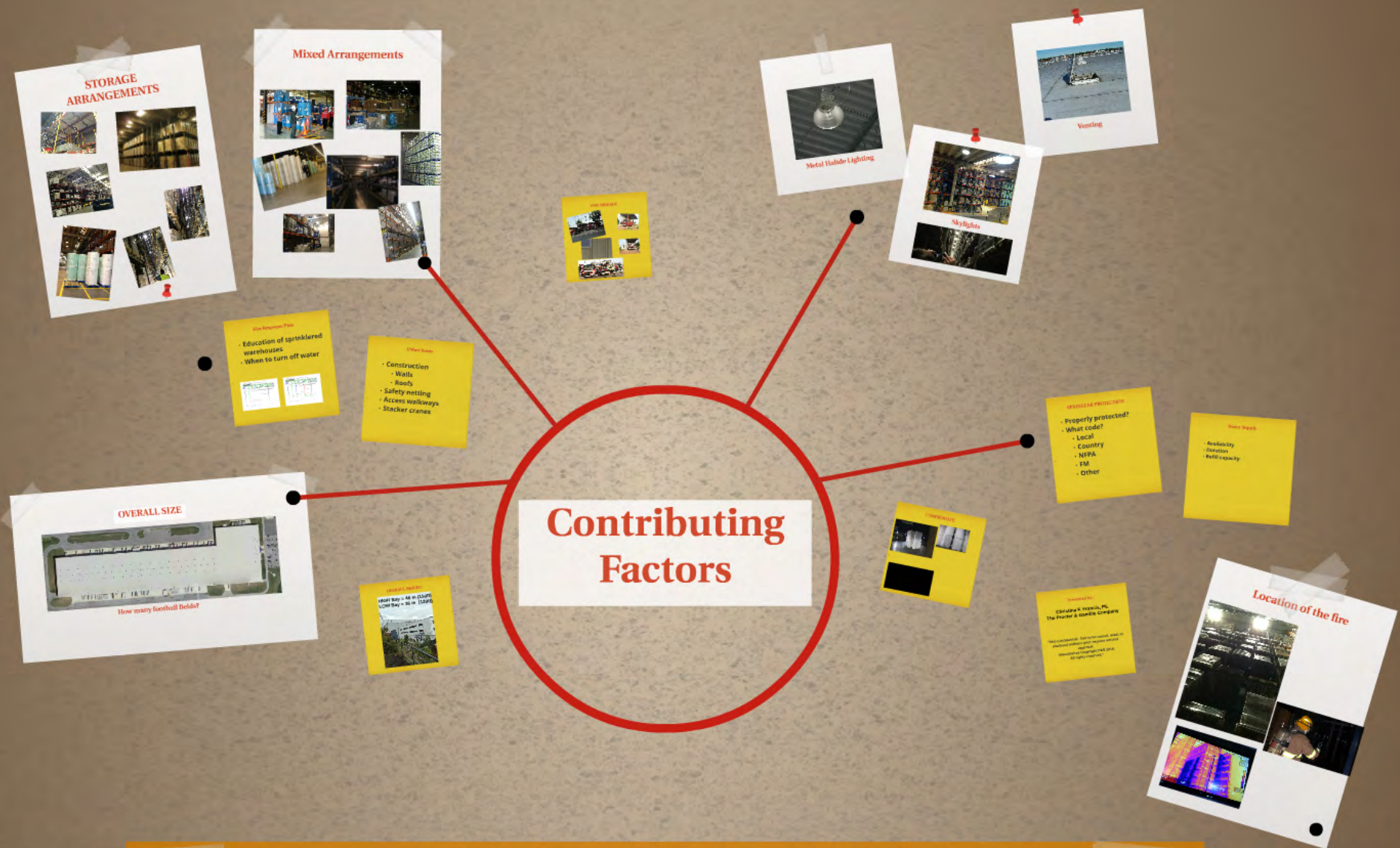


An overview of Global Warehouse Configurations and Challenges



An overview of Global Warehouse Configurations and Challenges

Presented by:

**Christina F. Francis, PE
The Procter & Gamble Company**

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Contributing Factors

OVERALL SIZE



How many football fields?

