

2022

VDOT CPM Schedule Template User Guide



Construction Division

Virginia Department of Transportation

7/13/2022

TABLE OF CONTENTS

OVERVIEW	2
1. Downloading a Copy of the CPM Schedule Template	3
2. Preparing the CPM Schedule Template for Use	3
3. Defining the Holidays for the Project Default Calendar	4
4. Creating the Project Work Breakdown Structure (WBS).....	6
5. Creating the Project Activity Codes.....	8
6. Developing a Baseline Schedule.....	9
7. Preparing the Bar-chart Schedule	19
8. Preparing Monthly Update Schedules.....	24
9. Updating the Bar-chart Schedule	27
10. Displaying Available Schedule Information in the Barchart Worksheet	29
11. Using the Activities Filter.....	32
12. Tracking Performance	48

Overview

The CPM Schedule Template is a multi-functional spreadsheet tool that can be used by the project team and other key stakeholders to prepare, update, view, analyze, or track the project critical path method (CPM) schedule in MS Excel. Furthermore, the CPM Schedule Template can be used to:

1. Prepare a Contract Time Determination Schedule for a small to mid-sized project.
2. Prepare and submit a Progress for Category I projects.
3. View various aspects of the schedule using pre-defined activity filters.
4. View schedule variances between the Current Schedule and the SOR or Previous Update.
5. Perform schedule delay analysis using the Contemporaneous Period Analysis (CPA) method.
6. Analyze and track periodic schedule performance and trends.

The CPM Schedule Template workbook includes the following worksheets:

1. Barchart: The *Barchart* worksheet can be used to view and analyze the project barchart schedule.
2. Activity Table: The *Activity Table* worksheet is used to prepare and update the schedule.
3. Charts: The *Charts* worksheet can be used to view the period performance charts.
4. ChartsData: The *ChartsData* worksheet can be used to view the performance statistics used to calculate the performance metrics.
5. WBS: The *WBS* worksheet can be used to create a project Work Breakdown Structure (WBS), with which the schedule can be organized.
6. Holidays: The *Holidays* worksheet is required to define the holidays and other anticipated non-workdays with which to calculate the schedule for activities to which the default 5-Day Calendar is assigned.
7. Codes: The *Codes* worksheet can be used to create activity codes that can be assigned to activities for filtering.

1. Downloading a Copy of the CPM Schedule Template – The following are guidelines for downloading a copy of the CPM Schedule Template file:

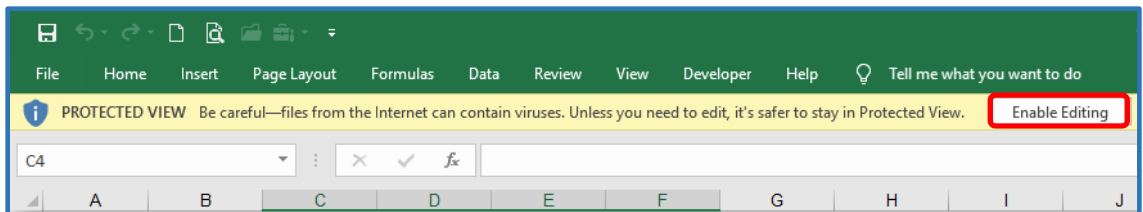
1. Download a copy of the CPM Schedule Template file using the link below:

<http://www.virginiadot.org/business/resources/const/CPMScheduleTemplate.xlsx>

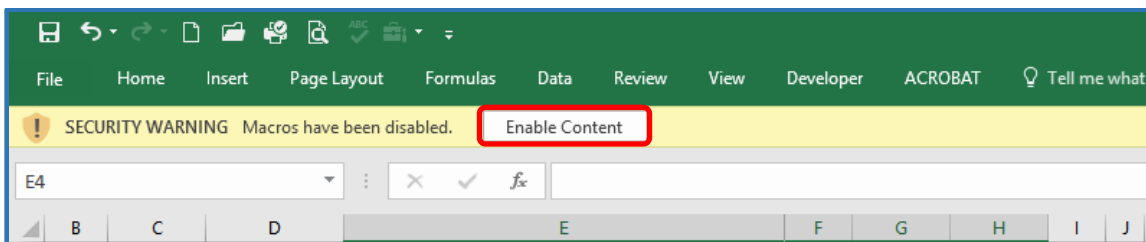
2. You may move the copy of the CPM Schedule Template file from your *Downloads* folder to a preferred file location using the MS Excel Cut/Paste function.

2. Preparing the CPM Schedule Template for Use – The following are guidelines for setting-up the CPM Schedule Template for use:

1. Obtain a copy of the CPM Schedule Template file, then save in the Excel Binary Workbook (.xlsx) or Excel Macro-Enabled Workbook (.xlsm) file format; and rename for a specific project using a naming convention that identifies the Contract ID, submission version, and type of submission (e.g. C00012345C01_BS_Baseline CPM Schedule.xlsx).
2. Open the file. If the PROTECTED VIEW message appears on top of the worksheet, click on the *Enable Editing* button.



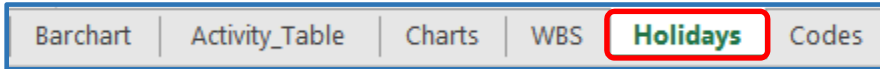
3. If the macros SECURITY WARNING message appears on top of the worksheet, click on the *Enable Content* button to enable the built-in macros.



Virginia Department of Transportation
Construction Division

3. **Defining the Holidays for the Project Default Calendar** – The CPM Schedule Template allows for the use of two project calendars only. A default *5-Day Calendar* that allows for the restriction of work on weekends, holidays, and other specified non-work days. And a *7-Day Calendar* with no restrictions for weekends, holidays, or other non-work days. The *7-Day Calendar* should be assigned to activities whose duration are defined in calendar days, such as VDOT Reviews. The following are guidelines for defining Holidays in the CPM Schedule Template for the default *5-Day Calendar*:

1. Click on the *Holidays* tab at the bottom to display the Holidays worksheet.



2. In Column A, select a cell below which to add a holiday or non-workday, and then click on the *Add Holiday or Non-Work Day* button. A calendar will be displayed.

Date	Add Holiday or Non-Work Day	Holidays/Non-Work Days	Delete Holiday
01/01/22		New Year's Day	
04/17/22		Easter	
05/30/22		Memorial Day	
07/04/22		Independence Day	
07/06/22		Day After 4th of July	
09/05/22		Labor Day	
11/24/22		Thanksgiving Day	
11/25/22		Day After Thanksgiving	
12/24/22		Day Before Christmas	
12/25/22		Christmas Day	

3. Select the year, month, and day of the holiday using the Pop-up Calendar.

A screenshot of the software interface showing a pop-up calendar. The calendar is for January 2023. The date '1' is highlighted with a red box. The interface includes a table with columns for Date, Add Holiday or Non-Work Day, Holidays/Non-Work Days, and Delete Holiday. The calendar is overlaid on the table, showing the days of the month from Sunday to Saturday.

Virginia Department of Transportation
Construction Division

4. In Column B, enter the description of the newly added holiday.

Date	Add Holiday or Non-Work Day	Holidays/Non-Work Days	Delete Holiday
01/01/22		New Year's Day	
04/17/22		Easter	
05/30/22		Memorial Day	
07/04/22		Independence Day	
07/06/22		Day After 4th of July	
09/05/22		Labor Day	
11/24/22		Thanksgiving Day	
11/25/22		Day After Thanksgiving	
12/24/22		Day Before Christmas	
12/25/22		Christmas Day	
01/01/23		New Year's Day	

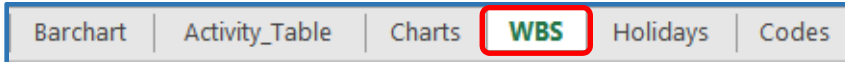
5. To add recurring holidays for additional years, you may use MS Excel Copy/Paste function after creating the holidays for the first year. And then adjust the dates as needed.
6. To delete a holiday, select the holiday and then click on the *Delete Holiday* button.

Date	Add Holiday or Non-Work Day	Holidays/Non-Work Days	Delete Holiday
01/01/22		New Year's Day	
04/17/22		Easter	
05/30/22		Memorial Day	
07/04/22		Independence Day	
07/06/22		Day After 4th of July	
09/05/22		Labor Day	
11/24/22		Thanksgiving Day	
11/25/22		Day After Thanksgiving	
12/24/22		Day Before Christmas	
12/25/22		Christmas Day	
01/01/23		New Year's Day	

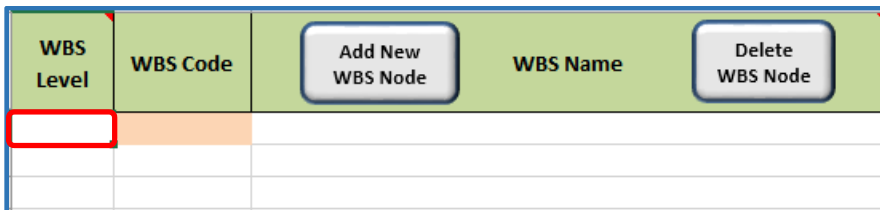
7. Please note that the 5-Day Calendar is the default and all activities to which the calendar is assigned, will be affected by the specified holidays.

4. **Creating the Project Work Breakdown Structure (WBS)** – A WBS provides a tiered framework with which to breakdown the project into smaller manageable parts and to organize the project activities. The CPM Schedule Template can be used to prepare a schedule with or without a WBS. *If a Project WBS will be used, it should be created and applied before adding the project activities.* The CPM Schedule Template may contain a sample WBS, which can be modified accordingly to match the project scope. The following are guidelines for creating a Project WBS:

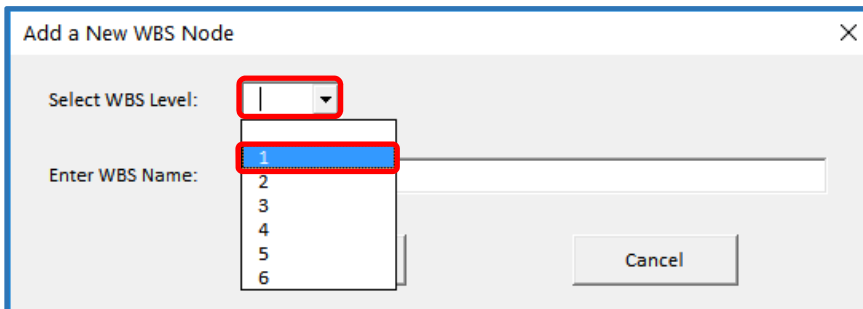
1. Click on the *WBS* tab at the bottom to display the WBS worksheet.



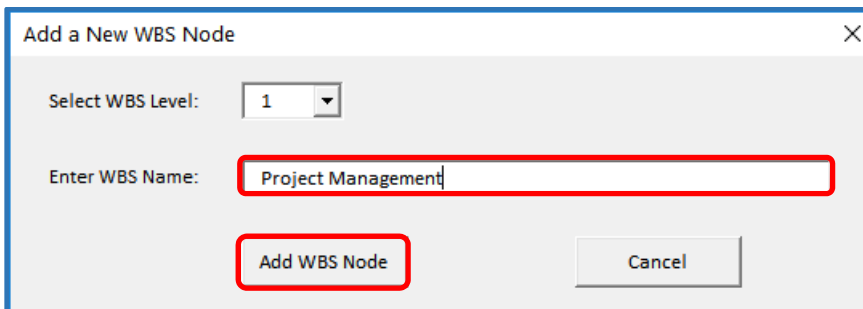
2. If the WBS is empty, select Cell A3 in column A to add the first WBS node. Otherwise, select a cell below which to add a WBS element, and then click on the *Add New Node* button.



3. In the Add a New WBS Node form, click on the *Select WBS Level* drop down menu to select a WBS Level. (Note: You may select up to 6 WBS levels depending on whether the new WBS element is a parent, subordinate, or child).



4. Enter a unique WBS Name for the new WBS element, then click on the *Add WBS Node* button.



Virginia Department of Transportation
Construction Division

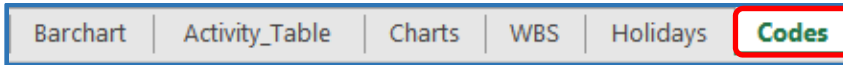
5. Repeat Steps 2 through 4 to complete the Project WBS. Below is a Sample Project WBS.

WBS Level	WBS Code	Add New WBS Node	WBS Name	Delete WBS Node
1	1		Project Management	
2	1.1		Milestones	
2	1.2		Administrative	
1	2		Preconstruction	
2	2.1		Prepare Submittals	
2	2.2		VDOT Review Submittals	
2	2.3		Fabricate and Deliver Materials	
1	3		Construction	
2	3.1		General/Start-up	
2	3.2		Phase 1	
1	4		Project Finish/Close-out	

6. Review to ensure that every element has a parent, except for Level 1.
7. To promote or demote a WBS node, modify the WBS Level accordingly.
8. To modify or reposition a WBS node, add a new node in the proper position, and then delete the old node by selecting the WBS node and clicking on the *Delete WBS Node* button.
9. Review the WBS Name for each WBS node to ensure the WBS Names are unique and modify accordingly.
10. Review the Project WBS to ensure that it is complete and that it reflects the entire scope of work.

5. Creating the Project Activity Codes – Activity codes can be created as needed to allow for filtering of activities based on the assigned codes. The CPM Schedule Template allows for the creation and assignment of up to four types of activity codes: Responsibility, Crew, Location, and Work Type. The CPM Schedule Template may contain sample Codes, which can be modified accordingly to match the project scope. The following are guidelines for creating a Project Activity Codes:

1. Click on the *Codes* tab at the bottom to display the Codes worksheet.



2. Select a code type and enter a short alpha-numeric code and a description or name of the code.

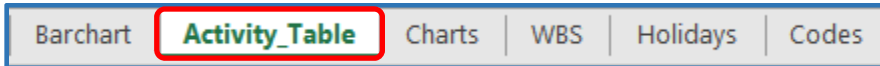
Responsibility Code	Responsibility Description	Crew Code	Crew Name	Location Code	Location Name	Work Type Code	Work Type Description
VDOT	VDOT	GC	Grading Crew	L-1	Location 1	RE	Regular Excavation
UC-1	Utility Company	DC	Drainage Crew	L-2	Location 2	DRN	Drainage Pipe
		PC	Piling Crew	L-3	Location 3	PD	Pile Driving
		CC	Concrete Crew	L-4	Location 4	CW	Concrete Work
		APC	Asphalt Paving Crew			AP	Asphalt Paving

1. Enter a *Responsibility Code* to be assigned to activities performed by the Department or others (e.g. VDOT, Utility Company, etc.).
2. Enter a *Crew Code* to be assigned to activities performed by a specific crew or sub-contractor (e.g. Grading Crew, Piling Crew, Concrete Crew, Paving Crew, etc.).
3. Enter a *Location Code* to be assigned to activities performed in a specific area or location (e.g. Eastern Approach, Sta. 100+15 – 150+00, Abut A, Pier 1, etc.).
4. Enter a *Work Type Code* to be assigned to activities of similar work type (e.g. Regular Excavation, Piling, Concrete, Paving, etc.).

Virginia Department of Transportation
Construction Division

6. **Developing a Baseline Schedule** – The Activity_Table worksheet will be used to develop and update the project schedule. The following are guidelines for developing a Baseline Schedule using the CPM Schedule Template:

1. Click on the *Activity_Table* tab at the bottom to display the Activity Table worksheet.



2. In Cells E1 to E4 of the Activity Table worksheet, enter the project information and schedule submission version.

Contract ID:		C00012345B01			©2022 Frank Gbinije All rights reserved.		Project Start Date:					
Project No.:		(NFO) 0010-123-456, C601					Contract Completion Date:					
Project Name:		Route 10 Roadway Widening					Projected Completion Date:					
Submission:		Baseline Schedule					Current Data Date:					
<div style="display: flex; justify-content: space-between; align-items: center;"> Help Apply WBS Add New Activity Delete Row Sort Activities Show All Columns Show Predecessors Show Logic Details Set Previous Update Open Calendar Calculate </div>												
WBS Node	WBS Code	Activity ID	Activity Name	Orig Dur	Start	Finish	Total Float	Critical	Actual Start	Actual Finish	Rem Dur	Dur % Compl
Route 10 Roadway Widening Baseline Schedule												

3. If the Baseline Schedule will be prepared without a WBS, skip to Step 6 below. If the Baseline Schedule will be prepared using a WBS, then select Cell B10, and then click on the *Apply WBS* button to apply the Project WBS created previously in the WBS worksheet.

