

Visualizing the Future One Step Ahead of Everyone Else

Presented by: Ryan Donaldson & Eric Sylvestre

NetPoint + GPM
CONFERENCE

May 8, 2020 | Online



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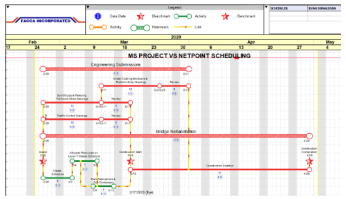
AGENDA



Bios & Team

NetPoint®

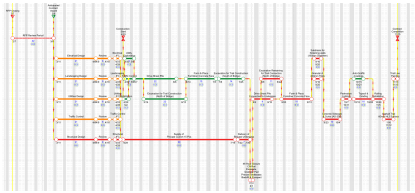
Intro To Scheduling Softwares



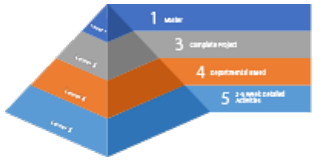
Real-Time Planning



Float vs Total Float



Visualizing Construction Schedules



Level 1 to Level 5 Schedule Integration



Eric Sylvestre

Operations Manager



Ryan Donaldson

Scheduler & Project Controls

OUR TEAM

FACCA Incorporated

Meet the presenter

Ryan Donaldson

FACCA Incorporated

Ryan spent the first 5 years of his career in product development and program management in the automotive industry where he used MS Project as his scheduling/planning software. He was introduced to NetPoint in the construction industry at the inception of his employment at Facca Inc. in 2017. He is well versed in both softwares and views NetPoint as an actual planning tool. Ryan earned his degree in civil/mechanical engineering.





Meet the presenter

Eric Sylvestre

FACCA Incorporated

Eric Sylvestre holds a BASc in civil engineering from the University of Windsor and has experience working on bridge, culvert, and marine projects. He uses NetPoint to improve efficiency at completing project deliverables on time and within budget.



Introduction to Scheduling Softwares

GPM vs CPM Scheduling Softwares

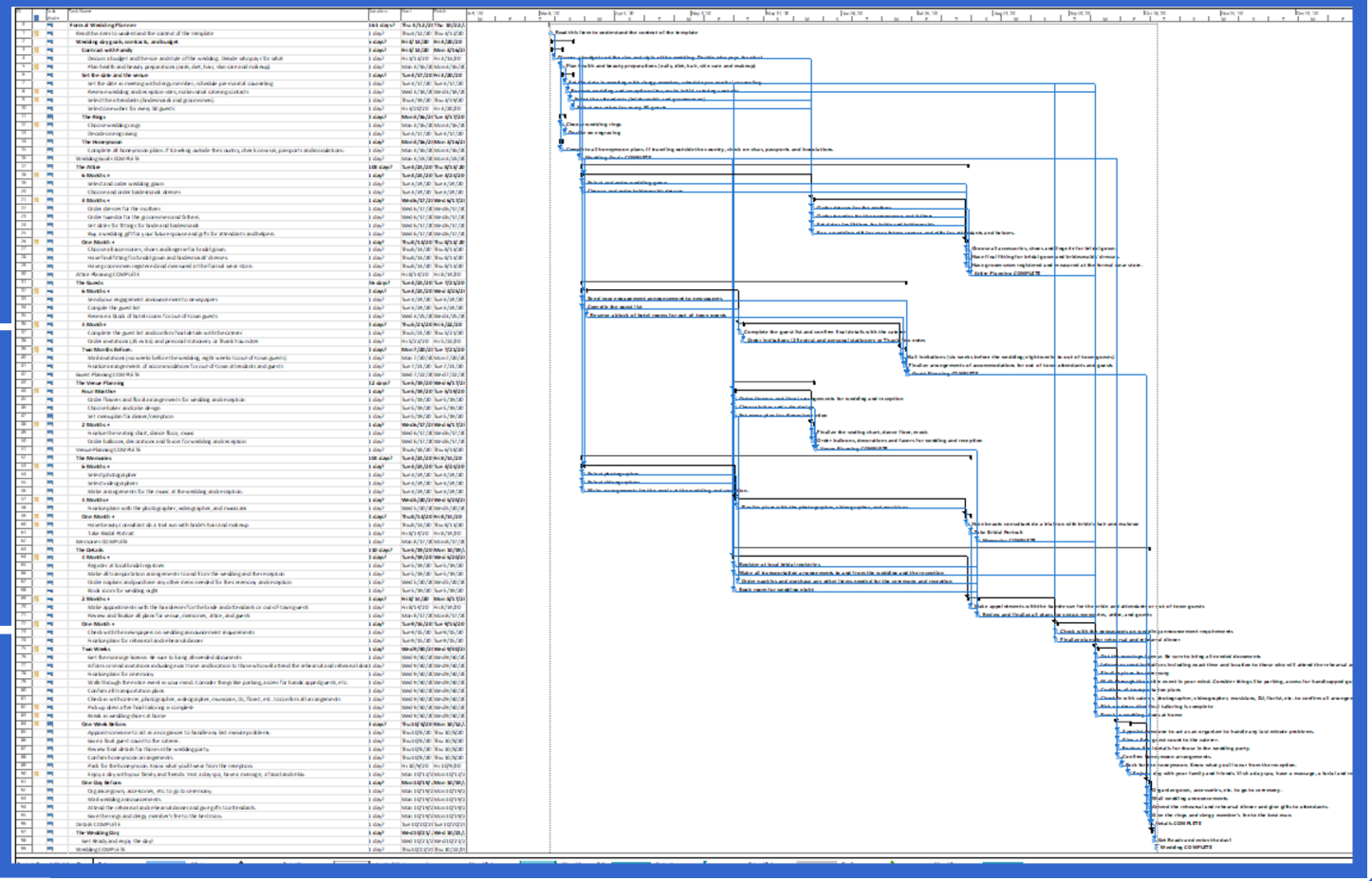
INTRODUCTION **MS PROJECT**

MS Project is a CPM (Critical Path Method) Software

The critical path method (CPM) is a step-by-step project management technique for process planning that defines CRITICAL and NON-CRITICAL tasks with the goal of preventing time-frame problems and process bottlenecks.

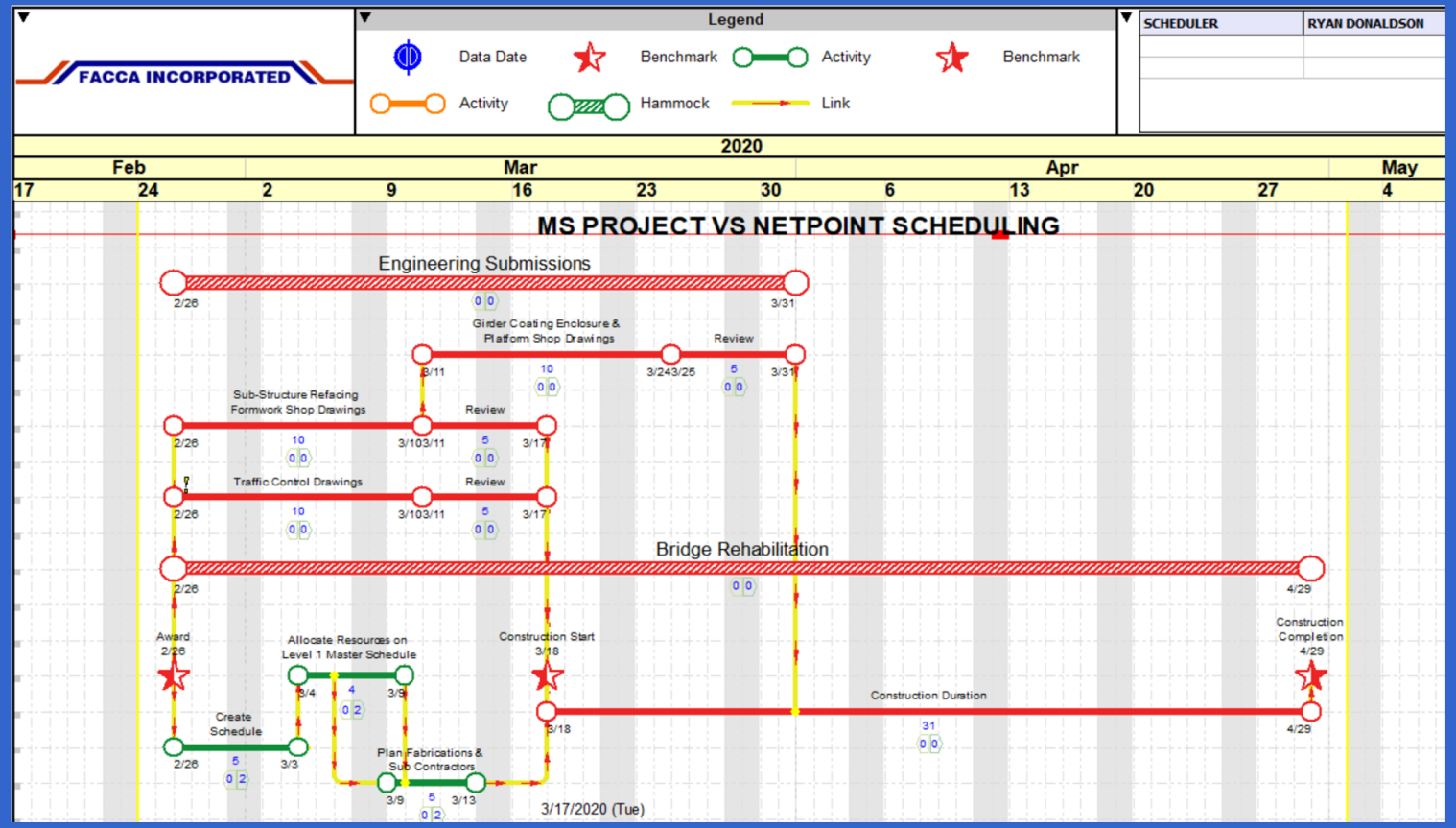
A critical path is determined by the longest stretch of activities that are dependent on each other, using predecessors and successors, while all being measured in time.

These so-called “longest paths” are typically bound by two logical end points (milestones or benchmarks).



INTRODUCTION **NetPoint**

NetPoint is a GPM (Graphical Path Method) Software



The graphical path method (GPM) is also a step-by-step project management technique for process planning that defines CRITICAL and NON-CRITICAL tasks with the goal of preventing time frame problems and process bottlenecks.

GPM uses a clean, visual methodology to schedule projects, providing a real-time, high-level editing tool when planning within the tightest deadlines.

NetPoint, a **GPM** scheduling software, was designed as a graphical tool to inspire an engaging, planning-centric experience for project stakeholders.



DIFFERENCES



NetPoint vs MS Project

NetPoint uses “Total Float”

- Drift + Float
- Float = # of days an activity can be delayed
- Drift = # of days an activity can start early

NetPoint uses link-gap to allow for real-time planning as changes are committed to the schedule.

Real-time visual planning & scheduling tool

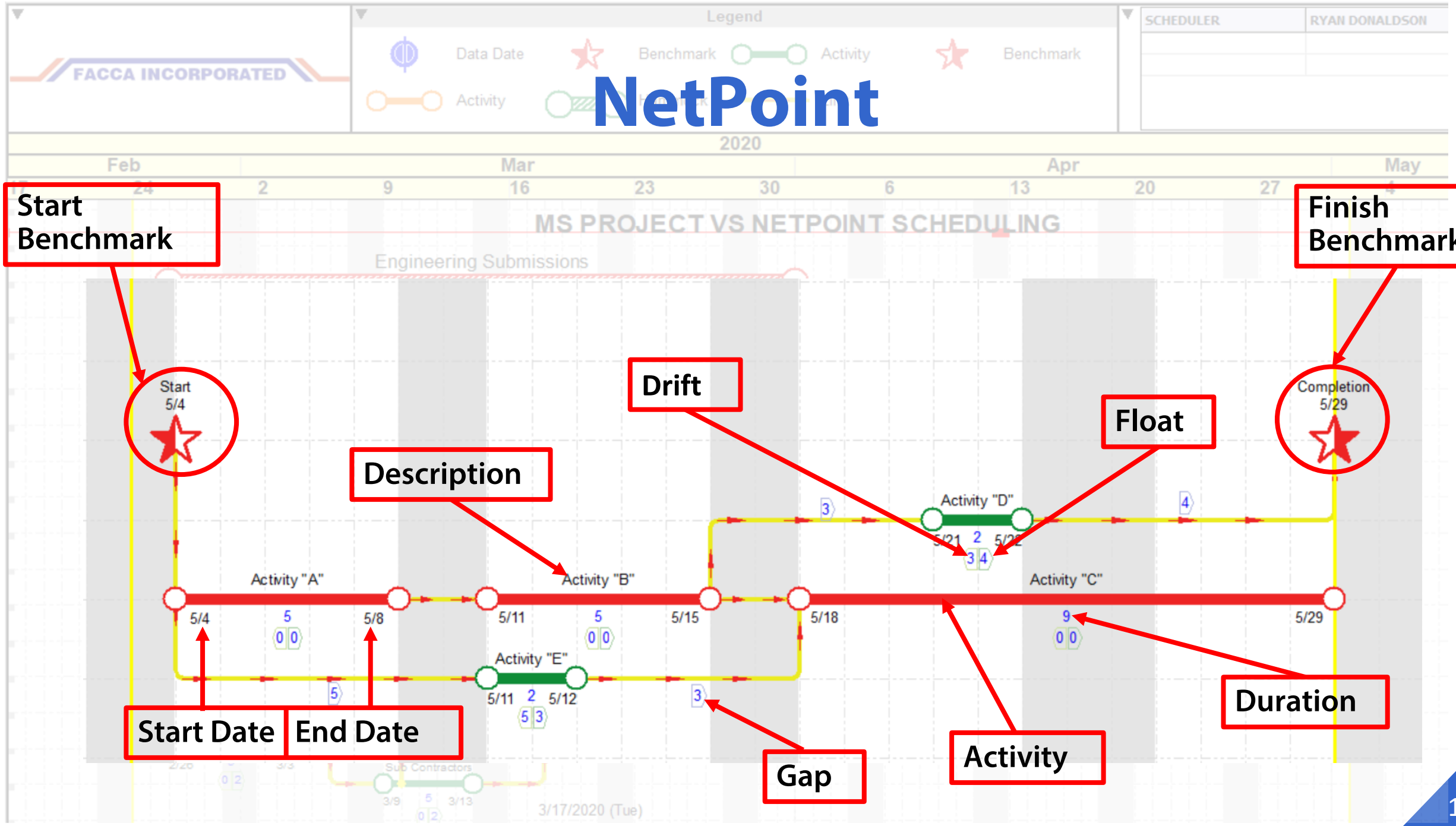
MS Project uses only “Float”

- Float is calculated when activities are forced to early start dates.

CPM relies on float calculation throughout the entire project based on early finish and late finish.

CPM is a scheduling tool that is used to check off a box on the list of submittals.

