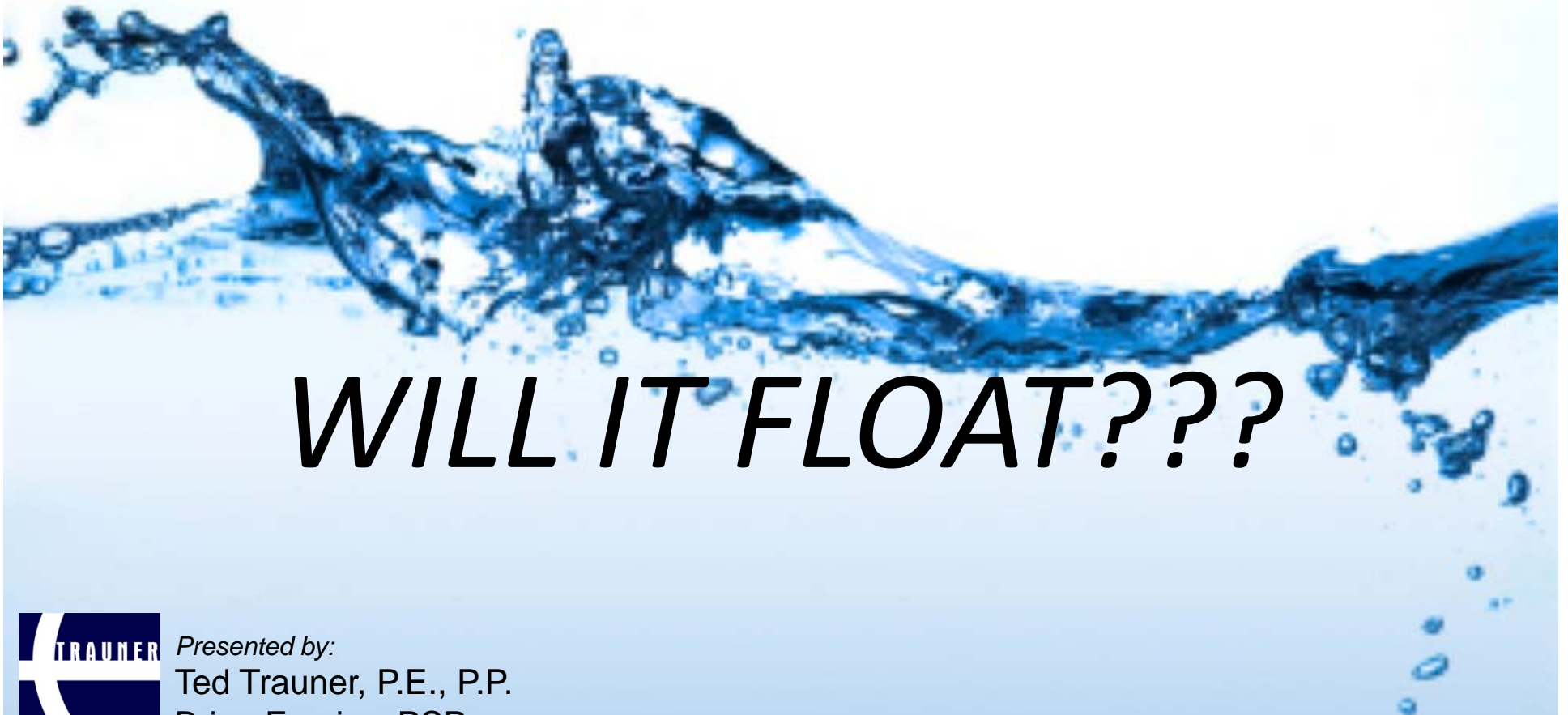





# Requesting a Time Extension from FDOT.



***WILL IT FLOAT???***



*Presented by:*  
Ted Trauner, P.E., P.P.  
Brian Furniss, PSP

A decorative graphic at the top of the slide showing a splash of blue water against a white background.

**WHAT DETERMINES IF A CONTRACTOR  
IS ENTITLED TO A TIME EXTENSION ON  
AN FDOT PROJECT?**



WE **MUST** REFER TO FDOT  
SPECIFICATIONS

# FDOT Specifications

8-7.3.2 The Department may grant an extension of Contract Time when a controlling item of work is delayed.....



# WHAT IS A CONTROLLING ITEM OF WORK?

# FDOT Specifications



- **Article I: Controlling Work Items:**

The activity or work item on the critical path having the least amount of total float. The controlling item of work will also be referred to as a Critical Activity.

Do the FDOT Specifications Define the Term  
“Critical Path”?

**NOT EXACTLY!**

**CAN WE ASSUME THAT THE  
“CONTROLLING ITEM OF WORK”  
OR  
“CRITICAL ACTIVITY”  
EQUATE TO THE TRUE CRITICAL PATH?**

Let's move from the FDOT Specifications  
to the "WORLD OF CPM SCHEDULING"

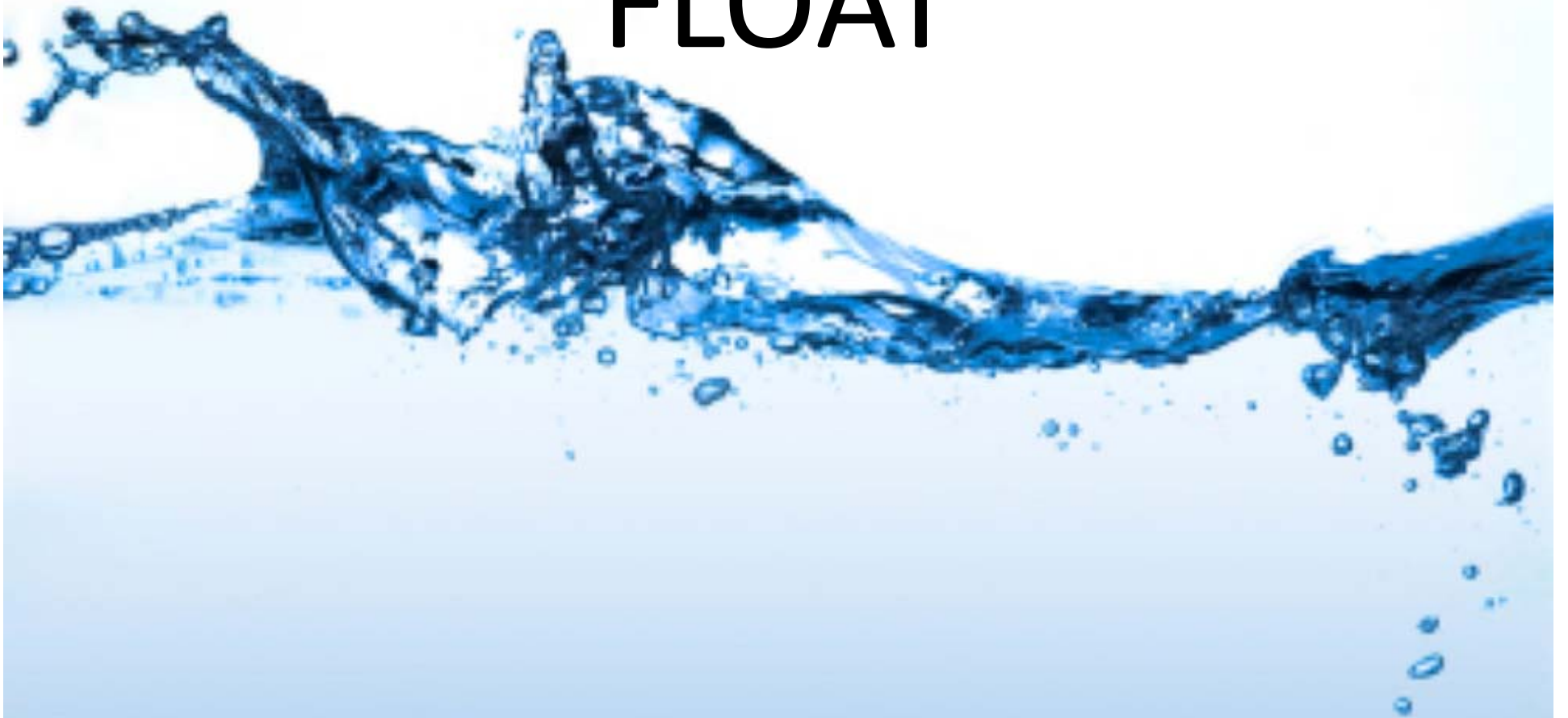


# The Critical Path - Various Definitions

1. THE LONGEST PATH THROUGH THE NETWORK.
2. THE PATH WITH THE LEAST AMOUNT OF FLOAT.
3. THOSE ACTIVITIES WHICH IF DELAYED WILL DELAY THE END DATE OF THE PROJECT.

***WHICH DEFINITION IS CORRECT?***

# FLOAT

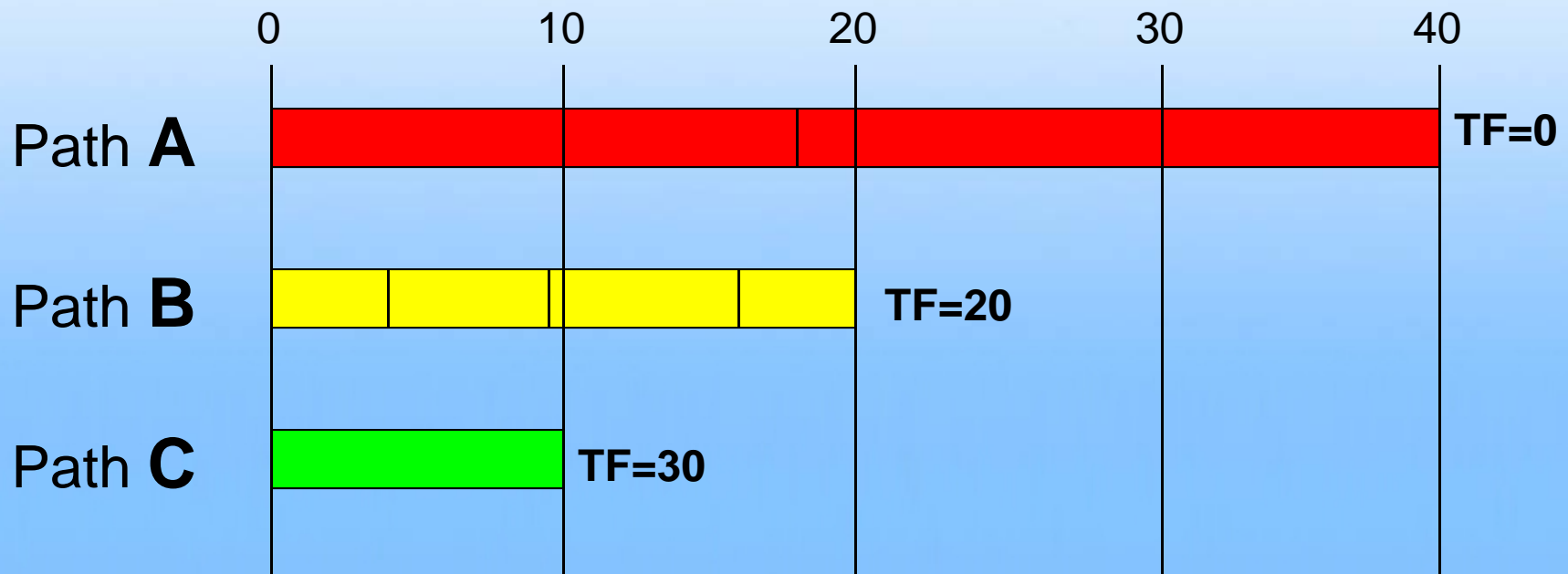


# Float

- What is Float in a CPM Schedule?
- What relationship does Float have to the Critical Path?
- Constraints and their affect on the Critical Path and Float.
- How Calendars affect the Critical Path.

