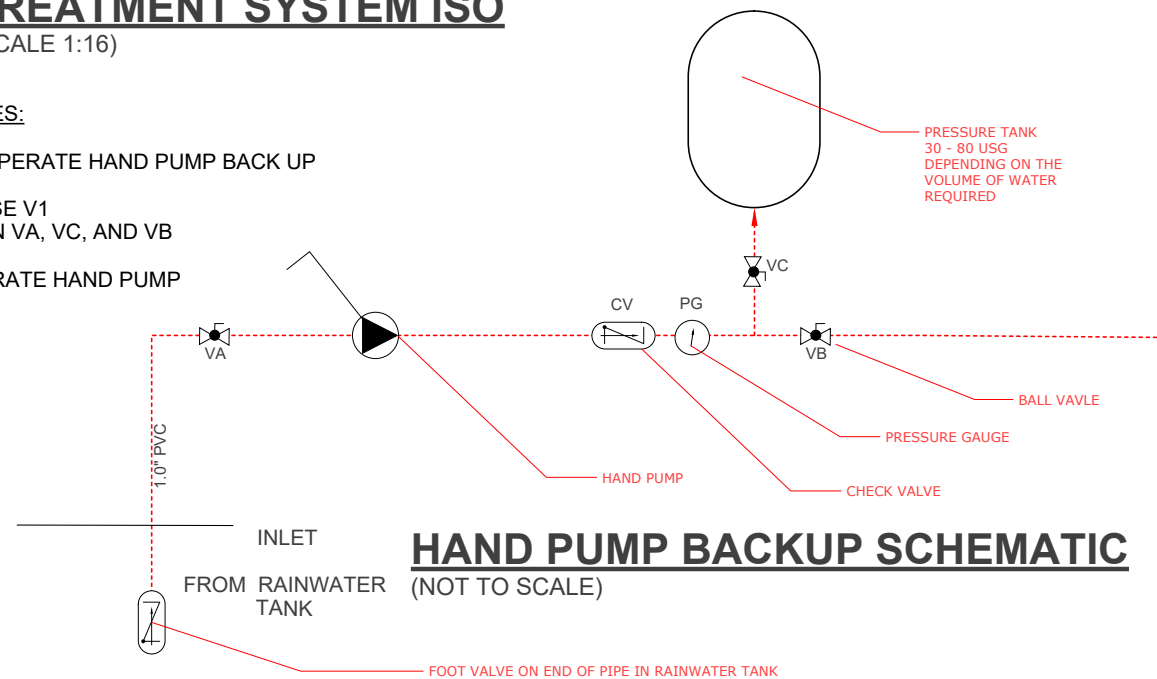
(SCALE 1:16)

