

National and international construction business administration science in a construction law context

Workshop 12: International
Approach to Delay & Disruption in
Construction Business

SCL D&D Protocol

methods of delay analysis

| Method of Analysis | Analysis Type | Critical Path Determined | Delay Impact Determined | Requires |
|---|----------------|--------------------------|-------------------------|--|
| Impacted As-Planned Analysis | Cause & Effect | Prospectively | Prospectively | <ul style="list-style-type: none"> Logic linked baseline programme A selection of delay events to be modelled |
| <u>Time Impact Analysis</u> | Cause & Effect | Contemporaneously | Prospectively | <ul style="list-style-type: none"> Logic linked baseline programme Update programmes or progress information with which to update the baseline programme A selection of delay events to be modelled |
| Time Slice Windows Analysis | Effect & Cause | Contemporaneously | Retrospectively | <ul style="list-style-type: none"> Logic linked baseline programme Update programmes or progress information with which to update the baseline programme |
| As-Planned versus As-Built Windows Analysis | Effect & Cause | Contemporaneously | Retrospectively | <ul style="list-style-type: none"> Baseline programme As-built data |
| Retrospective Longest Path Analysis | Effect & Cause | Retrospectively | Retrospectively | <ul style="list-style-type: none"> Baseline programme As-built data |
| Collapsed As-Built Analysis | Effect & Cause | Retrospectively | Retrospectively | <ul style="list-style-type: none"> Logic linked baseline programme A selection of delay events to be modelled |

Impacted As-Planned Analysis

- SCL D&D Protocol: involves introducing delay events into a baseline programme and recalculation in order to determine the prospective impact the delay event would have on the then predicted completion dates without considering mitigation and acceleration already occurred.
- Regularly used in practice when dealing with inexperienced clients unwilling/unable to recognize mitigation/acceleration effects.

Impacted As-Planned Analysis (cont'd)

- Advantages: does not require much expertise/resources.
- Disadvantages: often not realistic and does not help in claiming mitigation/acceleration cost.

Time Impact Analysis

- SCL D&D Protocol: out of 6 identified methods of delay analyses the 'time impact analysis' is recommended. This requires a baseline programme (updated from time to time) and a prospective analysis of the impact of any delay event on the then predicted completion dates.
Regularly used in practice with more experienced clients.

Time Impact Analysis

(cont'd)

- Advantages: more realistic and helps in claiming mitigation/acceleration cost.
- Disadvantages: requires continuous updating of programme and particular planning expertise; time consuming; clients often unwilling.

Collapsed As-built Analysis

- Delay events within the as-built programme are identified and collapsed/extracted for net impact 'but for' analysis: the Works could have been completed on time 'but for' the delay event.
- Regularly used in practice in order to simplify discussions.

Collapsed As-built Analysis

(cont'd)

- Advantages: relatively easy to create as-built programme in dredging projects; agreed baseline programme not required; graphics are 'appealing' by plotting delay events in different colours.
- Disadvantages: 'yes but' discussions about facts, cause and effect; wrong timing: always at end of project.

SCL D&D Protocol

methods of disruption analysis

| Productivity-based methods | Cost-based methods |
|-----------------------------------|----------------------------------|
| 1. Project-specific studies | 1. Estimated vs. incurred labour |
| <u>(a) Measured mile analysis</u> | 2. Estimated vs. used cost |
| (b) Earned value analysis | |
| (c) Programme analysis | |
| (d) Work or trade sampling | |
| (e) System dynamics modelling | |
| 2. Project-comparison studies | |
| 3. Industry studies | |

Measured Mile analysis definition

- SCL D&D Protocol: comparing level of productivity achieved in areas or periods of the works impacted by identified disruption events with productivity achieved on identical or like activities in areas or periods of the works not impacted by those identified disruption events.
- Regularly used in practice.

Measured Mile analysis

(cont'd)

- Advantages: relatively easy to demonstrate as all data are available; most accurate method using real data.
- Disadvantages: Does not automatically resolve cost issue; requires experience to understand data/drawings/charts; client unwilling to trust data from contractor's sources

Work or Trade Sampling

- SCL D&D Protocol: analysis of contemporaneous records of direct works observations to determine productivity.
- Used in practice to support claims for unforeseen soil/site conditions (soil sampling/analysis, rocks in drag head, wear & tear, underwater survey)

Work or Trade Sampling (cont'd)

- Advantages: undisputable proof, 'telling' examples.
- Disadvantages: no conclusive quantification, potentially costly/time consuming.