Contract ID:		C00012345B01			©2022 Frank Gbinije All rights reserved.		Project Start Date:					
Project No.:		(NFO) 0010-123-456, C601					Contract Completion Date:					
Project Name:		Route 10 Roadway Widening					Projected Completion Date:					
Submission:		Baseline Schedule					Current Data Date:					
<div style="display: flex; justify-content: space-between; align-items: center;"> Help Apply WBS Add New Activity Delete Row Sort Activities Show All Columns Show Predecessors Show Logic Details Set Previous Update Open Calendar Calculate </div>												
WBS Node	WBS Code	Activity ID	Activity Name	Orig Dur	Start	Finish	Total Float	Critical	Actual Start	Actual Finish	Rem Dur	Dur % Compl
Route 10 Roadway Widening Baseline Schedule												

Virginia Department of Transportation
Construction Division

4. Review the Project WBS and adjust as necessary.

Contract ID:		C00012345B01		©2022 Frank Gbinije All rights reserved.		Project Start Date:						
Project No.:		(NFO) 0010-123-456, C601				Contract Completion Date:						
Project Name:		Route 10 Roadway Widening				Projected Completion Date:						
Submission:		Baseline Schedule				Current Data Date:						
<input type="button" value="Help"/> <input type="button" value="Apply WBS"/> <input type="button" value="Add New Activity"/> <input type="button" value="Delete Row"/> <input type="button" value="Sort Activities"/> <input type="button" value="Show All Columns"/> <input type="button" value="Show Predecessors"/> <input type="button" value="Show Logic Details"/> <input type="button" value="Set Previous Update"/> <input type="button" value="Open Calendar"/> <input type="button" value="Calculate"/>												
WBS Node	WBS Code	Activity ID	Activity Name	Orig Dur	Start	Finish	Total Float	Critical	Actual Start	Actual Finish	Rem Dur	Dur % Compl
Route 10 Roadway Widening Baseline Schedule												
1			Project Management									
1.1			Milestones									
1.2			Administrative									
2			Preconstruction									
2.1			Prepare Submittals									
2.2			VDOT Review Submittals									
2.3			Fabricate and Deliver Materials									
3			Construction									
3.1			General/Start-up									
3.2			Phase 1									
4			Project Finish/Close-out									

Note:

- To change the Project WBS after applying it, you must first change it in the WBS worksheet.
- If a WBS node is added in the WBS worksheet, you must also apply the newly added WBS node to the Activity Table worksheet by selecting a WBS node below which to add the new node, then clicking on the *Apply WBS* button, and then selecting/applying the new node.
- If a WBS node is deleted in the WBS worksheet, you must also remove the node from the Activity Table worksheet by selecting the WBS node, then clicking on the *Delete Row* button.
- Select a WBS node (or activity) below which to add a new activity, then click on the *Add New Activity* button to display the *Add New Activity* form. Then proceed to Step 8 to add activities.

Contract ID:		C00012345B01		©2022 Frank Gbinije All rights reserved.		Project Start Date:						
Project No.:		(NFO) 0010-123-456, C601				Contract Completion Date:						
Project Name:		Route 10 Roadway Widening				Projected Completion Date:						
Submission:		Baseline Schedule				Current Data Date:						
<input type="button" value="Help"/> <input type="button" value="Apply WBS"/> <input type="button" value="Add New Activity"/> <input type="button" value="Delete Row"/> <input type="button" value="Sort Activities"/> <input type="button" value="Show All Columns"/> <input type="button" value="Show Predecessors"/> <input type="button" value="Show Logic Details"/> <input type="button" value="Set Previous Update"/> <input type="button" value="Open Calendar"/> <input type="button" value="Calculate"/>												
WBS Node	WBS Code	Activity ID	Activity Name	Orig Dur	Start	Finish	Total Float	Critical	Actual Start	Actual Finish	Rem Dur	Dur % Compl
Route 10 Roadway Widening Baseline Schedule												
1			Project Management									
1.1			Milestone									
1.2			Administrative									
2			Preconstruction									
2.1			Prepare Submittals									
2.2			VDOT Review Submittals									
2.3			Fabricate and Deliver Materials									
3			Construction									
3.1			General/Start-up									
3.2			Phase 1									
4			Project Finish/Close-out									


Virginia Department of Transportation
Construction Division

6. If the Baseline Schedule will be prepared without a WBS, then select Cell D10, and then click on the *Add New Activity* button to add the first activity.

Contract ID:	C00012345B01	©2022 Frank Gbinije All rights reserved.	Project Start Date:									
Project No.:	(NFO) 0010-123-456, C601		Contract Completion Date:									
Project Name:	Route 10 Roadway Widening		Projected Completion Date:									
Submission:	Baseline Schedule		Current Data Date:									
<input type="button" value="Help"/> <input type="button" value="Apply WBS"/> <input type="button" value="Add New Activity"/> <input type="button" value="Delete Row"/> <input type="button" value="Sort Activities"/> <input type="button" value="Show All Columns"/> <input type="button" value="Show Predecessors"/> <input type="button" value="Show Logic Details"/> <input type="button" value="Set Previous Update"/> <input type="button" value="Open Calendar"/> <input type="button" value="Calculate"/>												
WBS Node	WBS Code	Activity ID	Activity Name	Orig Dur	Start	Finish	Total Float	Critical	Actual Start	Actual Finish	Rem Dur	Dur % Compl
			Route 10 Roadway Widening Baseline Schedule									

7. If you are attempting to add activities without a WBS, a *WBS Prompt* message will appear to remind you to create and apply a WBS before adding activities. To proceed to add activities without a WBS, click the *Yes* button to display the *Add New Activity* form. Otherwise, click the *No* button to cancel; then proceed to create the Project WBS as described above, and then apply the WBS before adding activities.

WBS Prompt!

 Would you like to proceed to add activities without a WBS? If so, click Yes.

Otherwise, click No, then proceed to setup/apply the WBS before adding activities.

Virginia Department of Transportation
Construction Division

8. Complete the *Add New Activity* form to provide required schedule information for each activity.

The screenshot shows the 'Add New Activity' dialog box. It contains the following fields and sections:

- Enter New Activity ID:** Text box with value '10'.
- Enter Activity Name:** Text box with value 'Notice to Proceed'.
- Specify Activity Type:** Dropdown menu with value 'SM'. Below it is a note: "(Select 'SM' for Start Milestone, 'FM' for Finish Milestone, or 'T' for Work Task)".
- Constraint:** Dropdown menu.
- Enter Activity Original Duration:** Text box with value '0'. Below it is a note: "(Working Days)".
- Date:** Text box with a calendar icon.
- Select Activity Calendar:** Dropdown menu with value 'Cal-1_5-Day'.
- Predecessor Relationships:** A section with the instruction "Specify up to four predecessor relationships. Define for each predecessor, the Activity ID, Relationship Type, and Lag, as applicable." It contains a table with four columns: Predecessor 1, Predecessor 2, Predecessor 3, and Predecessor 4. Each column has three rows: Activity ID (dropdown), Relationship Type (dropdown), and Lag (text box).
- Buttons:** 'Cancel', 'Add Another Activity', and 'Finish'.

The *Add New Activity* form can be used to add a single activity and any required information by clicking on the *Finish* button. The form can also be used to add multiple activities and any required information at a time by clicking on the *Add Another Activity* button. The required information can also be added or modified later in a spreadsheet view as described later in this guide. Complete the form as follows:

1. **Activity ID:** Enter a unique Activity ID for each activity. By default, the form displays the Activity ID in increments of 10 based on the highest existing numerical value. However, you may define the Activity ID using an alpha-numeric system. (Note: Once the activity has been assigned as a predecessor, the ID should not be changed to avoid logic errors or open ends).
2. **Activity Name:** Enter a discrete Activity Name to provide a description of the specific work the activity represents.
3. **Activity Type:** Specify the Activity Type to indicate whether the activity is a start milestone (SM), finish milestone (FM), or a work task (T).
4. **Original Duration:** Enter the Original Duration to indicate the amount of time needed to complete the activity. For activities assigned a 5-Day Calendar, the activity duration should be based on work days, including any time for normal weather. Activity duration for activities assigned a 7-Day Calendar should be defined in terms of calendar days.
5. **Activity Calendar:** Select either a 5-Day or a 7-Day Calendar. The default is a 5-Day Calendar.

6. Predecessor Relationships: You may define up to four predecessor relationships for each activity as needed. Define the predecessor relationships as follows:
 1. Select an Activity ID from the drop-down list for each applicable Predecessor. (Note: Activities added using the *Add Another Activity* button are stored in memory momentarily and are not available as predecessors until after you click the *Finish* button. You may add the relationships later in the spreadsheet view).
 2. Select a Relationship Type from the available list. Select:
 - a) Start-to-Start (SS), when the activity can begin when its predecessor begins.
 - b) Finish-to-Start (FS), when the activity can begin when its predecessor finishes.
 - c) Finish-to-Finish (FF), when the activity can finish when its predecessor finishes.
 3. Enter a Lag (number of days; i.e. 1, 2, 3, etc.), as applicable to indicate any offset or waiting time between the predecessor and the activity.

7. Constraint: Constraints can be defined as required to establish deadlines or delay the start or finish of an activity to the specified date. Constraints can be defined as follows:
 1. Select a Constraint from the available list. Select:
 - a) *Start On*, when the activity must not start earlier or later than the specified date. This constraint restricts the activity from starting earlier than the specified date and sets a start date deadline; and should be used sparingly.
 - b) *Start on or Before*, when the activity can start on, but must start no later than the specified date. This constraint sets a start date deadline.
 - c) *Start On or After*, when the activity can start on, but must be restricted from starting earlier than the specified date. This constraint may be used when an activity's start date must be restricted by a moratorium, seasonal constraint, or time of year (TOYR) restriction.
 - d) *Finish On*, when the activity must not finish earlier or later than the specified date. This constraint restricts the activity from finishing earlier than the specified date and sets a finish date deadline; and should be used sparingly.
 - e) *Finish On or Before*, when the activity can finish on, but must finish no later than the specified date. This constraint sets a finish date deadline and should be applied to all contract milestones with a finish date mandate.
 - f) *Finish On or After*, when the activity can finish on, but must be restricted from finishing earlier than the specified date.
 2. Click on the Calendar icon and select a date for the selected constraint.

Virginia Department of Transportation
Construction Division

- Click the *Finish* button to add the activity and close the *Add New Activity* form.

The screenshot shows the 'Add New Activity' dialog box. It has a title bar with a close button. The form includes the following fields and controls:

- Enter New Activity ID:** Text box containing '10'.
- Enter Activity Name:** Text box containing 'Notice to Proceed'.
- Specify Activity Type:** Dropdown menu with 'SM' selected. Below it is a note: "(Select 'SM' for Start Milestone, 'FM' for Finish Milestone, or 'TT' for Work Task)".
- Constraint:** Dropdown menu.
- Enter Activity Original Duration (Working Days):** Text box containing '0'.
- Date:** Text box with a calendar icon.
- Select Activity Calendar:** Dropdown menu with 'Cal-1_5-Day' selected.
- Predecessor Relationships:** A section with instructions: "Specify up to four predecessor relationships. Define for each predecessor, the Activity ID, Relationship Type, and Lag, as applicable." It contains four columns for Predecessor 1 through 4, each with 'Activity ID', 'Relationship Type', and 'Lag' dropdowns and text boxes.
- Buttons:** 'Cancel', 'Add Another Activity', and 'Finish' (highlighted with a red box).

- Select a WBS node (or activity) below which to add new activities as needed, then click on the *Add New Activity* button.

Contract ID:		C00012345B01		©2022 Frank Gbinije All rights reserved.		Project Start Date:		04/01/22				
Project No.:		(NFO) 0010-123-456, C601				Contract Completion Date:						
Project Name:		Route 10 Roadway Widening				Projected Completion Date:		04/01/22				
Submission:		Baseline Schedule				Current Data Date:		04/01/22				
<div style="display: flex; justify-content: space-between; align-items: center;"> Help Apply WBS Add New Activity Delete Row Sort Activities Show All Columns Show Predecessors Show Logic Details Set Previous Update Open Calendar Calculate </div>												
WBS Node	WBS Code	Activity ID	Activity Name	Orig Dur	Start	Finish	Total Float	Critical	Actual Start	Actual Finish	Rem Dur	Dur % Compl
Route 10 Roadway Widening Baseline Schedule				1	04/01/22	04/01/22	0				1	0.0%
1	Project Management											
1.1	Milestones											
	1.1	10	Notice to Proceed	0	04/01/22		0	<input type="checkbox"/>			0	0.0%
1.2	Administrative											
2	Preconstruction											
2.1	Prepare Submittals											
2.2	VDOT Review Submittals											
2.3	Fabricate and Deliver Materials											
3	Construction											
3.1	General/Start-up											
3.2	Phase 1											
4	Project Finish/Close-out											

Virginia Department of Transportation
Construction Division

10. Repeat Step 8 above to complete the *Add New Activity* form for the additional activities.

WBS Node	WBS Code	Activity ID	Activity Name	Orig Dur	Start	Finish	Total Float	Critical	Actual Start	Actual Finish	Rem Dur	Dur % Compl
Route 10 Roadway Widening Baseline Schedule				214	04/01/22	10/31/22	0				214	0.0%
3	Construction			138	04/25/22	09/09/22	0				138	0.0%
3.1	General/Start-up			33	04/25/22	05/27/22	18				33	0.0%
3.1	300		Mobilization	10	04/25/22	05/06/22	11	<input type="checkbox"/>			10	0.0%
3.1	310		Construction Survey	5	05/09/22	05/13/22	11	<input type="checkbox"/>			5	0.0%
3.1	320		Clearing and Grubbing	10	05/16/22	05/27/22	11	<input type="checkbox"/>			10	0.0%
3.2	Phase I			102	05/31/22	09/09/22	0				102	0.0%
3.2	330		Regular Excavation	20	05/31/22	06/27/22	11	<input type="checkbox"/>			20	0.0%
3.2	340		Install Drainage Structure	15	06/22/22	07/14/22	0	<input checked="" type="checkbox"/>			15	0.0%
3.2	350		Backfill Drainage Structure	5	07/15/22	07/21/22	5	<input type="checkbox"/>			5	0.0%
3.2	360		Place Aggregate Base Subbase	15	07/15/22	08/04/22	0	<input checked="" type="checkbox"/>			15	0.0%
3.2	370		Place Asphalt Concrete Base Course	10	08/05/22	08/18/22	0	<input checked="" type="checkbox"/>			10	0.0%
3.2	380		Place Asphalt Concrete Intermediate Course	5	08/19/22	08/25/22	0	<input checked="" type="checkbox"/>			5	0.0%
3.2	390		Place Asphalt Concrete Surface Course	3	08/26/22	08/30/22	0	<input checked="" type="checkbox"/>			3	0.0%
3.2	400		Install Guardrail	5	08/31/22	09/07/22	0	<input checked="" type="checkbox"/>			5	0.0%
3.2	410		Striping	6	09/01/22	09/09/22	0	<input checked="" type="checkbox"/>			6	0.0%

11. To change the *Activity Type* or *Calendar* assignment for an activity, click on the *Show All Columns* button to display all available columns, and then click on the *Hide* buttons, except *Act Type and Calendar* to hide other columns.

WBS Node	WBS Code	Activity ID	Activity Name	Type	Calendar
Example Project #2 Baseline Schedule (DD: 4/1/22)					
1	Project Management				
1.1	Milestones				
1.1	10		Notice to Proceed	SM	Cal-1_5-Day
1.1	20		Incentive Early Completion Milestone (9/30/22)	FM	Cal-1_5-Day
1.1	30		Project Final Completion Date (10/31/22)	FM	Cal-1_5-Day
1.2	Administrative				
1.2	100		Preconstruction Conference	T	Cal-1_5-Day
1.2	110		Early Completion Incentive Duration	T	Cal-2_7-Day
2	Preconstruction				
2.1	Prepare and Submit Shop Drawings				
2.1	200		Prepare/Submit Drainage Str. Shop Dwgs	T	Cal-1_5-Day
2.2	VDOT Review and Approve Shop Drawings				
2.2	210		VDOT Review Shop Drawings	T	Cal-2_7-Day
2.3	Fabricate and Deliver Materials				
2.3	220		Fabricate/Deliver Drainage Structure	T	Cal-1_5-Day

Modify an activity's Activity Type or Calendar as follows:

1. Click on the *Activity Type* cell for the selected activity and select an activity type from a drop down list. You may select "SM" (Start Milestone), "FM" (Finish Milestone), or "T" (Task).
2. Click on the *Calendar* cell for the selected activity and select a calendar from a drop-down list. You may select Cal-1_5-Day or Cal-2_7-Day.
3. When you are finished modifying the activity type and/or calendar, you may click on the *Hide Act Type and Calendar* button to hide the columns.

Virginia Department of Transportation
Construction Division

12. To add or edit predecessor relationships for an activity, click on the *Show Predecessors* button.

The screenshot shows a software interface with a toolbar at the top containing buttons: Help, Apply WBS, Add New Activity, Delete Row, Sort Activities, Show All Columns, Show Predecessors (highlighted in red), Show Logic Details, Set Previous Update, Open Calendar, and Calculate. Below the toolbar is a table with columns for WBS Node, WBS Code, Activity ID, Activity Name, and four predecessor groups (P-1, P-2, P-3, P-4). Each predecessor group has sub-columns for Act. ID, Rel. Type, Lag, and Driving. A 'Hide Predecessor Relationships' button is highlighted in red above the table. The table contains data for 'Route 10 Roadway Widening Baseline Schedule' with activities like 'Project Management', 'Milestones', 'Administrative', and 'Preconstruction'. The activity '2.1 Prepare and Submit Shop Drawings' has its predecessor relationship cells (Act. ID, Rel. Type, Lag, Driving) highlighted in red.

Enter or modify an activity's predecessor relationships as follows:

1. Select the *Act. ID* cell for the P1, P2, P3, or P4 predecessor, as applicable and then enter or select a predecessor activity ID from the drop-down list. You may add up to 4 predecessors.
2. Select the *Rel. Type* cell for the P1, P2, P3, or P4 predecessor, and then select a relationship type (SS, FS, or FF) from the drop-down list, as applicable.
3. Select the *Lag* cell for the P1, P2, P3, or P4 predecessor, as applicable, and then enter a lag value, as necessary.
4. When you are finished entering or modifying the activity predecessor relationships, you may click on the *Hide Predecessors* button to hide the columns.

13. To add or change a constraint to an activity, click on the *Show All Columns* button to display all available columns, and then click on the *Hide* buttons, except *Constraints* to hide other columns.

The screenshot shows a software interface with a toolbar at the top containing buttons: Help, Apply WBS, Add New Activity, Delete Row, Sort Activities, Show All Columns (highlighted in red), Previous Update, Open Calendar (highlighted in red), Calculate, and Hide Constraints (highlighted in red). Below the toolbar is a table with columns for WBS Node, WBS Code, Activity ID, Activity Name, Actual Start, Actual Finish, Rem Dur, Dur % Compl, and Constraint. The Constraint column has sub-columns for Type and Date. The table contains data for 'Example Project #2 Baseline Schedule (DD: 4/1/22)'. The activity '1.2.1.2 Early Completion Incentive Duration' has its 'Constraint' cell highlighted in red, showing 'Start On or After' and '04/15/22'.