**NOTES:**

TO OPERATE HAND PUMP BACK UP

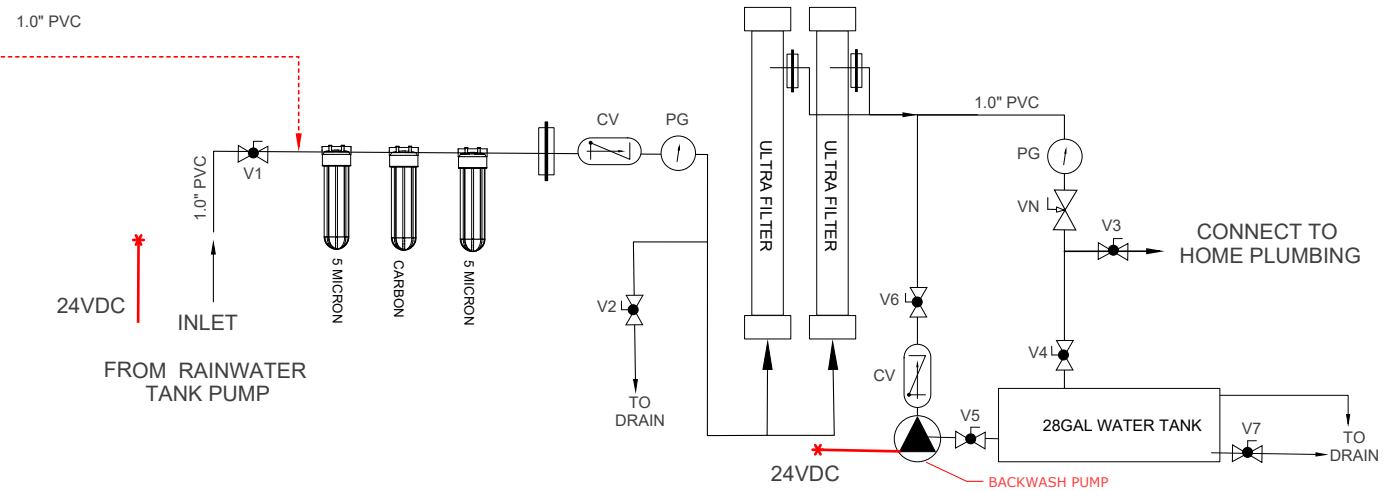
CLOSE V1  
OPEN VA, VC, AND VB

OPERATE HAND PUMP



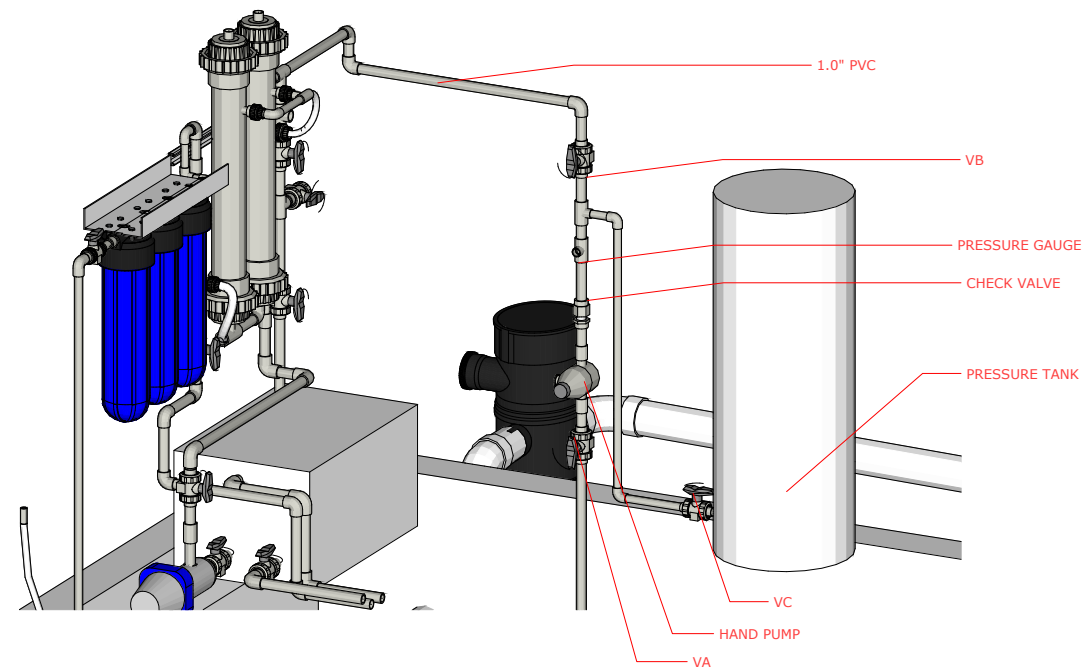
### TREATMENT SYSTEM FRONT

(SCALE 1:16)



