



**Georgia-Pacific**

# Transforming safety and applying HOP, focused on the Frontline Worker: Two application stories

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2023 PPSA Annual Safety & Health Conference

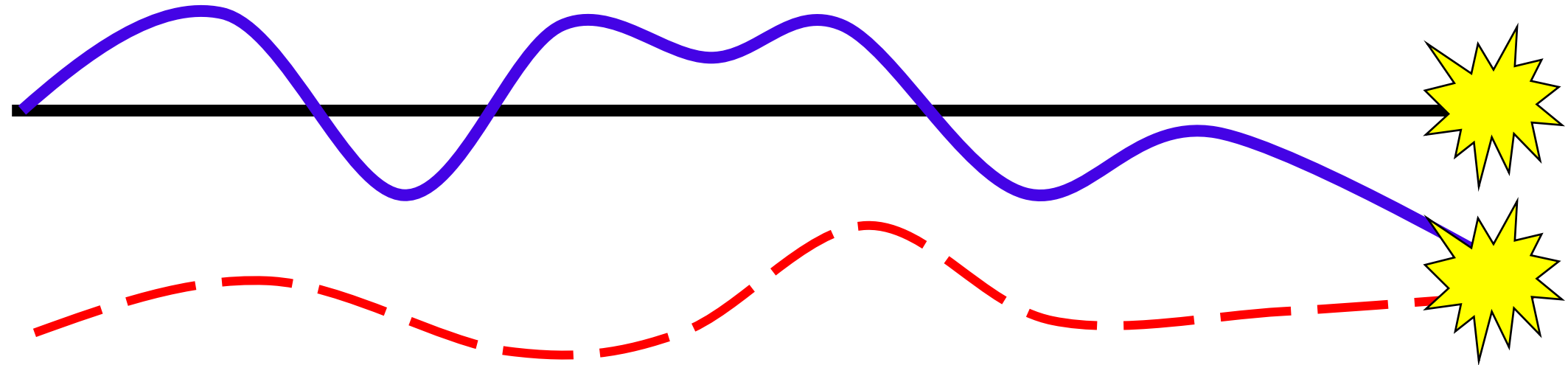
# Challenges in 2018:

- How could we increase the value of the work permitting process by front-end loading the safety discussions?
- How can we effectively show our new employees what hazards can change or end their life without hurting anyone?
- HOP has been introduced- how do we WALK THE TALK?