INTERNAL HEIGHT

HIGH Bay = 40 m (130ft)
LOW Bay = 30 m (100ft)



CONSTRUCTION



PERFORMANCE

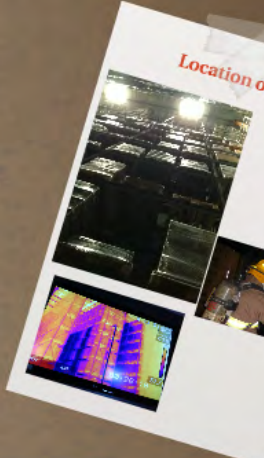
Chateau B. Francis, PE
The Process & Control Company

High Ceilings - Not to be confused with an
openness and high access within
the space.
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- What can...
- Local
- Country
- NFPA
- FM
- Other

- Availability
- Duration
- Refill capacity

Location of



An overview of Global Warehouse Configurations and Challenges

Contributing Factors

OVERALL SIZE



How many football fields?

Approximately 1.4 million sq ft or 130,000 sq m



Google

OVERALL HEIGHT

HIGH Bay = 46 m (150ft)

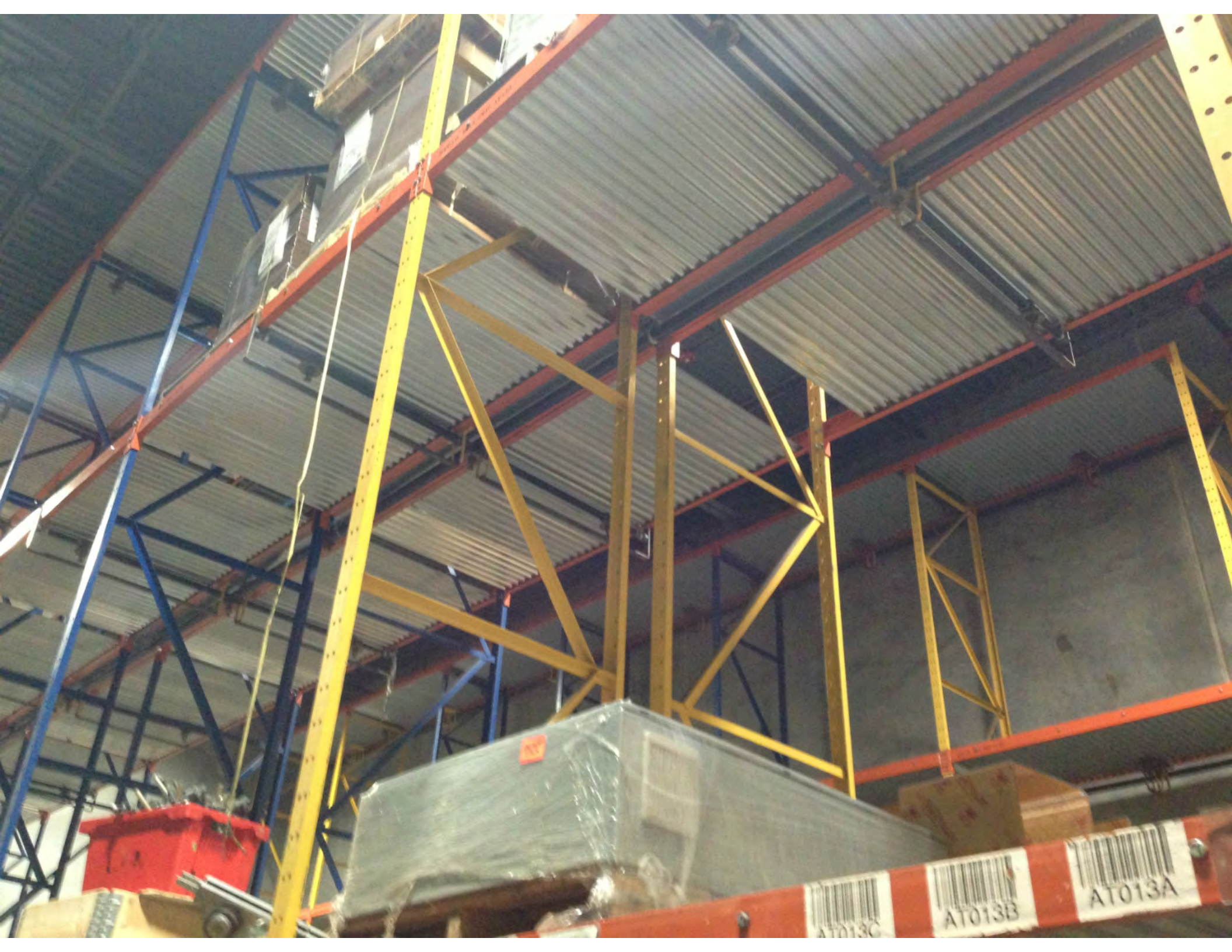
LOW Bay = 36 m (120ft)