### TREATMENT SYSTEM SCHEMATIC

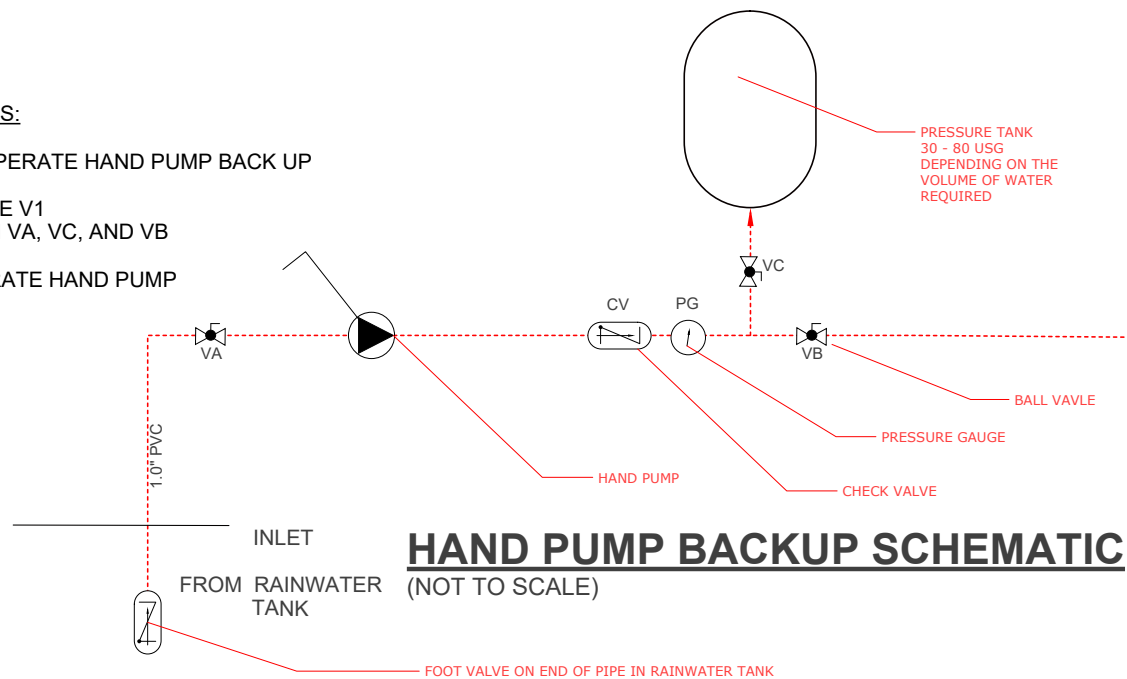
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**HAND PUMP BACKUP SYSTEM**  
SCALE 1:24