Virginia Department of Transportation
Construction Division

Enter or modify an activity's Constraint as follows:

1. Click on the *Constraint Type* cell of the activity, and then select from a drop-down list, a constraint type for the selected activity (See Item 7 of Step 8 - Complete the *Add New Activity* form above for definition of each Constraint Type).
 2. Click on the *Constraint Date* cell of the activity, then enter or click on the *Open Calendar* button to specify a constraint date for the selected activity.
 3. When you are finished modifying the constraint and/or date, you may click on the *Hide Constraints* button to hide the columns.
14. To add or change an activity code assignment, click on the *Show All Columns* button to display all available columns, and then click on the *Hide* buttons, except *Activity Codes* to hide other columns.

Help Apply WBS Add New Activity Delete Row Sort Activities Show All Columns Hide Activity Codes							
WBS Node	WBS Code	Activity ID	Activity Name	Responsibility Code	Resource Code	Location Code	Work Type Code
Example Project #2 Baseline Schedule (DD: 4/1/22)							
2.1	Prepare and Submit Shop Drawings						
2.1	200	Prepare/Submit Drainage Str. Shop Dwgs					
2.2	VDOT Review and Approve Shop Drawings						
2.2	210	VDOT Review Shop Drawings		VDOT			
2.3	Fabricate and Deliver Materials						
2.3	220	Fabricate/Deliver Drainage Structure					
3	Construction						
3.1	General/Start-up						
3.1	300	Mobilization					
3.1	310	Construction Survey					
3.1	320	Clearing and Grubbing					
3.2	Phase I						
3.2	330	Regular Excavation			GC	L-1	RE
3.2	340	Install Drainage Structure			DC	L-2	DRN
3.2	350	Backfill Drainage Structure			DC	L-2	DRN

Enter or modify an activity's Code as follows:

1. Click on the *Code* cell of the activity, as applicable, and then select from a drop-down list, a code for the selected activity.
2. When you are finished adding or modifying the code, you may click on the *Hide Activity Codes* button to hide the columns.

Virginia Department of Transportation
Construction Division

15. Once all required activities and properties have been defined, enter the required *Contract Completion Date* in Cell M2, and then click on the *Calculate* button to calculate the schedule.

Contract ID:	C00012345C01	© 2022 Frank Gbinije All rights reserved.	Project Start Date:	04/01/22
Project No.:	(NFO) 0010-123-456, C601		Contract Completion Date:	10/31/22
Project Name:	Route 10 Roadway Widening		Projected Completion Date:	10/31/22
Submission:	Baseline Schedule		Current Data Date:	04/01/22

Help
Apply WBS
Add New Activity
Delete Row
Sort Activities
Show All Columns
Show Predecessors
Show Logic Details
Set Previous Update
Open Calendar
Calculate

16. Select the *Current Data Date* from the pop-up calendar. The data date is the beginning date for calculating the schedule for all remaining work.

Calendar ✕

Month: April Year: 2022

◀ April-2022 ▶

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

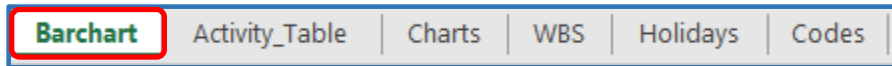
17. Review the schedule for completeness, reasonableness, and conformance; adjust as necessary.

WBS Node	WBS Code	Activity ID	Activity Name	Orig Dur	Start	Finish	Total Float	Critical	Actual Start	Actual Finish	Rem Dur	Dur % Compl
Route 10 Roadway Widening Baseline Schedule				214	04/01/22	10/31/22	0				214	0.0%
1			Project Management	214	04/01/22	10/31/22	0				214	0.0%
1.1			Milestones	214	04/01/22	10/31/22	0				214	0.0%
	1.1	10	Notice to Proceed	0	04/01/22		0	<input checked="" type="checkbox"/>			0	0.0%
	1.1	20	Incentive Early Completion Milestone (9/30/22)	0		09/30/22	0	<input checked="" type="checkbox"/>			0	0.0%
	1.1	30	Project Final Completion Date (10/31/22)	0		10/31/22	0	<input checked="" type="checkbox"/>			0	0.0%
1.2			Administrative	200	04/15/22	10/31/22	0				200	0.0%
	1.2	100	Preconstruction Conference	1	04/15/22	04/15/22	11	<input type="checkbox"/>			1	0.0%
	1.2	110	Early Completion Incentive Duration	31	10/01/22	10/31/22	0	<input checked="" type="checkbox"/>			31	0.0%
2			Preconstruction	82	04/01/22	06/21/22	0				82	0.0%
2.1			Prepare and Submit Shop Drawings	8	04/01/22	04/08/22	0				8	0.0%
	2.1	200	Prepare/Submit Drainage Str. Shop Dwgs	6	04/01/22	04/08/22	0	<input checked="" type="checkbox"/>			6	0.0%
2.2			VDOT Review and Approve Shop Drawings	30	04/09/22	05/08/22	1				30	0.0%
	2.2	210	VDOT Review Shop Drawings	30	04/09/22	05/08/22	1	<input checked="" type="checkbox"/>			30	0.0%
2.3			Fabricate and Deliver Materials	43	05/10/22	06/21/22	0				43	0.0%
	2.3	220	Fabricate/Deliver Drainage Structure	30	05/10/22	06/21/22	0	<input checked="" type="checkbox"/>			30	0.0%
3			Construction	138	04/25/22	09/09/22	0				138	0.0%
3.1			General/Start-up	33	04/25/22	05/27/22	18				33	0.0%
	3.1	300	Mobilization	10	04/25/22	05/06/22	11	<input type="checkbox"/>			10	0.0%
	3.1	310	Construction Survey	5	05/09/22	05/13/22	11	<input type="checkbox"/>			5	0.0%
	3.1	320	Clearing and Grubbing	10	05/16/22	05/27/22	11	<input type="checkbox"/>			10	0.0%
3.2			Phase I	102	05/31/22	09/09/22	0				102	0.0%
	3.2	330	Regular Excavation	20	05/31/22	06/27/22	11	<input type="checkbox"/>			20	0.0%
	3.2	340	Install Drainage Structure	15	06/22/22	07/14/22	0	<input checked="" type="checkbox"/>			15	0.0%
	3.2	350	Backfill Drainage Structure	5	07/15/22	07/21/22	5	<input type="checkbox"/>			5	0.0%
	3.2	360	Place Aggregate Base Subbase	15	07/15/22	08/04/22	0	<input checked="" type="checkbox"/>			15	0.0%
	3.2	370	Place Asphalt Concrete Base Course	10	08/05/22	08/18/22	0	<input checked="" type="checkbox"/>			10	0.0%
	3.2	380	Place Asphalt Concrete Intermediate Course	5	08/19/22	08/25/22	0	<input checked="" type="checkbox"/>			5	0.0%
	3.2	390	Place Asphalt Concrete Surface Course	3	08/26/22	08/30/22	0	<input checked="" type="checkbox"/>			3	0.0%
	3.2	400	Install Guardrail	5	08/31/22	09/07/22	0	<input checked="" type="checkbox"/>			5	0.0%
	3.2	410	Striping	6	09/01/22	09/09/22	0	<input checked="" type="checkbox"/>			6	0.0%
4			Project Finish/Close-out	19	09/12/22	09/30/22	0				19	0.0%
	4	500	Punchlist/Clean-up	10	09/12/22	09/23/22	0	<input checked="" type="checkbox"/>			10	0.0%
	4	510	Demob & Move-out	5	09/26/22	09/30/22	0	<input checked="" type="checkbox"/>			5	0.0%

Virginia Department of Transportation
Construction Division

7. **Preparing the Bar-chart Schedule** – After developing the Baseline Schedule in the Activity_Table worksheet, you should setup the bar-chart schedule to able to view/analyze the schedule in a bar-chart format. The following are guidelines for setting-up the Bar-chart Schedule:

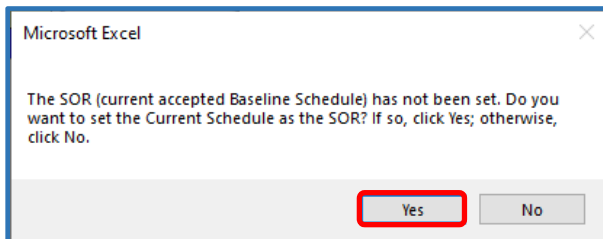
1. Click on the *Barchart* tab at the bottom to display the Barchart worksheet.



2. Click on the *Set Schedule* button to pull data from the Activity_Table worksheet. (*Note: You must click on the Set Schedule button to reset the schedule each time activities are added or deleted in the Activities_Table worksheet*).

Contract ID:		C00012345C01		Project Start Date:		04/01/22		MF%: <input type="checkbox"/> 0%	
Project No.:		(NFO) 0010-123-456, C601		Contract Completion Date:		10/31/22		BEI: <input type="checkbox"/> 1.00	
Project Name:		Route 10 Roadway Widening Baseline Schedule		Current Completion Date:		10/31/22		CEI: <input type="checkbox"/> 1.00	
Activities Filter:		All Activities		Current Data Date:		04/01/22		CPLI:	
<input type="button" value="Help"/> <input type="button" value="Print Preview"/> <input type="button" value="Set Schedule"/> <input type="button" value="Display All Columns"/>		<input type="button" value="Plot Barchart"/> <input type="button" value="Show Barchart"/> <input type="button" value="Hide Actual Dates"/>							
WBS Code	Activity ID	Activity Description	Current Schedule					Actual Dates	
			Original Duration	Start	Finish	Total Float	Critical	Actual Start	Actual Finish
		Route 10 Roadway Widening Baseline Schedule	214	04/01/22	10/31/22	0			

3. If the SOR (latest Baseline Schedule) has not been set, then a message will appear to prompt you to set the SOR. Click on the Yes button to set the SOR.



4. If you selected *No* in the previous step, then click on the *Set SOR* button to set the Baseline; and then click on the *Hide Baseline Columns* button to hide the columns.

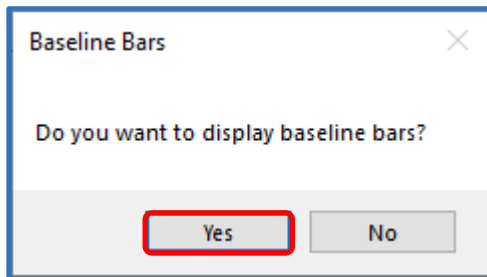
<input type="button" value="Help"/> <input type="button" value="Print Preview"/> <input type="button" value="Set Schedule"/> <input type="button" value="Display All Columns"/>		<input type="button" value="Set SOR"/> <input type="button" value="Hide Baseline Columns"/>		<input type="button" value="Plot Barchart"/> <input type="button" value="Show Barchart"/> <input type="button" value="Hide Actual Dates"/>										
WBS Code	Activity ID	Activity Description	Schedule of Record					Current Schedule					Actual Dates	
			Orig Dur	Start	Finish	Total Float	Critical	Original Duration	Start	Finish	Total Float	Critical	Actual Start	Actual Finish
		Route 10 Roadway Widening Baseline Schedule	214	04/01/22	10/31/22	0		214	04/01/22	10/31/22	0			
		Project Management	214	04/01/22	10/31/22	0		214	04/01/22	10/31/22	0			
		Milestones	214	04/01/22	10/31/22	0		214	04/01/22	10/31/22	0			
1.1	10	Notice to Proceed	0	04/01/22		0	<input checked="" type="checkbox"/>	0	04/01/22		0	<input checked="" type="checkbox"/>		
1.1	20	Early Completion Incentive Milestone (9/30/22)	0		09/30/22	0	<input checked="" type="checkbox"/>	0		09/30/22	0	<input checked="" type="checkbox"/>		
1.1	30	Project Final Completion Date (10/31/22)	0		10/31/22	0	<input checked="" type="checkbox"/>	0		10/31/22	0	<input checked="" type="checkbox"/>		
		Administrative	200	04/15/22	10/31/22	0		200	04/15/22	10/31/22	0			
1.2	100	Preconstruction Conference	1	04/15/22	04/15/22	11	<input type="checkbox"/>	1	04/15/22	04/15/22	11	<input type="checkbox"/>		
1.2	110	Early Completion Incentive Duration	31	10/01/22	10/31/22	0	<input checked="" type="checkbox"/>	31	10/01/22	10/31/22	0	<input checked="" type="checkbox"/>		

Virginia Department of Transportation
Construction Division

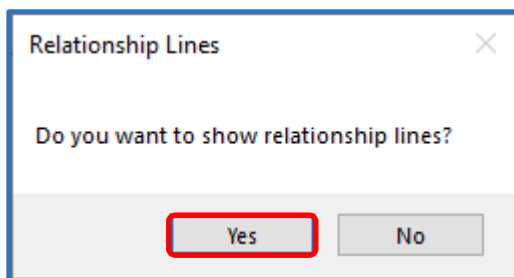
- Click on the *Plot Barchart* button to plot the barchart schedule. (*Note: You must click on the Plot Barchart button to refresh the barchart each time the schedule is modified or updated in the Activities_Table worksheet*).

		Current Schedule						Actual Dates	
WBS Code	Activity ID	Activity Description	Original Duration	Start	Finish	Total Float	Critical	Actual Start	Actual Finish
Route 10 Roadway Widening Baseline Schedule			214	04/01/22	10/31/22	0			
Project Management			214	04/01/22	10/31/22	0			
Milestones			214	04/01/22	10/31/22	0			
1.1	10	Notice to Proceed	0	04/01/22		0	<input checked="" type="checkbox"/>		
1.1	20	Early Completion Incentive Milestone (9/30/22)	0		09/30/22	0	<input checked="" type="checkbox"/>		
1.1	30	Project Final Completion Date (10/31/22)	0		10/31/22	0	<input checked="" type="checkbox"/>		
Administrative			200	04/15/22	10/31/22	0			
1.2	100	Preconstruction Conference	1	04/15/22	04/15/22	11	<input type="checkbox"/>		
1.2	110	Early Completion Incentive Duration	31	10/01/22	10/31/22	0	<input checked="" type="checkbox"/>		

- To plot the barchart schedule showing baseline bars, click on the *Yes* button; otherwise click on the *No* button.



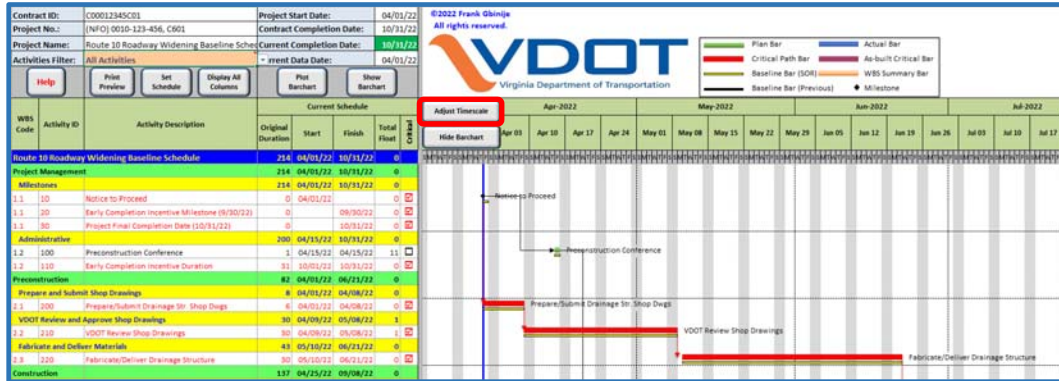
- To plot the barchart schedule showing relationship lines, click on the *Yes* button; otherwise click on the *No* button.



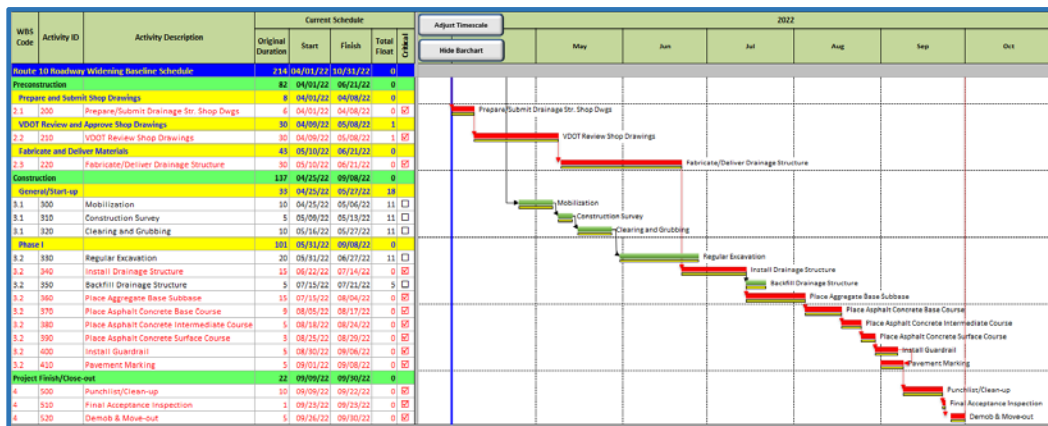
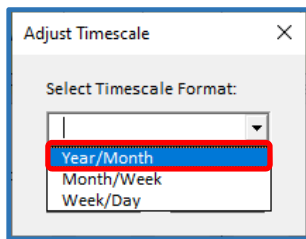
- Review the Baseline Schedule for completeness and conformance, adjust as necessary.

Virginia Department of Transportation
Construction Division

- The barchart schedule can be plotted using any of three different timescale formats, *Year/Month*, *Month/Week*, and *Week/Day*. The default is *Month/Week*. To adjust the barchart timescale, click on the *Adjust Timescale* button.