STORAGE ARRANGEMENTS







AT013C

AT013B

AT013A



DE

THINK
PICKLE UP
FOR SAFETY

DD

DD







Mixed Arrangements





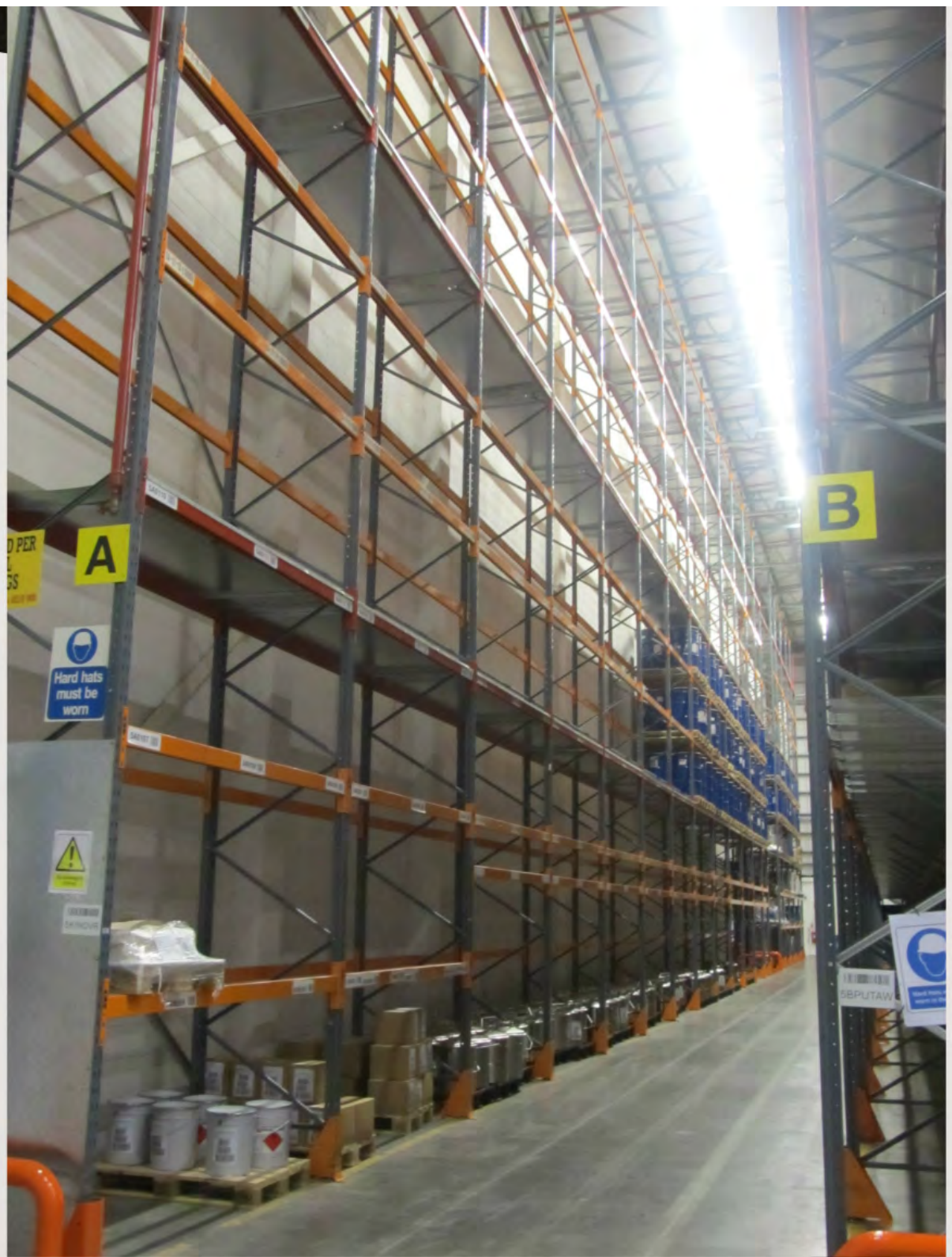