NetPoint


FACCA INCORPORATED
Legend
Data Date
Benchmark
Activity
Benchmark
Activity
SCHEDULER
RYAN DONALDSON
2020
Feb
Mar
Apr
May
MS PROJECT VS NETPOINT SCHEDULING
Engineering Submissions
Start Benchmark
Finish Benchmark
Drift
Float
Description
Start
5/4
Completion
5/29
Activity "A"
Activity "B"
Activity "C"
Activity "D"
Activity "E"
5/4
5/8
5/11
5/15
5/18
5/29
5/11
5/12
Start Date
End Date
Gap
Activity
Duration
Sub Contractors
3/17/2020 (Tue)



Real-Time Planning

GPM vs CPM Scheduling Softwares

MS Project

Poor Progress Visualization

Time consuming and difficult to create reports

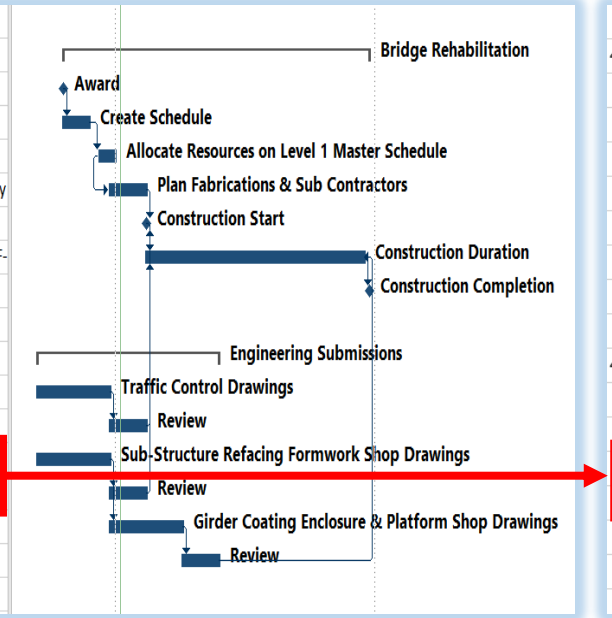
Real-time dashboard updates lacking

Infinitely more difficult to stay on top of the plan without real-time information

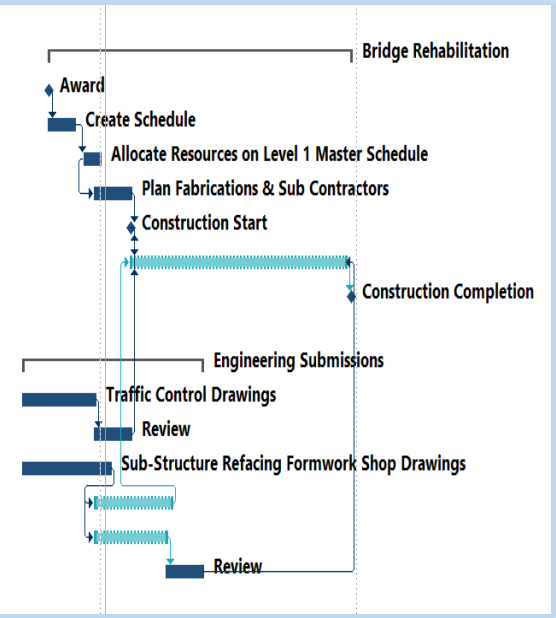
MS Project

Poor Progress Visualization

Bridge Rehabilitation	**43 days**	**Mon 3/2/20**	**Thu 4/30/20**	
Award	0 days	Mon 3/2/20	Mon 3/2/20	
Create Schedule	5 days	Mon 3/2/20	Fri 3/6/20	3
Allocate Resources on Level 1 Master Schedule	3 days	Mon 3/9/20	Wed 3/11/20	4
Plan Fabrications & Sub Contractors	5 days	Wed 3/11/20	Tue 3/17/20	5SS+1 day
Construction Start	0 days	Wed 3/18/20	Wed 3/18/20	6,13
Construction Duration	30 days	Wed 3/18/20	Tue 4/28/20	7,13,17FF-
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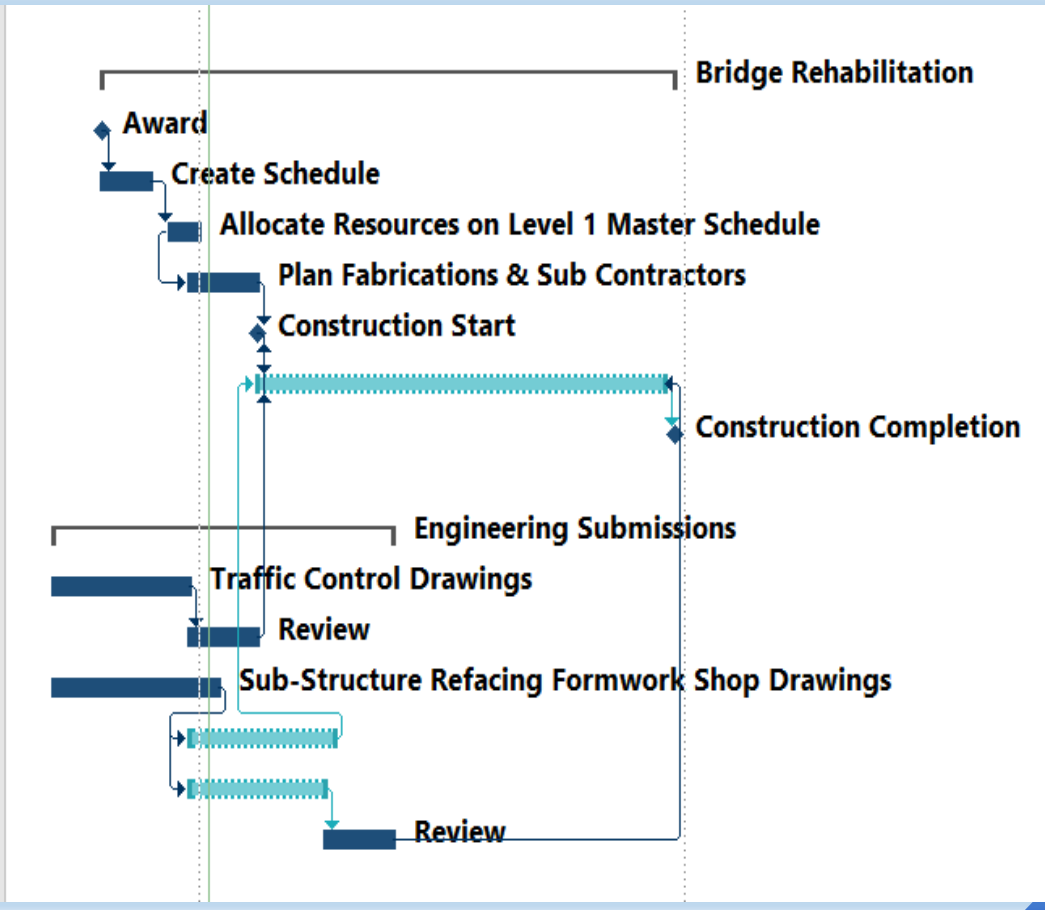
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MS Project

Poor Progress Visualization

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MS Project

Poor Progress Visualization

Laborious Date Maintenance

OPTION 1	Linked task dates – If I change a date on the 4th level task all subsequent tasks (i.e. 200 tasks) dates reflow - including into weekends, holidays.
OPTION 2	Non-linked task dates – If I change a date on the 4th level task, then I would have to manually update all subsequent task (i.e. 200 tasks) dates.
OPTION 3	Auto Leveling will scramble dates in unwanted ways; reformatting of schedule structure would be required.

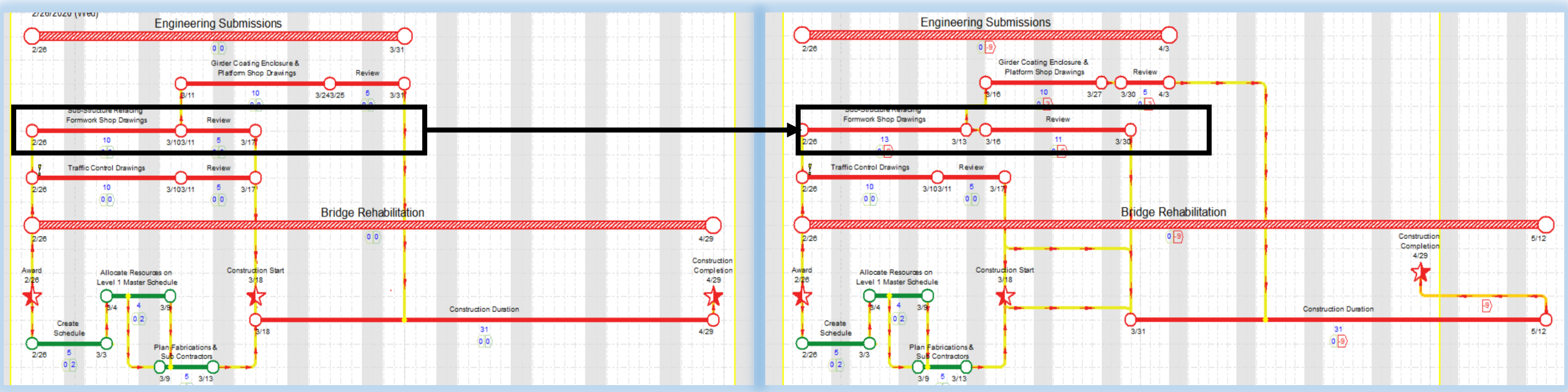
NetPoint

Real-Time Progress Visualization



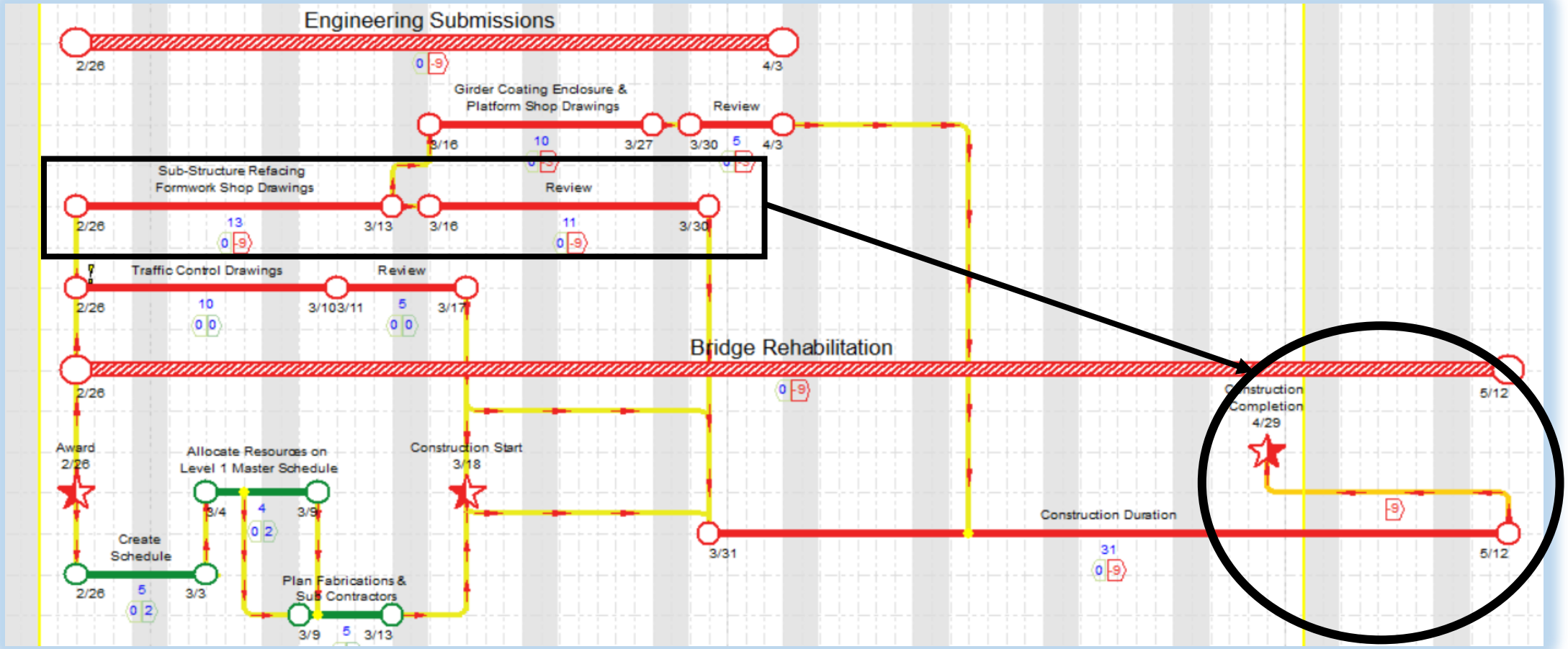
NetPoint

Real-Time Progress Visualization

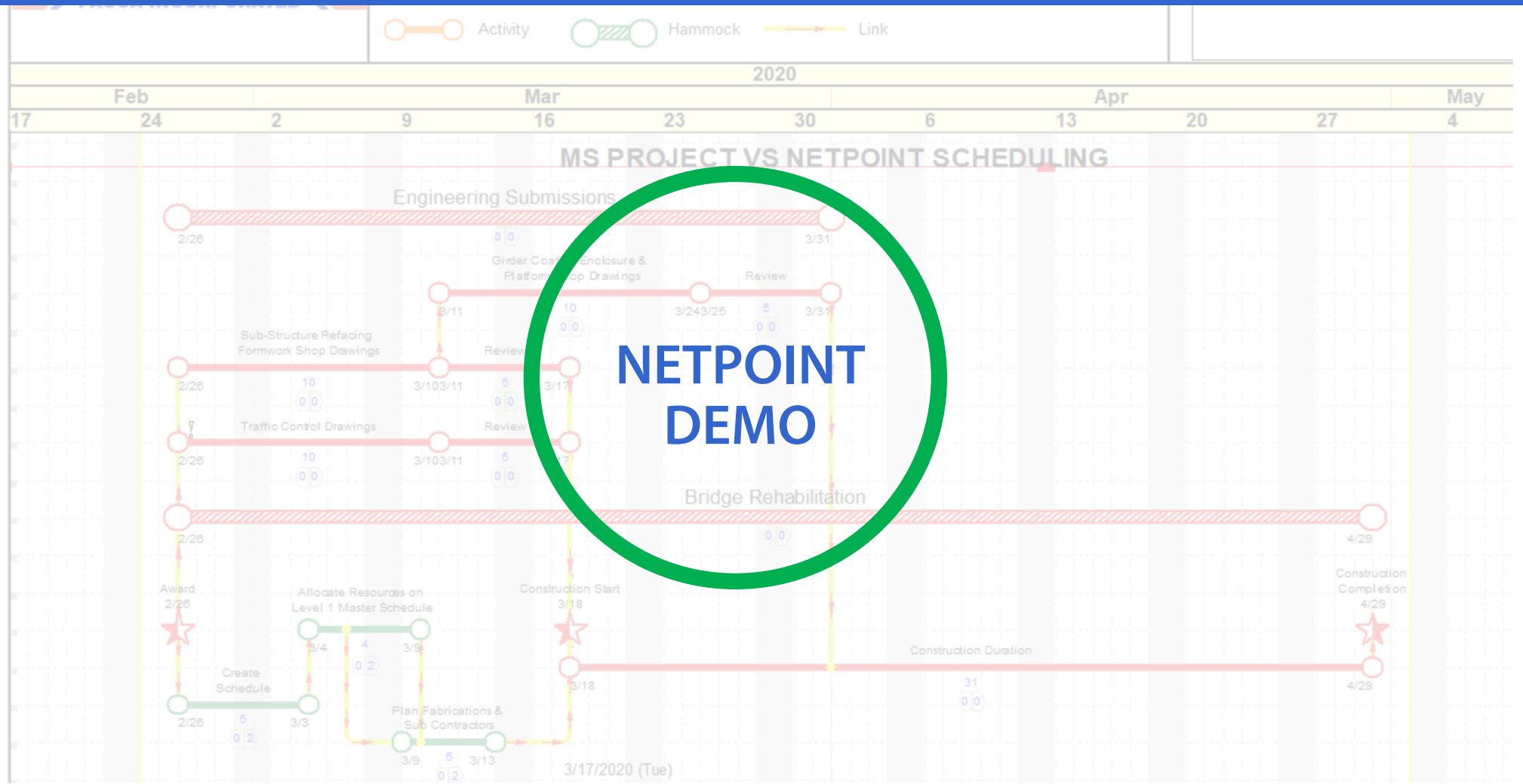


NetPoint

Real-Time Progress Visualization

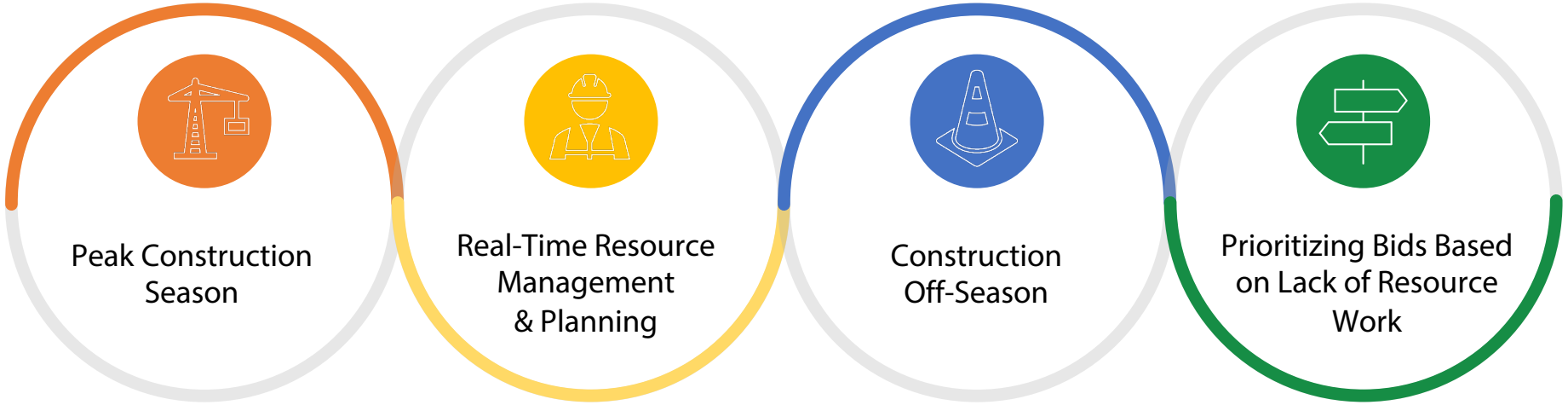


NetPoint


Activity
Hammock
Link
2020
Feb
Mar
Apr
May
17
24
2
9
16
23
30
6
13
20
27
4
MS PROJECT VS NETPOINT SCHEDULING
Engineering Submissions
2/26
3/31
Review
3/243/25
Sub-Structure Refacing
Formwork Shop Drawings
3/103/11
Traffic Control Drawings
Bridge Rehabilitation
4/29
Award
2/26
Allocate Resources on
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Construction Start
3/18
Construction
Completion
4/29
Construction Duration
Create
Schedule
2/26
3/3
Plan Fabrications &
Sub Contractors
3/9
3/13
3/17/2020 (Tue)
NETPOINT
DEMO