# Critical Path

- When will the Project finish?



TF = Total Float

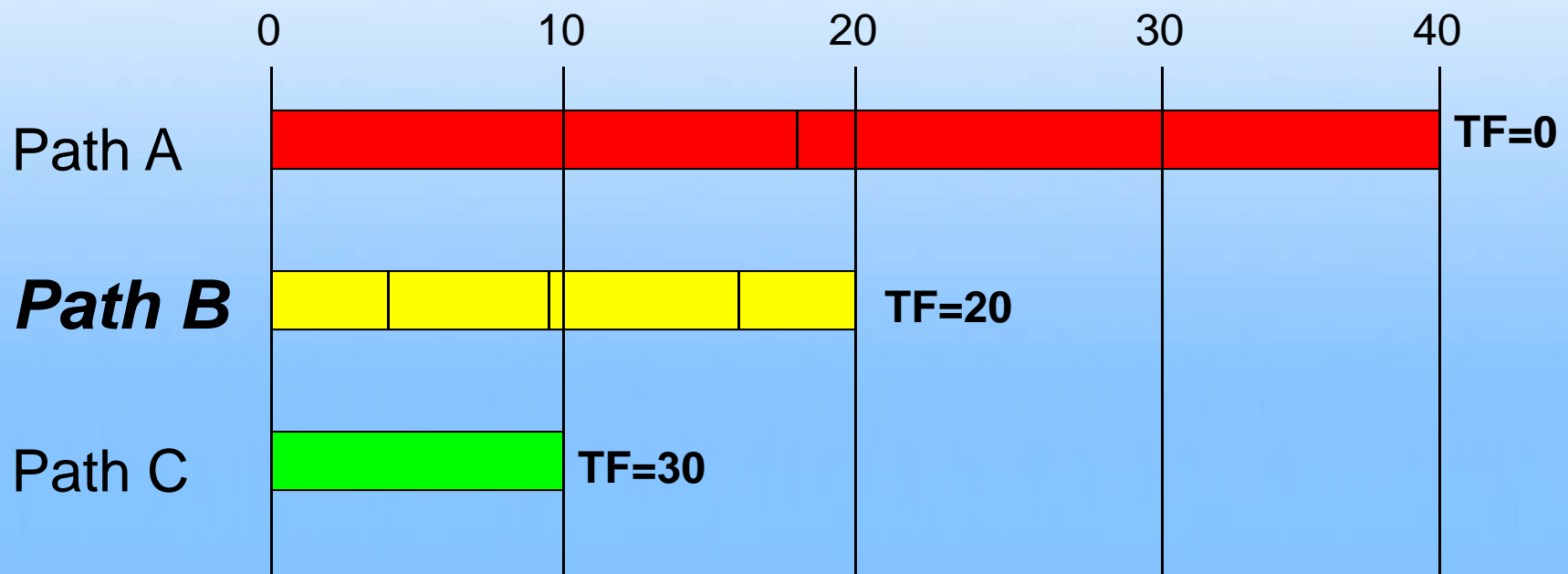
# Critical Path

- How long can **Path A** be delayed without delaying the Project?



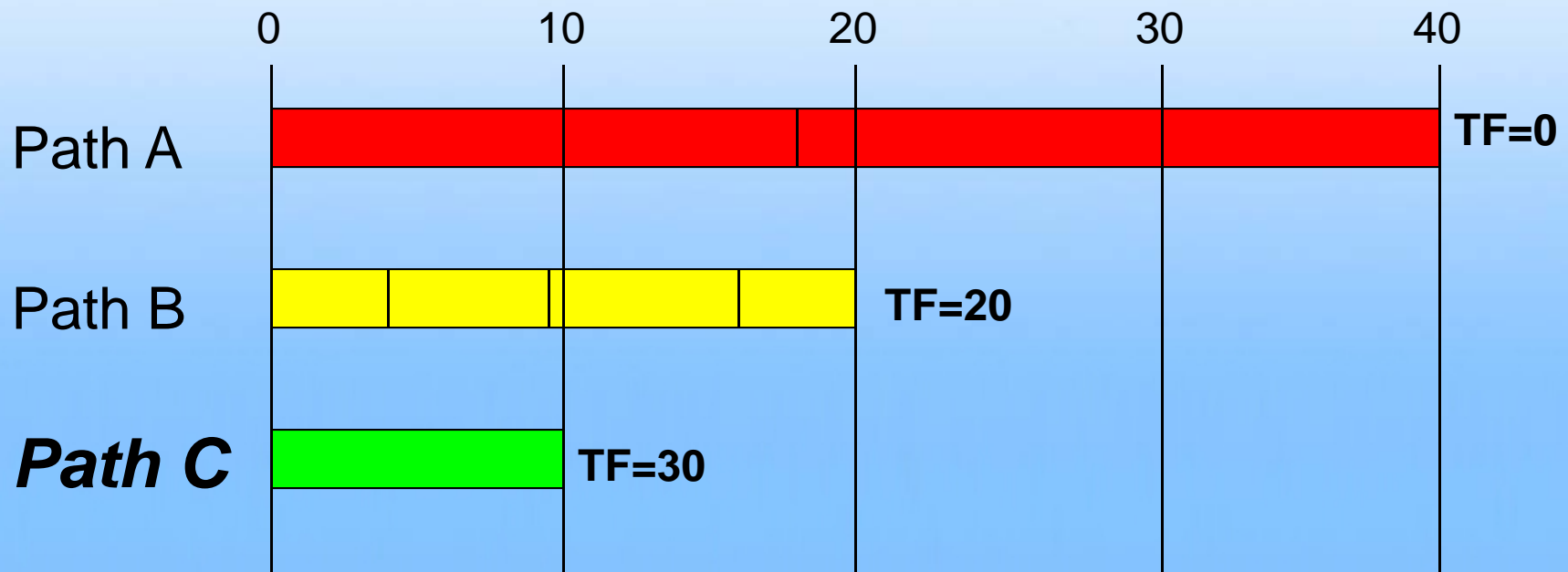
# Critical Path

- How long can **Path B** be delayed without delaying the Project?



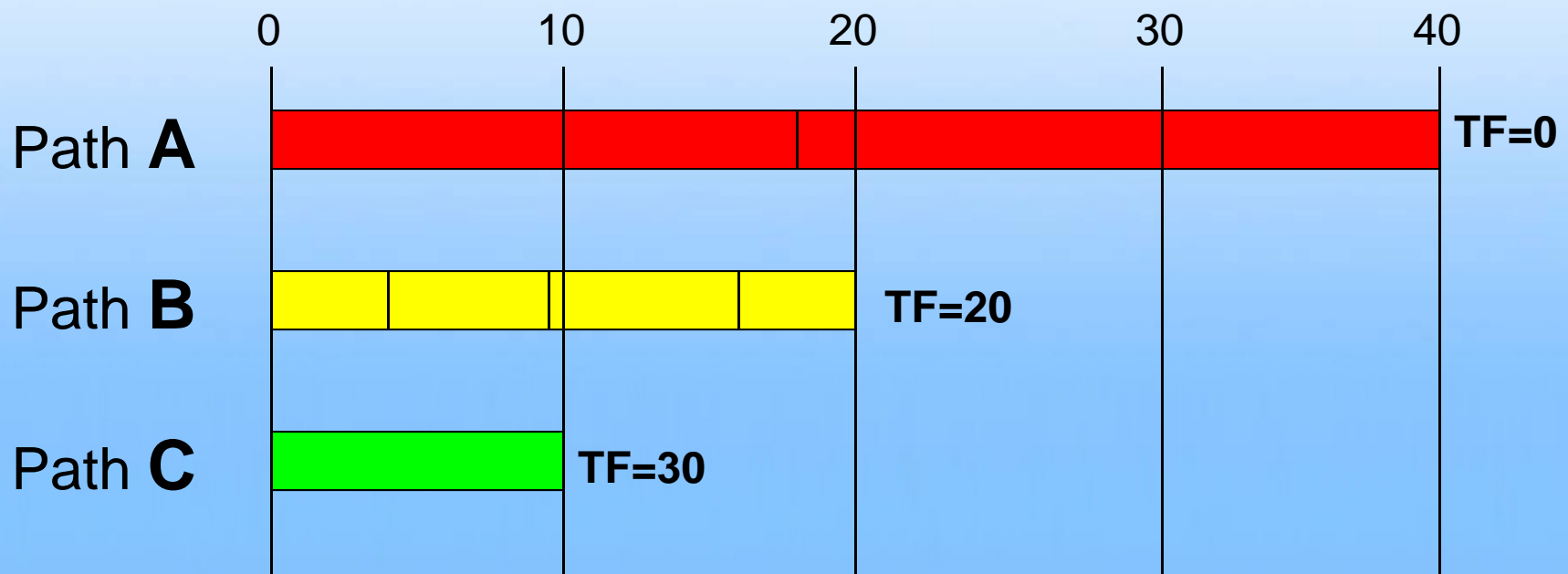
# Critical Path

- How long can **Path C** be delayed without delaying the Project?



# Critical Path

- Can we assume that the path with zero float is the critical path?



# Critical Path

- Can we assume that the path with zero float is the critical path?