# Black Line vs. the Blue Line Mental Model

Work as Planned  
vs. Work in Practice

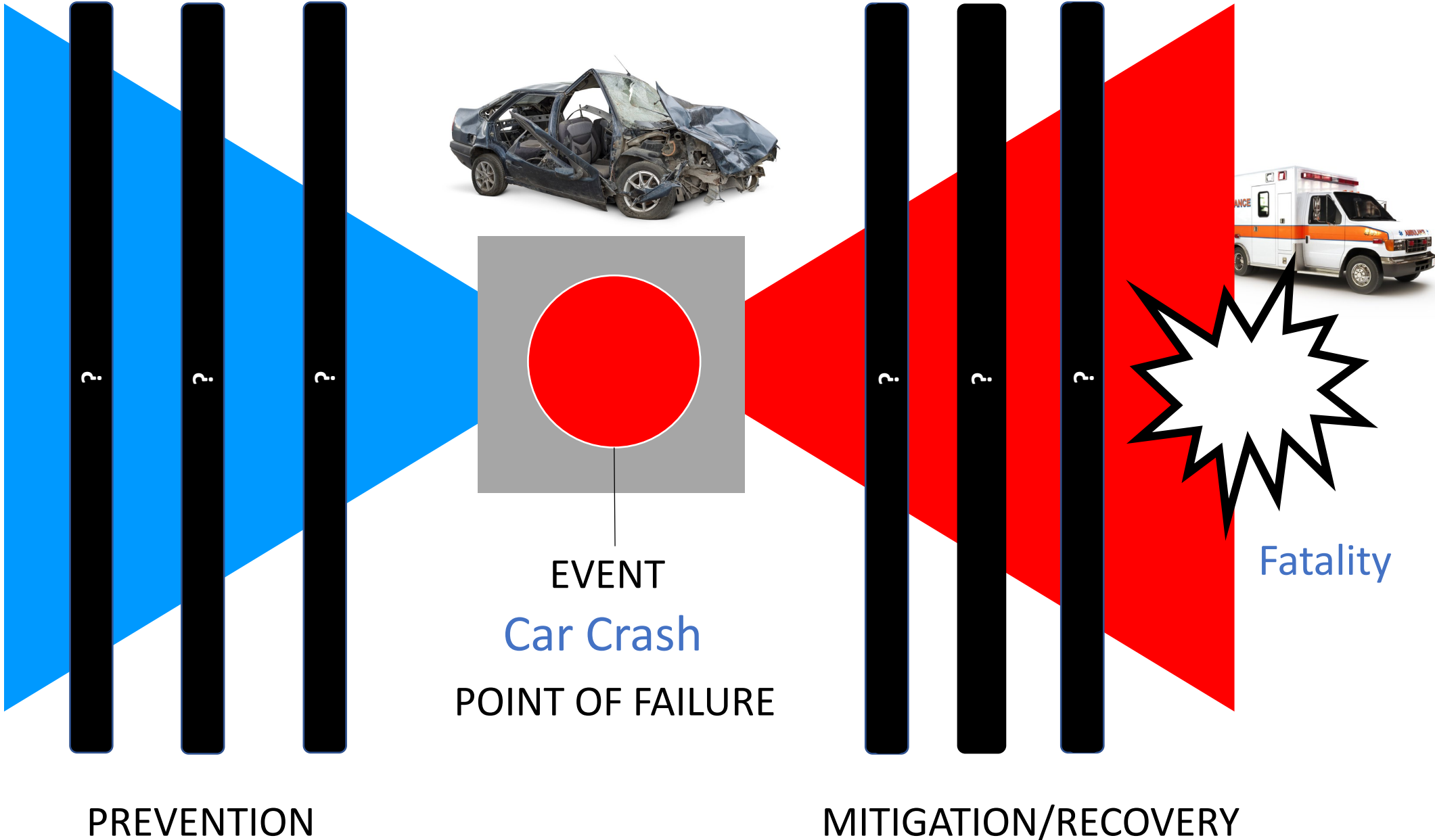


*“Masters of the  
blue line”*

***Normally  
Successful!***

(Conklin / Edwards)

# Bowtie Mental Model



# 2 Transformation Efforts:



+









## CONCEPT:

Individuals have the ability to fail safely by assessing all work activities (before, during, after) so that we stop death and serious injury

## WHERE DO WE FOCUS?

Concentrate efforts on work we do that involves the most risk to human life:



Isolation of  
Hazardous  
Energy



Working  
from Height



Hot Work



Lifting &  
Rigging



MOPED



Confined  
Space Entry



Line Break

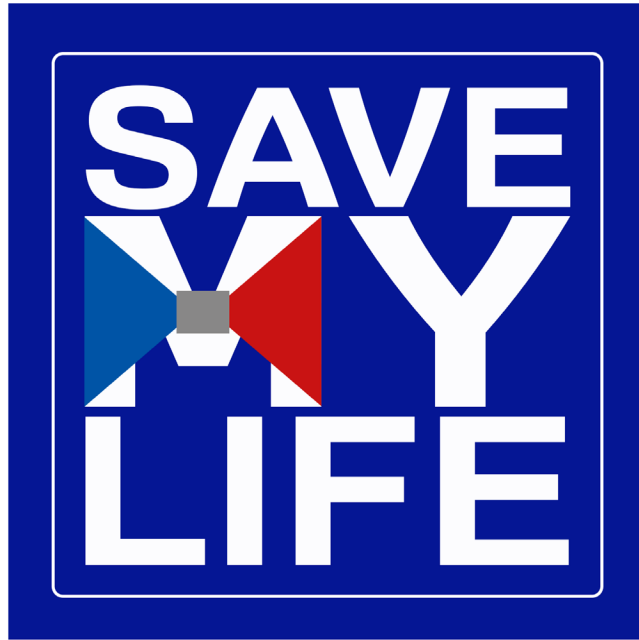


Excavation

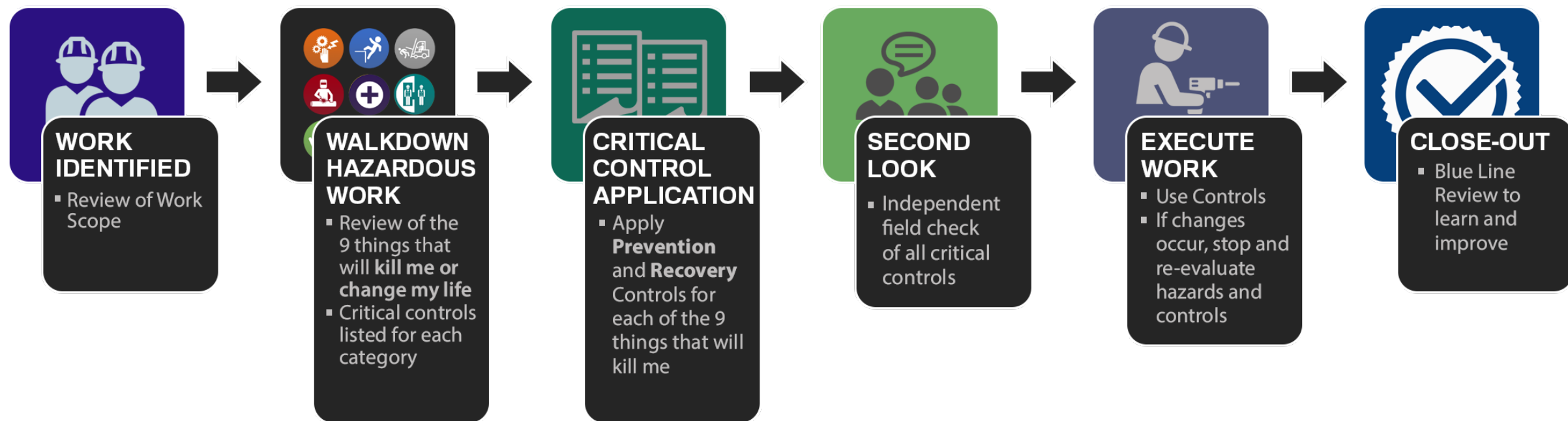


Other  
Critical  
Work

# Starting from Scratch on Permitting



- Thought Process: “When this fails, what will kill me or change my life? What controls are in place? Is that enough?”
- Utilized Google’s Sprint Process to design and prototype a completely new process within 1 week
- Spent 1 year moving from minimum viable product to field-used product, designed by our permit writers AND receivers





Mt. Holly

Do I Need a Permit?

- Isolation of Hazardous Energy
- Working At Heights
- Hot Work
- Lifting and Rigging
- MOPED
- Confined Space Ent

Permit Action

- New Permit
- Use Template
- Copy Recent
- Revalidate

Permit Information

- Permits by Name
- 2nd Look Pending
- Planned Permits
- Active Permits
- Permits in Walkdown
- Closed Permits

# HOP Application through the Tool



Issuer

Owns the work area and approves the work.

Acceptor

Most knowledgeable about the work to be done.

**SAVE MY LIFE** Production Sync is On  
Last Sync: 5/28 9:46 AM

Mt. Holly  
SML-MTH-0207 TEST

**SELECT WORK CATEGORIES**

- Isolation of Hazardous Energy**  
This process involves the steps of lock/tag/verify (LTV) and may or may not be done with a lockbox. 0
- Working At Heights**  
Performing work with a fall risk of more than 4 feet to the surface below. Consider roof edges and skylights. Usually not required when working within standard railings (scissor lift, etc.).
- Hot Work**  
Cutting, welding, or using other tools that can create sparks. 0
- Lifting and Rigging**  
Using fixed or mobile cranes to move material include Critical Lifts. 0
- MOPED**  
Activities conducted by workers on foot outside of designated pedestrian walkways and/or normal work stations where mobile equipment is in use.
- Confined Space Entry**  
Any time an entry is made into a permit-required confined space or a confined space may be declassified to non-permit required confined space. 0
- Line Breaking/Equipment Opening**  
Opening a line, tank, or process that contains or is known to contain materials that are Corrosive, Toxic, Flammable or combustible, High Temperature >140 F, Extremely Cold or Cryogenic, High Pressure >100 psig, Inert Gases, or any flowable material that meet any of the above criteria.
- Excavation and Trenching**  
Any trenches or excavations made using powered equipment or manually created (hand tools) trenches or excavations of 6 inches or more. 0
- Other Hazardous Work**  
Other hazardous work categories that can kill me or change my life if not controlled (Examples may include hydroblasting, sandblasting, under water activity, use of chainsaw, etc.).

Back Delete Review Controls



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This process involves the steps of lock/tag/verify (LTV) and may or may not be done with a lockbox. 0
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Performing work with a fall risk of more than 4 feet to the surface below. Consider roof edges and skylights. Usually not required when working within standard railings (scissor lift, etc.).
- Hot Work**  
Cutting, welding, or using other tools that can create sparks. 0
- General Hot Work Activity**  
Will NOT require a gas test
- Hot Work on vessel(s), piping, or equipment containing flammable materials**  
Will REQUIRE a gas test
- Lifting and Rigging**  
Using fixed or mobile cranes to move material include Critical Lifts. 0
- MOPED**  
Activities conducted by workers on foot outside of designated pedestrian walkways and/or normal work stations where mobile equipment is in use.
- Confined Space Entry**  
Any time an entry is made into a permit-required confined space or a confined space may be declassified to non-permit required confined space. 0
- Permit Required Confined Space Entry**  
PRCS entry
- Confined Space Declassification**  
Use this when documenting declassification of confined spaces in SML. ALL controls must be confirmed in order to declassify. If any cannot be confirmed, the space CANNOT be declassified.
- Line Breaking/Equipment Opening**  
Opening a line, tank, or process that contains or is known to contain materials that are Corrosive, Toxic, Flammable or combustible, High Temperature >140 F, Extremely Cold or Cryogenic, High Pressure >100 psig, Inert Gases, or any flowable



Issuer

Owns the work area and approves the work.