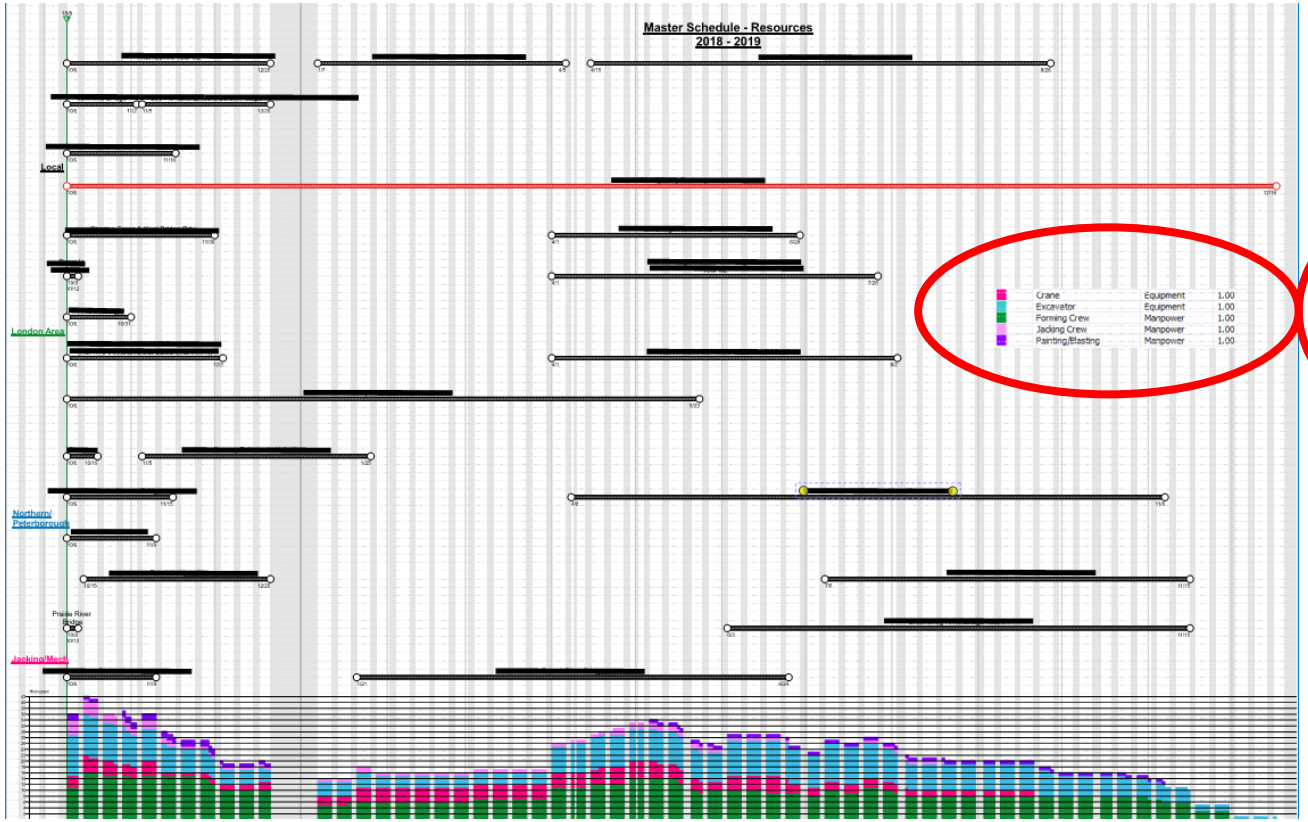
Real-Time Planning
NetPoint

Real-Time Visualization Peaks & Valleys



Real-Time Planning
NetPoint

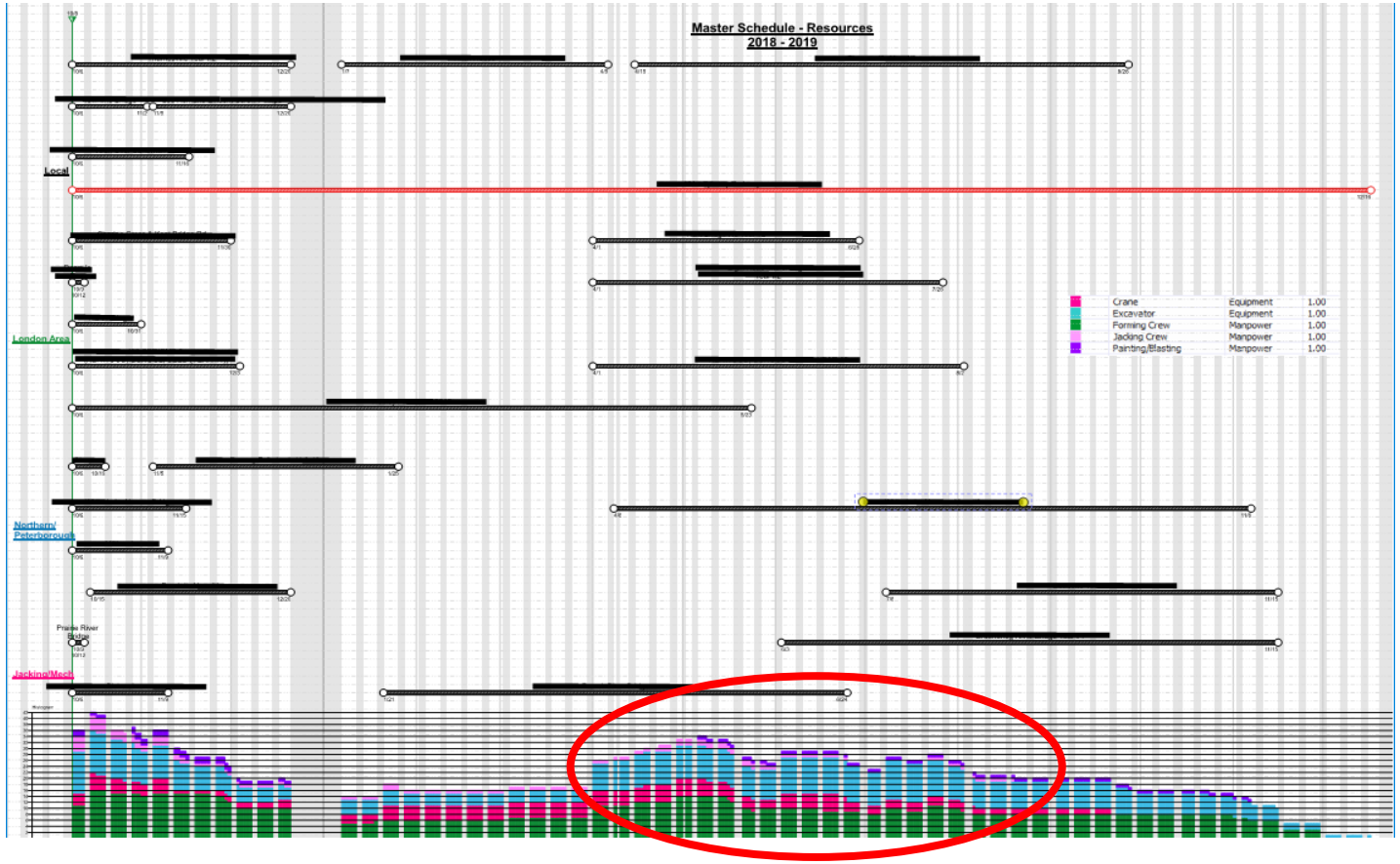
Defining Resource Colors for Clear Planning



	Crane	Equipment	1.00
	Excavator	Equipment	1.00
	Forming Crew	Manpower	1.00
	Jacking Crew	Manpower	1.00
	Painting/Blasting	Manpower	1.00

Real-Time Planning
NetPoint

Real-Time Resource Planning – Peak Construction Season



Peak Construction Seasons

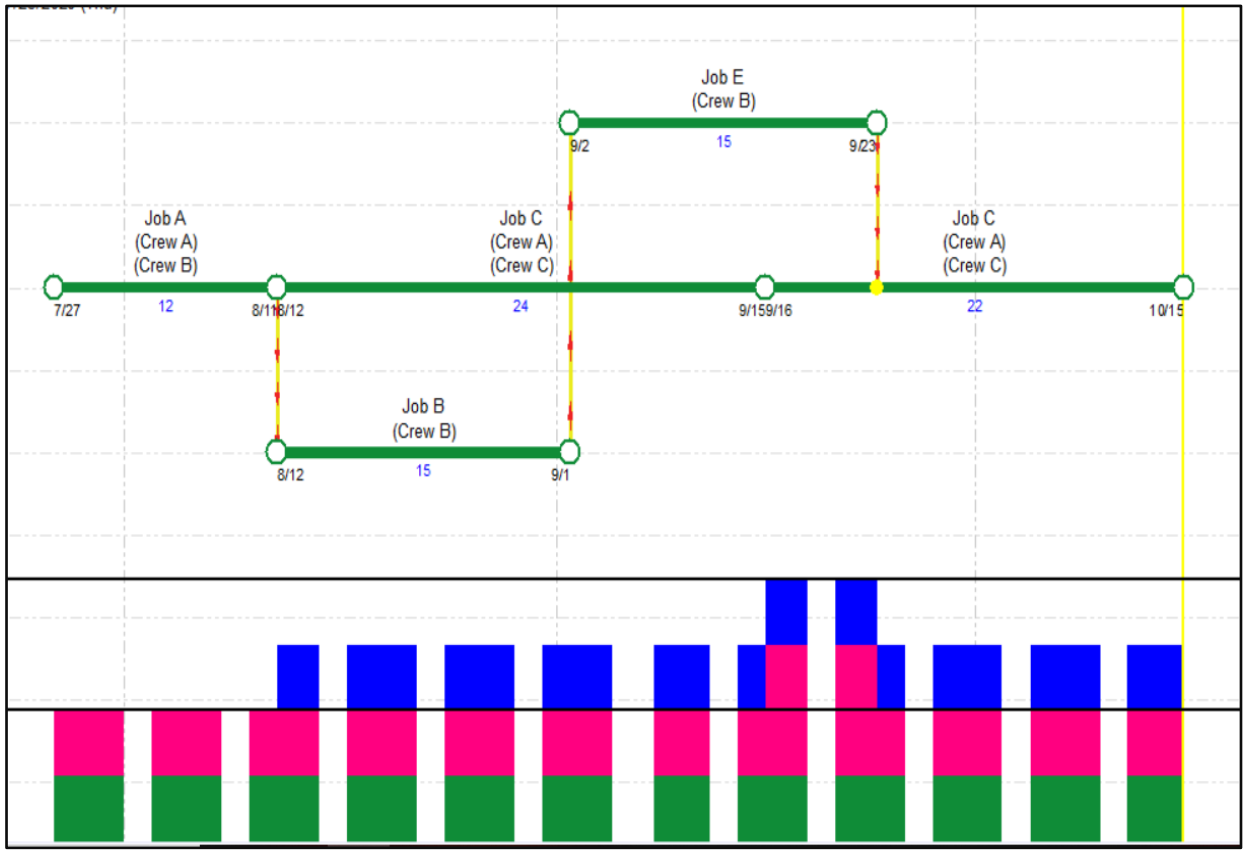
- Chart on the bottom allows us to clearly see when certain resources will reach their respective “peak construction season.”

Real-Time Planning
NetPoint

Real-Time Resource Planning

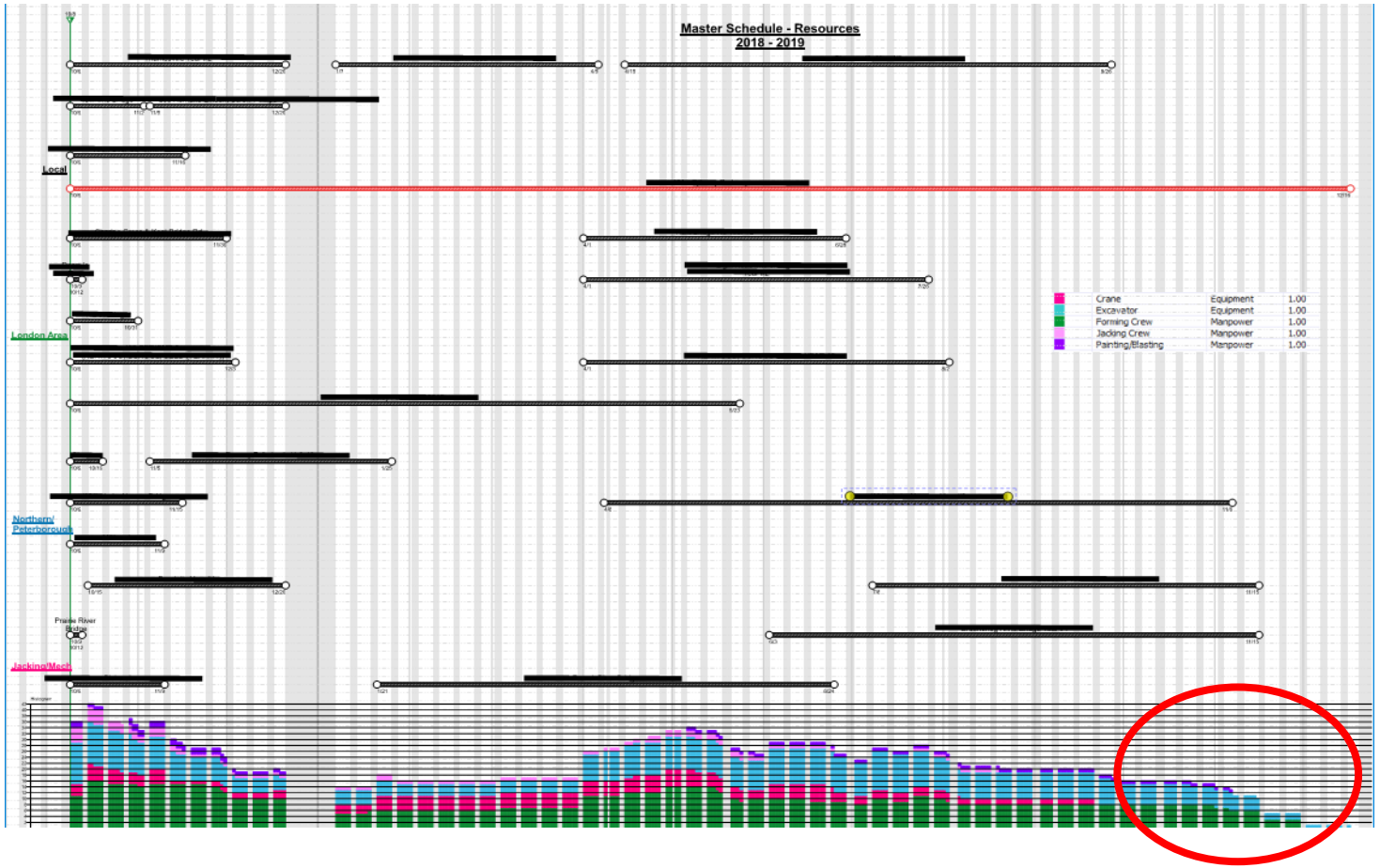
- Crew allocation
- Seamless resource flow from job to job
- Sequenced activities based on crew availability on Job C





Real Time Planning
NetPoint

Real-Time Resource Planning – Construction Off-Season



Peak Construction Off-Seasons

- Chart on the bottom allows us to clearly see when certain resources will reach their respective “Construction Off-Season.”

Real-Time Planning
NetPoint

Real-Time Resource Planning – Construction Off-Season

Prioritizing Bids Based on Lack of Resource Work

Chart on the bottom allows us to clearly see when certain resources will require more work and warrant bidding certain jobs based on that resource.

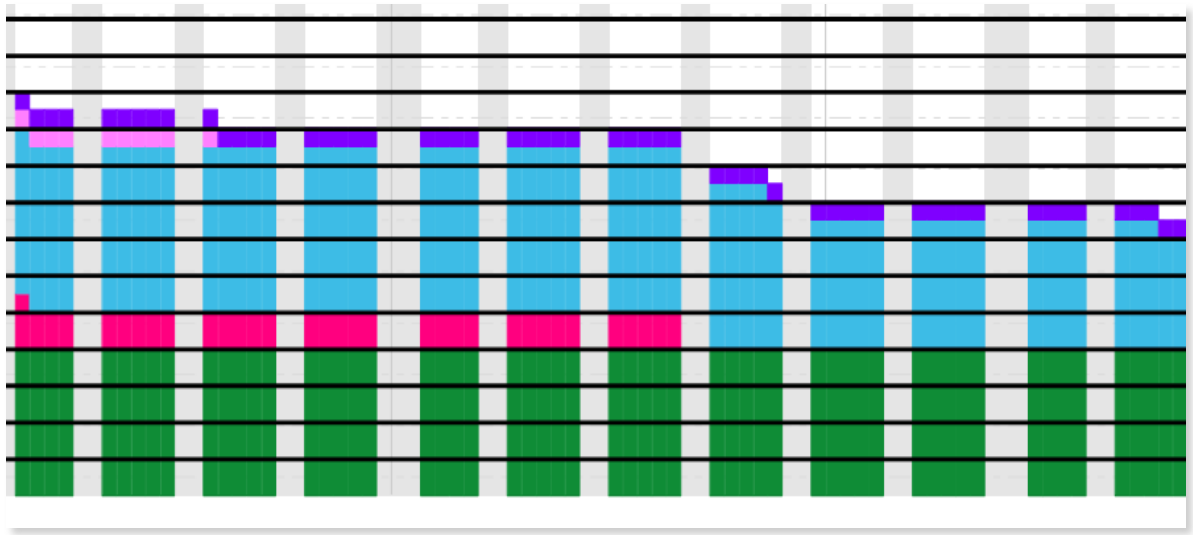


Chart shows forming crews maintain work; however, crane operators need more work. Target bids with crane operator work.

