CONSTRUCTION CONTRACT TIME DETERMINATION (CTD)

GUIDELINES FOR DESIGNERS/PLANNERS

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CONTENT

1 CONTRACT TIME DETERMINATION GUIDLINE SUMMARY

The development of a Contract Time Determination Schedule has many important considerations beyond just generating a suitable contract duration.

The CTD is used to:

- *Improve the accuracy of bid price projections.*
- *Adequately plan for the interactions of third-party utilities (that have often caused claims/delays in the past).*
- *Establish reasonable Contract Milestones*
- *Better plan the sequencing and traffic considerations.*
- *Properly plan for the many various types of restrictions associated with construction operations.*
- *Properly communicate vital work restrictions to formulate the contractors bid price.*
- *Can be used to perform a more thorough review of the Contractor's Baseline Schedule submission.*
- *Can help MassDOT plan its own forces, priorities, and improve programmatic cash demand projections.*
- *To help MassDOT Construction adjust to changes during construction*
- *Can be used to prepare proactive recovery /acceleration plans during changes/delays during construction.*
- *Can be used to help defend against unwarranted/justified time extension requests from the contractor.*
- *Improve the ability to evaluate the Designer's ability to prepare well planned construction documents.*
- *While developing the CTD, the Scheduler of Record should identify potential constructability concerns, such as access and/or utility constraints. These concerns should be identified in the Narrative, as well as the assumptions that were made in the development of the schedule so that they can be resolved prior to bidding the work.*

In an effort to help the Designers provide consistent and accurate contract durations and milestones, MassDOT has created this tool kit for the designers use to develop a Contract Time Determination deliverable. In general, this guideline that follows is required for most site specific Design-Bid-Build (DBB) projects and all Design-Build (DB) projects. – CTD submissions for DBB Projects are required at the 75% Design Submission, 100% Submission, and updated as required by the MassDOT, as part of the PS&E submission. Note - A *simplified/conceptual CTD* may be requested at the 25% DBB submission and is explained in ***Attachment F***.

For Design-Build projects, the CTD is required at the 25% submission and is to be updated as required by the MassDOT Project Manager prior to RFP Advertisement. See Designer Work-Hour Form and Project Manager for variations of when one is required.

CTD Tool-Kit Summary:

- ✓ Guideline for a Contract Time Determination (CTD) schedule development (below)
- ✓ CTD Schedule template for Primavera or "shell project" (.xer) – (https://www.mass.gov/info-details/massdot-highway-contractors-schedule-toolkit#primavera-software-downloads-)
- ✓ Sample of the Limitations of Operations (Special Provision 8.03) that the Designer will be responsible to prepare and update (below + Attachment D)
- ✓ Sample Limitations of Operations, Access Restraints, and Milestones (below + Attachments B & C)
- ✓ Sample construction work 'calendar' restrictions (below and Attachment A)
- ✓ Sample CTD narrative (Attachment G)
- ✓ Sample CTD (at 25%) – simple / conceptual (Attachment F)
- ✓ Sample CTD (at 75% or 100%) – detailed (Attachment I)

- ✓ Sample Design-Build CTD with Procurement steps (Attachment J)
- ✓ MassDOT CTD Checklist (Attachment H)

Related Tools Summary:

- ✓ Incentive/Disincentive Procedure, checklist and example (Attachment E)
- ✓ Bottom-up (production based) Construction Cost Estimate (linked to A Guide to Estimating Highway Projects Designer Tool-Kit)

1.1 GUIDANCE DISCLAIMER

The intent of the Contract Time Determination (CTD) toolkit is to assist designers when creating a construction Contract Time Determination Schedule; primarily eliminating a need to create standardized coding, reporting, formatting and to assist in the general schedule set up. The activity coding listed in this CTD toolkit is based on current requirements and is subject to change. The Designer/Scheduler is advised to check the MassDOT website, for updated templates, prior to starting each required CTD deliverable.

The CTD Toolkit is being provided for informational purposes and is available for use as a schedule development guideline only. The CTD Toolkit may not reflect specific project requirements and it is not guaranteed to be free from errors or inconsistencies. MassDOT makes no representations or warranties of any kind, express or implied, about the accuracy, reliability, or completeness with respect to the toolkit or any of the information, services, or related content contained therein for any purpose.

Note - It is the Designer's responsibility to ensure that the CTD schedule reflects the project scope, planned sequence of work, in accordance with the latest contract requirements, and that the design provided is buildable within the specified contract duration.

1.2 GENERAL

Contract Time Determination (CTD) is a procedure for determining the planned duration of construction contracts for placement in bid documents and documenting all time related aspects of the project planning that must be communicated to the bidders as an important basis. A major requirement of the CTD planning is to first start with an experienced construction planner/scheduler (5+ years in construction planning/scheduling), working with the Designer Project Manager/team, in the development of all aspects of sequencing, planning, and constructability.

This CTD deliverable will be evaluated, by MassDOT, as an important component of the Designer's overall design performance rating at the outcome of construction. In general, the CTD schedule must be performed in a way that:

- ✓ allows the contractor sufficient time to complete the project,
- ✓ is to be based upon at least one reasonable/constructible solution,
- ✓ minimizes any inconvenience to the traveling public,
- ✓ utilizes any valuable information that has been developed in the planning of the engineer's estimate (if applicable),

- ✓ takes into account all known limitations of construction operations that the contractor will need to be made aware as part of the bid documents (as prepared by the Designer with the MassDOT Standards as only the starting basis of specific project requirements),
- ✓ considers/conveys any unusual circumstances (specific location), that impact the time related aspects of the construction.

As part of the Contract Time Determination, the Designer will also:

- ✓ evaluate any special situations that might affect the duration of the project, such as unique site conditions, sensitive abutters, time of year restrictions (such as Cape Cod traffic restrictions and environmental restrictions for in-water work), other construction projects being performed in the area, either public or private, current detours, material restrictions (such as HMA paving, waterproofing, and curing), along with upcoming local public events,
- ✓ consider contractor *means and methods,* for key items of work, for at least one constructible plan,
- ✓ utilized the latest available Plans Specifications and Estimate,
- ✓ utilize the experience and professional judgment of the construction planner/scheduler (note: this CTD deliverable is a Designer responsibility – not exclusively a sub-consultants),
- ✓ check with the MassDOT PM to see if contractor incentives/disincentives will be offered,
- ✓ utilize the latest Project Utility Coordination form (PUC),
- ✓ develop a draft/proposed "Limitations of Operations" Section to define the specific Time related requirements that the contractors will need to work with (including any special restrictions like working within or around an active railroad) – See ***Attachment D*** for example of Limitations of Operations

For best results, the CTD is to be prepared using the ***Critical Path Method (CPM)*** scheduling technique to properly evaluate the reasonableness and accuracy of the overall construction plan.

1.3 SUMMARY OF IMPORTANT WORK-HOUR RESTRICTION CONSIDERATIONS

In some cases (when the roadway or bridge construction will not impede the traveling public greatly), the CTD will be based on the contractor working a normal 8-hour per day, 5-day work week (Monday thru Friday), and will contain provisions for a winter shut-down for any weather dependent work. However, many of MassDOT projects now are being planned to progress work in the winter and may require heat/weather protection and extended/accelerated shifts to minimize the impact to the public. Therefore, an alternative CTD may be planned to evaluate these production hour considerations. In these cases, two separate CTDs are to be prepared and presented to MassDOT for consideration (as negotiated in the updated Work Hour forms for the Designer) – or the MassDOT PM may direct the Designer to prepare only the accelerated version. In which case, concurrence must be obtained by the PM and the Special Provision must stipulate what the resulting work-hour/shift expectations are of the Contractor (as a basis of the bid price).

In cases where this MassDOT concurrence has been obtained, the working hours must be clearly stated in the Special Provision for ***8.06 Limitations of Operations*** and/or ***8.03 Prosecution of Work***:

SUBSECTION 8.03 Prosecution of Work

"Add/Amend the following at the end of the Section:

{This should be ahead of the Contractual and Interim Milestones}

The Contractor is hereby notified that winter work is expected for this project and has been taken into account in setting the completion date for the contract. Items of work that are expected to continue through the winter include, but are not limited to, the following: ***{Designer to insert specific work elements, e.g. closure pours; setting and grouting of precast elements; setting of prefabricated elements: etc.}***. If the work to be performed during the winter includes concrete or mortar, the relevant provisions of Section 901.72 shall be followed. Any costs, either direct costs or resulting from inefficiencies, related to continuing work in the winter shall be included in the contractor's bid and shall not be cause for a claim for a time extension or additional compensation

SUBSECTION 8.10 Determination and Extension of Contract Time for Completion

Add/Amend the following at the end of the Sections 8.10.B.4 and 8.10.C.5:

No additional time will be added to the Completion Date for work that is expected to be performed between Dec. 1 and Mar.15. Refer to Subsection 8.03 for work that is expected to be performed during this time period."

Other, non-weather related situations, requiring similar Special Provisions, include restrictions during peak hours on heavily traveled highways, night paving operations, and special requirements by sensitive abutters, railroads and/or other agencies. Typical examples of situations requiring special consideration include restrictions during peak hours on heavily travelled highways, night paving operations, and special requirements by sensitive abutters, specific temperature or moisture limits for specific materials/applications, railroads and/or other agencies. Typical examples of other working hours include night work, additional shifts per workday, extended shifts, and/or extended workweeks.

Note – If modified 8.03 is approved by MassDOT (as detailed above) and/or work is expected to be planned on during non-standard 40 hour work weeks, the Designer should be certain to eliminate/modify Subsection 7.09 accordingly.

SUBSECTION 7.09 Public Safety and Convenience.
(page 27) Add the following paragraph above the 2nd paragraph from the bottom:

Work is restricted to a normal 8-hour day, 5-day week, with the Prime Contractor and all Subcontractors working on the same shift. No work shall be done on Saturdays, Sundays, holidays, or the day before or after a holiday without prior approval of the Engineer.

See ***Attachment A*** for additional 'calendar' work restriction considerations.

1.4 CTD DEVELOPMENT PROCESS – GUIDELINE FOR DESIGN TEAM

The general procedure to develop a computerized Contract Time Determination Schedule is as following:

1. ***Designer's Project Manager*** **-** Initiate start of the CTD evaluation. Gather/transmit all relevant/ latest set plans and specs, any pertinent information and meet with the Designer's Construction Planner/Scheduler to review key project considerations, approach, and the CTD deliverable time table.
2. ***Designer's Construction Planner/Scheduler*** - Attend meetings related to planning, staging, constructability and or options to be evaluated.
3. ***Designer's Project Manager*** - Seek guidance/concurrence from the MassDOT PM regarding the plan to evaluate and obtain unusual site considerations (as developed by the Designer's team) – including the utility site evaluation meeting as part of Engineering Directive E-07-002.
4. ***Designer's Project Manager*** -Request the latest Project Utility Coordination (PUC) Form from the MassDOT District Utility Constructability Engineer (if applicable).
5. ***Designer's Project Manager*** **-** Seek confirmation, from the MassDOT PM, that contractor incentives/disincentives will (or will not) be offered (requiring special language and evaluations related to contract time). See I/D procedure and check-list.
6. ***Designer's Construction Planner/Scheduler*** -Perform a thorough review of the plans and specifications and utility considerations (PUC) with special emphasis on staging and maintenance of traffic, sequencing, and constructability, to gain an overall understanding of the key time related aspects of the project.
    1. Attend site meeting to evaluate utilities considerations, construction staging considerations, and other applicable work restrictions.
    2. Refine any required construction sequences.
    3. Review the Specifications and Special Provisions and take note of any time related, or sequence related items.
    4. Review the Cost Estimate for applicable quantities, shift premiums, and/or production rates for key items of work are noted for time related considerations. And, ensure that the cost estimate has been updated to reflect the latest plans, specifications, and requirements.
    5. Outline any other time related project issues or needs that will be part of the CTD narrative and Special Provisions to alert contractors.
7. ***Designer's Construction Planner/Scheduler*** -Create the CTD Schedule for the entire project and prepare graphic to present logic, sequence, durations, work-hour restrictions, etc.
8. ***Designer's Construction Planner/Scheduler*** -Develop a narrative (similar to a Contractor Baseline – as shown on the MassDOT Web-site Construction Contractor Tool-Kit --- MassDOT Highway contractor's schedule toolkit | Mass.gov) to adequately describe the basis of the schedule.
9. ***Designer's Construction Planner/Scheduler*** - Generate/record any comments or suggestions related to concerns or opportunities related to constructability, sequencing of the work, quantities, specifications, estimates, permits, Right of Way, Maintenance of Traffic, and/or any other assumptions used to make the Determination, and any other information that is deemed necessary to justify the duration. Include comments in the Narrative and transmit comments to Designer Project Manager.
10. ***Designer's Construction Planner/Scheduler & Designer's PM*** - Present to key members of the design team for concurrence to the basis and assumptions.
11. ***Designer's Construction Planner/Scheduler & Designer's PM*** **-** Check to make sure that the overall schedule appears to be reasonable, there are no obvious errors or mistakes in logic, (i.e., paving not being

performed in the middle of January), and that the Project Duration and Construction Contract Completion Date also appear to be reasonable

12. ***Designer's Construction Planner/Scheduler & Designer's PM -*** Modify the CTD and the Narrative accordingly.
13. ***Designer's Construction Planner/Scheduler & Designer's PM -*** Develop a draft Special Provision for all time related restrictions/considerations, access restraints and milestones that must be conveyed to the bidders.
14. ***Designer's Construction Planner/Scheduler -*** Finalize the deliverable package and obtain the Designer Project Manager signature (review)/ concurrence.
15. ***Designer Project Manager*** – Transmit to the MassDOT Project Manager and schedule a meeting to review (as desired by MassDOT PM).
16. ***Designer Project Manager*** –Offer to schedule a meeting with the MassDOT Project Manager to present the CTD, Narrative, and Special Provisions to the MassDOT.
17. ***MassDOT Project Manager*** – Distributes to MassDOT reviewers.
18. ***Designer's Construction Planner/Scheduler & Designer PM -*** Modify and update accordingly (with comments incorporated or responded to from MassDOT reviewers)
19. ***Designer's Construction Planner/Scheduler & Designer PM -*** Check to make sure that the overall schedule appears to be reasonable, there are no obvious errors or mistakes in logic, (i.e., paving not being performed in the middle of January), and that the Project Duration and Construction Contract Completion Date also appear to be reasonable

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20. *REPEAT FOR NEXT SUBMISSION PHASE*

    Designer's Construction Planner/Scheduler & Designer PM - Update CTD, Narrative, and Special Provisions as part of the next Design Phase Submission accordingly – with particular attention on changes, issues that were added (like a new utility on the PUC form), and/or design development that impacts the planned approach and special considerations that the contractor/bidders should be aware of.

