





# **Agenda**

#### **Welcome & Introduction**

- John Dalton MBTA
- > Terry McCarthy MBTA

#### **Safety**

- Dianna Souza MBTA
- Michael Weatherred, GLXC

#### **Construction Update**

John West, GLXC

#### **Schedule Management**

William Scully, GLX – MBTA





Art Beat at Davis Square (July 13)



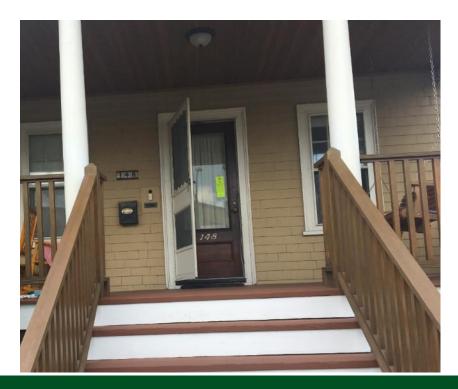




## Weekend Demo at Broadway Bridge (Aug. 2 - 4)

- Sent out email blast to 7,100 plus stakeholders in database
- Targeted email to HOAs and property managers
- Went door to door to 100 homes and businesses









### **Tour of Magoun Station (Sat. Aug. 3)**

• Meeting to discuss upcoming construction, answer station and Community Path questions hosted by Ryan Dunn.









# **GLX-C Safety**

Michael Weatherred





# **Safety**



Heat stress awareness and staying well hydrated continues to be a priority as we experienced the hottest July on record.



Drink water often

Rest in the shade

Report heat symptoms early

Know what to do in an emergency



# **Safety**



# GLX-C safety lagging indicator performance bests the national performance by almost 400%

	JULY 2019			2019 YEAR TO DATE			PROJECT TO DATE		
Entity	Hours*	Total Recordable Incident Rate (TCIR)	Days Away Restricted or Transferred Cases (DART)	Hours*	Total Recordable Incident Rate (TCIR)	Days Away Restricted or Transferred Cases (DART)	Hours*	Total Recordable Incident Rate (TCIR)	Days Away Restricted or Transferred Cases (DART)
Goals					0.40	0.15		0.40	0.15
GLXC	24 242	0.00	0.00	126 000	2.47	2.47	400 202	2.04	2.04
Craft GLXC	21,343	0.00	0.00	126,088	3.17	3.17	199,392	3.01	2.01
Staff	25,981	0.00	0.00	119,596	0.00	0.00	243,078	0.00	0.00
Subs	21,341	9.37	9.37	94,176	4.25	4.25	140,967	2.84	2.84
STV	30,136	0.00	0.00	236,132	0.00	0.00	594,803	0.00	0.00
Total	98,801	2.02	2.02	575,992	1.39	1.39	1,178,240	0.85	0.68

\*Hours are preliminary numbers and are subject to revision monthly





# **GLX-C Construction Update**

John West







### **Broadway Bridge**

- Support of Excavation (SOE) is complete. Wood lagging in place.
- Excavation for new abutments nearly complete.
- Old east abutment demolished Aug. 2 4 weekend.









### **Broadway Bridge**

• East abutment demo Aug. 2 – 4 weekend.









## Washington St. Bridge

- Steel placement planned for Aug. 24
- Drainage work is complete









### Medford St. Bridge

- GLX work on west abutment to start Aug. 7. Construction will include adding an additional abutment behind the existing west abutment to accommodate one set of Green Line tracks
- Bridge to reopen in Spring 2020



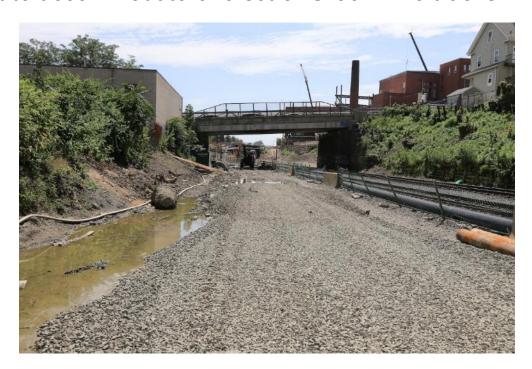






### **School St. Bridge Closure**

- School St. Bridge to close early 2020
- Construction will include adding an additional abutment behind the existing west abutment to accommodate one set of Green Line tracks









### **Preparing for Track Shift**

- Completed thermo-welding 80' long sections of light rail (1,700 tons that will be placed on alignment next spring.
- Will be placing additional 175 tons of commuter grade rail line this fall along the east side of the corridor.











