



# Clean Power Gasoline Additive



CUPA Conference  
Garden Grove  
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Bob Christie, Jones Covey Group



Costco Gasoline with Kirkland Signature  
**CLEAN**  

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**POWER**

- Costco has added tanks and piping to 270 gas stations outside California, to increase the amount of detergent additive in our gasoline.
- **Kirkland Signature Clean Power** detergent additive (UltraZol 9888) is manufactured by Lubrizol and registered with the EPA.
- Engine testing shows that more detergent is needed to keep modern engines clean.
- Clean Power is five times the EPA required additive in both regular and premium grades.
- We want to offer this higher-value product to our members in California.



JONES COVEY GROUP, INC.



# Clean Power Benefits

- Minimizes intake valve deposits
- Keeps fuel injectors clean
- Cleans up existing deposits
- Small incremental improvements

times many cars

times many miles

= significant impact on emissions and fuel economy.



Costco Gasoline with Kirkland Signature

# CLEAN POWER

Gasoline Detergent Additive

- Five times EPA detergent requirement
- Included in both regular and premium grades
- Cleans fuel injectors and intake valves
- Improves performance
- Reduces emissions caused by dirty engines



Now available at this location.



# Cleaner is better!



Intake valves



Fuel injectors



# Costco Gasoline Nationwide



**368 U.S. Costco fuel facilities**

**270 Clean Power installations (outside of California)**

**95 Costco gas stations in California**

*Find them at [costco.com](http://costco.com)*



# Automated Injection System

- “Batch Controller” in data hut controls the metering and dispensing system.
- Attendant keys total fuel gallons immediately prior to each delivery.
- Additive automatically injected at ~3.25 gallons per delivery.
- Additive is mixed with the fuel by the delivery agitation.
- System has run successfully since April 2011.



# Equipment Compatibility

- All equipment has manufacturers' confirmation of compatibility with Clean Power.
- Leak detection and liquid sensors confirmed to work with the additive by Ken Wilcox & Assoc., and already added to LG 113.
- Costco's application complies with June 1, 2012 regulation change to Title 23, CCR Section 2631.

*ASCO solenoid valves are identical to those currently used to dispense additive at many rack terminals*



