

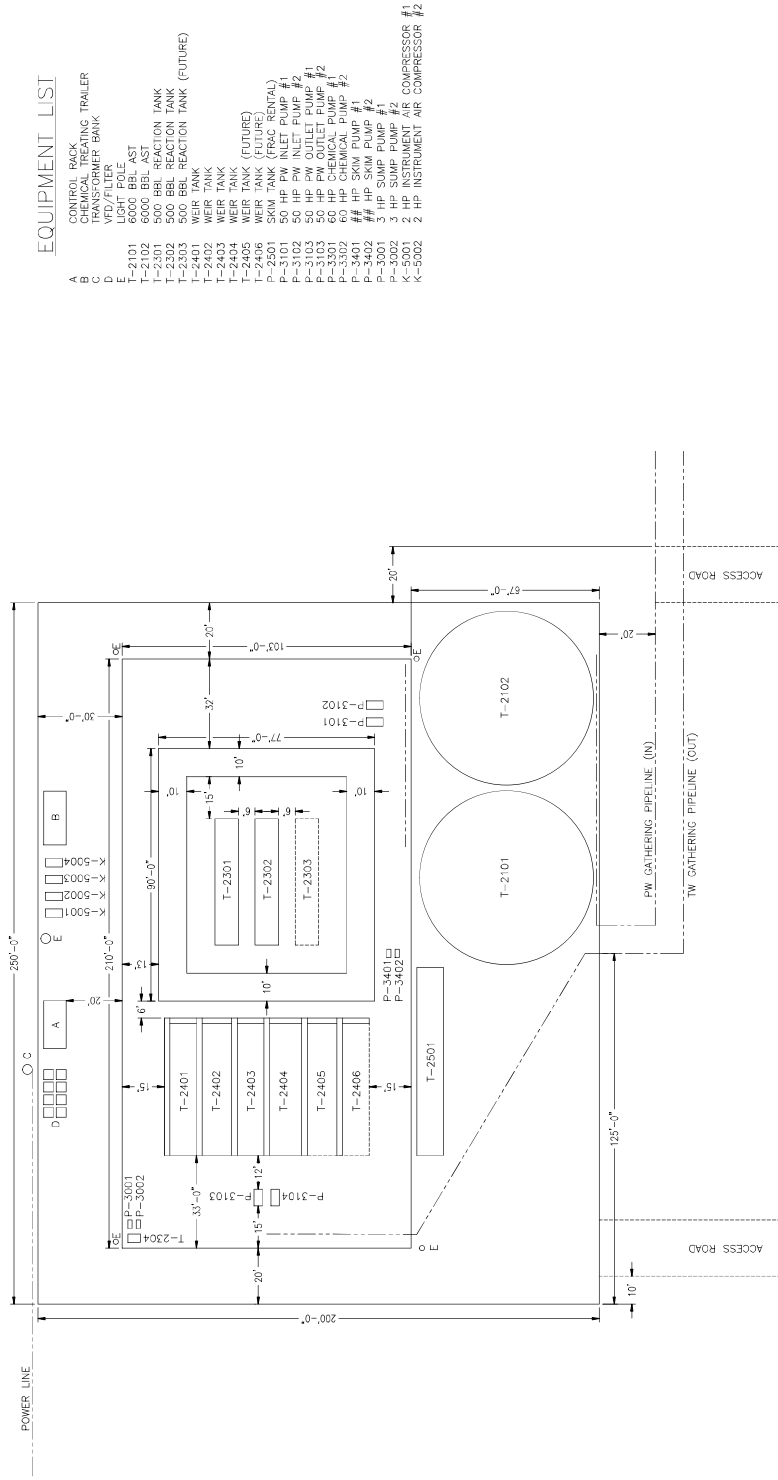
## Modification

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Oxy USA Inc. submits the following modification of the Sand Dunes Recycling Facility:

The recycling facility will include two synthetically lined ASTs. The ASTs have a total capacity of 6,000 bbl. each and are lined with two 30 mil (minimum) LLDPE or two 40 mil (minimum) HDPE liners. An additional 30 mil (minimum) LLDPE or 40 mil (minimum) HDPE shall be placed on the base of the tank and shall act as an additional protective layer and the foundation for the visual leak detection system should a breach occur through the upper primary and secondary liner. The AST subgrade shall be covered with a geocomposite or geotextile to protect the liner system. The ASTs shall be netted and maintain at least 2 ft. of freeboard capacity. The facility layout and design/construction specifications for the ASTs are attached. The ASTs may be constructed with an under mount manifold as opposed to over the top discharge/suction line. The ASTs will serve as pre-treatment tanks and act as a buffer system before the input to the recycling facility – preventing system upsets by providing steady flow.

A copy of the C-147 will be submitted to the land owner (BLM).



EQUIPMENT LIST

- A CONTROL RACK  
B CHEMICAL TREATING TRAILER  
C INSTRUMENT BULK  
D VED/FILTER  
E LIGHT POLE  
F 6000 BBL AST  
G 5000 BBL AST  
H 5000 BBL REACTION TANK  
I 500 BBL REACTION TANK (FUTURE)  
J WEIR TANK  
K WEIR TANK  
L WEIR TANK  
M WEIR TANK  
N WEIR TANK (FUTURE)  
O WEIR TANK (FUTURE)  
P 50 HP PW INLET PUMP #1  
Q 50 HP PW INLET PUMP #2  
R 50 HP PW OUTLET PUMP #1  
S 50 HP PW OUTLET PUMP #2  
T 60 HP CHEMICAL PUMP #1  
U 60 HP CHEMICAL PUMP #2  
V 60 HP SKM PUMP #1  
W 60 HP SKM PUMP #2  
X 3 HP SKM PUMP #1  
Y 3 HP SKM PUMP #2  
Z 2 HP INSTRUMENT AIR COMPRESSOR #1  
AA 2 HP INSTRUMENT AIR COMPRESSOR #2

SAND DUNES WATER TREATMENT FACILITY  
SOUTH CORRIDOR WTF  
PLOT PLAN  
SCALE = 1"=20'-0"

SCALE: 1"=20'-0"										1	2	3	CAD DRAWING							
FACILITY TYPE										SOUTH CORRIDOR WTF										FACILITY TYPE
DWG. CODE										C.V.L.										DWG. CODE
DWG. ASSET										PLOT PLAN										DWG. ASSET
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**Engineering and Standard  
Operating Procedures (QA/QC)  
for the  
Above Ground Storage Tanks  
(AST)  
Also known as  
Modular Large Volume Tanks  
(MLVT)**

**The reader is hereby notified that all information, reports, drawings, plans, diagrams, and specifications contained herein are the confidential property of Well Water Solutions and Rentals, Inc. (“WWSR”) and constitute proprietary trade secret material. Ownership of any tangible and intangible property, including intellectual property, is and shall be reserved and retained by WWSR. Unless otherwise authorized by WWSR in advance by written permission: (a) any use of WWSR confidential property shall be limited to legitimate, good faith purposes associated with regulatory compliance; (b) no person shall allow or in any way assist the disclosure, transfer, dissemination or use of any confidential property except for regulatory compliance purposes; and (c) only original, signed versions of this document may be authorized for use and review, and reproduction of or digitally storing this document by any method is strictly prohibited. Any violation, breach or threatened breach, whether voluntary or inadvertent, of the aforementioned limitations and prohibitions will cause irreparable injury to WWSR and shall entitle WWSR to injunctive relief against, and recover all attorney fees and cost from, any person in breach or threatening to breach said prohibition.**



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## 1.1

# EMERGENCY ACTION PLAN

## EMERGENCY PERSONNEL NAMES AND PHONE NUMBERS

DESIGNATED RESPONSIBLE PERSONNEL (Highest ranking manager at the site, such as, crew supervisor or crew lead.)

Name: \_\_\_\_\_

Phone: \_\_\_\_\_

### **EMERGENCY COORDINATOR:**

Name: Brian Bullock

Phone: 307-267-3964

## AREA MONITORS:

**Controller:** Mike Karaouni

Phone: 307-247-0791

**US Sales Manager:** Chad Campbell

Phone: 307-259-1987

## TANKS

North Dakota: Jake Travers

Phone: 208-610-6692

Wyoming: JW Morris

Phone: 307-267-8075

## WATER TRANSFER

Wyoming: Ben Ledford

Phone: 307-277-4681

## WELL WATER SOLUTIONS AND RENTALS OWNERSHIP

**CEO** Chris Songe

Phone: 307-247-1143

**PRESIDENT** Sean Lovelace

Phone: 307-267-1878

# EVACUATION ROUTES

- Evacuation routes have been posted in each work area. The following information is marked on evacuation maps.
  1. Emergency exits
  2. Primary and secondary evacuation routes
  3. Locations of fire extinguishers
  4. Fire alarm pull station locations
  5. Assembly points
- Site personnel should know at least two evacuation routes.
- All emergency numbers listed in this manual are for the Casper WY area. All field employees shall list in the space provided all emergency numbers needed for the regions that they are working in on the following form and in the JSA (Pre Job Safety Analysis).