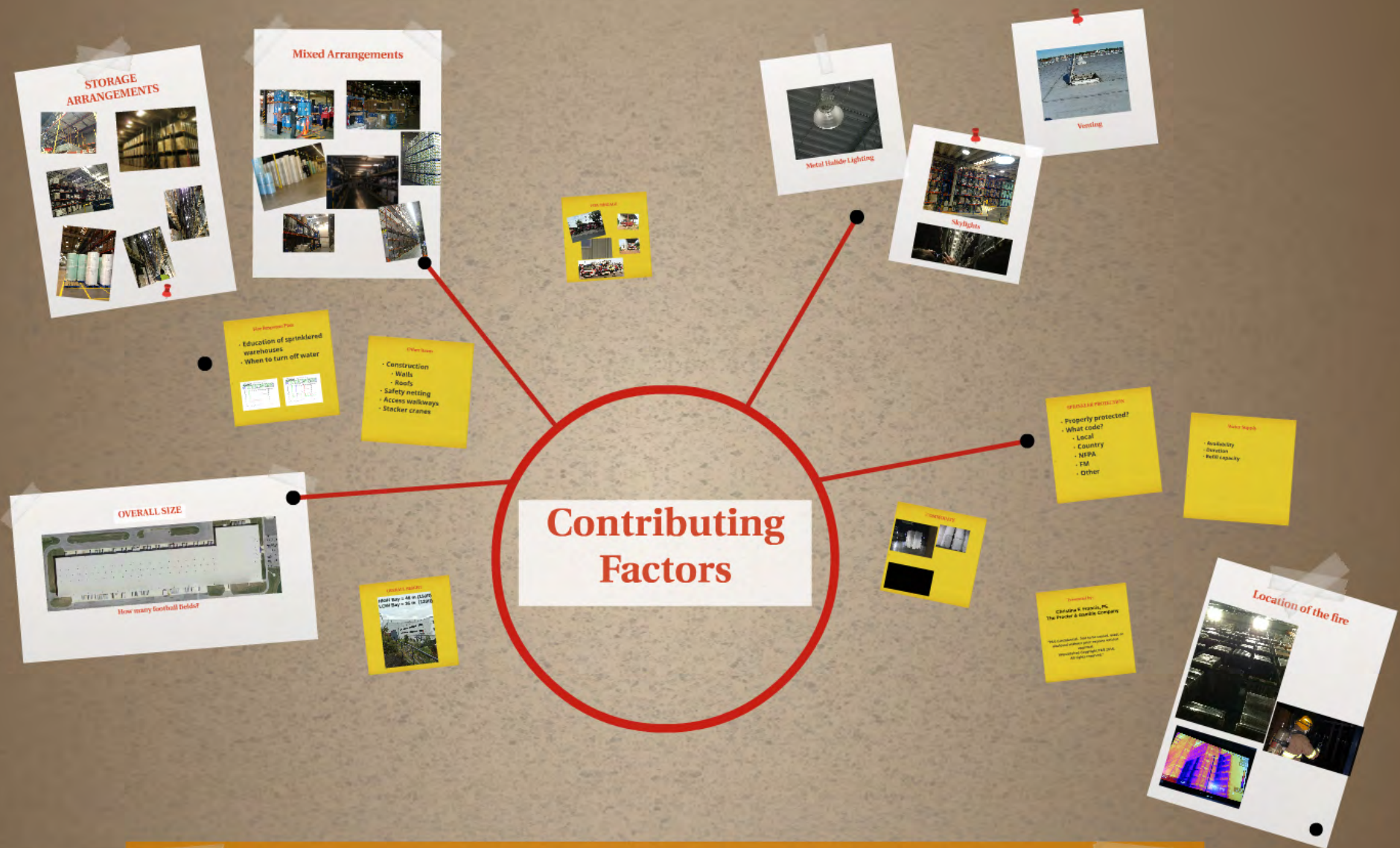


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An overview of Global Warehouse Configurations and Challenges