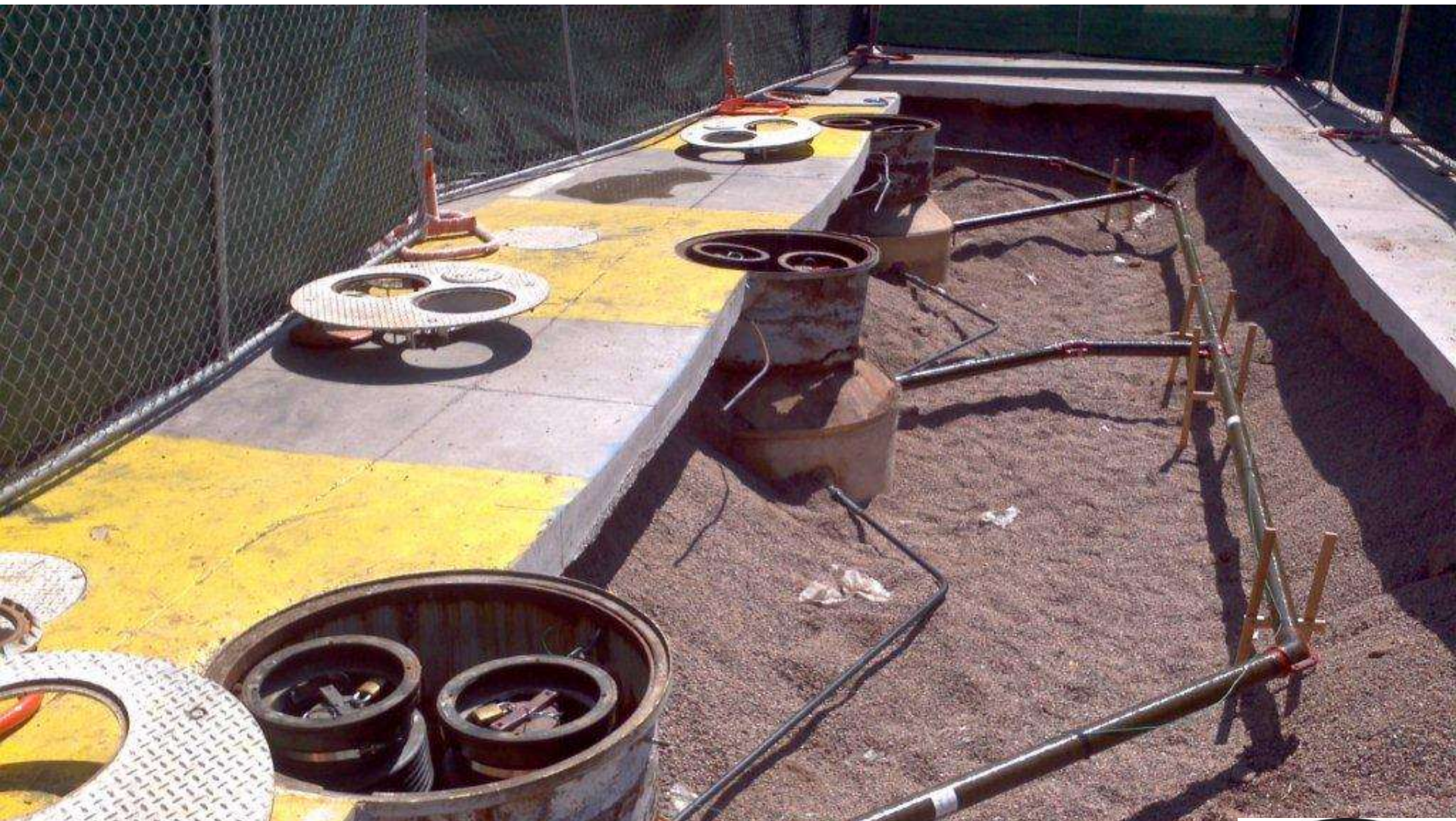


# Additive Tank Install





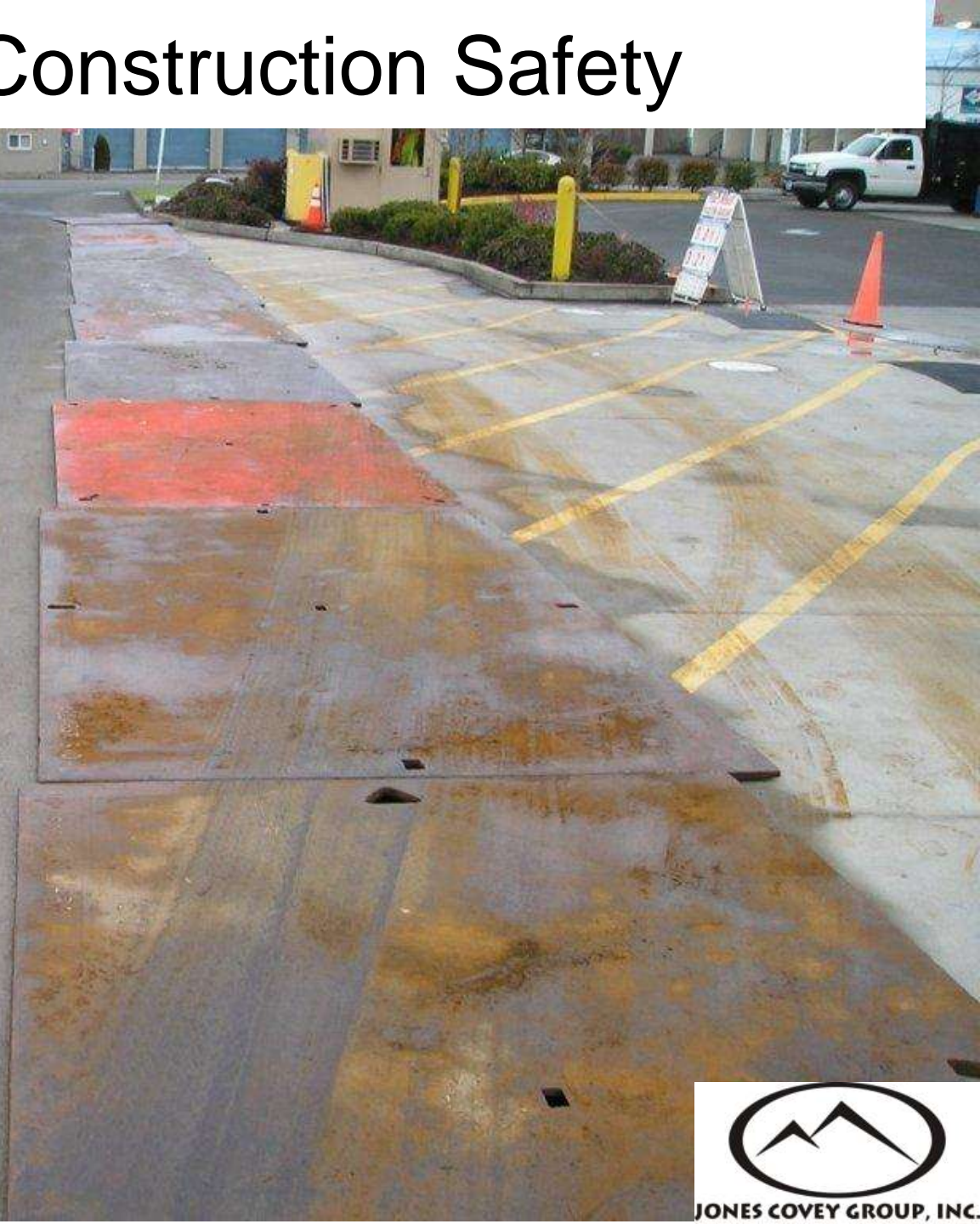
# Additive Piping to Fills



These sumps are single-wall, outside of CA

# Construction Safety

- Our 270 installations outside CA were done with minimal interruption to Costco's high volume sales.
- No accidents or other problems during our national rollout.