Answer:

**NO!**

# Critical Path

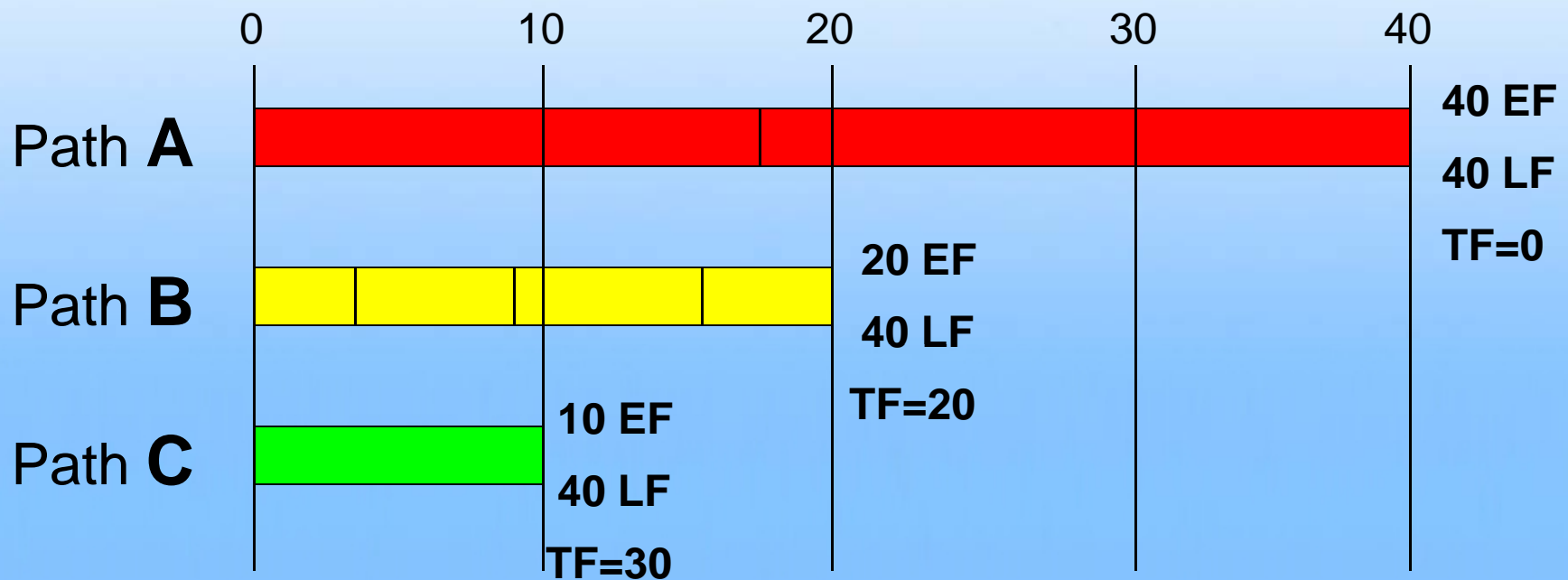
- Schedules produced today have evolved to include features that affect the calculation of float.
  - Constraints
  - Calendars

# Constraints

- Allow the scheduler to fix times and dates in the logic network.
- Often affect the calculation of float.

# Critical Path

- Using the earlier example, note the early and late finish dates of each of path.

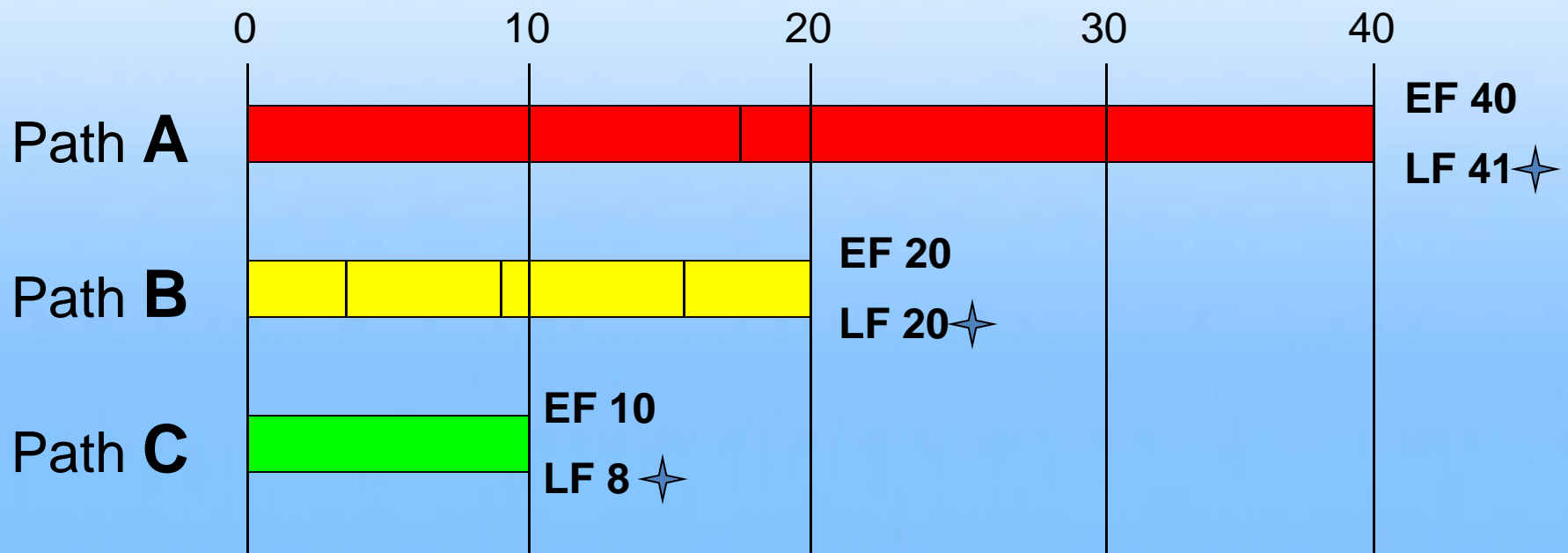


# Critical Path

- Using a constraint, we can choose to fix the late finish date.
- We constrain Path A to finish on day 41.
- We constrain Path B to finish on day 20.
- We constrain Path C to finish on day 8.

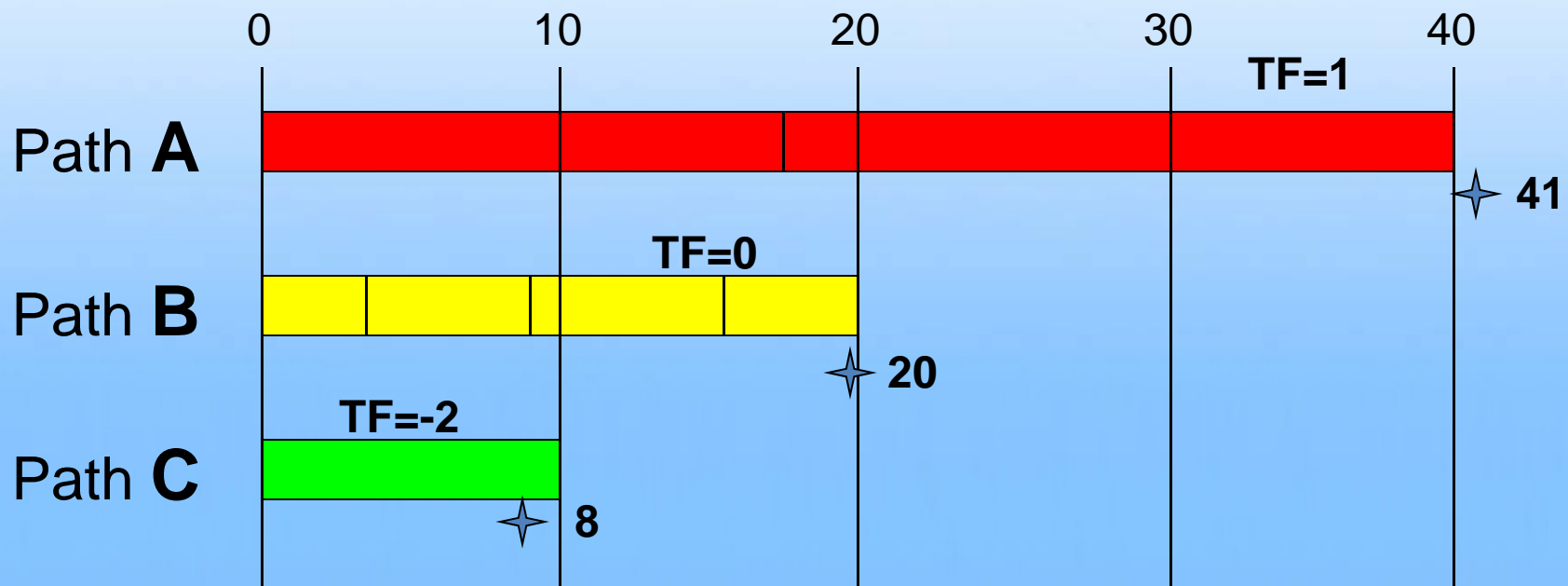
# Critical Path

- The constrained late finish dates replace the original late finish dates.