FIRE BRIGADE





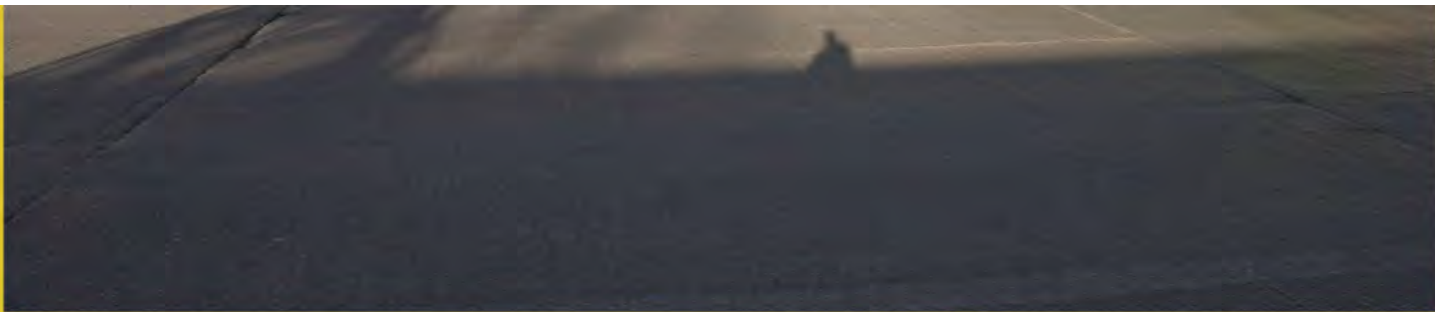
EINSATZLEITUNG

MAGIRUS
Feuerwehr
IVECO

Feuerwehr

Feuerwehr 112











Metal Halide Lighting



Skylights





Venting

COMMODITY



SPRINKLER PROTECTION

- **Properly protected?**
- **What code?**
 - **Local**
 - **Country**
 - **NFPA**
 - **FM**
 - **Other**

Water Supply

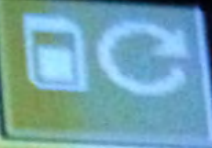
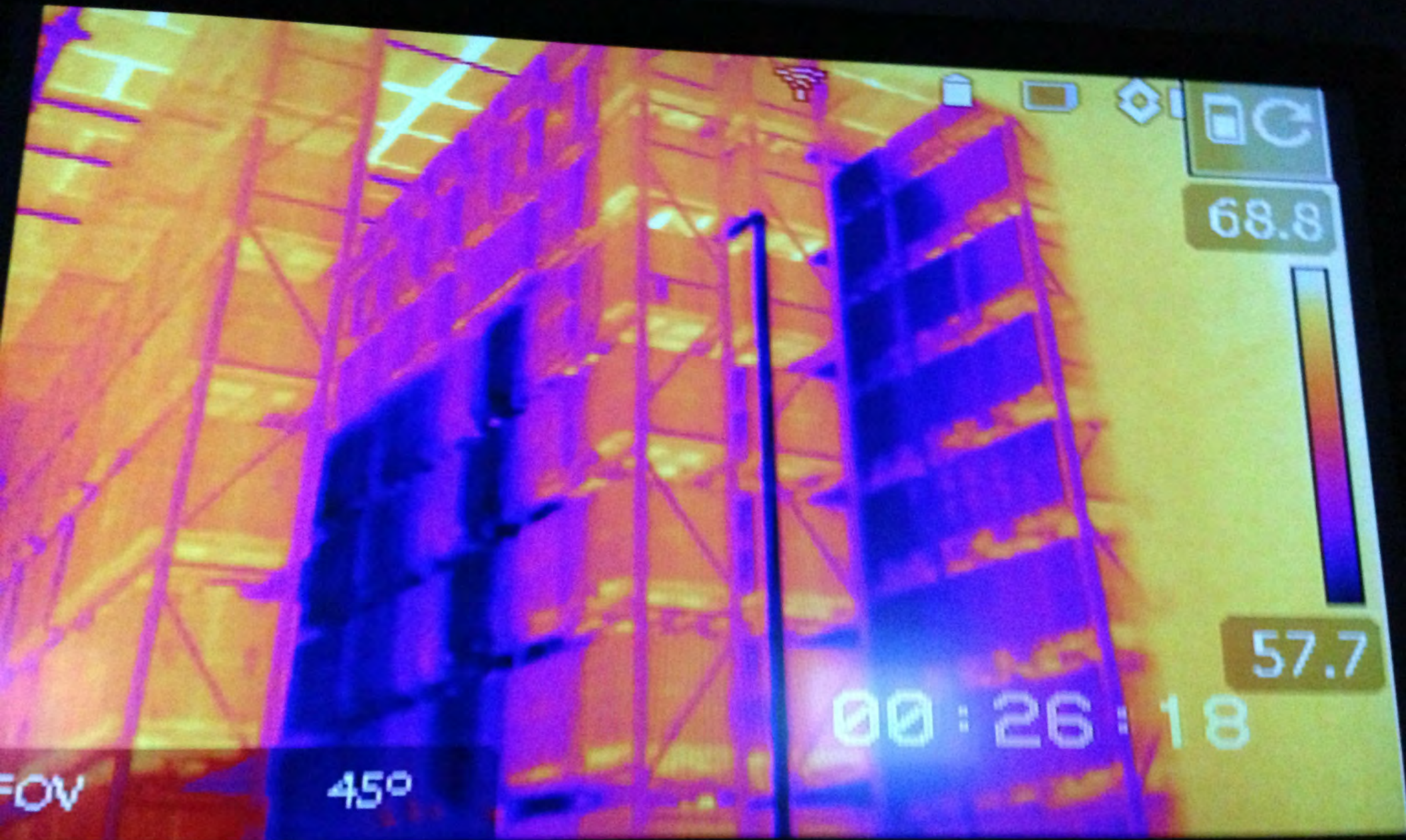
- **Availability**
- **Duration**
- **Refill capacity**

