# 7. [USING PRECURSOR ANALYSIS TO PREVENT HIGH-IMPACT LOW-FREQUENCY (HILF) EVENTS, INCLUDING FATALITIES (RS321-1)](https://www.construction-institute.org/precursors-of-high-impact-low-frequency-events-including-fatalities)

**Report Summary:** This study created a precursor analysis protocol for construction that enables practitioners to:

* Assess conditions in a leading fashion.
* Identify the presence of precursors and quantify them in a structured and methodical fashion.
* Predict and prevent the potential for a fatal or disabling event.

This protocol provides guidance for (1) identifying conditions that have the potential to lead to severe or fatal injuries based on the concept of energy, (2) identifying the presence of anomalous conditions (precursors) that precede fatal and disabling events through a strategic discussion with a work crew, and (3) correcting deﬁciencies.

**Key Takeaways:**

## (1) Assess worksite conditions.

## (Project Phase: Construction through Operate Facility)

* Conduct regular onsite observations and interviews to assess project work conditions.
* Utilize a structured approach to identify potential hazards and precursors to high-impact, low-frequency (HILF) events.
* Meticulously document the assessment findings to track trends and patterns over time.
* Involve experienced project staff in the assessment process for the accurate identification of leading conditions.

## (2) Identify the presence of precursors and quantify them in a structured and methodical manner.

## (Project Phase: Construction through Operate Facility)

* Implement onsite observations and interviews to assess the 16 highly effective precursors.
* Utilize a structured approach to categorize the precursors into four principal components: Poor Work Planning, Productivity Safety Stressors, Vulnerability to High Energy, and Outside Safety Influences.
* Quantitatively assess the precursors to assign an overall score that indicates the potential for a HILF event.
* Incorporate precursor analysis into safety management protocols.

## (3) Predict and prevent the potential for a fatal or disabling event.

## (Project Phase: Construction through Operate Facility)

* Assess high-energy conditions to identify work situations with energy levels above 1,500 ft/lb that can increase the injury severity risk.
* Identify precursors by analyzing detectable conditions or actions that signal an elevated risk of a HILF event.
* Apply a structured scorecard to systematically evaluate the 16 critical precursors, thereby assessing potential risk before work begins.
* Initiate corrective actions when the precursor assessment scores exceed safe thresholds (precursor scores ≥ 4.) and stop work to prevent possible HILF events.
* Use statistical modeling to objectively predict HILF event likelihood, thereby supplementing expert intuition with reliable data-driven tools.

## [(4) Tool: Guide to Precursor Analysis for Construction Fatalities](https://www.construction-institute.org/guide-to-precursor-analysis-for-construction-fatalities)

## (Project Phase: Construction through Operate Facility)

* Develop a rollout strategy for introducing precursor analysis tools to construction projects.
* Design training modules to educate industry practitioners about ways to use the tool effectively.
* Integrate precursor analysis into existing safety protocols and project management processes.
* Establish mechanisms for collecting feedback about the tool based on user experience and emerging data.
* Create templates for documenting the analysis results and generating actionable reports for stakeholders.