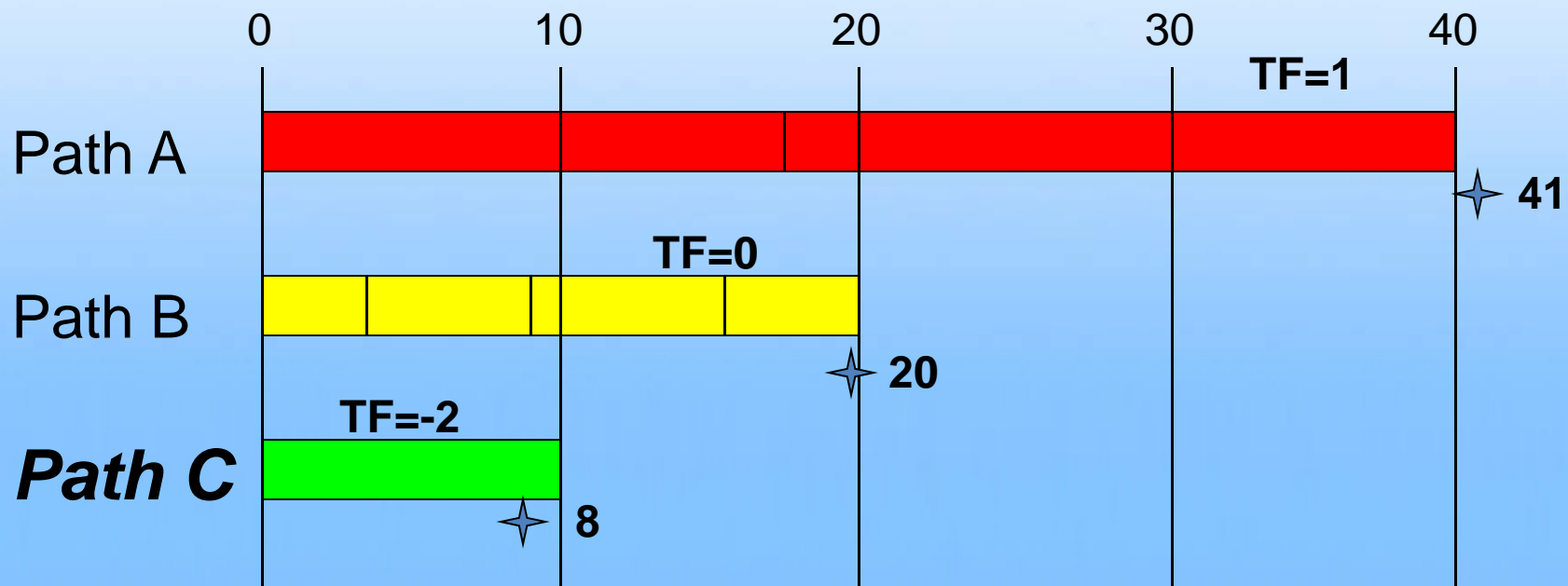
# Critical Path

- When will the Project finish?
- What path has the most negative float?



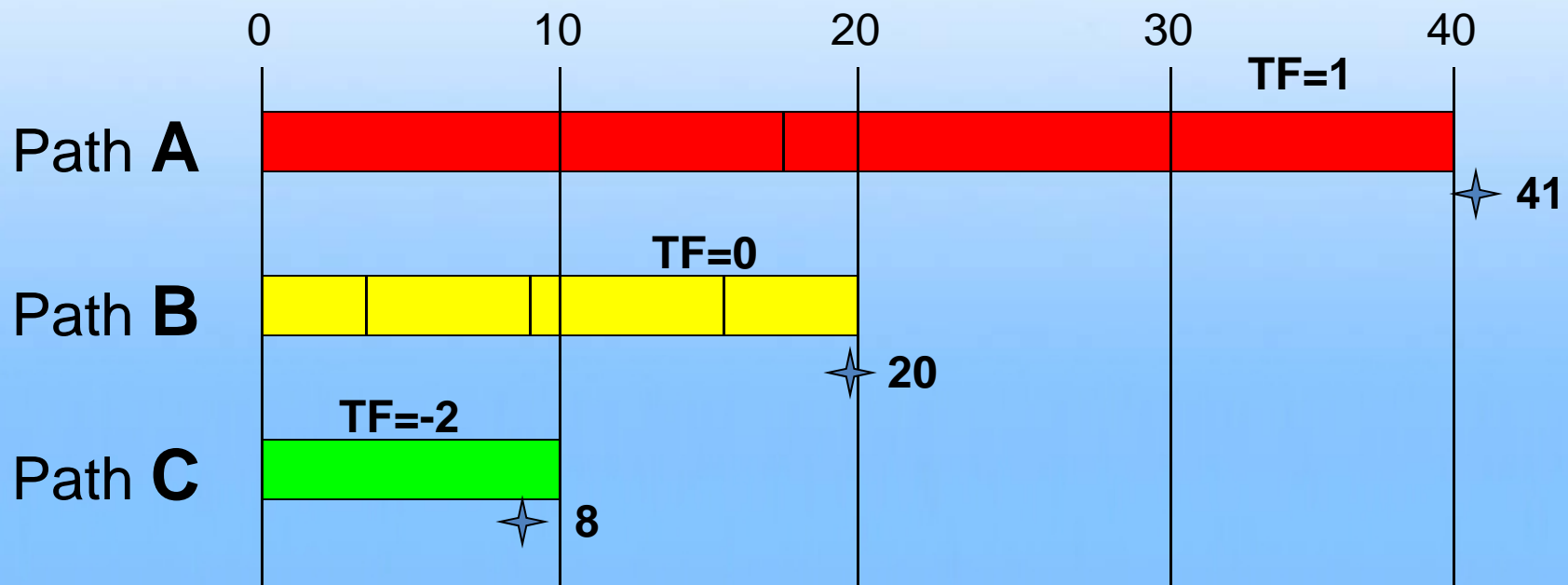
# Critical Path

- How long can **Path C** be delayed without delaying the Project?



# Critical Path

- Which path is critical to the Scheduled Project Completion Date?



# Constraints

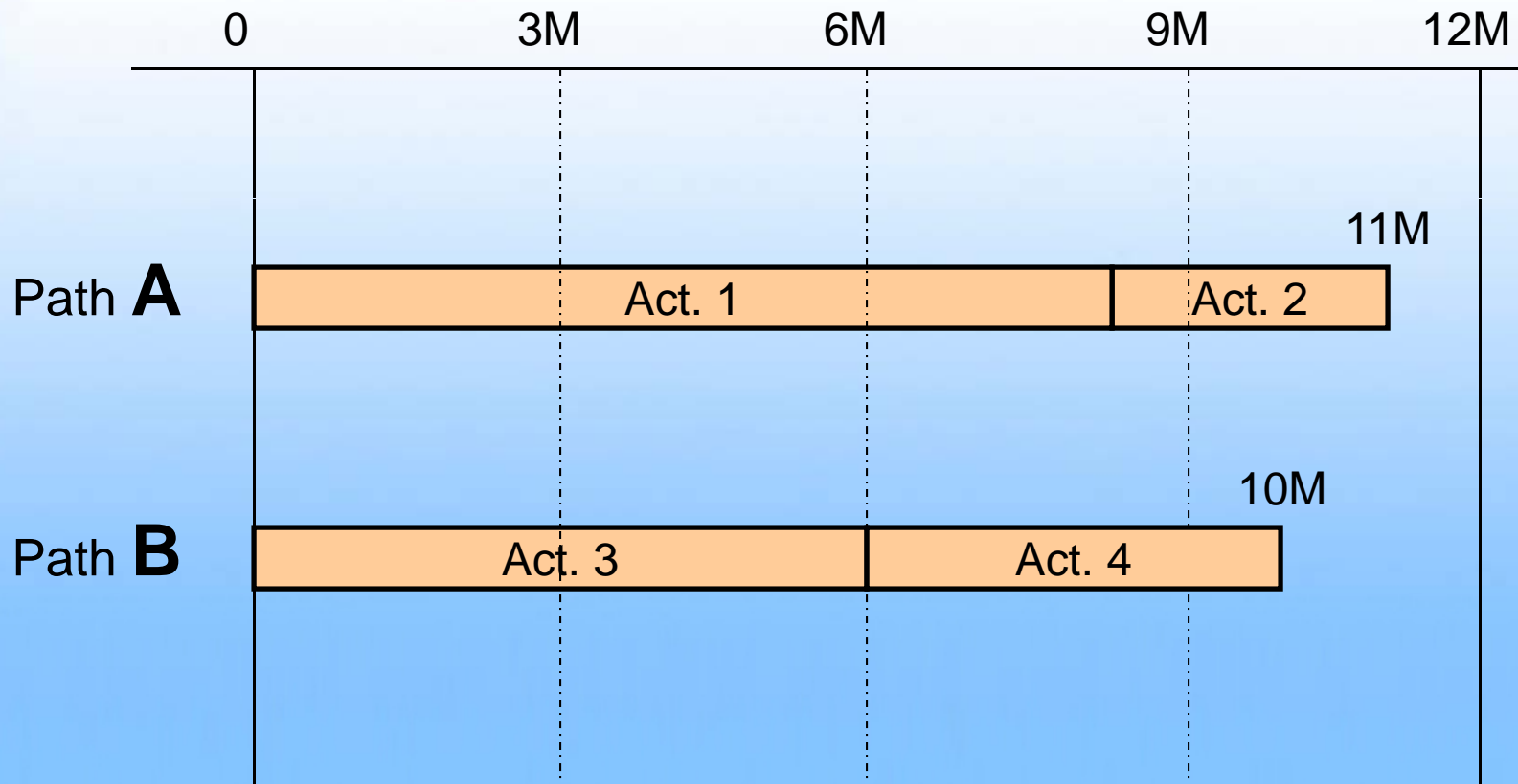
- Not limited to finish constraints.
  - Float constraints
  - Start constraints
- Often affect the calculation of float.

# Calendars

- Identify time periods when work cannot (or will not) be performed.
- Common example is a 5-day calendar with no work on weekends.
- Affect float.



# Calendars

## Time Line without Multiple Calendars



# Calendars



Identifying the work restrictions

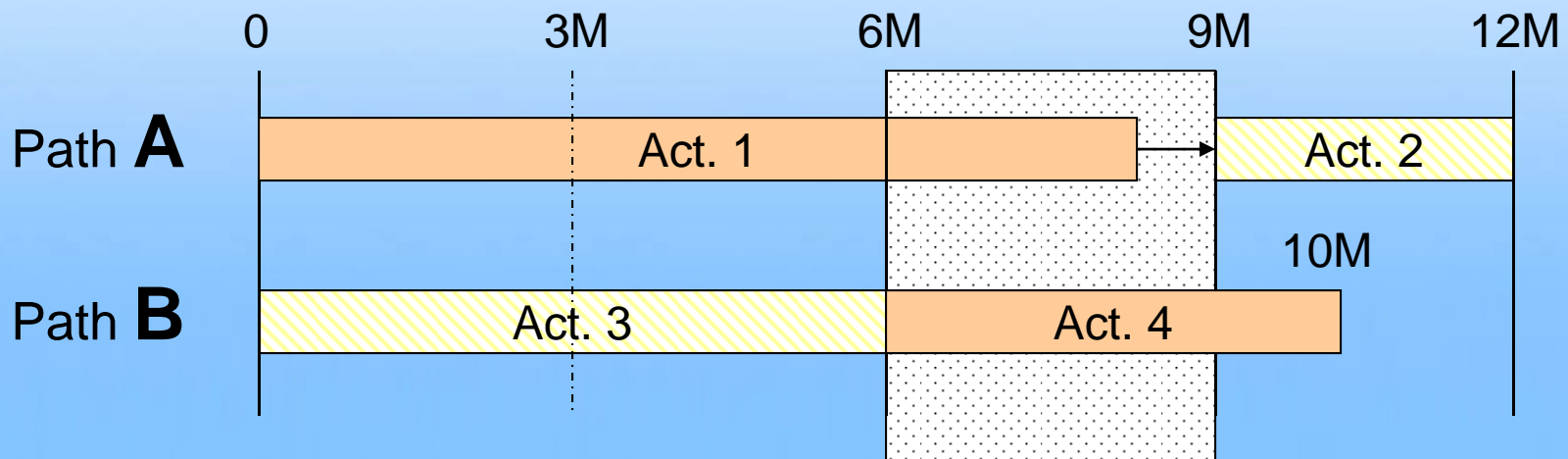
-  Activities that can be worked on any time.
-  Activities that cannot be worked on during turtle season (Months 6 – 9).