# EMERGENCY PHONE NUMBERS

**FIRE DEPARTMENT:** Emergency 911  
Non-emergency 307-237-7260 (Bar Nunn volunteer FD)

**AMBULANCE:** Emergency 911  
Non-emergency 307-237-7260 (Bar Nunn volunteer FD)

**POLICE:** Emergency 911  
Non-emergency 307-235-9282 (Sheriff's office dispatch)

**POWER COMPANY:** 1-888-221-7070 (Rocky Mountain Power)

**WATER COMPANY:** 307-265-7034 (Wardwell Water and Sewer district)

**GAS COMPANY:** 1-800-563-0012 (Source Gas)  
Local Number 307-234-6216

## EMERGENCY REPORTING AND EVACUATION PROCEDURES

Types of emergencies to be reported by site personnel are:

- MEDICAL
- FIRE
- SEVERE WEATHER
- BOMB THREAT
- CHEMICAL SPILL
- EXTENDED POWER LOSS
- OTHER (specify)\_\_\_\_\_

(e.g., active shooter, terrorist attack/hostage)

### MEDICAL EMERGENCY

- Call medical emergency phone numbers
  - Ambulance
  - Fire Department
  - Police

Provide the following information:

- a. Nature of medical emergency
- b. Location of the emergency (address, building number, room number)
- c. Your name and phone number you are calling from

- Do not move victim unless absolutely necessary
- Call the following personnel trained in CPR and First Aid to provide the required assistance prior to the arrival of professional medical help:

Brian Bullock 307-267-3964

Mike Karaouni 307-247-0791

Marc Collier 307-277-6043

- If trained personnel are not available, as a minimum, attempt to provide the following assistance:
  1. Stop the bleeding with firm pressure on the wounds (note: avoid contact with blood and other body fluids.)
  2. Clear the air passage using the Heimlich maneuver in case of choking.
- In case of rendering assistance to personnel exposed to hazardous materials, consult the SDS (Safety Data Sheet) and wear the appropriate PPE (personal protective equipment) attempt First Aid ONLY if trained and qualified.

## **FIRE EMERGENCY**

When fire is discovered:

- Activate the nearest fire alarm (if installed)
- Notify the local fire department by calling 911.

Be prepared to give location, (address, building number, room number) your name and number you are calling from.

- If alarm is not available, notify site personnel about the fire emergency by the following means.
  - Voice communication
  - Phone paging
  - Radio
  - Other (specify)\_\_\_\_\_

Fight fire ONLY if:

- The Fire Department has been notified.
- The fire is small and is not spreading to other areas.
- Escaping the area is possible by backing up to the nearest exit.
- The fire extinguisher is in working condition and personnel are trained to use it.

Upon being notified about the fire emergency, occupants must:

- Leave the building using the designated escape routes.
- Assemble in the designated area (specify location)
- Remain outside until the component authority (Designated official or designee) announces that it is safe to reenter.

Designated official, Emergency Coordinator, or supervisors must,

- Disconnect utilities and equipment unless doing so jeopardizes his/her safety.
- Coordinate an orderly evacuation of personnel.
- Perform an accurate head count of personnel reported to the designated area.
- Determine a rescue method to locate missing personnel.
- Provide the Fire Department personnel with the necessary information about the facility.
- Perform assessment and coordinate with ownership for office closing procedures.

Area monitors must:

- Ensure that all employees have evacuated the area.
- Report any problems to the Emergency Coordinator at the assembly area.
-

## **EXTENDED POWER LOSS**

In the event of extended power loss to the facility, certain precautionary measures be taken depending on the geographical location and environment of the facility:

- Unnecessary electrical equipment and appliances should be turned off in the event that power restoration would surge causing damage to electronics and effecting equipment.
- Facilities with freezing temperatures should turn off and drain the following lines in the event of a long term power loss.
  - Fire sprinkler system
  - Standpipes
  - Portable water lines
  - Toilets
- Add propylene-glycol (anti-freeze) to drains to prevent traps from freezing.
- Equipment that contains fluids that may freeze due to long term exposure to freezing temperatures should be moved to heated areas, drained of liquids, or provided auxiliary heat sources.

Upon restoration of heat and power:

- Electronics should be brought up to ambient temperatures before energizing to prevent condensate from forming on circuitry.
- Fire and portable water piping should be checked for leaks from freeze damage after the heat has been restored to the facility and water turned back on.

## **CHEMICAL SPILL**

In the event of a spill, always consult the SDS and check safe distances and appropriate PPE (Personal Protective Equipment).

When a large spill has occurred:

- Immediately notify the designated official and Emergency Coordinator.
- Contain the spill with available equipment (e.g. pads, brooms, absorbent powder, etc.)
- Secure the area and alert other on site personnel.
- DO NOT attempt to clean the spill unless trained to do so.
- Attend to any injured personnel and call the medical emergency number, if required.
- Call a local spill clean-up company or the fire department (if arrangements have been made) to perform a large chemical spill clean-up.

Fire department Non-emergency 307-237-7260 (Bar Nunn volunteer FD)

- Evacuate building as necessary.

When a small spill has occurred:

- Notify Supervisor
- If toxic fumes are present, secure the area (with caution tape or cones) to prevent other personnel from entering.
- Deal with the spill in accordance with the instructions described in the SDS.
- Small spills must be handled in a safe manner, while wearing the proper PPE.

## TELEPHONE BOMB THREAT CHECKLIST

INSTRUCTIONS: BE CALM, BE COURTEOUS. LISTEN. DO NOT INTERRUPT THE CALLER.

YOUR NAME: \_\_\_\_\_ TIME: \_\_\_\_\_ DATE: \_\_\_\_\_

CALLER'S IDENTITY: SEX: MALE \_\_\_\_\_ FEMALE \_\_\_\_\_ ADULT \_\_\_\_\_ JUVENILE \_\_\_\_\_ APROX AGE \_\_\_\_\_

ORIGIN OF CALL: LOCAL \_\_\_\_\_ LON DISTANCE \_\_\_\_\_

<input type="checkbox"/> Loud <input type="checkbox"/> Soft <input type="checkbox"/> High pitch <input type="checkbox"/> Deep <input type="checkbox"/> Raspy <input type="checkbox"/> Pleasant <input type="checkbox"/> Intoxicated <input type="checkbox"/> Other <p style="text-align: center;">ACCENT</p> <input type="checkbox"/> Local <input type="checkbox"/> Not local <input type="checkbox"/> Foreign <input type="checkbox"/> Region <input type="checkbox"/> Race	<input type="checkbox"/> Fast <input type="checkbox"/> Slow <input type="checkbox"/> Distinct <input type="checkbox"/> Distorted <input type="checkbox"/> Stutter <input type="checkbox"/> Nasal <input type="checkbox"/> Slurred <input type="checkbox"/> Other <p style="text-align: center;">MANNER</p> <input type="checkbox"/> Calm <input type="checkbox"/> Angry <input type="checkbox"/> Rational <input type="checkbox"/> Irrational <input type="checkbox"/> Coherent <input type="checkbox"/> Incoherent <input type="checkbox"/> Deliberate <input type="checkbox"/> Emotional <input type="checkbox"/> Righteous <input type="checkbox"/> Laughing	<input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> Foul <input type="checkbox"/> Other <p style="text-align: center;">BACKGROUND NOISES</p> <input type="checkbox"/> Factory <input type="checkbox"/> Trains <input type="checkbox"/> Machines <input type="checkbox"/> Animals <input type="checkbox"/> Music <input type="checkbox"/> Quiet <input type="checkbox"/> Office <input type="checkbox"/> Voices <input type="checkbox"/> Machines <input type="checkbox"/> Airplanes <input type="checkbox"/> Street <input type="checkbox"/> Party <input type="checkbox"/> Traffic <input type="checkbox"/> Atmosphere
Voice Characteristics	Speech	Language

### BOMB FACTS

PRETEND DIFFICULTY HEARIN-KEEP CALLER TALKING-IF CALLER SEEMS

AGREEABLE TO FURTHER CONVERSATION, ASK QUESTIONS LIKE:

When will it go off? Certain Hour \_\_\_\_\_ Time Remaining \_\_\_\_\_

Where is it located? Building \_\_\_\_\_ Area \_\_\_\_\_

What kind of bomb? \_\_\_\_\_

What kind of package? \_\_\_\_\_

How do you know so much about the bomb? \_\_\_\_\_

What is your name and address? \_\_\_\_\_

If building is occupied, inform caller that detonation could cause injury or death.

Call the Sheriff at 307-235-9282 and relay information about the call.

Did the caller appear familiar with the shop or location (by his/her description of the bomb location)?

Write out the message in its entirety and any other comments on a separate sheet of paper and attach it to this checklist.

**Notify your supervisor immediately.**

## SEVERE WEATHER AND NATURAL DISASTERS

### **Tornado:**

- When a warning is issued by sirens or other means, seek inside shelter. Consider the following:
  1. Small interior rooms on the lowest floor and without windows.
  2. Hallways on the lowest floor away from doors and windows.
  3. Rooms constructed with reinforced concrete, brick, or block with no windows.
- Stay away from outside walls and windows.
- Use arms to protect head and neck.
- Remain sheltered until the tornado threat is announced to be over.

### **Earthquake:**

- Stay calm and await instructions from the Emergency Coordinator and/or the designated official.
- Keep away from overhead fixtures, windows, filing cabinets, and electrical power.
- Assist people with injuries in finding a safe place.
- Evacuate as instructed by the Emergency Coordinator and/or the designated official.