Lean Scheduling with **NetPoint**

Benefits of Using NetPoint Scheduling & Planning

Scheduling & planning with NetPoint will allow a company to have:

Better time management

A single employee who can complete company-wide (size-dependent) scheduling and planning

An effective communication tool

Real-time planning over video conferencing, instead of revision after revision of emails

Shorter lead times for scheduling items such as:

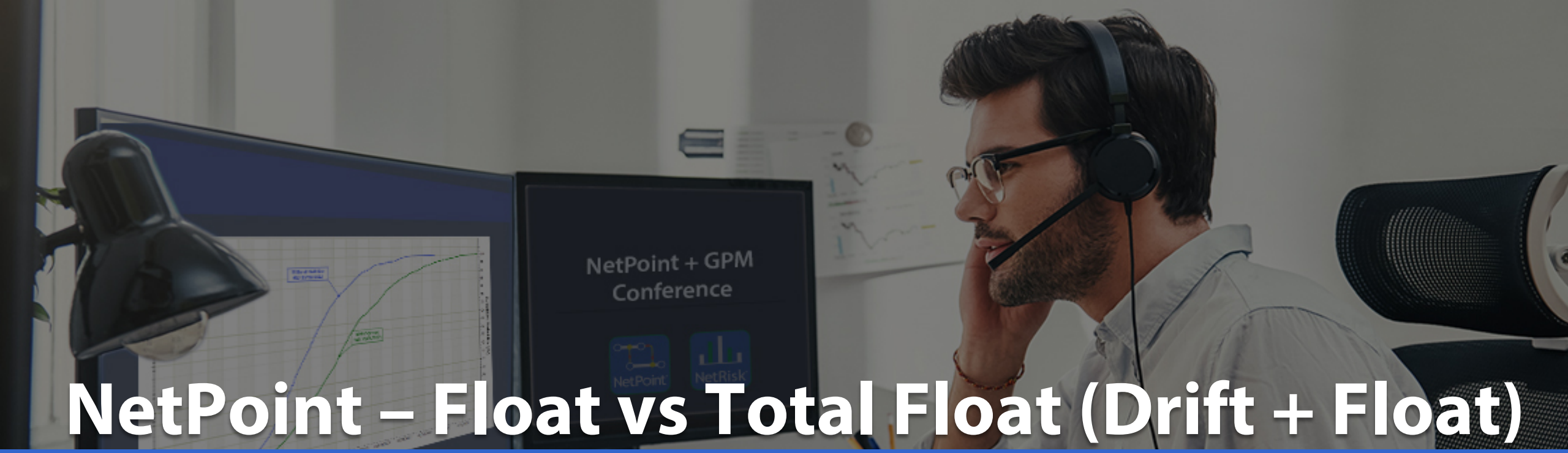
Weekly Updates
Monthly Updates
Baseline Schedules
Delay Analysis etc.



Lean Scheduling with **NetPoint**

Comparison of Lead times for Scheduling (NetPoint vs MS Project)

NETPOINT SCHEDULING	LEAD TIMES	MS PROJECT SCHEDULING	LEAD TIMES
Baseline Schedules (Upon Understanding of Job)	2 days	Baseline Schedules (Upon Understanding of Job)	3-5 days
Weekly Updates	15 minutes	Weekly Updates	1 hours
Monthly Updates	30 minutes	Monthly Updates	4 hours
Adding Delay Activity (Upon Understanding of Delay)	5-10 minutes	Adding Delay Activity (Upon Understanding of Delay)	1 hour
EOT Assessment	1 hour	EOT Assessment	1 day



NetPoint – Float vs Total Float (Drift + Float)

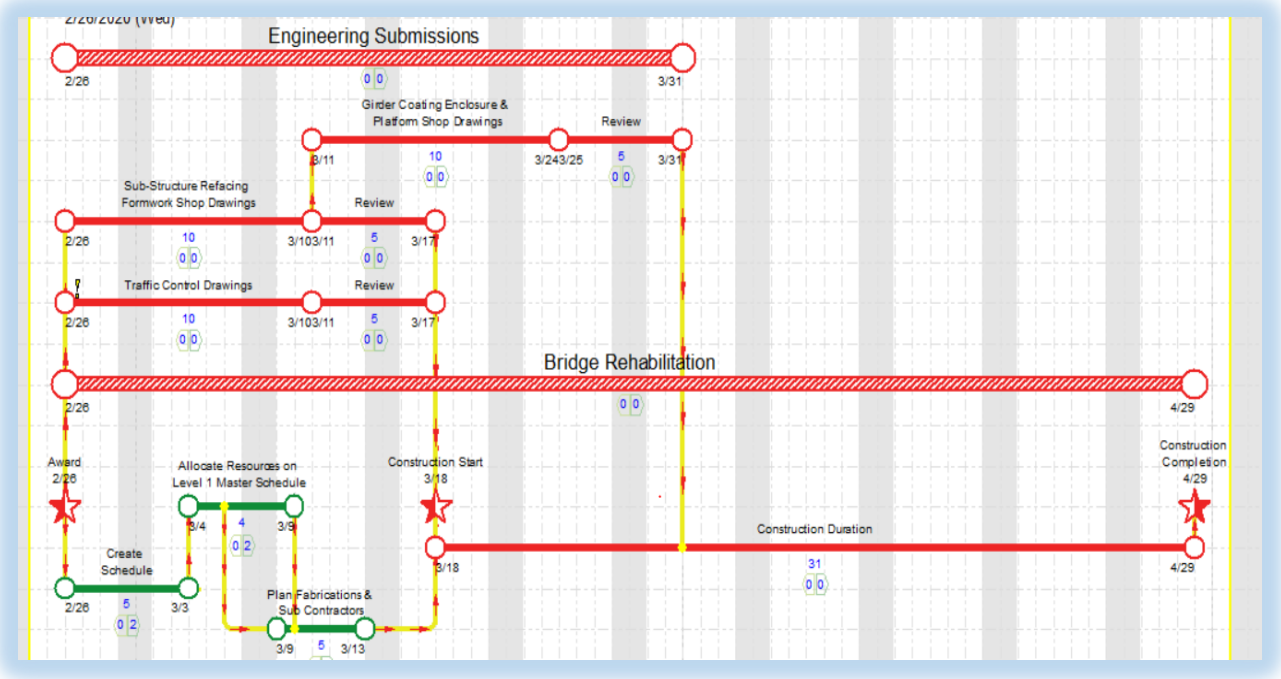
GPM vs CPM Scheduling Softwares

NetPoint

Total Float (Drift + Float)

FLOAT is defined as the amount of time that an activity can be delayed without having an impact on the critical path or overall completion of the project.

DRIFT is defined as the amount of time that an activity can start earlier without having an impact on the predecessor, logic, or sequencing applied to the critical path or overall completion of the project.

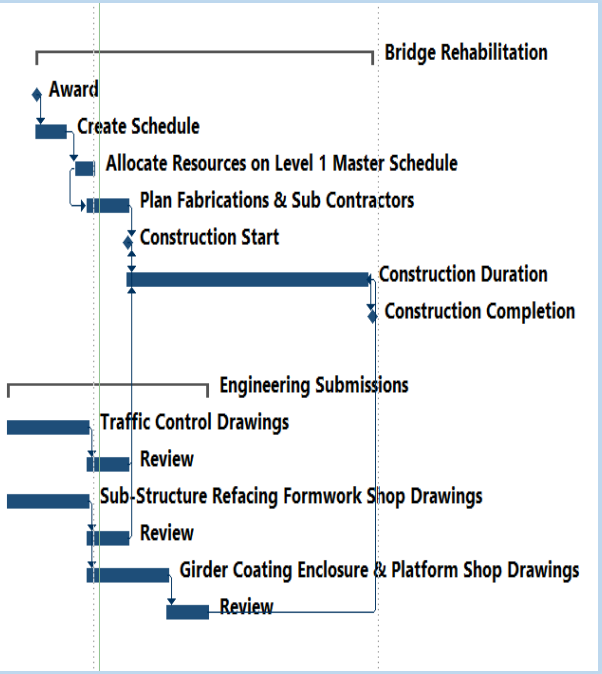


MS Project

Drift in MS Project

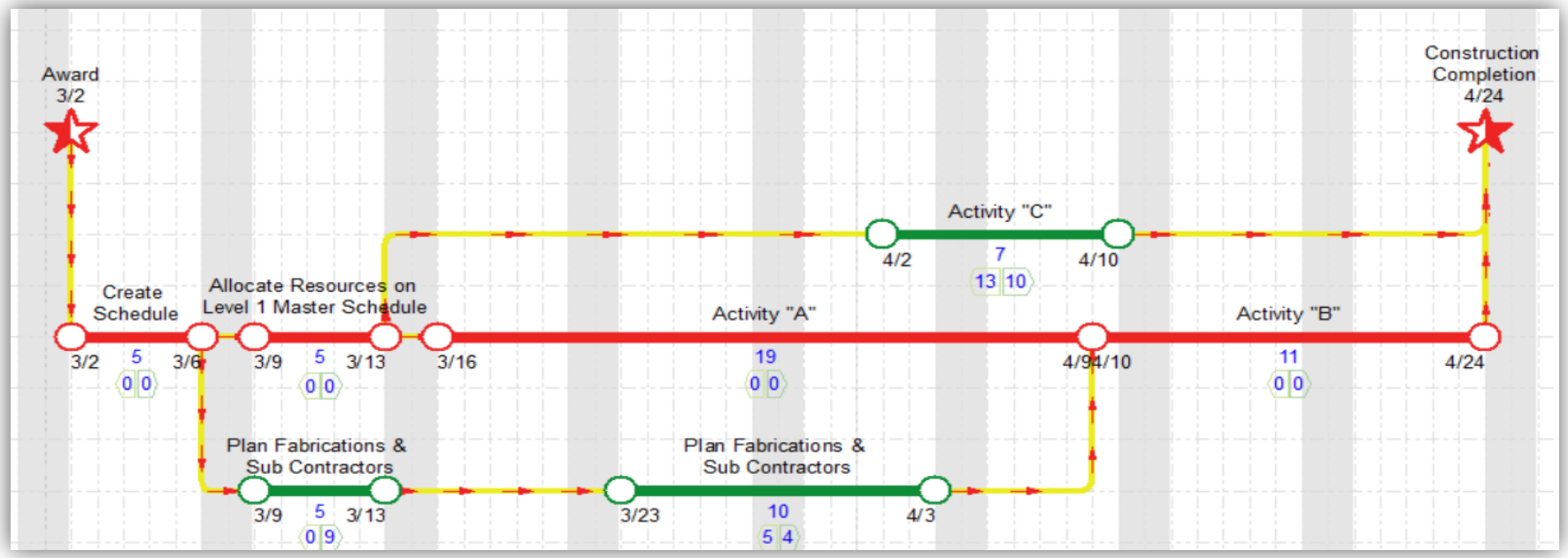
Activities in a CPM network default to their early dates; CPM does not calculate activity movement in the opposite direction unless it affect the predecessor.

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NetPoint

Total Float (Drift + Float)



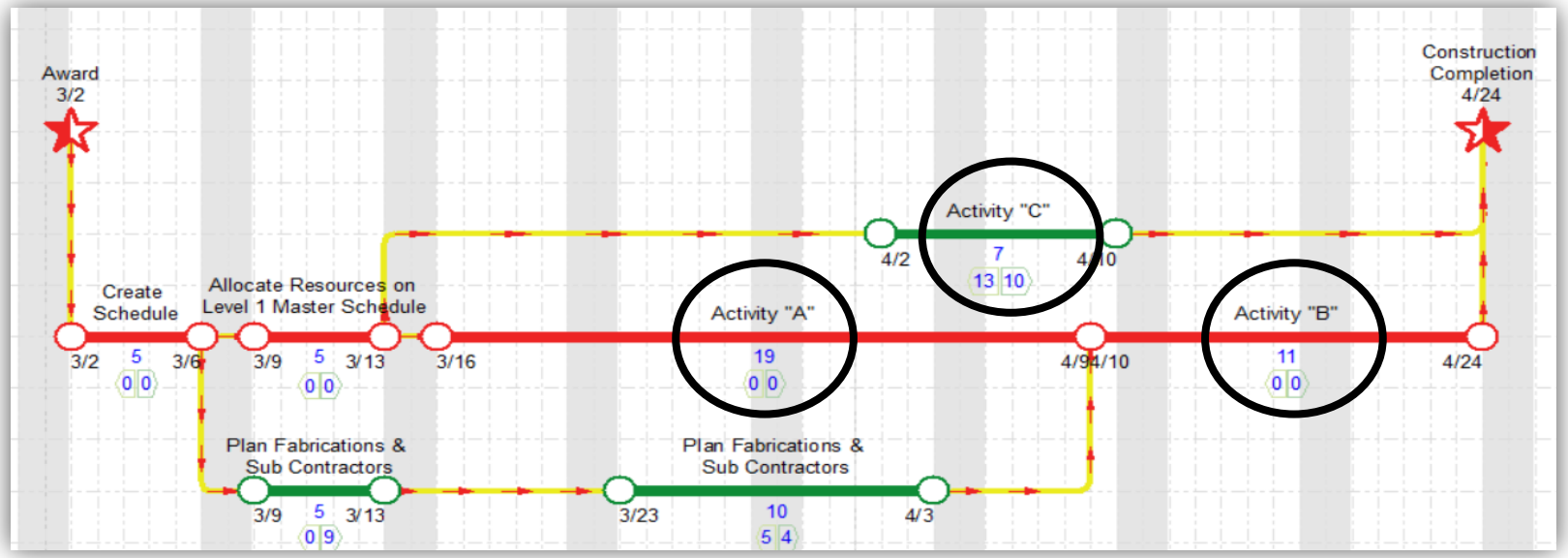
Total Float is on Activity A: (Drift = 0, Float = 0 Critical Activity)

Total Float is on Activity B: (Drift = 0, Float = 0 Critical Activity)

Total Float is on Activity C: (Drift = 13, Float = 10 (Total Float 23 Days))

NetPoint

Total Float (Drift + Float)



Total Float is on Activity C: (Drift = 13, Float = 10 (Total Float 23 Days)

Early Start Date: 4/2/2020 – 13 days = 3/16/2020

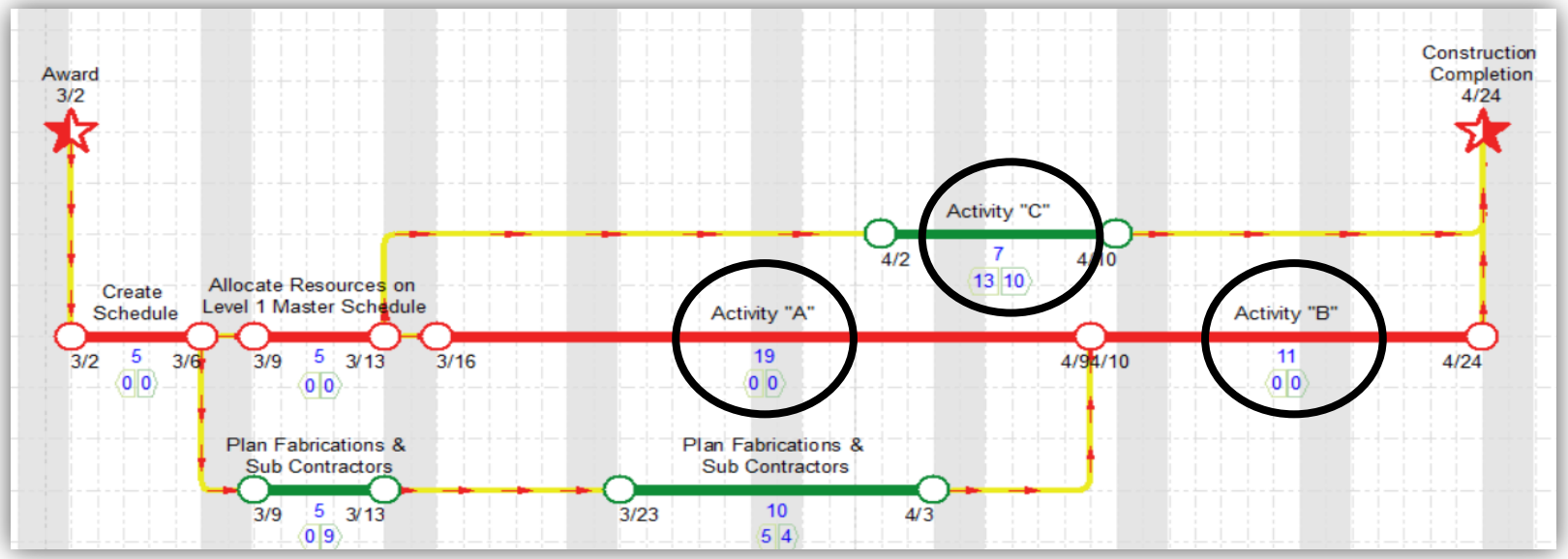
Late Start Date: 4/2/2020 + 10 days = 4/15/2020

Early Finish Date: 4/10/2020 – 13 days = 3/24/2020

Late Finish Date: 4/10/2020 + 10 days = 4/24/2020

NetPoint

Why Total Float (Drift + Float) Is Important



Total float allows you to refine resource management.

Say Activity A, B, & C are all Forming Activities. Based on complexity and/or risk of Activity A or Activity B, Activity C can start as soon as Activity A does, or as later as the start of Activity B + 4 days.



