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# Integrating High Risk Activities with Last Planner System®

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OVERCOMING OUR INDUSTRY CHALLENGES WITH LEAN SOLUTIONS

October 17, 2019



# Objectives:

- Define Serious Injuries and Fatalities (SIF) and High Risk Activities (HRA)
- Focused Strategy to prevent SIFs
- Last Planner System® ideal tool to integrate HRAs with planning



# Heard This Before?

- Great Safety Record Over Last 2 Years
- Lower Than Ever Recordable Rates
- No Lost Time Incident
- Recent Serious Incidents
- Confused and Upset Leadership;  
Unexplainable by Our Safety Leaders



Low Injury Rates  $\neq$  Zero Serious Incidents

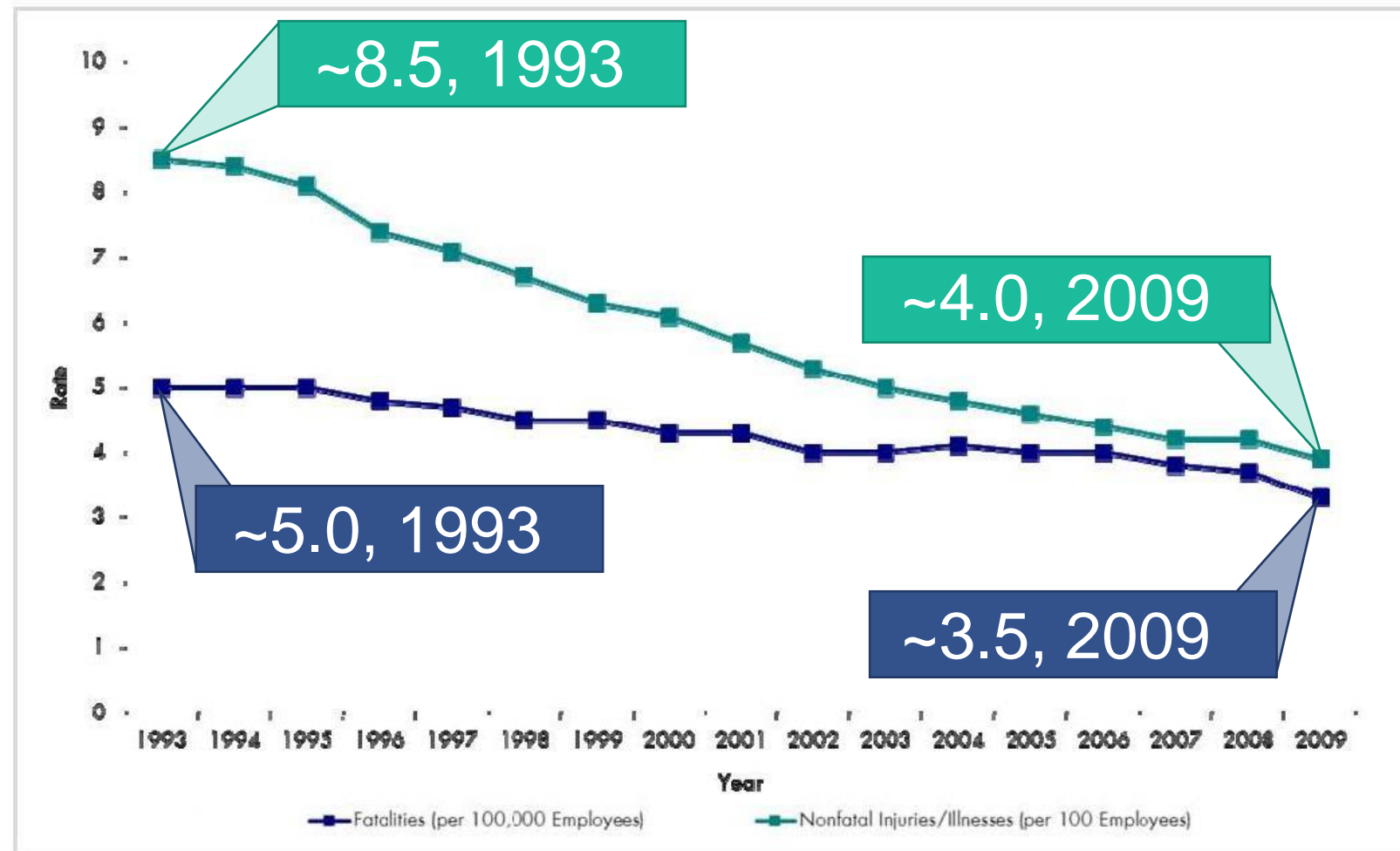
# Advancing Traditional Safety Management



# US National Data

## Occupational Fatalities and Nonfatalities

(United States Department of Labor, Bureau of Labor Statistics, 2011)



Recordable incident rates have steadily declined, while fatality rates have stayed essentially level.



# Serious Injuries and Fatalities (SIF)

## Two Types:

- **Life-Threatening:** one that if not immediately addressed is likely to lead to the death.
- **Life-Altering:** one that results in permanent or long-term impairment.



# Definition of SIF (Serious Injury and Eatalities)

SIF = Any injury or illness that resulted in:

**Life-threatening** injury or illness: one that if not immediately addressed is likely to lead to the death of the affected individual. Examples include, but are not limited to:

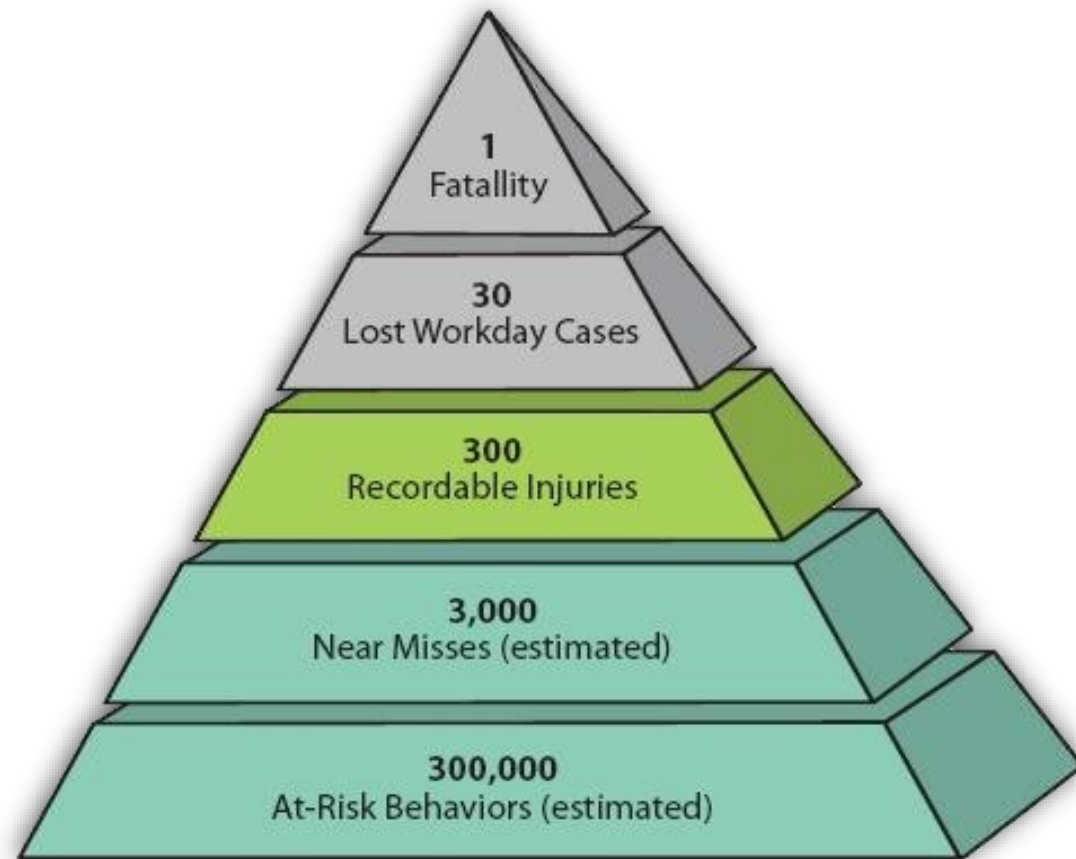
- **Laceration or crushing injuries or significant blood loss**
- **Damage to the brain or spinal cord or Severe burns**
- **Use of cardiopulmonary resuscitation or defibrillator**
- **Chest or abdominal trauma affecting vital organs**

**Life-altering** injury or illness: one that results in permanent or long-term impairment.

Examples include, but are not limited to:

- **Significant head injuries**
- **Paralysis**
- **Amputations**
- **Major Burns or disfiguring injuries**

# The Old Paradigm



“Safety Pyramid”: the idea that minor injuries predict serious ones is embedded in our culture.