### **Flood:**

#### **If indoors:**

- Be ready evacuate as directed by the Emergency Coordinator and/or the designated official.
- Follow the designated primary and secondary routes.

#### **If outdoors:**

- Climb to high ground and stay there.
- Avoid driving or walking through flood water.
- If car stalls, abandon it immediately and climb to higher ground.

### **Blizzard:**

#### **If indoors:**

- Stay calm and await instructions from the Emergency Coordinator or the designated official.
- Stay indoors.
- If there is no heat:
  1. Close off unneeded rooms and areas.
  2. Stuff towels or rags in cracks under doors.
  3. Cover windows at night.
- Eat and drink. Food provides the body energy and heat. Fluids prevent dehydration.



- Wear layers of loose-fitting, lightweight, warm clothing if available.

If outdoors:

- Find a dry shelter. Cover all exposed parts of the body.
- If shelter is not available:
  1. Prepare a lean-to, windbreak, or snow cave for protection from the wind.
  2. Build a fire for heat and to attract attention. Place rocks around the fire to absorb and reflect heat.
  3. DO NOT eat snow. It will lower your core body temperature. Melt it first.

If stranded in a car or truck:

- Stay in the vehicle!
- Run the motor for about ten minutes every hour. Open the window a little for fresh air to avoid carbon monoxide poisoning. Make sure the exhaust pipe is not blocked.
- Make yourself visible to rescuers.
  1. Turn on the dome light at night when running the engine.
  2. Tie a colored cloth to the antenna or door.
  3. Raise the hood after the snow stops falling.
- Exercise to keep blood circulating and to keep warm.

1.2



Company Information

Company

Name\_\_\_\_\_

Location\_\_\_\_\_

Company Man\_\_\_\_\_

Phone\_\_\_\_\_

Victim Information

Name\_\_\_\_\_

Category: Injury Illness (circle one)

Location\_\_\_\_\_

Job Title\_\_\_\_\_

Department\_\_\_\_\_

Date\_\_\_\_\_

**Incident Information**

What was the injury or illness?\_\_\_\_\_

Time work began?\_\_\_\_\_

What happened? (short explanation of how the incident occurred)\_\_\_\_\_

\_\_\_\_\_

What object or substance directly harmed the employee?\_\_\_\_\_

\_\_\_\_\_

**Unsafe acts by people: (circle all that apply)**

Operating without permission

Operating at unsafe speeds

Servicing Equipment with power

Making a safety device inoperative

Using defective equipment

Using equipment incorrectly

Unsafe lifting

Taking an unsafe position or posture

Distraction, teasing, or horseplay

Failure to wear PPE

Failure to use available equipment

Other\_\_\_\_\_

Did you see the potential incident while performing the job? YES or NO

Explain\_\_\_\_\_

\_\_\_\_\_

Did you notify the supervisor of the unsafe acts or conditions prior to the incident?  
YES or NO

Explain\_\_\_\_\_

\_\_\_\_\_

Where was the supervisor prior to and during the incident?\_\_\_\_\_

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How could this incident have been avoided? (circle all that apply)  
Stop the activity      Train supervisor      Routinely inspect for the hazard  
Guard the hazard      Redesign task steps      PPE  
Train employee      Write a new policy or procedure  
Other \_\_\_\_\_

Was there corrective action taken? YES or NO

What correction action was taken? \_\_\_\_\_

\_\_\_\_\_

List all unsafe conditions leading to injury. \_\_\_\_\_

\_\_\_\_\_

What happened? (short explanation of how injury occurred) \_\_\_\_\_

\_\_\_\_\_

Was the supervisor notified of unsafe acts or conditions prior to injury? YES or NO  
Explain \_\_\_\_\_

Where was the supervisor prior to/during to the injury? \_\_\_\_\_

How could this injury have been avoided? \_\_\_\_\_

\_\_\_\_\_

Was corrective action taken? YES or NO

What corrective action was taken? \_\_\_\_\_

\_\_\_\_\_



---

## NEAR MISS REPORT

A near miss is a potential hazard or incident that has not resulted in any personal injury. Unsafe working conditions, unsafe employee work habits, improper use of equipment or use of malfunctioning equipment have the potential to cause work related injuries. It is everyone's responsibility to report and /or correct these potential accidents/incidents immediately. Please complete this form as a means to report these near-miss situations.

---

Department/Location \_\_\_\_\_ Date: \_\_\_\_\_

Time \_\_\_\_\_ ☐ am ☐ pm

Please check all appropriate conditions:

☐ Unsafe Act

☐ Unsafe equipment

☐ Unsafe Condition

☐ Unsafe use of equipment

Description of incident or potential hazard : \_\_\_\_\_

\_\_\_\_\_

Employee Signature \_\_\_\_\_ Date \_\_\_\_\_

*(optional)*

---

## NEAR MISS INVESTIGATION

Description of the near-miss condition: \_\_\_\_\_

\_\_\_\_\_

Causes (primary and contributing) \_\_\_\_\_

\_\_\_\_\_

Corrective action taken (Remove the hazard, replace, repair, or retrain in the proper procedures for the task)

\_\_\_\_\_

\_\_\_\_\_

Signed: \_\_\_\_\_ Date Completed \_\_\_\_\_

Not completed for the following reason: \_\_\_\_\_

Management \_\_\_\_\_ Date \_\_\_\_\_

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**ISA will be filled out prior to the start of the day or different new task.**



**DATE :** \_\_\_\_\_

### Task Description:

[illegible][illegible]

# 1.4

## TRUCK PRETRIP CHECKLIST

<b>Operator</b>	<b>Date</b>
<b>Truck #</b>	<b>Gas/Diesel</b>

### OPERATOR MUST COMPLETE CHECKLIST AT THE START OF THE DAY

Mileage Beginning \_\_\_\_\_ Mileage Ending \_\_\_\_\_

Visual checks	OK	Service	N/A	Notes
Tire Condition				
Head/Tail lights				
Warning lights				
Fluid Levels				
Battery conn.				
Seatbelts				
Mirrors				
Gauges				
Fluid leaks				
Oil change				
Horn				
Steering				
<b>Ops check</b>				
Check oil				
Check coolant				
Diesel additive				
Battery levels				
Tire pressure				
Brakes				
Brake fluid				
Power steering				
Belts/hoses				
<b>In service?</b>	<b>Yes</b>	<b>No</b>		



## TRAILER PRETRIP CHECKLIST

<b>Operator</b>	<b>Date</b>
<b>Trailer #</b>	<b>Dual Tandem/Single</b>

<b>Pre-trip</b>	<b>Ok</b>	<b>Service</b>	<b>Notes</b>
Check gooseneck, connection, safety latch, & emergency Brake away			
All lights and connection			
Tires, pressure, hub, and lugs			
Deck boards, condition, clean, broken			
Min 12 straps and 4 chains and ratchet boomers			
Date of last DOT inspection with proof and registration			
In service?	<b>Yes</b>	<b>No</b>	



## FORKLIFT PRE USE CHECKLIST

FORKLIFT # \_\_\_\_\_ LOCATION \_\_\_\_\_

DAY \_\_\_\_\_ SHIFT \_\_\_\_\_ TIME \_\_\_\_\_

ITEM INSPECTED	OK	HIGH	LOW	AMOUNT ADDED
Fuel level				
Oil level				
Leaks under lift				
Forks, backrest, and Carriage				
Mast, Chain, Hydraulic lines				
Check Frame for cracks				
Tires, tire pressure, Axles				
Overhead Guard				
Fuel tank and connections				
Hydraulic cylinders and levels				
Battery and Cables				
Seat and Seatbelt				
Horn and backup alarm				
Lights and ops manual				
Gauges and instruments				
Brakes and Emergency brake				
Hydraulic controls and lift				
Steering				
Check boom for leaks and cracks				
All glass and wipers				
All Mirrors				



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### BACKHOE PRE USE CHECKLIST

BACKHOE # \_\_\_\_\_ LOCATION \_\_\_\_\_

DAY \_\_\_\_\_ SHIFT \_\_\_\_\_ TIME \_\_\_\_\_

ITEM INSPECTED	OK	HIGH	LOW	AMOUNT ADDED
Fuel level				
Oil level				
Leaks oil, hydraulic, fuel				
Check belts and hoses for cracks				
Battery and cables				
Inspect frame for cracks				
Check Hydraulic lines and fittings				
Check steps and handles				
Check bucket and teeth				
Inspect stabilizers and pads				
Lights and signals				
Horn and backup alarm				
All glass and wipers				
Instruments and gauges				
Steering				
Check tires and pressure				
Check all brakes				
Grease all points daily				