# Calendars

Incorporating the work restrictions

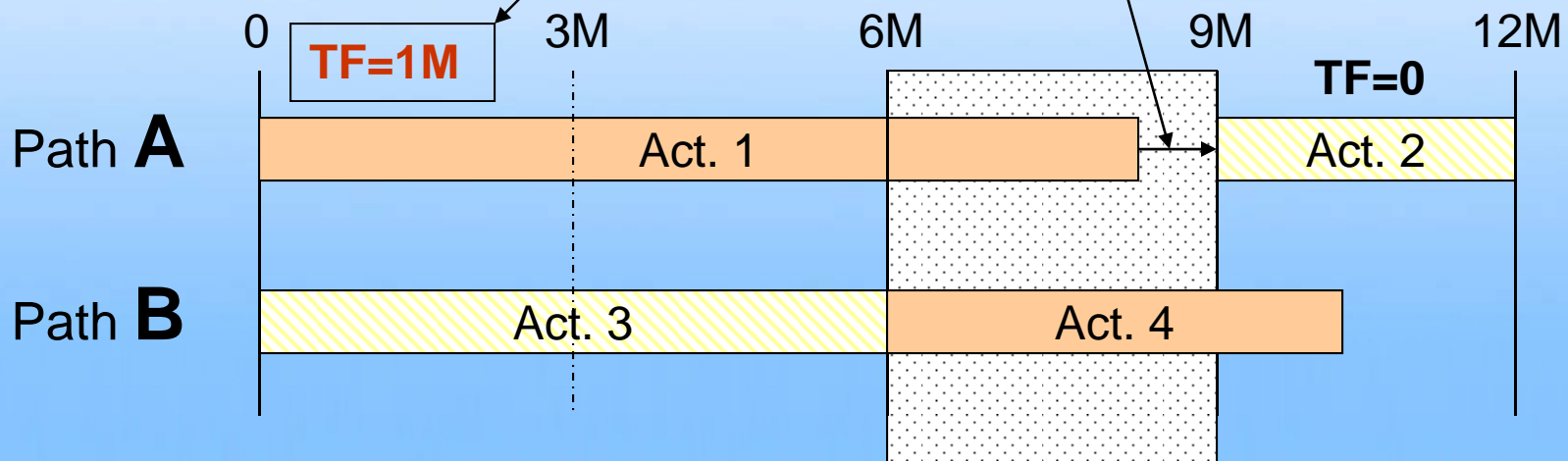
-  Activities that can be worked on any time.
-  Activities that cannot be worked on during turtle season (Months 6 – 9).



# Calendars

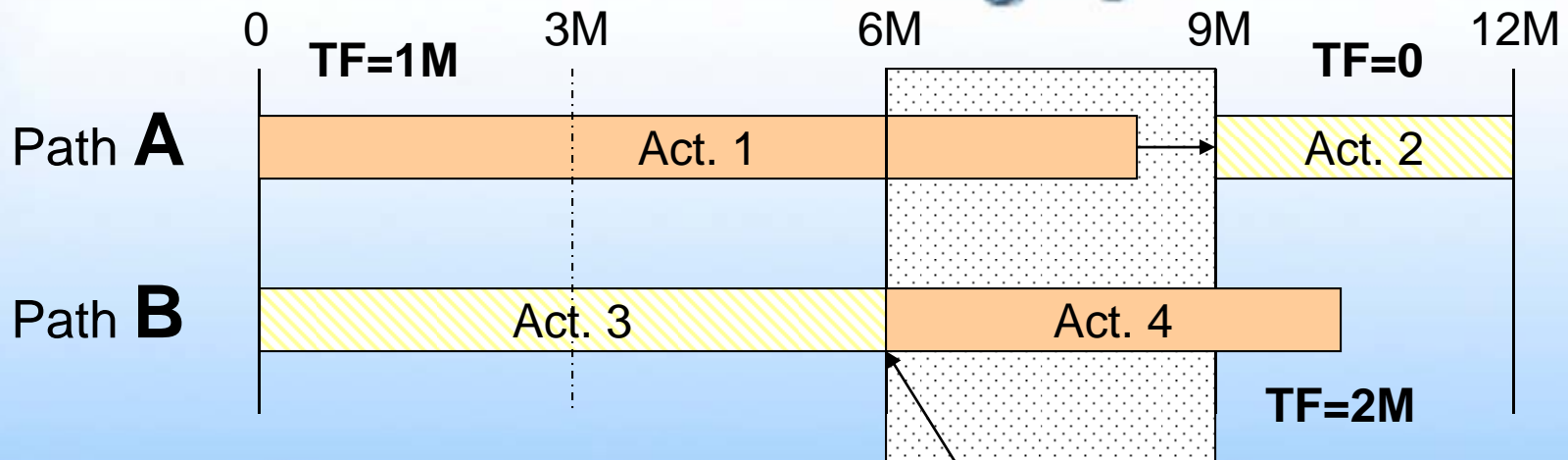
## Calculation of float with calendars

Because the first activity on Path A will not affect the Schedule Project Completion Date for a month, it has a month of float.



# Calendars

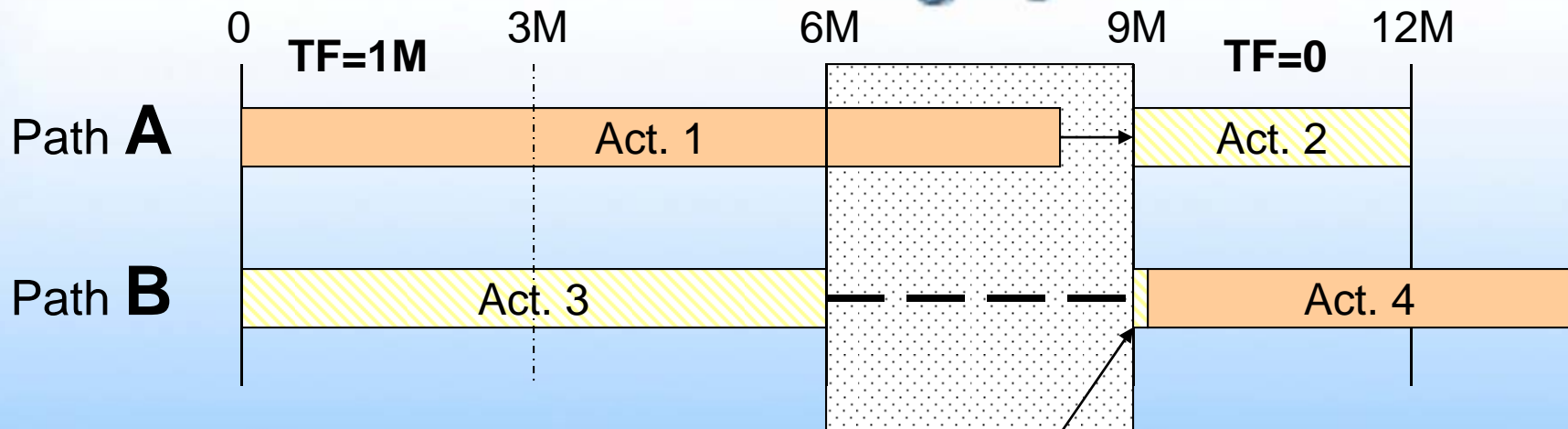
## Calculation of float with calendars



The first activity on Path B must finish on time or it will "spill over" into turtle season.

