



Health and Safety Improvement Proposal with Concentrate in Fall Protection

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CM598 DATA-DRIVEN HEALTH AND SAFETY FOR CONSTRUCTION

Why we care?

- ▶ at least **1/3** of construction deaths in US is caused by fall
- ▶ construction industry contributes more than **10%** of death and injury number in all industry, while the construction industry only represents about **8%** of all workers

Who is most vulnerable worker?

Job group	Sample Size	n of fall	Percent
Carpenters	54	44	82
Dry-Wallers, lathers, plasterers	26	22	85
Electricians	12	12	100
Iron workers, welders	14	9	64
Laborers	42	24	57
Painters	22	19	86
Plumbers, pipefitters	16	9	56
Roofers	31	28	90
Other	38	28	74
Total	255	195	76

How to quantify?

$$\text{Exposure level of fall hazard} = D \times \frac{H}{H_{max}} \times HD \times r$$

D – Duration

H -- Height of work surface from ground

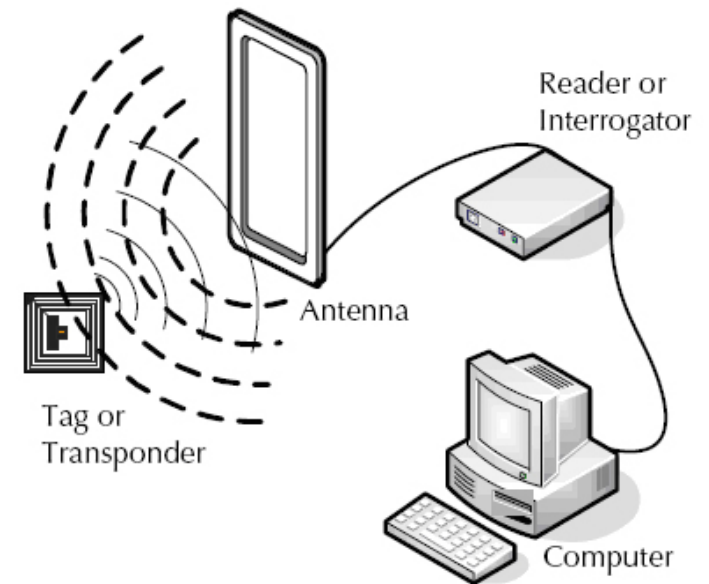
H_{max} -- Maximum value of Height of work surface from ground

HD -- Ground's Hardness Value

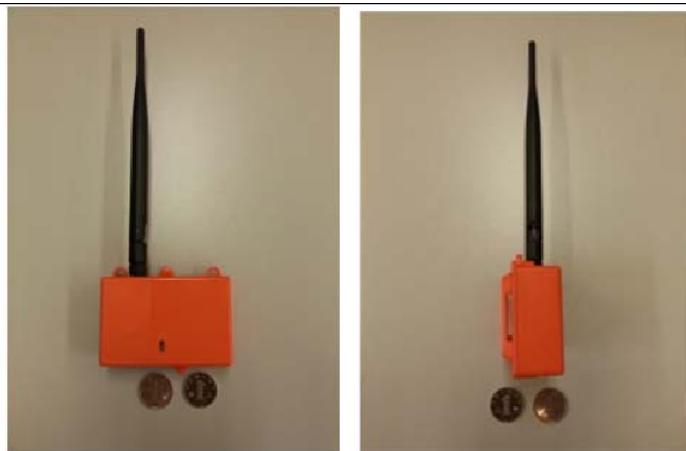
r -- Fall risk value

How to monitor?