1.5 CTD ORGANIZATION GUIDE – FOR DESIGNER'S PLANNER/SCHEDULER

The process for developing the Schedule and determining the Project Duration is as follows:

1. **Create a Work Breakdown Structure (WBS)** for the Project: Create a sequence of operations by breaking the project down into phase or time-related groups of operations that are compatible with the designer's suggested method of construction contained in the documents. For a CTD, the WBS should at a minimum, break down the work into the levels of detail shown on the sequencing steps within the staging plans. It should also correlate to the Engineer's Estimate for separate types of work and types operations. In most cases the WBS will have one of the following formats:

WBS Code	WBS Name
CSTv2.0	CSTv2.0
CSTv2.0.Mil	Milestones
CSTv2.0.Mil.Gene	General
CSTv2.0.Mil.Dura	Durations
CSTv2.0.Wid	Project Wide
CSTv2.0.Pre	Preconstruction
CSTv2.0.Pre.Prm	Permitting
CSTv2.0.Pre.Pro	Submittals & Procurements
CSTv2.0.Pre.Pro.8.01	Subsection 8.01: Subcontractor Approvals
CSTv2.0.Pre.Pro.8.01.SitePro	Licensed Site Professional
CSTv2.0.Pre.Pro.8.01.StrucClean	Structure Cleaning Subcontractor
CSTv2.0.Pre.Pro.8.01.Elec	Electrical Subcontractor
CSTv2.0.Pre.Pro.8.01.BrdDemo	Bridge Demolition Subcontractor
CSTv2.0.Pre.Pro.100	Item 100: Schedule of Operations
CSTv2.0.Pre.Pro.114.1	Item 114.1: Demolition of Superstructure
CSTv2.0.Pre.Pro.119.5	Item 119.5: Construction Noise Control
CSTv2.0.Pre.Pro.149.2	Item 149.2: Public Outreach
CSTv2.0.Pre.Pro.180.01	Item 180.01: Environmental Health & Safety Program
CSTv2.0.Pre.Pro.220	Items 220.x: Drainage Structures
CSTv2.0.Pre.Pro.701.47	Item 701.47: Winter Concrete Plan
CSTv2.0.Pre.Pro.701.61	Item 701.61: Contractor Quality Control Plan
CSTv2.0.Pre.Pro.756	Item 756: Stormwater Water Protection Plan
CSTv2.0.Pre.Pro.850	Items 850.x: Traffic Control for Construction and Maint Operations
CSTv2.0.Pre.Pro.991.1	Item 991.1: Control of Water
CSTv2.0.Pre.Pro.995.01	Item 995.01: Bridge
CSTv2.0.Pre.Pro.995.01.SEP	Steel Erection Procedure
CSTv2.0.Pre.Pro.995.01.901	SubItem 901: 4000 PSI 1.5 in., 565 Cement Concrete
CSTv2.0.Pre.Pro.995.01.960.01	SubItem 960.01: Structural Steel - Coated Steel
CSTv2.0.Pre.Pro.995.01.975.1	SubItem 975.1: Metal Bridge Railing (3 Rail), Steel (Type S3-TL4)
CSTv2.0.Pre.Pro.995.01.PD	Precast Decks
CSTv2.0.Pre.Pro.TPD	Temporary Pavement Design
CSTv2.0.Uti	Utility
CSTv2.0.Uti.URP	Utility Relocation & Coordination Plan
CSTv2.0.Uti.Not	Utility Notifications & Meetings
CSTv2.0.Uti.Rel	Utility Relocation
CSTv2.0.Uti.Rel.1	Utility 1 PUC Tasks

WBS Code	WBS Name
CSTv2.0.Uti.Rel.2	Utility 2 PUC Tasks
CSTv2.0.Uti.Rel.3	Utility 3 PUC Tasks
CSTv2.0.Uti.Rel.4	Utility 4 PUC Tasks
CSTv2.0.Uti.SCONN	Utility Service Connections
CSTv2.0.Con	Construction
CSTv2.0.Con.Gene	General
CSTv2.0.Con.Mobi	Start-up
CSTv2.0.Con.Ph1	Stage 1
CSTv2.0.Con.Ph1.StpA	Step A
CSTv2.0.Con.Ph1.StpB	Step B
CSTv2.0.Con.Ph1.StpC	Step C
CSTv2.0.Con.Ph1.StpD	Step D
CSTv2.0.Con.Ph2	Stage 2
CSTv2.0.Con.Ph2.StpA	Step A
CSTv2.0.Con.Ph2.StpB	Step B
CSTv2.0.Con.Ph2.StpC	Step C
CSTv2.0.Con.Ph2.StpD	Step D
CSTv2.0.Con.Ph3	Stage 3
CSTv2.0.Con.Ph3.StpA	Step A
CSTv2.0.Con.Ph3.StpB	Step B
CSTv2.0.Con.Ph3.StpC	Step C
CSTv2.0.Con.Ph3.StpD	Step D
CSTv2.0.Con.Ph4	Stage 4
CSTv2.0.Con.Ph4.StpA	Step A
CSTv2.0.Con.Ph4.StpB	Step B
CSTv2.0.Con.Ph4.StpC	Step C
CSTv2.0.Con.Ph4.StpD	Step D
CSTv2.0.Con.Ph5	Stage 5
CSTv2.0.Con.Ph5.StpA	Step A
CSTv2.0.Con.Ph5.StpB	Step B
CSTv2.0.Con.Ph5.StpC	Step C
CSTv2.0.Con.Ph5.StpD	Step D
CSTv2.0.Clo	Close-Out
CSTv2.0.Pla	Placeholder
CSTv2.0.Deleted	Deleted Activities

Activity Codes: Activity codes should be assigned to activities in order to be able to sort them other than by the Work Breakdown Structure (WBS) code. And the Activity codes should be assigned at the Project Level (within Primavera).

2. **Assign Durations:** In general, CTD activities should planned in a manner that allows for activity durations to be no less than 3 days and no greater than 30 days, to ensure that proper logic, sequencing and critical paths, are developed and maintained as the CTD is finalized. Once the individual activities are identified, the Planner/Scheduler is to determine the duration of each activity based with some of the following considerations:

- If applicable (i.e. a *Bottom Up Estimate* – or production based estimate has been provided), the Planner/Scheduler should review the crew basis and/or production rates used in the Engineer's Estimate). https://www.mass.gov/doc/controls-guidelines-production-based-construction-cost-estimate-bottom-up/download A Guide to Estimating Highway Projects
- Estimated quantities contained in the Engineer's Estimate
- Comparison of critical operations of recently completed similar projects
- The Design Team's professional judgment and experience
- Construction Estimating Guides and Published Documents (i.e. RS Means etc.) and/or any other data, information that help determine the time required to complete various activities.
- A normal, eight (8) hour per day, five (5)-day work week, unless there are special considerations to justify other working hours – see Special Provision 8.03 and other sections related to extended shift basis.
- Submittal review time should not be less than 30 days.
- For planning purposes, it is advisable to also generate revise and resubmit activities for submittals on the critical path. This consists of one 10 day activity to 'Revise & Resubmit Submittal – by Contractor' and another 20 day activity to "Re-Review and approve – by MassDOT."
- For complicated submittals, 60 days can be used, but the extended review time should be noted in the Special Provisions.
- Long lead items should be identified and the time assumed should be used. It should be noted in the narrative if the lead time came from a vendor, or if it is based upon the Designer's judgment.

3. **Assign Work Calendars:** For each activity, either select an existing calendar, one that matches all the required non-work days in the project, or, if an existing one does not match the project's requirements, create and use a new, project-specific calendar. The new work calendars should be created to match any contract requirements and what has been delineated as the basis of work in the requirements, estimate, and schedule. Operations may be limited by seasonal weather restrictions, seasonal water access restrictions (i.e. fish migration), landscaping restrictions etc. See section on Calendars elsewhere.

4. **Determine Logic Relationships between activities:** The Planner/Scheduler is to identify and apply logic between the activities in the schedule to represent the intent of the staging plans, required work sequences and any assumptions that the Engineer has made in the basis of Estimate. The Planner/Scheduler is to be sure to include activities for early post NTP activities such as office trailer set-up, preconstruction meeting, and early submittals whose approval is required prior to start of work. Ensure that each activity, excluding NTP and Field Completion, has at least one predecessor and one successor and there are no '*open ends.*'

5. **Apply Access Restraints and Milestones.** The CTD is also used to adequately plan for significant changes during the design and procurement phases to best anticipate consequential impacts related to possible calendar/work restriction impacts. A project with two seasons may turn into three construction seasons if the bid opening slips just a few weeks. The Planner/Scheduler is to prepare the CTD with consideration to the advertising date and bid opening date. A constraint is to be assigned to the anticipated NTP date, and for any other required Milestones or Access Restraints. Add project events such as the Advertising Date, the Bid Opening Date, the Award Date, the NTP Date (based on the CTD Guidance Grid below), and the Pre-Construction meeting, which should be scheduled within 30 days of NTP issuance. The Scheduler

Planner should also be certain to add activities (calculated from NTP) for the Full Beneficial Use milestone, Substantial Completion milestone, and the Field Completion milestones. Constraints should only be used to hold contractual dates, such as Access Restraints and Milestones. See Access Restraints and Milestone in ***Attachment C&D*** below.

CTD Guidance

Project Criteria	Advertisement to NTP Duration
Design-Build Projects (RFP to NTP)	180-220 Days
Office Estimate >$15M or Municipal Design	120 Days
Office Estimate <$15M and MassDOT Design	90 Days

6. **Consider key Resources/Restrictions.** As part of the CTD basis, the major resources that make up the bulk of the work should be considered in the evaluations critical activities in the schedule, for example placement and movement of heavy equipment to and around the site.

7. **Calculate and Review the Schedule**. After logic has been applied, the Planner/Scheduler should calculate the schedule and review the Critical Path. Critical Path Method (CPM) calculations result in start times, finish times and float calculations of the activities. A resulting Bar Chart should be developed to show work will be performed and the duration of each activity, and will be a representation of the entire project. Once the Schedule is calculated, a more accurate check can be made to make sure that the overall schedule appears to be reasonable, there are no obvious errors or mistakes in logic (i.e. paving not being performed in the middle of January), and that the Project Duration and Construction Contract Completion Date also appear to be reasonable. Special care should be taken regarding the final dates calculated for the finish Milestones, especially consider what the results would be if project advertisement or Notice-to-Proceed issuance were to be delayed by, 30 days or 60 days for example, and the logical effect on the Milestone dates. Does it push past another winter season? Does final landscaping fall into a restricted planting season? Special care should also be taken on the closeout of the Project, and whether Punchlist Items generated after declaration of Substantial Completion can be performed in that time period, or may slip to the following spring construction season. A grid, similar to the one shown here, should be included in the Narrative showing the effects of various procurement durations in relation to advertisement.

[PROJECT NAME]		NTP ADV + 90days		NTP ADV + 120days		NTP ADV + 150days		NTP ADV + 180days	
Milestone	Milestone Description	Date	Days from NTP	Date	Days from NTP	Date	Days from NTP	Date	Days from NTP
ADV	Advertisement	10/28/2024		10/28/2024		10/28/2024		10/28/2024	
NTP	Notice to Proceed	1/26/2025		2/25/2025		3/27/2025		4/26/2025	
MS03	Full Beneficial Use	6/11/2028	1,232	8/14/2028	1,266	10/6/2028	1,289	10/6/2028	1,259
MS02	Substantial Completion	7/8/2028	1,259	9/14/2028	1,297	11/3/2028	1,317	11/3/2028	1,287
MS01	Contractor Field Completion	8/22/2028	1,304	10/29/2028	1,342	12/18/2028	1,362	12/18/2028	1,332

8. Once the Project Schedule is Calculated and Reviewed, a written Narrative is required for all CTDs. See example CTD narrative in ***Attachment G***.

9. Review/complete the Contract Time Determination Checklist – See Section ***Attachment H*** below.

10. Prepare a Determination Memo providing the project duration and file the Determination documentation in the appropriate contract file. Based on the calculated schedule, an interoffice Memorandum should be prepared by the Designer that contains the information listed below:

    - Project Duration
    - Construction Contract Completion Date
    - If one-hundred and twenty (120) calendar Days were not used, list the estimated number of days assumed to elapse between the Advertisement Date and NTP, as the basis for the Construction Contract Time Determination. If the Advertisement Date is delayed by more than thirty (30) Calendar Days, an updated Construction Time Determination will be required
    - Contractor prequalification type obtained from MassDOT's Definitions of Classes of Work

1.6 OTHER IMPORTANT FACTORS

There are many factors which must be considered while preparing the CTD Schedule. It will be the Designer's responsibility to determine which factors apply and are most relevant to the specific project. Listed below are typical factors which must be given consideration.

1. **Utilities:** Planning and coordination with third party utilities is very important in avoiding delays. MassDOT has a new section 8.14 Utility Coordination Specification for contractors to utilize for Utility Coordination. The Planner/Scheduler should review this specification, insert activities for pre-con and utility coordination meetings to occur with 30-days NTP issuance, and should be certain that a PUC form has been provided by the District Utility/Constructability Engineer (DUCE). This PUC form depicts the planned duration and sequence as a result of MassDOT/Designer planning during design. This PUC form also serves as one of the most important baseline schedule basis documents prior to bid and into construction. Careful consideration must be given to which utilities have to be relocated and the sequence of those relocations. Often the contractor has to do certain enabling work before a utility is able to relocate, which may result in delay to the contractor if this work is not included in the Project Schedule. All necessary utility force accounts and/or other agreements must either be in place prior to the creation of the Project Schedule or sufficient time, as determined by either the PM or the DUCE, must be allowed in the schedule for their formulation.

2. **Seasonal Limitations:** Seasonal limitations for landscaping work (seeding, planting trees, shrubs, and ground cover) must be considered and scheduled so that, for example, the Contract Completion Date does not occur in March (see Winter Work), thereby allowing no time for the Contractor to do this work, which, typically, occurs at the end of a project. There may be other restrictions for various reasons as well, such as; paving and striping that need similar consideration in their scheduling. These restrictions must appear in the Special Provisions. See example 8.03 for expectation for working through winter on most MassDOT projects with significant user volume – ***Attachment A, B, and C.***

3. **Maintenance of Traffic (MOT):** The sequence of operations may be directly affected by the traffic pattern unique to a project. When detours are involved, their complexity and availability require careful study. Frequently, time restrictions are placed on the contractor in the specifications to keep off the traveled way during heavy commuting hours and the Traffic Management Plan (TMP) contained in the Contract drawings often dictates the number of phases in a project. Each CTD should contain the shortest practical duration of traffic interruptions during project construction. Therefore, MOT requirements must be carefully considered during the development of the CTD.

4. **Curing Time:** The effect on the Project Schedule of concrete curing time, waiting periods between successive paving courses or between concrete placement operations, as well as specified embankment settlement periods, must be considered.

5. **Winter Work:** Construction projects shall not be scheduled to automatically include a December 1 to March 15 shutdown period, because there are many work activities that can proceed during this time. Different calendars need to be used to properly account for certain activities non-work periods and to help monitor changes/impacts as the project evolves. See ***Attachment A, B, and C.***

6. **Adjacent Contracts:** Conflicting operations of adjacent projects, both public and private, must be considered. Coordination of two or more construction projects in the same area can have an effect on the Project Schedule. Any restrictions assumed in the schedule must be clearly described in the Special Provisions of all affected contracts.

7. **Submittal Review Periods:** Review time for demolition procedures, shop drawings, erection procedures, and other submittals must be taken into account. Typically, these reviews are scheduled at one Calendar Month per submittal. Utilities and railroads will require more time and should be scheduled for a minimum of sixty (60) Calendar Days. As a rule of thumb, periods of between thirty (30) and sixty (60) Calendar Days prior to the start of construction should be included in the schedule for this work. For larger contracts, major submittals should be shown as occurring within the contract period, but at a reasonable amount of time before work starts.

8. **Fabrication Time:** Time for fabrication of structural steel, precast concrete units, traffic signal equipment, and other items must be taken into account. This work must be given careful consideration in the Project Schedule. Project Schedules typically require that orders be placed soon after Contract Award, but fabrication time must follow shop drawing approval in the schedule.