# Aerial lift pre-use inspection checklist



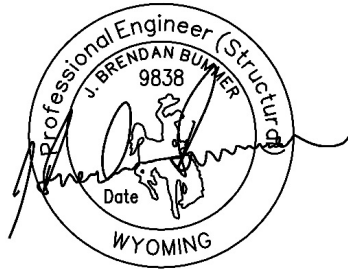
Operator _____ Date _____ Aerial or scissor lift ID _____			
Unit type:		Location	
<b>1. Safety Precautions</b>	OK, NO, NA	<b>2. Check Operations</b>	OK, NO, NA
Windy		Horn	
Less than 20-25 MPH		Guage	
PPE		Brakes	
Wheel chock or Brake		Lights	
Working surface -Level		Steering	
Power Lines or Electrical Source		Attatchments or Accessories	
Load Limits		Back up Alarm	
Outriggers		Warning lights	
Other		Other	
<b>3. Vehicle Inspection</b>	OK, NO, NA	<b>4. Platform Lift Inspection</b>	OK, NO, NA
Oil Level		Lift and travel controls and switches	
Hydraulic Oil level		Placards, Decals, and Control ID labels	
Fuel Level		Handrails, Guardrails, and Safety Chains	
Check lift and area for leaks		Platform deck and toeboards	
Coolant level		Other	
Tire pressure and condition of tires			
Battery and charger			
Ground control switches			
Other			
Comments			

**Modular Large Volume Tank**

# **STRUCTURAL DESIGN SPECIFICATIONS**

Prepared for:  
**WELL WATER SOLUTIONS**  
**Casper, Wyoming**

**July 1, 2014**



Prepared by:  
**PILLAR STRUCTURAL ENGINEERING**  
1964 E. 1<sup>st</sup> Street  
Casper, Wyoming 82601  
(307) 265-3900  
(307) 265-3559 fax  
[www.pillarse.com](http://www.pillarse.com)

---

## **Structural Design Specifications**

Project: Modular Large Volume MLVT

Project No.: 14-06087

Date: July 1, 2014

Pages 1-8: General References  
Project Summary  
Structural Design Certification  
MLVT Erection Operations Manual  
MLVT Inspection and Testing Specifications

Attachments: Design Drawings

---

## GENERAL REFERENCES

Manual of Steel Construction – Load and Resistance Factor Design, Third Edition, American Institute of Steel Construction.

Welded Steel Tanks for Oil Storage – API Standard 650, Eleventh Edition, June 2007, American Petroleum Institute.

Tank Inspection, Repair, Alteration, and Reconstruction – API Standard 653, Fourth Edition, April 2009, Addendum 1, August 2010, American Petroleum Institute.

## PROJECT SUMMARY

These specifications have been prepared for Well Water Solutions, a supplier of MLVT's located in Casper, WY.

The specifications herein include the structural design certification, MLVT erection operations manual, and MLVT inspection and testing specifications. All other components of the policy requirements including site preparation and liner certification and installation are provided and certified by others. These specifications have been prepared as general guidelines specific to the MLVT's provided only by Well Water Solutions.

## PILLAR STRUCTURAL ENGINEERING

June 30, 2015

Well Water Solutions and Rental, Inc.  
2130 W. 40<sup>th</sup>  
Casper, WY 82604  
Attn: Sean Lovelace

Re: Portable Frac Tank Certification – Pinned Seams

Dear Mr. Lovelace:

Per your request our office has performed a structural analysis of the portable frac tanks as well as the associated accessories. This analysis was performed to determine that the tanks meet the required strength criteria under operating conditions according to the AISC Manual of Steel Construction.

The tanks range in diameter from approximately 81 to 190 feet and are 11 feet, 8 inches in height and are designed to store water. They are constructed of individual steel reinforced panels that are connected together with a patent pending steel pin system.

The following tanks sizes were included in the analysis:

- 10,000 BBL – Approximately 81'Ø
- 20,000 BBL – Approximately 108'Ø
- 30,000 BBL – Approximately 135'Ø
- 40,000 BBL – Approximately 156'Ø
- 50,000 BBL – Approximately 176'Ø
- 55,000 BBL – Approximately 183'Ø
- 60,000 BBL – Approximately 190'Ø

The tanks are constructed of the following materials:

- Tank Panels – ASTM A36, 36 ksi Steel Plate
- Horizontal & Vertical Framing – ASTM A500, Grade B, 46 ksi Structural Steel Tubing
- Connecting Pins - ASTM A36, 36 ksi Steel Round Bar



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June 30, 2015  
Page 2 of 2

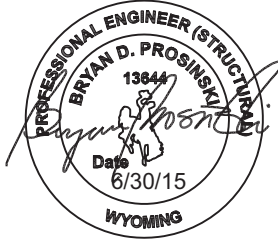
Our office has determined that the portable frac tanks, as described herein, are capable of supporting the operating load conditions in conformance with the AISC Manual of Steel Construction.

Calculations of this analysis can be provided upon request.

If you have any questions or require additional information please contact our office.

Sincerely,

Bryan Prosinski, P.E., S.E.  
Pillar Structural Engineering



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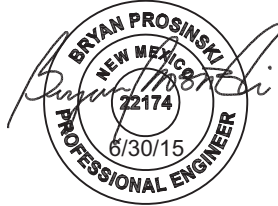
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Pillar Structural Engineering



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Page 2 of 2

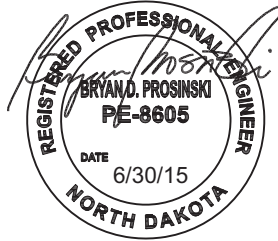
Our office has determined that the portable frac tanks, as described herein, are capable of supporting the operating load conditions in conformance with the AISC Manual of Steel Construction.

Calculations of this analysis can be provided upon request.

If you have any questions or require additional information please contact our office.

Sincerely,

Bryan Prosinski, P.E., S.E.  
Pillar Structural Engineering





Box 7866 5014 Industrial Road, Drayton Valley, Ab. T7A 1L5 Ph: (780) 542-3096 Fax: (780) 542-6405

## Engineering Compliance

July 6, 2015

KFE Project #151055

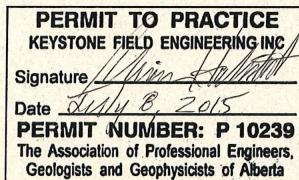
Water Well Solutions and Rentals, Inc.  
Attn: Scott Sandler  
2130 W. 40<sup>th</sup>  
Casper, Wyoming (USA) 82604

Attention: Mr. Scott Sandler

Re: Portable Frac Tank Engineering Review and Compliance – Pinned Seams  
Sizes: 10K, 20K, 30K, 40K, 50K, 55K and 60K Tanks

A structural engineering review was conducted by Peter Vann (P. Eng) of Keystone Field Engineering Inc. for the above noted tank sizes. It was determined that the 'pinned' tank panel connections are capable of supporting the operating load conditions; and the panel lift points are of suitable construction according to the Canadian Handbook of Steel Construction (latest addition). The certified liner for the tanks shall have a minimum bonded seam strength of 40 ppi.

If you have any questions, please contact the office at 780-542-3096.



Peter Vann, P. Eng  
Structural Engineer

KEYSTONE FIELD ENGINEERING INC.  
PV/ kj  
Reference:  
Drawings completed by Nalco FabTech

[www.keystonefieldeng.com](http://www.keystonefieldeng.com)



## 2.3

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### I. MLVT ERECTION OPERATIONS MANUAL

#### A. PRE CHECKS

1. Complete JSA prior to any work commencing
2. Confirm MLVT location and inspect for proper compliance with WYOGC requirements and site preparation recommendations.
3. Inspect trenches for proper construction according to site preparation recommendations.
4. Check weather conditions for the entire day to assure there will be proper weather conditions. If wind exceeds 15-20 MPH consider stopping work or consider deploying liner once all but one MLVT panels have been erected to provide a satisfactory wind block.
5. Review compaction tests for conformance with site preparation recommendations.
6. Comply with MLVT Inspection and Testing Specifications.

#### B. TOOLS, MATERIALS, and EQUIPMENT

1. Hard Hat
2. FRC Clothing
3. Gloves and Safety Glasses
4. Fall Arrest Gear
5. Box Knife
6. Drills with Deep Well Sockets
7. Telehandler Attachment
8. Telehandler (9,000 lb. or larger)
9. Optional Telehandler Man Basket with OSHA Certified Load Rating
10. Man Lift

#### C. MLVT ERECTION PROCEDURE

1. Inspect ditches, find center of MLVT and paint the ring for the MLVT. 40K=156'Ø, 30K=135' Ø, 20K=108' Ø, 10K=82' Ø.
2. Once the ring is painted make a mark 15' out from the ring around the outside. This mark is used as a reference point to assure there is enough liner to go over the MLVT walls once they are erected.
3. Unroll and position the 10 ounce geotextile fabric to all sides of the ring. Ensure the center mark labeled on the geotextile fabric is in the center of the MLVT. Adjust the geotextile if necessary.
4. Once the geotextile fabric is laid out and free of large wrinkles unroll and pull the liner out past the edges of the geotextile fabric. All layers should overlap each other and the liner should extend past the 15' mark. Once you have ensured the geotextile fabric and liner are square and centered it is ok to then begin to fill the trenches with water. Take care not to walk on liner that has no geotextile fabric underneath it. Make sure boots are clean and free of rocks before walking on any liner.
5. Once the geotextile fabric and liner are pulled out, begin to set the ring by first folding the geotextile fabric and the liner back onto itself to expose the MLVT diameter line for the MLVT panel ring.