## Assumption of Heinrich’s Safety Triangle:

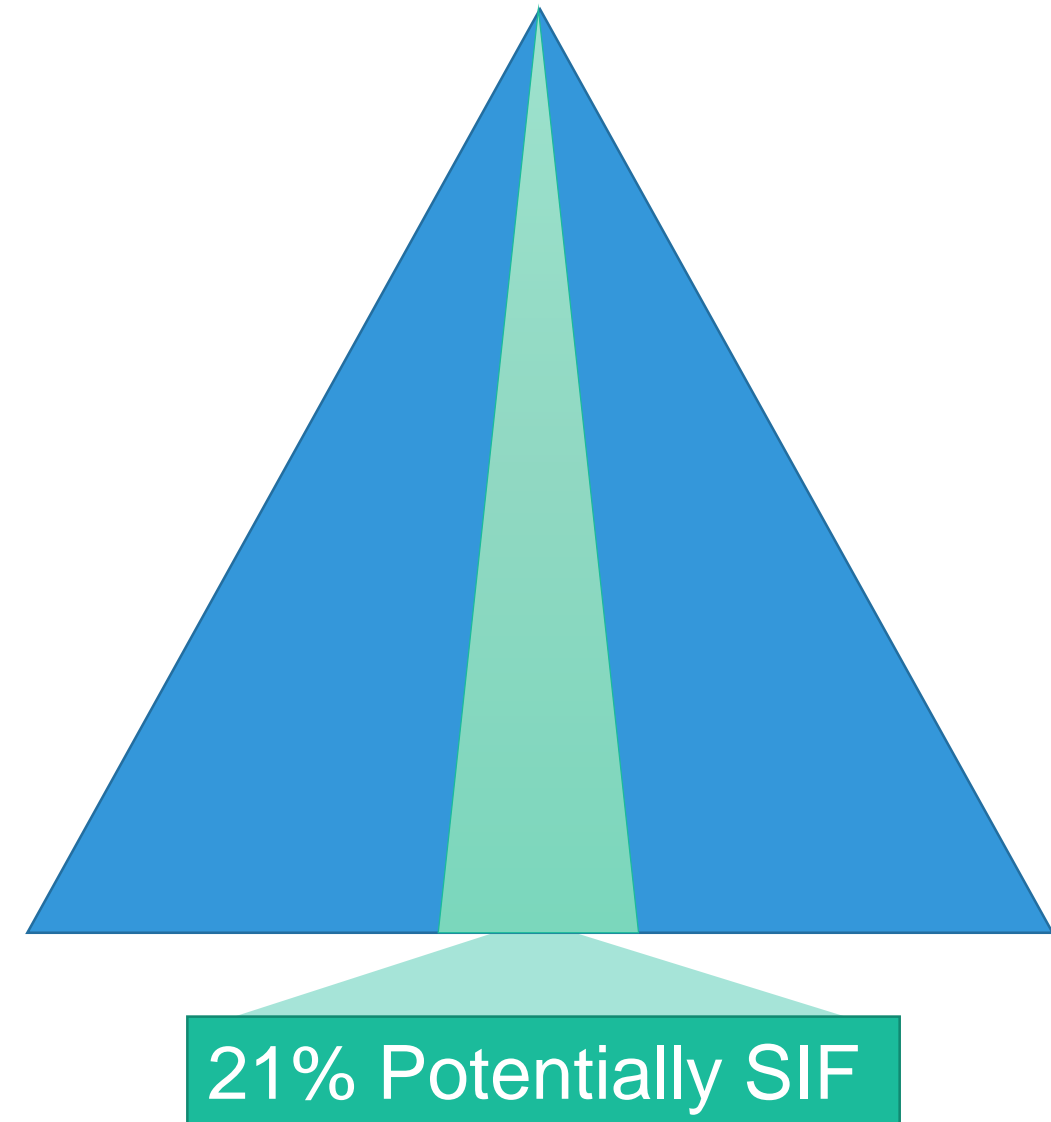
1. As injuries increase in severity their number decreases in frequency.
2. All injuries of low severity have the same potential for serious injury.
3. Injuries of differing severity have the same underlying causes.
4. One injury reduction strategy will reach all kinds of injuries equally
  - Reducing minor injuries by 20% will also reduce major injuries by 20%.



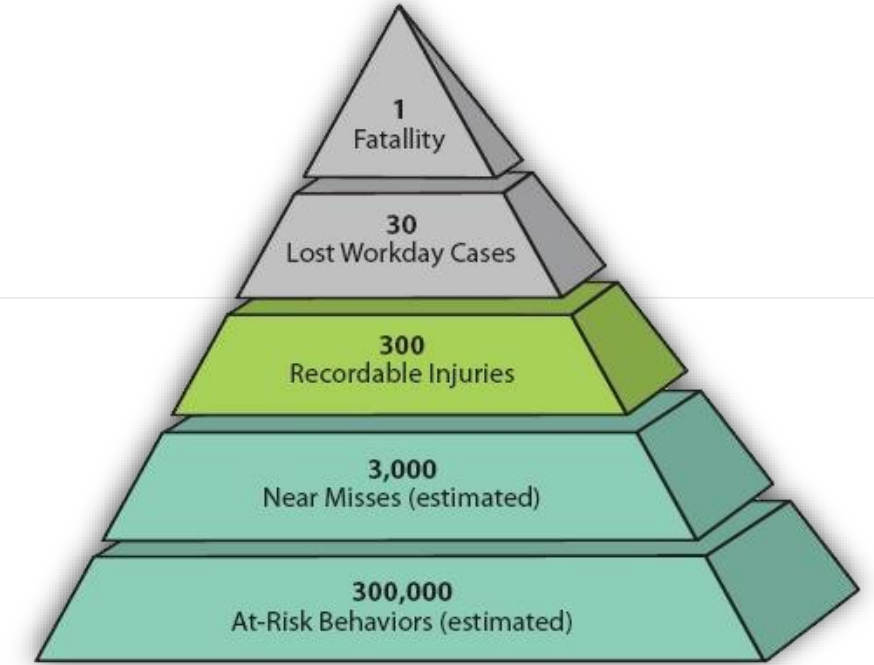
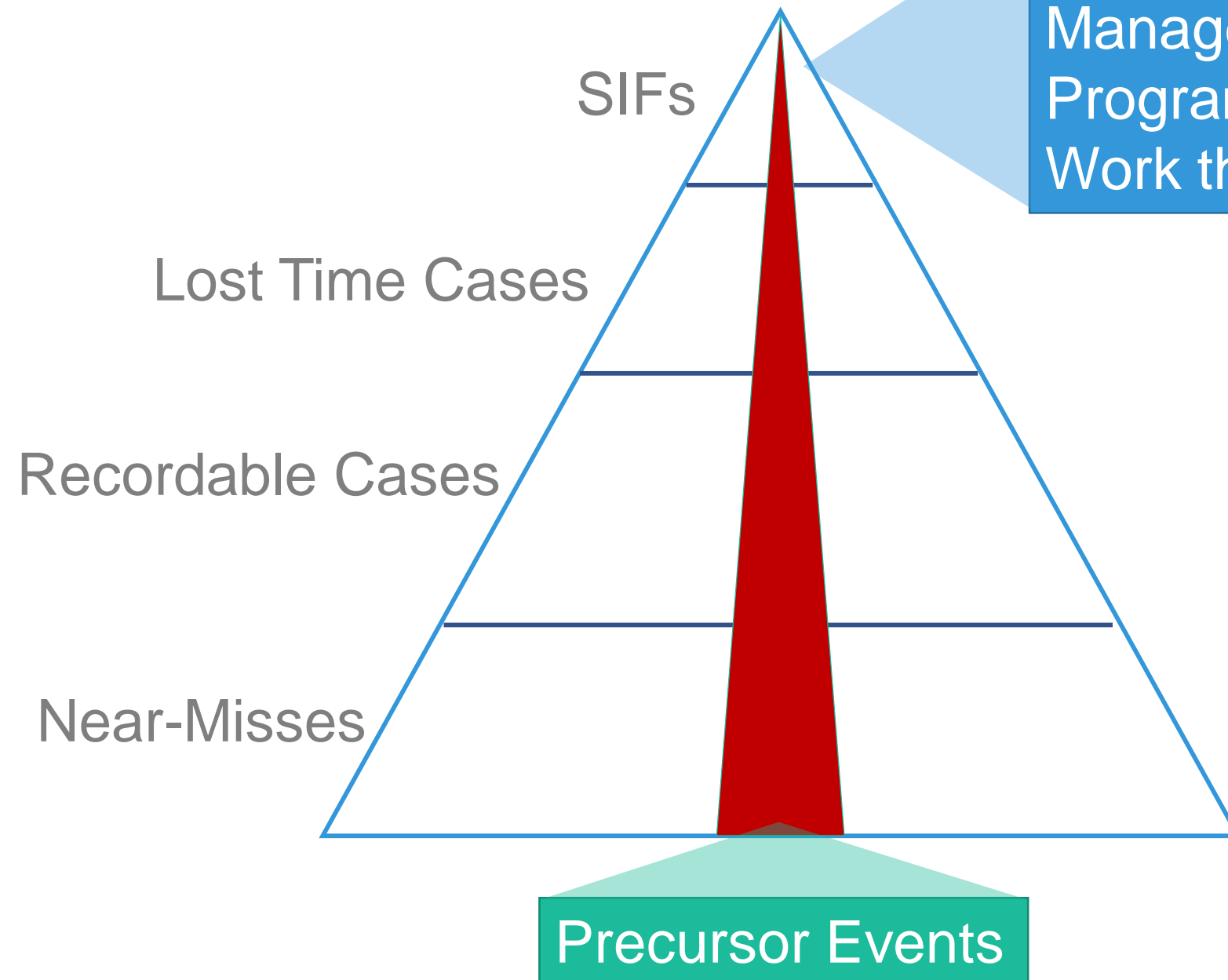
# The Reality