9. **Railroads:** All Railroads have strict rules for working along and over their Right-of-Way. Most of them require that no construction operations progress when there is any potential of fouling the track. Coordination with railroads is very important and the specific rules of working along specific rail road sites needs to be clearly communicated to the bidders and documented with the rail road. Careful consideration must be given to the sequence of the work required with regard to the railroad's allowable track fouling time windows. Often the contractor has to perform certain work before the railroad work, which may result in delay to the contractor if this work is not included in the Project Schedule. All necessary railroad force accounts and/or other agreements must either be in place prior to the finalization of the CTD, as determined by either the PM or the DUCE, and must be explained in the Special Provisions. See ***Attachment D.***

10. **Permits:** Certain permits may be required. The time required to obtain such permits will vary depending on the nature of the permit and the authority granting the permit. Sufficient time, as determined by either the PM or the DUCE and included in the Special Provisions, should be allotted for this process, although in many instances it will coincide with other operations that can be performed. Any impacts to the Project Schedule must be determined and quantified in the schedule.

11. **ROW:** Right-of-Way (ROW) must be established, if required, by the PM. The time needed to obtain such ROW will vary depending on the nature of the land-taking, easement, and/or right(s)-of-entry involved and the individual landowner(s) of the property in question. If not already completed by the time of the Determination request, the PM should determine and provide to the DUCE the amount of time that should be allotted for this process, although in many instances it will coincide with other operations that can be performed. Requirements for the Contractor to obtain ROW or the expected times for MassDOT to do so must be clearly defined in the Special Provisions.

12. **Night Work:** Certain projects such as resurfacing of heavily traveled highways have provisions for night work only. Contract provisions may restrict the contractor to less than a full eight (8) hours of work per night. With the use of temporary lighting set-ups, traffic operating under revised and/or temporary traffic control devices and lane restrictions, and other restrictions peculiar to night work, production rates are generally less than daytime operations and must be given careful consideration in determining project durations.

13. **Punchlist/Close-Out:** The CTD should detail the post-Substantial Completion declaration project close-out phase, including scheduling and performing a Substantial Completion walk-through and generation of punchlist items by MassDOT (21 days) , contractor resolution of punchlist items (30 days per 722.61.B.18), and receipt of all Material Certifications, prior to Contractor Field Completion.

The previous information is intended as guidance only. Each project is different and contains its own unique set of circumstances that may not be covered by this information. Care should be exercised in the creation of the Project Schedule to ensure that each project's unique requirements and schedule impacts are captured

2 TOOLKIT COMPONENTS

2.1 SCHEDULE FILE

This schedule templates (Design-Bid-Build & Design-Build) were created in Primavera P6 release 20 and were designed to aid the Designer prepare a Contract Time Determination Schedule to determine the project's duration. The templates include standard resources IDs, project and activity codes, WBS organization, work calendars, and standard layouts. In order to use the templates, the Designer will need to save the .xer file to the scheduler's local drive, open Primavera and import the file.

MassDOT Highway contractor's schedule toolkit | Mass.gov

2.2 PRIMAVERA SCHEDULE SETTINGS

The template has been developed using the following schedule calculation settings.

Scheduling Method = Retained Logic
This is the normal method for predicting status with out-of sequence progress.

Schedule Method = Contiguous Activities
This is also the standard setting in Primavera and is intended for use on non-interruptible activities.

Total Float Calculations = Uses finish dates to calculate Total Float
Standardizing this setting across all ABP projects will provide consistency to our reporting.

2.3 CALENDARS

Calendars Provided --- See *Attachment A*
Work calendars should adhere to the project Specifications. The template has been developed with several Calendars that comply with the specifications and correctly describe the work restrictions.
Please ensure that each activity in the schedule is assigned to a calendar that is appropriate for the work type.

Calendars should be maintained at the Project Level *(on the Primavera setting – i.e. not global)*

2.4 MASS DOT STANDARD MILESTONES – CSD-084

Standard Contract Milestones
MassDOT uses the following Contract Milestones for all site-specific Highway and Roadway Bridge Projects (including Design Build). These Milestones are subject to change in 2014 – therefore, the Designer is advised to check the MassDOT web-site before starting each CTD.

The Designer is instructed to use these definitions or as modified by MassDOT standards for contract Milestones.

MS#3 – FULL BENEFICIAL USE – The majority of contract Work has been completed and the asset(s) has been opened for full multi-modal transportation use, except for limited contract work items that do not materially impair or hinder the intended public use of the transportation facility. All anticipated lane takings have been completed, except for minor, short term work items.

MS#2 – SUBSTANTIAL COMPLETION – A walkthrough of the entire contract Work has been performed by the Resident Engineer. A Punch List has been generated and the Work required by contract, including paper work, has been completed, except for work having a contract price of less than one percent of the adjusted total contract price, including overruns underruns and all contract amendments. All material submittals have been received by the District Materials Lab.

MS#1 – CONTRACT FIELD COMPLETION - All physical contract Work is complete including the punchlist. The Contractor has fully de-mobilized from the field operations.

The milestones listed below should adhere to the following naming convention. These milestones have been created within the CTD template MassDOT Highway contractor's schedule toolkit | Mass.gov .

Milestone

Milestone Identifier	Milestone Activity Description	Example
NTP	Notice to Proceed	NTP – Notice to Proceed
AR01	Access restraint for start of demolition to allow for utility relocations	AR01 – Access Restraint #1 (Aerial Utilities) or AR02 – Access Restraint #2 (In Bridge Utilities)
MS03	Full Beneficial Use	MS03 – Full Beneficial Use
MS02	Substantial Completion	MS02 – Substantial Completion
MS01	Contractor Field Completion	MS01– Contractor Field Completion
MSXX	Other Interim Milestones as defined by need (such as significant phasing and incentives)	MSXX – Phase 2 Completion

There should be no successor activities to Final Completion Milestones. If the Project asks for contractual completion dates for each, then the activities should be assigned a "finish on or before" constraint of the contract date.

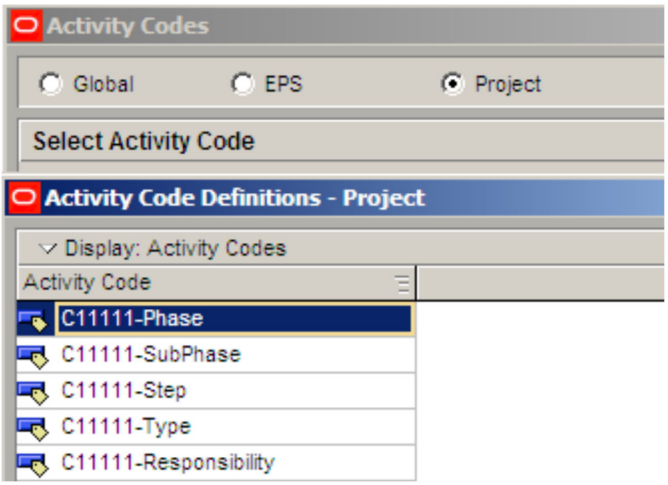
2.5 ACTIVITY CODES AND SETTINGS

Activity Codes

Activity codes can be assigned to activities in order to be able to sort them other than by the Work Breakdown Structure (WBS) code. See CTD Tool Kit.

Listed below are some suggested activity code fields.

The activity codes should be maintained at the Project Level.



Additional activity code (or WBS coding) may be added and utilized at the contractor's discretion.

WBS Structure

The WBS structure shown below was created within the project to allow for additional means to organize the CTD schedule. Additional WBS detail may be added and utilized at the Designer's discretion. See CTD Tool-Kit

2.6 NARRATIVE

Once the schedule is calculated and reviewed a written Narrative is required for all CTDs.
The narrative should expand upon what is contained in the Basis of Estimate and explain all elements of the schedule, any assumptions made by the Designer and with special attention to the critical path, and near critical paths. See Attachment below example CTD Narrative.

The narrative should expand upon what is contained in the Basis of Estimate (if applicable) and explain all elements of the schedule, with special attention to the critical path, and near critical paths. The narrative should include the following.

- Discuss the Designer's site management plan (i.e. lay down, staging, traffic, parking etc.)
- Describe the Designer's overall planned approach and the resulting description of the critical path.
- Describe the basis of any and all significant resource issues.
- Identify any significant risks that MassDOT Construction should be made aware of.
- Provide a summary of the basis and assumptions for critical activity durations and logic.
- Confirm that a complete PUC form was provided to the Scheduler and used as the basis.
    - Note even if there are no utilities impacts, a signed PUC form is required stating N/A
- Summarize all of the Access Restraints and Milestones.
- Confirm compliance with winter weather requirements and other work-restrictions.
- Explanation of the use of Calendars.
- Explain how limitations of operations were incorporated into the Schedule – and provide draft language for the Special Provisions (as required).

- Explain any work that must take place outside of normal work hours.
- Explain any schedule compression/acceleration that was used to achieve any required dates.
- Identify any constructability considerations that the Design team should address.
- Explain any options that were considered
- Identify any other important time related considerations
- If this CTD is an update of a previous submission, confirm review comments have been addressed and describe all significant changes that have been included.

*See **Attachment G for Example Narrative***

ATTACHMENT A

IMPORTANT WORK RESTRICTIONS

DEVELOPED FOR ***CONSTRUCTION PLANNING***

DURING THE ***DESIGN PHASE***

REV3 – 05-MAR-2024

CONTENT

DISCLAIMER - The intent of this guideline is to assist Designer when creating a Contract Time Determination Study; primarily eliminating a need to create standardized coding, reporting, formatting and to assist in the general schedule set up only. This tool-kit information is provided for informational purposes and is available for use as a schedule development guideline only. This information may not reflect specific contract requirements. MassDOT does not guarantee the schedule information to be free from errors or inconsistencies, and the presence of such errors or inconsistencies does not relieve the Designer or a Contractor, from preparing schedule submittals in accordance with the specific Contract requirements and the requirements of the Engineer. MassDOT makes no representations or warranties of any kind, express or implied, about the accuracy, reliability, or completeness with respect to the guidance herein or any of the information, services, or related content contained therein for any purpose.

MassDOT assumes no liability or responsibility for any damages (whether incurred directly or indirectly) or loss of any kind that might arise from the use of, misuse of, or the inability to use the information contained in this guideline. MassDOT assumes no liability for improper or incorrect use of this guideline. In choosing to use this guideline, the Designer or Contractor expressly agrees that it will not submit any claims as a result of the information furnished herein, or use any of this information in the defense of any claim that the Contractor may choose to submit over the course of any MassDOT Contract.

MassDOT reserves the right to update, remove, or amend any of the information contained in this guideline as needed without prior notice. For updates, please refer to the MassDOT website prior to starting schedule submissions.

ATTACHMENT A – IMPORTANT WORK RESTRICTIONS

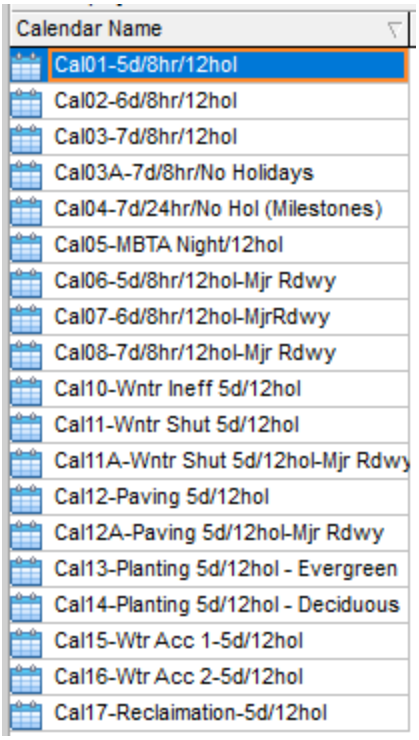
MassDOT has developed the attached guide that demonstrates the standard calendars to be used on MassDOT Highway construction projects. MassDOT Highway construction projects should be scheduled according to the state and federal calendars, labor unions collective bargaining agreements (if applicable), environmental restrictions, and unfavorable weather conditions. In addition, each project may have its own limitations such as local restrictions, Coast Guard shutdown calendars, specific railroad limitations for construction, additional site specific environmental concerns, etc.

This guide demonstrates typical calendars to be used in the development of Construction Contract Time Determinations (C**CTD**s) and similar reports, as well as, presented in the Contractor's Construction Schedule Toolkit (CCST) for use in developing Contractor's construction schedules.

The Designer should ensure that the specific project requirements are represented, have been reviewed with MassDOT, noted in the specifications, and adjust in the CTD Schedule accordingly.

LIST OF CALENDARS

Calendars must be maintained at the <u>Project Level.</u>



<u>Calendar Descriptions</u>

- Calendar 1, 2 & 3 are the typical 5, 6 or 7 daytime work schedules with holidays.
- Calendar 3A – 7d/8hr/No Holidays - is used for typical calendar-day dependent activities like Review and Approval of submissions by MassDOT.
- Calendar 4 is a 7d/24hr/No Holidays schedule that has no time restrictions, and is used for Milestones and Access Restraints, and also non-work time-dependent activities like curing of concrete.

- Calendar 5 is specifically for MBTA associated work at night
- Calendar Descriptions with "***Mjr Rdwy***" (Calendars 6, 7, 8, 11A & 12A) include the additional extended holiday work restrictions on Major Roadways leading up to or following Holiday weekends such as Thanksgiving week.
- Calendar 10 – Winter Ineff, 5d/12 Hol, is a calendar that simulates an inefficiency during the period of December 15th through March 15th. This calendar should only be used on activities that could be performed during the winter months, however, may be impacted by cold or snow weather events.
- Calendar 11 – Winter Shut 5D/12Hol, is a calendar used for activities that cannot be performed between December 1 and March 15.
- Calendar 12 – Paving 5d/12Hol, is a calendar that restricts work between November 15th and March 30th, when asphalt plants are typically off-line.
- The CST includes two "Planting" calendars (Calendars 13 & 14), one for Deciduous plantings, and one for Evergreen plantings.
- Calendar 15 & 16 are water access calendars for in-water related activities. Calendar 15 provides water access from June 1st to Sep 30th, and Calendar 16 restricts water access from April 15th to July 15th, and September 15th to October 31st due to fish migration. These calendars may need to be adjusted per each contracts specified in-water access restrictions.
- Calendar 17 – Reclamation – 5d/12hol, is a calendar that restricts Reclamation work between October 15th and April 15th.

Shift Work

If the design intent is to perform work outside the daytime work schedule (setup currently as 8am-4pm), Calendars should be modified and/or added to reflect the actual work periods, and any modifications or additions detailed in the CTD Narrative.

SEASONAL RESTRICTIONS

WINTER

- General
  - Typical winter weather restrictions are in place from Dec. 1st to March 15th
  - See Specification Section 8.03
- Concrete
  - Unless allowed with new Subsection 8.03 referenced above (i.e. expecting winter work and heat protection), no concrete placement, will occur between December 1 and March 15.
  - Although the Supplement Specifications do not specifically restrict the periods in which concrete shall be placed, the Spec does indicate that concrete cannot be placed during cold weather conditions:
    - See MassDOT Standard Specifications for Highways and Bridges
  - Reference: Per DOT winter shutdown periods, concrete placement is typically restricted between December 1 and March 15.