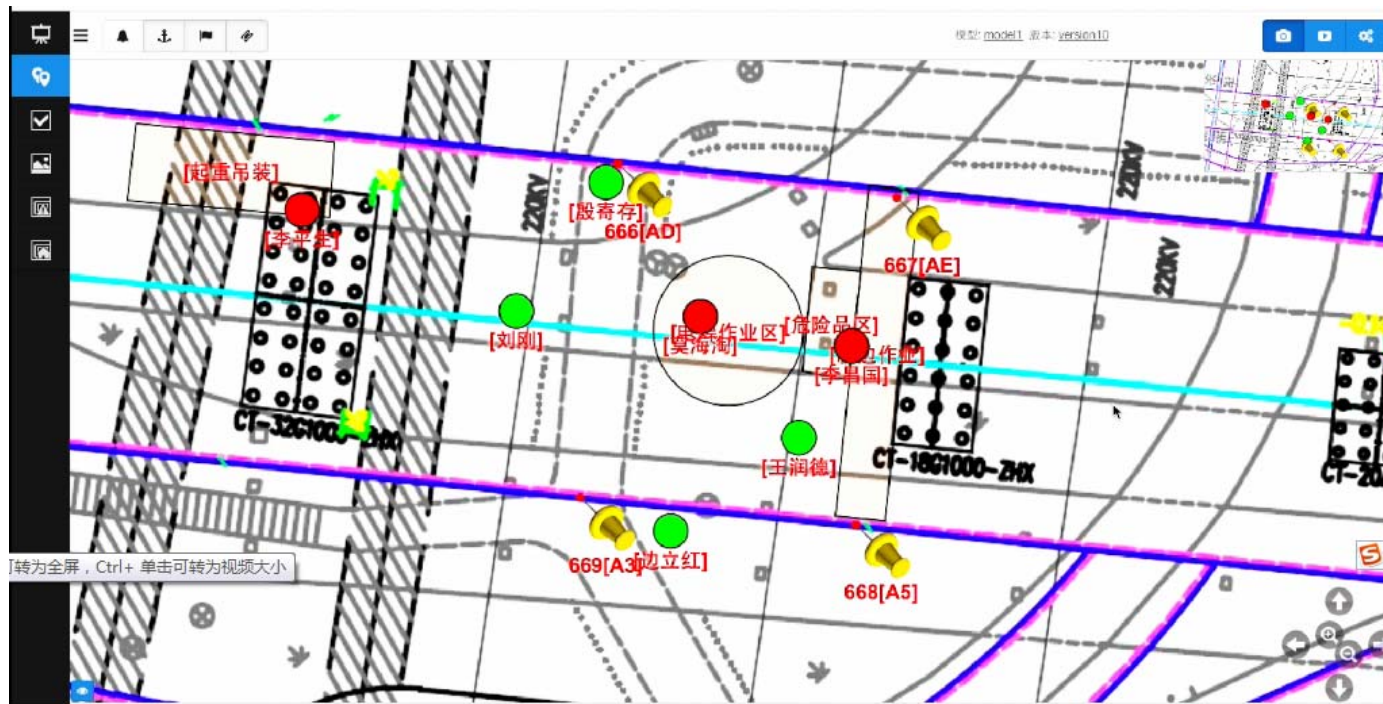
- ▶ Continuously exposed
the time when the worker begins his work at height
the time he ends his work
- ▶ Discontinuously exposed
Radio-frequency identification (RFID)



How to monitor?

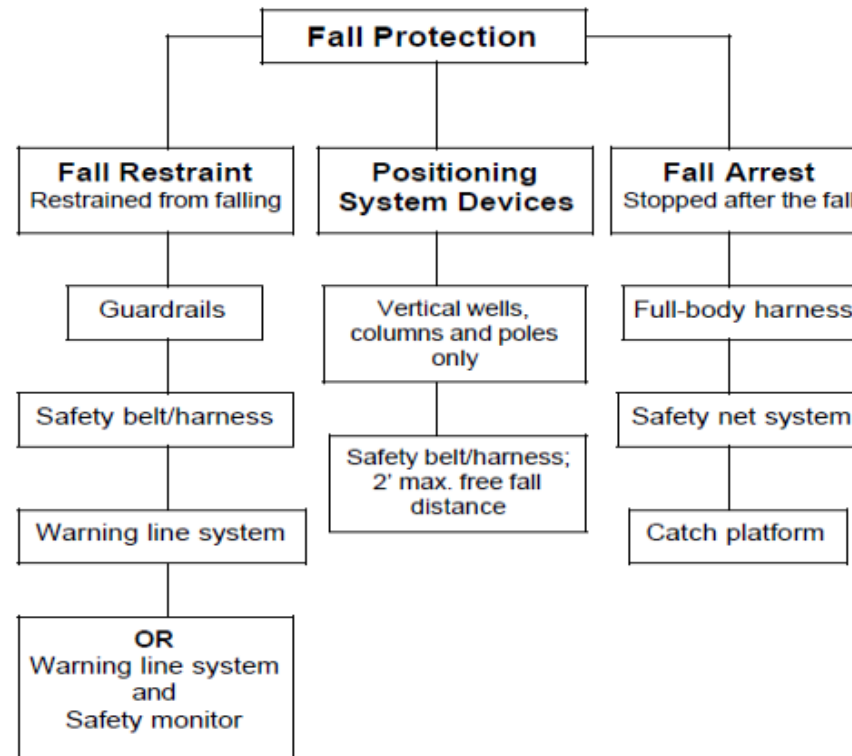


How to monitor?



How to control?

► Hardware





How to control?

- ▶ Software
 - ▶ Industry regulations and guidelines
 - ▶ FRID technology
 - ▶ Tool-box talk
 - ▶ culture of safety

How to ensure that the controls work?

- ▶ Training and exam
- ▶ Inspection
- ▶ PDCA circulation