Location of the fire









68.8



57.7

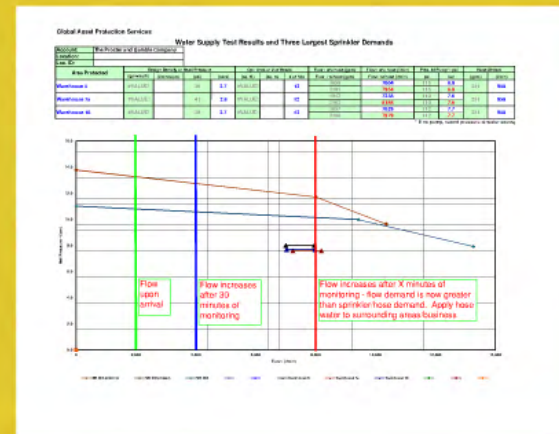
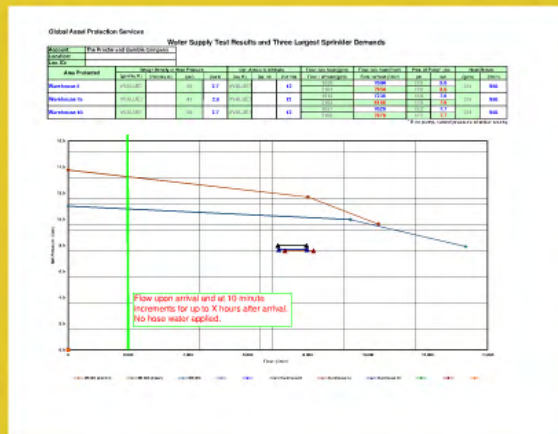
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FOV

