

# Project Planning & Control

## *Precedence Diagramming Method (PDM), Project Monitoring & Control*

### *Week 7*

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# Project Planning & Control

## *Lesson 1*

### *Introduction to Precedence Diagramming Method (PDM)*

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# Learning Objectives

- Rationale for Precedence Diagram Method
- History of PDM
- PDM Notation & Relationships
- Network Analysis using PDM
- Examples

# Rationale for Precedence Diagram Method

- Consider a Pipeline Project
- Key Activities
  - Excavate
  - Lay pipe
  - Backfill
- Develop Project Network
  - How many activities ?
  - What is the sequence ?



# NEED FOR PDM



Excavate



Lay pipe



Backfill

- Above network clearly says that after completion of excavation; pipe laying will be done; After pipe laying is complete - backfilling will be done.

**Does this represent real sequence ??**

1. Pipe laying may start after 3 or 4 days of excavation.
2. Backfilling may start after 3 or 4 days of pipe laying.

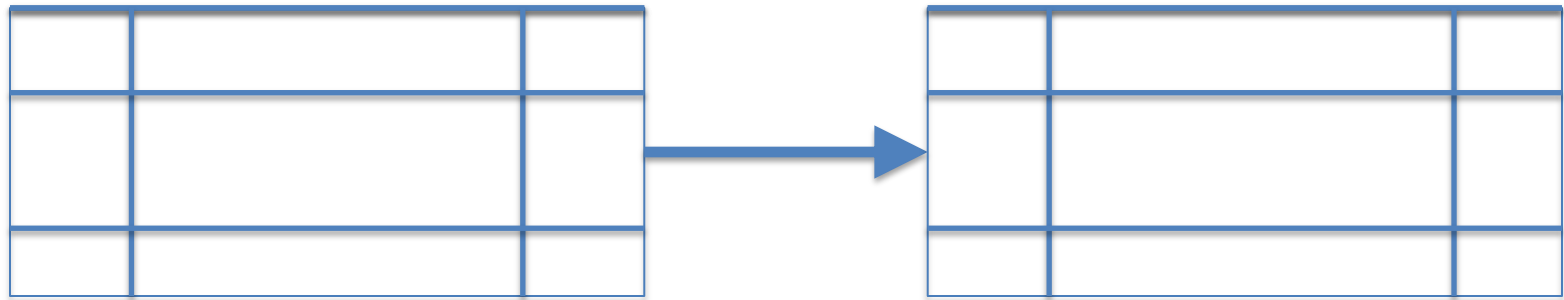
How can we represent this ?

# History of Precedence Diagram Method

- Developed in 1960s by Zachry Construction & IBM
- Attempt to get advantages of AOA's events with a AON type representation.
- The default representation in all popular scheduling software.
- Not fully accepted by all professional schedulers as software algorithms are not standardised

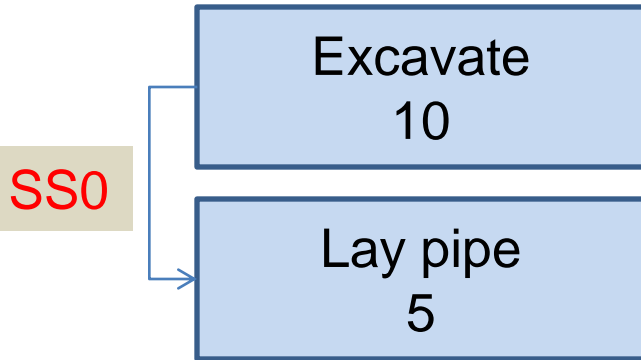
# Precedence Diagram Method Notation

- AON Type Notation

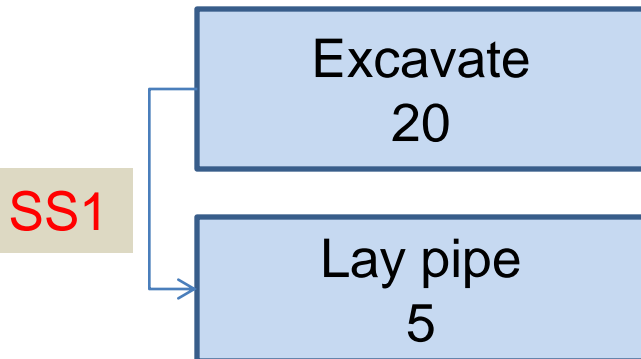


- 4 Types of Relationships
  - Start to Start relationship
  - Finish to Start relationship
  - Finish to Finish relationship
  - Start to Finish relationship
- Leads & Lags