- SIFs will **not** be reduced by working at the bottom of the pyramid alone.
  - Causes and correlations are different.
- SIF reduction demands a **different** focus and strategy.
- Precursors of SIFs can be identified and measured.

**Precursor:** unmitigated high risk situation which will result in a serious / fatal injury if continues.



# The New Paradigm



Continue to monitor and ensure regulatory compliance and execution of traditional safety management...

...but the top priority is the elimination of SIFs.

# Understanding SIF Potential

**Case A:** worker fell while walking across a freshly cleared construction site

**Result:** bruising / swelling of knee

- Classified as “First-Aid” – **SIF = No**

**Case B:** worker fell 15’ after stepping into a hole covered by plywood, but secured

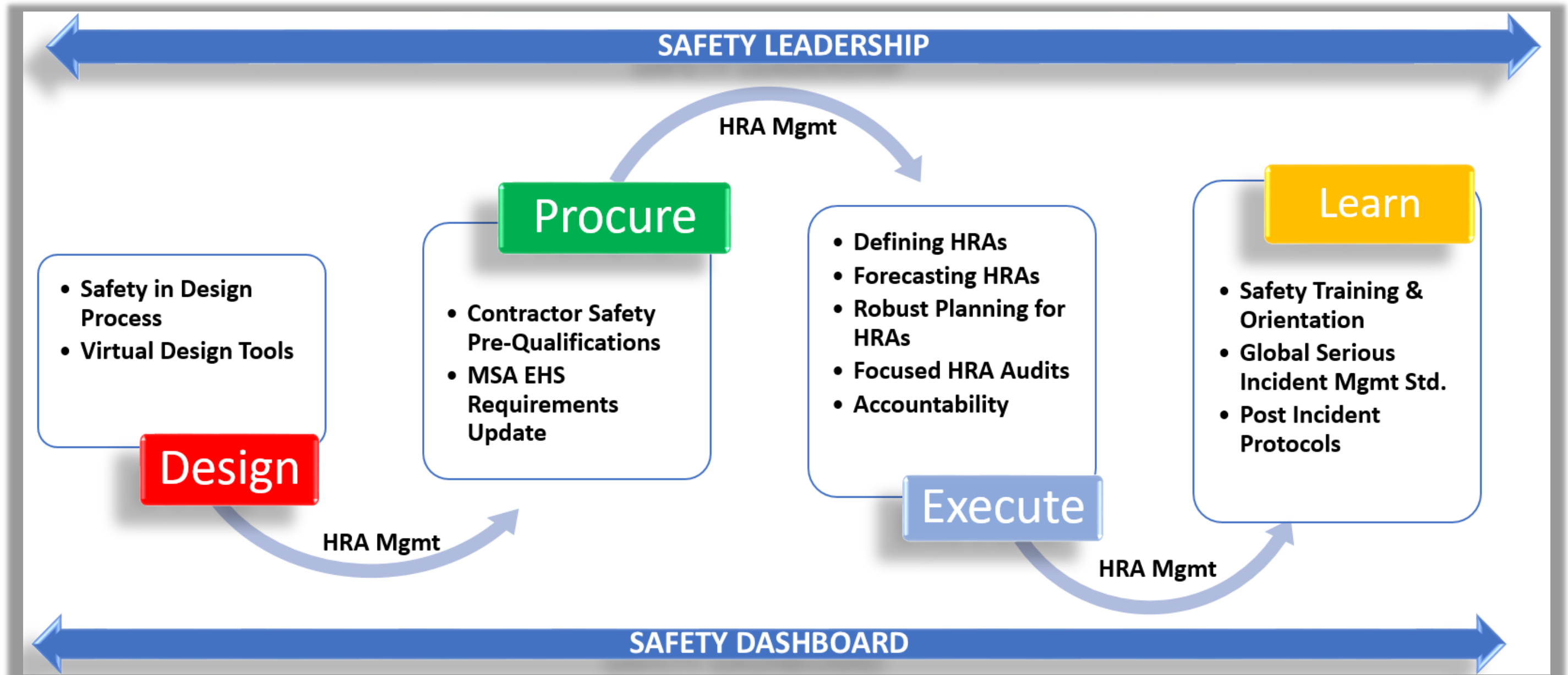
**Result:** bruising / swelling of arm and rib cage

- Classified as “First-Aid” – **SIF = Yes**

**Potential**, in addition to, **actual** severity must be identified and analyzed.

Worst **Potential** Severity (WPS) Rate =  $\#SIF \times 200,000 / \text{Total Workhours}$