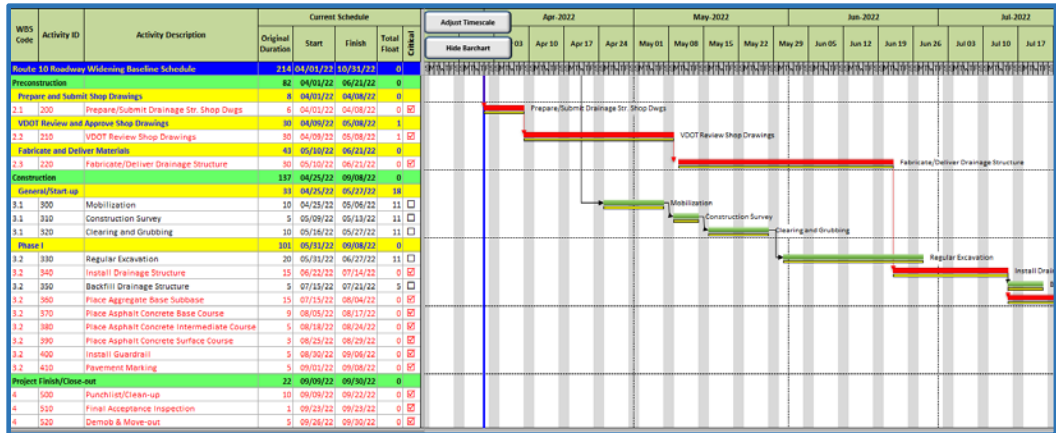
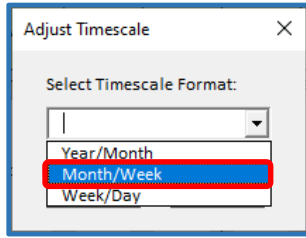


- Select *Year/Month* to display a collapsed timescale view of the barchart schedule in months and years.

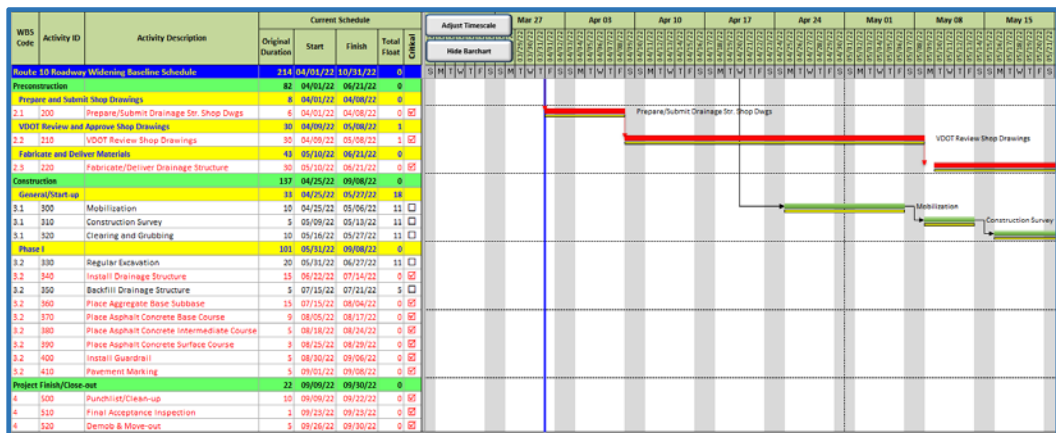
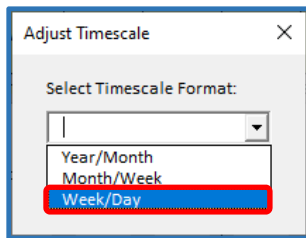


Virginia Department of Transportation
Construction Division

- Select *Month/Week* to display a normal (default) view of the barchart schedule.




- Select *Week/Day* to display an expanded timescale view of the barchart schedule in days and weeks.



Virginia Department of Transportation
Construction Division

10. To preview and print a copy of the barchart schedule, click on the *Print Preview* button.

Contract ID: C00012345C01		Project Start Date: 04/01/22		©2022 Frank Gbinije All rights reserved.					
Project No.: (NFO) 0010-123-456, C601		Contract Completion Date: 10/31/22							
Project Name: Route 10 Roadway Widening Baseline Schedule		Current Completion Date: 10/31/22							
Activities Filter: All Activities		Current Data Date: 04/01/22							
<input type="button" value="Help"/> <input type="button" value="Print Preview"/> <input type="button" value="Set Schedule"/> <input type="button" value="Display All Columns"/>		<input type="button" value="Plot Barchart"/> <input type="button" value="Show Barchart"/>							
		Current Schedule		Adjust Timescale					
WBS Code	Activity ID	Activity Description	Original Duration	Start	Finish	Total Float	Critical	<input type="button" value="Hide Barchart"/>	
Route 10 Roadway Widening Baseline Schedule			214	04/01/22	10/31/22	0		May Jun	
Preconstruction			82	04/01/22	06/21/22	0			
Prepare and Submit Shop Drawings			8	04/01/22	04/08/22	0			
2.1	200	Prepare/Submit Drainage Str. Shop Dwgs	6	04/01/22	04/08/22	0	<input checked="" type="checkbox"/>	Prepare/Submit Drainage Str. Shop Dwgs	
VDOT Review and Approve Shop Drawings			30	04/09/22	05/08/22	1	<input checked="" type="checkbox"/>	VDOT Review Shop Drawings	
2.2	210	VDOT Review Shop Drawings	30	04/09/22	05/08/22	1	<input checked="" type="checkbox"/>		
Fabricate and Deliver Materials			43	05/10/22	06/21/22	0			
2.3	220	Fabricate/Deliver Drainage Structure	30	05/10/22	06/21/22	0	<input checked="" type="checkbox"/>	Fabricate	
Construction			137	04/25/22	09/08/22	0			

11. Prepare and save an electronic print file (pdf) copy of the *Baseline Schedule Report* using a naming convention that includes the Contract ID, submission version, and type of submission (e.g. C00012345C01_BS_Baseline CPM Schedule.pdf).

Example Project Baseline Schedule (WBS) Barchart Schedule Report 5/5/2022

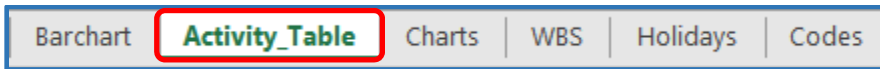
WBS Code	Activity ID	Activity Description	Original Duration	Start	Finish	Total Float	Critical	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Route 10 Roadway Widening & Existing Submittals			214	04/01/22	10/31/22	0									
Preconstruction			82	04/01/22	06/21/22	0									
Prepare and Submit Shop Drawings			8	04/01/22	04/08/22	0									
2.1	200	Prepare/Submit Drainage Str. Shop Dwgs	6	04/01/22	04/08/22	0	<input checked="" type="checkbox"/>								
VDOT Review and Approve Shop Drawings			30	04/09/22	05/08/22	1	<input checked="" type="checkbox"/>								
2.2	210	VDOT Review Shop Drawings	30	04/09/22	05/08/22	1	<input checked="" type="checkbox"/>								
Fabricate and Deliver Materials			43	05/10/22	06/21/22	0									
2.3	220	Fabricate/Deliver Drainage Structure	30	05/10/22	06/21/22	0	<input checked="" type="checkbox"/>								
Construction			137	04/25/22	09/08/22	0									
General Methods			36	04/25/22	09/08/22	0									
3.1	300	Mobilization	5	04/25/22	05/06/22	0	<input checked="" type="checkbox"/>								
3.2	310	Construction Survey	5	05/09/22	05/13/22	0	<input checked="" type="checkbox"/>								
3.3	320	Cleaning and Grading	5	05/16/22	05/20/22	0	<input checked="" type="checkbox"/>								
Phase I			108	04/25/22	09/08/22	0									
3.2	330	Regular Excavation	20	05/23/22	06/27/22	0	<input checked="" type="checkbox"/>								
3.2	340	Install Drainage Structure	5	05/23/22	05/23/22	0	<input checked="" type="checkbox"/>								
3.2	350	Backfill Drainage Structure	5	05/23/22	05/23/22	0	<input checked="" type="checkbox"/>								
3.2	360	Place Aggregate Base Subbase	5	05/23/22	05/23/22	0	<input checked="" type="checkbox"/>								
3.2	370	Place Asphalt Concrete Base Course	5	05/23/22	05/23/22	0	<input checked="" type="checkbox"/>								
3.2	380	Place Asphalt Concrete Intermediate Course	5	05/23/22	05/23/22	0	<input checked="" type="checkbox"/>								
3.2	390	Place Asphalt Concrete Surface Course	5	05/23/22	05/23/22	0	<input checked="" type="checkbox"/>								
3.3	400	Install Curbs	5	05/23/22	05/23/22	0	<input checked="" type="checkbox"/>								
3.3	410	Remove Marking	5	05/23/22	05/23/22	0	<input checked="" type="checkbox"/>								
Project Ready/Closeout			20	09/08/22	09/08/22	0									
4	400	Final Inspection	5	09/08/22	09/08/22	0	<input checked="" type="checkbox"/>								
4	410	Final Acceptance Inspection	5	09/08/22	09/08/22	0	<input checked="" type="checkbox"/>								
4	420	Close & Mobilize	5	09/08/22	09/08/22	0	<input checked="" type="checkbox"/>								

12. Using the MS Excel *File/Save As* function, save a copy of the workbook in the Excel Binary Workbook (.xlsb) or Excel Macro-Enabled Workbook (.xlsm) file format, using a naming convention that includes the Contract ID, submission version, and type of submission, and data date (e.g. C00012345C01_BS_Baseline Schedule (DD: 4/1/22).xlsb).

Virginia Department of Transportation
Construction Division

8. Preparing Monthly Update Schedules – The following are guidelines for preparing monthly Update Schedules using the CPM Schedule Template:

1. Open the previously saved file, then save a copy using the MS Excel *File/Save As* function. Rename for the current update (e.g. C00012345C01_U01_5-4-20_Update Schedule 1.xlsb).
2. Click on the *Activity_Table* tab at the bottom to display the Activity Table worksheet.



3. Enter the schedule submission version in Cell E4 (e.g. Update Schedule 1 (DD: 5/4/22)).

Contract ID:		C00012345C01		©2022 Frank Gbinije All rights reserved.		Project Start Date:		04/01/22				
Project No.:		(NFO) 0010-123-456, C601				Contract Completion Date:		10/31/22				
Project Name:		Route 10 Roadway Widening				Projected Completion Date:		10/31/22				
Submission:		Update Schedule 1 (DD: 5/4/22)				Current Data Date:		04/01/22				
<input type="button" value="Help"/> <input type="button" value="Apply WBS"/> <input type="button" value="Add New Activity"/> <input type="button" value="Delete Row"/> <input type="button" value="Sort Activities"/> <input type="button" value="Show All Columns"/> <input type="button" value="Show Predecessors"/> <input type="button" value="Show Logic Details"/> <input type="button" value="Set Previous Update"/> <input type="button" value="Open Calendar"/> <input type="button" value="Calculate"/>												
WBS Node	WBS Code	Activity ID	Activity Name	Orig Dur	Start	Finish	Total Float	Critical	Actual Start	Actual Finish	Rem Dur	Dur % Compl

4. **Important!** Click on the *Set Previous Update* button to store a copy of the current schedule. (*Note: This step must be performed each time before the schedule is updated for the period. It allows for a variance comparison between the Current Schedule and the Previous Update.*)

Contract ID:		C00012345C01		©2022 Frank Gbinije All rights reserved.		Project Start Date:		04/01/22				
Project No.:		(NFO) 0010-123-456, C601				Contract Completion Date:		10/31/22				
Project Name:		Route 10 Roadway Widening				Projected Completion Date:		10/31/22				
Submission:		Update Schedule 1 (DD: 5/4/22)				Current Data Date:		04/01/22				
<input type="button" value="Help"/> <input type="button" value="Apply WBS"/> <input type="button" value="Add New Activity"/> <input type="button" value="Delete Row"/> <input type="button" value="Sort Activities"/> <input type="button" value="Show All Columns"/> <input type="button" value="Show Predecessors"/> <input type="button" value="Show Logic Details"/> <input type="button" value="Set Previous Update"/> <input type="button" value="Open Calendar"/> <input type="button" value="Calculate"/>												
WBS Node	WBS Code	Activity ID	Activity Name	Orig Dur	Start	Finish	Total Float	Critical	Actual Start	Actual Finish	Rem Dur	Dur % Compl

Virginia Department of Transportation
Construction Division

- Double-click on an *Actual Start* or *Actual Finish* cell or select a cell and click on the *Open Calendar* button, and then select a date for the selected activity, as applicable.

Help Apply WBS Add New Activity Delete Row Sort Activities Show All Columns Show Predecessors Show Logic Details Set Previous Update Open Calendar Calculate												
WBS Node	WBS Code	Activity ID	Activity Name	Orig Dur	Start	Finish	Total Float	Critical	Actual Start	Actual Finish	Rem Dur	Dur % Compl
Route 10 Roadway Widening Update Schedule 1 (DD: 5/4/22)				214	04/01/22	10/31/22	0		04/01/22		214	0.2%
1	Project Management			214	04/01/22	10/31/22	0				214	0.0%
1.1	Milestones			214	04/01/22	10/31/22	0				214	0.0%
1.1	10	Notice to Proceed		0	04/01/22			<input checked="" type="checkbox"/>	04/01/22		0	100.0%
1.1	20	Early Completion Incentive Milestone (9/30/22)		0		09/21/22	7	<input checked="" type="checkbox"/>			0	0.0%
1.1	30	Project Final Completion Date (10/31/22)		0		10/22/22	0	<input checked="" type="checkbox"/>			0	0.0%
1.2	Administrative			200	04/15/22	10/31/22	0				200	0.0%
1.2	100	Preconstruction Conference		1	04/15/22	04/15/22		<input type="checkbox"/>	04/15/22	04/15/22	1	100.0%
1.2	110	Early Completion Incentive Duration		31	09/22/22	10/22/22	9	<input checked="" type="checkbox"/>			31	0.0%
2	Preconstruction			82	04/01/22	06/21/22	0				82	0.0%
2.1	Prepare and Submit Shop Drawings			8	04/01/22	04/08/22	0				8	0.0%
2.1	200	Prepare/Submit Drainage Str. Shop Dwgs		6	04/01/22	04/12/22		<input checked="" type="checkbox"/>	04/01/22	04/12/22	6	100.0%
2.2	VDOT Review and Approve Shop Drawings			30	04/09/22	05/08/22	1				30	0.0%
2.2	210	VDOT Review Shop Drawings		30	04/13/22	05/02/22		<input checked="" type="checkbox"/>	04/13/22	05/02/22	30	100.0%
2.3	Fabricate and Deliver Materials			43	05/10/22	06/21/22	0				43	0.0%
2.3	220	Fabricate/Deliver Drainage Structure		30	05/03/22	06/10/22	7	<input checked="" type="checkbox"/>	05/03/22		7	6.7%

Note:

- For the completed activities, enter the *Actual Start* and/or *Actual Finish* dates.
 - For the on-going activities, enter the *Actual Start* dates and *Remaining Duration* (time required to complete the remaining work as of the current data date).
- If activities are being performed out of sequence or there are changes in the planned sequence, you may click on the *Show Predecessors* button to adjust the predecessor logic as necessary.

Help Apply WBS Add New Activity Delete Row Sort Activities Show All Columns Show Predecessors Show Logic Details Set Previous Update Open Calendar Calculate												
WBS Node	WBS Code	Activity ID	Activity Name	Orig Dur	Start	Finish	Total Float	Critical	Actual Start	Actual Finish	Rem Dur	Dur % Compl
Contract ID: C00012345C01				©2022 Frank Gbinije All rights reserved.				Project Start Date: 04/01/22				
Project No.: (NFO) 0010-123-456, C601								Contract Completion Date: 10/31/22				
Project Name: Route 10 Roadway Widening								Projected Completion Date: 10/31/22				
Submission: Update Schedule 1 (DD: 5/4/22)								Current Data Date: 04/01/22				

Virginia Department of Transportation
Construction Division

7. Click on a P1, P2, P3, or P4 cell for the selected activity and adjust the logic as necessary. Then click on the *Hide Predecessor Relationships* button to hide the columns.

WBS Node		WBS Code	Activity ID	Activity Name	P-1				P-2				P-3				P-4			
					Act. ID	Rel. Type	Lag	Driving	Act. ID	Rel. Type	Lag	Driving	Act. ID	Rel. Type	Lag	Driving	Act. ID	Rel. Type	Lag	Driving
Route 10 Roadway Widening Update Schedule 1 (DD: 5/4/22)																				
3 Construction																				
3.1 General/Start-up																				
	3.1	300		Mobilization	10	SS	10	<input type="checkbox"/>	100	FS	5	<input checked="" type="checkbox"/>								
	3.1	310		Construction Survey	300	FS		<input checked="" type="checkbox"/>												
	3.1	320		Clearing and Grubbing	310	FS		<input checked="" type="checkbox"/>												
3.2 Phase I																				
	3.2	330		Regular Excavation	310	FS		<input type="checkbox"/>	320	FS		<input checked="" type="checkbox"/>								
	3.2	340		Install Drainage Structure	220	FS		<input checked="" type="checkbox"/>	330	SS	5	<input type="checkbox"/>								
	3.2	350		Backfill Drainage Structure	340	FS		<input checked="" type="checkbox"/>												
	3.2	360		Place Aggregate Base Subbase	330	FF	5	<input type="checkbox"/>	340	FS		<input checked="" type="checkbox"/>	350	FF	5	<input type="checkbox"/>				
	3.2	370		Place Asphalt Concrete Base Course	330	FS		<input type="checkbox"/>	340	FF	20	<input type="checkbox"/>	350	FF	10	<input type="checkbox"/>	360	FS		<input checked="" type="checkbox"/>
	3.2	380		Place Asphalt Concrete Intermediate Course	370	FS		<input type="checkbox"/>												
	3.2	390		Place Asphalt Concrete Surface Course	380	FS		<input type="checkbox"/>												
	3.2	400		Install Guardrail	390	FS		<input checked="" type="checkbox"/>												
	3.2	410		Pavement Marking	390	SS	3	<input type="checkbox"/>	400	FF	2	<input checked="" type="checkbox"/>								

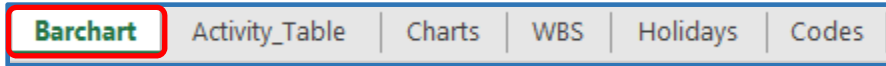
8. Click on the *Calculate* button to update the data date and re-calculate the schedule.