45°

Fire Response Plan

- Education of sprinklered warehouses
- When to turn off water

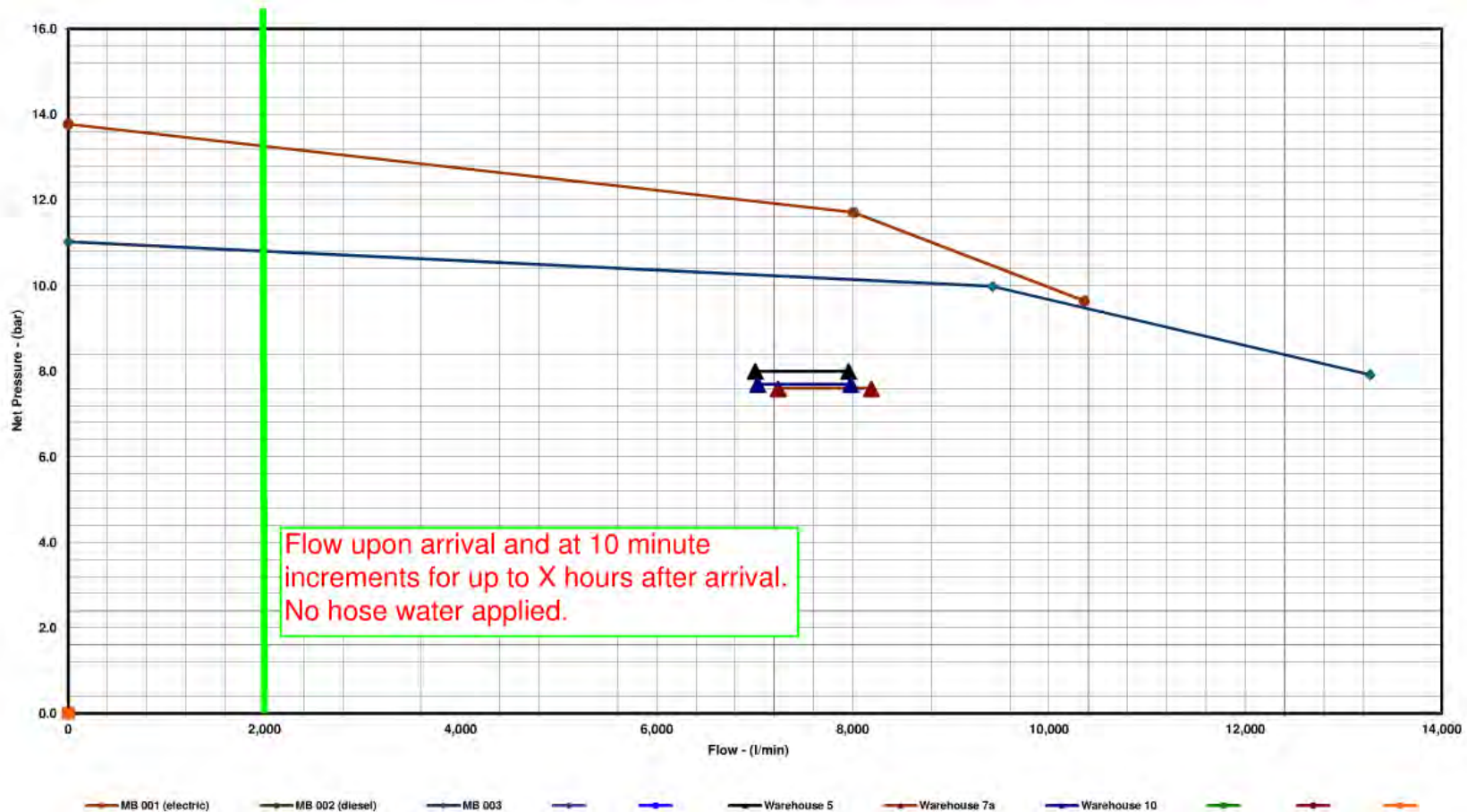


Water Supply Test Results and Three Largest Sprinkler Demands

Account:	The Procter and Gamble Company
Location:	
Loc. ID:	

Area Protected	Design Density or Head Pressure				Opr. Area or # of Heads			Flow - w/o hose (gpm)		Flow - w/o hose (l/min)		Pres. At Pump* - psi		Hose Stream	
	(gpm/sq.ft.)	(l/min/sq.m)	(psi)	(bars)	(sq. ft.)	(sq. m)	# of hds	Flow - w/hose (gpm)	Flow - w/hose (l/min)	psi	bar	(gpm)	(l/min)		
Warehouse 5	#VALUE!		39	2.7	#VALUE!		12	1850 2101	7004 7954	116 116	8.0 8.0	251	950		
Warehouse 7a	#VALUE!		41	2.8	#VALUE!		12	1912 2165	7238 8188	110 110	7.6 7.6	251	950		
Warehouse 10	#VALUE!		39	2.7	#VALUE!		12	1857 2108	7029 7979	112 112	7.7 7.7	251	950		