# Start to Start Relationship



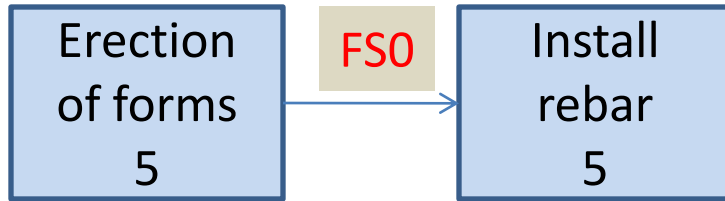
- **Zero lag:** Laying pipe can start no earlier than excavation.



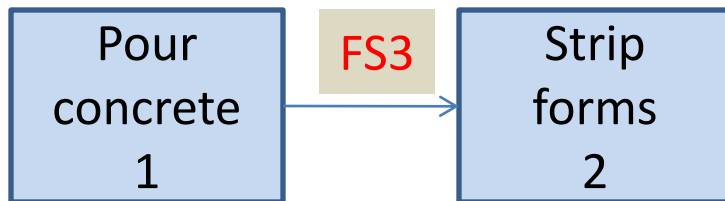
- **Positive lag:** Laying pipe can start no earlier than one day after excavation starts.



# Finish to Start Relationship

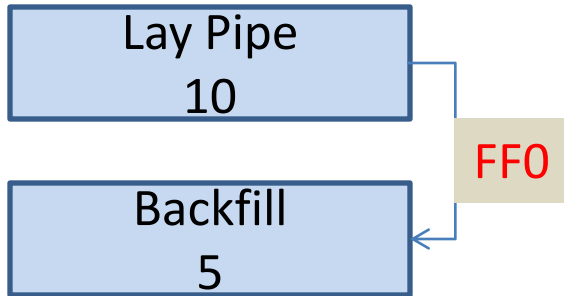


- **Zero lag:** Installation of reinforcement can start only after the erection of forms is completed.

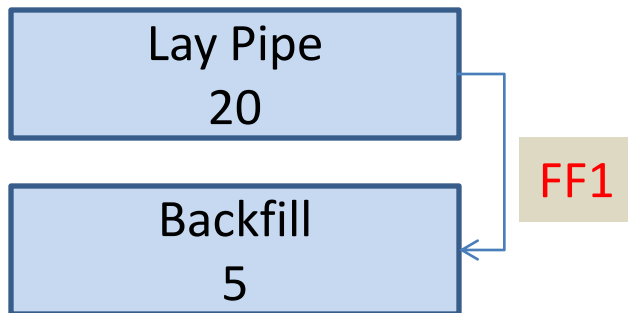


- **Positive lag:** The stripping of forms can start no earlier than 3 days after completion of concrete pouring.

# Finish to Finish Relationship

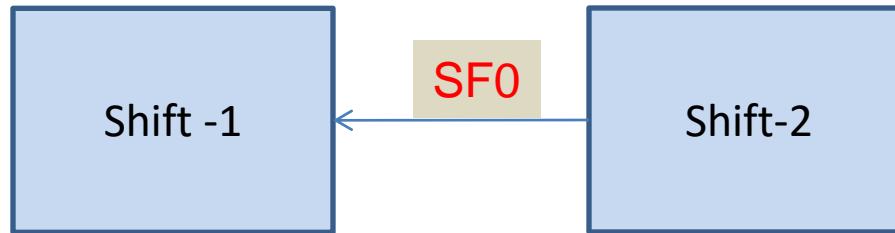


- **Zero lag:** The completion of backfilling can be no earlier than the completion of laying pipe.



- **Positive lag:** Backfilling can be completed no earlier than 1 day after the laying of pipe is completed.

# Start to Finish Relationship



- Shift 1 can end their work only after Shift-2 has started
- Not a common relationship – rarely used.