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DISCUSS AND CONFIRM EACH CONTROL

General Hot Work Activity (Hot Work)

- All flammable or combustible materials are at least 35ft. away from hot work or protected from sparks (covered, shielded, drenched, etc.). Equipment being welded on is emptied and cleaned of flammables/combustibles.
- Combustible dust will be controlled during hot work, if it can build up during the task.
- Conveyors, wall/floor openings, and systems that handle combustibles and/or flammables (dust, bark, paper, vapors, etc.) are protected from sparks, embers, torch, flames, heat transfer, etc.
- All equipment in Combustible Dust Classified Areas such as sanders, planer rooms, baghouse areas, and hog enclosures shall be shut down prior to performing hot work.
- The Fire Watch has been identified and s/he will stay at least one hour after the hot work is complete. Additional check back periods may be needed for high risk work areas every 30 minutes. HOW LONG WILL WE NEED TO PERFORM THE CHECKBACKS?
- Fire suppression systems are working and not impaired in any way. COMMENT REQUIRED
- What fire extinguishing equipment will the fire watch need? COMMENT REQUIRED

Permit Required Confined Space Entry (Confined Space Entry)

Add Gas Test

Back Delete Sign Permit



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DISCUSS AND CONFIRM EACH CONTROL

General Hot Work Activity (Hot Work)

Permit Required Confined Space Entry (Confined Space Entry)

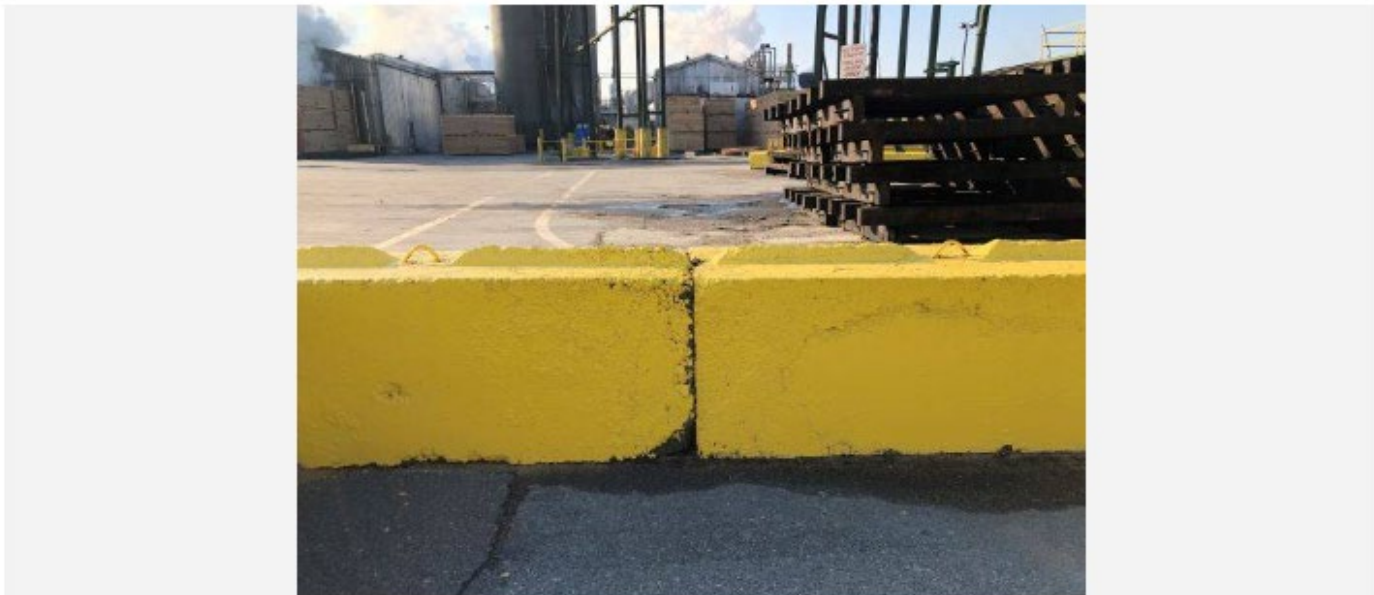
- Confirm the confined space is prepared for entry (emptied, purged, cleaned, ventilated) and LTV has been completed with positive isolation for hazardous materials (double block & bleed, blank/blind, misaligned piping, etc.).
- If the opening creates a fall hazard, barricades or railings in place.
- Manways/hatches/openings have barricade (with tape or sign) when attendant/hole watch is not in place.
- Atmosphere will be continuously monitored with a calibrated instrument for oxygen, LEL, H2S, CO and other chemicals (as required by the site).
- Continuous ventilation in place and working unless natural ventilation can achieve the required air changes (minimum 6 air changes per hour).
- Attendant/hole watch has plan to communicate with workers in space and working a communication device to contact rescue services. How will the attendant contact rescue services? COMMENT REQUIRED
- For non-entry rescue, confirm entrants are wearing a harness with a lifeline connected to the D-ring (unless lifeline/harness creates additional hazards).
- If the space has the potential for hazardous atmospheres, confirm that a trained, fully staffed rescue team is in place and can provide timely rescue, depending on the hazards of the space.