- Base Paving (HMA)
  - No base paving (HMA) placement will occur between November 15 and April 1.
  - Hot mix asphalt shall not be placed after November 15 or before April 1 without the written permission of the Engineer.
  - Reference: See MassDOT Standard Specifications for Highways and Bridges, 450.42 and 460.42

- Pave (OGFC)
  - No specific scheduling calendar has been created for this type of work.
  - No final paving placement (OGFC) will occur between after October 31 or before May 1.
  - OGFC mixtures shall not be placed after October 31 or before May 1 without the written permission of the Engineer.
  - Reference: See MassDOT Standard Specifications for Highways and Bridges, 450.42 and 460.42

- Reclamation Pavement
  - Calendar 17 was created for this type of work.
  - Reclamation operations shall not commence before April 15 and shall terminate on or before October 15 unless otherwise approved in writing by the Engineer
  - Reference: See MassDOT Standard Specifications for Highways and Bridges
- Other
  - No applying of waterproofing sealant or soil compaction will occur between December 1 and March 15.
  - Review all key material specifications and modify Special Provisions and CTD basis accordingly.

LANDSCAPING

- General Landscape Calendar
  - Sod, seeding, plantings, etc can occur during the Spring Season (April 15 to June 1) and Fall Season (August 15 to November 1).
  - Reference: See MassDOT Standard Specifications for Highways and Bridges, 770.61 and 771.61
- MassDOT Standard Specifications for Highways and Bridges, Section 771.60, Excerpt below:
  - Balled and burlapped plants may be planted in the spring until June 15 and in the fall from August 15 to November 1. No specific scheduling calendar has been created for this type of work.
  - Container grown plants may be planted at any time the ground is not frozen (provided specified minimum time of growth and root development has been met). No specific scheduling calendar has been created for this type of work.
  - Bare rooted plants shall be planted only from the time ground thaws in spring until May 15.
  - The seeding season for crownvetch shall be from April 15 to August 15. No specific scheduling calendar has been created for this type of work.
- MassDOT Standard Specifications for Highways and Bridges, Section 771.61, Excerpt below:
  - Delineates different planting seasons between deciduous and evergreen materials. However, for CTD purposes, the deciduous material calendar will be used.
- Please refer to the Contract Special Provisions for any additional Plantings and Landscaping restrictions.

WINTER INEFFICIENCY

a. The weather impact on working efficiency during the winter is estimated according to the collected weather information from weather data from 2003 thru 2008. It is assumed that the project will be shut down in days with severe weather. Severe weather was defined as blowing snow, rain for more than 1 inch, daily temperature below 10 degrees, wind of more than 50 MPH, thunderstorm, and fogs that reduce visibility to less than ¼ miles.
b. The historical data show that the number of days with severe weather on average is as follows:
   1. 1day/week from December 15 to January 15,
   2. 2 days/week from January 16 to February 15,
   3. 1 day/week from February 16 to March 15.
c. The relevant calendars for concrete and pavement have used the aforementioned data and have reduced number of working days per week.

ENVIRONMENT - WATER ACCESS

- Water Access - Low Flow
  - Water access is only allowed during the period of June 1 to September 30
  - The restriction applies to the installation of water control systems only. Once water control has been installed (coffer dams, etc) there are no restriction on the work that can occur in the dry conditions
  - Refer to individual project 404 DEP Environment Permit for restrictions

    - Reference: Environmental Permit 404 and Per Kevin Walsh, 2/17/10
- Water Access - Fish Migration
    - Water access is NOT allowed during the period of April 1 to July 15th and from September 15 to October 31 to allow for fish migration periods.
    - The restriction applies to the installation of water control systems only. Once water control has been installed (coffer dams, etc) there are no restriction on the work that can occur in the dry conditions.
    - Reference: Environmental Permit 404 and Per Kevin Walsh, 2/17/10
- Water Access – ACOE
    - Refer to individual project 401 ACOE (Army Corp of Engineers) Environment Permit for restrictions
    - Other – Review all environmental permits and specifications and modify Special Provisions and CTD basis accordingly.

DISTRICT SPECIFIC CALENDARS

Due to the differing weather conditions between regions, District staff may require specific work restrictions. Please consult with your District scheduler regarding District specific calendar/restrictions.

LIST OF HOLIDAYS

The calendars that indicate "12 Hol" in the title include the 12 Massachusetts legal holidays, populated through the year 2040. These holidays are:

Holiday
New Year's Day – January First**
Martin Luther King, Jr. Day – Third Monday in January
Washington's Birthday – Third Monday in February
Patriots' Day – Third Monday in April
Memorial Day – Last Monday in May
Juneteenth Independence Day – June 19th**
Independence Day – July 4th**
Labor Day – First Monday in September
Columbus Day – Second Monday in October
Veterans' Day – November 11th**
Thanksgiving Day – fourth Thursday in November
Christmas Day – December 25th**

**** If the Holiday falls on a Sunday, it will be observed on the following Monday, however, if the Holiday falls on a Saturday, it will be observed on Saturday.

STATE HOLIDAYS

The followings are 14 legal holidays in the State of Massachusetts, including two Suffolk County Only holidays:

1) New Year's Day
2) Martin Luther King's Birthday
3) President's Day
4) Evacuation Day (Suffolk County only)
5) Patriot's Day

6) Memorial Day
7) Bunker Hill Day (Suffolk County only)
8) Juneteenth Independence Day
9) Independence Day
10) Labor Day
11) Columbus Day
12) Veteran's Day
13) Thanksgiving Day
14) Christmas Day

FEDERAL HOLIDAYS

The followings are the 11 Federal holidays:

1) New Year's Day
2) Martin Luther King's Birthday
3) President's Day
4) Memorial Day
5) Juneteenth Independence Day
6) Independence Day
7) Labor Day
8) Columbus Day
9) Veteran's Day
10) Thanksgiving Day
11) Christmas Day

COLLECTIVE BARGAINING AGREEMENTS HOLIDAYS

The followings are 12 holidays considered in the Collective Bargaining Agreements of labor unions:

1) New Year's Day
2) Martin Luther King's Birthday
3) President's Day
4) Patriot's Day
5) Memorial Day
6) Juneteenth Independence Day (Optional)
7) Independence Day
8) Labor Day
9) Columbus Day
10) Veteran's Day
11) Thanksgiving Day
12) Christmas Day

ATTACHMENTS B & C –
NORMAL WORK SHIFTS AND
EXAMPLES OF SPECIAL PROVISION 8.00

DEVELOPED FOR ***CONSTRUCTION PLANNING***

DURING THE ***DESIGN PHASE***

REV3 – 05MAR2024

CONTENT

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MassDOT assumes no liability or responsibility for any damages (whether incurred directly or indirectly) or loss of any kind that might arise from the use of, misuse of, or the inability to use the information contained in this guideline. MassDOT assumes no liability for improper or incorrect use of this guideline. In choosing to use this guideline, the Designer or Contractor expressly agrees that it will not submit any claims as a result of the information furnished herein, or use any of this information in the defense of any claim that the Contractor may choose to submit over the course of any MassDOT Contract.

MassDOT reserves the right to update, remove, or amend any of the information contained in this guideline as needed without prior notice. For updates, please refer to the MassDOT website prior to starting schedule submissions.

ATTACHMENT B – NORMAL WORK SHIFTS – MODIFIED AS NEEDED

Per the MassDOT Standard Specifications for Highways and Bridges, 7.09 states the following.

SECTION 7.00
LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

SUBSECTION 7.09 Public Safety and Convenience.
(page 27) Add the following paragraph above the 2nd paragraph from the bottom:

Work is restricted to a normal 8-hour day, 5-day week, with the Prime Contractor and all Subcontractors working on the same shift. No work shall be done on Saturdays, Sundays, holidays, or the day before or after a holiday without prior approval of the Engineer.

However, many contracts may be planned using extended work-hours/shifts. The Designer may need to modify this section as required to inform the contractor of this bid basis/expectation. The Designer should consult with the District prior to starting the CTD.

Particular roads/highways may be more prone to holiday peak traffic conditions which may warrant closure surrounding holiday periods, in these cases the CTD should adjust the work periods accordingly.

SECTION 8.00
PROSECUTION AND PROGRESS

SUBSECTION 8.03 Prosecution of Work

Add/amend the following at the end of the Section:

{This should be ahead of the Contractual and Interim Milestones}

The Contractor is hereby notified that winter work is expected for this project and has been taken into account in setting the completion date for the contract. Items of work that are expected to continue through the winter include, but are not limited to, the following: ***{Designer to insert specific work elements, e.g. closure pours; setting and grouting of precast elements; setting of prefabricated elements: etc.}***. If the work to be performed during the winter includes concrete or mortar, the relevant provisions of Section 901.72 shall be followed. Any costs, either direct costs or resulting from inefficiencies, related to continuing work in the winter shall be included in the contractor's bid and shall not be cause for a claim for a time extension or additional compensation.

Contractual Completion Milestones:

This Contract contains the following Contractual Milestones that are to be included in the Contractor's Baseline Contract Progress Schedule submission. The contractor shall identify the completion of the work pertaining to each Contractual Milestone through the inclusion of a Finish Milestone in the accepted baseline Contract Progress Schedule.

- **MS#01 – Contractor Field Completion:** The Contractor shall achieve Contractor Field Completion within X,XXX calendar days from Notice to Proceed.

  Contractor Field Completion shall be defined as the date that completion of all physical contract Work has been performed, including the completion of the punchlist work and the Contractor has fully de-mobilized from the field operations.

- **MS#02 – Substantial Completion:** The Contractor shall achieve Substantial Completion within X,XXX calendar days from Notice to Proceed.

  Substantial Completion shall be described as the date that a walkthrough of the entire contract Work has been performed by the Resident Engineer, and the Work required by the Contract, including paperwork, has been completed, except for work having a contract price of less than one percent of

the adjusted contract price, including overruns, underruns and all contract amendments. All Material submittals must have been received by the District Materials Lab.

- **MS#03 – Full Beneficial Use:** The Contractor shall achieve Full Beneficial Use within XXX calendar days from Notice to Proceed.

  Full Beneficial Use shall be described as the date that the majority of the contract Work has been completed and the asset(s) has been opened for full multi-modal transportation use, except for limited contract work items that do not materially impair or hinder the intended public use of the transportation facility. All anticipated lane takings have been completed, except for minor, short-term work items.

ADDITIONAL/INTERIM MILESTONES

Note – The use of Interim Milestone is discouraged by MassDOT unless there are Incentive/Disincentives offered to the Contractor and/or there are complicated stages that rely upon significant/critical Utility coordination. In this case, to allow the Contractor some flexibility in scheduling the work to allow for the follow-on utility relocations, MassDOT allows for a floating interim milestone (i.e. does not need to be completed by a particular date after NTP – but this still provides the benefit of an interim milestone to capture the planning steps needed District advanced preparation and coordination of the third-party Utility company).

Examples:

- **MS#04 – Interim Milestone: Completion of the Installation of the Beams in Stage 2 – to allow for secondary Utility relocations. T**he Contractor shall complete the work associated with the Stage 2 beam installation, which will allow for the start of the installation of the main gas line, as planned in Stage 2 (as described in AR#02). The Contractor shall identify the completion of this work with a Finish Milestone using the stated description. And will provide the Engineer with advance notice prior to completing this work to allow for the specified notification of Utility companies.

SUBSECTION 8.06 Limitations of Operations

Add/amend the following at the end of the Section:

Access Restraints:

This contract will contain Access Restraint(s) to provide an anticipated start date of certain portions of the Work that are restrained by a Third Party (such as a Utility). An Access Restraint is a restriction of physical work, of a specific area or operation in the Contract, to allow all bidders to evaluate anticipated work restrictions, equally, during the pre-bid planning stages. The Contract Time (duration) has considered these portions of the work and has been developed with the initial information that has been provided by the Third Party, and accepted by MassDOT. The Contractor shall be required to communicate and coordinate with all

affected Third Parties, and may be required to perform support aspects of the third party scope (as noted in the Contract Documents) well in advance of the start of the applicable third party scope. The Contractor must clearly identify all aspects of this work in the preparation of the Construction Schedule and throughout the contract duration.

This contract contains the following Access Restraints that are to be included in the Contractor's Baseline Schedule submission:

- **AR#01 – Access Restraint #01:** The Contractor will be restricted from starting any physical * Work associated with the start of the traffic shift for Stage 1 **until XXX calendar days after NTP**, to allow for the relocation of the aerial utilities. See Attachment ____ PUC Form and Subsection 8.14 Utility Coordination and Documentation Requirements.

- **AR#02 – Access Restraint #02:** The Contractor will be restricted from starting any physical * work associated with the deck installation (in Stage 2) **until X calendar days after the completion of Milestone #03 (MS#04)**, to allow for the relocation of NSTAR gas line. See Attachment ____ PUC Form and Subsection 8.14 Utility Coordination and Documentation Requirements.
-
- **AR#03 – Access Restraint #03:** The Contractor will be restricted from starting any physical * Work associated with the start of the traffic shift for Stage 3 **until 25 calendar days after Milestone #04 (MS#05),** to allow for the relocation of the utilities into their permanent location. See Attachment ____ PUC Form and Subsection 8.14 Utility Coordination and Documentation Requirements.

- **AR#0X – Access Restraint #0X:** The contractor will be restricted from Starting **MS#04 - Interim Milestone: Closing of Bridge to Traffic for Construction** no earlier than **15 April 2012** to avoid the 60 calendar days bridge closure window to start during the winter season.

In accordance with the requirements provided in Section 8.02 the Contractor shall provide a project baseline schedule, in accordance with the terms and conditions of the contract that identifies all affected third parties and the Access Restraints noted above. During the prosecution of Work, and as part of the Monthly Schedule Update Submission, the Contractor shall provide proof of notification to those third parties.

If, during the prosecution of the Work, the Contractor is delayed by a Third Party, the Contractor will identify delays, as identified with the most recent schedule update, provide proper notification to the Engineer, evaluate options to recover, and present to the Engineer for approval. Should the Contractor's critical path be significantly impacted, by the actions or inactions of the Third Party, and no viable recovery options are accepted by MassDOT, the Contractor may submit a request for Time Extension accompanied by a complete Time Entitlement Analysis, to clearly demonstrate the impact of the delay. Only after all of the schedule requirements have been met *(see section 8.02 and 8.10 Determination and Extension of Contract Time for Completion),* and it is clear that the Contractor demonstrates that it has coordinated properly and worked expeditiously with the Third Party, and that none of the Contractor's actions or inactions contributed to the

delay, will the Engineer approve a Time Extension request. Under no circumstances will compensation be provided for delays associated with a Third Party/Utility.

Work Restrictions:

Additionally, this contract contains the following work restrictions that are to be included in the Contractor's Baseline Schedule submission:

- Route XXX shall be closed to traffic for a period of no more than 30 calendar days to accomplish the work described in Phase Y. Route XXX shall be restored to traffic the final configuration shown in Phase X no later than 4:00 AM on Monday, DD Month, YYYY.

- Route YYY shall be closed to traffic for a period of no more than 54 hours to accomplish the work described in Phase Y. The shutdown period is required to occur during the Columbus Day weekend with the closure of Route YYY starting no earlier than 11:00 PM on Friday, DD Month, YYYY. Route YYY shall be restored to traffic the final configuration shown in Phase X no later than 72 hours later, by 4:00 AM on Monday, DD Month, YYYY.

- Due to peak traffic conditions during the summer season, no work shall impede on normal traffic conditions during the period between Memorial Day weekend and Labor Day weekend. The restrictions starts XXX…..

- Progress on both bridges should be sequenced as shown in the Traffic Management Plans. The phases for each bridge should be sequenced to eliminate traffic shifts between the bridges.

- The Contractor is reminded that, in bidding this work, the Contractor is obligated to meet the Contract Milestones (Time) and is obligated to plan the successful completion of Work, prior to submitting the bid.