# Next Generation of Safety

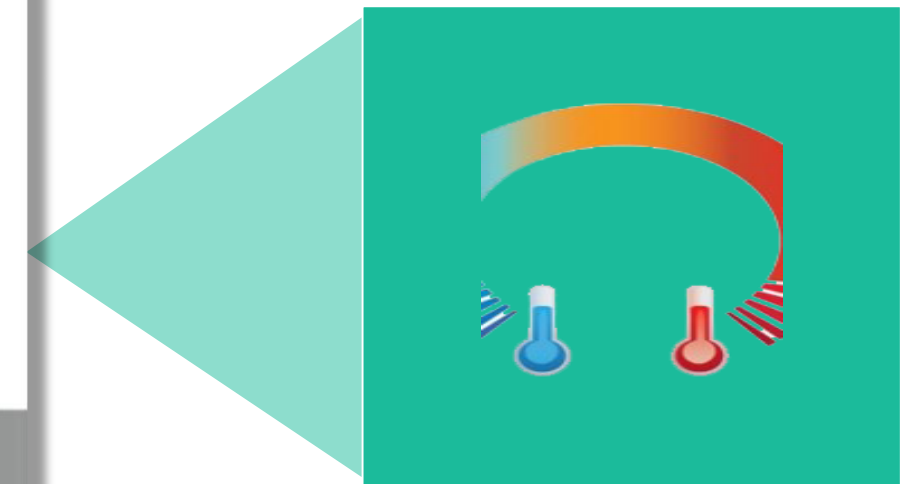




# Next Generation of Safety



Noise

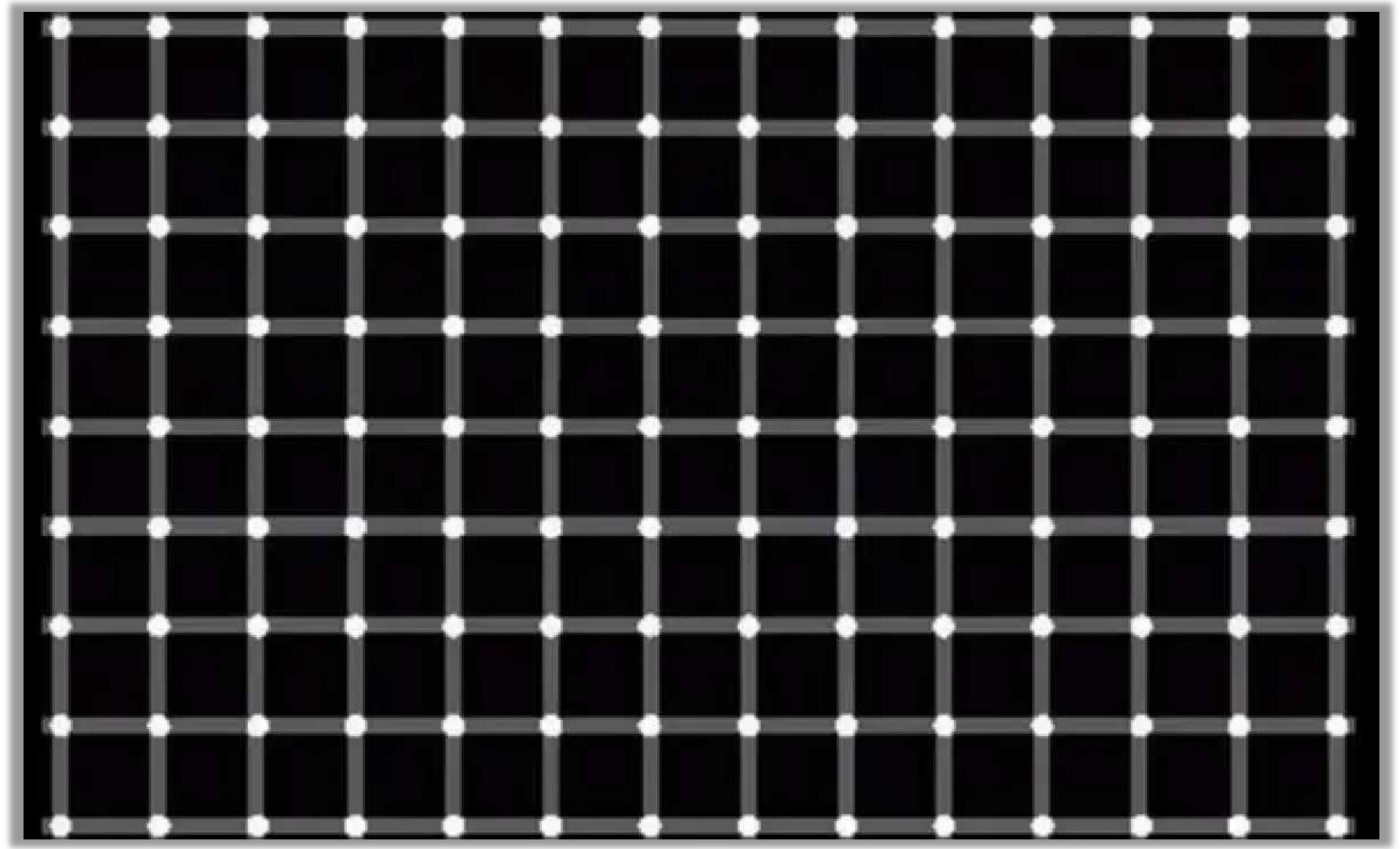


Temperature Extremes

# Integrate SIF Mitigation into Project Planning

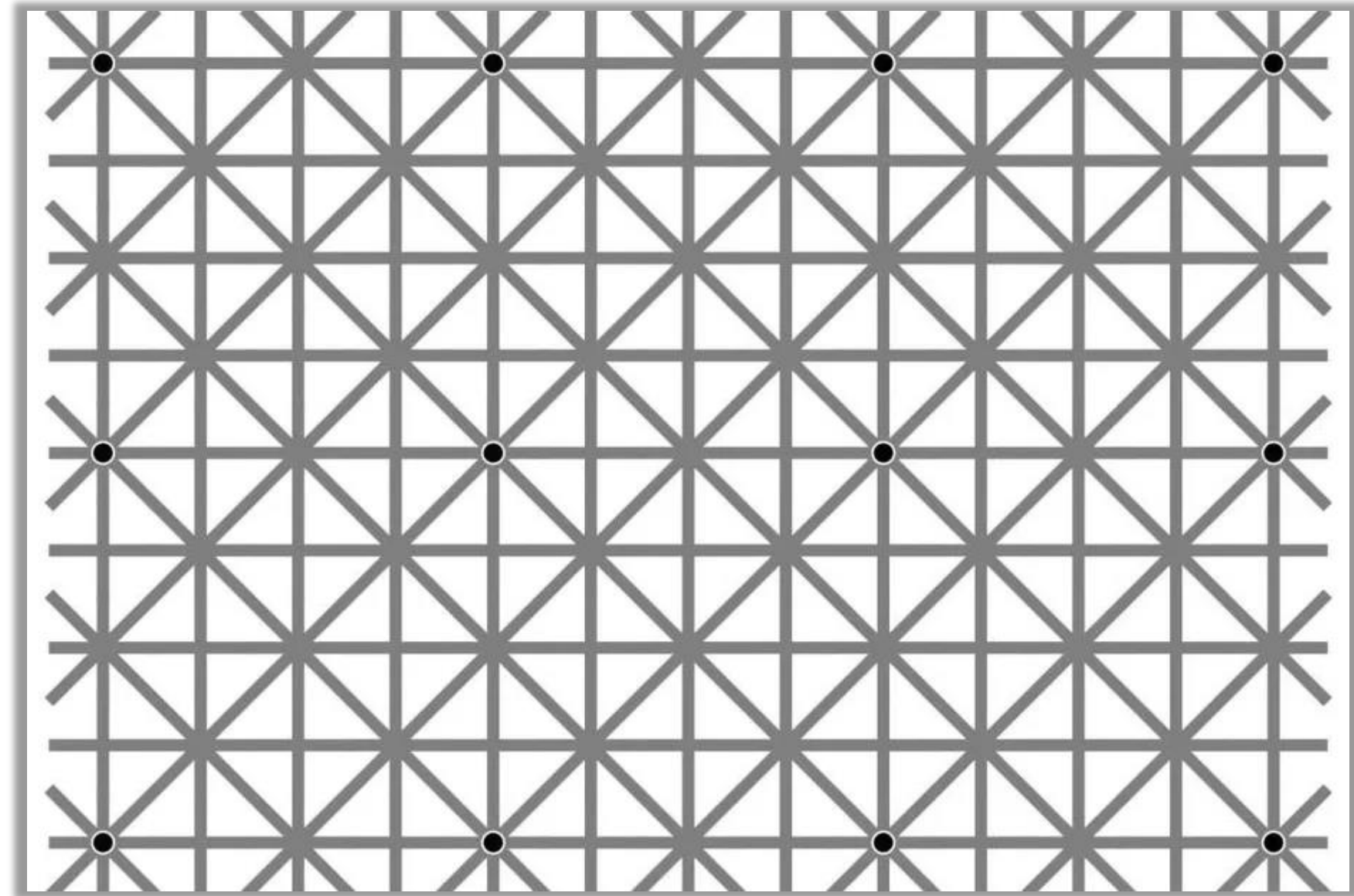


# Forecasting & Managing ALL Risks on a Project



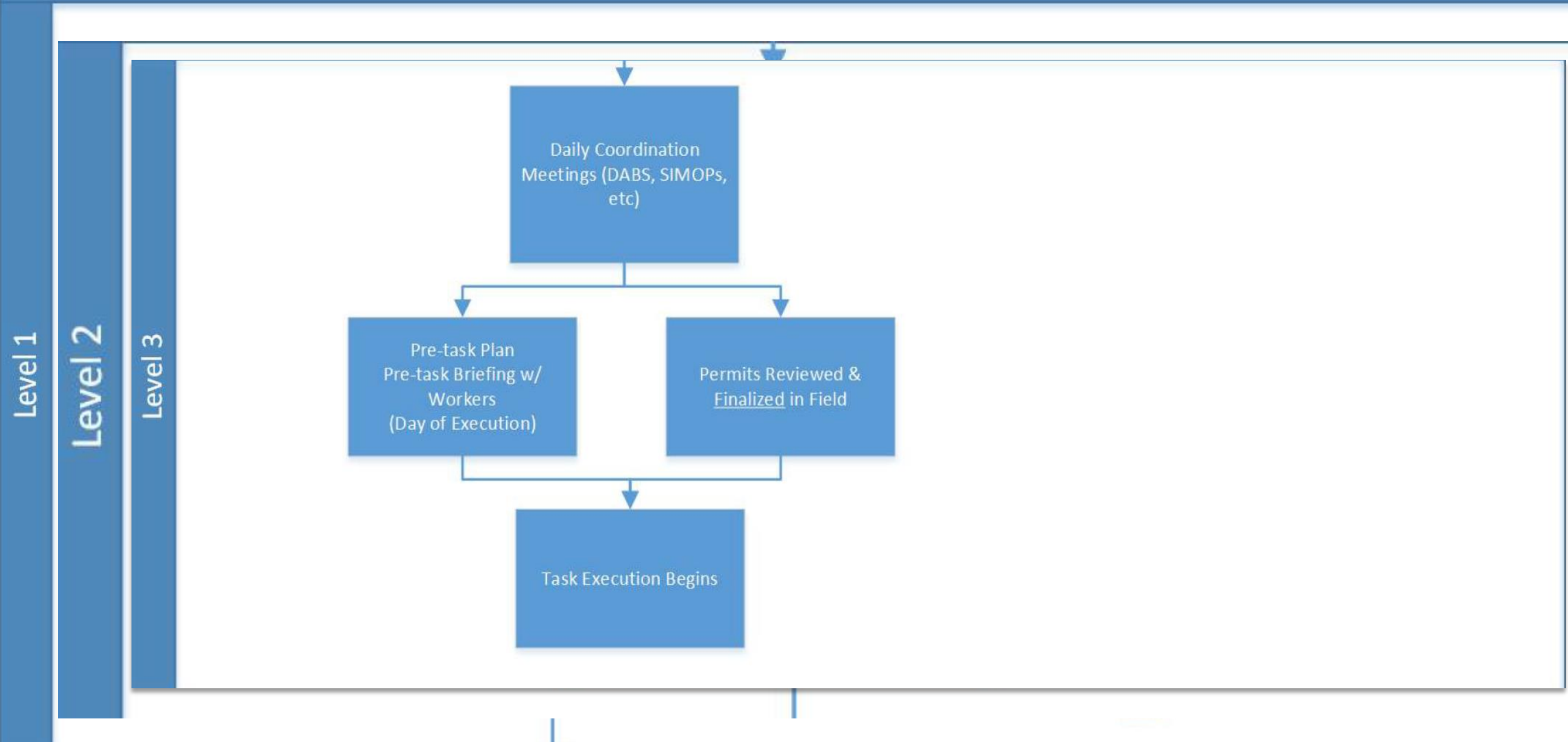
# Forecasting & Managing Risks

How many safety risks, represented by black dots, do you see?





# High Risk Activity (HRA) Forecasting & Planning Process Flow



# High Risk Activities Identified In Project Schedule

Activity ID	Activity Name	Original Duration	Start	Finish	DSM07 Primary HRA	DSM07 Secondary HRA
COLO-3-CELL-C-5530	Terminate Load Side PDU Cabling	6	12-Aug-19 A	17-Aug-19	P-WH	S-E
COLO-3-CELL-C-6040	Terminate Line Side PDU Cabling	6	19-Aug-19	24-Aug-19	P-WH	S-E
COLO-3-CELL-C-4320	Install MOR Cabinets	2	21-Aug-19	22-Aug-19	P-MH	S-N/A
Electrical Room						
COLO-3-CELL-C-4580	Install Lighting	6	09-Aug-19 A	17-Aug-19	P-WH	S-E
COLO-3-CELL-C-6020	Set Inside Lineup Electrical Room Equipment	6	15-Aug-19 A	19-Aug-19	P-L	S-MH
COLO-3-CELL-C-4530	Install EPMS/BAS Pathways	3	20-Aug-19	22-Aug-19	P-WH	S-MH
COLO-3-CELL-C-4570	Terminate Overhead Cable	12	22-Aug-19	05-Sep-19	P-E	S-MH