# Calendars

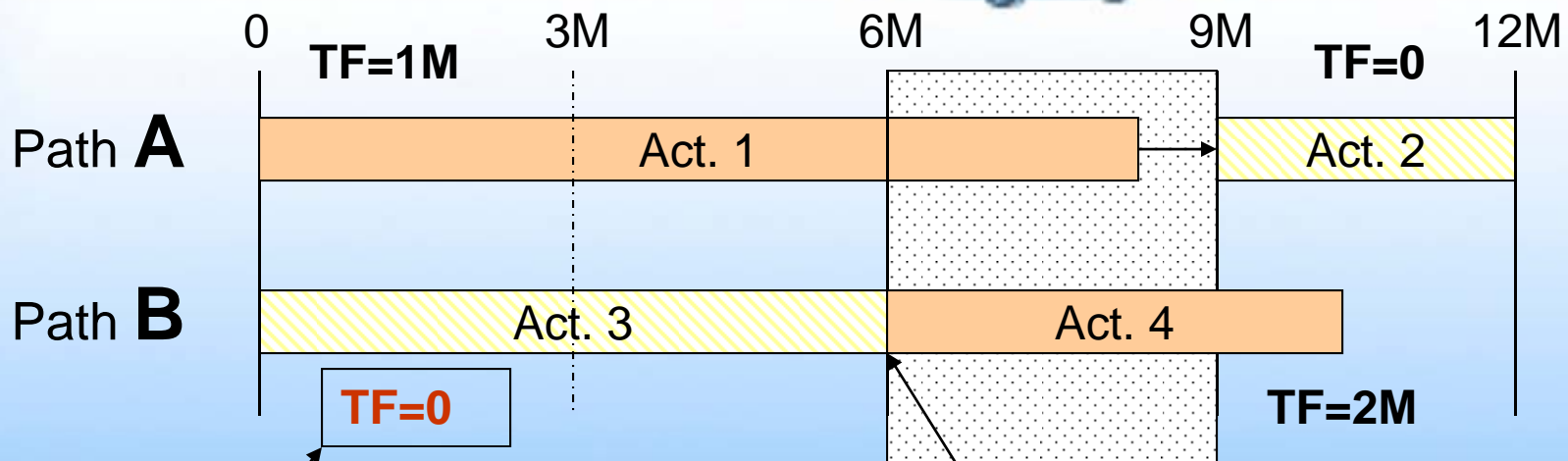
## Calculation of float with calendars



**If Path B were delayed, it would finish after turtle season and delay the Scheduled Project Completion Date.**

# Calendars

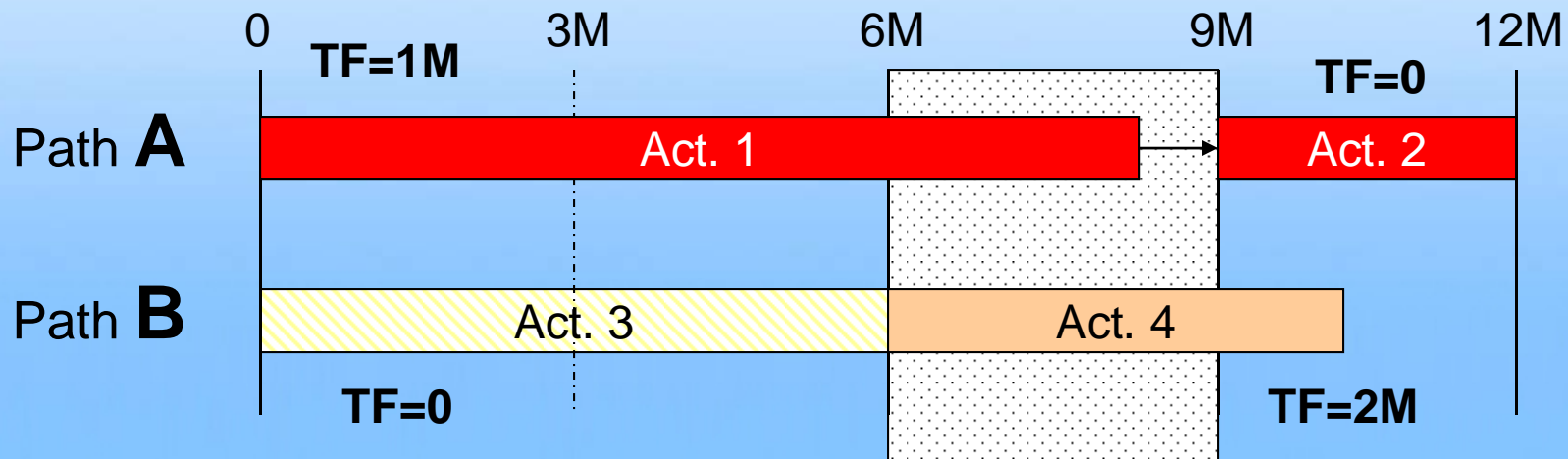
## Calculation of float with calendars



Because the first activity on Path B must be completed on time (before turtle season) or delay the project, it has no float.

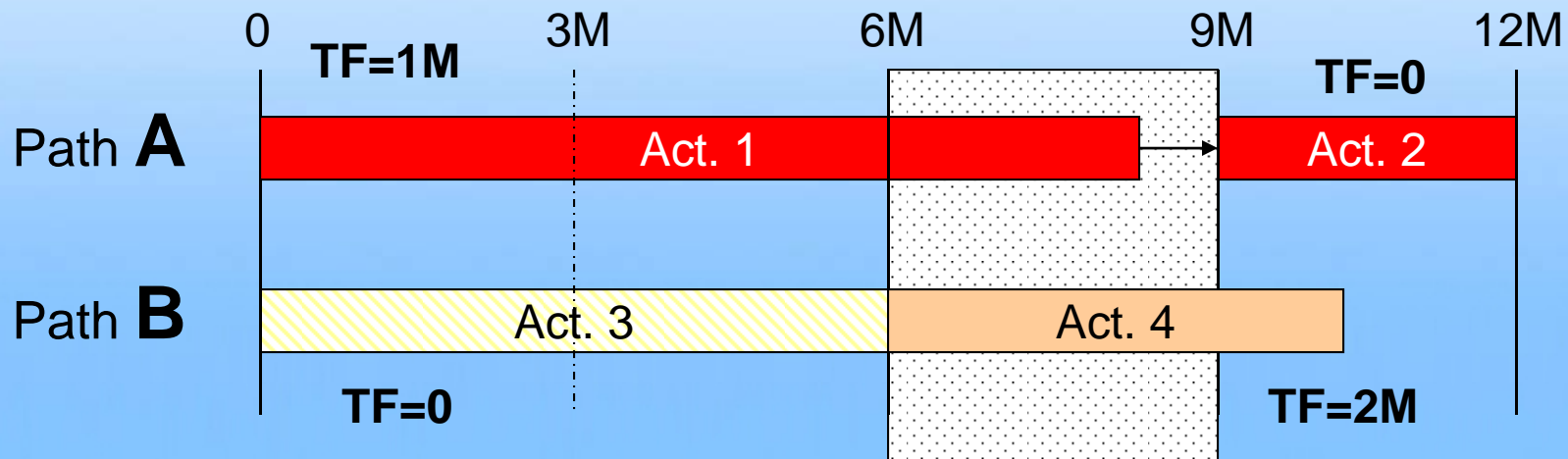
# Critical Path

- When will the Project finish?
- Which path is critical?



# Critical Path

When there are multiple calendars, (with no constraints) float helps determine when a delay to completion could occur, but it cannot be relied upon to identify the path that leads to completion.



# Float Conclusions

- The critical path is the longest sequence of work driving the project's completion date (longest path).
- Because constraints and calendars affect float, lowest float does not always mean critical path.
- Therefore, it appears that the determination of “controlling items of work,” is different from the determination of the “critical path.”

Presuming we can identify the  
CONTROLLING ITEMS OF WORK,  
how is the  
TIME EXTENSION REQUEST supported?

***WHAT TYPE OF ANALYTICAL PRESENTATION  
IS REQUIRED?***

# How to Demonstrate a Delay:

- A TIME IMPACT ANALYSIS?
- AN IMPACTED AS-PLANNED ANALYSIS?
- A COLLAPSED AS-BUILT ANALYSIS?
- A CONTEMPORANEOUS ANALYSIS?

***THE METHOD IS NOT DEFINED***

# FDOT Specifications

8-7.3.2:

“Shall include as a minimum commencement date of the delay, the cause of the delay, and the controlling item of work affected by the delay;”




IS THE TIME ANALYSIS PROSPECTIVE OR  
RETROSPECTIVE?

# FDOT Specifications appear to indicate the analysis is RETROSPECTIVE:

Section 8-7.3.2:

“A preliminary request ...ten calendar days after commencement of a delay...

...a request...within 30 days after the elimination of the delay...”

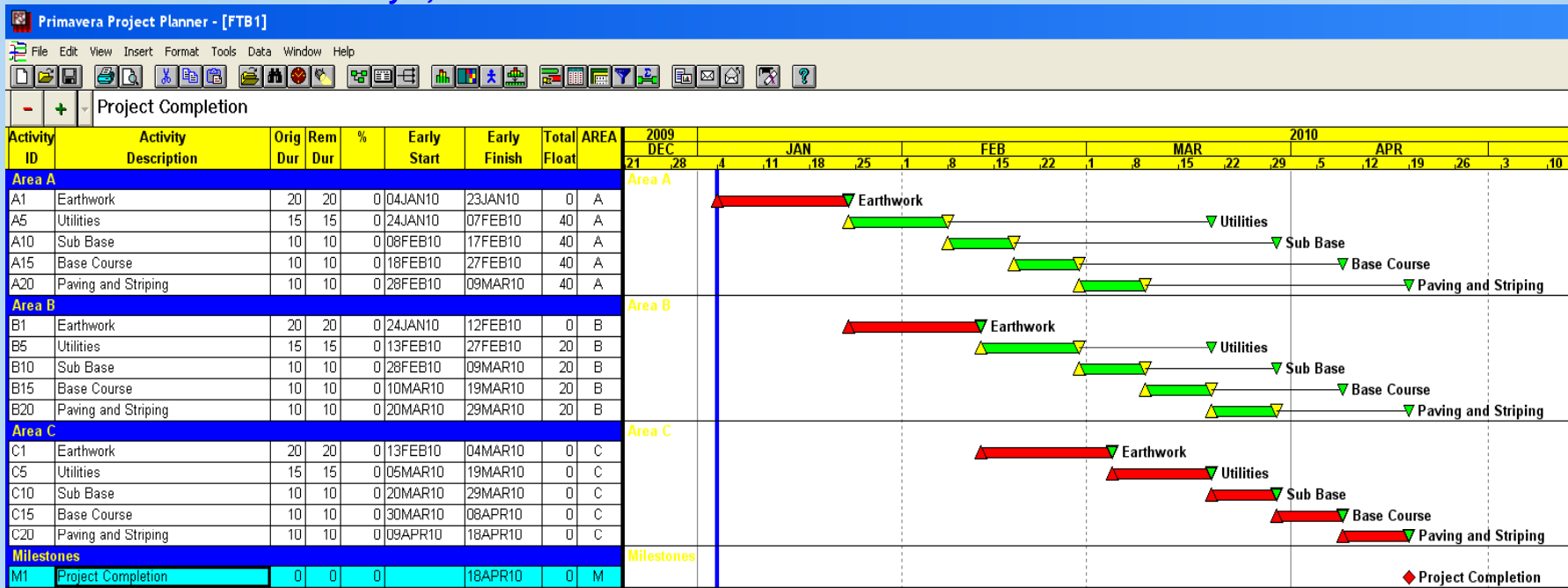


THE METHOD CHOSEN TO “MEASURE” THE  
DELAY CAN SIGNIFICANTLY AFFECT THE  
MAGNITUDE OF THE NUMBER OF DAYS OF  
DELAY.

# Basis for Scenarios

- Ace Construction (Ace) is selected to construct small roadway project.
- Ace received a NTP from FDOT and mobilized to the project on January 3, 2010.