- In this case, the Contract Time has been developed utilizing extended shifts for portions, or all aspects, of these construction operations: _____, _____, _____, and _____. In the evaluation of the bid price, preparation of bid documents, and the ability to meet the Contract Time, the Contractor is allowed to work 6 Days per week, for 10 hours per day, from ___ a.m. to ___p.m. for these identified operations.

- Additionally, the Contractor is prohibited from working from ___ to ___ for any operation related to XXX

- In submitting a bid price for this contract, the Contractor acknowledges that a detailed plan has been developed to meet the Contract Time for all aspects of the Contract; including shift work; extended work hour requirements/restrictions; all of the limitations of operations; utility coordination, as well as the planning of all subcontractor and supplier operations.

- The roadway shall be open to all traffic between the dates of XXX and YYY.

- The contract time has been developed assuming that project work will occur throughout the winter season – See new Section 8.03 for expecting work to proceed in the winter (with winter protection considerations as a basis)

SUBSECTION 8.11 – Failure to Complete Work on Time

Add/amend the following at the end of the Section:

Liquidated Damages for failure to meet Project Milestones:

Additionally, this contract contains the following liquidated damages:

- XXX

Note to Designer/Engineers: *MassDOT is currently contemplating an adjustment to have LDs apply to the Full Beneficial Use Milestone. Check with MassDOT P.M.*

Incentives/Disincentives:

Additionally, this contract contains the following Incentives/Disincentives:

- XXX

ATTACHMENTS B & C –
NORMAL WORK SHIFTS AND
EXAMPLES OF SPECIAL PROVISION 8.00

DEVELOPED FOR ***CONSTRUCTION PLANNING***

DURING THE ***DESIGN PHASE***

REV3 – 05MAR2024

CONTENT

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MassDOT assumes no liability or responsibility for any damages (whether incurred directly or indirectly) or loss of any kind that might arise from the use of, misuse of, or the inability to use the information contained in this guideline. MassDOT assumes no liability for improper or incorrect use of this guideline. In choosing to use this guideline, the Designer or Contractor expressly agrees that it will not submit any claims as a result of the information furnished herein, or use any of this information in the defense of any claim that the Contractor may choose to submit over the course of any MassDOT Contract.

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ATTACHMENT B – NORMAL WORK SHIFTS – MODIFIED AS NEEDED

Per the MassDOT Standard Specifications for Highways and Bridges, 7.09 states the following.

SECTION 7.00
LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

SUBSECTION 7.09 Public Safety and Convenience.
(page 27) Add the following paragraph above the 2nd paragraph from the bottom:

Work is restricted to a normal 8-hour day, 5-day week, with the Prime Contractor and all Subcontractors working on the same shift. No work shall be done on Saturdays, Sundays, holidays, or the day before or after a holiday without prior approval of the Engineer.

However, many contracts may be planned using extended work-hours/shifts. The Designer may need to modify this section as required to inform the contractor of this bid basis/expectation. The Designer should consult with the District prior to starting the CTD.

Particular roads/highways may be more prone to holiday peak traffic conditions which may warrant closure surrounding holiday periods, in these cases the CTD should adjust the work periods accordingly.

SECTION 8.00
PROSECUTION AND PROGRESS

SUBSECTION 8.03 Prosecution of Work

Add/amend the following at the end of the Section:

{This should be ahead of the Contractual and Interim Milestones}

The Contractor is hereby notified that winter work is expected for this project and has been taken into account in setting the completion date for the contract. Items of work that are expected to continue through the winter include, but are not limited to, the following: ***{Designer to insert specific work elements, e.g. closure pours; setting and grouting of precast elements; setting of prefabricated elements: etc.}***. If the work to be performed during the winter includes concrete or mortar, the relevant provisions of Section 901.72 shall be followed. Any costs, either direct costs or resulting from inefficiencies, related to continuing work in the winter shall be included in the contractor's bid and shall not be cause for a claim for a time extension or additional compensation.

Contractual Completion Milestones:

This Contract contains the following Contractual Milestones that are to be included in the Contractor's Baseline Contract Progress Schedule submission. The contractor shall identify the completion of the work pertaining to each Contractual Milestone through the inclusion of a Finish Milestone in the accepted baseline Contract Progress Schedule.

- **MS#01 – Contractor Field Completion:** The Contractor shall achieve Contractor Field Completion within X,XXX calendar days from Notice to Proceed.

  Contractor Field Completion shall be defined as the date that completion of all physical contract Work has been performed, including the completion of the punchlist work and the Contractor has fully de-mobilized from the field operations.

- **MS#02 – Substantial Completion:** The Contractor shall achieve Substantial Completion within X,XXX calendar days from Notice to Proceed.

  Substantial Completion shall be described as the date that a walkthrough of the entire contract Work has been performed by the Resident Engineer, and the Work required by the Contract, including paperwork, has been completed, except for work having a contract price of less than one percent of

the adjusted contract price, including overruns, underruns and all contract amendments. All Material submittals must have been received by the District Materials Lab.

- **MS#03 – Full Beneficial Use:** The Contractor shall achieve Full Beneficial Use within XXX calendar days from Notice to Proceed.

  Full Beneficial Use shall be described as the date that the majority of the contract Work has been completed and the asset(s) has been opened for full multi-modal transportation use, except for limited contract work items that do not materially impair or hinder the intended public use of the transportation facility. All anticipated lane takings have been completed, except for minor, short-term work items.

ADDITIONAL/INTERIM MILESTONES

Note – The use of Interim Milestone is discouraged by MassDOT unless there are Incentive/Disincentives offered to the Contractor and/or there are complicated stages that rely upon significant/critical Utility coordination. In this case, to allow the Contractor some flexibility in scheduling the work to allow for the follow-on utility relocations, MassDOT allows for a floating interim milestone (i.e. does not need to be completed by a particular date after NTP – but this still provides the benefit of an interim milestone to capture the planning steps needed District advanced preparation and coordination of the third-party Utility company).

Examples:

- **MS#04 – Interim Milestone: Completion of the Installation of the Beams in Stage 2 – to allow for secondary Utility relocations. T**he Contractor shall complete the work associated with the Stage 2 beam installation, which will allow for the start of the installation of the main gas line, as planned in Stage 2 (as described in AR#02). The Contractor shall identify the completion of this work with a Finish Milestone using the stated description. And will provide the Engineer with advance notice prior to completing this work to allow for the specified notification of Utility companies.

SUBSECTION 8.06 Limitations of Operations

Add/amend the following at the end of the Section:

Access Restraints:

This contract will contain Access Restraint(s) to provide an anticipated start date of certain portions of the Work that are restrained by a Third Party (such as a Utility). An Access Restraint is a restriction of physical work, of a specific area or operation in the Contract, to allow all bidders to evaluate anticipated work restrictions, equally, during the pre-bid planning stages. The Contract Time (duration) has considered these portions of the work and has been developed with the initial information that has been provided by the Third Party, and accepted by MassDOT. The Contractor shall be required to communicate and coordinate with all

affected Third Parties, and may be required to perform support aspects of the third party scope (as noted in the Contract Documents) well in advance of the start of the applicable third party scope. The Contractor must clearly identify all aspects of this work in the preparation of the Construction Schedule and throughout the contract duration.

This contract contains the following Access Restraints that are to be included in the Contractor's Baseline Schedule submission:

- **AR#01 – Access Restraint #01:** The Contractor will be restricted from starting any physical * Work associated with the start of the traffic shift for Stage 1 **until XXX calendar days after NTP**, to allow for the relocation of the aerial utilities. See Attachment ____ PUC Form and Subsection 8.14 Utility Coordination and Documentation Requirements.

- **AR#02 – Access Restraint #02:** The Contractor will be restricted from starting any physical * work associated with the deck installation (in Stage 2) **until X calendar days after the completion of Milestone #03 (MS#04)**, to allow for the relocation of NSTAR gas line. See Attachment ____ PUC Form and Subsection 8.14 Utility Coordination and Documentation Requirements.
-
- **AR#03 – Access Restraint #03:** The Contractor will be restricted from starting any physical * Work associated with the start of the traffic shift for Stage 3 **until 25 calendar days after Milestone #04 (MS#05),** to allow for the relocation of the utilities into their permanent location. See Attachment ____ PUC Form and Subsection 8.14 Utility Coordination and Documentation Requirements.

- **AR#0X – Access Restraint #0X:** The contractor will be restricted from Starting **MS#04 - Interim Milestone: Closing of Bridge to Traffic for Construction** no earlier than **15 April 2012** to avoid the 60 calendar days bridge closure window to start during the winter season.

In accordance with the requirements provided in Section 8.02 the Contractor shall provide a project baseline schedule, in accordance with the terms and conditions of the contract that identifies all affected third parties and the Access Restraints noted above. During the prosecution of Work, and as part of the Monthly Schedule Update Submission, the Contractor shall provide proof of notification to those third parties.

If, during the prosecution of the Work, the Contractor is delayed by a Third Party, the Contractor will identify delays, as identified with the most recent schedule update, provide proper notification to the Engineer, evaluate options to recover, and present to the Engineer for approval. Should the Contractor's critical path be significantly impacted, by the actions or inactions of the Third Party, and no viable recovery options are accepted by MassDOT, the Contractor may submit a request for Time Extension accompanied by a complete Time Entitlement Analysis, to clearly demonstrate the impact of the delay. Only after all of the schedule requirements have been met *(see section 8.02 and 8.10 Determination and Extension of Contract Time for Completion),* and it is clear that the Contractor demonstrates that it has coordinated properly and worked expeditiously with the Third Party, and that none of the Contractor's actions or inactions contributed to the

delay, will the Engineer approve a Time Extension request. Under no circumstances will compensation be provided for delays associated with a Third Party/Utility.

Work Restrictions:

Additionally, this contract contains the following work restrictions that are to be included in the Contractor's Baseline Schedule submission:

- Route XXX shall be closed to traffic for a period of no more than 30 calendar days to accomplish the work described in Phase Y. Route XXX shall be restored to traffic the final configuration shown in Phase X no later than 4:00 AM on Monday, DD Month, YYYY.

- Route YYY shall be closed to traffic for a period of no more than 54 hours to accomplish the work described in Phase Y. The shutdown period is required to occur during the Columbus Day weekend with the closure of Route YYY starting no earlier than 11:00 PM on Friday, DD Month, YYYY. Route YYY shall be restored to traffic the final configuration shown in Phase X no later than 72 hours later, by 4:00 AM on Monday, DD Month, YYYY.

- Due to peak traffic conditions during the summer season, no work shall impede on normal traffic conditions during the period between Memorial Day weekend and Labor Day weekend. The restrictions starts XXX…..

- Progress on both bridges should be sequenced as shown in the Traffic Management Plans. The phases for each bridge should be sequenced to eliminate traffic shifts between the bridges.

- The Contractor is reminded that, in bidding this work, the Contractor is obligated to meet the Contract Milestones (Time) and is obligated to plan the successful completion of Work, prior to submitting the bid.

- In this case, the Contract Time has been developed utilizing extended shifts for portions, or all aspects, of these construction operations: _____, _____, _____, and _____. In the evaluation of the bid price, preparation of bid documents, and the ability to meet the Contract Time, the Contractor is allowed to work 6 Days per week, for 10 hours per day, from ___ a.m. to ___p.m. for these identified operations.

- Additionally, the Contractor is prohibited from working from ___ to ___ for any operation related to XXX

- In submitting a bid price for this contract, the Contractor acknowledges that a detailed plan has been developed to meet the Contract Time for all aspects of the Contract; including shift work; extended work hour requirements/restrictions; all of the limitations of operations; utility coordination, as well as the planning of all subcontractor and supplier operations.

- The roadway shall be open to all traffic between the dates of XXX and YYY.

- The contract time has been developed assuming that project work will occur throughout the winter season – See new Section 8.03 for expecting work to proceed in the winter (with winter protection considerations as a basis)

SUBSECTION 8.11 – Failure to Complete Work on Time

Add/amend the following at the end of the Section:

Liquidated Damages for failure to meet Project Milestones:

Additionally, this contract contains the following liquidated damages:

- XXX

Note to Designer/Engineers: *MassDOT is currently contemplating an adjustment to have LDs apply to the Full Beneficial Use Milestone. Check with MassDOT P.M.*

Incentives/Disincentives:

Additionally, this contract contains the following Incentives/Disincentives:

- XXX

ATTACHMENT D

EXAMPLE 8.06

'LIMITATIONS OF OPERATIONS'

NEAR ACTIVE RAILROAD

DEVELOPED FOR ***CONSTRUCTION PLANNING***

DURING THE ***DESIGN PHASE***

REV3 – 05MAR2024

CONTENT

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MassDOT assumes no liability or responsibility for any damages (whether incurred directly or indirectly) or loss of any kind that might arise from the use of, misuse of, or the inability to use the information contained in this guideline. MassDOT assumes no liability for improper or incorrect use of this guideline. In choosing to use this guideline, the Designer or Contractor expressly agrees that it will not submit any claims as a result of the information furnished herein, or use any of this information in the defense of any claim that the Contractor may choose to submit over the course of any MassDOT Contract.

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ATTACHMENT D - EXAMPLE 'LIMITATION OF OPERATION' FOR WORK ALONG THE RAIL ROAD

Below is an example / Limitation of Operations / Special Provision for working along over or adjacent to a rail road - to be confirmed with the MassDOT District Construction office and the applicable railroad. This is only an example to highlight some standard considerations for working near a 'foul zone' and it is understood that these example restrictions, and the speicific railroad operations rule book, may have very significant impacts on the planning of the construction schedule/contract duration. Therefore, the Designer is obligated to seek the intended work plan of the particular/applicable railroad, as part of the finalization the special provisions and the CTD.

- For planning purposes, the Designer is to develop/consider reasonable approaches/contruction methods to work in the vacinity of the track.
- Some railroads do not allow for certain nightime closures.
- Some special allowances can be made by the railroad operations team.
- If speical considerations are needed in order to achieve MassDOT construction schedule goals, the Designer is to work with MassDOT District Construction, providing specific options for possible consturction operations *(such as protective shoring/barriers, anticiapted crane sizes and boom locations, low headroom equipment, slick-line concrete placement, exploratory/pre-excations, and other restrictions that may needed to be included in the contrruction contract as a special provision),* to seek railroad approval to work beyond what is considered to be the baseline minium equirements for working near active rail.

SUBSECTION 8.06 Limitations of Operations – near active railroad operations

Add/amend the following at the end of the Section:

The work associated with this project, except as hereinafter expressly provided, will be done without interruption of or change in the regular work or operation of vehicles of the Railroad (RR).

1. *No work shall be done affecting the operations of RR vehicles, or operations of stations or RR yards, until the Contractor has submitted details of his procedures to the Engineer and the applicable RR Operations representatives sixty (60) working days prior to start of work and has secured written permission to proceed. These procedures must be approved by the RR and the Engineer 10 days prior to starting physical work within the potential foul zone of the track centerline.*

2. *The RR Operations requires that all work affecting the safety of the operations to be performed at prescheduled non-operating periods from approximately **1:30 a.m. to - 4:30 a.m. effectively**, to allow for a RR test train to pass safely before 5:00am. This applies to all operations that have the potential to foul the track to the limits that are prescribed in the RR Right-of-way procedures/rules.*

3. *The Contractor will not be permitted to remain within the track right-of-way after 5:00 am (6:00 a.m. Sunday). The RR may, during emergencies or at times when the RR work forces are required to work in the area of the contractors work, order the Contractor to cease work and remove his work forces and equipment from the property leaving the right-of-way in a safe operating condition.*

4. *The RR also reserves the right to stop or postpone any contractor's previously approved work if, in the RR's opinion, such work is being performed in a manner that will endanger and or delay the RR's regular work or operations.*

5. *The RR reserves the right to deny the Contractor access to the right of way because of operational requirements, adverse weather conditions or emergency track, signal, and power repairs.*

6. *The Contractor shall expect to be denied access to the site a total of 10 (ten) days per calendar year, this does not include the following holidays; New Year's Day, President's Day, Patriot's Day, Memorial Day, Bunker Hill Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, and Christmas Day.*

7. *Furthermore, the contractor shall also expect to have his access to the site delayed a total of 4 (four) times per month. Each delay shall be 60 (sixty) minutes or less.*

8. *Due to increased stopping distances associated with slippery rail conditions, non-emergency access will not be allowed within ten (10) feet of the centerline of the track under adverse weather conditions.*

The contractor shall plan for, and make specific allowances for, these restrictions in the bid Price and schedule.