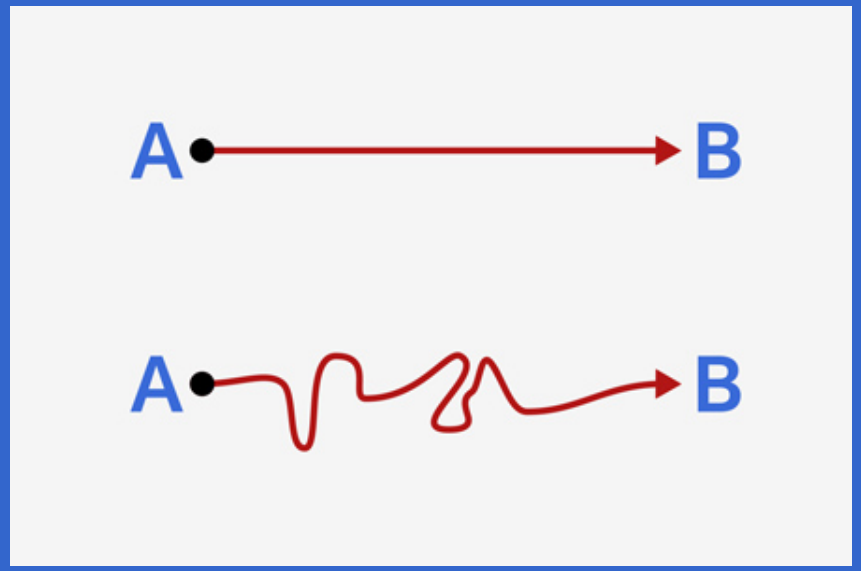
Forensic Schedules with NetPoint

Forensic Schedules with **NetPoint**

Simplified forensic schedules that can be performed on NetPoint are:

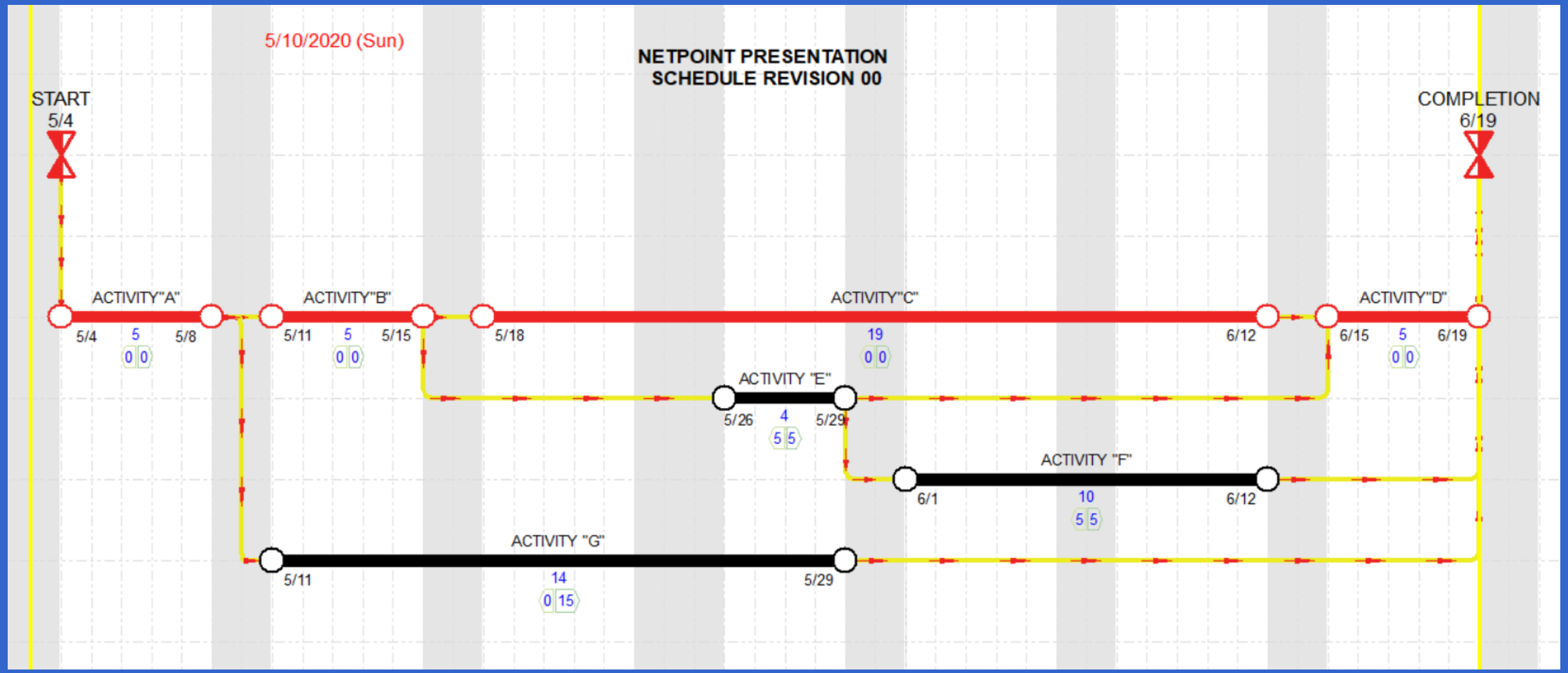
Impact as-planned analysis

As-planned vs as-built analysis



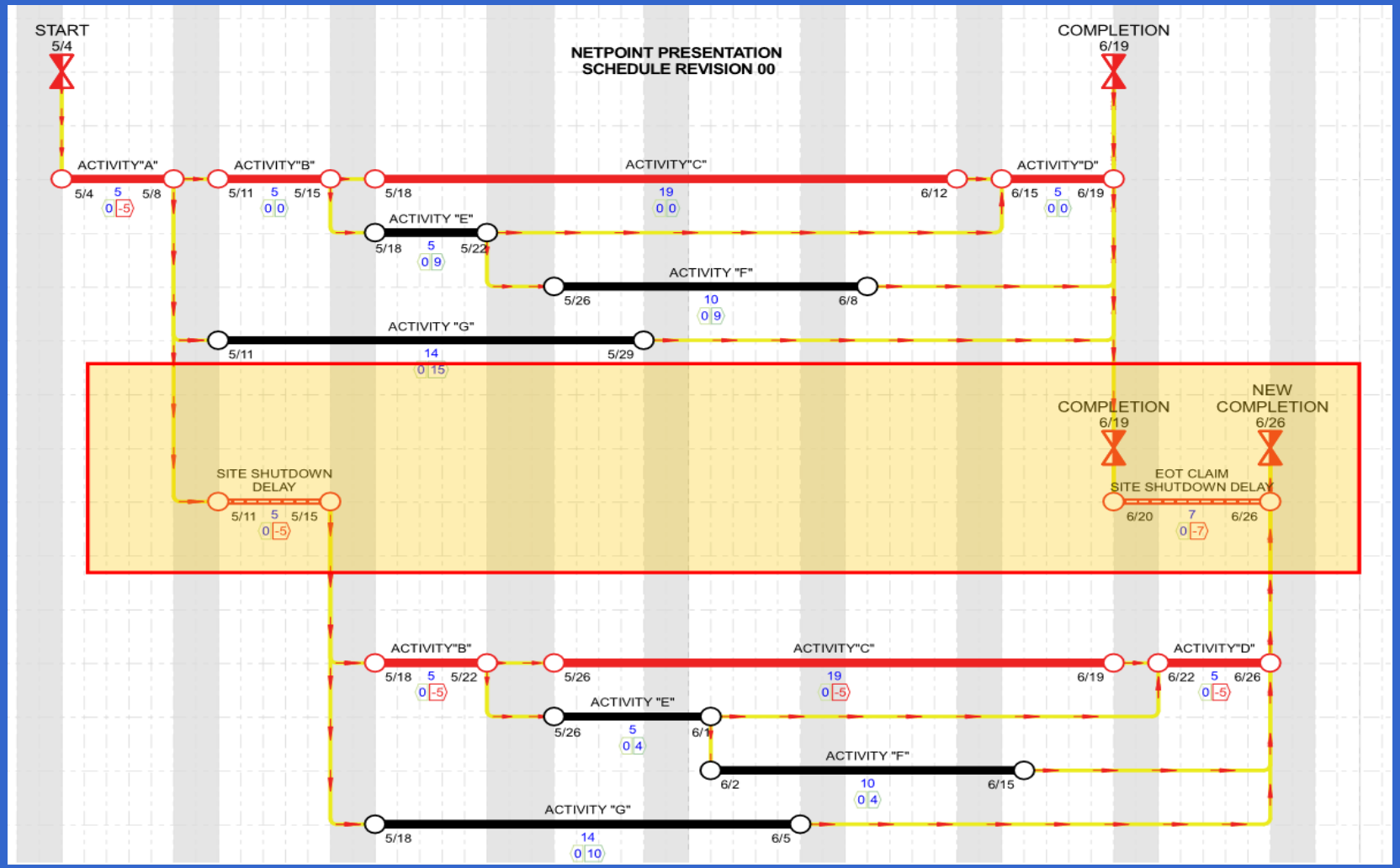
Forensic Schedules with **NetPoint**

Planned Construction



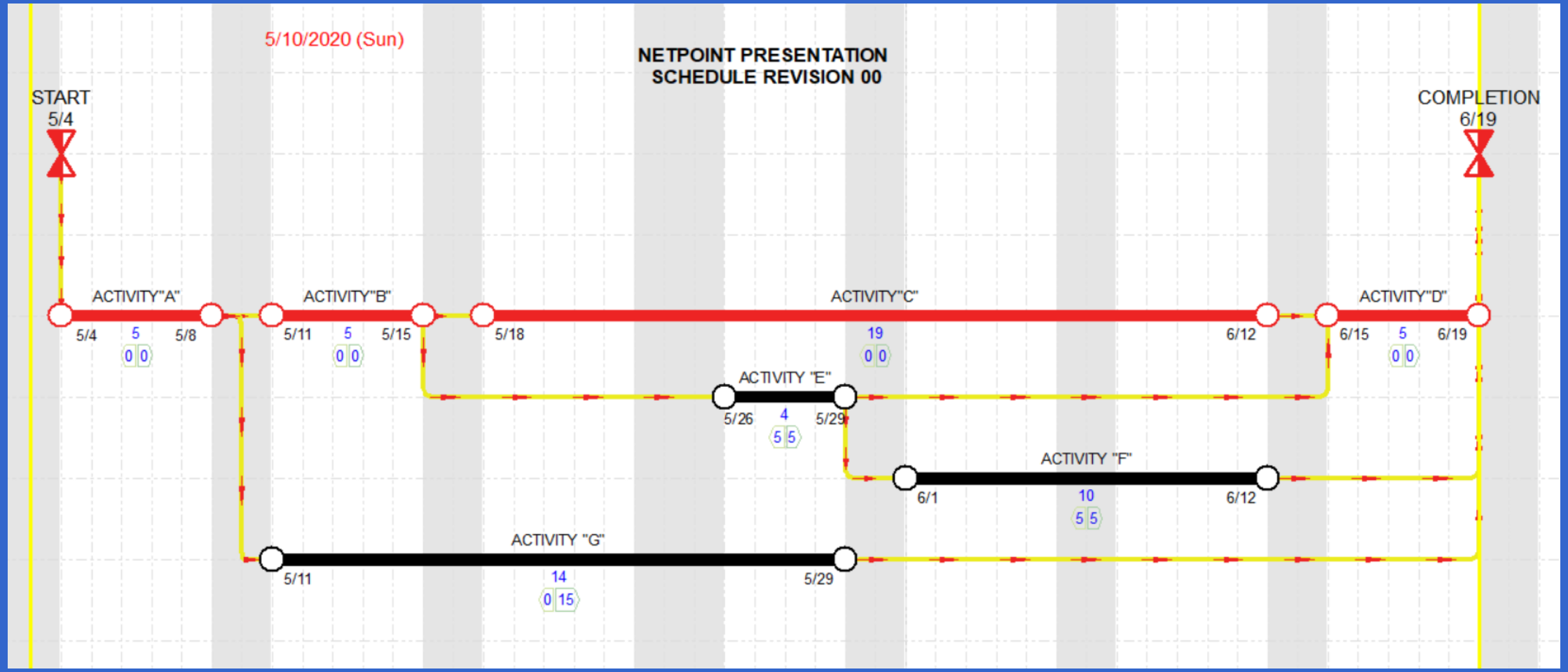
Forensic Schedules with **NetPoint**

Impact As-Planned Analysis



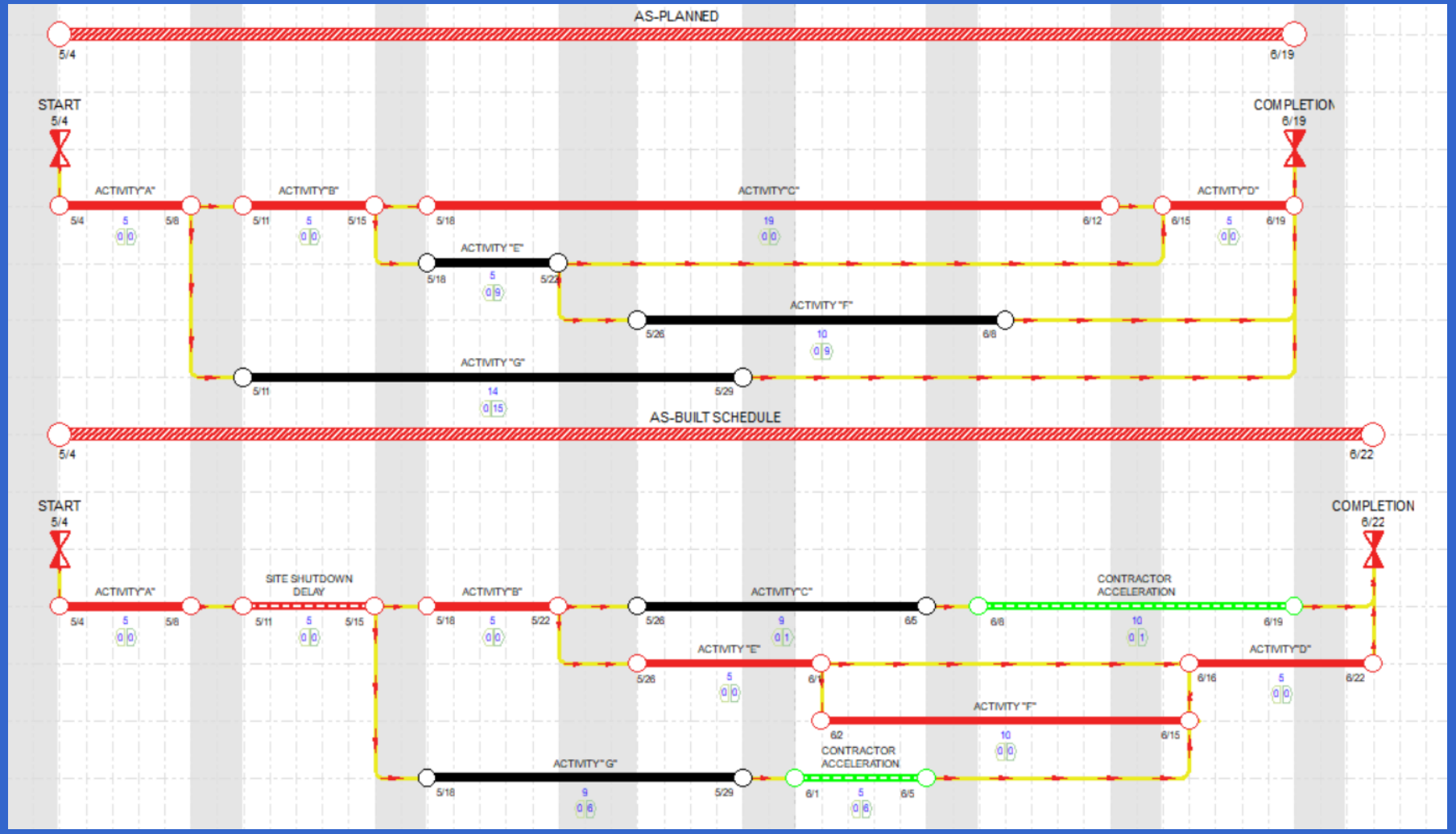
Forensic Schedules with **NetPoint**

As-Planned



Forensic Schedules with **NetPoint**

As-Planned vs As-Built





Visualizing Construction Schedules vs Checking the Box

NetPoint

Construction Schedules
Checklist Items

Most clients require two types of strict construction schedules:

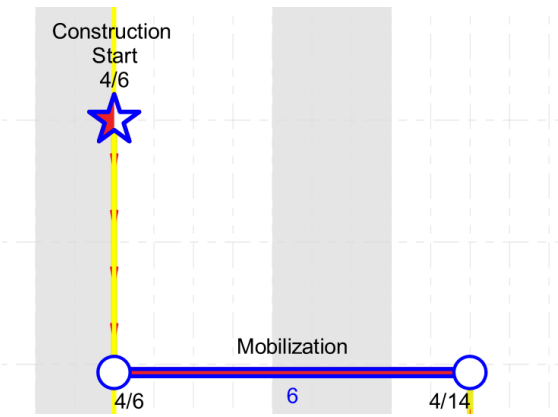
- Completion Date Schedules
- Working Day Schedules

Most clients that FACCA provide their services to required strict construction schedules with constraints such as:

- Completion Date Schedules

Typically these schedules have the following constraints:

1. Completion Date
2. Award Date
3. Commencement Date
4. In-water work windows
5. Vegetation removal windows
6. Migratory bird season
7. Winter shutdowns





Construction Schedules
Checklist Items

Most clients require two types of strict construction schedules:

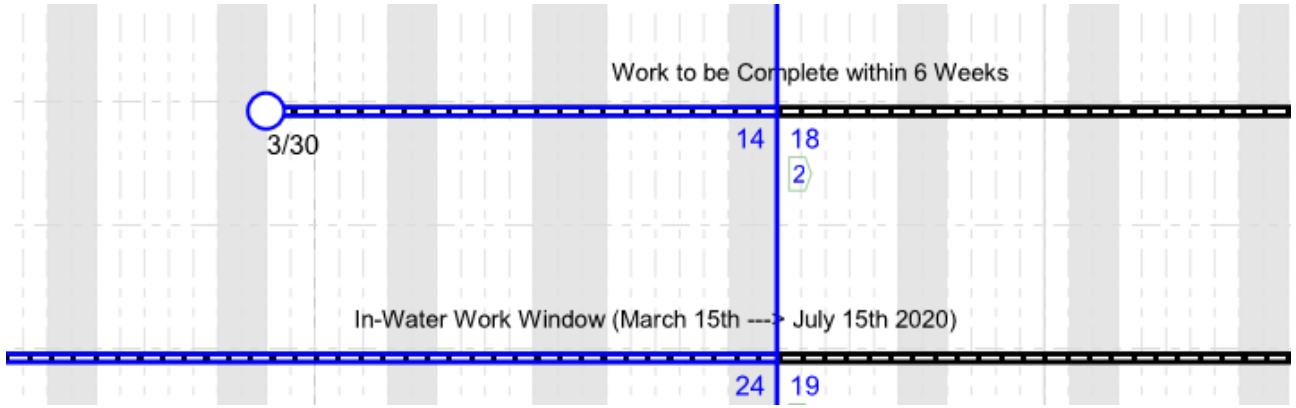
- Completion Date Schedules
- Working Day Schedules

Most clients that FACCA provide their services to required strict construction schedules with constraints such as:

- Working Day Schedules

Typically these schedules have the following constraints:

1. Completion Date (Based on start date + working days allotted to Contractor in the contract)
2. Award Date
3. Commencement Date
4. In-water work windows
5. Vegetation removals windows
6. Migratory bird season
7. Incentives & disincentives

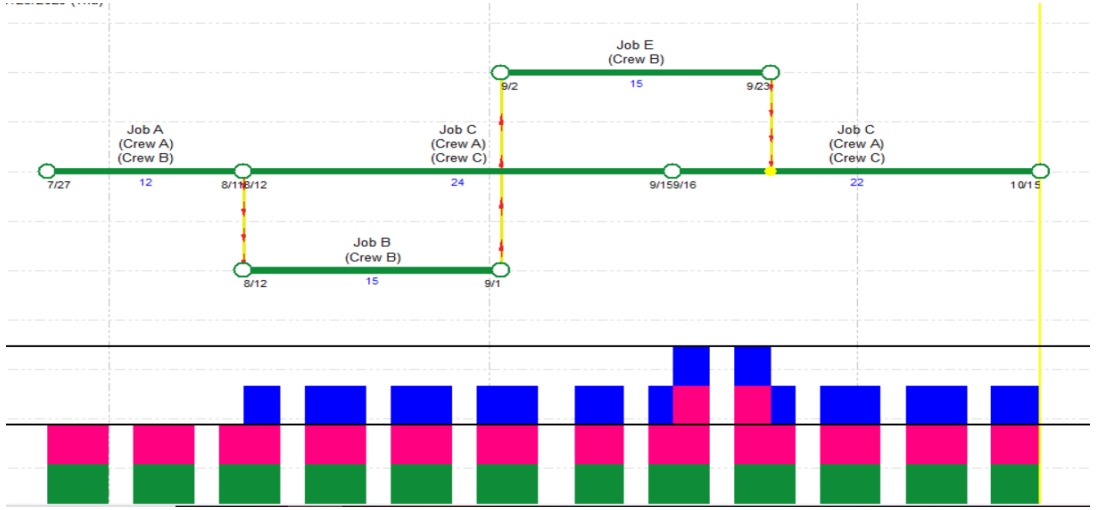


Construction Schedules
Real-Time Visualization — **NetPoint**

NetPoint Scheduling + Planning

NetPoint (GPM software) is a great scheduling and planning software. Just like CPM-based software, NetPoint can generate very accurate baseline schedules and yearly baseline resource flow. However, when a delay is presented, resource flow is affected and issues arise as projects begin to overlap.

NetPoint allows the user to accurately show company-wide resource flow in real-time at any point in time during the current delay, instead of completing a delay post-mortem.



Construction Schedules
Real-Time Visualization vs Checking the Box

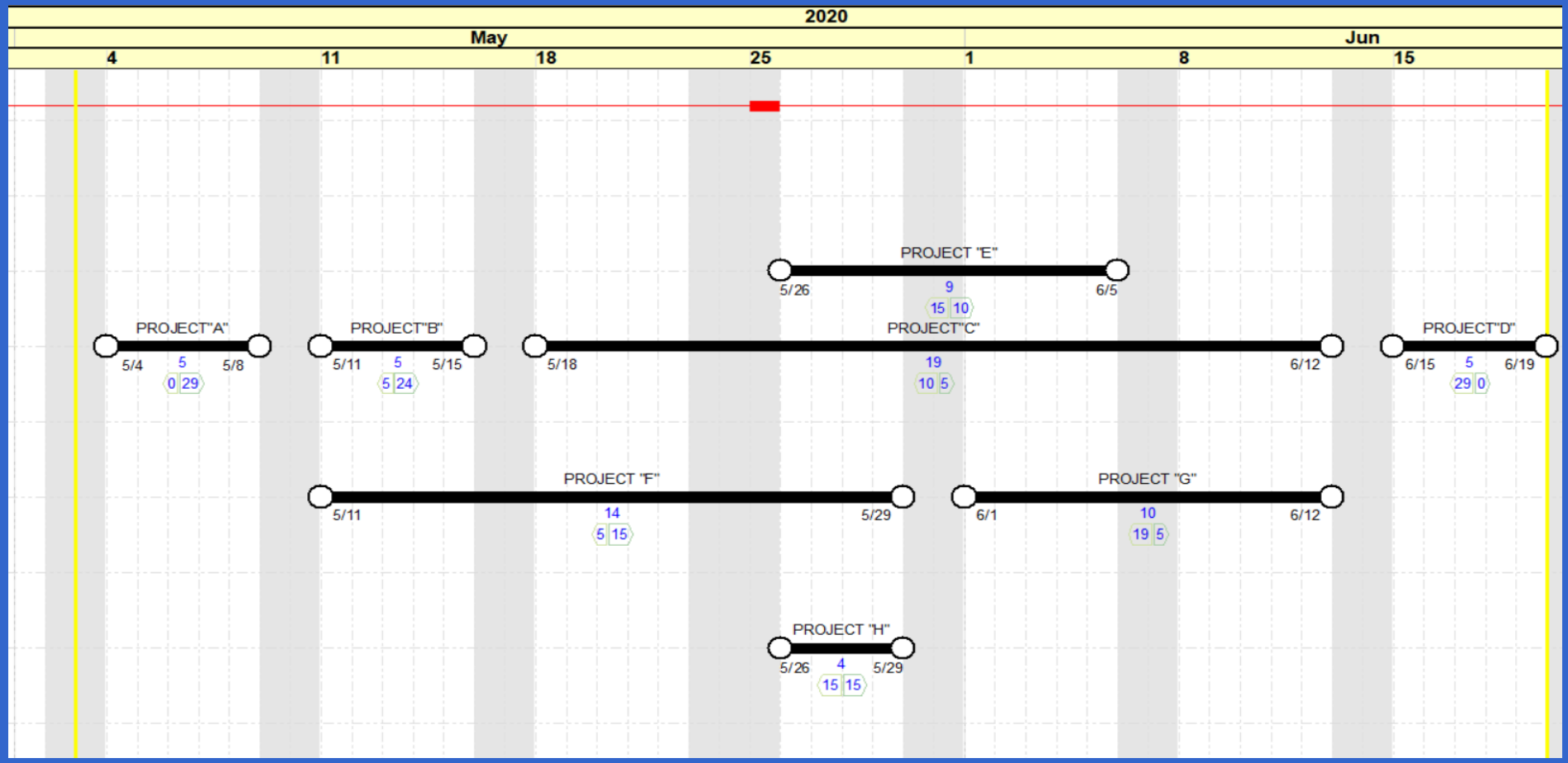
NetPoint Scheduling + Planning vs MS Project Scheduling

NETPOINT SCHEDULING & PLANNING PROS	MS PROJECT SCHEDULING PROS
Accurate Baseline Scheduling	Accurate Baseline Schedules
Accurate Baseline Resource Planning	Accurate Baseline Resource Planning
Proactive Planning	
Preventative Maintenance (Lack of Resources on Other Job Sites)	
Accurate Company-Wide Construction Peaks	
Accurate Time-Frame Target Bidding	
Fewer Layoffs	
Seamless Company-Wide Cash Flow Month-to-Month	