Atmospheric Testing

Add Gas Test

Back Delete Sign Permit

✓ **P** 1. A temporary no-fly zone is in place for the area where pedestrian-based work activities are being performed (Best practice: Mobile equipment rerouted or barriers significant enough to protect employees/slow lift.) ^



Comment (optional)

Type your comment

Add Photo

Remove control

Confirm

✓ **R** 5. PPE identified and worn (eye, face, skin, respiratory, etc.) until the line or vessel has been completely opened and the hatchway, manway, flange, or pipe has been completely removed so workers can visually verify there are no signs of obvious plugs or bridging of material. WHAT PPE WILL BE WORN? COMMENT REQUIRED ^

First Break PPE (for reference)	Body	Hands		Eyes		Respiratory*		Other
	Chemical Suit & Boots	Yellow Latex Gloves	Green Neoprene Gloves	Goggles	Face Shield	Personal Airspace Monitor		
Aluminum Sulfate, Sodium Sulfate	X	X		X	X			
Magnesium Sulfate	X			X	X			
Black Liquor, Hydrogen Peroxide, Caustic (all concentrations), Sulfuric Acid/Sulfuric Acid, White Wood Liquor	X		X	X	X			
Chlorine Dioxide (CDO), Sulfur Dioxide (SO2)	X		X	X	X	X		No Contact Lenses
Chlorine Gas (CL2), Sulfur Hexafluoride (SF6)		X		X				Long Sleeves
Chlorine Gas (CL2), Sulfur Hexafluoride (SF6)		X		X	X	X		Chem. Resistant Pants
Diethyl Ether, Gasoline, Diesel, Propane, Acetylene, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid	X	X	X	X	X	X		Chem. Resistant Pants
Fluorine Gas (F2), Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid	X	X	X	X	X	X		No Contact Lenses
Hydrochloric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid	X		X	X	X	X		No Contact Lenses
Hydrochloric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid	X		X	X	X	X		Resistant Gloves
Hydrochloric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid	X	X		X	X	X		Resistant Gloves
Hydrochloric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid	X	X	X	X	X	X		Long Sleeves
Hydrochloric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid	X	X	X	X	X	X		Cartridge Respirator Required
Hydrochloric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid	X (not body)		X	X	X			
Hydrochloric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid	X (not body)		X	X	X			
Hydrochloric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid	X		X	X	X			Resistant Gloves
Hydrochloric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid, Sulfuric Acid, Hydrochloric Acid, Hydrofluoric Acid	X		X	X	X			Resistant Gloves
Others:								

\* Refer to the SDS for appropriate Respiratory Protection if above Exposure Limit and for chemicals not on this list

Comment (Required)\*

Type your comment

Add Photo

Remove control

Confirm

# 2<sup>nd</sup> Set of Eyes

Independent look confirming prevention and recovery controls in place.

**SAVE MY LIFE** Sync is On  
Production Last Sync 5/08 10:14 AM

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**General Hot Work Activity (Hot Work)**

- Are there any combustible materials nearby? If so, are they covered or drenched so they wont catch fire?  ▾
- Look for air intakes, fans, areas where sparks can get to a different floor, and conveyors in the area.  ▾
- Check the area to make sure hot work will not take place in one of these classified areas while equipment is operating.  ▾
- Ask who the fire watch will be. Do we need an extra fire watch? How does the fire watch call for help? If combustibles/flammables are difficult to see or remove, make sure there is a plan for check back periods every 30 minutes after fire watch is complete.  ▲  
**Comment: Check back periods needed for 3 hours after the work, every 30 minutes, due to high risk work area (combustible dust).**

**Permit Required Confined Space Entry (Confined Space Entry)**

- Ask to see the positive isolation (double block and bleed, a blank/blind, or misaligned piping, etc..)  ▾
- Check that the hole watch is going to be doing continuous monitoring.  ▾
- Look for air movers at the space. If none are present, ask how the space will be ventilated.  ▾
- The comment below lists how the hole watch will communicate with workers in the space and call for rescue services. Confirm equipment is on hand and ready to use.  ▲  
**Comment: Hole watch will communicate with entrants via verbal communication. He has a radio and will use channel 1 in case of an emergency. He also has a cell phone with good service, if needed.**
- Check to see if entrants have lifelines. If not, ask how the lifeline creates a greater hazard.  ▾

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**WORK CATEGORIES SELECTED**