ATTACHMENT E
INCENTIVE/DISINCENTIVE
DRAFT GUIDANCE

DEVELOPED FOR ***CONSTRUCTION PLANNING***

DURING THE ***DESIGN PHASE***

REV3 – 05MAR2024

CONTENT

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The following is a **draft version** of the Incentive/Disincentive Engineering Directive to be issued in 2014:

Draft Incentive Disincentive Engineering Directive

The purpose of this Engineering Directive is to provide guidance for evaluating proposed construction projects to determine if an Incentive/Disincentive (I/D) provision is appropriate and also to describe a procedure for implementing these provisions when applicable.

This Engineering Directive is applicable to all Design, Bid, Build projects with an office estimate greater than $10 Million identified as one of the following project types in ProjectInfo (MassDOTs design phase repository): Bridge Reconstruction/Rehab, Bridge Replacement, Hwy Reconstr – Added Capacity, Hwy Reconstr – Major Widening, Hwy Reconstr –Restr/Rehab, Hwy Reconstr – No Added Capacity, Hwy Reconstr – Minor Widening, New Bridge, Painting – Structural, Reclamation, Resurfacing, Tunnels. Projects that involve Accelerated Construction Techniques shall also be subject to this Engineering Directive regardless of the amount of the office estimate.

FHWA's Technical Advisory T 5080.10, dated April 4, 2011, defines an I/D provision as follows: "…a contract provision which compensates the contractor a specified amount of money for each day identified critical work is completed ahead of schedule and assesses a deduction for each day the contractor overruns the I/D time." This Technical Advisory also indicates that I/D provisions should not be used routinely. "Generally, I/D provisions should be limited to those projects whose construction would severely disrupt highway traffic or highway services, significantly increase road user costs, have significant impact on adjacent neighborhoods or businesses, or close a gap thereby providing a major improvement in the highway system."

Upon receipt of the 25% Submittal, the Project Manager is responsible for evaluating the project utilizing Section I, Project Characteristics of the Incentive Disincentive Checklist included in this Engineering Directive. This checklist is intended to be used as a tool to evaluate the applicability of an I/D provision based on various characteristics of the project. If, as a result of performing this evaluation, it is determined that the project is likely an appropriate candidate for an I/D provision, the Project Manager is responsible for ensuring that the Construction Advertising Project Estimator (CAPE) includes an amount equal to 5% of the project office estimate under ITEM 999.785 INCENTIVE. The CAPE shall also reflect an amount of $0.00 under ITEM 999.786 DISINCENTIVE. For federal aid projects these costs must be incorporated into the Total Federal Participating Construction Costs for purposes of programming the project on the STIP.

Upon receipt of the 75% Submittal, the Project Manager is responsible for updating Section 1, of the Incentive Disincentive Checklist and preparing Section II Project Requirements. If the project meets all the requirements of the checklist, the Project Manager is responsible for obtaining the following information from the Designer of Record:

- A proposed construction schedule that identifies specific milestones for a potential I/D Provision
- The duration of each milestone to be considered based on both a standard 8-hour work day and an extended work day
- The estimated construction costs associated with the relevant milestones

- For projects that do not require a detour, the expected increase in time necessary to pass through the work zone based on the length of the work zone and the anticipated reduction in travel speed due to a reduction in the number of lanes, reduction in the width of travel lanes, reduction in the offset to obstructions or speed reductions.
- For projects involving a detour, the route and increased time required to travel the proposed detour.

The Project Manager will then be responsible for preparing the I/D Worksheet using the information provided by the designer of record. If the project meets the requirements of the checklist and the calculated I/D Daily amount is between $10,000 and $20,000 per day, the Project Manager will prepare a transmittal from the Deputy Chief Engineer of Design to the Deputy Chief Engineer for Construction requesting a determination regarding the overall strategy and amount of the I/D provisions.

This transmittal will include:

- The scope of work for the project
- The project characteristics that cause the project to be a candidate for I/D Provisions
- A verification that all of the project requirements form the checklist will be met
- A construction schedule identifying potential milestones based on extended (or) normal work-hours (if applicable)
- A narrative describing the increased travel time associated with the traffic management plan for each milestone
- Incentive Disincentive Daily Rate Worksheet

The Construction Section is responsible for approving the I/D Worksheet calculations. While the responsibility for preparing these documents rests with the MassDOT Project Manager, the Construction Section shall assist in the preparation of these documents with input from the designer of record, District Project Development staff and District Construction staff. If after reviewing these documents it is determined that an I/D provision cannot be recommended, the Deputy Chief Engineer for Construction will notify the Deputy Chief Engineer for Design.

The Deputy Chief Engineer for Construction is responsible for approving the use of I/D provisions on projects where it has been verified that the District Office can support any extended work hours or other staff resources that may be necessary to implement the provisions. Projects that cannot be supported by the District Office and may require District staff sharing or other measures to cover the requirements of the contract are subject to the approval of the Chief Engineer.

The final approval process for an I/D Provision varies depending on the project's funding source. In accordance with Chapter 233 of the Acts of 2008, An Act Financing an Accelerated Structurally Deficient Bridge Program (ABP), the Highway Division is required to obtain approval from the Commonwealth of Massachusetts Inspector General to use I/D provisions on ABP projects. This requirement is only applicable to ABP projects. For projects that are subject to FHWA oversight (refer to latest version of the Stewardship and Oversight Agreement), FHWA approval is required.

Once final approval is received, the Project Manager is responsible for ensuring that the designer of record, in coordination with the Construction Section, incorporates the appropriate special provisions into the 100% Submittal. The Project Manager is responsible for ensuring that all documents relating to the decision making process associated with the application of I/D provisions are stored in ProjectInfo in the General folder.

SCHEDULE INCENTIVE / DISINCENTIVE (I/D) CLAUSE DECISION-MAKER CHECKLIST

Date: _____ Project No.: _____ Project Manager: _____
Project Name: _____

I. Project Characteristics

In order for a project to be considered for the use of I/D provisions, the work must involve the reconstruction or rehabilitation of an existing facility that will cause severe disruptions to traffic and cause a significant increase in roadway user coast.

Projects that include extensive work to be performed by third parties, such as those involving complicated utility relocations, should not be considered.

Projects must have one or more of the following characteristics to be considered:

Answer **Y**es or **N**o to each of the ten (10) statements below.

Y N

1. __ __ The Peak Hour traffic volumes are equal to or greater than 1,600 passenger cars per hour per lane.
   PC/H/LN = _____

2. __ __ The project pedestrian volumes greater than 60 pedestrians per hour.
   P/H = _____

3. __ __ The project consists of work that will complete a gap in the highway system.
   Name of the gap _____.

4. __ __ The project includes lane restrictions on a major bridge or bridges.
   Name of the Bridge(s) _____.

5. __ __ The project involves a lengthy detour or detours.
   Detour description _____
   _____
   _____.

6. __ __ The project will cause a significant impact on adjacent neighborhoods, businesses or tourist destinations.
   List impacted areas _____.

7. __ __ The project will cause a significant impact to services such as Police, Fire, Transit, EMS, School Buses.
   List services impacted _____.

Date: _____ Project No.: _____ Project Manager: _____
Project Name: _____

II. Project Requirements
In addition to having one or more of the project characteristics noted under Section I of this checklist, a project must also satisfy **all** of the following requirements in order to be considered a good candidate for an I/D provision:

Answer **Y**es or **N**o to each of the four (4) statements below.

Y N

1. __ __ The right-of-way (ROW) Certificate for the project will be issued prior to the project advertisement and there will be no unresolved ROW issues.

2. __ __ The contract documents can clearly define the start and completion of the I/D phase or phases.

3. __ __ The plans and specifications will be complete and accurate at the time of project advertisement and clearly illustrate what is to be constructed as well as show and fully describe any unusual and/or special conditions, situations and/or restrictions the contractor must work under, all of which should reflect a low probability of extra work orders being required during construction. Only minor plan revisions and few RFIs(Requests for Information) are typical for this type of project.

4. __ __ The use of a schedule incentive/disincentive clause yields a favorable cost/benefit ratio where the cost is the Daily I/D Amount and the benefit is the calculated daily savings in road user and MassDOT – Highway Division costs.

ATTACHMENT F

EXAMPLE

SIMPLE CONCEPTUAL CTD

(CONTRACT TIME DETERMINATION)

FOR 25% DESIGN STAGE

DEVELOPED FOR ***CONSTRUCTION PLANNING***

DURING THE ***DESIGN PHASE***

REV3 05MAR2024

CONTENT

DISCLAIMER - The intent of this guideline is to assist Designer when creating a Contract Time Determination Study; primarily eliminating a need to create standardized coding, reporting, formatting and to assist in the general schedule set up only. This tool-kit information is provided for informational purposes and is available for use as a schedule development guideline only. This information may not reflect specific contract requirements. MassDOT does not guarantee the schedule information to be free from errors or inconsistencies, and the presence of such errors or inconsistencies does not relieve the Designer or a Contractor, from preparing schedule submittals in accordance with the specific Contract requirements and the requirements of the Engineer. MassDOT makes no representations or warranties of any kind, express or implied, about the accuracy, reliability, or completeness with respect to the guidance herein or any of the information, services, or related content contained therein for any purpose.

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ATTACHMENT F – SIMPLE/CONCEPTUAL CTD AT THE 25% DESIGN PHASE (ONLY)

1.1 CONCEPTUAL CONTRACT TIME DETERMINATION (CTD) SUMMARY

The Designer has conducted a conceptual CTD and found these durations based on an advertising date of 03Sep11 and a Notice to Proceed (NTP) date of 24Mar12.

- **NTP to Full Beneficial Use / Substantial Completion (Activity MS02) 913 cd 22 Sep 2014**
- **NTP to Contractor Field Completion (Activity MS01) 942 cd 21 Oct 2014**

This report describes the basis for the conceptual CTD and gives an overview of the project scope, the assumptions used, the limitations of operations and any initial time related concerns.
A simplified/conceptual CTD schedule is also attached.

1.2 PURPOSE

A conceptual CTD is required at the 25% DBB submission. As required, this conceptual CTD has been generated for initial budgeting and planning purposes only. The CTD will be developed and refined as part of the 75% Submission.

1.3 PROJECT DESCRIPTION – CTD BASIS

The proposed project consists of the rehabilitation of the existing three-span concrete arch bridge that carries North Harvard Street over the Charles River. Included in the rehabilitation will be the replacing of the existing bridge lighting, side spandrel and parapet walls and roadway surface. The proposed rehabilitation of the bridge will occur within the footprint of the existing bridge. The existing bridge will be modified to accommodate bicycle lanes in each direction. The final width of the bridge will match the original dimension. The intersections of North Harvard Street with both Memorial Drive and Soldiers Field Road may be reconstructed to include new traffic signals, new and relocated granite curbing. The project also includes utility upgrades on the bridge superstructure and landscape improvements adjacent to the bridge.
The proposed project will be staged to minimize impacts and maintain pedestrian and vehicular traffic. The construction will be phased so that continuous vehicular, pedestrian is maintained to the maximum extent possible. The project is intended to be built in four phases. The existing four-lane section will be reduced to two lanes, one lane in each direction. Whenever possible, sidewalks will be maintained on both sides of the bridge during construction.

1.4 CONCEPTUAL CTD - REFERENCES

The conceptual CTD was developed using information contained in the following documents:

A. MassDOT Accelerated Bridge Project Description – Project 605517
B. 25% Drawings Set
C. Previous Data/Experience

1.5 METHODOLOGY

After a cursory review of the preliminary staging concepts, sketch plans, Preliminary Office Estimate, the scope of work was identified. The project scope was broken down into discrete high level phases. The duration of each phase of demo and construction was calculated based on the (similar project) and engineering judgment from our project team.

1.6 ASSUMPTIONS

Initial Maintenance-Of-Traffic and Sequencing considerations

The schedule has been developed as per the initial traffic sequencing of the project:

Note- these are initial stages only and will be refined.

- ✓ ***Stage 1:***

  Arch Repairs and temporary support of excavation installation in the middle lane. The middle lane will be closed and at least one lane of traffic will be maintained on North Harvard Street in each direction

- ✓ ***Stage 2:***

  East or West lane reconstruction (Bridge and Roadway). One lane will be closed and at least one lane of traffic will be maintained on North Harvard Street in each direction

- ✓ ***Stage 3:***

  West or East lane reconstruction (Bridge and Roadway). One lane will be closed, at least one lane of traffic will be maintained on North Harvard Street in each direction

- ✓ ***Stage 4:***

  Middle Roadway construction. Middle lane will be closed, at least one lane of traffic will be maintained on North Harvard Street in each direction