- 
6. Put telehandler attachment on telehandler (Remove round bar holding forks onto telehandler and reinsert through custom attachment and re-secure bar to carriage.) and use attachment to place the first panel on the line. Secure the panel in place to secondary equipment with a certified chain. Secondary equipment may be a backhoe or other large machinery.
  7. Continue to set panels in a counter clockwise fashion by placing the female holes of the new panel onto the male pins of the previous panel. Set the rest of the ring in this same manner. (At each panel joint secure a 16 ounce geotextile strip to top pin of the panel and drape to the inside of the MLVT. Spray glue or tape in place on the interior joint to provide added liner protection at these points.)
  8. Hang one to two fill lines and secure them with ratchet straps to give the water trucks a place to continue filling the MLVT as the remainder of the panels are erected.
  9. Once there are enough panels (about half) in place for the MLVT to hold itself erect, begin pulling liner up the wall and placing temporary clips to hold in place. Take care to leave sufficient slack in the liner. Ensure that the person in the man basket has on the appropriate fall arrest gear.
  10. Before setting the last panel hang the manifold and connect the suction line and strainer box. (Make sure suction hose is connected in a straight alignment to assure good suction.)
  11. Set the last panel of the MLVT.
  12. Begin setting the permanent clips by adjusting liner in a straight and loose manner to allow for tightening as water is added to the MLVT. Ensure that personnel setting the clips are wearing the proper fall arrest gear.
  13. When the liner is adjusted correctly, place 2 clips per panel and tighten the bolts with impact drills.
  14. Continue setting clips in this manner until all clips are placed. It is very critical to have around 12-16 inches of water in the MLVT before all clips are installed. Monitor the MLVT closely until the minimum required amount of water is in the MLVT. If there is not at least 12 inches of water in the MLVT, install the clips only on every other panel. This will break any vacuum created from wind and will prevent the liner from shifting. Once the required amount of water is in the MLVT it must be fully clipped.
  15. Once all clips are set, trim back the excess liner and discard.
  16. Hang all remaining plumbing and secure with ratchet straps.
  17. Walk location and pick up ALL trash.
  18. Secure all materials and trash to be removed from location and leave location.

---

### II. MLVT INSPECTION AND TESTING SPECIFICATIONS

#### A. VISUAL INSPECTION FREQUENCY

1. MLVT owner to visually inspect each panel as they are offloaded.
2. MLVT owner to visually inspect each panel and panel connection once the MLVT is erected.
3. Operator, contractor, or MLVT owner to conduct routine visual inspections of the exterior panels and panel connections of the MLVT as required by the WYOGC.
4. MLVT owner to visually inspect each panel and panel connection as they are disassembled.
5. MLVT owner to verify thickness of every panel a minimum of every 50 set-ups.
6. Design Engineer of Record to perform annual visual observation of each MLVT in production.

#### B. VISUAL INSPECTION GUIDELINE

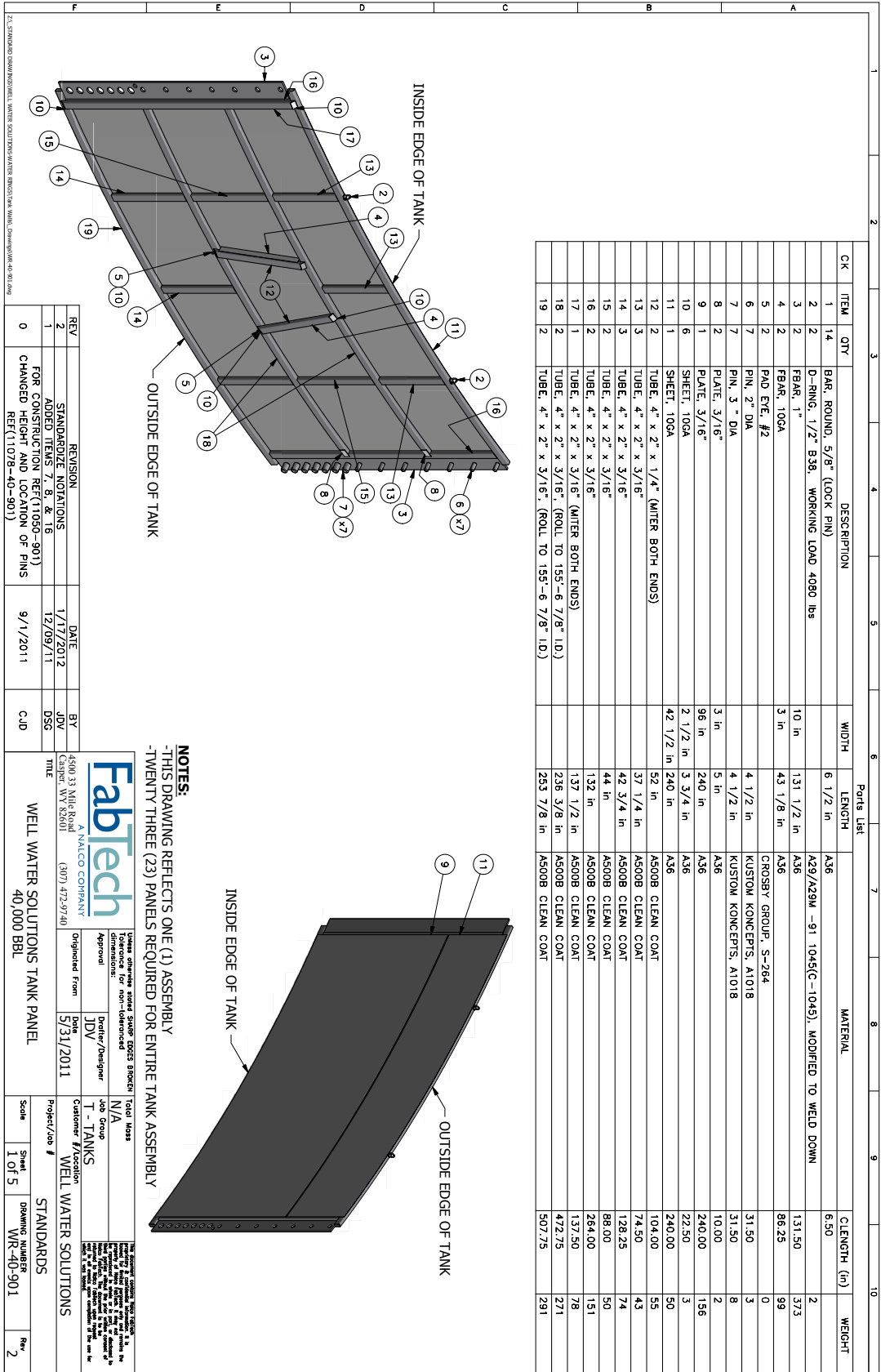
1. Inspect for deficiencies in the MLVT panels, panel connections, and connection components. Deficiencies include but are not limited to; damaged panels or panel connection components, excessive corrosion of steel, cracked welds, paint coatings, etc.
2. Inspect for any indication of tank settlement.
3. Inspect for any indication of leaks.
4. Inspect for any indication of tank panel and/or panel connection fatigue.