## **Vehicle Maintenance Facility**

- Pile driving is underway
- 270 piles will be driven this month











### **Work near Union Square Station**

- Wall behind Target removed
- MSE wall (UN-2) construction to begin









#### Lechmere Area

- Both drilling crews now working between BET area and Water St.
- Brisk activity including pouring concrete columns and pier caps for viaduct



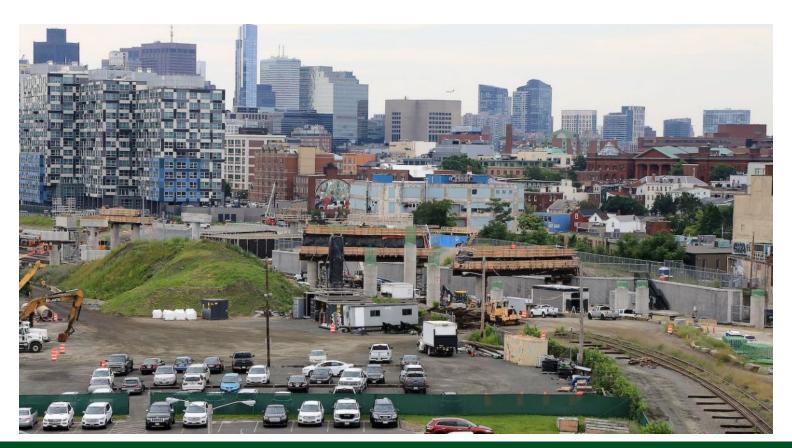






## **Boston Engine Terminal (BET) Area**

Viaduct work continues with frequent night and weekend work



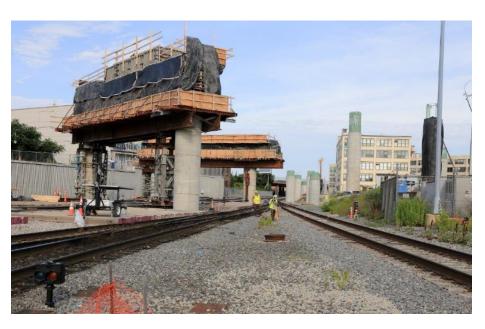






#### **Brickbottom Area**

 Work along this part of the Fitchburg line includes viaduct construction, utility relocations and wall construction (N-3A/N-3B)









### **Noise & Retaining Walls**

### Between McGrath Hwy - Walnut St.

Noise Wall (N-6) ready for panel installation









### **Noise & Retaining Walls**

#### **Between Schools St. – Sycamore**

- Noise Wall (N-7A & B) work starting
- Built up embankment to support drill rig for wall foundations







# **Project Status**



### **Noise & Retaining Walls**

#### Between Lowell - Cedar St.

 Drainage installation and post installation for Noise Wall (N-10, ME-2, ME-2A & N-11) continues











### **Noise & Retaining Walls**

#### **Between Cedar St. - Broadway**

ME-2.1/ Noise Wall N-12 – ready for panel placement









### **Noise & Retaining Walls**

### **Between Broadway – Harvard St.**

ME-2.4/Noise Wall N-14A & N-14B









### **Noise & Retaining Walls**

#### Between College Ave. – Winthrop St.

- Posts placement complete for Noise Wall N-15 (along Burget & Charnwood)
- Post placement continues for ME-3A & ME-3B







### **Community Connection Team – Red Cross Blood Drive**

- Friday, July 12 & 19 at 35 Charlestown & Inner Belt Office
- 30 employees donated