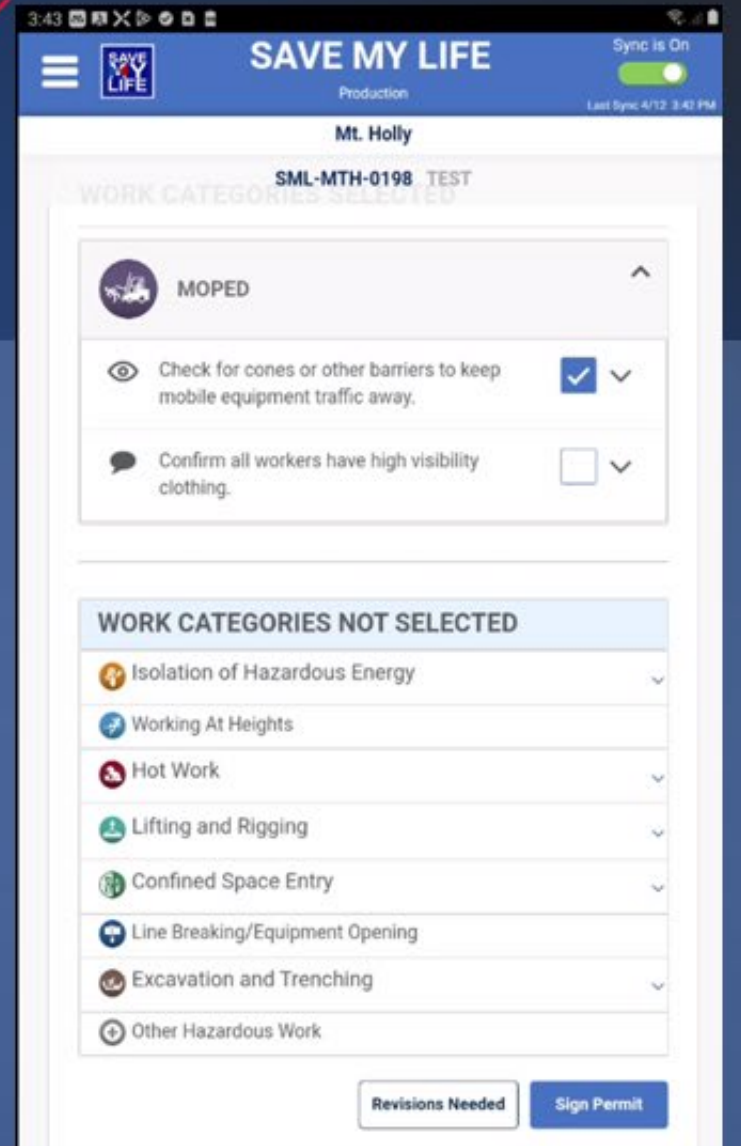
- General Hot Work Activity (Hot Work) ▾
- Permit Required Confined Space Entry (Confined Space Entry) ▾

**WORK CATEGORIES NOT SELECTED**

- Isolation of Hazardous Energy ▾
- Working At Heights ▾
- Hot Work ▾
- Lifting and Rigging ▾
- MOPED ▾
- Confined Space Entry ▾
- Line Breaking/Equipment Opening ▾
- Excavation and Trenching ▾
- Other Hazardous Work