Contract ID:		C00012345C01	©2022 Frank Gbinije All rights reserved.		Project Start Date:		04/01/22					
Project No.:		(NFO) 0010-123-456, C601			Contract Completion Date:		10/31/22					
Project Name:		Route 10 Roadway Widening			Projected Completion Date:		10/31/22					
Submission:		Update Schedule 1 (DD: 5/4/22)			Current Data Date:		05/04/22					
<input type="button" value="Help"/> <input type="button" value="Apply WBS"/> <input type="button" value="Add New Activity"/> <input type="button" value="Delete Row"/> <input type="button" value="Sort Activities"/> <input type="button" value="Show All Columns"/> <input type="button" value="Show Predecessors"/> <input type="button" value="Show Logic Details"/> <input type="button" value="Set Previous Update"/> <input type="button" value="Open Calendar"/> <input type="button" value="Calculate"/>												
WBS Node	WBS Code	Activity ID	Activity Name	Orig Dur	Start	Finish	Total Float	Critical	Actual Start	Actual Finish	Rem Dur	Dur % Compl
Route 10 Roadway Widening Update Schedule 1 (DD: 5/4/22)												
1 Project Management												
	1.1 Milestones											
	1.1	10	Notice to Proceed	0	04/01/22			<input checked="" type="checkbox"/>	04/01/22		0	100.0%
	1.1	20	Early Completion Incentive Milestone (9/30/22)	0		10/05/22	0	<input checked="" type="checkbox"/>			0	0.0%
	1.1	30	Project Final Completion Date (10/31/22)	0		10/31/22	0	<input checked="" type="checkbox"/>			0	0.0%
1.2 Administrative												
	1.2	100	Preconstruction Conference	1	04/15/22	04/15/22		<input type="checkbox"/>	04/15/22	04/15/22	0	100.0%
	1.2	110	Early Completion Incentive Duration	26	10/06/22	10/31/22	0	<input checked="" type="checkbox"/>			26	0.0%
2 Preconstruction												
2.1 Prepare and Submit Shop Drawings												
	2.1	200	Prepare/Submit Drainage Str. Shop Dwgs	6	04/01/22	04/12/22		<input checked="" type="checkbox"/>	04/01/22	04/12/22	0	100.0%
2.2 VDOT Review and Approve Shop Drawings												
	2.2	210	VDOT Review Shop Drawings	30	04/13/22	05/12/22	0	<input checked="" type="checkbox"/>	04/13/22		9	70.0%
2.3 Fabricate and Deliver Materials												
	2.3	220	Fabricate/Deliver Drainage Structure	30	05/13/22	06/24/22	0	<input checked="" type="checkbox"/>			43	0.0%
	2.3	220	Fabricate/Deliver Drainage Structure	30	05/13/22	06/24/22	0	<input checked="" type="checkbox"/>			30	0.0%
3 Construction												
3.1 General/Start-up												
	3.1	300	Mobilization	10	04/25/22	04/29/22		<input type="checkbox"/>	04/25/22	04/29/22	0	100.0%
	3.1	310	Construction Survey	5	05/04/22	05/10/22	17	<input type="checkbox"/>			5	0.0%
	3.1	320	Clearing and Grubbing	10	05/11/22	05/24/22	17	<input type="checkbox"/>			10	0.0%

Virginia Department of Transportation
Construction Division

9. Updating the Bar-chart Schedule – After updating the schedule in the Activity_Table worksheet, you should also refresh the bar-chart schedule. The following are guidelines for updating the Update Barchart Schedule:

1. Click on the *Barchart* tab at the bottom to display the Barchart worksheet.



2. If activities have been added or deleted in the current schedule, then click on the *Set Schedule* to update the barchart schedule; otherwise, skip this step. (*Note: You must click on the Set Schedule button to reset the schedule each time activities are added or deleted in the Activities_Table worksheet*).

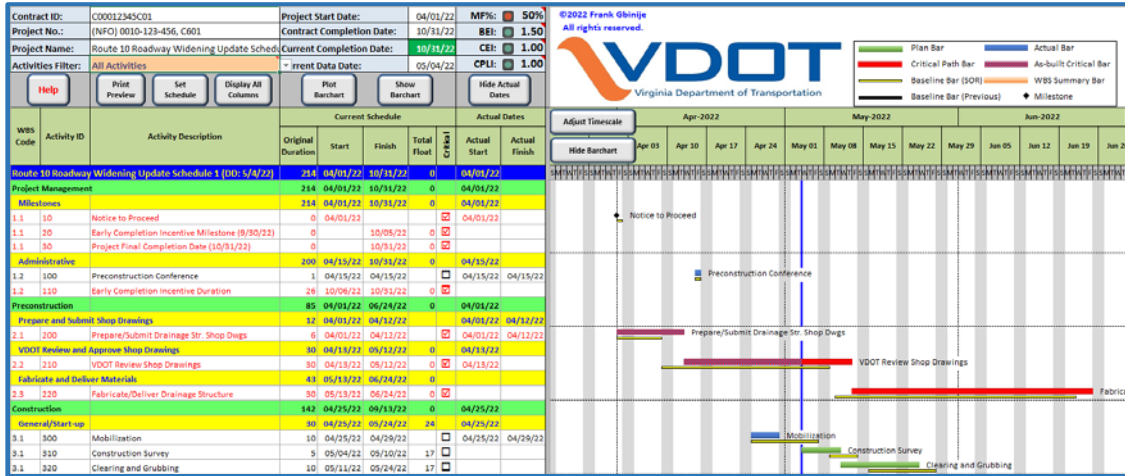
Contract ID:		C00012345C01		Project Start Date:		04/01/22		MF%: <input type="checkbox"/> 50%			
Project No.:		(NFO) 0010-123-456, C601		Contract Completion Date:		10/31/22		BEI: <input type="checkbox"/> 1.50			
Project Name:		Route 10 Roadway Widening Update Schedu		Current Completion Date:		10/31/22		CEI: <input type="checkbox"/> 1.00			
Activities Filter:		All Activities		Current Data Date:		05/04/22		CPLI: <input type="checkbox"/> 1.00			
<input type="button" value="Help"/>		<input type="button" value="Print Preview"/>		<input type="button" value="Set Schedule"/>		<input type="button" value="Display All Columns"/>		<input type="button" value="Plot Barchart"/>			
<input type="button" value="Show Barchart"/>		<input type="button" value="Hide Actual Dates"/>									
		Current Schedule					Actual Dates				
WBS Code	Activity ID	Activity Description			Original Duration	Start	Finish	Total Float	Critical	Actual Start	Actual Finish

3. **DO NOT** click on the *Set SOR*, unless a revised baseline is required. If a revised baseline is required, click on the *Set SOR* button to set the current Update Schedule as the SOR. Otherwise, click on the *Hide Baseline Columns* button.

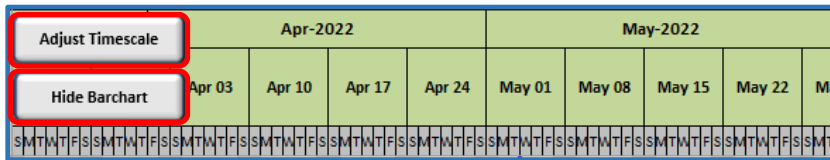
Contract ID:		C00012345C01		Project Start Date:		04/01/22		MF%: <input type="checkbox"/> 50%								
Project No.:		(NFO) 0010-123-456, C601		Contract Completion Date:		10/31/22		BEI: <input type="checkbox"/> 1.50								
Project Name:		Route 10 Roadway Widening Update Schedu		Current Completion Date:		10/31/22		CEI: <input type="checkbox"/> 1.00								
Activities Filter:		All Activities		Current Data Date:		05/04/22		CPLI: <input type="checkbox"/> 1.00								
<input type="button" value="Help"/>		<input type="button" value="Print Preview"/>		<input type="button" value="Set Schedule"/>		<input type="button" value="Display All Columns"/>		<input type="button" value="Set SOR"/>								
<input type="button" value="Hide Actual Dates"/>							<input type="button" value="Plot Barchart"/>		<input type="button" value="Show Barchart"/>							
		Schedule of Record					Current Schedule				Actual Dates					
WBS Code	Activity ID	Activity Description			Orig Dur	Start	Finish	Total Float	Adj C	Original Duration	Start	Finish	Total Float	Critical	Actual Start	Actual Finish
Route 10 Roadway Widening Update Schedule 1 (DD: 5/4/22)				214	04/01/22	10/31/22	0			214	04/01/22	10/31/22	0		04/01/22	
Project Management				214	04/01/22	10/31/22	0			214	04/01/22	10/31/22	0		04/01/22	
Milestones				214	04/01/22	10/31/22	0			214	04/01/22	10/31/22	0		04/01/22	
1.1	10	Notice to Proceed		0	04/01/22		0	<input checked="" type="checkbox"/>		0	04/01/22		0	<input checked="" type="checkbox"/>	04/01/22	
1.1	20	Early Completion Incentive Milestone (9/30/22)		0		09/30/22	0	<input checked="" type="checkbox"/>		0		10/05/22	0	<input checked="" type="checkbox"/>		
1.1	30	Project Final Completion Date (10/31/22)		0		10/31/22	0	<input checked="" type="checkbox"/>		0		10/31/22	0	<input checked="" type="checkbox"/>		
Administrative				200	04/15/22	10/31/22	0			200	04/15/22	10/31/22	0		04/15/22	
1.2	100	Preconstruction Conference		1	04/15/22	04/15/22	11	<input type="checkbox"/>		1	04/15/22	04/15/22		<input type="checkbox"/>	04/15/22	04/15/22
1.2	110	Early Completion Incentive Duration		31	10/01/22	10/31/22	0	<input checked="" type="checkbox"/>		26	10/06/22	10/31/22	0	<input checked="" type="checkbox"/>		
Preconstruction				82	04/01/22	06/21/22	0			85	04/01/22	06/24/22	0		04/01/22	
Prepare and Submit Shop Drawings				8	04/01/22	04/08/22	0			12	04/01/22	04/12/22			04/01/22	04/12/22
2.1	200	Prepare/Submit Drainage Str. Shop Dwgs		6	04/01/22	04/08/22	0	<input checked="" type="checkbox"/>		6	04/01/22	04/12/22		<input checked="" type="checkbox"/>	04/01/22	04/12/22
VDOT Review and Approve Shop Drawings				30	04/09/22	05/08/22	1			30	04/13/22	05/12/22	0		04/13/22	
2.2	210	VDOT Review Shop Drawings		30	04/09/22	05/08/22	1	<input checked="" type="checkbox"/>		30	04/13/22	05/12/22	0	<input checked="" type="checkbox"/>	04/13/22	
Fabricate and Deliver Materials				43	05/10/22	06/21/22	0			43	05/13/22	06/24/22	0			
2.3	220	Fabricate/Deliver Drainage Structure		30	05/10/22	06/21/22	0	<input checked="" type="checkbox"/>		30	05/13/22	06/24/22	0	<input checked="" type="checkbox"/>		
Construction				137	04/25/22	09/08/22	0			142	04/25/22	09/13/22	0		04/25/22	
General/Start-up				33	04/25/22	05/27/22	18			30	04/25/22	05/24/22	24		04/25/22	
3.1	300	Mobilization		10	04/25/22	05/06/22	11	<input type="checkbox"/>		10	04/25/22	04/29/22		<input type="checkbox"/>	04/25/22	04/29/22
3.1	310	Construction Survey		5	05/09/22	05/13/22	11	<input type="checkbox"/>		5	05/04/22	05/10/22	17	<input type="checkbox"/>		
3.1	320	Clearing and Grubbing		10	05/16/22	05/27/22	11	<input type="checkbox"/>		10	05/11/22	05/24/22	17	<input type="checkbox"/>		

Virginia Department of Transportation
Construction Division

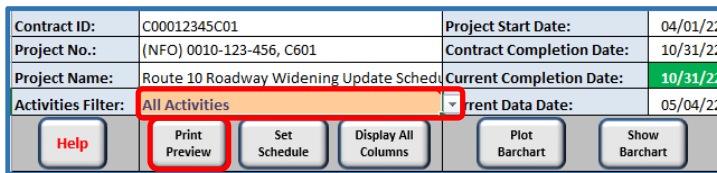
- Click on the *Plot Barchart* button to re-plot the barchart schedule. (*Note: You must click on the Plot Barchart button to refresh the barchart each time the schedule is modified or updated in the Activities_Table worksheet*).



- You may click on the *Adjust Timescale* button to compress or expand the barchart timescale, as needed.



- Click on the *Hide Barchart* button to hide the barchart area, as needed.
- You may use the *Activities Filter* to display activities that meet a certain criterion, as needed. For additional guidelines, see the *Using the Activities Filter* section below.

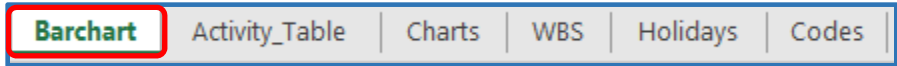


- You may use the *Print Preview* to print and save required reports.
- Using the MS Excel *File/Save As* function, save a copy of the workbook in the Excel Binary Workbook (.xlsb) or Excel Macro-Enabled Workbook (.xlsm) file format, using a naming convention that includes the Contract ID, submission version, and type of submission, and data date (e.g. C00012345C01_U01_Update Schedule 1 (DD: 5/4/22).xlsb).

Virginia Department of Transportation
Construction Division

10. Displaying Available Schedule Information in the Barchart Worksheet – The Barchart worksheet can be used to display various types of available schedule information for monitoring and controlling a project. The following are guidelines for using the Barchart Schedule worksheet:

1. Click on the *Barchart* tab at the bottom to display the Barchart worksheet.



2. Click on the *Show All Columns* button to display all available columns.

Contract ID:		C00012345C01	Project Start Date:		04/01/22	MF%:	<input type="checkbox"/> 50%		
Project No.:		(NFO) 0010-123-456, C601	Contract Completion Date:		10/31/22	BEI:	<input type="checkbox"/> 1.50		
Project Name:		Route 10 Roadway Widening Update Schedule	Current Completion Date:		10/31/22	CEI:	<input type="checkbox"/> 1.00		
Activities Filter:		All Activities	Current Data Date:		05/04/22	CPLI:	<input type="checkbox"/> 1.00		
<input type="button" value="Help"/> <input type="button" value="Print Preview"/> <input type="button" value="Set Schedule"/> <input type="button" value="Display All Columns"/> <input type="button" value="Plot Barchart"/> <input type="button" value="Show Barchart"/> <input type="button" value="Hide Actual Dates"/>									
WBS Code	Activity ID	Activity Description	Current Schedule					Actual Dates	
			Original Duration	Start	Finish	Total Float	Critical	Actual Start	Actual Finish

3. Click on *Hide Columns* button to hide associated columns, as needed.

Contract ID:		C00012345C01	Project Start Date:		04/01/22	MF%:	<input type="checkbox"/> 50%					
Project No.:		(NFO) 0010-123-456, C601	Contract Completion Date:		10/31/22	BEI:	<input type="checkbox"/> 1.50					
Project Name:		Route 10 Roadway Widening Update Schedule	Current Completion Date:		10/31/22	CEI:	<input type="checkbox"/> 1.00					
Activities Filter:		All Activities	Current Data Date:		05/04/22	CPLI:	<input type="checkbox"/> 1.00					
<input type="button" value="Help"/> <input type="button" value="Print Preview"/> <input type="button" value="Set Schedule"/> <input type="button" value="Display All Columns"/> <input type="button" value="Set SOR"/> <input type="button" value="Hide Baseline Columns"/> <input type="button" value="Plot Barchart"/> <input type="button" value="Show Barchart"/> <input type="button" value="Hide Actual Dates"/>												
WBS Code	Activity ID	Activity Description	Schedule of Record					Current Schedule			Actual Dates	
			Orig Dur	Start	Finish	Total Float	Critical	Original Duration	Start	Finish	Total Float	Critical

4. You may display the schedule information, schedule variances, and plot baseline bars for the *SOR* or *Previous Update* depending on the selected baseline (target). Click on Cell E6, then select from the baseline drop box *Schedule of Record* or *Previous Update* to set the SOR or Previous Update as the baseline to view, plot baseline bars, or compare the *Current Schedule* against.