# **Team Building**



### Soccer (July 25) at Gold Star Mothers Park



**GLX-C:** 6 **GLX:** 4 (OT)





# **Schedule Management**

William Scully

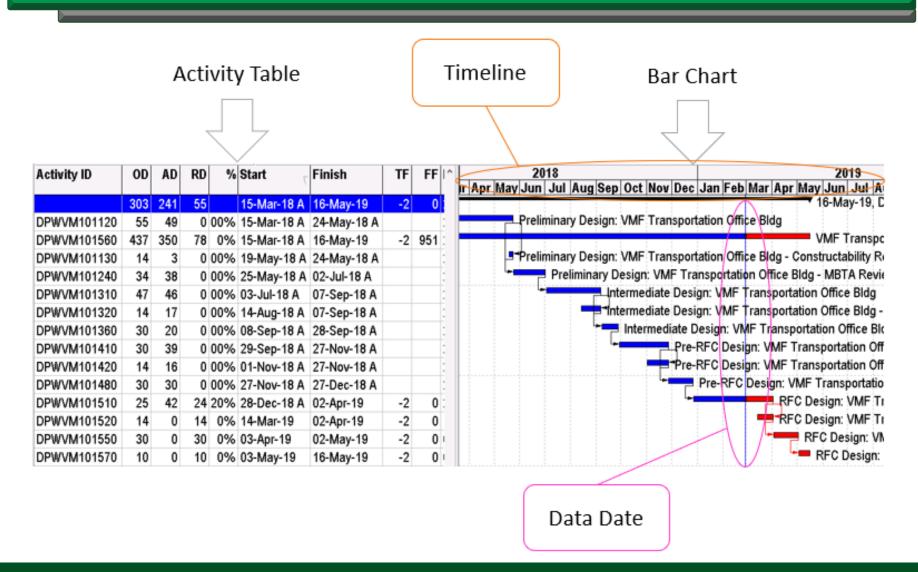




# **Training Goals**

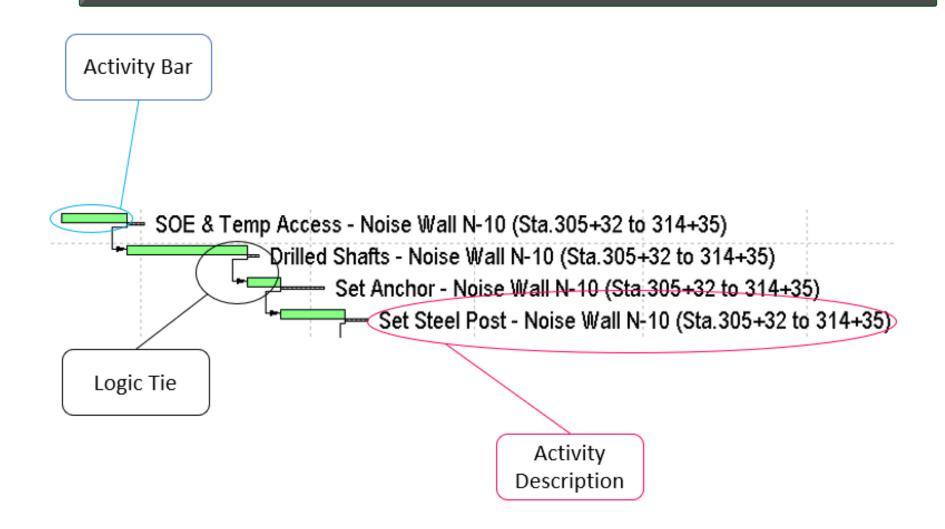
- Schedule Basic
- Understanding of how to read a schedule
- Difference between Early Dates and Late Dates
- What is Float
- How is Free Float different from Total Float
- Milestones and how the affect Critical Paths
- Our project milestones and he Critical Path















- Activity Constraints (apply for float determination)
  - As Late As Possible
  - Finish On
  - Finish On or After
  - Finish On or Before (commonly used)
  - Mandatory Finish