COLO-3-CELL-C-4510	Terminate Underground Cable at LVS01	12	22-Aug-19	05-Sep-19	P-E	S-MH
COLO-3-CELL-C-5180	Terminate and Test CAHU Conductors	6	26-Aug-19	31-Aug-19	P-E	S-MH
COLO-3-CELL-C-4370	Install EPMS/BAS Cabinet	2	06-Sep-19	07-Sep-19	P-MH	S-N/A
Cell D						
COLO-3-CELL-A-6020	Set Inside Lineup Electrical Room Equipment	4	22-Aug-19	26-Aug-19	P-L	S-MH
COLO-3-CELL-A-4520	Install EPMS/BAS Pathways	3	27-Aug-19	29-Aug-19	P-WH	S-MH
COLO-3-CELL-A-4580	Terminate Overhead Cable	12	29-Aug-19	12-Sep-19	P-E	S-MH
COLO-3-CELL-A-4410	Terminate Underground Cable at LVS01	12	29-Aug-19	12-Sep-19	P-E	S-MH
COLO-3-CELL-A-5180	Terminate and Test CAHU Conductors	5	03-Sep-19	07-Sep-19	P-E	S-MH
COLO-3-CELL-A-4300	Install EPMS/BAS Cabinet	2	13-Sep-19	14-Sep-19	P-MH	S-N/A
Main Colo						
COLO-3-CELL-D-4070	Install Electrical Overhead Branch	45	08-Jul-19 A	28-Aug-19	P-WH	S-MH
COLO-3-CELL-D-6230	Install Perimeter Telecom Tray	9	29-Aug-19	09-Sep-19	P-WH	S-MH
COLO-3-CELL-D-4090	Install Overhead Fire Alarm Work	6	07-Sep-19	13-Sep-19	P-WH	S-MH
Pull PDU to HAC Bus Feeders						
COLO-3-CELL-D-5600	Pull PDU to HAC Bus Feeders	6	16-Aug-19	22-Aug-19	P-WH	S-E

COLO-3-CELL-C-4580      Install Lighting

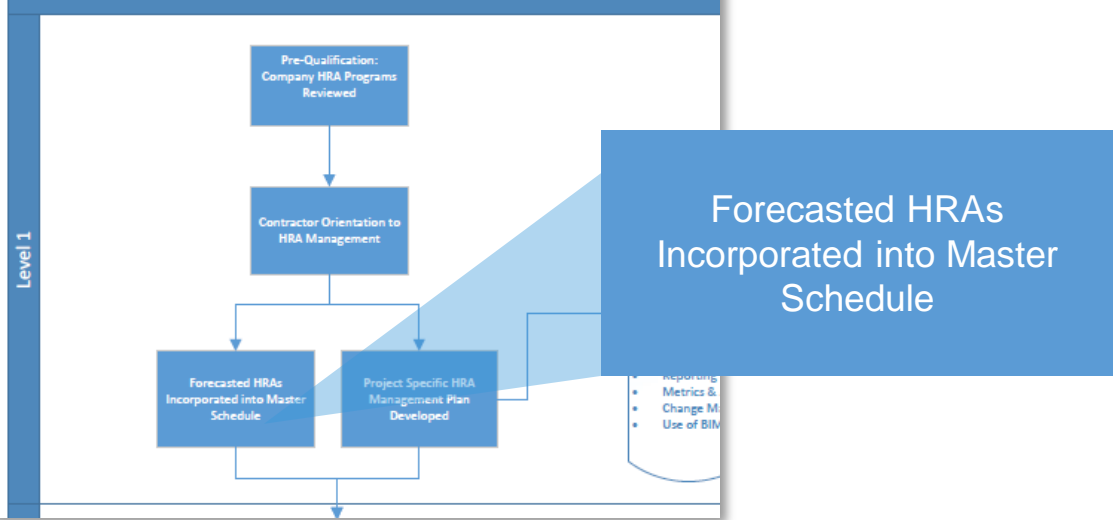
COLO-3-CELL-C-6020      Set Inside Lineup Electrical Room Equipment