# San Luis Obispo Installation



- 1500 gallon DW additive UST
- Ameron 2" DW FRP piping.
- Additive tank sumps and lines VPH monitored.
- Station already VPH-equipped (opened in 2005)
- Scheduled to finish in mid-February.
- Four other CA locations have permits and will begin soon.



# Two Hurdles

## 1. Fill Sump Upgrade to VPH

Connecting the new additive tank to the existing tanks triggers a requirement to upgrade our existing SB 989 single wall fill sumps to double wall sumps compliant with AB 2481.

## 2. CARB Approval of Remote Fill

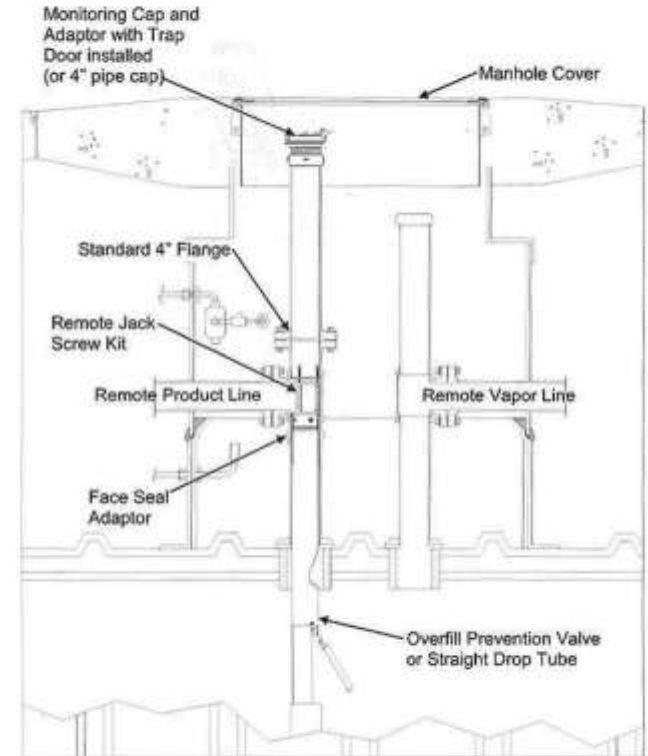
To date, the Air Resources Board (ARB), has not approved our application of the OPW Remote Fill jack screw assembly as a means of getting product into the gas tanks.



# CARB Hurdle

- OPW Remote Fill jack screw assembly is part of their 2007 E.O.VR-102-H (Figure 2E)
- Clean Power configuration uses this assembly to inject the additive into the drop tube.
- Station uses the conventional spill buckets in the fill sumps, similar to E.O. Figure 2A.
- CARB has approved a test site at the Lodi Costco, installation pending.
- The remote fill configuration is needed at the older sites where the USTs don't have fill tank manways.