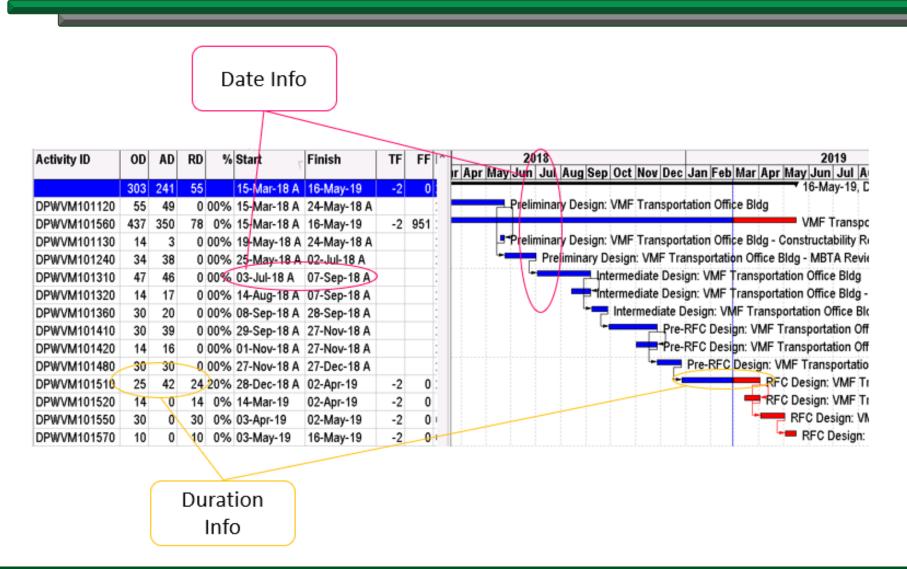


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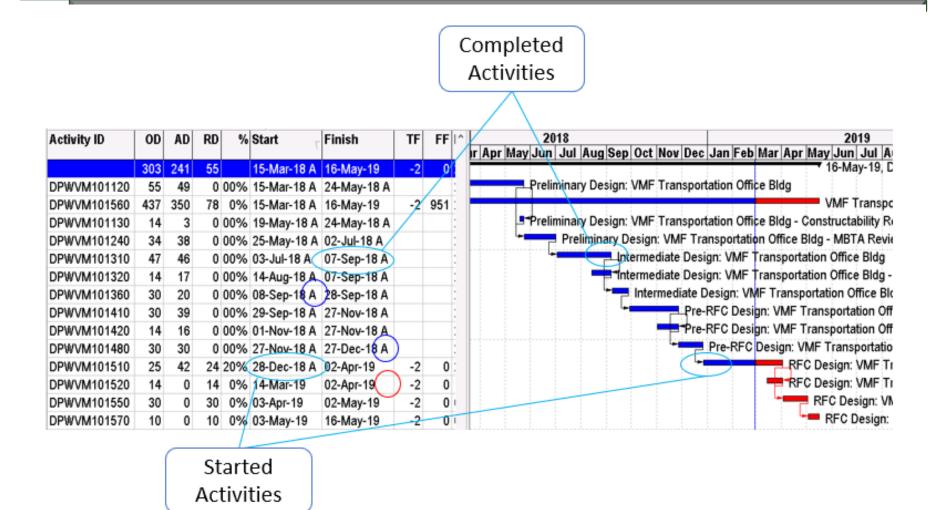
# Understanding How to Read a Schedule







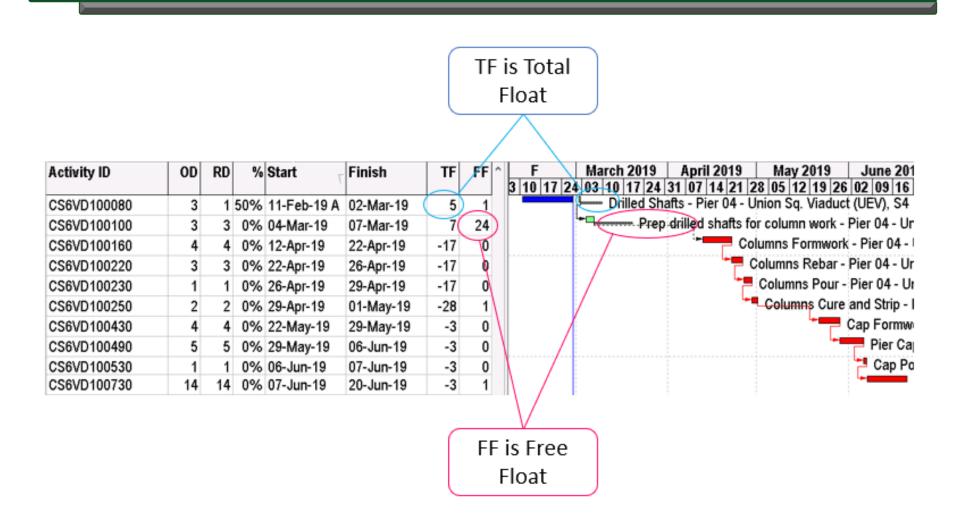
# **Understanding How to Read a Schedule**







### Understanding How to Read a Schedule







#### Difference between Early Dates and Late Dates

#### Early Dates = WHEN YOU CAN START or FINISH



Late Dates = WHEN YOU MUST START or FINISH

Activity ID	OD	RD	% Early	Early	TF Late Start		FF :^	th 2019 April 2019 May 2019 June 2019 July 2019
CS4VD100890	8	8	9% 06-Apr-19	Finish 17-Apr-19	-5 01-Apr-19	Finish 09-Apr-19	0	0 17 24 31 07 14 21 28 05 12 19 26 02 09 16 23 30 07 14 21 28 Drilled Shafts - Pier 25 - Medford Viaduct (MBV), S4
CS4VD101000	5	5	0% 17-Apr-19	25-Apr-19	-4-89-Apr-19	18-Apr-19	14	Prep drilled shafts for column work - Pier 25 - Medford Vi
CS4VD101090	4	4	0% 15-May-19	21-May-19	-18 18-Apr-19	25-Apr-19	0	Columns Formwork - Pier 25 - Medford Vi
CS4VD101280	3	3	0% 21-May-19	24-May-19	-18 25-Apr-19	30-Apr-19	0	Columns Rebar - Pier 25 - Medford Viac
CS4VD101330	1	1	0% 24-May-19	28-May-19	-18 30-Apr-19	01-May-19	0	Columns Pour - Pier 25 - Medford Via
CS4VD101380	2	2	0% 28-May-19	30-May-19	-28 01-May-19	02-May-19	0	Columns Cure and Strip - Pier 25 - N





#### What is Float?

- Is the number of days (Business or Calendar) between when you CAN START or FINISH and When You MUST START or FINISH
- When Float is Positive = Ahead of Schedule

Activity ID	OD	RD	%	Early Start	Early Finish	TF	Late Start	Late Finish	FF^
CS1DR200050	1	1	0%	02-Aug-19	03-Aug-19	40	27-Oct-19	02-Nov-19	0
CS1DR200010	3	3	0%	02-Aug-19	04-Aug-19	40	27-Oct-19	03-Nov-19	0

Early Start is before Late Start

AHEAD OF SCHEDULE





#### What is Float?

- Is the number of days (Business or Calendar) between when you CAN START or FINISH and When You MUST START or FINISH
- When Float is Negative = Behind Schedule