COLO-3-CELL-C-4530      Install EPMS/BAS Pathways

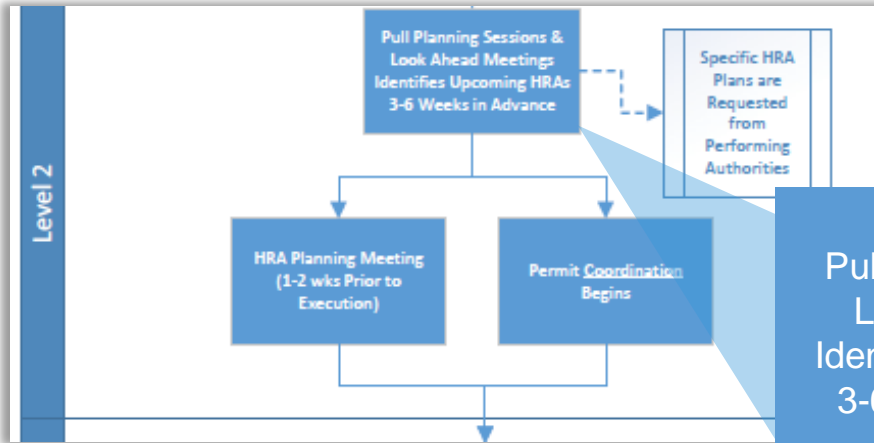
DSM07 Primary HRA	DSM07 Secondary HRA
P-WH	S-E
P-WH	S-E
P-MH	S-N/A
P-WH	S-E
P-L	S-MH
P-WH	S-MH
P-E	S-MH
P-E	S-MH
P-E	S-MH
P-MH	S-N/A

P-WH	S-E
P-L	S-MH
P-WH	S-MH
P-E	S-MH
P-E	S-MH
P-E	S-MH
P-MH	S-N/A
P-WH	S-MH
P-WH	S-MH
P-WH	S-MH
P-WH	S-E

High Risk Activity (HRA) Forecasting & Planning Process Flow



P-L      S-MH



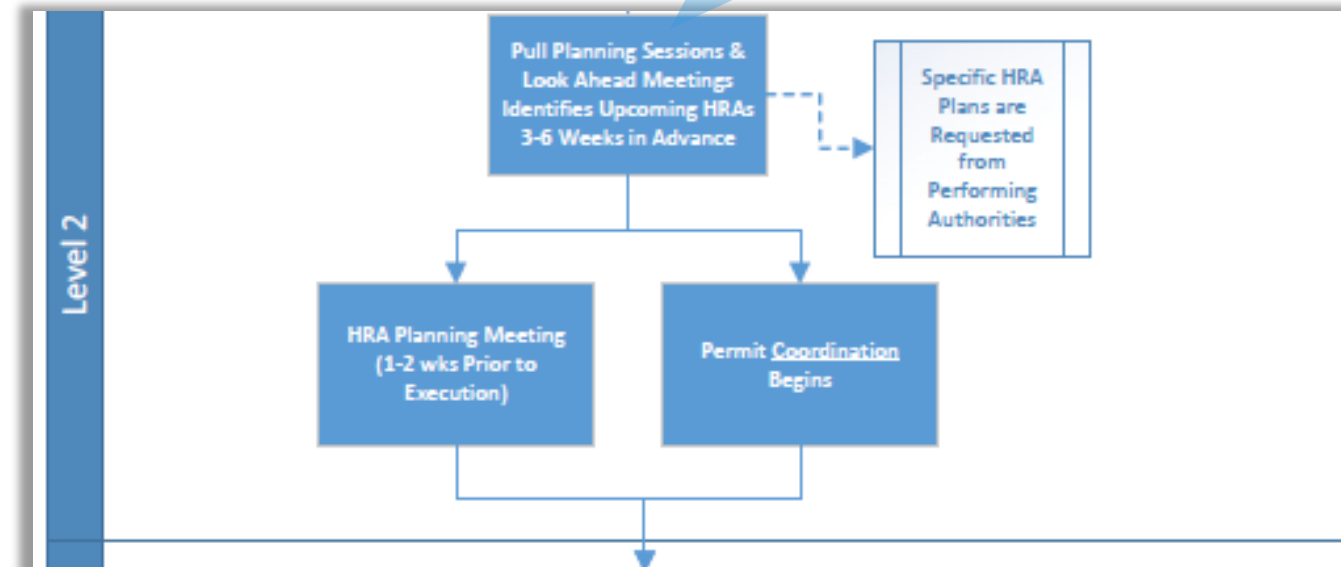
Pull Planning Sessions & Look Ahead Meetings Identifies Upcoming HRAs 3-6 Weeks in Advanced

# High Risk Activity Identified In Pull Plans

The image shows a 'Pull Plan Post-it' form from Turner Construction. The form has a purple border and the Turner logo at the top. It includes the following fields:

- ✓ TASK DESCRIPTION
- ✓ # WORKDAYS
- ✓ REQUIRED PREDECESSORS
- ✓ PS ID
- ✓ HRA ID (highlighted with a red box)

Pull Planning Sessions & Look Ahead Meetings Identifies Upcoming HRAs 3-6 Weeks in Advanced