Figure 2E  
Typical Remote-Fill Tank Top Configuration



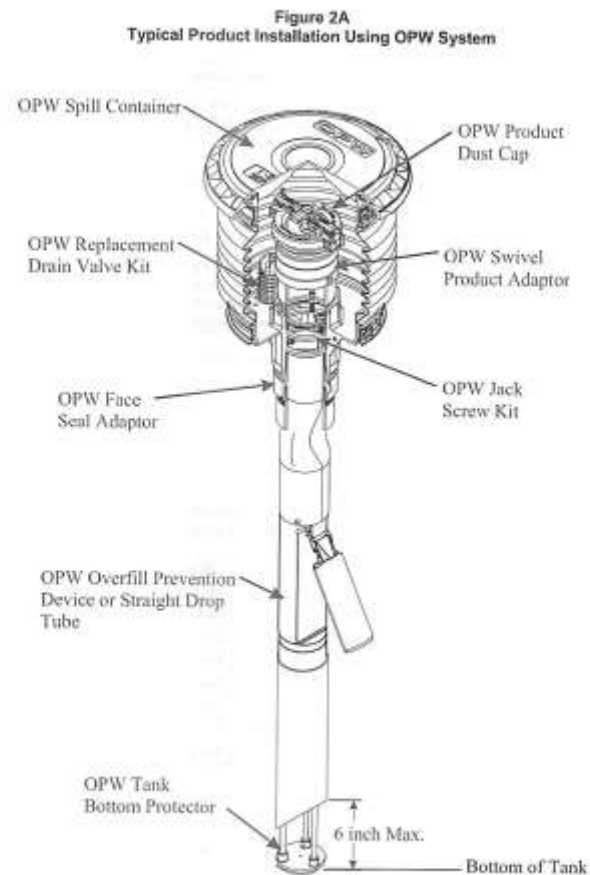
**E.O VR-102-H Figure 2E**

Executive Order VR-102-H, OPW Phase I Vapor Recovery System, Exhibit 2, Page 11



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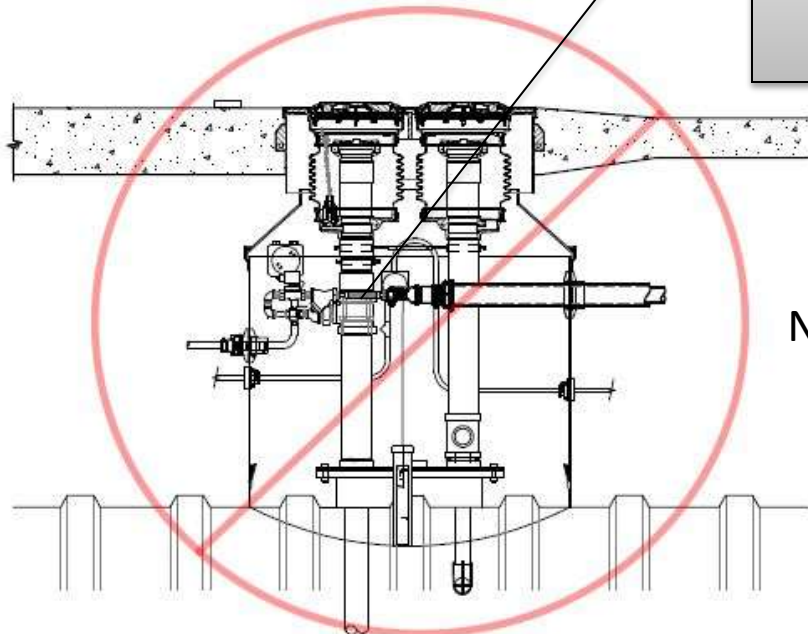
**E.O VR-102-H Figure 2A**



# Tank Manway Replacement

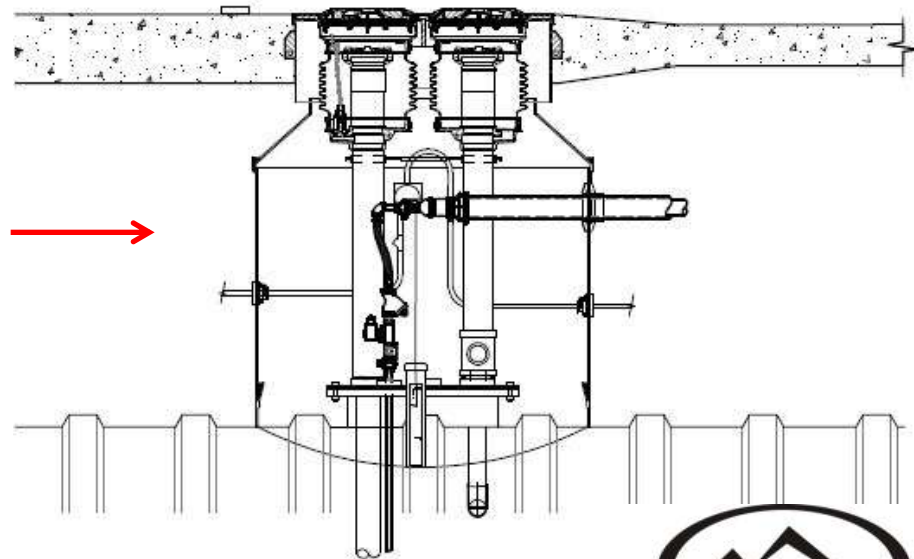
- At 48 of our 95 CA sites, we'll replace the fill tank manways to add a third bung for injecting the additive directly into the fuel UST. This is our method for installing Clean Power at new gas stations.

## Retrofit detail "2 bung design"



Use of the OPW  
Jackscrew  
assembly is not  
currently  
approved

## New build detail "3 bung design"



Need →



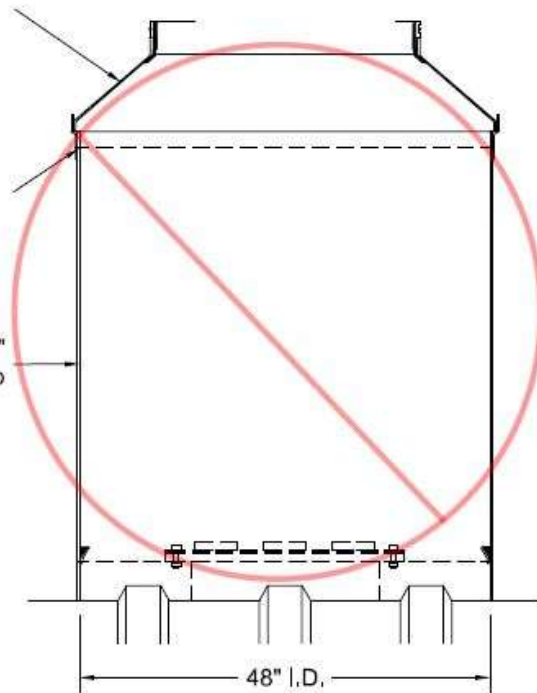
# AB 2481 Hurdle

- Connecting the new additive tank to an existing tank triggers a requirement to upgrade our existing single-wall fill sumps to be VPH compliant.