WBS Code	Activity ID	Activity Description	Schedule of Record					Current Schedule				
			Original Duration	Start	Finish	Total Float	Critical	Original Duration	Start	Finish	Total Float	Critical
		Route 10 Roadway Widening Update Schedule 1 (DD: 5/4/22)	214	04/01/22	10/31/22	0	0	214	04/01/22	10/31/22	0	0
		Project Management	214	04/01/22	10/31/22	0	0	214	04/01/22	10/31/22	0	0
		Milestones	214	04/01/22	10/31/22	0	0	214	04/01/22	10/31/22	0	0
1.1	10	Notice to Proceed	0	04/01/22		0	<input checked="" type="checkbox"/>	0	04/01/22			<input checked="" type="checkbox"/>
1.1	20	Early Completion Incentive Milestone (9/30/22)	0		09/30/22	0	<input checked="" type="checkbox"/>	0		10/05/22	0	<input checked="" type="checkbox"/>
1.1	30	Project Final Completion Date (10/31/22)	0		10/31/22	0	<input checked="" type="checkbox"/>	0		10/31/22	0	<input checked="" type="checkbox"/>
		Administrative	200	04/15/22	10/31/22	0	0	200	04/15/22	10/31/22	0	0
1.2	100	Preconstruction Conference	1	04/15/22	04/15/22	11	<input type="checkbox"/>	1	04/15/22	04/15/22		<input type="checkbox"/>
1.2	110	Early Completion Incentive Duration	31	10/01/22	10/31/22	0	<input checked="" type="checkbox"/>	26	10/06/22	10/31/22	0	<input checked="" type="checkbox"/>

Virginia Department of Transportation
Construction Division

5. The *Current Schedule* columns display activity schedule information for the current schedule.

WBS Code	Activity ID	Activity Description	Current Schedule					Actual Dates	
			Original Duration	Start	Finish	Total Float	Critical	Actual Start	Actual Finish
Route 10 Roadway Widening Update Schedule 1 (DD: 5/4/22)			214	04/01/22	10/31/22	0		04/01/22	
Project Management			214	04/01/22	10/31/22	0		04/01/22	
Milestones			214	04/01/22	10/31/22	0		04/01/22	
1.1	10	Notice to Proceed	0	04/01/22			<input checked="" type="checkbox"/>	04/01/22	
1.1	20	Early Completion Incentive Milestone (9/30/22)	0		10/05/22	0	<input checked="" type="checkbox"/>		
1.1	30	Project Final Completion Date (10/31/22)	0		10/31/22	0	<input checked="" type="checkbox"/>		
Administrative			200	04/15/22	10/31/22	0		04/15/22	
1.2	100	Preconstruction Conference	1	04/15/22	04/15/22		<input type="checkbox"/>	04/15/22	04/15/22
1.2	110	Early Completion Incentive Duration	26	10/06/22	10/31/22	0	<input checked="" type="checkbox"/>		
Preconstruction			85	04/01/22	06/24/22	0		04/01/22	
Prepare and Submit Shop Drawings			12	04/01/22	04/12/22			04/01/22	04/12/22
2.1	200	Prepare/Submit Drainage Str. Shop Dwgs	6	04/01/22	04/12/22		<input checked="" type="checkbox"/>	04/01/22	04/12/22

6. The *Actual Dates* columns display the *Actual Start/Actual Finish* dates for progressed activities.

WBS Code	Activity ID	Activity Description	Current Schedule					Actual Dates	
			Original Duration	Start	Finish	Total Float	Critical	Actual Start	Actual Finish
Route 10 Roadway Widening Update Schedule 1 (DD: 5/4/22)			214	04/01/22	10/31/22	0		04/01/22	
Project Management			214	04/01/22	10/31/22	0		04/01/22	
Milestones			214	04/01/22	10/31/22	0		04/01/22	
1.1	10	Notice to Proceed	0	04/01/22			<input checked="" type="checkbox"/>	04/01/22	
1.1	20	Early Completion Incentive Milestone (9/30/22)	0		10/05/22	0	<input checked="" type="checkbox"/>		
1.1	30	Project Final Completion Date (10/31/22)	0		10/31/22	0	<input checked="" type="checkbox"/>		
Administrative			200	04/15/22	10/31/22	0		04/15/22	
1.2	100	Preconstruction Conference	1	04/15/22	04/15/22		<input type="checkbox"/>	04/15/22	04/15/22
1.2	110	Early Completion Incentive Duration	26	10/06/22	10/31/22	0	<input checked="" type="checkbox"/>		
Preconstruction			85	04/01/22	06/24/22	0		04/01/22	
Prepare and Submit Shop Drawings			12	04/01/22	04/12/22			04/01/22	04/12/22
2.1	200	Prepare/Submit Drainage Str. Shop Dwgs	6	04/01/22	04/12/22		<input checked="" type="checkbox"/>	04/01/22	04/12/22

7. The *Percent Complete* columns display the activity duration percent complete for the *Current Schedule* and *SOR*; as well as the *Variance (SOR)* for the current schedule.

WBS Code	Activity ID	Activity Description	Current Schedule					Percent Complete		
			Original Duration	Start	Finish	Total Float	Critical	Duration Percent Complete	SOR Percent Complete	Percent Complete Variance
Route 10 Roadway Widening Update Schedule 1 (DD: 5/4/22)			214	04/01/22	10/31/22	0		16%	15%	0%
Project Management			214	04/01/22	10/31/22	0		4%	15%	-12%
Milestones			214	04/01/22	10/31/22	0		0%	15%	-15%
1.1	10	Notice to Proceed	0	04/01/22			<input checked="" type="checkbox"/>	100%	100%	0%
1.1	20	Early Completion Incentive Milestone (9/30/22)	0		10/05/22	0	<input checked="" type="checkbox"/>	0%	0%	0%
1.1	30	Project Final Completion Date (10/31/22)	0		10/31/22	0	<input checked="" type="checkbox"/>	0%	0%	0%
Administrative			200	04/15/22	10/31/22	0		4%	10%	-6%
1.2	100	Preconstruction Conference	1	04/15/22	04/15/22		<input type="checkbox"/>	100%	100%	0%
1.2	110	Early Completion Incentive Duration	26	10/06/22	10/31/22	0	<input checked="" type="checkbox"/>	0%	0%	0%
Preconstruction			85	04/01/22	06/24/22	0		41%	40%	1%
Prepare and Submit Shop Drawings			12	04/01/22	04/12/22			100%	100%	0%
2.1	200	Prepare/Submit Drainage Str. Shop Dwgs	6	04/01/22	04/12/22		<input checked="" type="checkbox"/>	100%	100%	0%
VDOT Review and Approve Shop Drawings			30	04/13/22	05/12/22	0		70%	83%	-13%
2.2	210	VDOT Review Shop Drawings	30	04/13/22	05/12/22	0	<input checked="" type="checkbox"/>	70%	83%	-13%

Virginia Department of Transportation
Construction Division

8. The *As-built Durations* columns display the activity *Actual Duration*, *Remaining Duration* and *At Completion Duration* for the current schedule.

WBS Code	Activity ID	Activity Description	Current Schedule					As-built Durations		
			Original Duration	Start	Finish	Total Float	Critical	Actual Dur	Rem Dur	At Compl Dur
Route 10 Roadway Widening Update Schedule 1 (DD: 5/4/22)			214	04/01/22	10/31/22	0		33	181	214
Project Management			214	04/01/22	10/31/22	0		33	181	214
Milestones			214	04/01/22	10/31/22	0		33	181	214
1.1	10	Notice to Proceed	0	04/01/22			<input checked="" type="checkbox"/>	0	0	0
1.1	20	Early Completion Incentive Milestone (9/30/22)	0		10/05/22		<input checked="" type="checkbox"/>			0
1.1	30	Project Final Completion Date (10/31/22)	0		10/31/22		<input checked="" type="checkbox"/>			0
Administrative			200	04/15/22	10/31/22	0		19	181	200
1.2	100	Preconstruction Conference	1	04/15/22	04/15/22		<input type="checkbox"/>	1	0	1
1.2	110	Early Completion Incentive Duration	26	10/06/22	10/31/22	0	<input checked="" type="checkbox"/>		26	26
Preconstruction			85	04/01/22	06/24/22	0		33	52	85
Prepare and Submit Shop Drawings			12	04/01/22	04/12/22			12	0	12
2.1	200	Prepare/Submit Drainage Str. Shop Dwgs	6	04/01/22	04/12/22		<input checked="" type="checkbox"/>	8	0	8
VDOT Review and Approve Shop Drawings			30	04/13/22	05/12/22	0		21	9	30
2.2	210	VDOT Review Shop Drawings	30	04/13/22	05/12/22	0	<input checked="" type="checkbox"/>	21	9	30

9. The *Variance* columns display the variances in activity *Start Date*, *Finish Date* and *Duration* (Note: The variances are based the baseline selected in Cell E6, SOR or Previous Update).


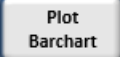
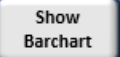
WBS Code	Activity ID	Activity Description	Current Schedule					SOR Variances		
			Original Duration	Start	Finish	Total Float	Critical	Start Date Variance	Finish Date Variance	Dur Variance
Route 10 Roadway Widening Update Schedule 1 (DD: 5/4/22)			214	04/01/22	10/31/22	0		0	0	0
Project Management			214	04/01/22	10/31/22	0		0	0	0
Milestones			214	04/01/22	10/31/22	0		0	0	0
1.1	10	Notice to Proceed	0	04/01/22			<input checked="" type="checkbox"/>	0		0
1.1	20	Early Completion Incentive Milestone (9/30/22)	0		10/05/22		<input checked="" type="checkbox"/>		-5	0
1.1	30	Project Final Completion Date (10/31/22)	0		10/31/22		<input checked="" type="checkbox"/>			0
Administrative			200	04/15/22	10/31/22	0		0	0	0
1.2	100	Preconstruction Conference	1	04/15/22	04/15/22		<input type="checkbox"/>	0	0	0
1.2	110	Early Completion Incentive Duration	26	10/06/22	10/31/22	0	<input checked="" type="checkbox"/>	-5	0	5
Preconstruction			85	04/01/22	06/24/22	0		0	-3	-3
Prepare and Submit Shop Drawings			12	04/01/22	04/12/22			0	-4	-4
2.1	200	Prepare/Submit Drainage Str. Shop Dwgs	6	04/01/22	04/12/22		<input checked="" type="checkbox"/>	0	-4	-2
VDOT Review and Approve Shop Drawings			30	04/13/22	05/12/22	0		-4	-4	0
2.2	210	VDOT Review Shop Drawings	30	04/13/22	05/12/22	0	<input checked="" type="checkbox"/>	-4	-4	

10. Click on *Hide Columns* button to hide associated columns, as needed.

Contract ID:		C00012345C01			Project Start Date:		04/01/22		MPF: <input type="checkbox"/> 50%					
Project No.:		(NFO) 0010-123-456, C601			Contract Completion Date:		10/31/22		BEI: <input type="checkbox"/> 1.50					
Project Name:		Route 10 Roadway Widening Update Sched			Current Completion Date:		10/31/22		CEI: <input type="checkbox"/> 1.00					
Activities Filter:		All Activities			Current Data Date:		05/04/22		CPLI: <input type="checkbox"/> 1.00					
<input type="button" value="Help"/> <input type="button" value="Print Preview"/> <input type="button" value="Set Schedule"/> <input type="button" value="Display All Columns"/> <input type="button" value="Set SOR"/> <input type="button" value="Hide Baseline Columns"/> <input type="button" value="Plot Barchart"/> <input type="button" value="Show Barchart"/> <input type="button" value="Hide Actual Dates"/>														
WBS Code	Activity ID	Activity Description	Schedule of Record					Current Schedule					Actual Dates	
			Orig Dur	Start	Finish	Total Float	Critical	Original Duration	Start	Finish	Total Float	Critical	Actual Start	Actual Finish

Virginia Department of Transportation
Construction Division

11. Using the Activities Filter – The *Activities Filter* provides a variety of pre-defined filters, which allows the user to select activities that meet a specific criterion. Click on the *Activities Filter* drop box (Cell D4), then click on the drop-down arrow, and then select a filter to display the specific activities that meet the criteria for the selected filter.

Contract ID:	C00012345C01	Project Start Date:	04/01/22			
Project No.:	(NFO) 0010-123-456, C601	Contract Completion Date:	10/31/22			
Project Name:	Route 10 Roadway Widening Update Schedule	Current Completion Date:	10/31/22			
Activities Filter:	All Activities	Current Data Date:	05/04/22			
						
		Current Schedule				
WBS Code	Activity ID	Original Duration	Start	Finish	Total Float	Critical

The following are available pre-defined filters that can be used to view various aspects of the schedule; as well as description, criteria, and suggestions for how each filter can be used:

1. All Activities: Select *All Activities* to view all available activities. This filter can be used to analyze the schedule to determine:
 - a) If all individual activities required to complete the project are included.
 - b) If the durations of the individual activities are reasonable.
 - c) If the overall sequence and logic are reasonable.
 - d) If the current status of the individual activities are accurate.
 - e) What work is scheduled to be performed, where and when?
 - f) How many concurrent operations are going at the same time or at the same location?
 - g) Are there sufficient resources to complete the work as planned?
 - h) Are there any potential conflicts? If any, determine potential impact and possible mitigation strategies.
2. WBS Summary: Select *WBS Summary* to view summary level information at each WBS node. This filter can be used to analyze the schedule at a higher level to determine:
 - a) If the WBS reflects a complete breakdown of the project and entire scope of work. Are there any major phases, stages or elements of work not shown?

Virginia Department of Transportation
Construction Division

- b) If the WBS reflects a reasonable and logical breakdown and flow of the Work.
 - c) The overall time and status of major phases, stages or elements of work. Is the overall status of each WBS element reasonable and accurate?
 - d) What work if any, is scheduled to be performed during the winter periods or out of season?
 - e) If there are concurrent work scheduled at the same time? If any, is it feasible or is further evaluation of the schedule necessary to determine if adjustments are necessary?
3. Milestones: Select *Milestones* to view all milestone activities, typically activities with zero (0) duration or with Activity Type of "SM" or "FM". Milestones are either contract mandated or are used to mark the start or finish of key events such as a phase or stage. This filter can be used to analyze the schedule to determine:
- a) If all Contract milestones are included and are constrained to match the Contract dates, as required by specifications.
 - b) If other key dates required for monitoring and controlling the project are included and are designated as milestones.
 - c) Current status of the Contract milestones. Are the milestones being met or are they are ahead or behind schedule? Are corrective actions necessary?
4. Overall Longest Path: Select *Overall Longest Path* to view all critical path activities from the beginning of the project to the end. The activities on the left side of the data date represent the "As-built Critical Path" while the activities on the right side represent the "Critical Path". This filter can be used primarily to analyze the schedule to determine:
- a) If the overall sequence and logic are realistic. Are there any out of sequence logic?
 - b) If the critical path activities are based on mandatory or discretionary logic.
 - c) If there are concurrent critical activities, and what are the potential risks?
 - d) If there are gaps along the critical path and what are the causes of the gaps?
 - e) If the durations of the individual activities are reasonable relative to past performance?
 - f) What critical activity is the controlling critical path activity?
 - g) If there are any shifts in the critical path since the previous schedule. If so, why?
 - h) If there are any opportunities for fast-tracking or collapsing the schedule to mitigate delays, if needed.

5. Critical Path: Select *Critical Path* to view the critical path activities for the remaining work as of the data date. These are the activities that must be completed on time to ensure that the project completes on time as currently planned. This filter can be used to analyze the schedule for upcoming critical path work to determine:
- a) If the overall sequence and logic are realistic. Are there any out of sequence logic?
 - b) If the critical path activities are based on mandatory or discretionary logic.
 - c) If there are concurrent critical activities, and what are the potential risks?
 - d) If there are gaps along the critical path and what are the causes of the gaps?
 - e) If the durations of the individual activities are reasonable relative to past performance?
 - f) What critical activity is the controlling critical path activity?
 - g) If there are any shifts in the critical path since the previous schedule. If so, why?
 - h) If there are any opportunities for fast-tracking or collapsing the schedule to mitigate delays, if needed.
6. Critical/Near Critical (TF<10): Select *Critical/Near Critical (TF<10)* to view remaining activities that are either on the critical path or have total float (TF) values of less than 10. These are activities that are more likely to delay the project or (a constrained milestone) if they are delayed beyond the number of days of available TF. Such activities should be monitored closely. This filter can be used to analyze the schedule to determine:
- a) What near critical activities are at risk of becoming critical and what are the potential impacts?
 - b) If the overall sequence and logic are realistic. Are there any out of sequence logic?
 - c) If the critical path activities are based on mandatory or discretionary logic.
 - d) If there are concurrent critical activities, and what are the potential risks?
 - e) If there are gaps along the critical path and what are the causes of the gaps?
 - f) If the durations of the individual activities are reasonable relative to past performance?
 - g) What critical activity is the controlling critical path activity?
 - h) If there are any shifts in the critical path since the previous schedule. If so, why?
 - i) If there are any opportunities for fast-tracking or collapsing the schedule to mitigate delays, if needed?

7. Critical Path Shift (SOR): Select *Critical Path Shift (SOR)* to view activities that are now on the critical path, but were not on the critical path in the SOR; or activities that were on the critical path in the SOR, but are not on the current schedule critical path. This filter can be used to analyze the schedule to determine if there are any shifts in the critical path since the SOR. If so:
 - a) What activities are involved?
 - b) Where the shifts caused by logic or duration changes? If so, why, and were the changes documented in the narrative and are the changes reasonable and acceptable?
 - c) Where the shifts caused by out-of-sequence progress? If so, are logic revisions necessary to ensure that the schedule reflects the current plan?
 - d) Where the shifts caused by lack of progress or other delays. If so, the issues should be documented and monitored closely and any potential issues that may arise should be evaluated.
 - e) Are the shifts significant and permanent? If so, all involved parties should be informed.

8. Critical Path Shift (Previous): Select *Critical Path Shift (Previous)* to view activities that are now on the critical path, but were not on the critical path in the Previous Update; or activities that were on the critical path in the Previous Update, but are not on the current schedule critical path. This filter can be used to analyze the schedule to determine if there are any shifts in the critical path since the previous update. If so:
 - a) What activities are involved?
 - b) Where the shifts caused by logic or duration changes? If so, why, and were the changes documented in the narrative and are the changes reasonable and acceptable?
 - c) Where the shifts caused by out-of-sequence progress? If so, are logic revisions necessary to ensure that the schedule reflects the current plan?
 - d) Where the shifts caused by lack of progress or other delays. If so, the issues should be documented and monitored closely and any potential issues that may arise should be evaluated.
 - e) Did the shift cause a schedule impact on a contract milestone or the project completion date? If so, the causes and impacts should be documented.
 - f) Are the shifts significant and permanent? If so, all involved parties should be informed.