Master Schedules

NetPoint vs MS Project Visualization

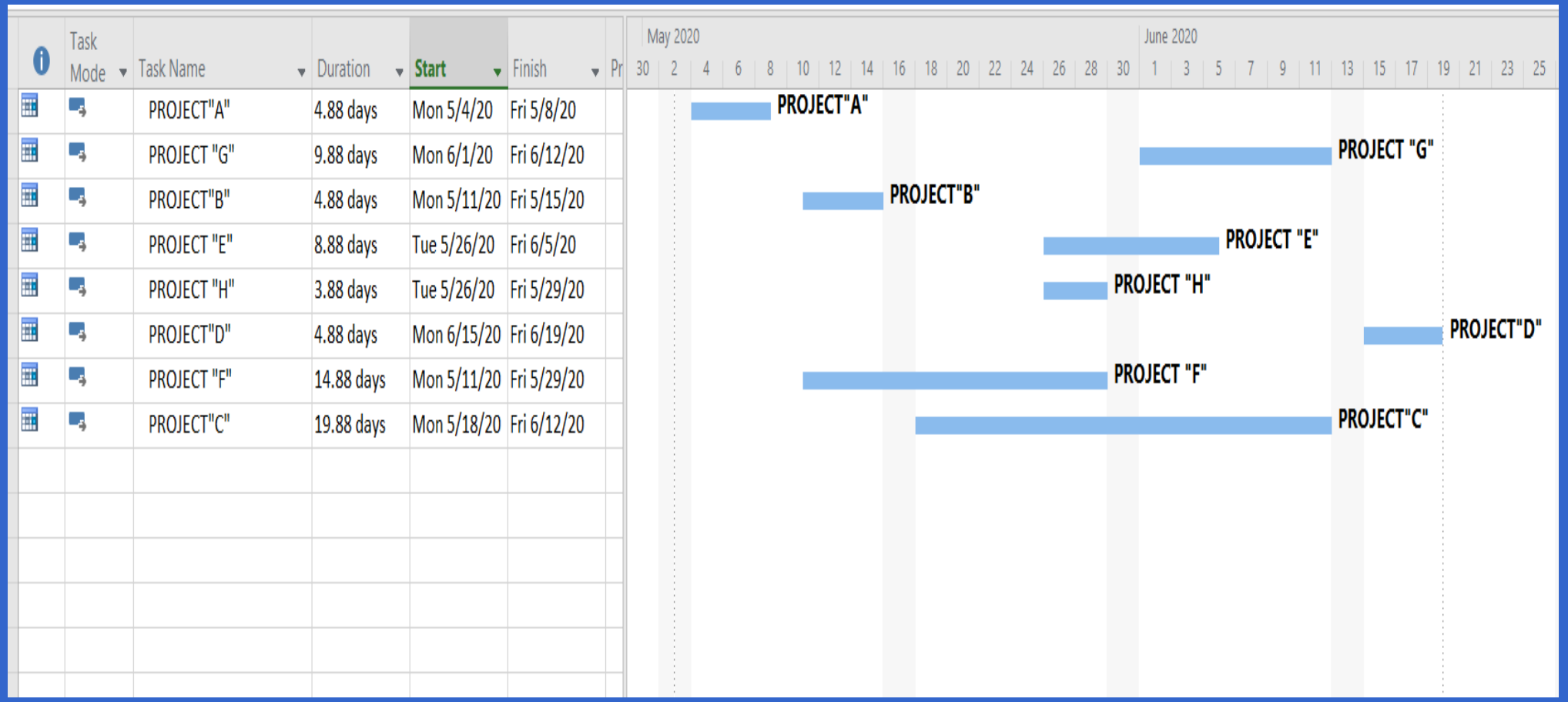
NetPoint



Master Schedules

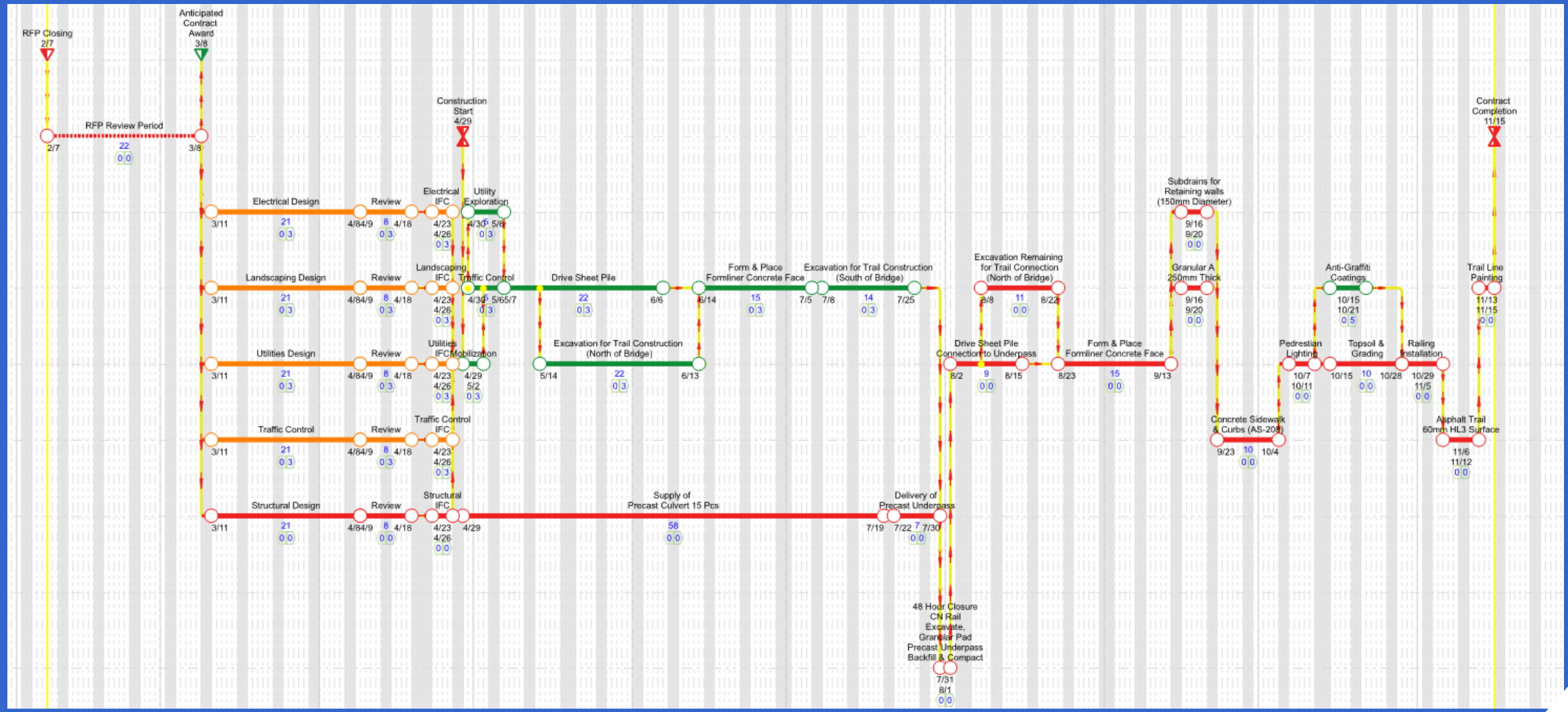
NetPoint vs MS Project Visualization

MS Project



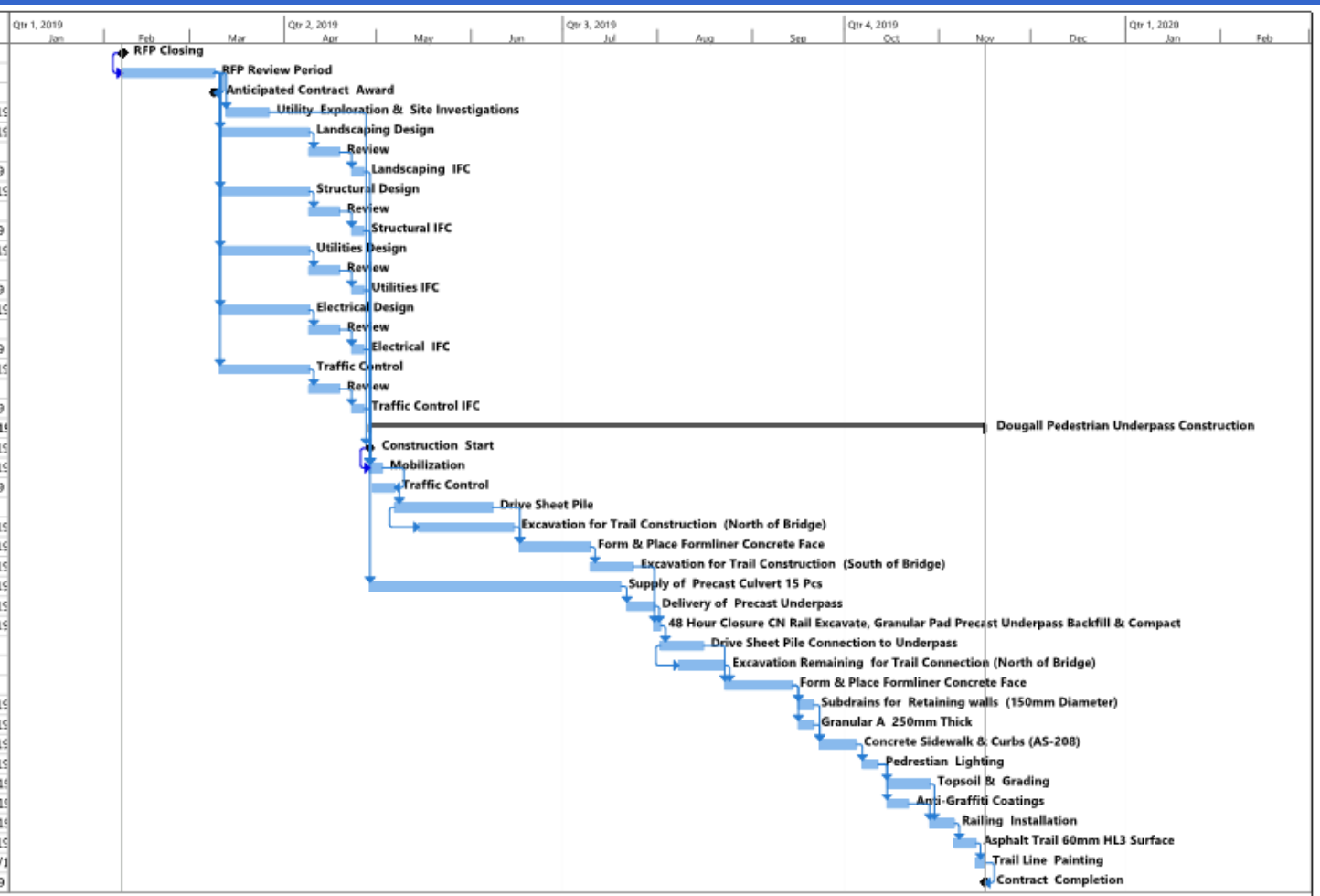
Task Mode	Task Name	Duration	Start	Finish
	PROJECT"A"	4.88 days	Mon 5/4/20	Fri 5/8/20
	PROJECT "G"	9.88 days	Mon 6/1/20	Fri 6/12/20
	PROJECT"B"	4.88 days	Mon 5/11/20	Fri 5/15/20
	PROJECT "E"	8.88 days	Tue 5/26/20	Fri 6/5/20
	PROJECT "H"	3.88 days	Tue 5/26/20	Fri 5/29/20
	PROJECT"D"	4.88 days	Mon 6/15/20	Fri 6/19/20
	PROJECT "F"	14.88 days	Mon 5/11/20	Fri 5/29/20
	PROJECT"C"	19.88 days	Mon 5/18/20	Fri 6/12/20

Example of Bid Schedules in NetPoint
Visualization



Example of Bid Schedules in MS Project
Visualization

ID	Task Mode	Task Name	Duration	Start
1		RFP Closing	0 days	Thu 2/7/19
2		RFP Review Period	22 days	Thu 2/7/19
3		Anticipated Contract Award	0 days	Fri 3/8/19
4		Utility Exploration & Site Investigations	10 days	Wed 3/13/19
5		Landscaping Design	21 days	Mon 3/11/19
6		Review	8 days	Tue 4/9/19
7		Landscaping IFC	4 days	Tue 4/23/19
8		Structural Design	21 days	Mon 3/11/19
9		Review	8 days	Tue 4/9/19
10		Structural IFC	4 days	Tue 4/23/19
11		Utilities Design	21 days	Mon 3/11/19
12		Review	8 days	Tue 4/9/19
13		Utilities IFC	4 days	Tue 4/23/19
14		Electrical Design	21 days	Mon 3/11/19
15		Review	8 days	Tue 4/9/19
16		Electrical IFC	4 days	Tue 4/23/19
17		Traffic Control	21 days	Mon 3/11/19
18		Review	8 days	Tue 4/9/19
19		Traffic Control IFC	4 days	Tue 4/23/19
20		**Dougall Pedestrian Underpass Construction**	**145 days**	**Mon 4/29/19**
21		Construction Start	0 days	Mon 4/29/19
22		Mobilization	4 days	Mon 4/29/19
23		Traffic Control	5 days	Tue 4/30/19
24		Drive Sheet Pile	24 days	Tue 5/7/19
25		Excavation for Trail Construction (North of Bridge)	23 days	Wed 5/15/19
26		Form & Place Formliner Concrete Face	17 days	Mon 6/17/19
27		Excavation for Trail Construction (South of Bridge)	10 days	Wed 7/10/19
28		Supply of Precast Culvert 15 Pcs	60 days	Mon 4/29/19
29		Delivery of Precast Underpass	7 days	Mon 7/22/19
30		48 Hour Closure CN Rail Excavate, Granular Pad Precast Underpass Backfill & Compact	2 days	Wed 7/31/19
31		Drive Sheet Pile Connection to Underpass	10 days	Fri 8/2/19
32		Excavation Remaining for Trail Connection (North of Bridge)	11 days	Thu 8/8/19
33		Form & Place Formliner Concrete Face	16 days	Fri 8/23/19
34		Subdrains for Retaining walls (150mm Diameter)	5 days	Mon 9/16/19
35		Granular A 250mm Thick	5 days	Mon 9/16/19
36		Concrete Sidewalk & Curbs (AS-208)	10 days	Mon 9/23/19
37		Pedrestian Lighting	5 days	Mon 10/7/19
38		Topsoil & Grading	10 days	Tue 10/15/19
39		Anti-Graffiti Coatings	5 days	Tue 10/15/19
40		Railing Installation	6 days	Tue 10/29/19
41		Asphalt Trail 60mm HL3 Surface	5 days	Wed 11/6/19
42		Trail Line Painting	3 days	Wed 11/13/1
43		Contract Completion	0 days	Fri 11/15/19





NetPoint – Level 5 Embedded Schedules

NetPoint

Level 5 Embedded Schedules
NetPoint

What is a Level 5 Schedule

Detailed schedule of a single activity within a level 3 scope-of-work project schedule

Schedule that is required due to:

- Critical time restrictions
- Risk mitigation
- Detailed hourly schedule of a single-day activity
- Other construction constraints



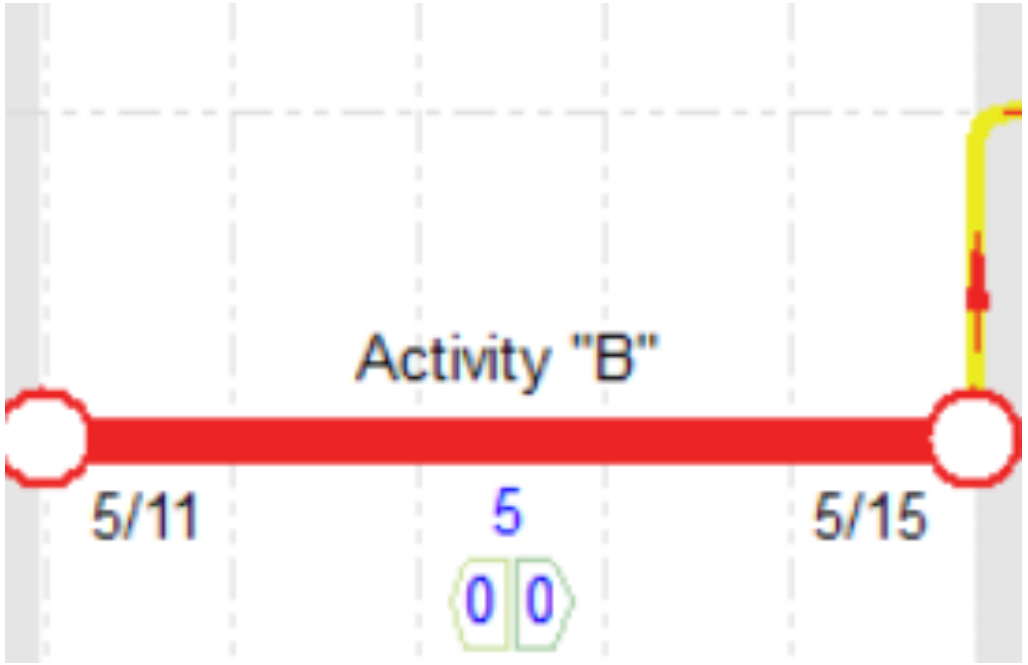
Level 5 Embedded Schedules
NetPoint

Activity Embedment tool within NetPoint

- Ability to embed an attachment of any kind
- Photo of complete activity
- Purchase order for a certain material or fabrication
- Extension of time PDF linked to a delay activity

-or-

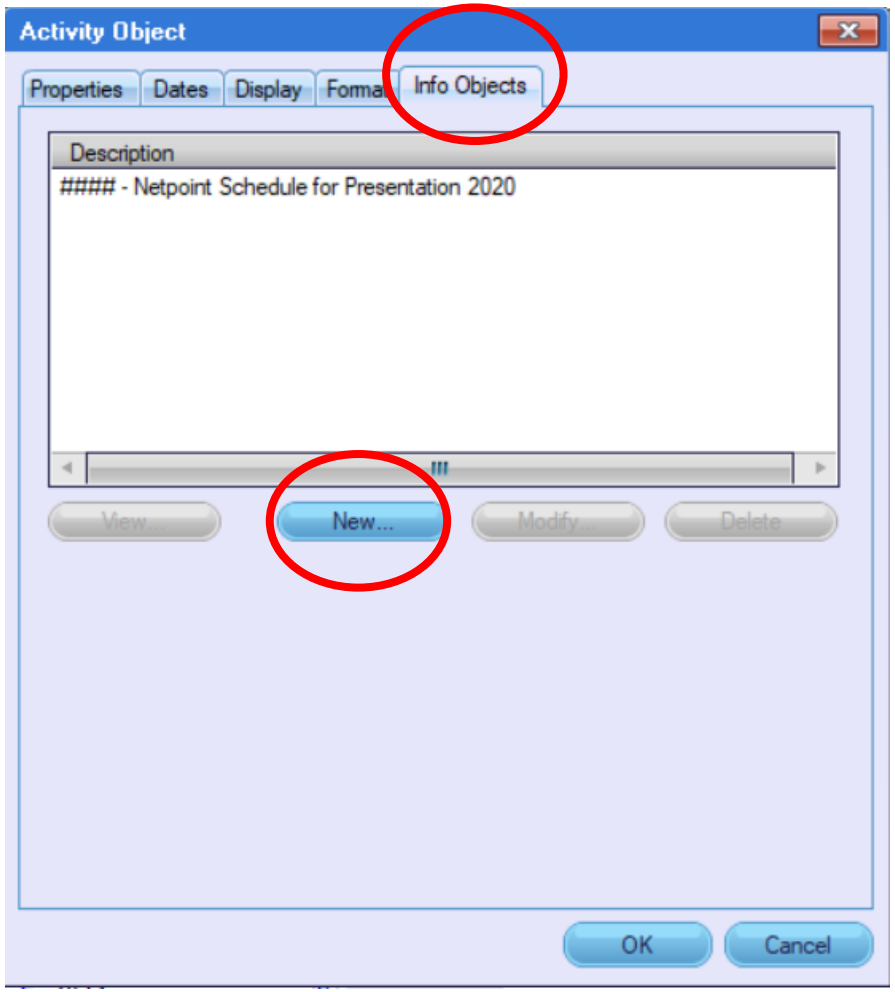
- A Level 5 schedule



Level 5 Embedded Schedules
NetPoint

Activity Embedment tool within NetPoint

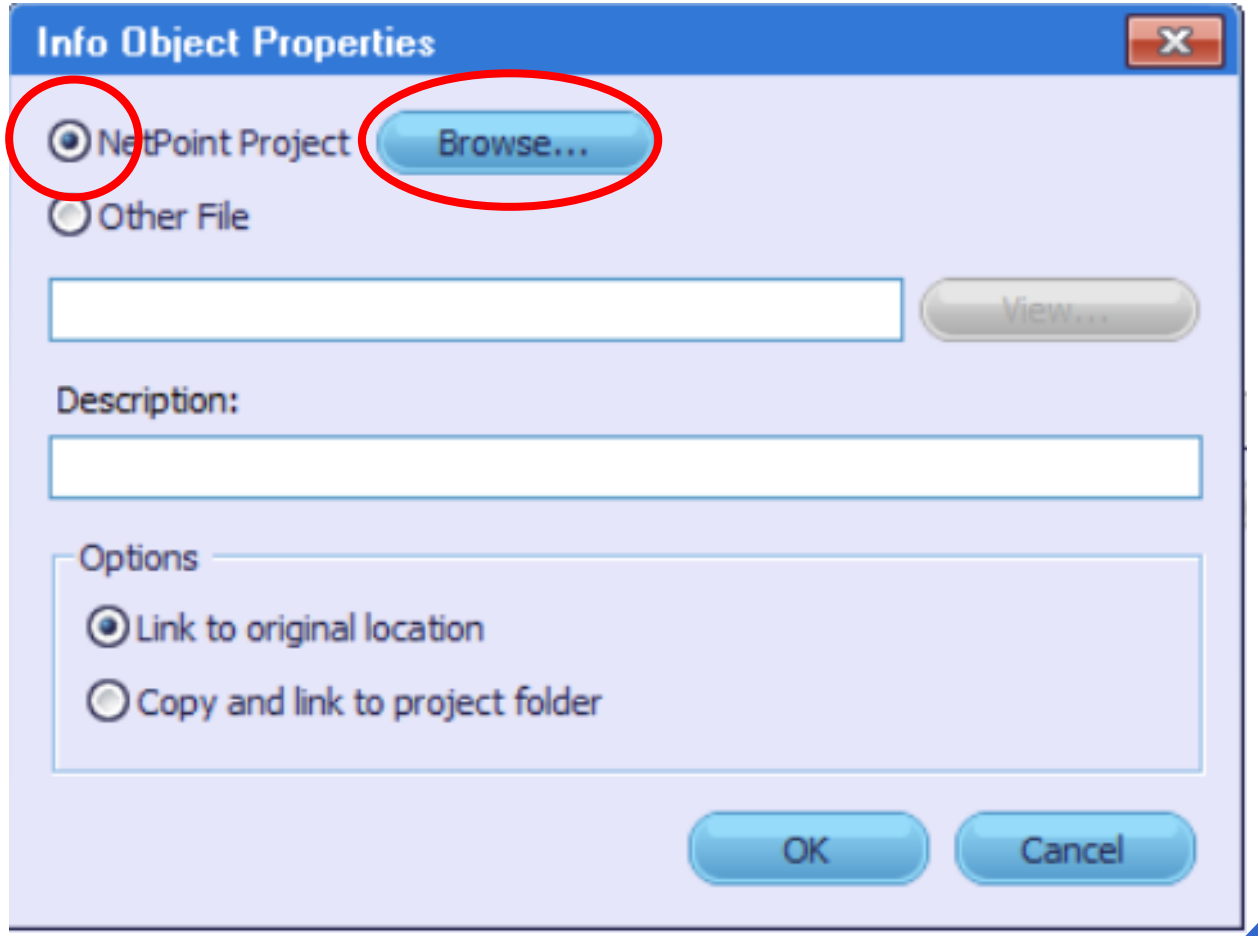
- Double-click on desired activity
- Click the "Info Objects" Tab
- Click "New"