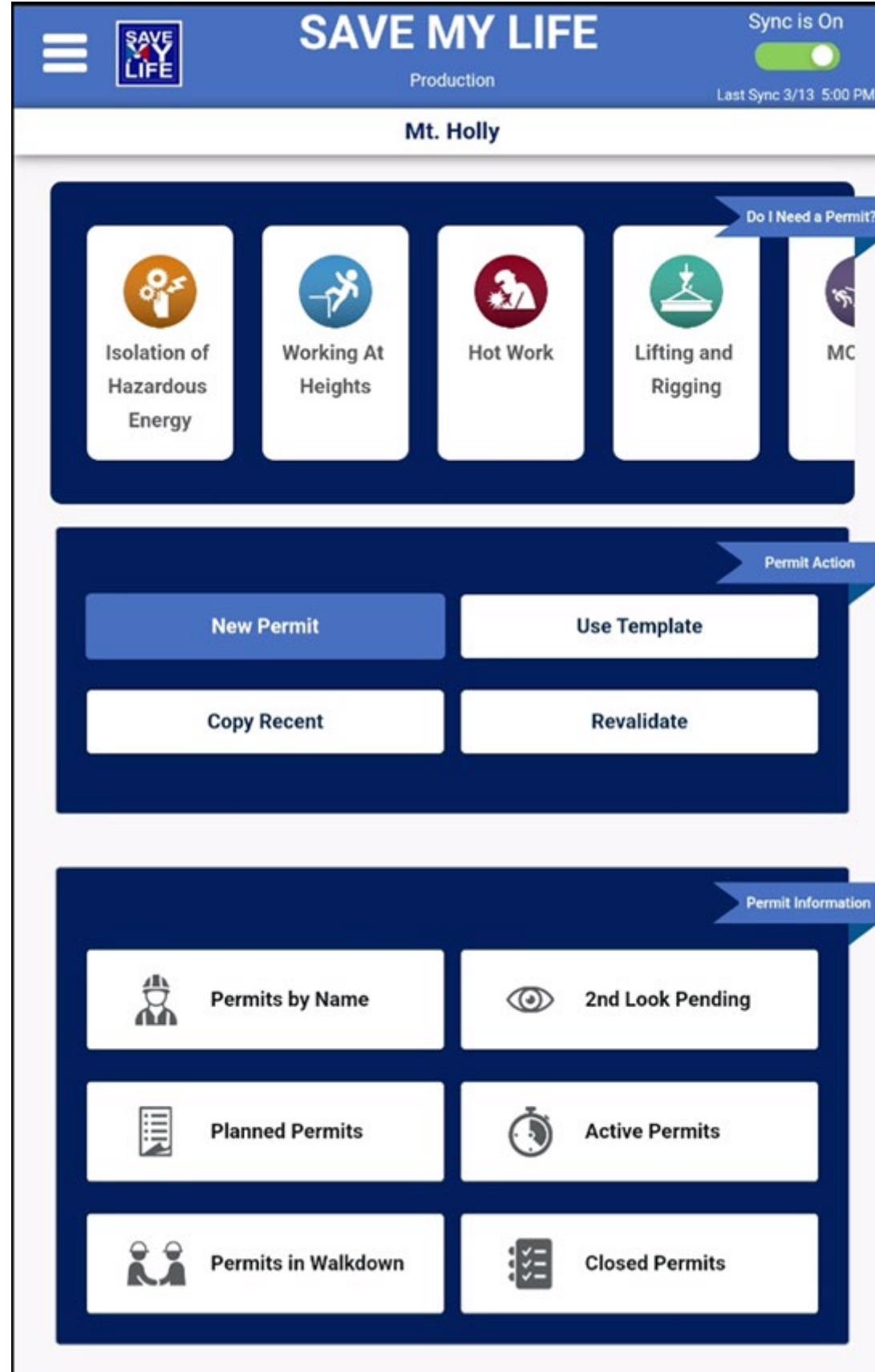
Revisions Needed Sign Permit





# Connectivity

- Wi-Fi not needed to permit.
- Wi-Fi does help “sync” permits on other devices and on the App Manager for real-time viewing.







# What We Got Right

- We pursued leader buy-in first
- We asked the front line to tell us what they need, and asked them to design it [Operator/Maintenance-centric]
- We set clear criteria for our minimum viable product
- We developed a strong implementation plan; We had to alter the plan due to COVID



# ..But If We Had To Do It Over Again

- Design for poor connectivity from the start
- Increase front-line involvement through development and testing even after it was designed
- Connect earlier with auxiliary groups that impact the success of the process.



# Safety Immersive Training: the “Bad Day” without the “Bad Day”





# Immersive Strategy Approach

## The “Why”



- Module 1 - Trainee will experience bad day
- Module 2 - Trainee will see what good looks like
- Module 3 - Trainee tests their skills to prevent the bad day

*Designed to follow the Human Action Model*

## The “What”



Immersive (360) meets the training requirements in the GP Compliance Standard for that area.

Example: Lock Tag Verify (LOTO):

- LTV Procedures
- Types of Locks
- Lock Removal
- Types of Energy Sources
- Energy Restoration
- Lockout Interruption & Troubleshooting
- Definitions
- Alternative Protective Measures
- Periodic Inspections

# Connection to Save My Life

- 1 What can kill me?
- 2 What controls are in place?
- 3 Is that enough?

**SAVE MY LIFE**  
Training Environment

Uncontrolled energy SML-WDY-0217 - TEST FOR SCREENSHOTS

**DISCUSS AND CONFIRM EACH CONTROL**

**Isolation of Hazardous Energy**

- P** A. Employees that work in the area have been notified of the lockout.
- P** B. Confirm that the procedure matches the work to be completed (procedure required if more than one energy source). ENTER THE PROCEDURE NAME
- P** C. Isolation points (disconnects, valves, etc.) are in position and locked according to the procedure. (Can confirm by reviewing completed procedure OR walkdown)
- P** D. If lockboxes are used, confirm the LTV procedure is completed, posted, and all keys are secured in the lockbox. ENTER LOCKBOX IDENTIFIER OR TAKE PHOTO OF LOCKBOX:
- P** E. If lockboxes are used, a department lock/controlling lock are in place. (Personal locks must be in place before work begins.)
- R** F. How was zero energy verified (such as with a "try" test)? COMMENT REQUIRED

Remove control Confirm

**Isolation of Hazardous Energy**

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**Equipment/System Name: Conveyor 1A**

Conveyor 1A

**Types and magnitude of energy**

Local Disconnect - Conveyor 1A 480V three phase

MCC Room - MCC [3-C-2] Conveyor 1A 480V three phase

**Specific Steps to Lock, Tag, Verify the Equipment**

- 1) Shut Conveyor 1A OFF at the Equipment Control Panel
- 2) Shut Conveyor 1A at the Local Disconnect and apply lock
- 3) Shut Conveyor 1A at the MCC [3-C-2] and apply lock
- 4) Perform Try/Test at the Equipment Control Panel by pressing the conveyor button and verify that there is no movement