1.7 INITIAL TIME RELATED CONCERNS

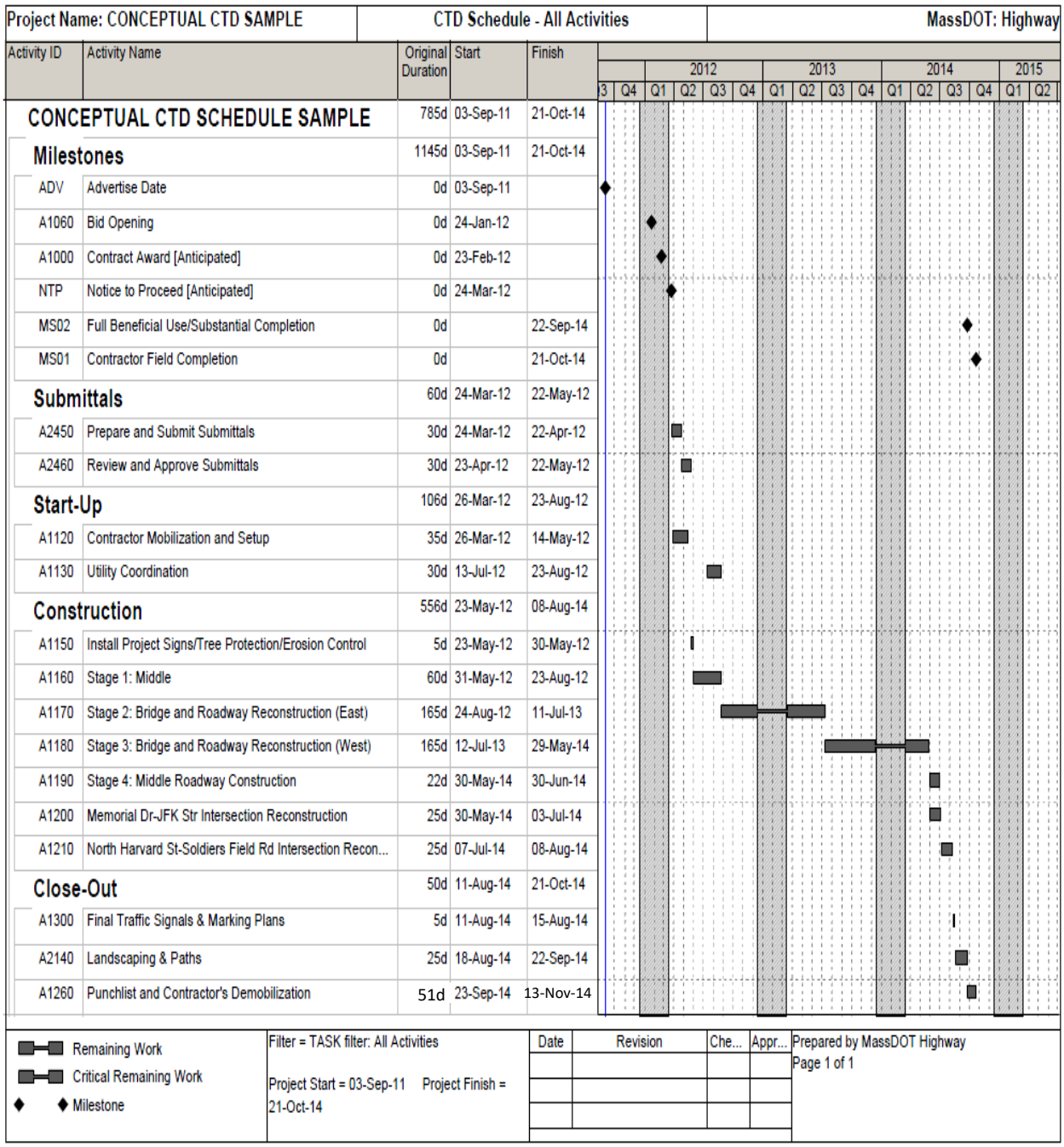
- Currently the bridge carries utilities (water mains, duct banks, and lighting conduit). If it is determined that the condition of the utilities requires replacement, advance notice and coordination may be required with utility companies
- The entire area is considered historical both nationally and locally at the state level. Very intimate attention should be given to ensure that the rehabilitation of the bridge will adhere and preserve all of the historical details and all required permits are granted
- Environmental permits will be granted to allow for water access
- No PUC Form has been provided to the Designer at this time. Utilities will be critical to that early stages of this project and the Designer will be seeking an update on the PUC form after the schedule Utility Site meeting (on _____, 2014), and as the design evolves into the 75% stage.

1.8 INCENTIVE/DISINCENTIVE

It is the Designer's understanding that this project will not be offering contractor Incentive/Disincentive at this time. The Designer will coordinate and confirm with the Project Manager whether an Incentive/Disincentive (I/D) provision is appropriate for this project.

1.9 ATTACHMENTS – SIMPLE BAR CHART - CTD

9.1 SIMPLIFIED/CONCEPTUAL CTD SCHEDULE – (ATTACHED)



ATTACHMENT G

EXAMPLE

CONTRACT TIME DETERMINATION

(CTD)

WITH NARRATIVE

75% DESIGN PHASE

DEVELOPED FOR ***CONSTRUCTION PLANNING***

DURING THE ***DESIGN PHASE***

REV3 – 05MAR2024

CONTENT

ATTACHMENT G – EXAMPLE CTDS 75% DESIGN PHASE – WITH NARRATIVE

DISCLAIMER - The intent of this guideline is to assist Designer when creating a Contract Time Determination Study; primarily eliminating a need to create standardized coding, reporting, formatting and to assist in the general schedule set up only. This tool-kit information is provided for informational purposes and is available for use as a schedule development guideline only. This information may not reflect specific contract requirements. MassDOT does not guarantee the schedule information to be free from errors or inconsistencies, and the presence of such errors or inconsistencies does not relieve the Designer or a Contractor, from preparing schedule submittals in accordance with the specific Contract requirements and the requirements of the Engineer. MassDOT makes no representations or warranties of any kind, express or implied, about the accuracy, reliability, or completeness with respect to the guidance herein or any of the information, services, or related content contained therein for any purpose.

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1 EXECUTIVE SUMMARY

1.1 CONTRACT TIME DETERMINATION (CTD) SUMMARY

The _____ {Consultant} conducted a Contract Time Determination study (CTD) that initially resulted in a Substantial Completion date of _____2016. At the direction of MassDOT, subsequent efforts were developed to optimize the schedule further and are summarized as follows:

OPTION A – This initial evaluation utilized two primary work assumptions during the substructure construction; one single crew working on the abutments, and another single crew working on the piers sequentially.

OPTION B - This option utilized three primary work assumptions as part of the substructure construction; one single crew working on the abutments and two other crews working on the piers with two headings (two different directions). This resulted in a Substantial Completion date of _____ 201_. The duration reduction in this option was minimal due to the limitation of completing some of the work in the winter, such as waterproofing and paving.

OPTION C – An additional accelerated duration study was developed, as a continuation of the previous Option B basis, in which the critical superstructure and approach work activities were changed to a working shifts of 6 days per week and 10 work hours per day (from the basis of 5 days/8hours). The schedule savings is significant due to the combination of time saved in performing some critical activities on extended shifts, with the multiple headings used in Option B no longer delayed due to winter shutdown. The incorporation of these acceleration methods resulted in a Substantial Completion date of _____201_.

Additionally, a cursory evaluation to explore the benefits of potentially improving the duration of the substructure work was explored using that same 6day/10 hour increase. This aggressive schedule initiative was deemed to be less of a benefit than the acceleration of the superstructure work.

The {CONSULTANT} is now recommending the Accelerated Option C schedule for this project and has determined the following performance durations to be reasonable and achievable using the Design Build delivery method. These durations are based on a Notice to Proceed (NTP) date of _____.

	Duration	**Date**
• **NTP to Interim Roadway Opening (MS#04)**	**____ days**	**_____**
• **NTP to Full Beneficial Use (MS#03)**	**____ days**	**_____**
• **NTP to Substantial Completion/Full Beneficial Use (MS#02)**	**____ days**	**_____**
• **NTP to Contractor Field Completion (MS#01)**	**____ days**	**_____**

This report describes the basis for the project duration and explains the use of durations, calendars (working shifts), schedule contingency and the assumptions used in the report. The detailed CTD schedule is also attached. Two detailed schedules / acceleration options are also attached included to help demonstrate the completion.

1.2 SPECIAL RESTRICTIONS

The items listed below provide restrictions on the discussed duration, these restrictions should be considered when determining the contractual durations:

- In order to prevent delays associated with the proposed completion date slipping through an additional winter slow down period, the NTP should be issued no later than _____201_.
- According to the standard specifications, when the NTP is being issued, if the proposed Substantial Completion/Full Beneficial Use milestone falls between December 1st and March 15th, the same number of additional days, beyond December 1st, will need to be extended after March 15th. This standard specification should be eliminated to require a Time Extension Analysis to be submitted by the contractor, as this contract time study has factored this into account and a CPM Schedule Specification is required for this project from the Contractor.
- Finally, any date changes should be coordinated and reviewed with the project team, prior to the advertisement and NTP.

1.3 CONTRACT SPECIAL PROVISIONS LANGUAGE

Specific contract language has been developed for incorporation into the Contract's Special Provisions to address changes to access restrictions, work restrictions, and limitations of operations. See attachment _____

1.4 MILESTONES CHART

The following chart lists the CTD milestones for each option, based on contract procurement durations.

	Advertisement to NTP = 90 Days		Advertisement to NTP = 120 Days		Advertisement to NTP = 150 Days		Advertisement to NTP = 180 Days	
Milestone	Date	Days from NTP	Date	Days from NTP	Date	Days from NTP	Date	Days from NTP
Advertise Construction Contract	XX/XX/XXXX							
Notice-to-Proceed Issuance	XX/XX/XXXX		XX/XX/XXXX		XX/XX/XXXX		XX/XX/XXXX	
Option A								
Interim Roadway Opening (MS#04)	XX/XX/XXXX	XXX	XX/XX/XXXX	XXX	XX/XX/XXXX	XXX	XX/XX/XXXX	XXX
Full Beneficial Use (MS#03)	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX
Substantial Completion (MS#02)	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX
Contractor Field Completion (MS#01)	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX
Option B								
Interim Roadway Opening (MS#04)	XX/XX/XXXX	XXX	XX/XX/XXXX	XXX	XX/XX/XXXX	XXX	XX/XX/XXXX	XXX
Full Beneficial Use (MS#03)	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX
Substantial Completion (MS#02)	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX
Contractor Field Completion (MS#01)	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX
Option C								
Interim Roadway Opening (MS#04)	XX/XX/XXXX	XXX	XX/XX/XXXX	XXX	XX/XX/XXXX	XXX	XX/XX/XXXX	XXX
Full Beneficial Use (MS#03)	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX
Substantial Completion (MS#02)	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX
Contractor Field Completion (MS#01)	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX	XX/XX/XXXX	X,XXX

Explanation of dates:

- The columns contain the Milestone date results based on various Construction Contract procurement durations
- The table is segmented by the three Options of normal and Accelerated CTD versions
- The standard Milestones (FBU, SC, and CFC) have been inserted into the contract bid documents exactly as stipulated by MassDOT in the _____ guidance document dated _____.

2 PURPOSE

The schedule and narrative are developed for the sole use of MassDOT and should not be shared with the Design-Builder/Contractor. The CTD is prepared using Critical Path Method (CPM) scheduling techniques to estimate the duration of the construction portion of the project and is generated to demonstrate that there is at least one reasonable/buildable plan to finish the project within the timeframe specified. This CTD considers most/critical constructability aspects as part of this planning effort, however, not all constructability aspects have been drafted/commented upon as part of this CTD. This CTD schedule is based on the 25% design and is intended to provide a conceptual baseline comparison of what is a reasonable and achievable duration for the construction of the project.

3 PROJECT DESCRIPTION

MassDOT has established a preliminary cost estimate of $____,000,000 for Project # 60___ - _____ Bridge Replacement Project, which includes but is not limited to:

- Construction of the replacement of the _____ carrying Route _____ over Lake _____in _____ including but not limited to _____,new piers and abutments and new open spandrel steel deck arch superstructures.
- Bridge Demolition
- Roadway and Intersection Improvement and Traffic Management
- Drainage and Stormwater Treatment
- Bridge and Approach Lighting and Bridge accent lighting
- Utility Coordination and Relocation
- Architectural and Historic Bridge Elements including monuments, plaques, railings, historic signage
- Coordination with stakeholders in conjunction with MassDOT

The scope of work contains, but is not limited to, the design and replacement of the existing Bridge No. S-_____=W-_____ in its entirety. The existing concrete _____ bridge will be demolished and replaced with a _____ structure as shown on the 75% Highway Plans and Bridge Plans. The construction will be sequenced in order to maintain two lanes of traffic over the bridge during construction. The contractor will be required to coordinate with _____ and provide notice to mariners on recreational boating passage during construction. Recreational boating through the project area must be maintained during construction.

The new bridge will be an ____foot long (center of bearings) ___ span, _____deck arch supported on concrete abutments and piers. The piers will be supported on deep foundations. The bridge will have two separate structures/barrels supporting the eastbound and westbound traffic in its final configuration.

The new bridge will provide a minimum ___foot wide vertical clearance envelope providing a minimum of ___ feet over mean water level _____. In order to maximize the vertical clearance under the bridge the roadway profile will be raised to a maximum grade of __%.

Current traffic movements over the bridge and through the intersections will be maintained through the project area during construction. A minimum of two lanes in each direction will be provided over the bridge at all times with the exception of possible short term lane closures during off peak hours for specific construction activities.

The work includes improvements along _____Avenue for approximately _____ feet (subject to change during final design) including modifications and improvements for the intersection of ____ Avenue and Route ____.

The Contractor will be responsible for maintenance and providing an acceptable operating condition of two travel lanes in each direction within limits of the project area including the _____ Bridge.

Site Photograph:

4 REFERENCES

The CTD was developed using information contained in the following documents:

A. MassDOT Project Description – Project 60____
B. 75% Drawings Set : Highway and Bridge Drawings, dated Month DD, YYYY
C. Preliminary Construction Cost Estimate of $_,000,000 based on 75% Design
D. Reference Data for Production Rates _____
E. Conceptual cost estimate date _____
F. 75% Construction Cost Estimate information developed by _____ dated _____

5 METHODOLOGY

After reviewing the reference information, the scope of work was identify and analyzed. The conceptual cost estimate was used as the starting point for the schedule in order to maintain traceability between the two documents. The project scope was further broken down into discrete items of work (activities). The duration of each activity was calculated based on the quantity take offs, previous data, equipment and crew compositions. After defining the activities which represent the scope of the project, logical relationships between the activities were created to reflect the sequence in which the work will be performed. The schedule was then calculated based on the activity durations, and the sequence of the activities. The application of the resources over time was evaluated based on the number of activities worked during the construction of each phase. The critical path were reviewed with members of MassDOT District Construction.

6 CRITICAL PATH

For the purposes of this CTD, a project's critical path is the longest continuous path of activities through the project. The critical path determines the completion date of the project. A delay of any of the activities on the critical path will delay the completion date of the project.

To provide a quick understanding of the most critical path, a written description is listed below. The full schedule is added as an attachment to this report. The critical path changes with the two options also included for accelerating the construction. {consultant to add graphic of critical paths and describe them}

Advertise, Award & Design:

- 75% Phase 2 Plans has been completed on _____ and then PS&E Phase 2 Plans will be completed in _____
- The anticipated Advertisement date for this project is currently forecasted to be _____

Construction Phase 1:

- Phase __ work for demolition of the south sidewalk & start of the utility transfers will begin in _____ and continue through the fall of _____ while the design process is ongoing
- The Utility relocations and splice over work for Verizon will start after Phase__ in the fall of ____ and continue during Phase __ work through _____ for a completion in May ____.
- Phase __ work will start with Stage1 (Install Cofferdams, Erect Precast Concrete Piers and Abutments) in November ____ and continue while staggering the major work elements from Pier 2 to 3.
- Phase __ Stage 2 will continue to complete the superstructure frame construction.
- Phase __ Stage 3 will then continue to complete the superstructure deck construction & approach work for a traffic shift by Month DD, YYYY.

Construction Phase 2:

- Phase __ work for demolition will continue through the summer ____ and completing in the fall of ____.
- Phase __ work will start with Stage1 (Install Cofferdams, Erect Precast Concrete Piers and Abutments) in the fall of ____ and continue while staggering the major work elements from Pier 2 to 3.
- Phase __ Stage 2 & 3 will continue to complete the superstructure frame construction.
- Phase __ Stage 4 & 5 will then continue to complete the superstructure deck construction & approach work for a traffic shift by November ____.

7 ASSUMPTIONS

The following assumptions were used in the development of this schedule as shown:

7.1 GENERAL

- All work will be performed according to a 5 day 40 hour standard workweek, with the exception of the superstructure work (6/10s), which includes Massachusetts state holidays as listed on the DOT web site.
- Labor, equipment and materials will be available when and as needed.
- MassDOT PM anticipates that the only remaining project permits will be granted as scheduled without impacting the duration.
- The {CONSULTANT} anticipates that an environmental permit modification will be granted to allow unlimited water access with the exception of the boating restrictions. Should there be additional restrictions the contract duration will need to be increased.
- Early release packages for both design and submittals are shown in the schedule to allow starting Stage 1 demolition while the rest of the project is still being designed.
- Activities generally planned to work through the winter include the cofferdam installation, mass excavation, pile driving, mass concrete, precast pier installation, demolition, and large steel girder installations. These activities use a modified calendar that has 5 additional non work days between January and March to account for the winter inefficiencies.