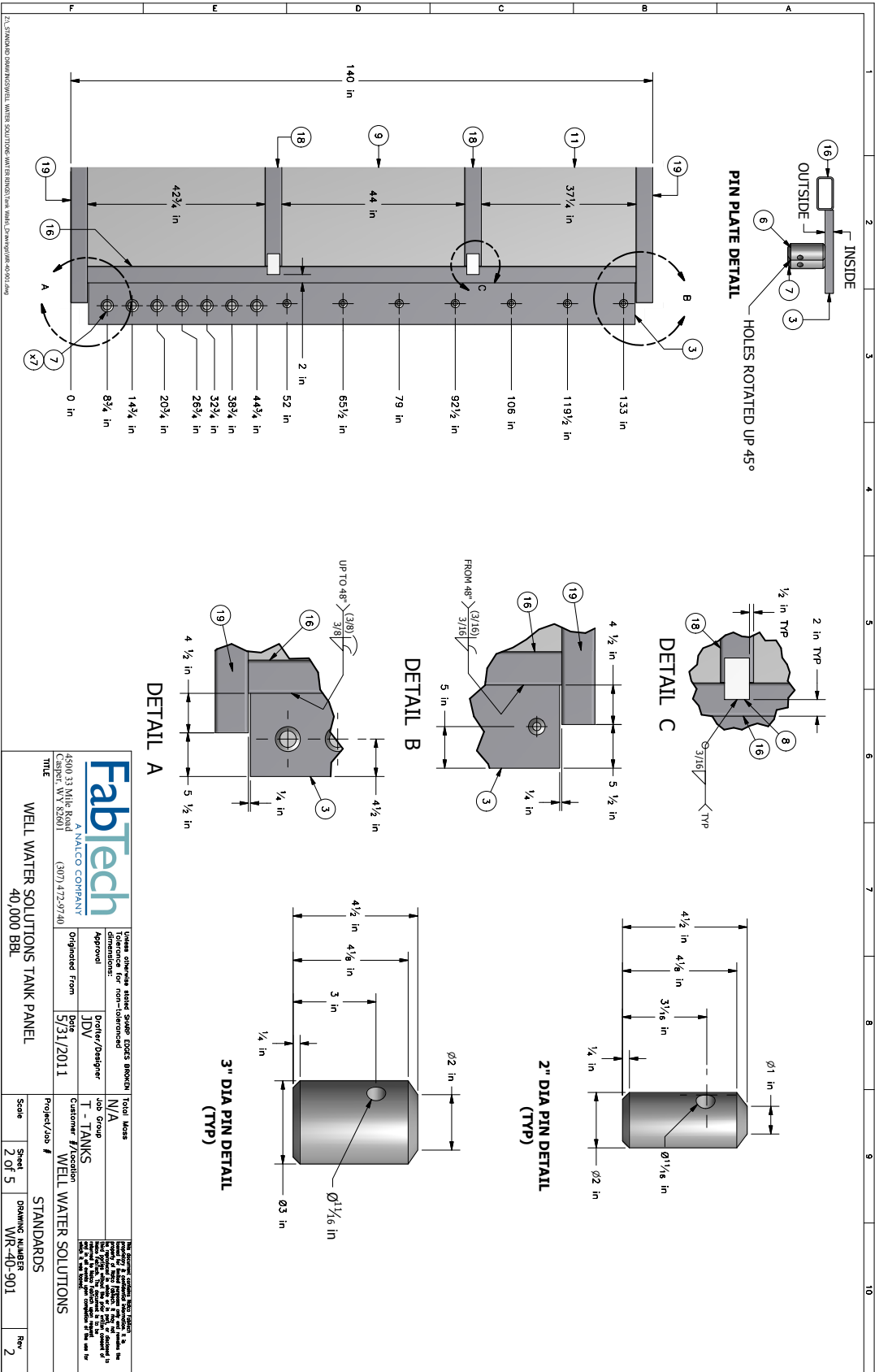
#### C. MAGNETIC PARTICLE EXAMINATION

1. Magnetic Particle Examination must be performed by a certified inspector a minimum of every 50 MLVT set-ups.
2. The examination must include ALL welded joints.
3. Any deficiencies found must be repaired by a certified welder. If deficiencies cannot be adequately repaired, consult design engineer for appropriate recommendations.

#### D. RECORDS

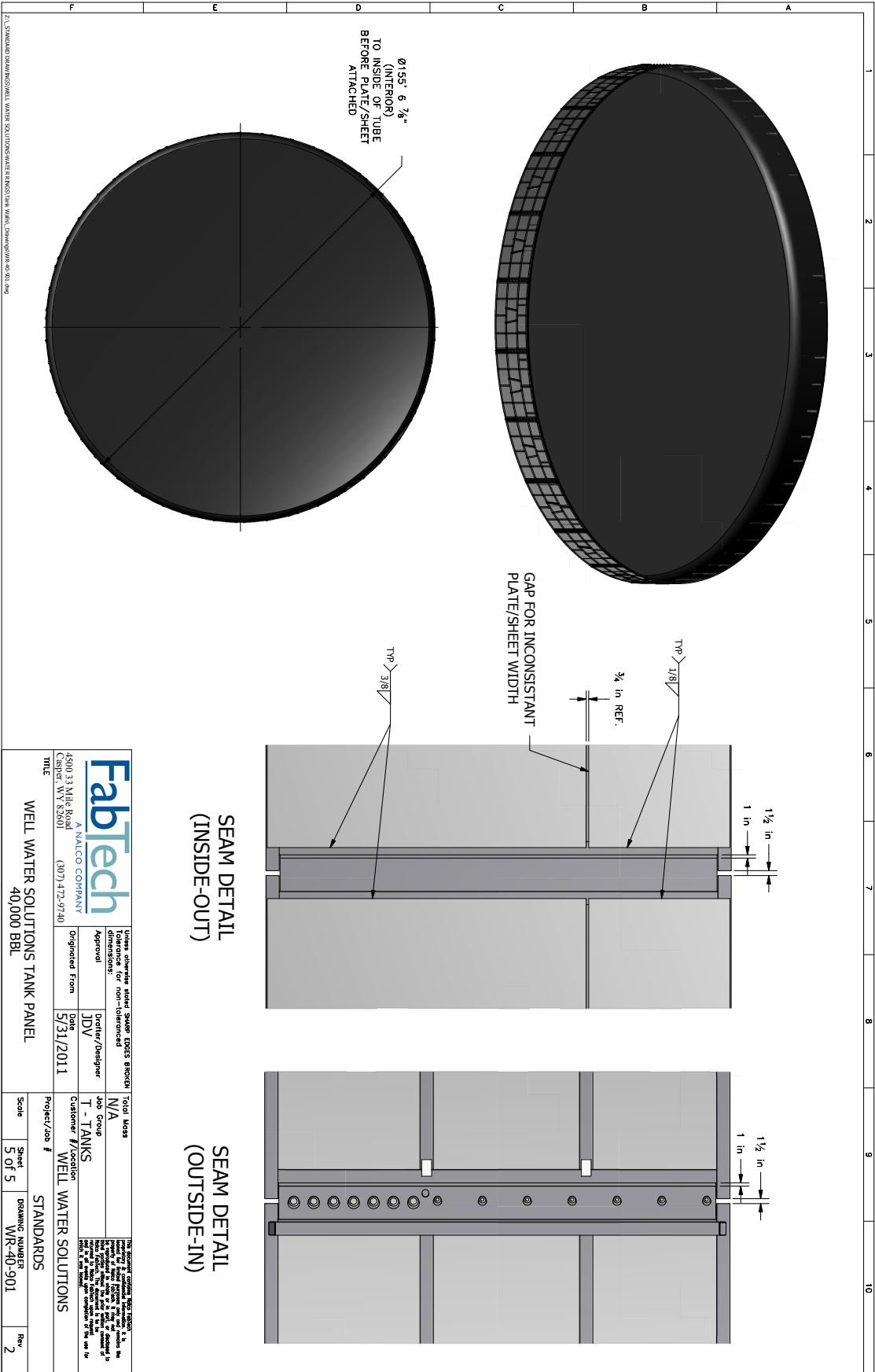
1. Records of all inspections must be kept.
2. A log of each MLVT must be kept by MLVT owner indicating dates and duration of each service, inspections and examinations performed, and repairs or alteration performed.