9. Added Activities (SOR): Select *Added Activities (SOR)* to view activities added to the schedule since the SOR. This filter can be used to analyze the schedule to determine if activities have been added to the schedule since the SOR. If so:
- a) What activities were added?
 - b) Where the activities added for new work or changes to the work. If so, were the changes documented in the narrative or a SIA, with explanations and any resulting impact? And are the changes reasonable and acceptable?
 - c) Where the activities added for omitted work, splitting existing activities, or to further define the scope of work. If so, were the changes, explanations and any resulting impact documented in the narrative? And are the changes reasonable and acceptable?
 - d) Are the sequence of work and logic realistic and acceptable?
 - e) Are the durations reasonable relative to past performance?
 - f) Did the added activities cause a significant impact on the schedule, critical path, milestones, the project completion date, or costs? If so, consider re-baselining.
10. Added Activities (Previous): Select *Added Activities (Previous)* to view activities added to the schedule since the previous update. This filter can be used to analyze the schedule to determine if activities have been added to the schedule since the previous update. If so:
- a) What activities were added?
 - b) Where the activities added for new work or changes to the work. If so, were the changes documented in the narrative or a SIA, with explanations and any resulting impact? And are the changes reasonable and acceptable?
 - c) Where the activities added for omitted work, splitting existing activities, or to further define the scope of work. If so, were the changes, explanations and any resulting impact documented in the narrative? And are the changes reasonable and acceptable?
 - d) Are the sequence of work and logic realistic and acceptable?
 - e) Are the durations reasonable relative to past performance?
 - f) Did the added activities cause a significant impact on the schedule, critical path, milestones, the project completion date, or costs? If so, consider re-baselining.

11. VDOT Activities: Select *VDOT Activities* to view activities for which the Department may be responsible or involved. This filter relies on key words in the activity description such as VDOT, review, approve, approval, accept, acceptance, inspect, inspection, and punch list. This filter can be used to analyze the schedule to determine, if any:
- a) What are the VDOT activities and when are they scheduled? Are all VDOT responsible activities required to complete the project included?
 - b) Are the durations of the VDOT activities are reasonable with respect to the Contract?
 - c) Are the sequence and logic with related work are reasonable?
 - d) Is the status of the VDOT activities accurate, including actual start/finish dates?
 - e) Are there upcoming VDOT responsible work? If so, plan accordingly to avoid delays or mitigate impact of delays.
12. Winter Periods: Select *Winter Periods* to view activities that are scheduled to be performed during the months of November, December, January, February, February, and March. This filter can be used to analyze the schedule to determine:
- a) What activities, if any, are currently at risk of being pushed into the winter period when the weather is typically not conducive for prosecuting the work? And what actions can be taken to avoid or mitigate potential delays?
 - b) If there are any weather-sensitive activities scheduled to be performed when the weather is typically not conducive for prosecuting the work. If so, an appropriate winter calendar should be assigned to restrict weather sensitive activities from being scheduled during the winter periods.
 - c) If there are activities scheduled to be performed during the winter period, whose rate of progress could be negatively impacted by winter weather. If so, are the durations of such activities realistic?
 - d) If there are activities scheduled to be performed during the winter period, whose quality could be negatively impacted by winter weather. If so, what actions or protective measures are needed or planned to avoid potential quality issues?
13. Completed: Select *Completed* to view the activities that have been completed to date as of the data date. This filter can be used to analyze the schedule to determine:
- a) What activities, if any, are reported as complete as of the data date?
 - b) If the activities reported as complete are actually complete as of the data date.
 - c) If there are any activities that are actually complete, but are not reported as complete?
 - d) If the as-built dates (actual start and actual finish) are accurate. If not, any inaccuracies should be documented and reported to the contractor for corrections.

14. In Progress: Select *In Progress* to view activities that have started, but have not finished as of the data date. This filter can be used to review the schedule to determine:

- a) What activities are currently ongoing as of the data date, where, and by whom?
- b) What activities are currently ongoing as of the data date, but are not shown? If any, ensure that the contractor corrects the schedule for accuracy.
- c) If any, are the on-going activities progressing as planned? If not, why and what are the potential impact? Monitor progress, available float and criticality.
- d) If the remaining durations of the on-going activities are realistic based on past performance and amount of work remaining as of the data date.
- e) If there are any on-going critical path or near critical activities (Total Float value of 10 days or less)? If any, monitor performance to ensure timely completion.

15. Remaining Work: Select *Remaining Work* to view activities that are either on-going or have not started as of the data date. This filter can be used to analyze the schedule to determine:

- a) What activities are currently on-going or have not started, where, when, and by whom?
- b) If all activities required to complete the remaining work are included.
- c) What activities are currently being performed as of the data date, but are not shown? If any, ensure that the contractor corrects the schedule for accuracy.
- d) If any, are the on-going activities progressing as planned? If not, why and what are the potential impact? Monitor available float and criticality.
- e) If the durations, sequence of work and logic are realistic relative to past performance and amount of work remaining as of the data date.
- f) If there are several activities stacked-up against the data date line? If so, determine if the work will be performed as planned or if adjustments are necessary.
- g) If there are concurrent activities scheduled at the same time or at the same place, and if feasible, concerning resource availability and safety.
- h) If there are any on-going or scheduled critical path or near critical activities (Total Float value of 10 days or less)? If any, monitor performance to ensure timely completion.
- i) If there are any opportunities to mitigate or avoid delays on the project.

16. Not Started: Select *Not Started* to view activities that are yet to begin as of the data date. This filter can be used to analyze the schedule to determine:
- a) What activities have not started, where, when, and by whom?
 - b) What activities have actually started as of the data date, but are not shown? If any, ensure that the contractor corrects the schedule for accuracy.
 - c) If there are several activities stacked-up against the data date line? If so, determine if the work will be performed as planned or if adjustments are necessary.
 - d) What activities have not started, but should have started relative to the previous schedule? If any, determine why, when they will start; available float and criticality and whether corrective actions are necessary.
 - e) If there are any opportunities to mitigate or avoid delays on the project.
17. 2-Week Look-ahead: Select *2-Week Look-ahead* to view on-going activities and remaining activities that are scheduled to be performed during the period between the Run Date (Today) and the next 14 days. This filter can be used to analyze the schedule to:
- a) Determine what, where, when, and by whom? Plan accordingly.
 - b) Determine their criticality and available float. If there are any on-going or scheduled critical path or near critical activities (Total Float value of 10 days or less)? If any, monitor performance to ensure timely completion.
 - c) Determine if the work is progressing as planned. If not, determine why and any potential impact.
 - d) Document actual start, actual finish dates; and any non-work days and why.
18. 30-Day Look-ahead: Select *30-Day Look-ahead* to view activities scheduled to be performed in the next 30 days as of the data date. This filter can be used to determine:
- a) What activities, where, when, and by whom? Check for missing activities.
 - b) Their criticality and available float. If there are any on-going or scheduled critical path or near critical activities (Total Float value of 10 days or less)? If any, monitor performance to ensure timely completion.
 - c) If there are on-going activities as of the data date line. Check reported progress and remaining duration for accuracy relative to past performance.
 - d) If there are remaining activities stacked-up against the data date line. Determine if the current plan is reasonable or if adjustments are necessary.
 - e) If the work is progressing as planned. If not, determine why and any potential impact.

19. 60-Day Look-ahead: Select *60-Day Look-ahead* to view activities scheduled to be performed in the next 60 days as of the data date. This filter can be used to analyze the schedule to:

- a) Determine what, where, when, and by whom? Check for missing activities.
- b) Determine their criticality and available float. If there are any on-going or scheduled critical path or near critical activities (Total Float value of 10 days or less)? If any, monitor performance to ensure timely completion.
- c) Determine if there are on-going activities as of the data date line. Check reported progress and remaining duration for accuracy relative to past performance.
- d) Determine if there are remaining activities stacked-up against the data date line. Determine if the current plan is reasonable or if adjustments are necessary.
- e) Determine if the work is progressing as planned. If not, determine why and any potential impact.

20. Due Today: Select *Due Today* to view activities that are currently scheduled to be complete on the run date (today) based on the current schedule. This filter can be used to analyze the schedule to determine, if any:

- a) What activities are scheduled to be complete on the run date, where, and by whom?
- b) What activities will not be completed by the end of the day? Why and when will they finish?
- c) What is the criticality and available float of the activities?
- d) What are the potential impacts if the activities are not completed by the end of the day?

21. Overdue: Select *Overdue* to view remaining activities that should have been completed as of the run date (today) based on the current schedule. This filter can be used to analyze the schedule to determine, if any:

- a) What activities should have been completed as of run date, where, and by whom?
- b) Why are the activities late and when will they finish?
- c) What is the criticality and available float of the activities?
- d) What are the potential impacts?
- e) What adjustments, if any, are needed to avoid delays or mitigate impact of delays?

22. Progress Last Period: Select *Progress Last Period* to view activities that were updated since the previous schedule. This filter can be used to analyze the schedule to determine, if any:
- a) What activities were performed, where, and by whom?
 - b) Are there other activities performed that should have been progressed and are not shown?
 - c) Are the actual start and actual finish dates accurate? If not, document and notify the contractor for corrections in the next schedule submission.
 - d) Are there any activities with actual dates on or beyond the data date. If any, notify the contractor for corrections in the next schedule submission.
 - e) Are the reported progress and remaining duration for ongoing activities accurate? If not, document and notify the contractor for corrections in the next schedule submission.
23. Schedule Delay Analysis (CPA Method): Select *Schedule Delay Analysis (CPA Method)* to view the activities that were performed during the last period; as well as the current critical path activities. This filter displays the *Previous Update* and *Previous Update Variance* columns and can be used to analyze the schedule for any delays that occurred during the last period to determine:
- a) What activities were performed during the last period and by whom?
 - b) What activities started later or are scheduled to start later than planned relative to the previous schedule? If any, determine and document cause, criticality, available total float, and who is responsible.
 - c) What activities finished later or are scheduled to finish later than planned relative to the previous schedule? If any, determine and document cause, criticality, available total float, and who is responsible.
 - d) What activities took longer or are scheduled to take longer than planned relative to the previous schedule? If any, determine and document cause, criticality, available total float, and who is responsible.
 - e) What is the current controlling critical path activity? Determine the current status and whether it is ahead or behind schedule relative the previous schedule. If it is behind, determine why, available total float, and who is responsible. Also, have there been any shifts in the critical path since the previous schedule?
 - f) If the schedule has gained or lost time relative to a milestone or the project *Completion Date* since the previous schedule? Did a critical delay occur, what caused the delay, is it related to the controlling critical activity, and who is responsible? Document findings in available *Schedule Delay Analysis* worksheet.

24. Schedule Slippage (Previous): Select *Schedule Slippage (Previous)* to view the remaining activities that have slipped relative to the previous schedule. This filter displays the *Previous Update* and *Previous Update Variance* columns and can be used to analyze the schedule to determine:

- a) What remaining activities have slipped relative to the previous schedule, if any?
- b) Current status, criticality, and available total float.
- c) Controlling activities and primary cause of the schedule slippages.
- d) Potential for further delays based on past performance and possible impact.
- e) If adjustments or corrective measures are needed to mitigate or avoid potential impact.

25. Missed Start (SOR): Select *Missed Start (SOR)* to view activities that actually started late or are forecast to start later than planned as of the data date, relative to the SOR. This filter displays the *Schedule of Record* and *SOR Variance* columns. It is intended to provide an early warning signal to alert you of how much the current schedule has deviated from the SOR in terms of activity start date. Furthermore, this filter can be used to analyze the schedule to determine:

- a) How many and what activities started late or are forecast to start later than planned relative to the SOR? If any, determine why, current status, criticality, and available float.
- b) If there is a recurring trend that pertains to certain types of activities? If so, determine primary cause and potential impact; and if adjustments are necessary.
- c) If there are fewer, same, or greater number of missed starts each month? If same or greater, consider further evaluation of the schedule to determine cause, potential impact; and if adjustments are necessary.

26. Missed Start (Previous): Select *Missed Start (Previous)* to view activities that actually started late or are forecast to start later than planned, relative to the Previous Update Schedule. This filter displays the *Previous Update* and *Previous Update Variance* columns. It is intended to provide an early warning signal to alert you of how realistic the current schedule is in terms of activity start date. Furthermore, this filter can be used to analyze the schedule to determine:

- a) How many and what activities started late or are forecast to start later than planned relative to the Previous Update Schedule? If any, determine why, current status, criticality, and available float.
- b) If there is a recurring trend that pertains to certain types of activities? If so, determine primary cause and potential impact; and if adjustments are necessary.
- c) If there are fewer, same, or greater number of missed starts each month? If same or greater, consider further evaluation of the schedule to determine cause, potential impact; and if adjustments are necessary.

27. Missed Finish (SOR): Select *Missed Finish (SOR)* to view activities that actually finished late or are forecast to finish later than planned as of the data date, relative to the SOR. This filter displays the *Schedule of Record* and *SOR Variance* columns. The displayed activities count is used to calculate the Missed Finish Percentage (MF%). The MF% is a ratio of the cumulative count of activities that have *missed their planned finish dates* to the cumulative count of activities that should have been completed relative to the SOR. The MF% serves as an early warning alert when the schedule is slipping. It also serves as an early warning indicator to alert you of how much the current schedule has deviated from the SOR in terms of activity finish date. Furthermore, this filter can be used to analyze the schedule to determine:

- a) How many and what activities failed to finish on time relative to the SOR? If any, determine the reasons, current status, criticality, and available float.
- b) If there is a recurring trend that pertains to certain types of activities? If so, determine primary cause and potential impact; and if adjustments are necessary.
- c) If there are fewer, same, or greater number of missed finishes each month? If same or greater, consider further evaluation of the schedule to determine cause, potential impact; and if adjustments are necessary.
- d) Is the current MF% within acceptable range and has a negative trend manifested? If so, does the current schedule require corrective action to realign it with the SOR?

28. Missed Finish (Previous): Select *Missed Finish (Previous)* to view activities that actually finished late or are forecast to finish later than planned relative to the Previous Update Schedule. This filter displays the *Previous Update* and *Previous Update Variance* columns. It provides an early warning indicator to alert you of how realistic the current schedule is in terms of activity finish date. Furthermore, this filter can be used to analyze the schedule to determine:

- a) How many and what activities failed to finish on time relative to the Previous Update Schedule? If any, determine the reasons, current status, criticality, and available float.
- b) If there is a recurring trend that pertains to certain types of activities? If so, determine primary cause and potential impact; and if adjustments are necessary.
- c) If there are fewer, same, or greater number of missed finishes each month? If same or greater, consider further evaluation of the schedule to determine cause, potential impact; and if adjustments are necessary.





29. BEI Activities: Select *BEI Activities* to view all activities that have been completed to date or should have been completed as of the data date, relative to the SOR. The *Baseline Execution Index (BEI) Activities* filter displays the activities used to calculate the BEI performance metric. The BEI is a ratio of the cumulative count of activities that were actually completed to date compared to the cumulative count of activities that should have been completed relative to the SOR. The BEI is an early warning indicator of how well the contractor has executed the baseline plan to date. Furthermore, this filter can be used to analyze the schedule to determine:

- a) What activities have slipped relative to the SOR? If any, determine the reasons, current status, criticality, and available float.
 - b) Are there activities being completed that were not scheduled to be completed? Is the contractor working out of sequence and does the schedule require adjustments to align the schedule with the current plan?
 - c) Are there repeated occurrences by similar types of activities? If so, determine primary cause and potential impact; and if adjustments are necessary.
 - d) Is the current BEI within acceptable range and has a negative trend manifested? If so, does the current schedule require corrective action to realign it with the SOR?
30. CEI Activities: Select *CEI Activities* to view activities that should have been completed during the last period relative to the Previous Update Schedule. The *Current Execution Index (CEI) Activities* filter displays the activities used to calculate the CEI metric. The CEI is a ratio of the number of activities completed during the last period to the number of activities that should have been completed relative to the Previous Update Schedule. The CEI is an indicator of how well the contractor is executing the current plan. This filter can be used to analyze the schedule to determine, if any:
- a) What activities have slipped relative to the Previous Update Schedule? If any, determine the reasons, current status, criticality, and available float.
 - b) Are durations of the remaining activities reasonable relative to past performance? If not, consider further assessment of the schedule to determine if adjustments are necessary.
 - c) Are there repeated occurrences by similar types of activities? If so, determine primary cause and potential impact; and if adjustments are necessary.
 - d) Is the current CEI within acceptable range and has a negative trend manifested? If so, does the current schedule require corrective action to avoid delays or mitigate impact of delays?
31. Variance (SOR) - Duration (<0): Select *Variance (SOR) - Duration (<0)* to view activities that have exceeded or are forecast to exceed their planned duration, relative to the SOR. This filter also displays the *Schedule of Record* and the *Variance* columns. It is intended to alert you of how much the current schedule has deviated from the SOR in terms of activity duration. Furthermore, this filter can be used to analyze the schedule to determine:
- a) How many and what activities that have taken longer or are forecast to take longer than planned relative to the SOR? If any, determine the reasons, current status, criticality, and available float.
 - b) If the durations of the remaining activities are reasonable relative to past performance? If not, consider further assessment of the schedule for any required adjustments.