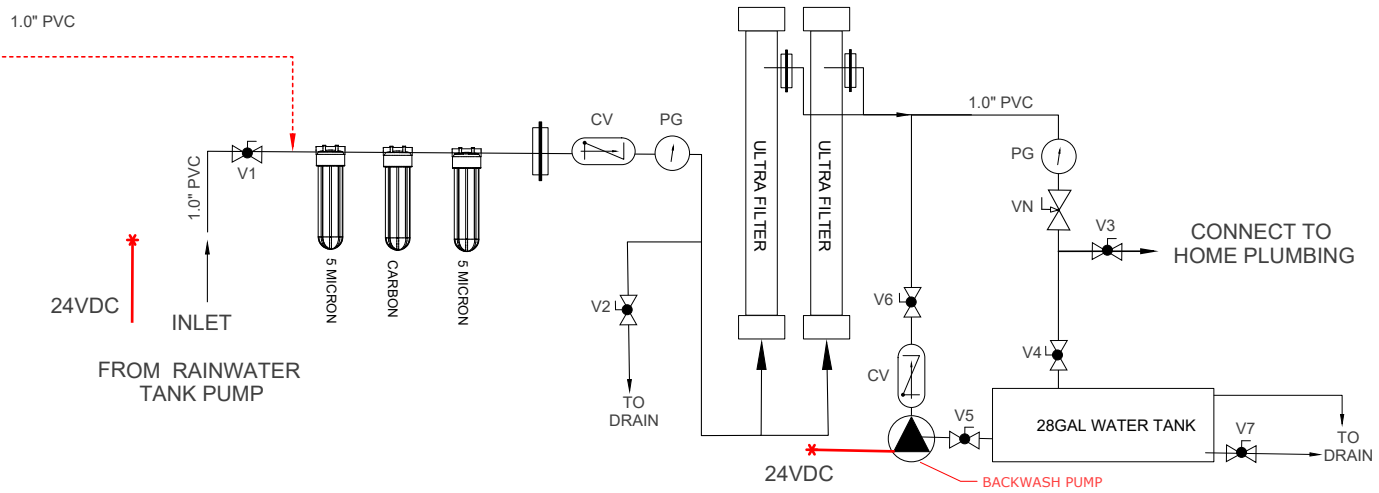
**NOTES:**

- TO OPERATE HAND PUMP BACK UP
- CLOSE V1
- OPEN VA, VC, AND VB
- OPERATE HAND PUMP

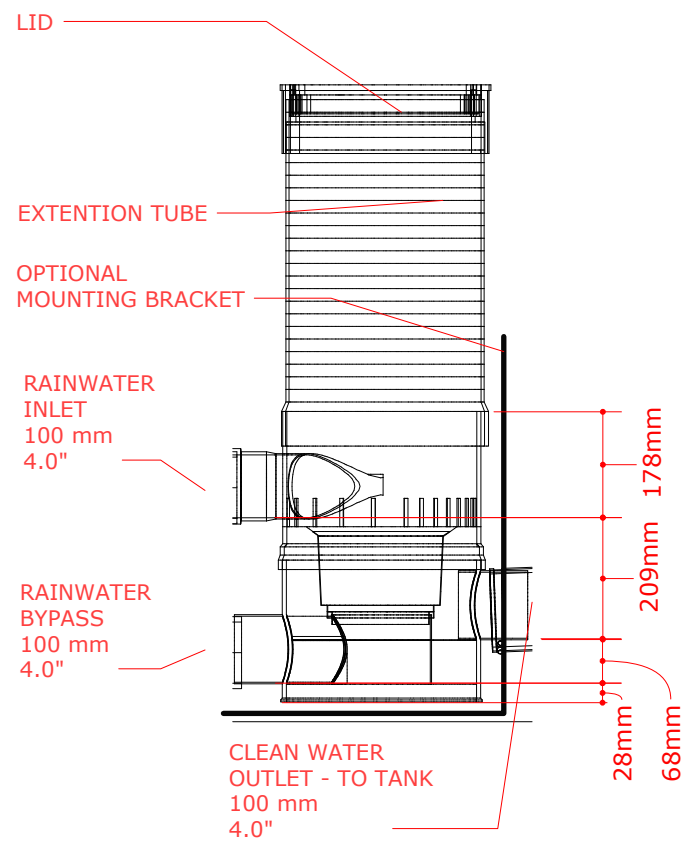


**HAND PUMP BACKUP SCHEMATIC**  
(NOT TO SCALE)

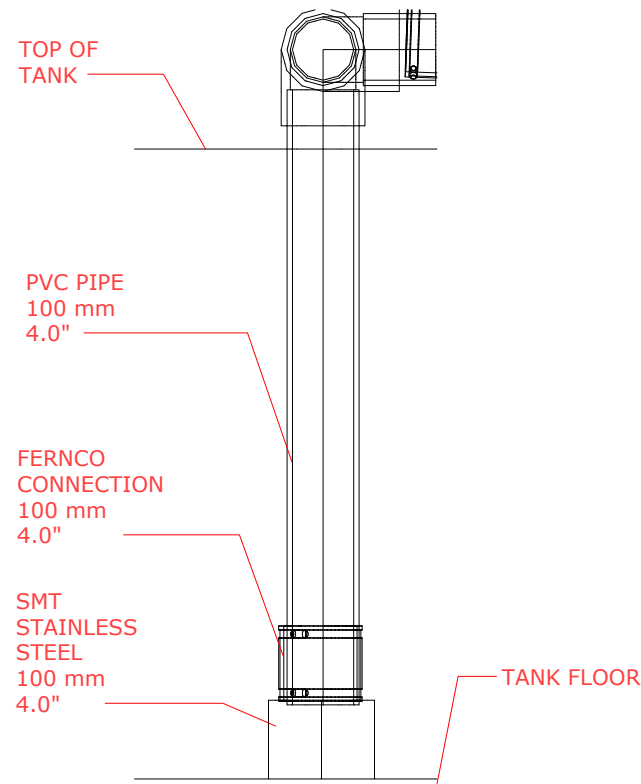