## Baseline Schedule - January 4, 2010

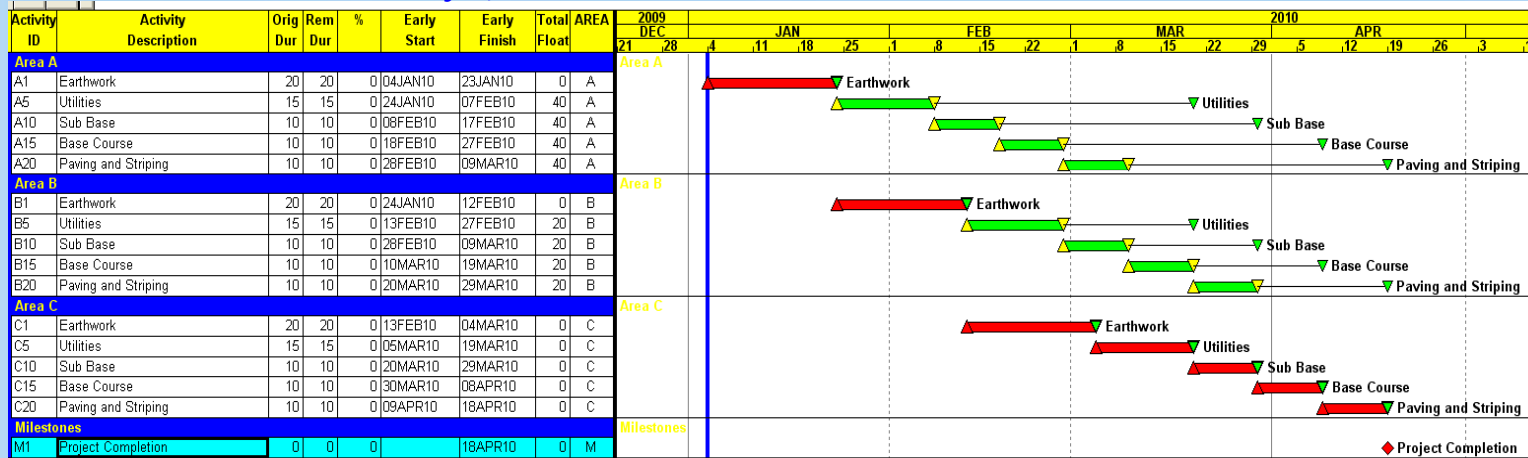


- On January 4<sup>th</sup>, Ace encountered a differing site condition for contaminated soils. FDOT and separate sub removed contaminated soils from Area A from January 5<sup>th</sup> through January 31<sup>st</sup>. Ace given full access to Area A on February 1<sup>st</sup>.

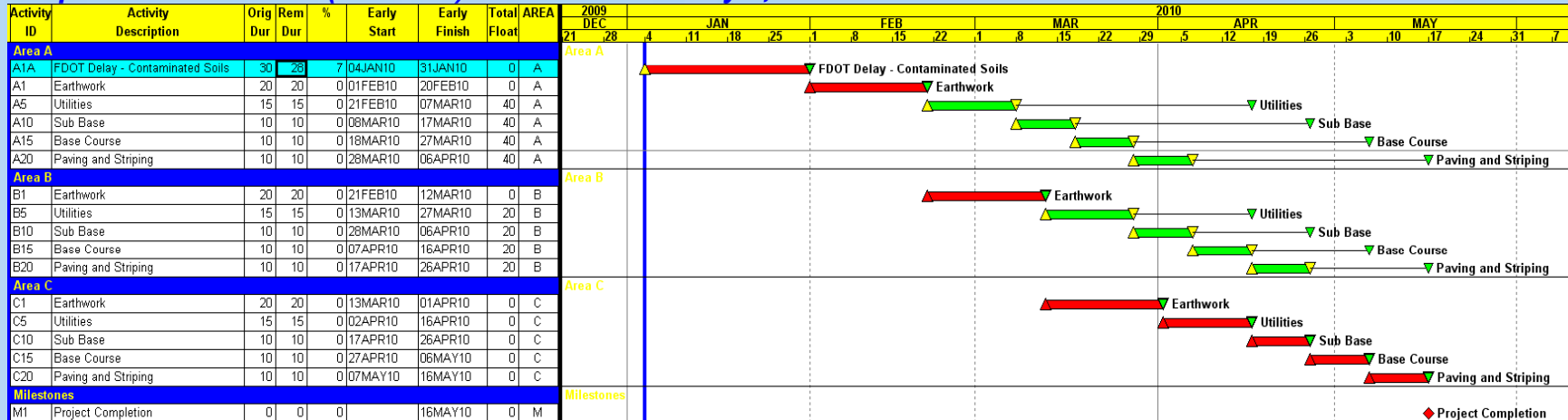
# Scenario #1: Impacted As-Planned/ Time Impact Analysis

- Ace submitted time extension request to FDOT using an Impacted As-Planned method of analysis. Ace requested a 28-day time extension from the contaminated soil delay in Area A.

**Baseline Schedule - January 4, 2010**



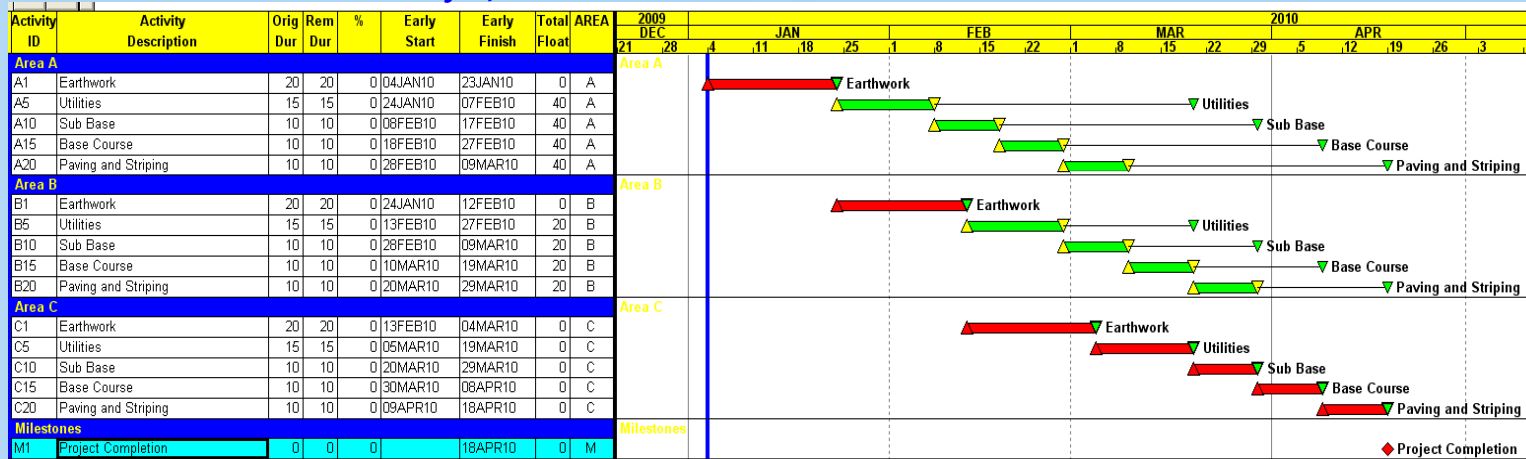
**Impacted As-Planned (Baseline) Schedule - January 4, 2010**



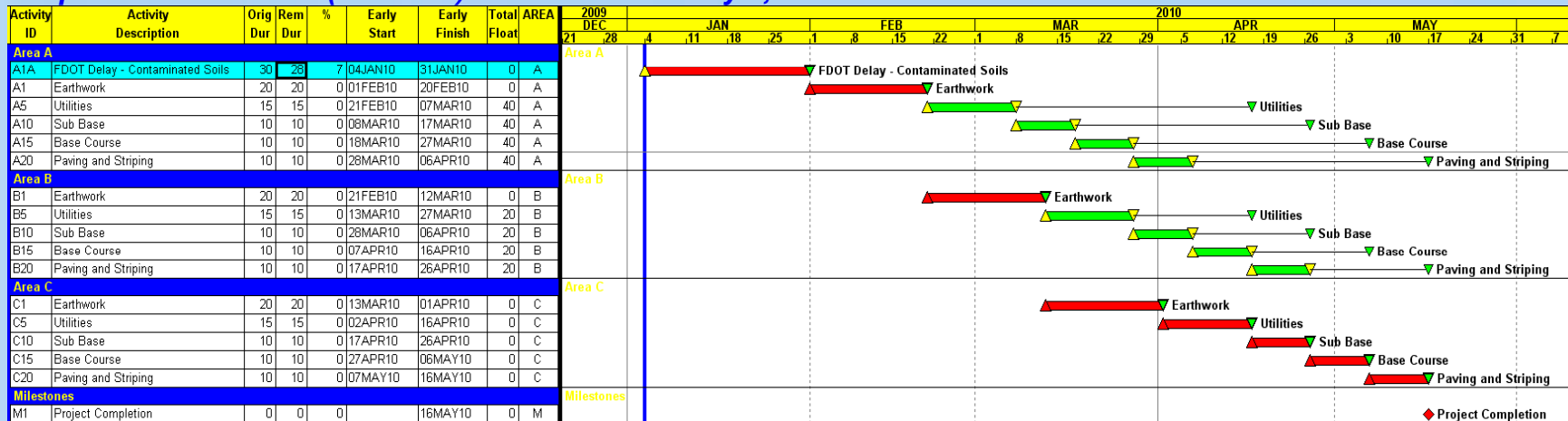
# Scenario #1: Impacted As-Planned/ Time Impact Analysis

- Was Ace's time extension request justified based on FDOT specs?
- Was Ace's analysis prospective or retrospective?
- Assuming Ace's analysis was done retrospectively, what may Ace's analysis method fail to take into account?