* If no pump, record pressure at water source

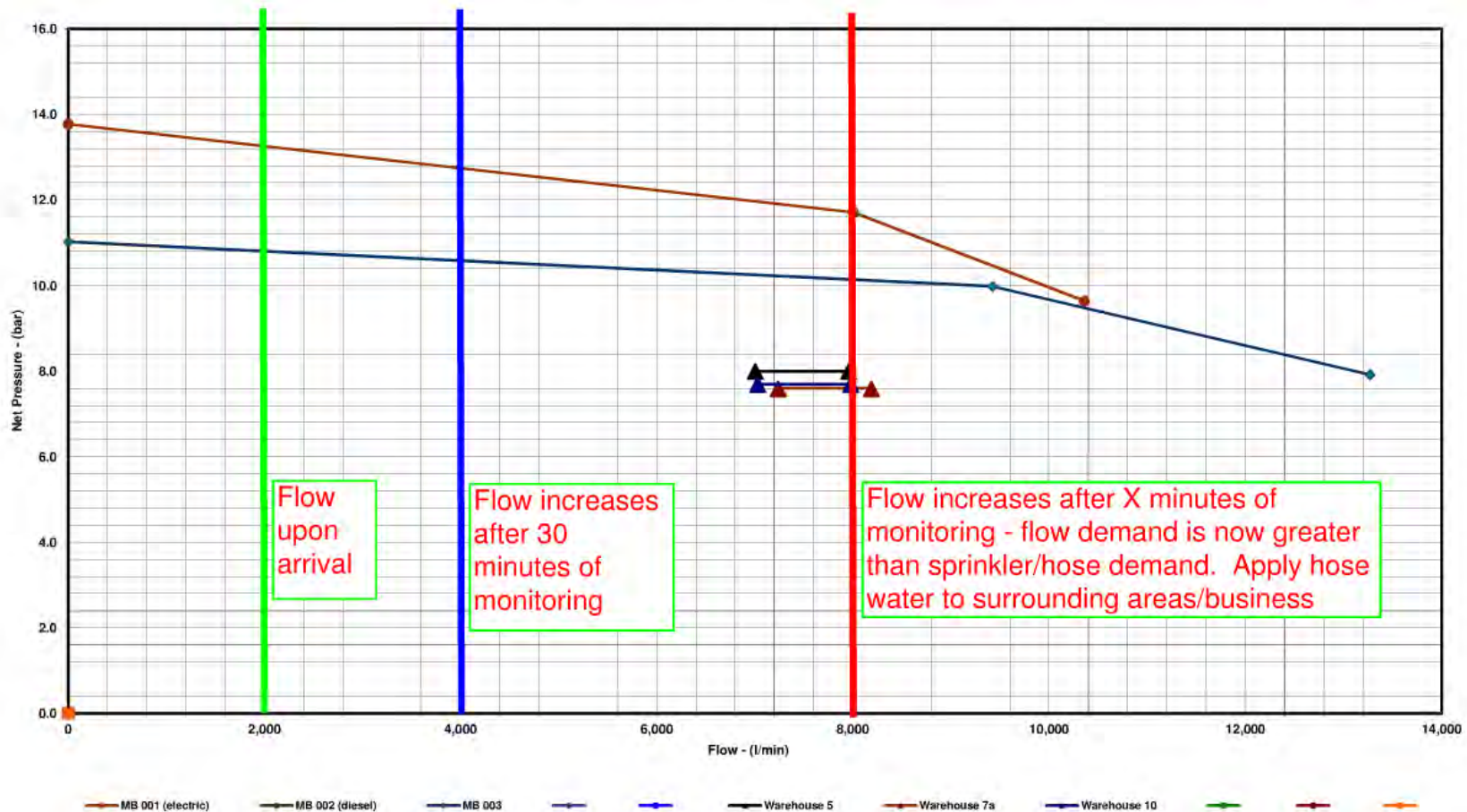


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Warehouse 5	#VALUE!		39	2.7	#VALUE!		12	1850	7004	116	8.0	251	950
								2101	7954	116	8.0		
Warehouse 7a	#VALUE!		41	2.8	#VALUE!		12	1912	7238	110	7.6	251	950
								2165	8188	110	7.6		
Warehouse 10	#VALUE!		39	2.7	#VALUE!		12	1857	7029	112	7.7	251	950
								2108	7979	112	7.7		

* If no pump, record pressure at water source



Other items

- **Construction**
 - **Walls**
 - **Roofs**
- **Safety netting**
- **Access walkways**
- **Stacker cranes**

Thank you!

Questions?

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