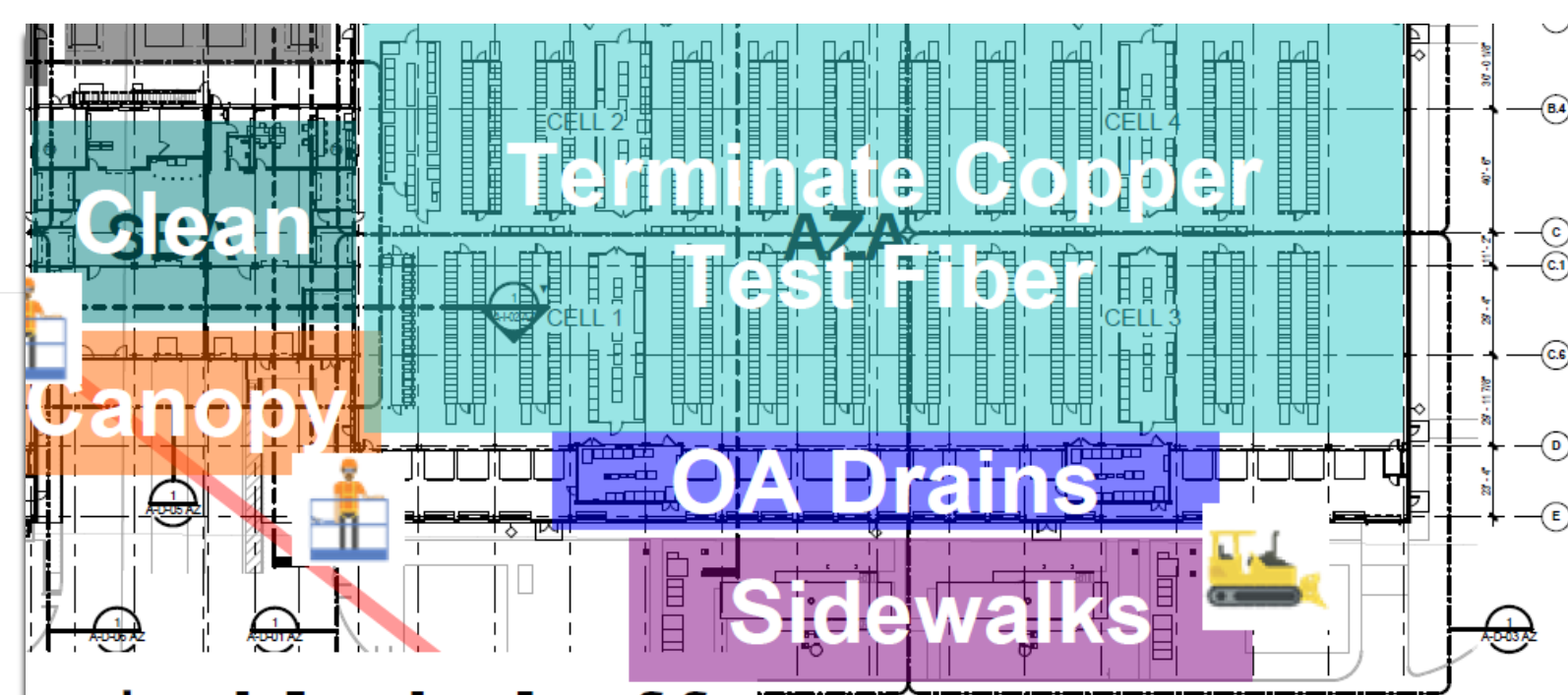


# High Risk Activity Identified In Weekly Work Plans

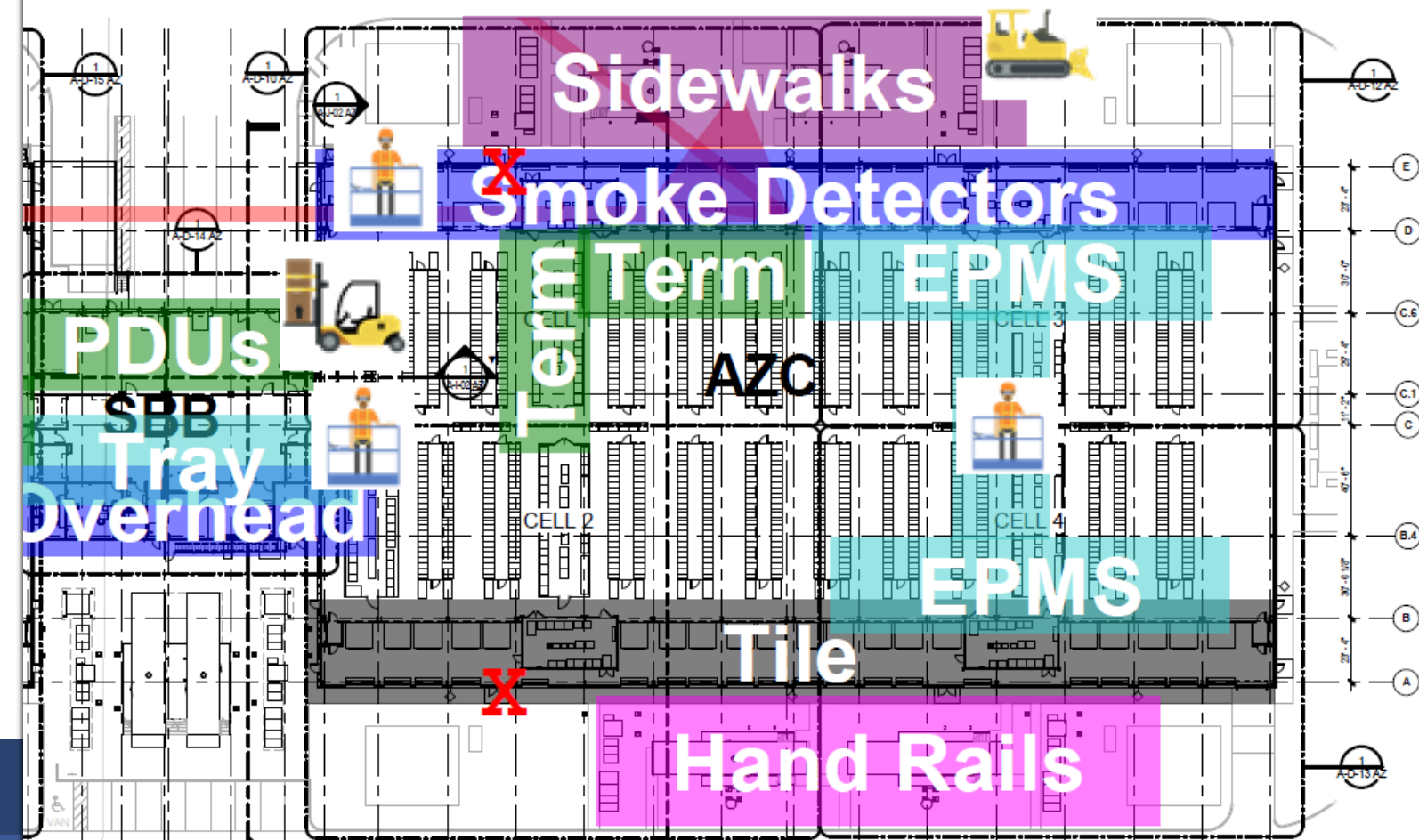
HRAs
L, MH, WH
MH,WH
WH, MH, L
WH, HM
WH,MH
WH
MH,
WH,MH
WH,MH
MH, L, WH
MH, WH
WH,MH

Microsoft CH2 Weekly Work Plan											
Plan Starting On:  											