**TREATMENT SYSTEM FRONT**  
(SCALE 1:16)



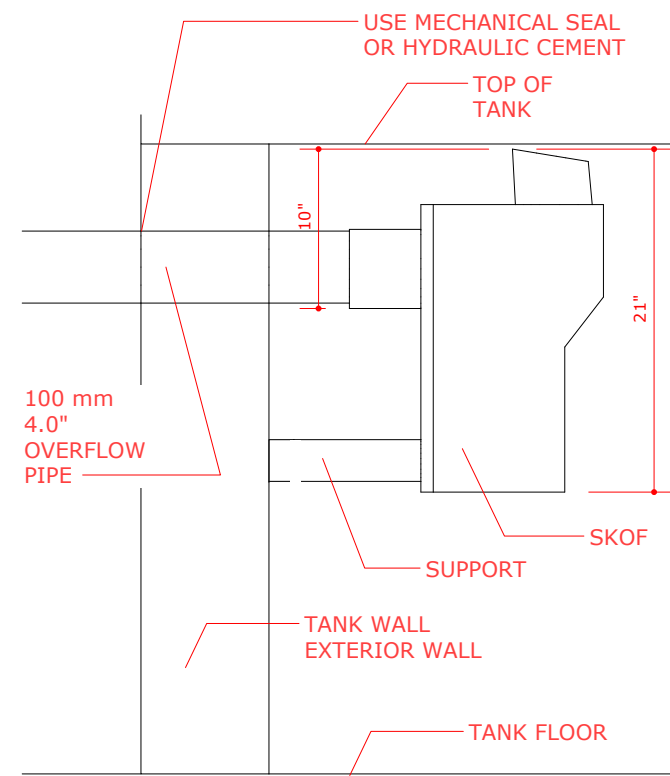
**TREATMENT SYSTEM SCHEMATIC**  
(NOT TO SCALE)



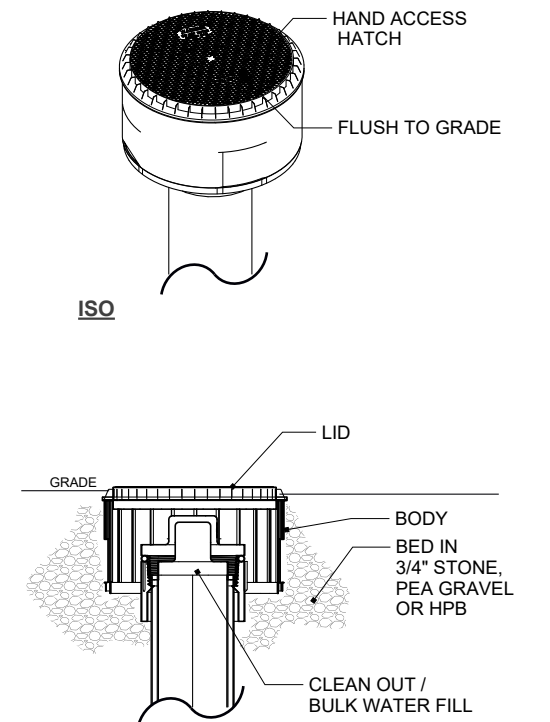
**1** WFF 100 - PREFILTER VORTEX 100  
SCALE: 1:12