189 of our existing tanks have single wall fill sumps

Single-Wall

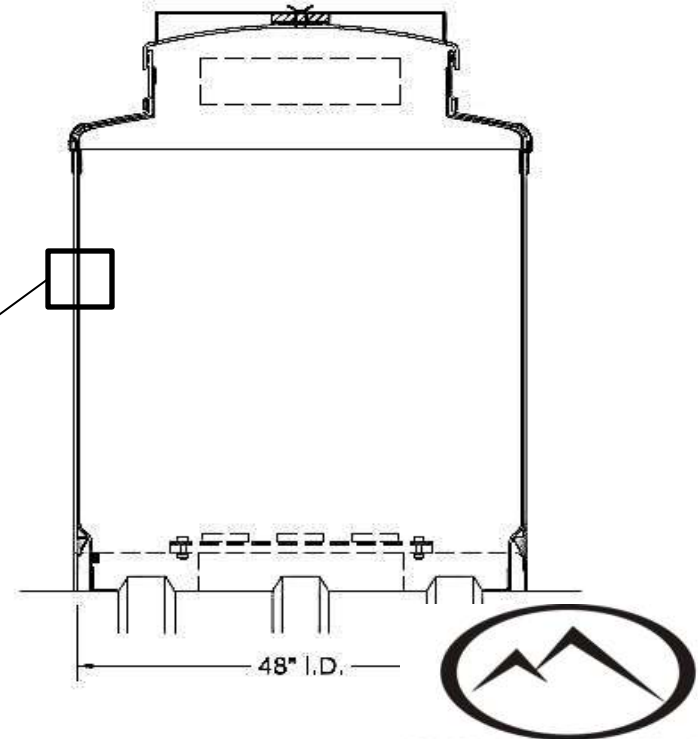
Existing 48" Single-Wall Sump



Need

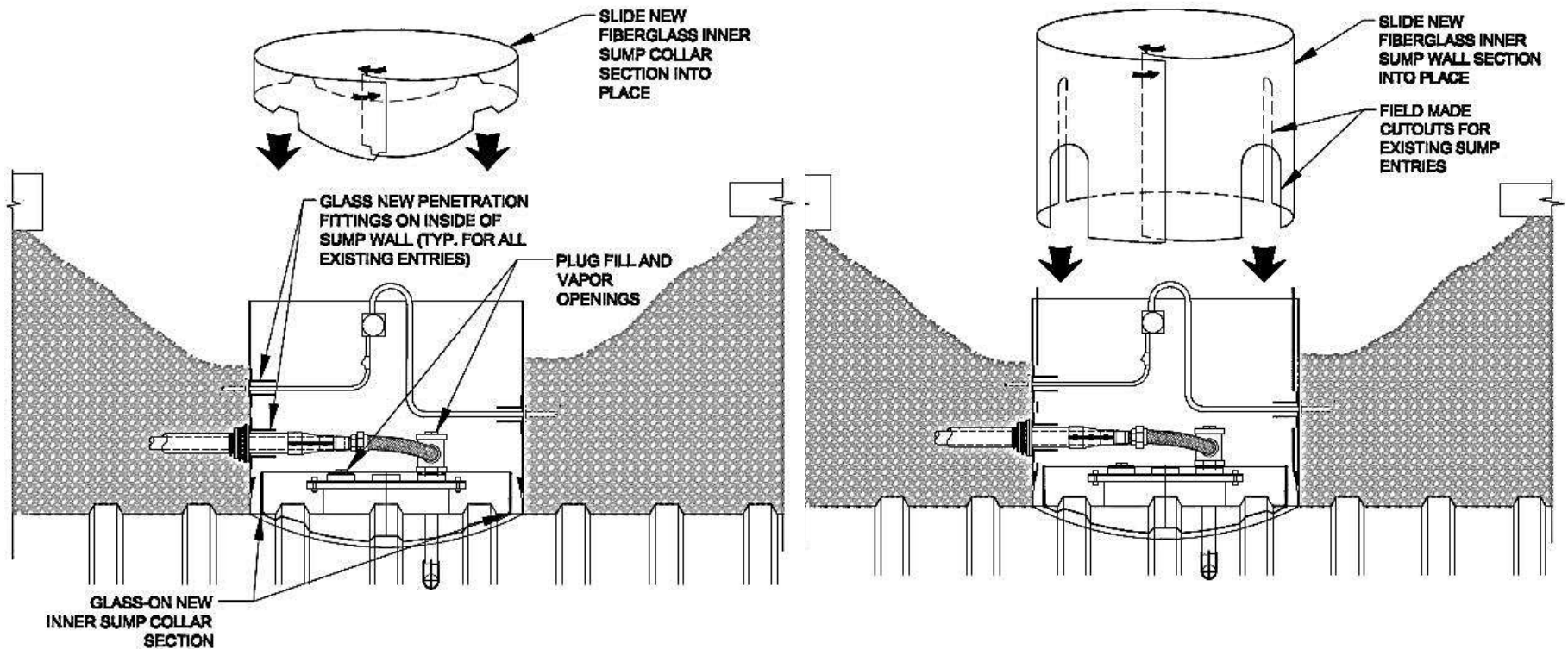


Required to have double wall monitored sumps





# AB 2481 Solution



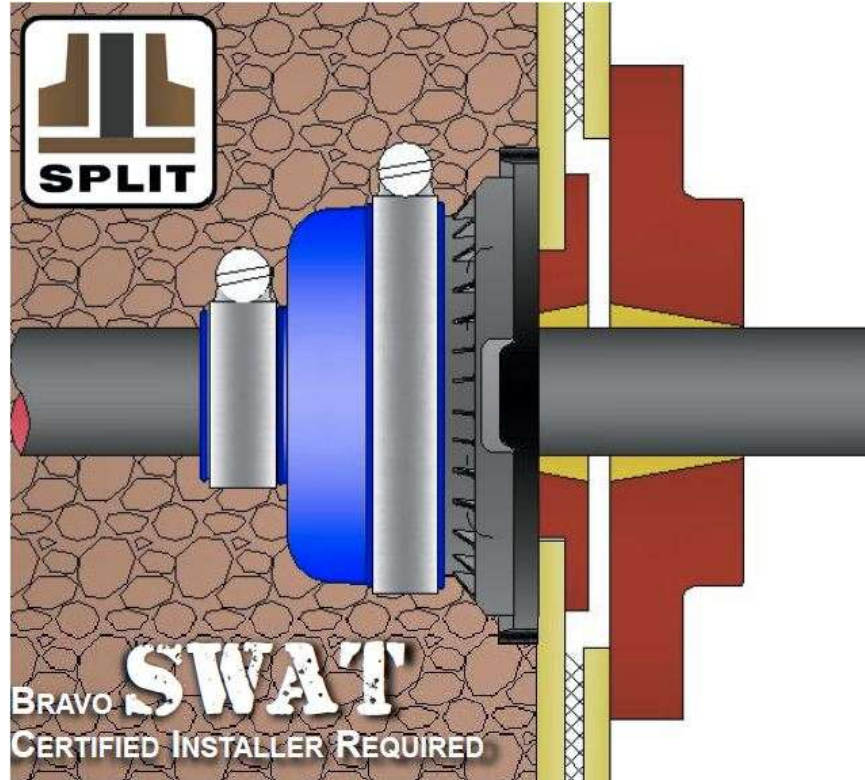
FILL SUMP, WITH NEW INNER SUMP COLLAR AND OUTER FIBERGLASS PENETRATION CUFFS