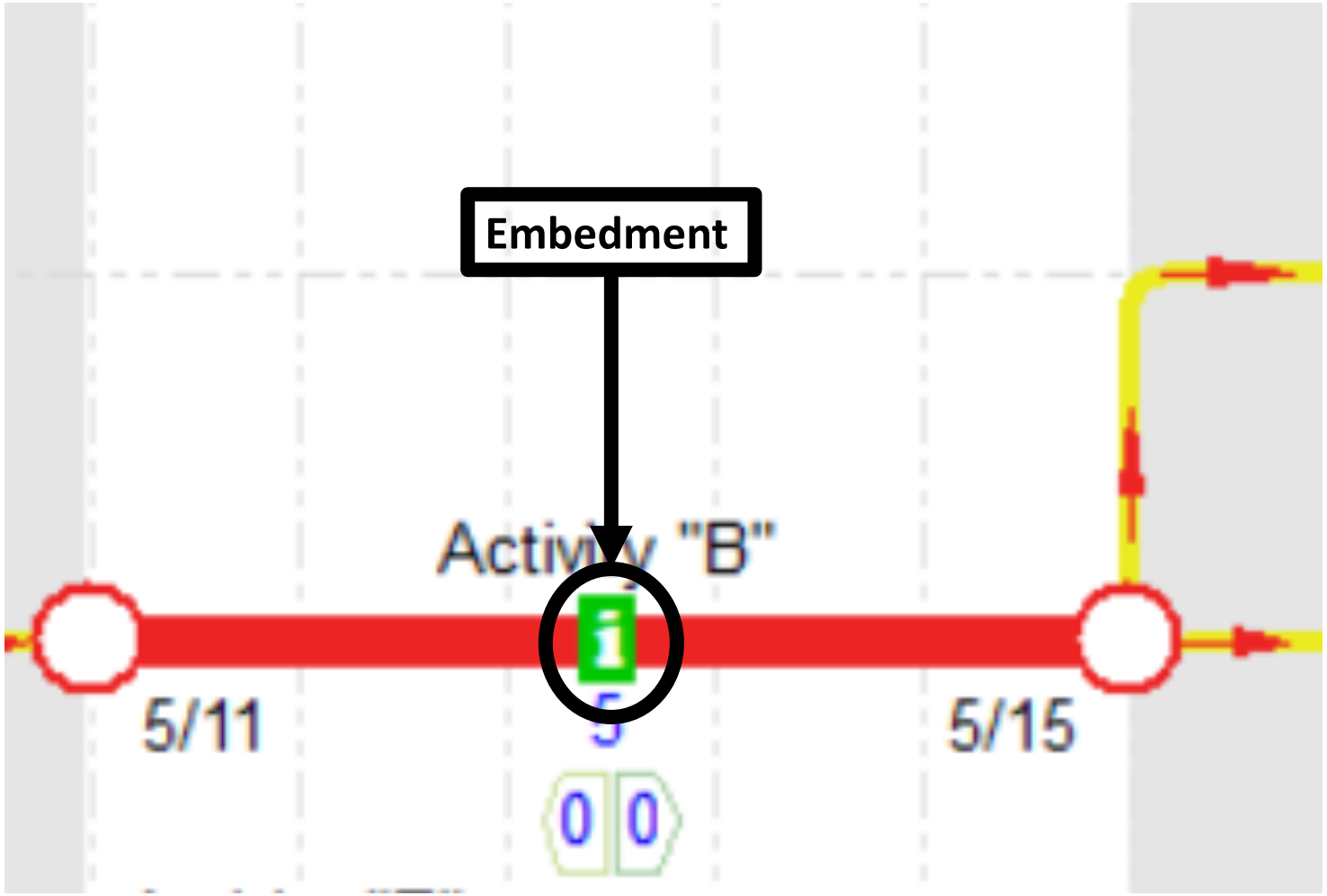
Level 5 Embedded Schedules
NetPoint

Activity Embedment tool within NetPoint

- Select NetPoint Project
- Click the “Browse” button
- Select the schedule you wish to embed into the activity
- Click the “OK” button



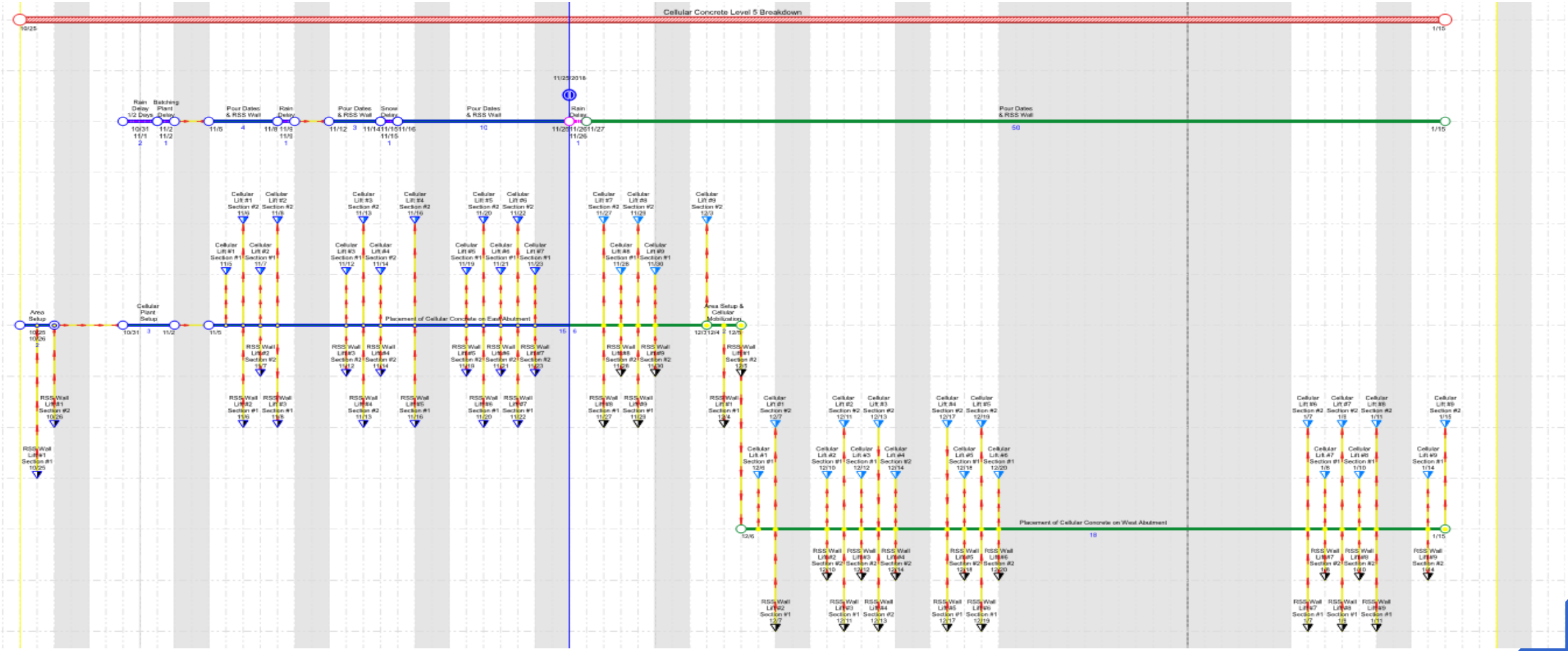
Level 5 Embedded Schedules
NetPoint



Level 5 Embedded Schedules

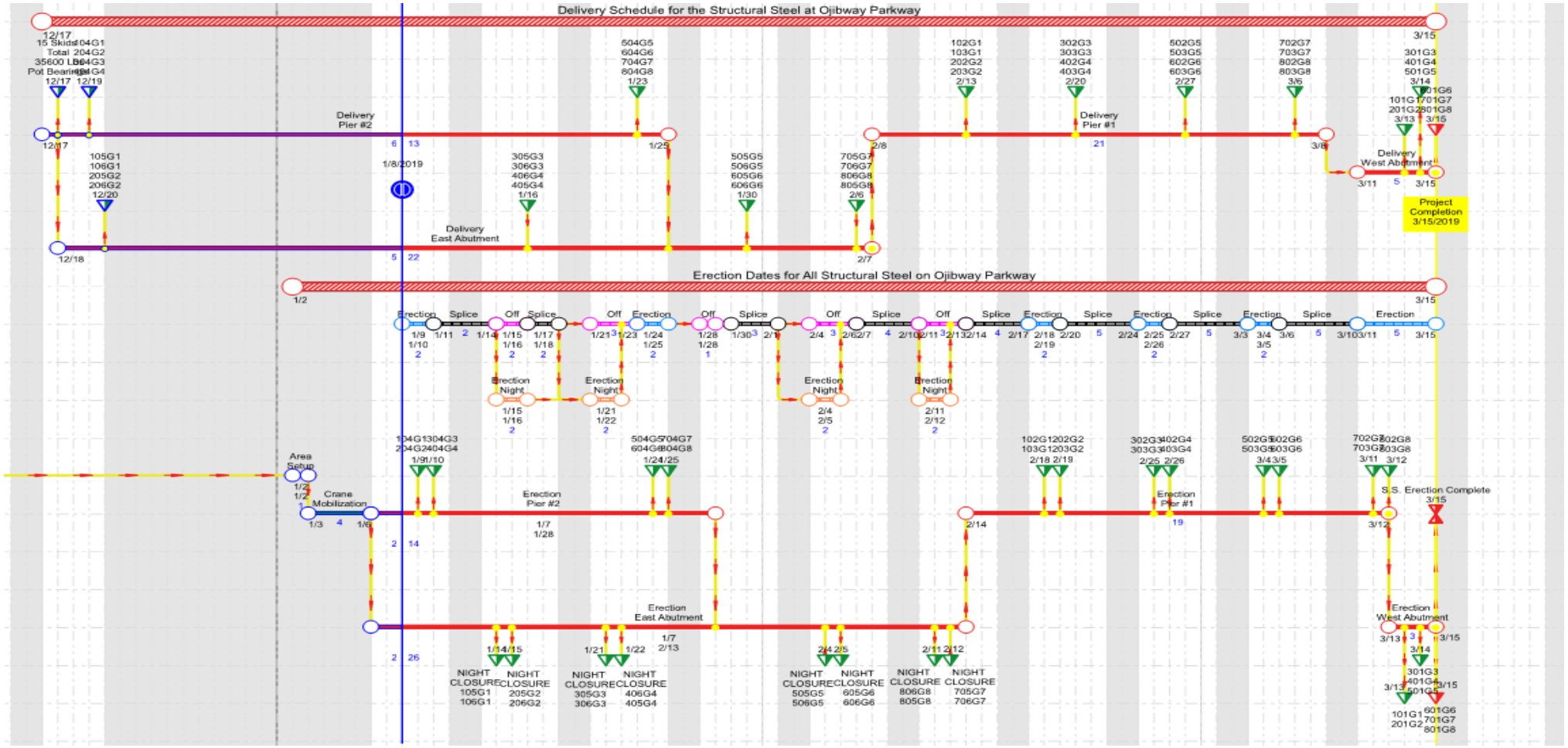
NetPoint

Example of a Level 5 Schedule for Cellular Concrete on an RSS Wall



Level 5 Embedded Schedules
NetPoint

Example of a Level 5 Schedule for Girder Delivery & Erection





NetPoint – Looking to the Future

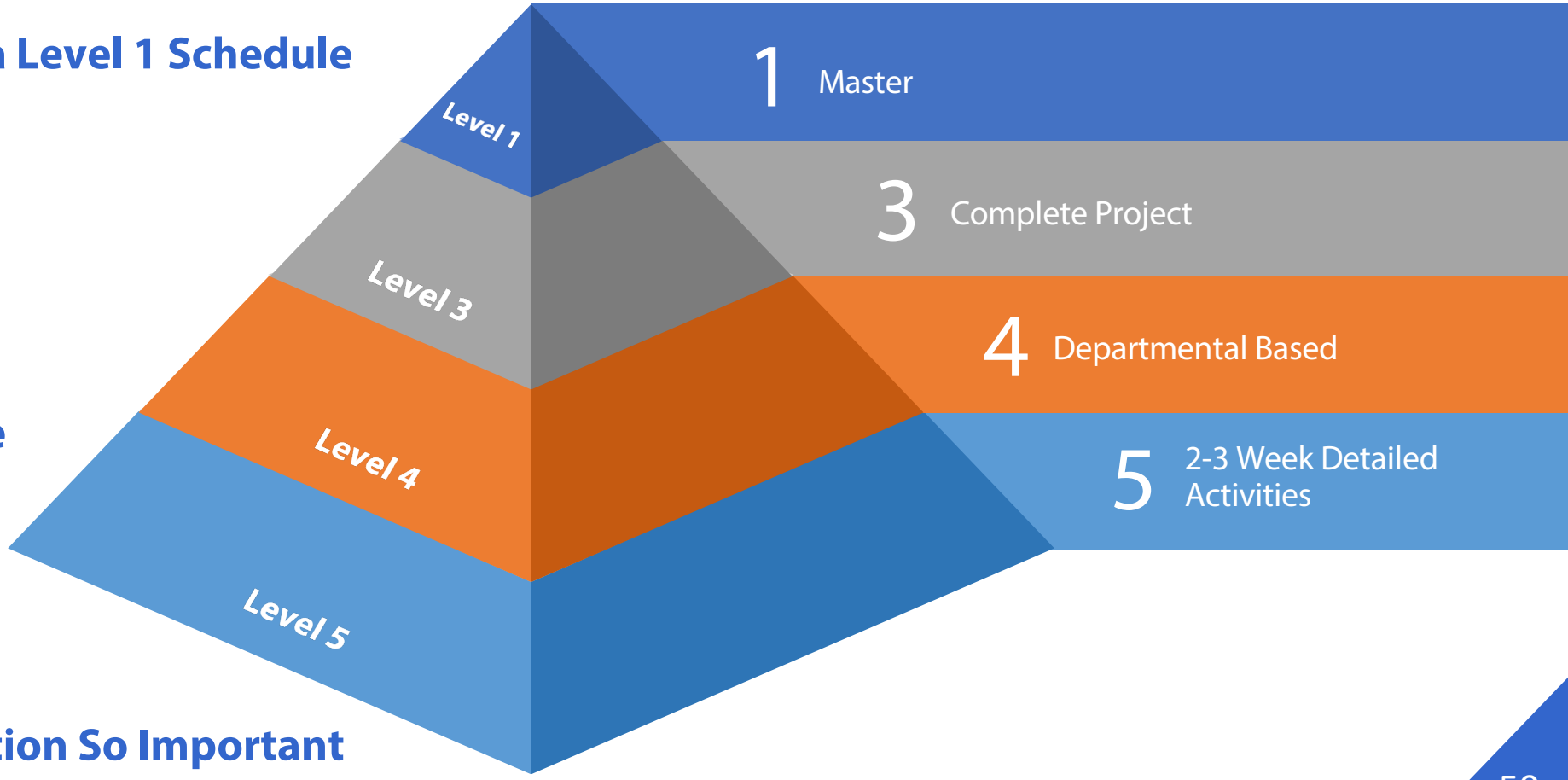
NetPoint – Vertical Integration of Level 1 to Level 5 schedules

Level 1 to Level 5
Vertically Integrated Schedules

What Is a Level 1 Schedule

What Is a Level 5 Schedule

Why is Vertical Integration So Important



Level 1 to Level 5
Vertically Integrated Schedules

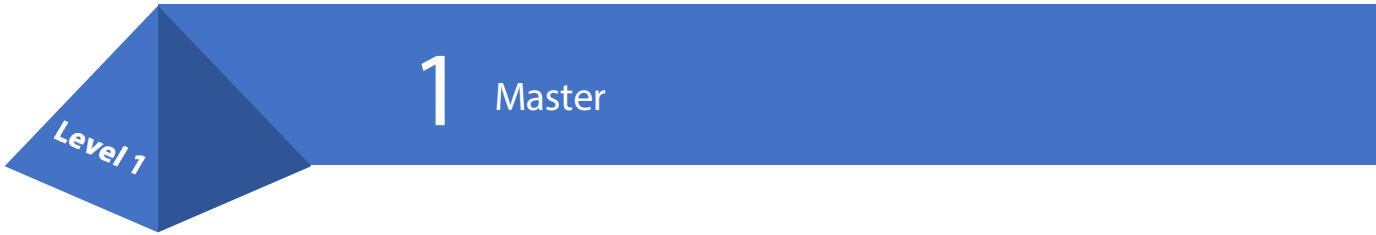
What Is a Level 1 Schedule

A level 1 schedule is an overall master schedule, showing all operation and project within the scope of the company.

Defines resource flow and determination

Defines peak construction seasons and slow seasons

Defines bidding priority



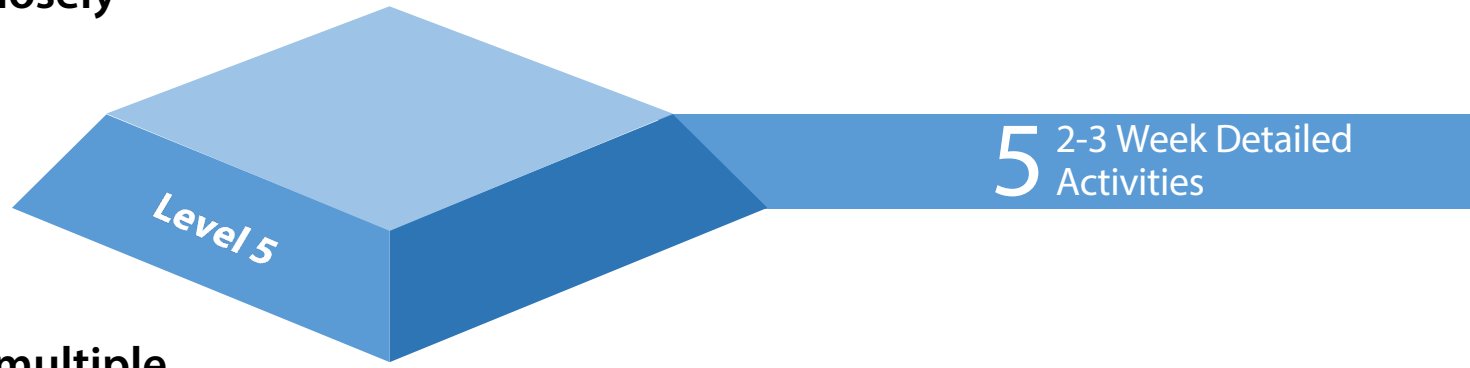
Level 1 to Level 5
Vertically Integrated Schedules

What Is a Level 5 Schedule

A level 5 schedule is detailed schedule of the following:

Time frame that is critical to track closely

- Night closures
- Main highway closures



A single activity broken down into multiple activities that require close tracking

- Girder erection on main highways
- Daily cellular concrete placements with RSS paneling

Level 1 to Level 5
Vertically Integrated Schedules

Why Is Vertical Integration So Important

Vertical Integration is important from a detailed single activity all the way to the master schedule that defines operations company-wide.

Elimination of potential human error

The input of the same information in multiple locations opens the door for error

Create efficiency for lean scheduling

Accurately track resources from day to day



Q & A TIME



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THANK YOU