Activity ID	OD	RD	%	Early -	Early	TF	Late Start	Late	FF :^
				Start	Finish			Finish	
CS4VD100890	8	8	0%	06-Apr-19	17-Apr-19	-5	01-Apr-19	09-Apr-19	0
CS4VD101000	5	5	0%	17-Apr-19	25-Apr-19	-4	09-Apr-19	18-Apr-19	14
CS4VD101090	4	4	0%	15-May-19	21-May-19	-18	18-Apr-19	25-Apr-19	0

Early Start is after Late Start

BEHIND SCHEDULE





#### How is Free Float different from Total Float

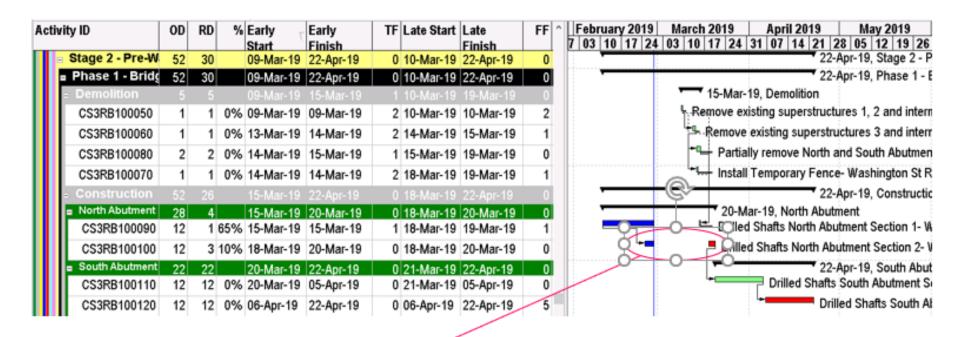
- Free Float (FF) is the amount that particular activity can slide without delaying the successor activity
- Total Float (FF) is the amount that sequence of Activities can slide without delaying the critical path

Activity ID	OD	RD	%	Start	Finish	TF	FF	F March 2019 April 2019 May 2019 June 201
CS6VD100080	3	1	50%	11-Feb-19 A	02-Mar-19	_5	1	Drilled Shafts - Pier 04 - Union Sq. Viaduct (UEV), S4
CS6VD100100	3	3	0%	04-Mar-19	07-Mar-19	(7)	(24	Prep drilled shafts for column work - Pier 04 - Ur
CS6VD100160	4	4	0%	12-Apr-19	22-Apr-19	-17	0	Columns Formwork - Pier 04 - I
CS6VD100220	3	3	0%	22-Apr-19	26-Apr-19	-17	0	Columns Rebar - Pier 04 - Ur
CS6VD100230	1	1	0%	26-Apr-19	29-Apr-19	-17	0	Columns Pour - Pier 04 - Ur
CS6VD100250	2	2	0%	29-Apr-19	01-May-19	(-28)	(1	Columns Cure and Strip - I
CS2DR200400	3	3	0%	22-Apr-19	24-Apr-19	34	0	S2 - 36"RCP East sid
CS2DR200390	4	4	0%	25-Apr-19	29-Apr-19	(34)	0	S2 - 36"RCP East
CS2DR200410	7	7	0%	01-May-19	08-May-19	34	31	S2 - 36"RCP I





### Exercise – What do you see?



Gap between Activity in Progress and completion of activity





### Milestones and How they Affect the Critical Path

Milestone	Current Contractual Date
Notice to Proceed	20-Dec-17
Milestone 5 – VMF Functionally Complete & Ready for MBTA Operational Testing	09-Oct-20
Milestone 4C – Revenue Service for the Union Branch (One)	28-Apr-21
Milestone 3C – Revenue Service for Medford Branch (Two)	10-Jul-21
Milestone 2 – Contract Substantial Completion	21-Aug-21
Milestone 1 – Final Acceptance	20-Oct-21

- Milestones are waypoints
  - Contractual
  - Physical
  - Technical
  - Commercial
  - Stakeholder
- Provide a fixed point for assess the health of the Schedule





### Milestones and How they Affect the Critical Path

Milestone	Current Contractual Date	Forecast
Notice to Proceed	20-Dec-17	20-Dec-17 (A)
Milestone 5 – VMF Functionally Complete & Ready for MBTA Operational Testing	09-Oct-20	28-Oct-20
Milestone 4C – Revenue Service for the Union Branch (One)	28-Apr-21	28-Apr-21
Milestone 3C – Revenue Service for Medford Branch (Two)	10-Jul-21	18-Jul-21
Milestone 2 – Contract Substantial Completion	21-Aug-21	29-Aug-21
Milestone 1 – Final Acceptance	20-Oct-21	28-Oct-21