## Baseline Schedule - January 4, 2010



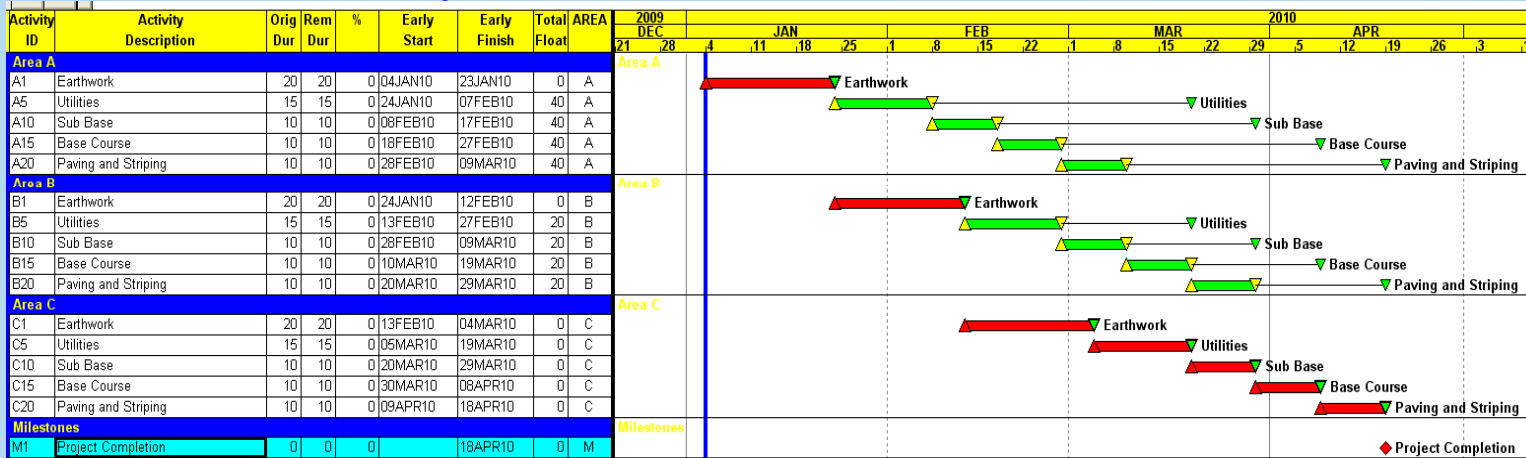
## Impacted As-Planned (Baseline) Schedule - January 4, 2010



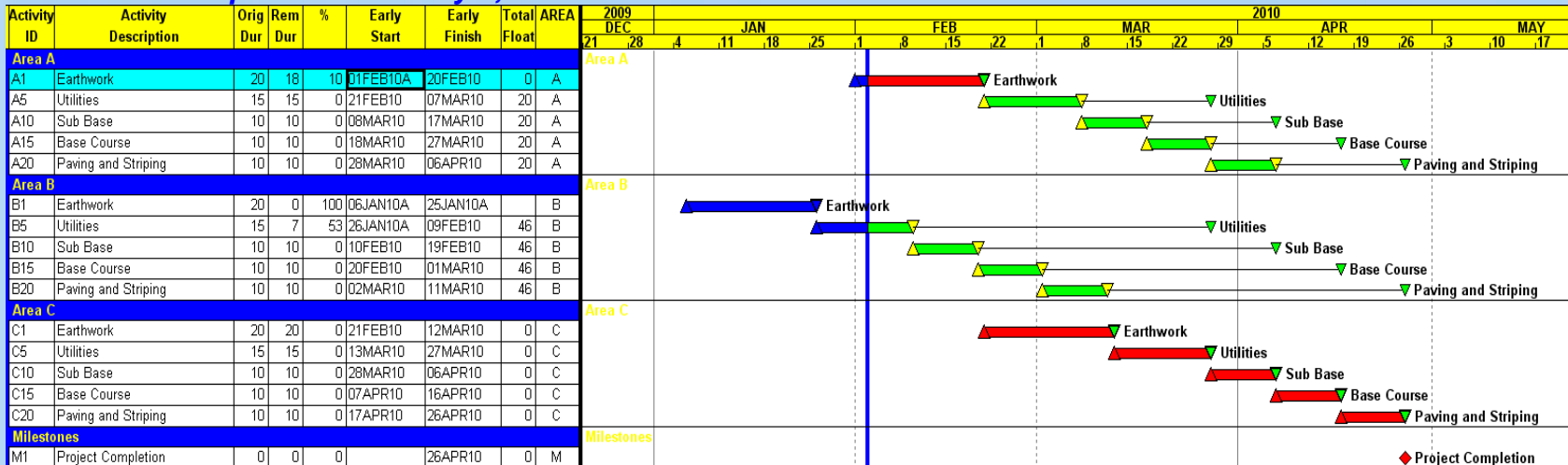
# Scenario #2: Contemporaneous Analysis

- Same delays to Area A.
- Ace requested an 8-day time extension.

## Baseline Schedule - January 4, 2010



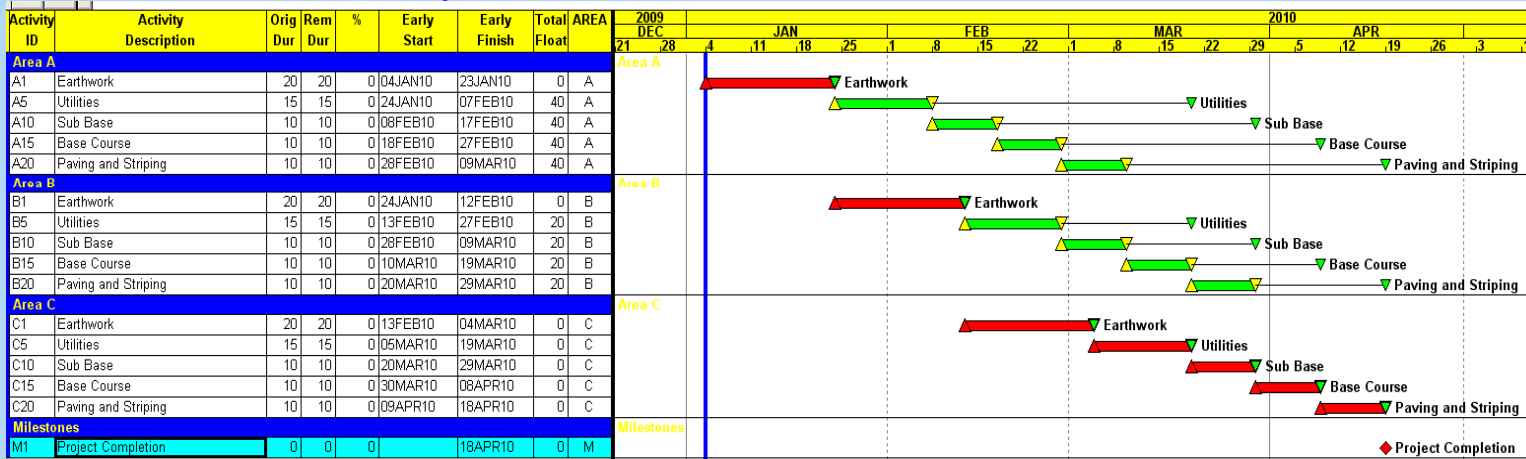
## 1st Schedule Update - February 3, 2010



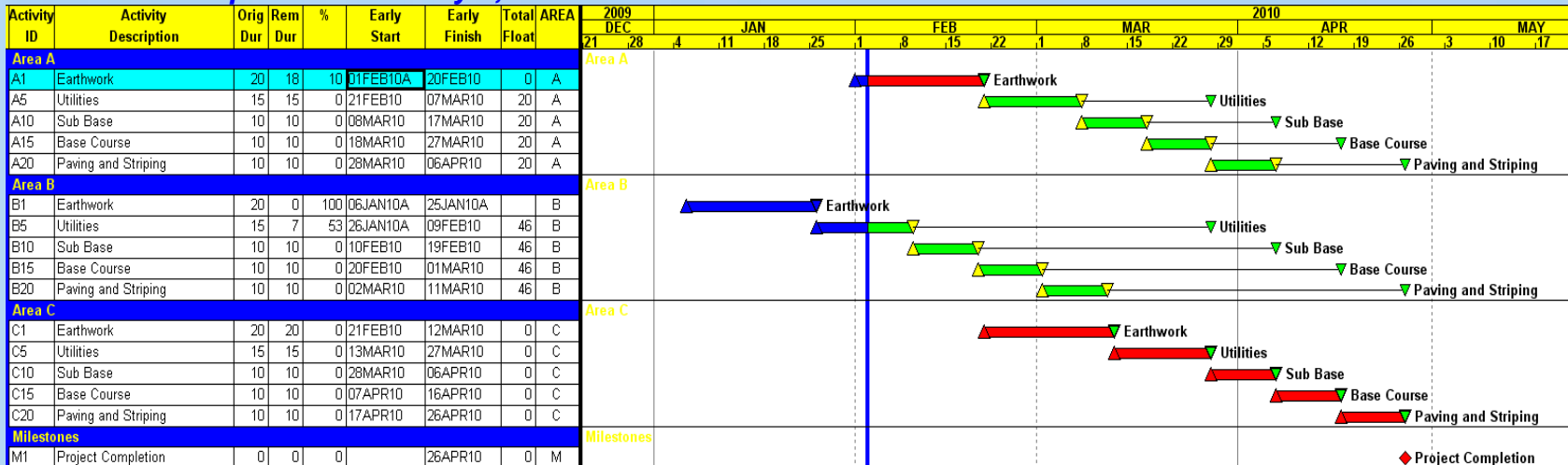
# Scenario #2: Contemporaneous Analysis

- What is different in Ace's schedule update?
- Was there still a delay to the project?
- Without an activity for the contaminated soils in Area A, how does the schedule show delay to the project?
- Where are the delays and what activities were delayed?
- How does the total delay compare with the total delay from Scenario #1?

## Baseline Schedule - January 4, 2010



## 1st Schedule Update – February 3, 2010



# Conclusions

1. Float should not be used to determine what is on the critical path. Because of that, a controlling item of work that meets the FDOT definition may not be on the true critical path of the project.
2. FDOT specs appear to specify a retrospective analysis.
3. FDOT specs do not specify an analysis method.
4. Contractor should incorporate changes into project schedules, but only in a prospective manner.

# Conclusions



5. Retrospectively, the contemporaneous analysis accounts for all delays, and not just the delays related to a specific item. The contemporaneous delay method also accounts for changes in sequence (logic revisions) whereas other methods typically do not account for these changes.
6. The quantification of critical path delay and the determination of causation for that delay **must** be separate processes.

# *Questions?*



# Further Information:

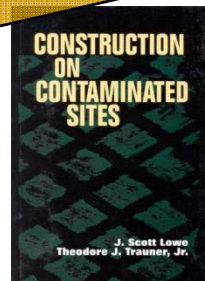
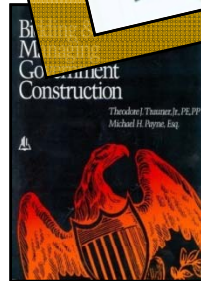
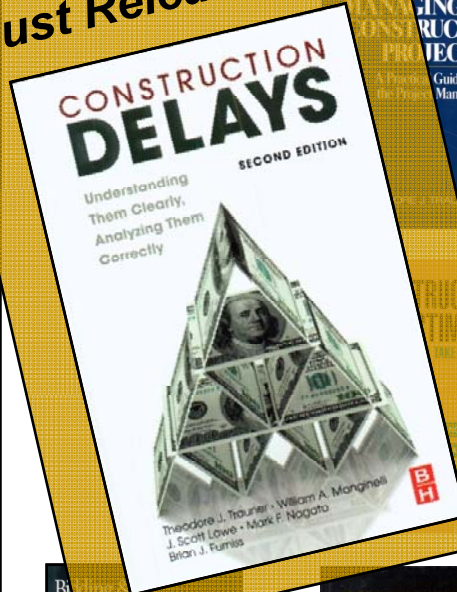


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