r is blocked off



Mobile Equipment



Material Handling



Lifting



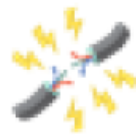
Hazardous Materials



Ground Disturbance



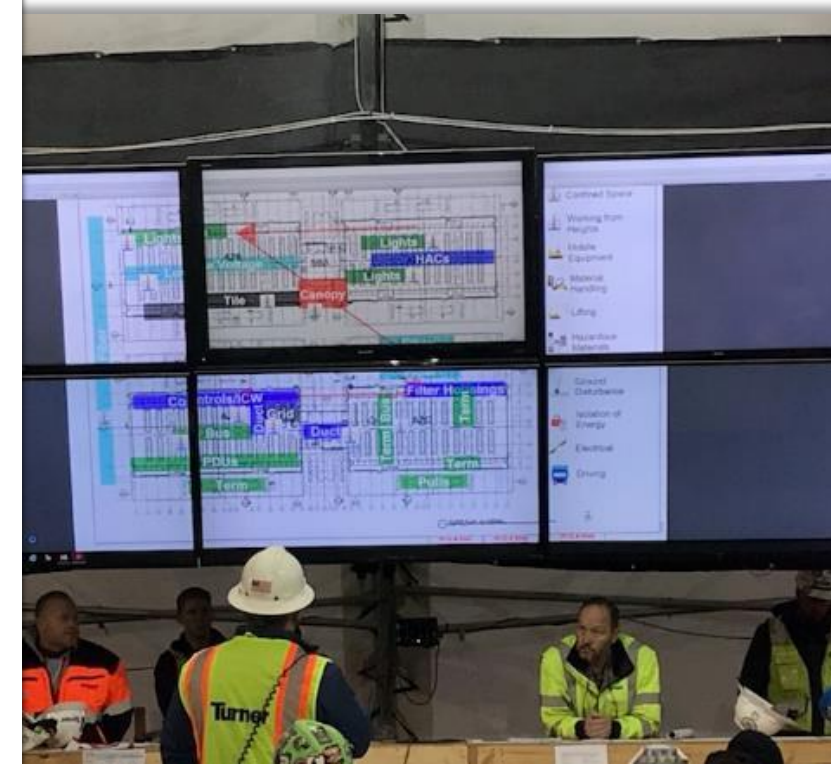
Isolation of Energy



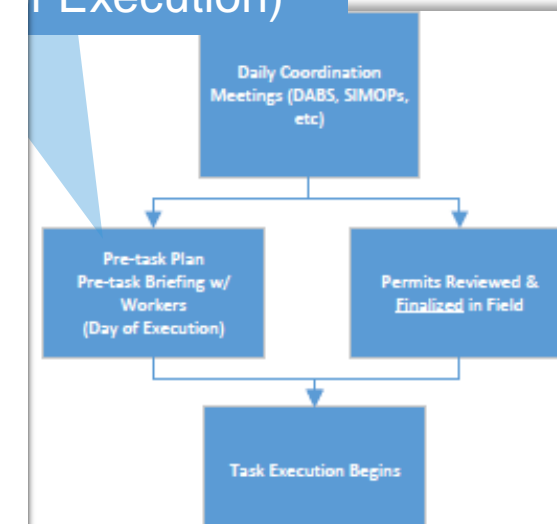
Electrical



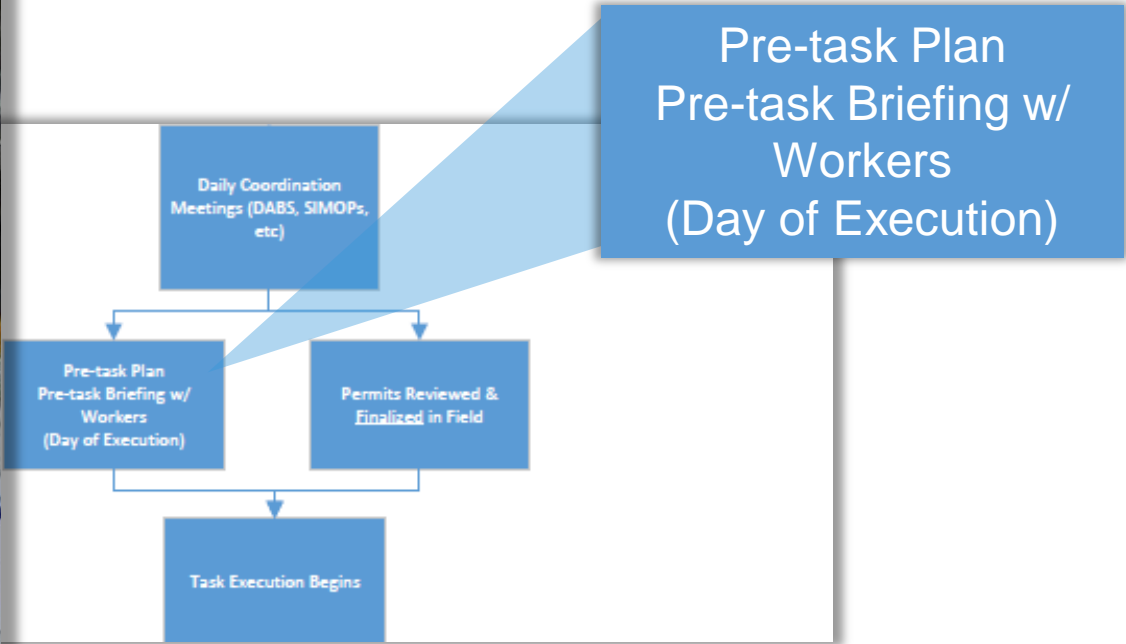
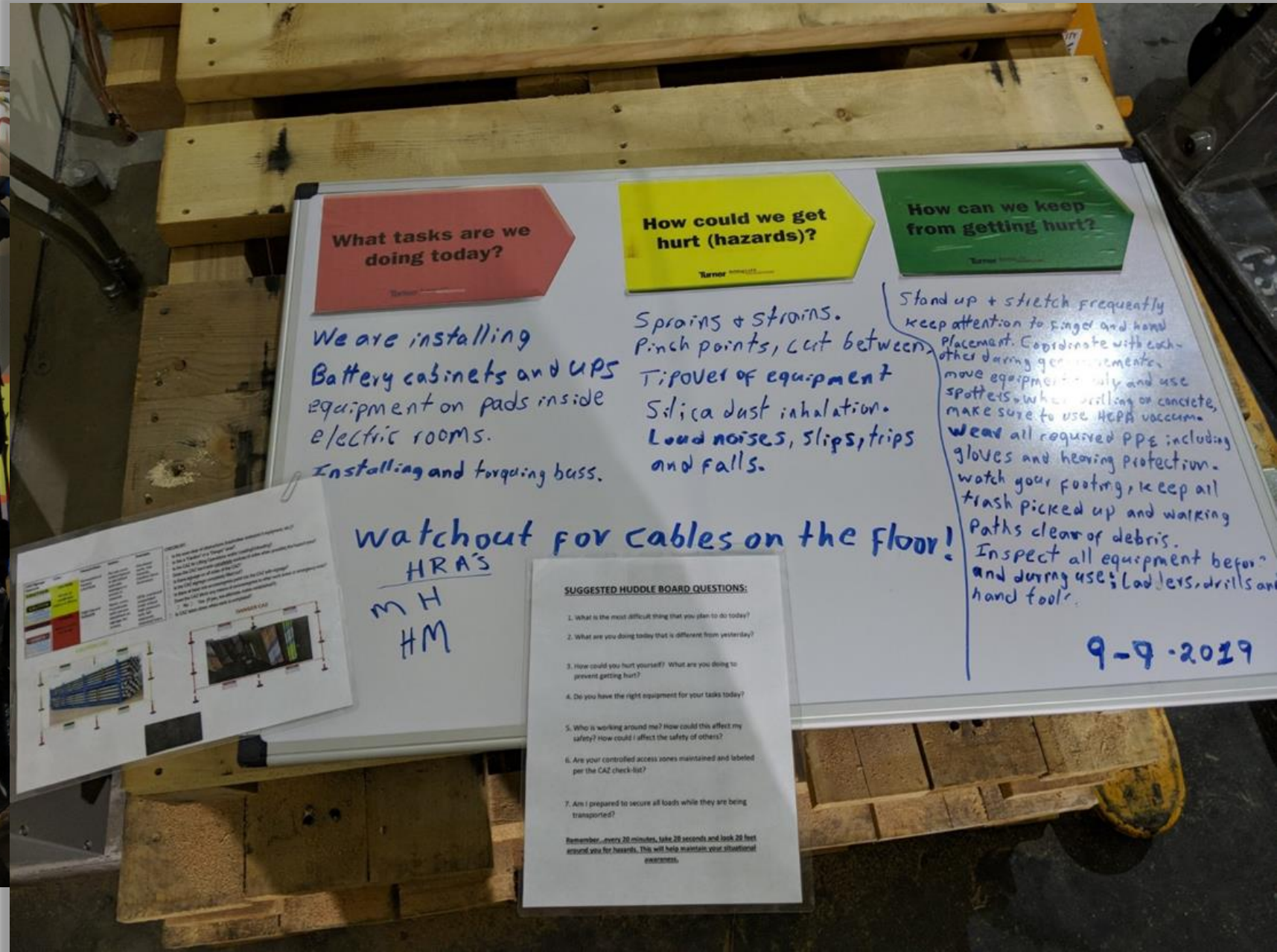
Driving



Task Plan  
Task Briefing w/  
Workers  
(Day of Execution)



# High Risk Activities in Pre-Task Plans (PTP)





# High Risk Activities in Pre-Task Plans (PTP)

**Turner**




**Building L.I.F.E.**  
Living Injury Free Everyday

## PRE-TASK PLAN

Date: \_\_\_\_\_ Company: \_\_\_\_\_  
Description of Activity: \_\_\_\_\_  
Supervisor: \_\_\_\_\_ Location of Task: \_\_\_\_\_

Pre-task Plan  
Pre-task Briefing w/  
Workers  
(Day of Execution)

### High Risk Activities (HRAs)

- |  |  |   |  |
|--|--|---|--|
|  Working from Heights (WH)  |  Lifting Operations (L)   |  Confined Space (CS)       |  Driving (D)                |
|  Hazardous Materials (HM) |  Material Handling (MH) |  Electrical (E)          |  Noise Exposure (N)       |
|  Energy Isolation (EI)    |  Mobile Equipment (ME)  |  Ground Disturbance (GD) |  Temperature Extremes (T) |


### Turner Building L.I.F.





# High Risk Activities in Change Management


R.	BOND	1.00%	\$ -	0.00	\$ -	\$ -	\$ -
S.	GRAND TOTAL [Q+R]		\$ -	0.00	\$ -	\$ -	\$ -
TOTAL COST FOR PCO #			001	= \$	-		


U. List all the HRA's associated with this change.  
Comments: None


  
Material Handling  
**M**


  
Hazardous Material  
**H**


  
Driving  
**D**


  
Working From Heights  
**W**


  
Lifting Operations  
**L**

  
Confined Spaces  
**C**

  
Energy Isolation  
**I**

  
Electrical  
**E**

  
Ground Disturbance  
**G**

  
Mobile Equipment  
**Mob**

etc.? If no, any damage that is caused as a result of this change will be back charged to the subcontractors included in this proposal. If yes, please describe the work / area affected by each subcontractor's scope of work and attach a document showing what in place work will be impacted.			Yes/No	Initial :	
V.	Comments:	None			
VI. DURATION					
W.	All costs to maintain the project schedule have been included in this proposal			Initial :	
	Comments:	None			

Page 2



# Keys to Success

- Leadership Buy-In
- Supervisor Buy-In
- Craft Worker Training, Understanding
- Risk Evaluation During Change Management



# Summary



- Focused Strategy beyond traditional management to prevent SIFs
- The Last Planner System™ is the ideal tool to deliver integrated HRA and production planning
- Proven value across global portfolio

# Contact Us

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# Acronym Glossary

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- SIF: Serious Injuries and Fatalities
- WWP: Weekly Work Plan
- WPS: Worst Potential Severity
- HRA: High Risk Activity
- PTP: Pre-Task Plan



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