3-C-2

VAC VDC  
L2 L3  
**POWER**  
L1 GND

NO

Life





System /  
Equipment Locks



Department /  
Controlling Locks



Personal Locks





**WARNING**

POTENTIAL  
COMBUSTIBLE  
DUST HAZARD

Click here to view  
an arc flash incident

# DEMO

# Immersive

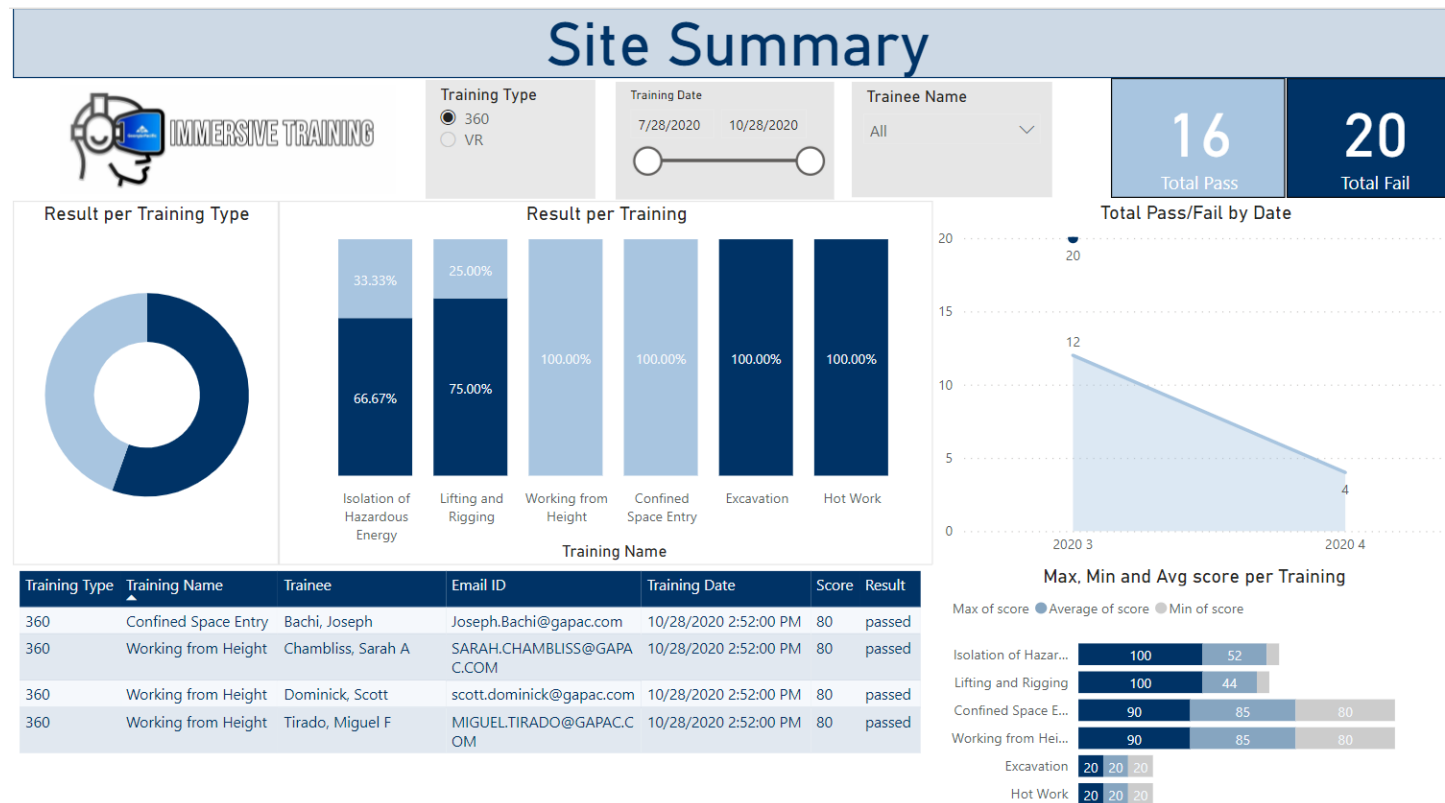
# Training

VR

360

# Immersive Training Data & Dashboards

- Site Dashboard
- Trainee Summary Dashboard
- Site Summary Dashboard





# Take-Aways

- GP has seen benefits of bringing technology to the worker to improve safety
- It's important to keep the vision in front of you to avoid being distracted by all the new data you're bringing in
- Employing the concepts of HOP is critical to success- any tools to benefit the frontline need to be designed/tested/improved by the frontline
- If you don't see what you need on the market- don't let that stop you



SCAN ME