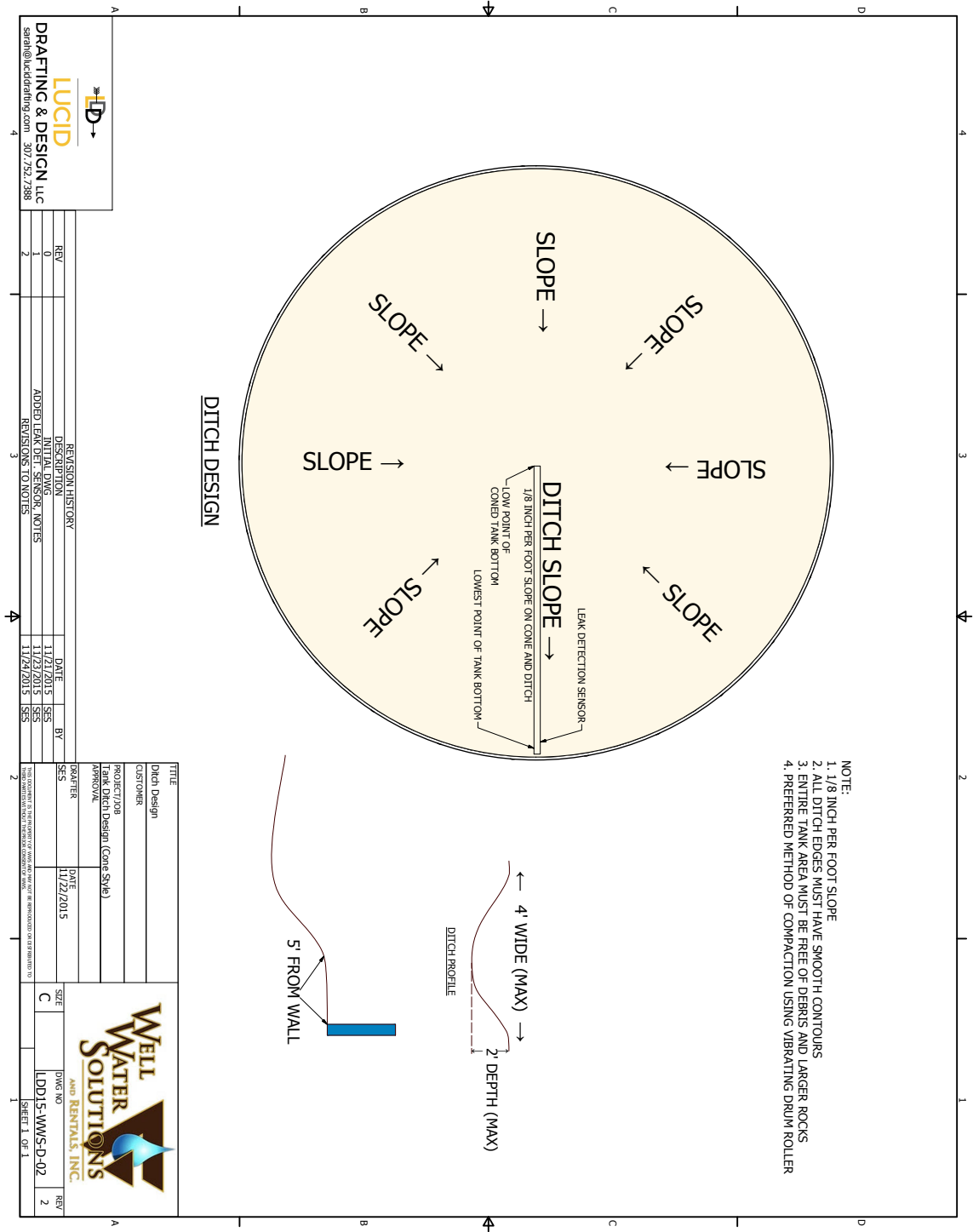


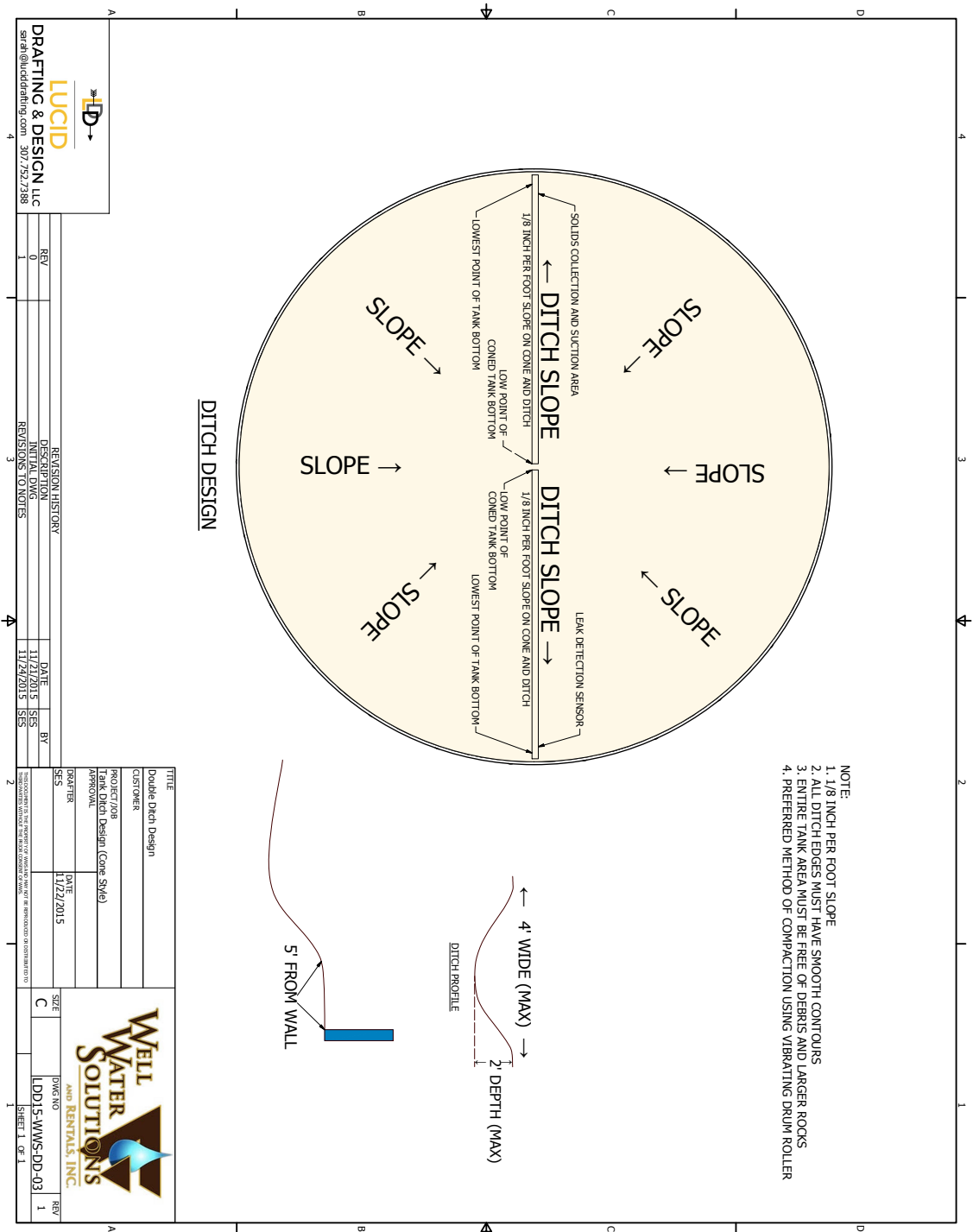






3.1





## 4.1

November 20, 2015

To whom it may concern:

Referenced Project: Unknown

Referenced Material: SuperGeo L40B

Material Description: 40 mil Nominal Linear Low Density Polyethylene Black/Black Smooth provided in fabricated panels approximately 200' X 200'.

Brawler Industries' SuperGeo L40B is compatible and approved for use with processed water containing 1000 ppm oil and bleach. Brawler Industries estimates the exposed life of SuperGeo L40B to be a minimum of 15 years and would issue a warranty for 10 years against UV degradation.

Please see below for additional information required.

Tensile strength at break – 200 lb/in per ASTM D6693 (On data sheet)

Elongation at break – 800 % per ASTM D6693 (On data sheet)

Puncture resistance – 90 lbs per ASTM D1004 (On data sheet)

Hydrostatic burst strength – N/A

Axi-symmetric strain – 60 % per ASTM D5617 (On data sheet)

Flexibility cycles without cracking – N/A

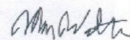
Uv resistance % at 30000 hrs – N/A

Coeff of thermal expansion - <2 %

Chem resistance to oil, bleach – See above – No issues with given concentration level

Complete material description – See above

Seaming method, results – Wedge welding, Hot Air, or Extrusion Welding approved



Marilyn Waltner  
Director of Market Development  
Brawler Industries, LLC

## SuperGeo™ LL Smooth



Properties	Test Method	Nominal Values
<b>40 mil</b>		
Thickness, mil	ASTM D5199	40
Density, g/cm <sup>3</sup> (max)	ASTM D1505	.939
Tensile Properties (MD and TD) <ul style="list-style-type: none"> <li>• Strength at Break, lb/in width (mm)</li> <li>• Elongation at Break, %</li> </ul>	ASTM D6693, Type IV	200 800
2% Modulus-lb/in. (max.)	ASTM D5323	2400
Tear Resistance, lb	ASTM D1004	30
Puncture Resistance, lb)	ASTM D4833	90
Axi-Symmetric Break Resistance Strain- %	ASTM D5617	60
Carbon Black Content, %	ASTM D4218 (2)	2.0-3.0
Carbon Black Dispersion	ASTM D5596	Note (3)
Oxidative Induction Time (OIT) <ul style="list-style-type: none"> <li>(a) Standard OIT (min. ave.)</li> <li>----- or -----</li> <li>(b) High Pressure OIT (min. ave.)</li> </ul>	ASTM D3895 ASTM D5885	100 400
Oven Aging at 85°C <ul style="list-style-type: none"> <li>(a) Standard OIT (min. ave.) -% retained after 90 days</li> <li>----- or -----</li> <li>(b) High Pressure OIT (min. ave.) -% retained after 90 days</li> </ul>	ASTM D5721 ASTM D3895 ASTM D5885	85 83
UV Resistance (5) <ul style="list-style-type: none"> <li>(a) Standard OIT (min. ave.)</li> <li>----- or -----</li> <li>(b) High Pressure OIT (min. ave.) -% retained after 1600 hrs</li> </ul>	ASTM D7238 ASTM D3895 ASTM D5885	N.R. (6) 89
Roll Length, ft		910
Roll Width, ft		22
Roll Area, ft <sup>2</sup>		20,020

*This data is provided for informational purposes only. Brawler Industries, LLC makes no warranties as to the suitability of the fitness for a specific use or merchantability of products referred to, no guarantee of satisfactory results upon contained information or recommendations and disclaims all liability from resulting loss or damage. This information is subject to change without notice, please check with Brawler Industries, LLC for current updates.*



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SE HABLA ESPAÑOL

[www.brawler.com](http://www.brawler.com)



## 5.0

### PATENTS AND PATENT PROTECTION

Well Water Solutions & Rentals Inc. has the first two patents in this field that protects two separate hinge connection designs. Also included in the patents are the quick connecting attachment and the industries safest and strongest liner clamp design to date.



US008376167B2

(12) **United States Patent**  
**Lovelace et al.**

(10) **Patent No.:** **US 8,376,167 B2**  
(45) **Date of Patent:** **Feb. 19, 2013**

(54) **PORTABLE RESERVOIR FRAME**

(75) Inventors: **Sean Michael Lovelace**, Casper, WY (US); **Christopher Jason Songe**, Casper, WY (US)

(73) Assignee: **Energy Innovations, LLC**, Casper, WY (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **13/469,883**

(22) Filed: **May 11, 2012**

(65) **Prior Publication Data**

US 2012/0223073 A1 Sep. 6, 2012

**Related U.S. Application Data**

(63) Continuation of application No. 13/245,492, filed on Oct. 21, 2011.

(51) **Int. Cl.**  
**B65D 6/00** (2006.01)

(52) **U.S. Cl.** ..... **220/4.17; 220/4.16; 220/693; 220/567; 220/4.12**

(58) **Field of Classification Search** ..... 220/1.6, 220/4.12, 4.16, 4.17, 9.4, 23.9, 495.06, 495.08, 220/567, 681, 693  
See application file for complete search history.