FILL SUMP REBUILDING, WITH NEW INNER SUMP WALL AND CUTOUTS FOR CUFF PENETRATIONS

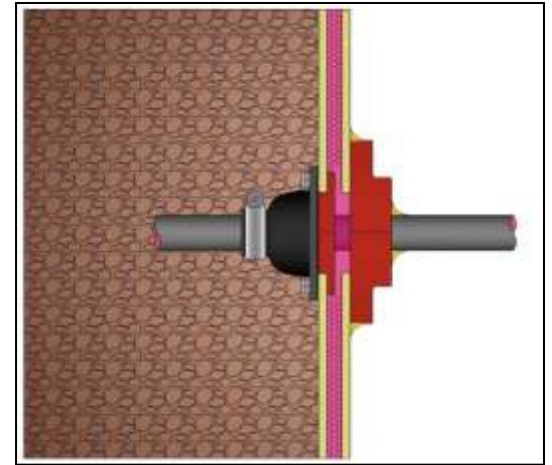
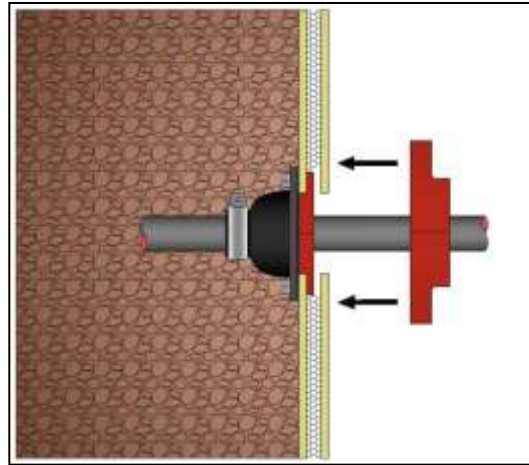
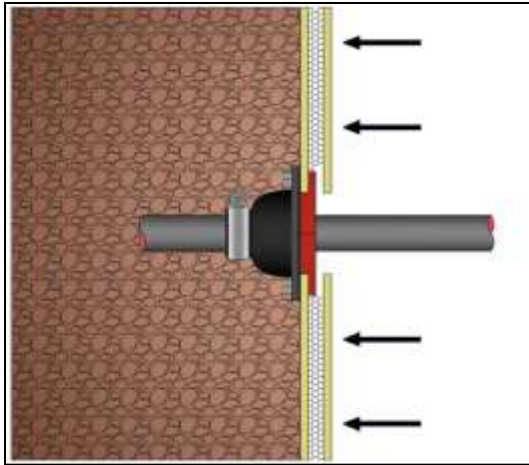
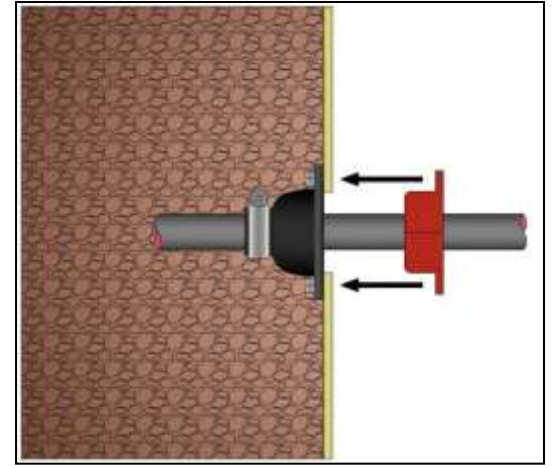
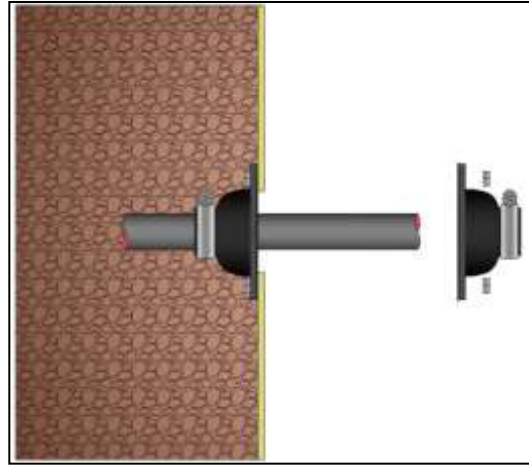
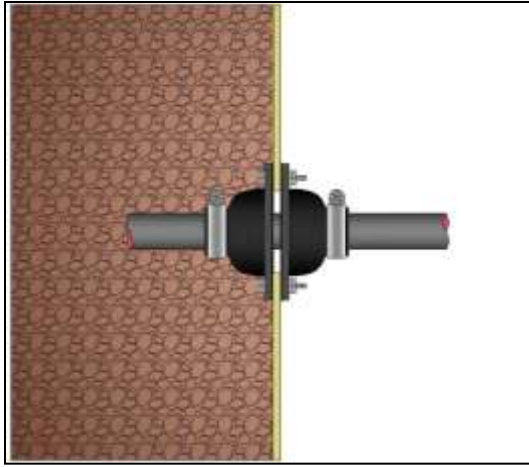
**Field- install secondary sump sleeve for VPH monitoring.**