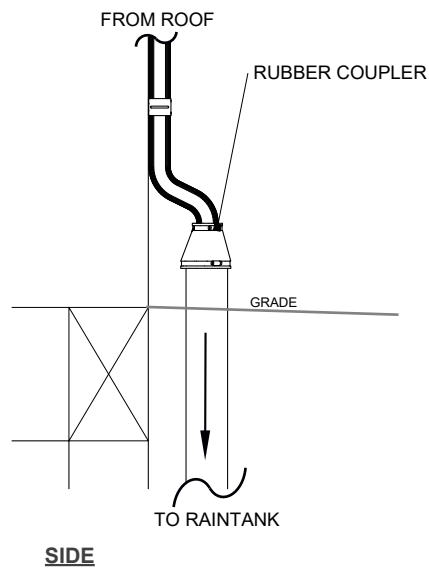
**2** SMT - SMOOTHIG INLET STAINLESS STEEL  
SCALE: 1:12



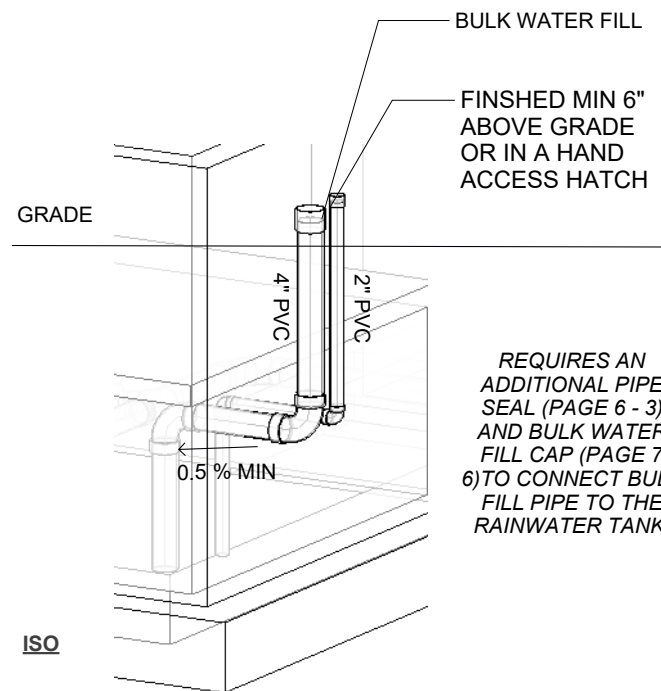
**3** SKOF - SKIMMING OVERFLOW / BACKWATER VALVE  
SCALE: 1:12



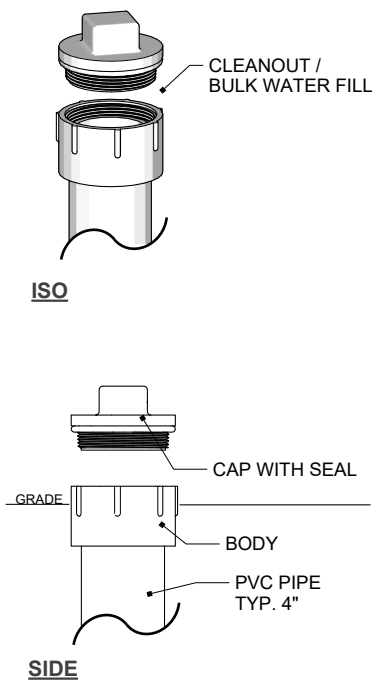
**4** TYPICAL CLEANOUT ACCESS  
SCALE: 1:10