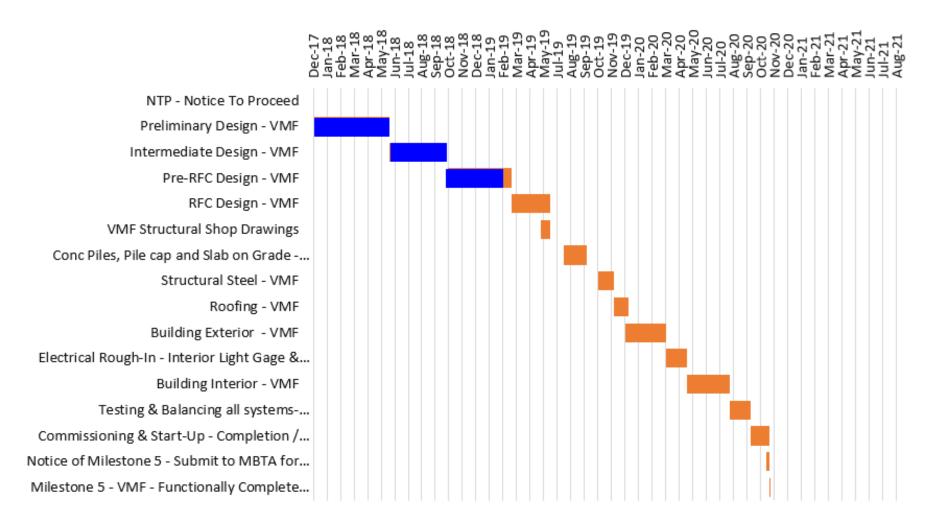
### Milestones and How they Affect the Critical Path

Milestone	Current Contractual Date	Forecast	TF
Notice to Proceed	20-Dec-17	20-Dec-17 (A)	0
Milestone 5 – VMF Functionally Complete & Ready for MBTA Operational Testing	09-Oct-20	28-Oct-20	-18
Milestone 4C – Revenue Service for the Union Branch (One)	28-Apr-21	28-Apr-21	0
Milestone 3C – Revenue Service for Medford Branch (Two)	10-Jul-21	18-Jul-21	-8
Milestone 2 – Contract Substantial Completion	21-Aug-21	29-Aug-21	-8
Milestone 1 – Final Acceptance	20-Oct-21	28-Oct-21	-8





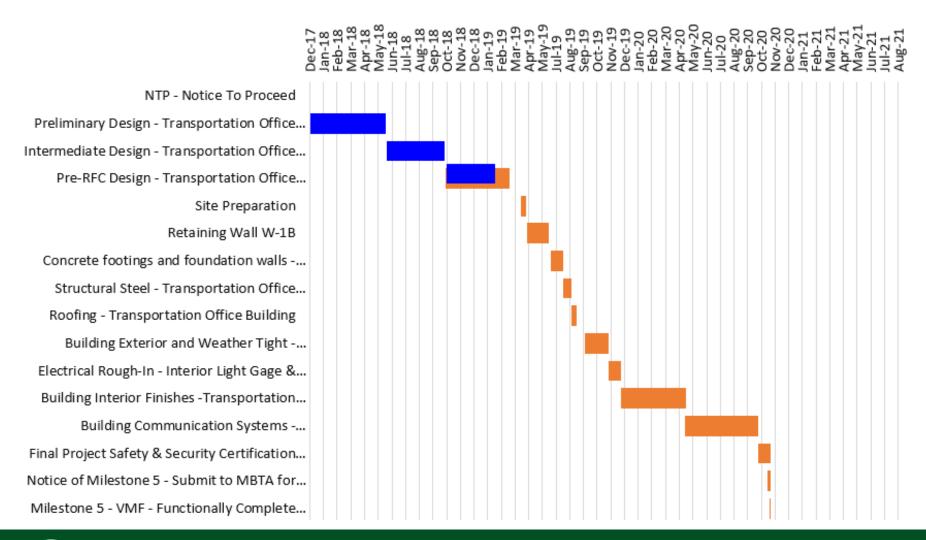
## Critical Path Milestone 5 – VMF Functionally Complete (-18 days)