# DW Penetration Fittings



# Existing to New Design



# Staging An Actual Installation



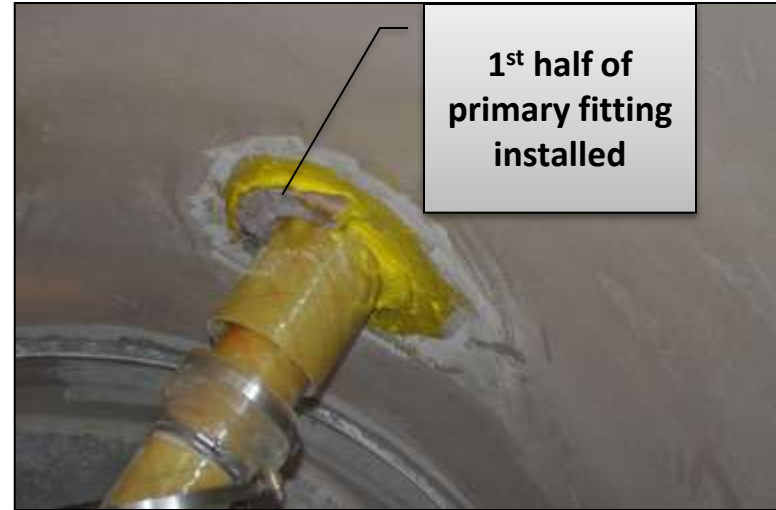
# Existing Single Wall Design



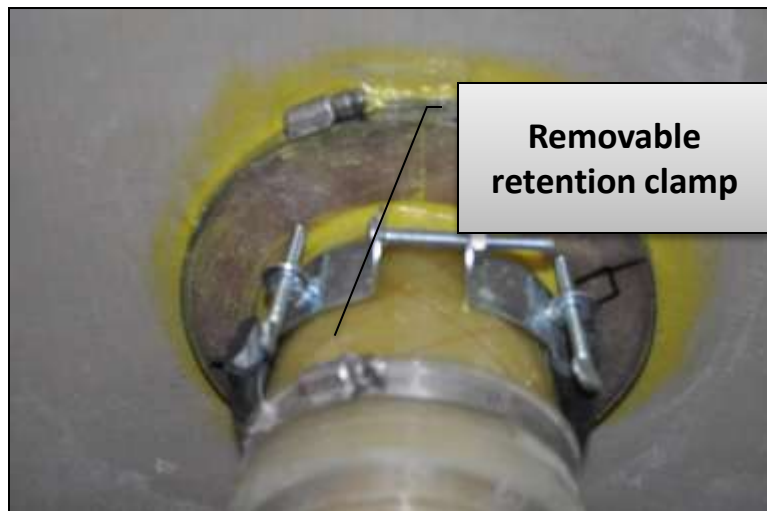
# Removal of Existing Penetrations



# Primary Fitting Installation



# Completed Primary Fitting





# Manufacturer's Installation



Containment Solutions field service techs will upgrade the sumps to DW.