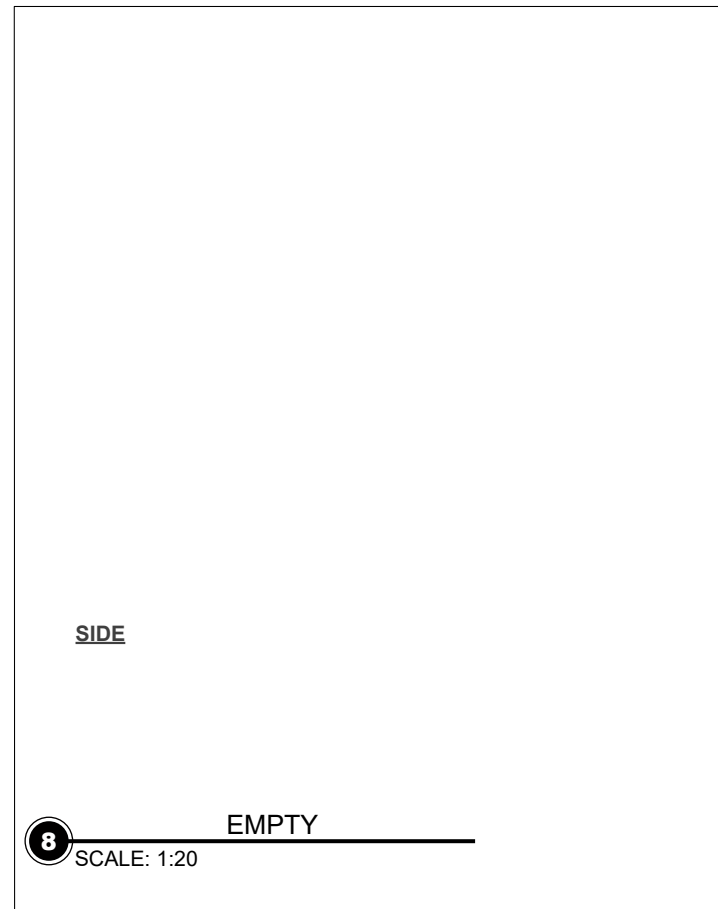
**5** DOWNPIPE TRANSITION  
SCALE: 1:20



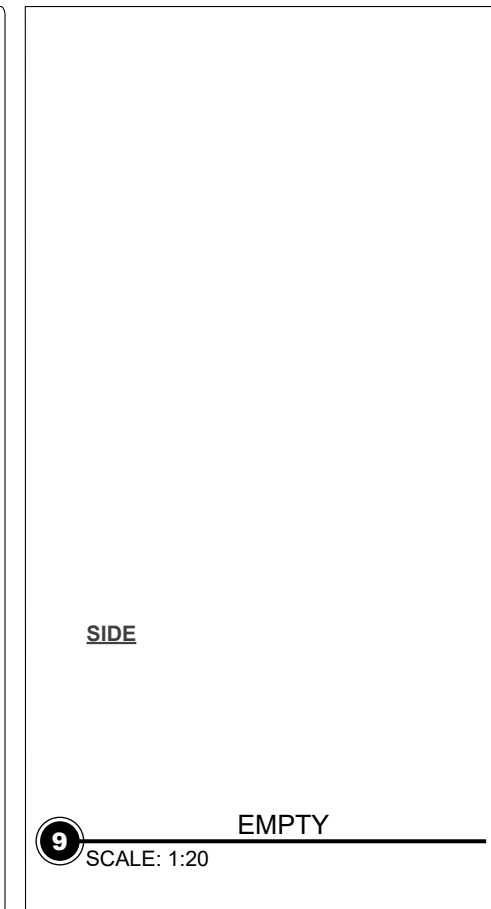
**6** TYPICAL BULK WATER FILL DETAIL  
SCALE: NOT TO SCALE



**7** TYPICAL CLEANOUT / BULKWATER FILL  
SCALE: 1:10



**8** EMPTY  
SCALE: 1:20



**9** EMPTY  
SCALE: 1:20