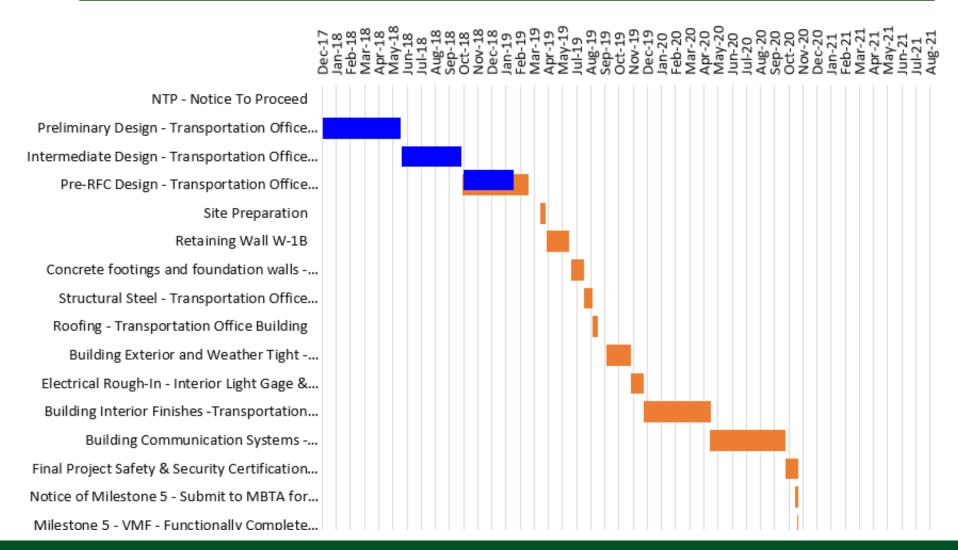
## Near Critical Path Milestone 5 – VMF Functionally Complete (-12 days)







## Near Critical Path Milestone 5 – VMF Functionally Complete (-12 days)







# Critical Path Milestone 4 – Branch One Complete (0 days)

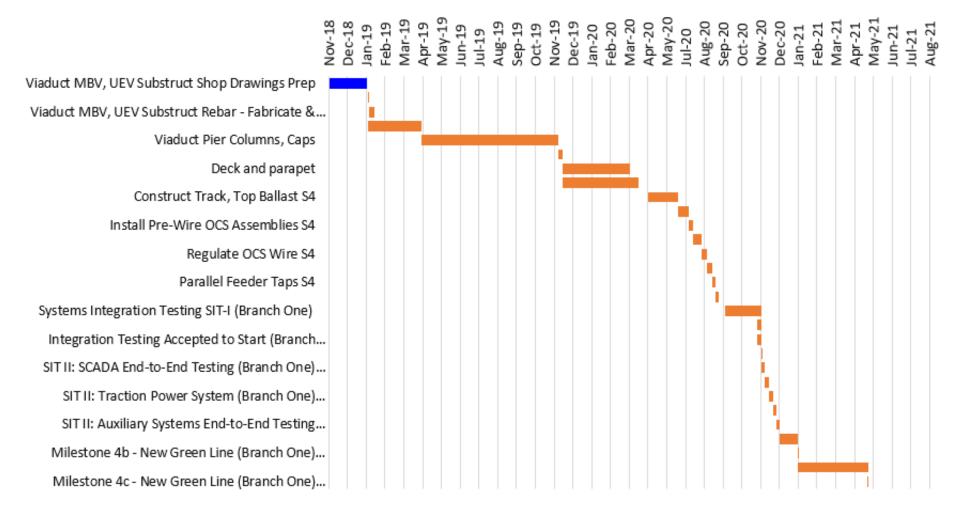
NTP - Notice To Proceed Design Submittals Schedule Preliminary Design: Signaling Intermediate Design: Signaling Pre-RFC Design: Signaling Train Control Signaling Cabinets & Equipment... Train Control Signaling Cabinets & Equipment... Install Wayside Equipment - Brick Bottom CIH, S5 Pull & Terminate & Test Signal Cable - Brick... Local Field Acceptance Testing (SIT-1 Phase 1) -... Systems Integration Testing SIT-I (Branch One) Notice of Milestone 4a - Submit to MBTA for... Integration Testing Accepted to Start (Branch... Milestone 4a - New Green Line (Branch One)... SIT II: SCADA End-to-End Testing (Branch One)... SIT II: Comm Systems End-to-End Testing... SIT II: Traction Power System (Branch One) using... SIT II: Train Control System End-to-End Testing... SIT II: Auxiliary Systems End-to-End Testing... Final Configuration Testing (Branch One) Milestone 4b - New Green Line (Branch One)... Pre-Revenue Demonstration Testing (Branch...



Milestone 4c - New Green Line (Branch One)...



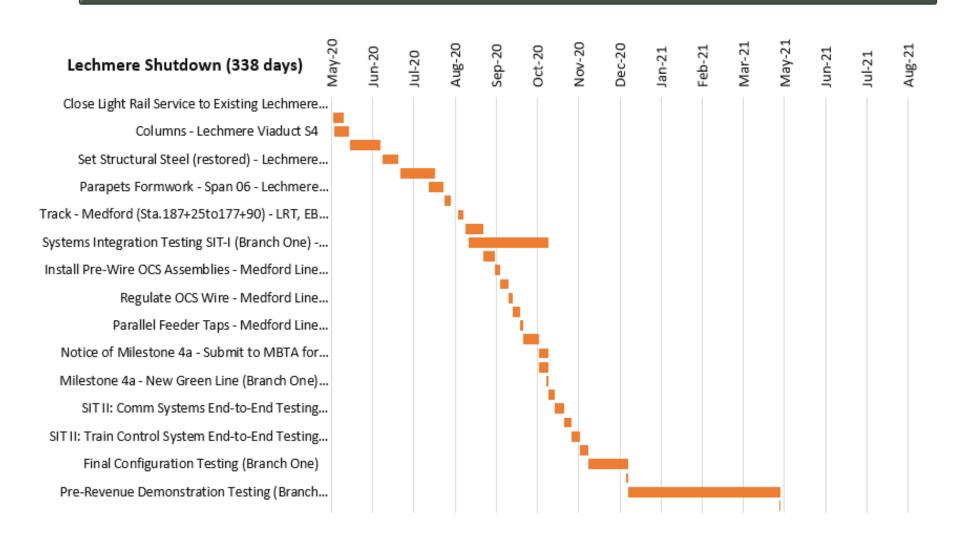
# Near Critical Path Milestone 4 – Branch One Complete (+7 days)