# New Collar and Sump



- Cut and install a new secondary sump collar
- Sump interstice about 1"
- New inner wall same thickness as outer sump wall.



# New Collar Complete



# New Sump Sleeve



**Cut outs being shaped for existing vent, vapor and electrical conduits**



# Sump Sleeve Installation



# New Sump Sleeve Prep

Final fitting of  
new sump wall

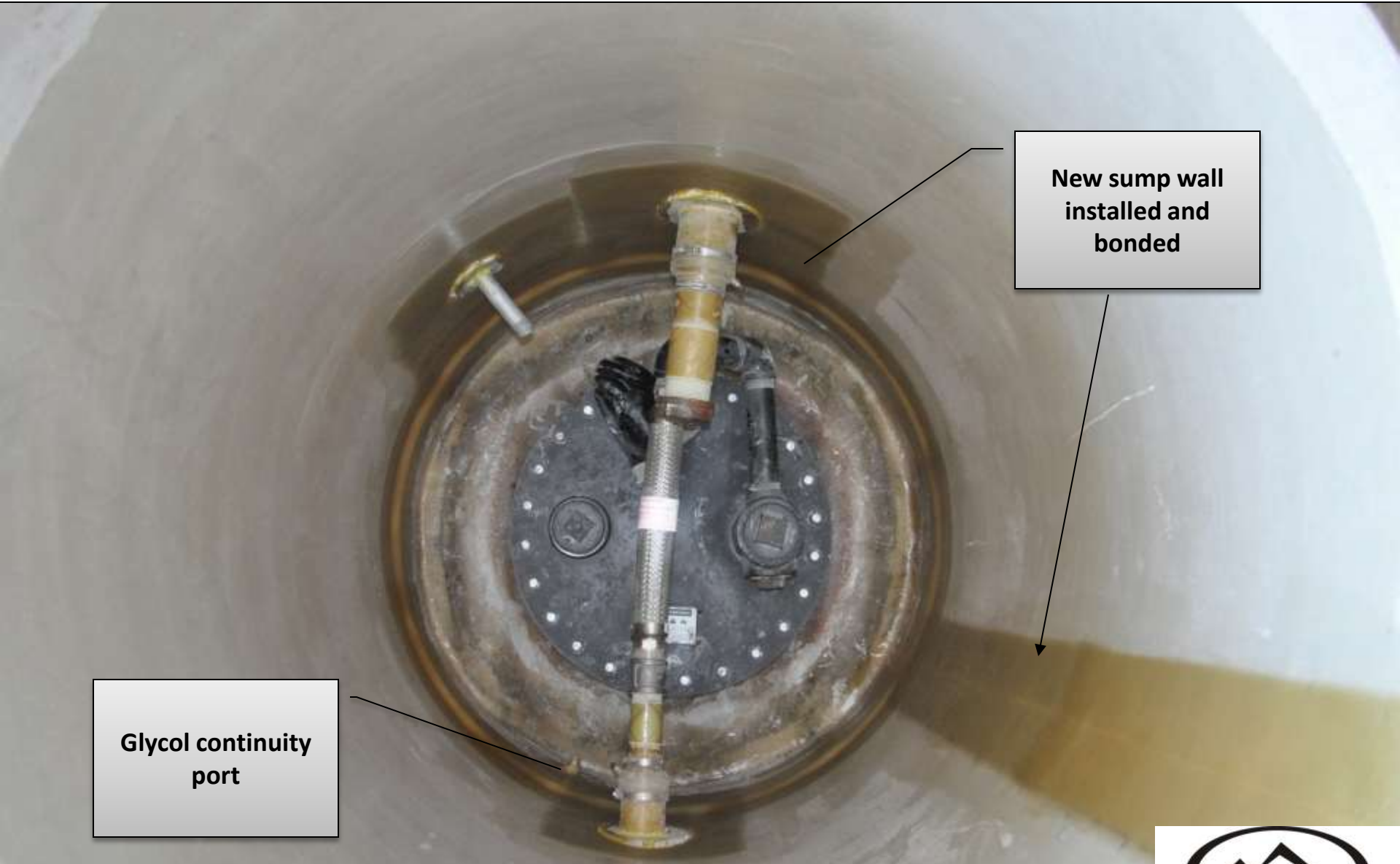


# New Sump Sleeve Prep



Final fitting of new  
sump wall

# Completed Sump Sleeve



New sump wall  
installed and  
bonded

Glycol continuity  
port



# New Concentric Reducer



New top section of  
sump with liquid  
reservoir



New  
concentric  
reducer being  
bonded



# New DW Sump Complete



New concentric reducer  
installation complete

# Secondary Fitting Installation



# Completed Secondary Fitting



New Bravo fitting  
installation  
completed



# Completed Double Wall Sump



# Scope of Work

- 31 sites will have the tank manway replaced only (existing VPH).
- 17 sites will have the tank manway replaced and SW sumps converted to DW (SB 989 sites with tank manways)
- 39 Sites will have the SW sumps converted to DW sumps when CARB approves the OPW remote fill configuration (no tank manways exist).
- 8 sites do not require any manway or sump work (VPH sites with existing three-bung manways).



# Team Work