(56) **References Cited**

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CA 2692016 7/2010

\* cited by examiner

*Primary Examiner* — Anthony Stashick

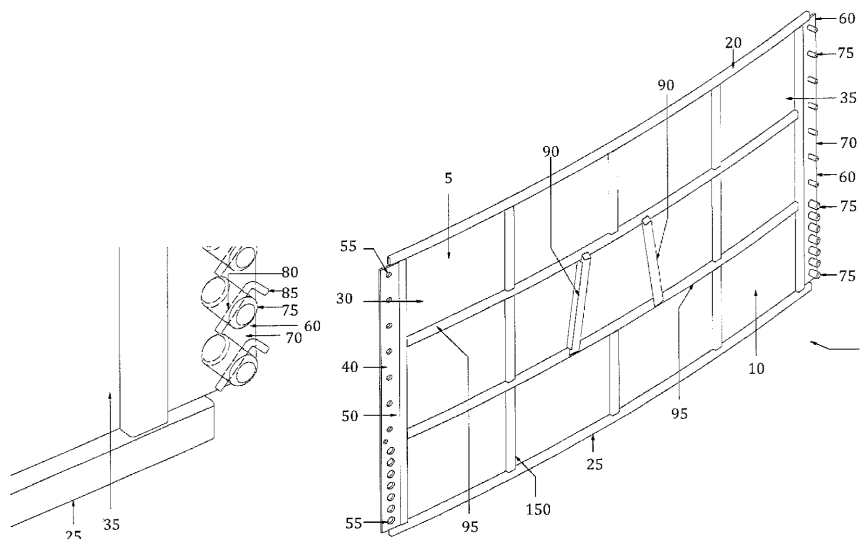
*Assistant Examiner* — Christopher McKinley

(74) *Attorney, Agent, or Firm* — Gordon Silver, Ltd.; Ronald C. Gorsché

**ABSTRACT**

(57) A portable reservoir frame composed of interlocking panels secured by a series of flanges having holes and pegs. An inner liner to hold liquid inside the reservoir frame is presented.

**16 Claims, 11 Drawing Sheets**





US008365937B2

(12) **United States Patent**  
**Lovelace et al.**

(10) **Patent No.:** **US 8,365,937 B2**  
(45) **Date of Patent:** **Feb. 5, 2013**

(54) **PORTABLE RESERVOIR FRAME**

(75) Inventors: **Sean Michael Lovelace**, Casper, WY  
(US); **Christopher Jason Songe**, Casper,  
WY (US)

(73) Assignee: **Energy Innovations, LLC**, Casper, WY  
(US)

(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 0 days.

(21) Appl. No.: **13/469,845**

(22) Filed: **May 11, 2012**

(65) **Prior Publication Data**  
US 2012/0234829 A1 Sep. 20, 2012

**Related U.S. Application Data**

(63) Continuation of application No. 13/426,286, filed on  
Mar. 21, 2012, which is a continuation-in-part of  
application No. 13/245,492, filed on Oct. 21, 2011.

(51) **Int. Cl.**  
**B65D 6/00** (2006.01)

(52) **U.S. Cl.** ..... **220/4.17**; 220/4.16; 220/693; 220/567;  
220/4.12

(58) **Field of Classification Search** ..... 220/565,  
220/567, 1.6, 4.16, 4.12, 9.4, 495.06, 495.08,  
220/23.9, 4.17, 693, 681  
See application file for complete search history.

(56) **References Cited**

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2009/0127255 A1 \* 5/2009 Rood, Jr. .... 220/1.5

**FOREIGN PATENT DOCUMENTS**

CA 2692016 7/2010

\* cited by examiner

*Primary Examiner* — Anthony Stashick

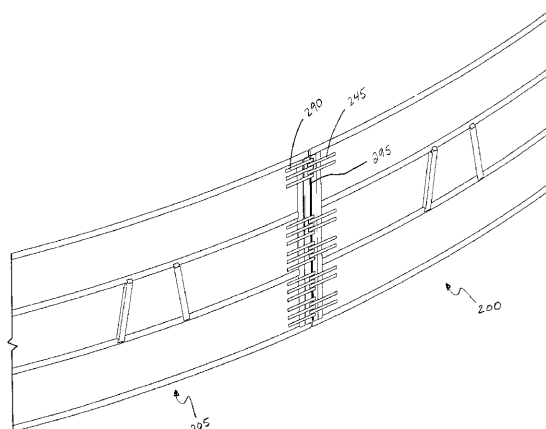
*Assistant Examiner* — Christopher McKinley

(74) *Attorney, Agent, or Firm* — Gordon Silver Ltd.; Ronald  
C. Gorsché

(57) **ABSTRACT**

A portable reservoir frame having a number of interlocking  
panels secured by a plurality of interleaved knuckle members  
is provided.

**20 Claims, 20 Drawing Sheets**



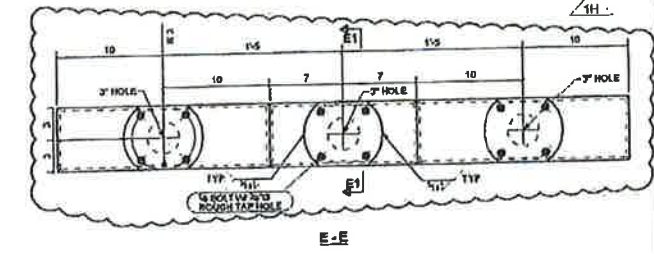
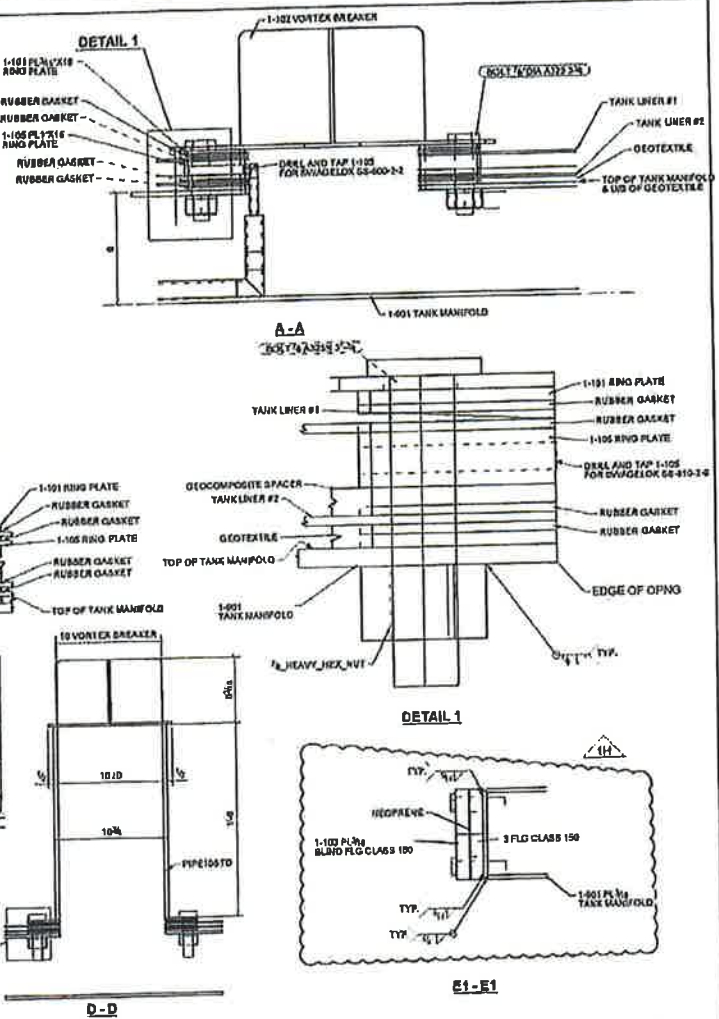
## Reference Photos



## Under-Mount Manifold Option

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REV	DATE	DESCRIPTION	BY	CHK
11	12/04/04	1" FLUO ADDED - RE-FA	MDL	QWS
12	12/03/05	1" FLUO ADDED - RE-FA	MDL	QWS
13	11/03/05	POLE AND REIN - RE-FA	MDL	QWS
14	11/03/05	TANK DESIGN REIN - RE-FA	MDL	QWS
15	06/03/05	TANK REIN & SHIELDING FITTINGS ADDED - RE-FA	MDL	QWS
16	05/03/05	PIPE REIN & SHIELDING FITTINGS ADDED - RE-FA	MDL	QWS
1A	05/03/05	PIPE REIN & SHIELDING FITTINGS ADDED - RE-FA	MDL	QWS
0	12/03/05	ISSUED FOR FABRICATION	MDL	QWS
B	12/04/05	NOTED PL REIN - RE-FA	MDL	QWS
A	11/05/05	MARKED FOR APPROVAL	MDL	QWS
AA	11/01/05	ISSUED FOR PING APPROVAL	MDL	QWS

**COWNDEN**  
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Fax: 423.295-4423  
E-mail: gws@slade.com

**Apache Corporation**  
MIDLAND, TX

TANK MANIFOLD LAYOUT

REF: APA-2012-03

DRAWN BY: MDE DATE: 11/20/12	CHECKED BY: JPH DATE: 11/23/12
OWS PROJ NO. 14-1218	DRAWING NO. 1-E1