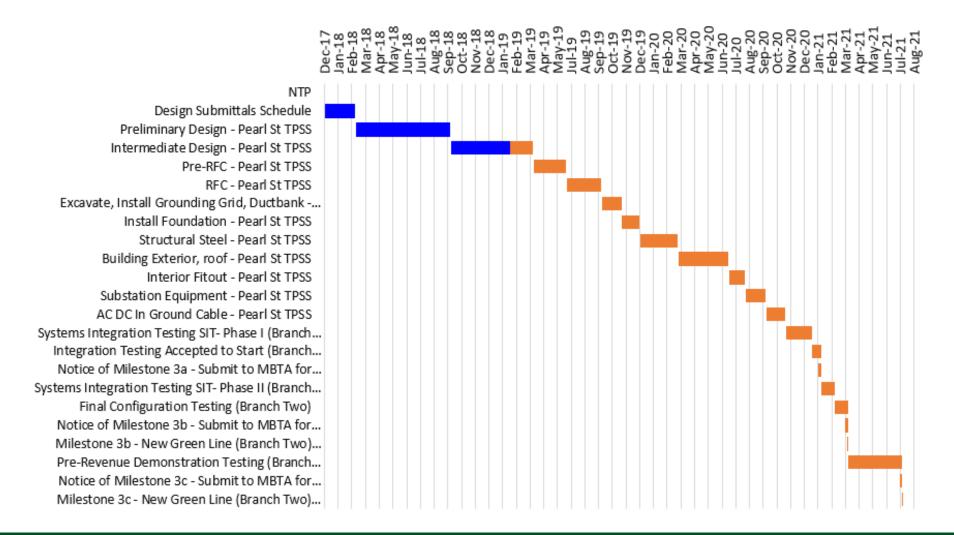
## Critical Path Milestone 4 – Spans 1 thru 7 Branch One







## Critical Path Milestone 3 – Branch Two Complete (-8 days)

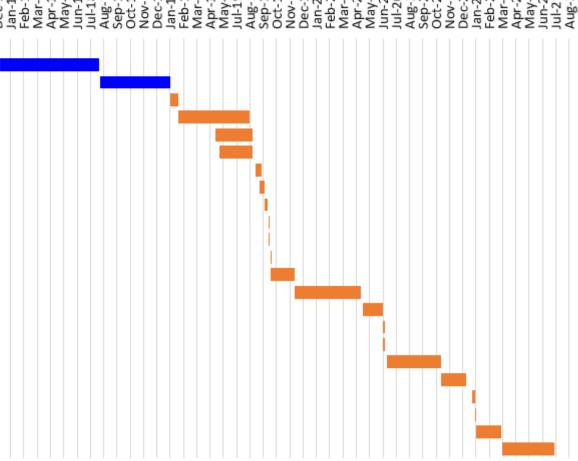






# Near Critical Path Milestone 3 – Branch Two Complete (-3 days)

NTP Main Drainage DP11 Perm shoring constructability reviews Place order Micropiles Shoring 60" FRP 60" FRP East side Drive Micropiles 60" FRP East side Excavation and Shotcrete 60" FRP East side Install Pipe Backfill S3 Install Ballast Mat, Ballast S3 Construct Track, Top Ballast S3 Surface Track, Destress Track S3 Track Shift during weekend shutdown Commuter Rail NH-T2 in Permanent Alignment... Washignton St. Bridge North/South Abutment... Washington St. Bridge North/South Abutment... Washington St. Bridge Open to traffic Season 1 Washington St. Bridge North/South Abutment... Washington St. Bridge Girders/Deck Stage 4 Washington St. Bridge Approach Slab Stage 4 Systems Installation / Testing Segment 3 Systems Integration Testing SIT- Phase I (Branch... Notice of Milestone 3a - Submit to MBTA for... Milestone 3A: New Green Line Branch Two... Milestone 3B: New Green Line Branch Two DB... Milestone 3C: New Green Line Branch Two Open...







#### **Discussion**