- c) If there is a trend of similar types of activities that are taking longer? If so, determine primary cause and potential impact; and if adjustments are necessary.
 - d) If activities exceeding their planned durations has become a regular occurrence? If so, determine primary cause and potential impact; and if adjustments are necessary.
32. Variance (Previous) - Duration (-): Select *Variance (Previous) - Duration (-)* to view activities that have taken longer or are forecast to take longer than planned relative to the Previous Update Schedule. This filter also displays the *Previous Update* and the *Variance* columns. It is intended to provide insight on how well or how poorly the contractor is executing the short-term plan and how realistic is the current schedule in terms of activity duration. Furthermore, this filter can be used to analyze the schedule to determine:
- a) How many and what activities took longer relative to the Previous Update Schedule? If any, determine the reasons, current status, criticality, and available float.
 - b) If the durations of the remaining activities are reasonable relative to past performance? If not, consider further assessment of the schedule for any required adjustments.
 - c) If there is a trend of similar types of activities that are taking longer? If so, determine primary cause and potential impact; and if adjustments are necessary.
 - d) If activities taking longer has become a regular occurrence? If so, determine primary cause and potential impact; and if adjustments are necessary.
33. Variance (SOR) - Percent Complete (-): Select *Variance (SOR) - Percent Complete (-)* to view activities that are behind progress in terms of percent complete relative to the SOR. This filter also displays the *Schedule of Record* and the *Percent Complete* columns. It is intended to alert you of how much the current schedule has deviated from the SOR in terms of activity percent complete. Furthermore, this filter can be used to analyze the schedule to determine:
- a) How many and what remaining activities are currently behind progress relative to the SOR? If any, determine the reasons, current status, criticality, and available float.
 - b) If there is a trend of similar types of activities that are falling behind? If so, determine primary cause and potential impact; and if adjustments are necessary.
 - c) If activities falling behind has become a regular occurrence? If so, determine primary cause and potential impact; and if adjustments are necessary.
34. Responsibility: Select *Responsibility* and then select a Responsibility code to view activities to which the selected code has been assigned. If assigned, the Responsibility code allows you to filter activities being performed by a particular party (e.g. VDOT, Utility Company, etc.) to determine who is doing what, where, and when?

35. Crew: Select *Crew* and then select a Crew code to view activities to which the selected code has been assigned. If assigned, the Crew code allows you to filter activities being performed by a particular crew (e.g. Grading Crew, Drainage Crew, Piling Crew, Concrete Crew, Asphalt Paving Crew, etc.). Furthermore, this filter can be used to analyze the schedule to determine:
- a) What crews are working where, doing what, and when?
 - b) What crews and how many are required? Are there are sufficient crews to accomplish the work as planned?
 - c) If there are any potential conflicts that may cause delays or safety risks.
 - d) If there are overlaps that may require additional resources or schedule adjustments?
36. Location: Select *Location* and then select a Location code to view activities to which the selected code has been assigned. If assigned, the Location code allows you to filter activities being performed at a particular location (e.g. Abut A, Pier 1, Sta. 100+00 to Sta. 120+15, etc.). Furthermore, this filter can be used to analyze the schedule to determine:
- a) What work is being performed where and when?
 - b) If there are too much work going on at any one location?
 - c) If there are any potential conflicts that may cause delays or safety risks.
 - d) If schedule adjustments are necessary.
37. Work Type: Select *Work Type* and then select a Work Type code to view activities to which the selected code has been assigned. If assigned, the Work Type code allows you to filter activities of similar work type (e.g. Grading, Drainage, Piling, Concrete, Asphalt Paving, etc.). Furthermore, this filter can be used to analyze the schedule to determine:
- a) What type of work is being performed where and when?
 - b) If there are sufficient crews to accomplish the work as planned?
 - c) If there are too much work going on at the same time.
 - d) If there are overlaps that may require additional resources or schedule adjustments?
 - e) If the timing of work correlates with anticipated earnings as shown in the Progress Earnings Schedule (Form C-13C).

12. Tracking Performance – The CPM Schedule Template has built-in performance metrics that can be used to track performance trends. This information can be used to track performance to determine when further evaluation of the schedule or corrective measures are necessary to avoid delays or mitigate impact of delays on the project.

Contract ID:	C00012345C01	Project Start Date:	04/01/22	MF%:  33%
Project No.:	(NFO) 0010-123-456, C601	Contract Completion Date:	10/31/22	BEI:  1.00
Project Name:	Route 10 Roadway Widening Update Schedu	Current Completion Date:	10/31/22	CEI:  1.00
Activities Filter:	All Activities	Current Data Date:	06/04/22	CPLI:  1.00




Help
Print Preview
Set Schedule
Display All Columns
Plot Barchart
Show Barchart
Hide Actual Dates

1. Performance Metrics: The CPM Schedule Template includes the following Performance Metrics:

- Missed Finish % (MF%):** The Missed Finish % (MF%) is an early warning indicator of how well the original plan is being executed. The MF% is a measure of on-time performance that is based on the number of activities scheduled to finish to date as of the data date that have missed their originally planned finish dates, relative to the SOR.




$$MF\% = \left(\frac{\text{\# of Activities with Actual or Forecast Finish Date Past SOR Date}}{\text{\# of Activities with SOR Finish Date Before Data Date}} \right) \times 100$$

The MF% performance indicator is:

- Green : when value <= 25
 - Yellow : when value < 50 and > 25
 - Red : when value >= 50
- Baseline Execution Index (BEI):** The Baseline Execution Index (BEI) is an indicator of the efficiency with which activities have been accomplished overall relative to the SOR. The BEI measures the ratio of the number activities completed to date to the number of activities that should have been completed as of the data date.

$$BEI = \left(\frac{\text{Total \# of Activities Complete}}{\text{Total \# of Activities that Should be Complete}} \right)$$




The BEI performance indicator is:

- Green : when value >= 0.95
- Yellow : when value < 0.95 and >= 0.80
- Red : when value < 0.80

3. Current Performance Index (CEI): The Current Performance Index (CEI) is an indicator of how well the current plan is being executed and how realistic is the schedule. It measures the ratio of the number of activities to be completed and have been completed each month to the number that should have been completed relative to the previous update.




$$CEI = (Total \# \text{ of Activities Complete During the Period}) / (Total \# \text{ of Activities that Should be Complete})$$

The CEI performance indicator is:

- a) Green : when value ≥ 0.95
 - b) Yellow : when value < 0.95 and ≥ 0.80
 - c) Red : when value < 0.80
4. Critical Path Length Index (CPLI): The Critical Path Length Index (CPLI) is an indicator of the relative efficiency at which the critical path will be achieved to meet the project deadline. CPLI is calculated based on the critical path length and total float for the remaining work. A CPLI value of 1.0 or greater than 1.0 is an indicator that the project is likely to finish on time. A CPLI value of less than 1.0 is an indicator that the critical path may not be achieved without corrective measures.

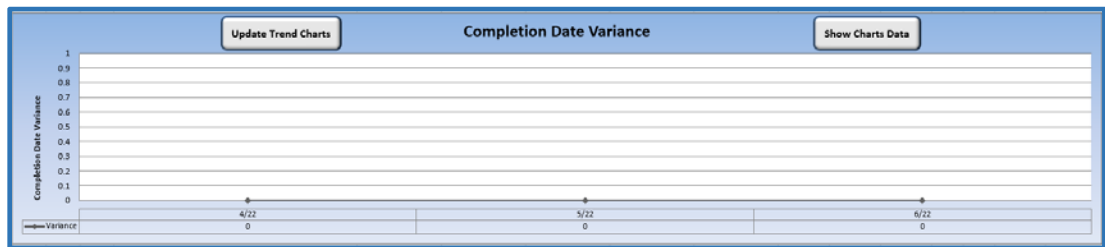
$$CPLI = (Critical \text{ Path Length} + Total \text{ Float}) / (Critical \text{ Path Length})$$

The CPLI performance indicator is:

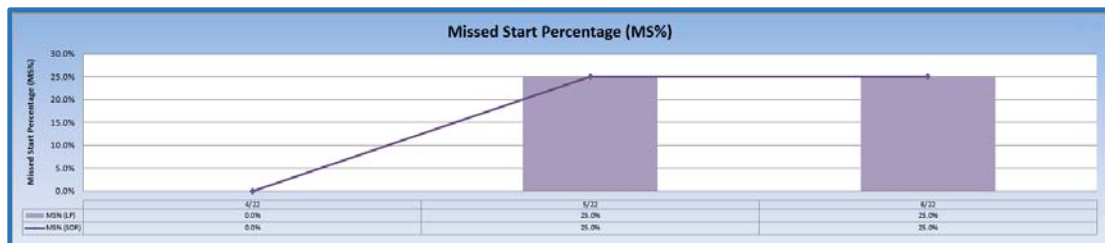
- a) Green : when value ≥ 0.95
- b) Yellow : when value < 0.95 and ≥ 0.80
- c) Red : when value < 0.80

2. Performance Trends Chart: The CPM Schedule Template includes automatically generated Charts for various performance metrics. Click on the *Charts* worksheet tab to view the performance data curves for each performance metric. Then click on the *Update Trend Charts* button to refresh the charts. Review each chart to determine if a negative trend is apparent and if adjustments to the current work plan are necessary.

1. Completion Date Variance: The *Completion Date Variance Chart* depicts in a line graph the cumulative number days the project has gained or slipped each performance period relative to the Contract Completion date. Review for dips and if the curve is trending upwards or downwards each period to determine if adjustments are necessary. The ideal curve is one that reflects values trending towards 0.

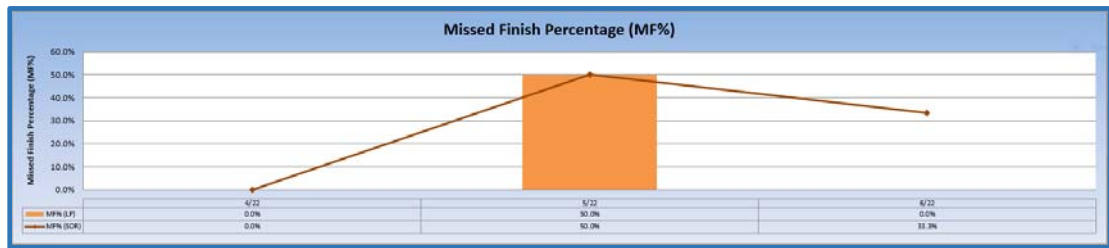


2. Missed Start Percentage (MS%): The *MS% Chart* depicts in a bar chart and line graph respectively, the monthly MS% (LP) and MS% (SOR). The MS% (LP) depicts the ratio of the number activities scheduled to start during the last period with actual dates or forecast dates past their planned dates, relative to the previous update. The MS% (SOR) depicts the ratio of the number activities scheduled to start to date with actual dates or forecast dates past their planned dates, relative to the SOR. Review to determine if the current MF% is greater than 50% and if the curve is trending upwards or downwards each period to determine if adjustments are necessary. The ideal curve is one that reflects values trending towards 0%.



Virginia Department of Transportation
Construction Division

3. **Missed Finish Percentage (MF%):** The *MF% Chart* depicts in a bar chart and line graph respectively, the monthly MF% (LP) and MF% (SOR). The MF% (LP) depicts the ratio of the number activities scheduled to finish during the last period with actual dates or forecast dates past their planned dates, relative to the previous update. The MF% (SOR) depicts the ratio of the number activities scheduled to finish to date with actual dates or forecast dates past their planned dates, relative to the SOR. Review to determine if the current MF% is greater than 50% and if the curve is trending upwards or downwards each period to determine if further evaluation of the schedule or adjustments are necessary. The ideal curve is one that reflects values trending towards 0%.

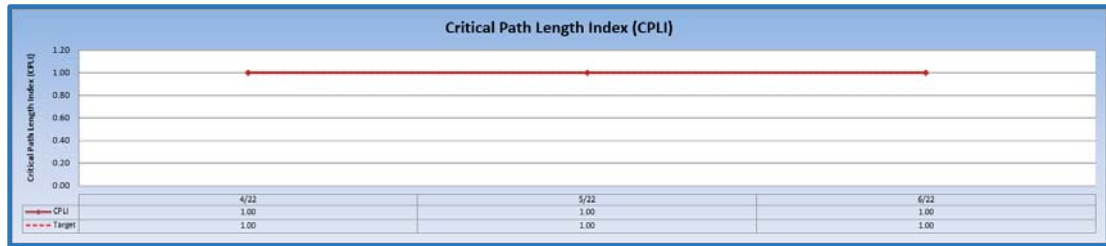


4. **Baseline Execution Index (BEI) & Current Execution Index (CEI):** The *BEI & CEI Chart* depicts in a bar chart and line graph respectively, the monthly BEI and CEI. BEI is a measure of how well the baseline plan is being accomplished, and is a ratio of total number completed activities to date and total number of activities to be completed. CEI is a measure of how well the current plan is being accomplished from month to month, and is a ratio of total number completed activities to be completed that were actually completed and total number of activities to be completed during the last period. Review for peaks and valleys and if the curve is trending upwards or downwards each period to determine if further evaluation of the schedule or adjustments are necessary. The ideal curve is one that reflects BEI and CEI values ranging between 0.95 and 1.0.

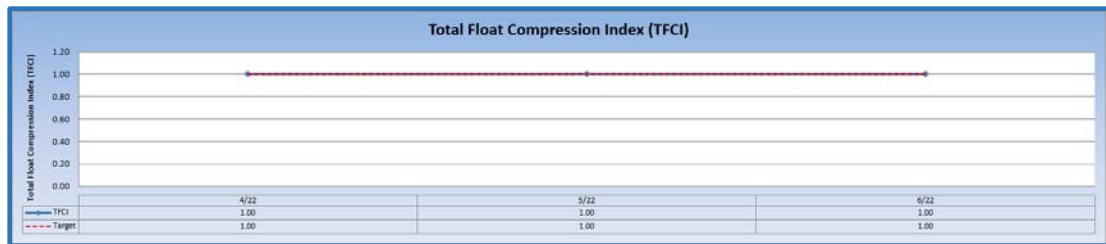


Virginia Department of Transportation
Construction Division

5. Critical Path Length Index (CPLI): The *CPLI Chart* depicts in a line graph the monthly CPLI. CPLI is a measure of the relative efficiency at which the critical path will be achieved. A CPLI value of 1.0 is an indicator that the project deadline will be achieved if the rate of performance is maintained. A CPLI value of less than 1.0 is an indicator that adjustments should be made to improve performance for the project achieve its deadline. Review for peaks and valleys and if the curve is trending upwards or downwards each period to determine if further evaluation of the schedule or adjustments are necessary. The ideal curve is one that reflects CPLI values ranging between 0.95 and 1.0.

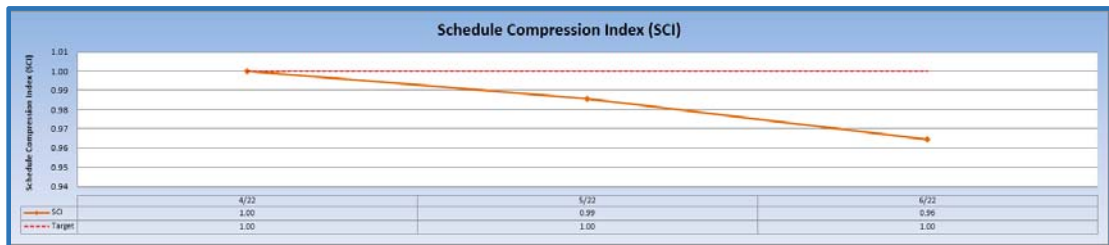


6. Total Float Compression Index (TFCI): The *TFCI Chart* depicts in a line graph the monthly TFCI. TFCI is a performance metric that can be used to predict if a project will achieve its deadline. TFCI is based on the project actual duration and total float ($TFCI = (PAD + CPTF) / PAD$; where PAD = Project Actual Duration and CPTF = Critical Path Total Float). Review for peaks and valleys and if the curve is trending upwards or downwards each period to determine if further evaluation of the schedule or adjustments are necessary. The ideal curve is one that reflects CPLI values ranging between 0.95 and 1.0.

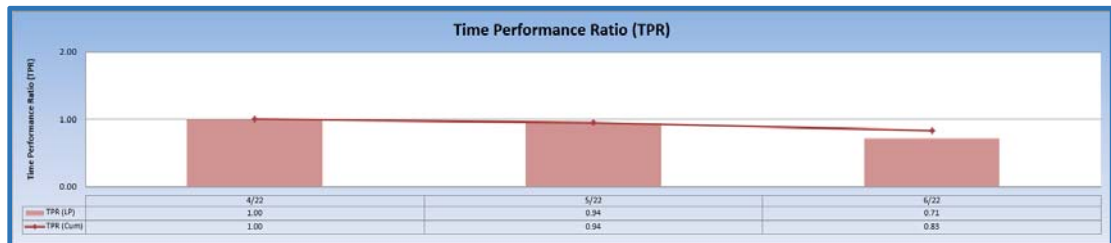


Virginia Department of Transportation
Construction Division

7. Schedule Compression Index (SCI): The *SCI Chart* depicts in a line graph the monthly SCI. SCI is a performance metric that measures the efficiency at which activities are being performed based on remaining duration, relative to the SOR. SCI is a ratio of the aggregate planned remaining duration and the aggregate current remaining duration of all activities as of the data date ($SCI = \sum PRD / \sum CRD$; where PRD = Planned Remaining Duration and CRD = Current Remaining Duration). Review for peaks and valleys and if the curve is trending upwards or downwards each period to determine if further evaluation of the schedule or adjustments are necessary. The ideal curve is one that reflects SCI values ranging between 0.95 and 1.0.



8. Time Performance Ratio (TPR): The *TPR Chart* depicts in a bar chart and line graph respectively, the monthly TPR (LP) and TPR (Cum). TPR is a measure of actual time of performance relative to the original time planned for each completed activity. TPR (LP) is an average of the TPR values of all activities completed during the last period. And TPR (Cum) is an average of TPR values for all activities completed to date ($TPR = AD / OD$; where AD = Actual Duration and OD = Original Duration). Review for peaks and valleys and if the curve is trending upwards or downwards each period to determine if further evaluation of the schedule or adjustments are necessary. The ideal curve is one that reflects TPR values ranging between 1.0 and less than 1.0.



9. Click on the *Show Charts Data* button to open *ChartsData* worksheet to view the charts data table used to create the charts.

For assistance or questions, please contact Frank Gbinije:

frank.gbinije@vdot.virginia.gov