- In the case that the precast _____ installation falls in the winter, the final tension & grout is shown as occurring after the winter and before the steel is installed on the _____.
- Activities generally planned not to work through the winter include abutment concrete, roadway work, waterproofing, paving, and deck concrete. These activities use either a short (Dec15-Mar15) winter shutdown or long (Nov15-Apr1) winter shutdown calendar based on the type of work and are in accordance with District Construction confirmation. These have been noted in a modified 8.03 Special Provision (see attached _____)
- The schedule base option A utilizes two primary work areas during the substructure construction. One crew and equipment working on the abutments and another crew and equipment working on the piers sequentially.
- The schedule acceleration option B utilizes three primary work areas during the substructure construction. One crew and equipment working on the abutments and two crews and equipment working on the piers with two headings.
- The schedule acceleration option C utilizes the same multiple heading approach as option B and includes additional acceleration on the critical superstructure and approach work occurring on a 6 day 10 hour a day workweek.

7.2 MAINTENANCE OF TRAFFIC

- The schedule has been developed as per the traffic sequencing in the design set.
    - In phase 1, bi-directional traffic will continue to operate with 2 lanes in each direction on the existing bridge.
    - In phase 2, bi-directional traffic will operate with 2 lanes in each direction on the new east bound bridge built in phase 1.

8 UTILITY COORDINATION

8.1 SCOPE OF UTILITY WORK

The PUC form (attached ____) has been utilized to develop many access restraints and the CTD. This will be included in the contract bid documents and will be the basis of the Contractors baseline schedule.

8.2 UTILITY COORDINATION COMMENTS

The PUC form has been noted as a possible candidate for Early Utility relocation (before Contractor NTP). The District Construction staff should note this and possibly use the PUC form information to manage the early start and progression of this work after the Advertisement.

The PUC form also notes that there is some concurrent utility work that must be executed properly to complete within the contact time. This should also be noted by District Construction and verified in the Contractors baseline schedule.

There appears to be _____ Utilities that have yet to generate the planned utility durations/sequence (not on the PUC form but are part of this work). The {consultant} has contacted the PM and the DUCE to see if there is an update on this information and will incorporate in the 100% submission. It is anticipated that the information provided by {Utility} will be critical and will likely impact the Duration provided herein – therefore, this CTD has included a 'plug' duration of 60 days to relocate _____ .

8.3 ACCESS RESTRAINTS

Access restraints and interim milestones are shown in the schedule to highlight how the current utility relocations affect the construction schedule. The utility relocations occur ___{describe the need for access restraints and proposed access restraint dates calculated from the NTP }

9 KEY SUBMITTALS

9.1 EARLY SUBMITTAL PACKAGES

As the first year of construction will be based on preliminary drawings, it is very important for the Contractor to complete early design packages for _____

SUPPORT OF EXCAVATION (S.O.E.) FOR PIERS

The submittals for the cofferdams are critical for getting the work zone established in the water prior to ice over in the lake. To facilitate getting this done early, the submittals are shown as occurring after the _____ is approved.

PILE DRIVING

With several of the piers having deep piles it is important to have these submittals completed early to allow sufficient time to procure the materials and schedule the crews for the project. This becomes even more important with the acceleration options as they include an additional pile driving operation.

REBAR SHOP DRAWINGS

The pile caps and abutments include a significant amount of rebar and getting this approved early will be important to prevent any delays in construction.

STRUCTURAL STEEL

With the amount of steel on this project it is very important to track both the submittal and procurement of the steel through the fabrication process to prevent any delay to the construction in the field.

10 RESOURCES

Several of the activities in the schedule require equipment that will need to be planned for and scheduled in advance to avoid any impact to the schedule. In the acceleration option schedules, this becomes even more important to plan for as they require an additional operation with another crane, pile driver, and barge or other work platform for the piers.

The majority of activities on the critical path involve _____. The primary resources required for these activities are _____. Those key resources will be working in crews and completing the work simultaneously.

11 COST

The current available cost and quantity estimates were utilized to derive the activity and schedule duration. The total cost was $__,000,000.

12 SCHEDULE CONTINGENCY

The {CONSULTANT} has determined that the project can be completed in the duration provided in Section 1 of this report. {CONSULTANT} believes these durations are reasonable and achievable. No schedule contingency has been included.

13 LIMITATIONS OF OPERATIONS

Operations will be limited by seasonal weather restrictions, seasonal water flow, maintenance of pedestrian traffic, maintenance of vehicular traffic, maintenance of Railroad operations, Subway operations, utility work (see previous section), access to neighboring businesses and schools, etc.

13.1 SEASONAL RESTRICTIONS

13.1.1 WATER ACCESS

- Water Access
  - The schedule was developed with the requirement to allow access to recreational water traffic through the center primary span.

- Winter Concrete
  - No concrete placement, applying of waterproofing sealant or soil compaction will occur between December 1 and March 15.
  - Although the Supplement Specifications do not specifically restrict the periods in which concrete shall be placed, the Spec does indicate that concrete cannot be placed when:
    - See MHD Supplement Specifications -Ed. 1988, Section 901.64 C
  - Reference: Per standard DOT winter shutdown periods, concrete placement is typically restricted between December 1 and March 15.

- Base & Final Paving (HMA)
  - No base paving (HMA) placement will occur between November 15 and April 1.
  - Hot mix asphalt shall not be placed after November 15 or before April 1 without the written permission of the Engineer.
  - Reference: See MHD Supplement Specifications-Ed. 1988, Section 460.63

- Reclaiming Pavement
  - Reclaiming operations shall not commence before April 15 and shall terminate on or before October 15 unless otherwise approved in writing by the Engineer
  - Reference: See MHD Supplement Specifications -Ed. 1988, Section 403.60

13.1.2 LANDSCAPING

- Landscape Calendar #1: Sod
  - {CONSULTANT}will use the following summary schedule for most landscaping, installing sod, etc.
    - Planting can occur during the Spring Season (April 15 to June 1) and Fall Season (August 15 to November 1).
  - MHD Standard Specifications -Ed. 1988, Section 771.60, Excerpt below:
    - Balled and burlapped plants may be planted in the spring until June 15 and in the fall from August 15 to November 1.

- Container grown plants may be planted at any time the ground is not frozen (provided specified minimum time of growth and root development has been met).
- Bare rooted plants shall be planted only from the time ground thaws in spring until May 15.
- The seeding season for crownvetch shall be from April 15 to August 15.

13.1.3 WINTER INEFFICIENCY

a. The weather impact on working efficiency during the winter is estimated according to the collected weather information from weather data from 2003 thru 2008. It is assumed that the project will be shut down in days with severe weather. Severe weather was defined as blowing snow, rain for more than 1 inch, daily temperature below 10 degrees, wind of more than 50 MPH, thunderstorm, and fogs that reduce visibility to less than ¼ miles.
b. The historical data show that the number of days with severe weather on average is as follows:
    1. 1 day/week from December 1 to January 15,
    2. 2 days/week from January 16 to February 15,
    3. 1 day/week from February 16 to March 15.
c. The relevant calendars for concrete and pavement have used the aforementioned data and have reduced number of working days per week.

13.2 OTHER CONSTRUCTION SPECIFICATION GUIDELINES

13.2.1 CONCRETE RESTRICTIONS:

- Per Supplemental Spec, Section 901
    - Minimum cure duration before adding load: 7 calendar days
    - Minimum cure duration for concrete deck before adding waterproofing: 14 calendar days

13.3 TRAFFIC CONTROL

Traffic is required to remain open throughout construction with 2 lanes in each direction. In order to complete the phasing plan the approaches at both ends of the bridge will need to be adjusted several times as show in the traffic management plans.

It is assumed that the construction of several activities will be required to be performed during off hours such as at night or during the weekends.

14 ACCELERATION SCHEDULES

In general, construction sequences will proceed in a linear fashion utilizing one set of equipment/crews (cranes, forms, etc) in the most cost effective manner. However, for this project the {CONSULTANT} developed acceleration construction sequences that complete the project in less time. Methods used to accelerate the project schedule are as follows:

14.1.1 OPTION B – MULTIPLE HEADINGS ON SUBSTRUCTURE

The acceleration Option B includes working the demolition and pier construction from two headings, each with their own set of crews and equipment.

This acceleration option helps to significantly reduce the time required to complete the substructure construction, however it offers little savings over the entire course of the project. The duration from NTP (Notice to Proceed) to Substantial Completion/Full Beneficial Use only reduced from _____calendar days in Option A to _____calendar days in Option B. The reason the schedule savings in this option are minimal is due to the limitation of completing some of the work in the winter, such as waterproofing and paving.

14.1.2 OPTION C – MULTIPLE HEADINGS ON SUBSTRUCTURE & EXTENDED HOURS ON SUPERSTRUCTURE

In order to fully realize the savings in Option B, additional acceleration was introduced as Option C, where critical superstructure and approach work activities were changed to a working calendar of 6 days per week and 10 work hours per day.

This acceleration option was able to significantly reduce the duration from NTP to Substantial Completion/Full Beneficial Use from ____ cd in Option A to _____ cd in Option C. The reason the savings is so significant is a combination of time saved in performing some of the critical activities on the extended shifts, with the multiple headings used in Option B no longer being held up for the winter shutdown.

15 ATTACHMENTS

ATTACHMENT H

MASSDOT CTD CHECKLIST

(CONTRACT TIME DETERMINATION)

DEVELOPED FOR ***CONSTRUCTION PLANNING***

DURING THE ***DESIGN PHASE***

REV3 – 05MAR2024

MASSDOT CTD RECEIPT CHECKLIST

Contract #: _____ Project #: _____

Design Consultant Name: _____ Project Name: _____

Description of Submission: _____

Design Consultant Submission Date: _____ Schedule Data Date: _____

PM Date of Review: _____ Accept or Revise & Resubmit: _____

Project Manager Name: _____

CONSTRUCTION CONTRACT TIME DETERMINATION (CTD)	
SUBMISSION REQUIREMENTS	
Has the Designer submitted a CTD Quality Control confirmation (Designer PM approval) before the submission of the CTD?	☐ Yes ☐ No
Has the Designer clearly identified that the basis documents, those used to develop this CTD, are the most current documents (75%)?	☐ Yes ☐ No
Has the Designer provided evidence that the Designer Scheduler/Planner that performed the CTD is experienced?	☐ Yes ☐ No
Have Access Restraints (for all PUC utility coordination and other site access restrictions) been clearly identified and properly explained in the CTD and Special Provisions 8.03 and or 8.06 ?	☐ Yes ☐ No
Has the CTD been developed with winter expectations/restrictions clearly accounted for - and clearly identified in 8.03 and or 8.06?	☐ Yes ☐ No
Has an evaluation of critical resources, shift differential, overtime, and possible means and methods (i.e. to demonstrate one 'buildable' solution) been included with the narrative of the CTD?	☐ Yes ☐ No
If this CTD is an update, has there been a clear description of the scope changes that have occurred since the previous CTD?	☐ Yes ☐ No
Have all of the PUC form (utilities) been utilized to develop the CTD?	☐ Yes ☐ No
In the narrative, has the Designer stated and shown evidence that they have provided MassDOT with a 'buildable' project?	☐ Yes ☐ No
Has the scheduled been developed with the 'bottoms up cost estimate' as a basis for the lump sum bridge work?	☐ Yes ☐ No

3/6/2024 2:08 PM

Have the three new MassDOT Milestones been properly utilized (Full Beneficial Use, Substantial Completion, and Contractor Field Completion)?	☐ Yes ☐ No
Has ROW certificate been issued?	☐ Yes ☐ No
Have all required environmental permits received with this design phase submission been accounted for in this CTD Submission (time related aspects)? If no, list missing permits and/or outstanding issues: _____ _____ _____ Required permits may include, but may not be limited to the following: Department of Environmental Protection (DEP), Chapter 91, Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Stormwater Notice of Intent, U.S. Army Corps of Engineers, U.S. Coast Guard and other Navigable Waterway Management Authorities, Mass. National Heritage, Water Quality, Mass. Dept. of Fisheries, Environmental Notification Form (ENF), Environmental Impact Report (EIR), Conservation Commission Order of Conditions, etc. _____	☐ Yes ☐ No
Have all railroad work restrictions been discussed with rail road, approved and incorporated into the CTD ? If no, list outstanding issues: _____ _____ _____ Railroad issues may include, very specific requirements for any equipment/materials near the foul zone of the track, -- other considerations as part of the railroad force account agreements, railroad relocation designs, railroad relocation schedules, determination of other potential railroad-related operational impacts, etc --- and need to require flaggers (see example limitation of operations that provides a basis for not being allowed access on a reasonable basis).	☐ Yes ☐ No
Have all Maintenance of Traffic and Traffic Management requirements been determined/included in CTD? If no, list outstanding issues: _____	☐ Yes ☐ No
Have all local, municipal, town, agreements been determined/included in CTD? If no, list outstanding issues: _____	☐ Yes ☐ No
Have all working-over-water, and in water (if applicable) restrictions If no, list outstanding issues: _____	☐ Yes ☐ No
In addition to MassDOT standard Milestones (FBU, SC, and CFC) have there been interim milestones developed for needed I/Ds or Utilities?	☐ Yes ☐ No
Have all of the schedule elements been clearly annotated in the CTD submission? Time required for the Contractor to plan work and mobilize prior to starting physical work ☐ Preparation of critical submittals ☐ Review of critical submittals by the Designer (MassDOT will provide standard submittal review durations to be used in the CCTD schedules) ☐	☐ Yes ☐ No

Procurement/ordering of materials ☐ Fabricate and deliver long-lead items ☐ Time necessary to complete each activity, as itemized in the Construction cost estimate ☐ Testing ☐ Commissioning (movable drawbridges only) ☐ Seasonal restrictions ☐ Environmental permitting or landowner restrictions ☐ Agency/utility/city restrictions ☐ Sequencing/logic required to complete the work ☐	
Have Incentives/Disincentives been offered for this project – if so, has a calculation been developed to support the amount ?	☐ Yes ☐ No
CONSTRUCTION CONTRACT TIME DETERMINATION (CTD)	
CHANGES AND COMMUNICATION	
Has the Designer shown that any/all significant changes to work restrictions, shifts, resources, or other schedule/cost related elements been properly communicated to the construction estimator (to update key pricing issues related to time)?	☐ Yes ☐ No
Have all community commitments, noise restrictions, and other important restrictions have been properly accounted for in the CTD?	☐ Yes ☐ No
Previous Design Phase review comments have been incorporated with this CTD submission? If no, identify the significant comments that were not addressed.	☐ Yes ☐ No
Has the schedule been developed using the most current forecast for Bid Opening and NTP?	☐ Yes ☐ No
Has this CTD been sent to the Area Engineer, the Project Controls Manager, the DUCE, and the District Scheduler distributed to MassDOT Reviewers – in accordance with the 2014 Design Submission Distribution Chart ?	☐ Yes ☐ No
If this CTD is an update, have previous comments, from the Area Engineer, the Project Controls Manager, the DUCE, or the District Scheduler been incorporated or documented/addressed (otherwise)?	☐ Yes ☐ No
Are there delays to the completion dates from the previous submission?	☐ Yes ☐ No
Have alternative options been evaluated? If Yes, have these been reviewed with the MassDOT PM's supervisor, District, and have they been evaluated for pricing results as well?	☐ Yes ☐ No

Have the agreed changes to completion dates been updated in Pinfo and in the contract bid documents?	☐ Yes ☐ No

Signed: _____
Printed Name: _____
Title: _____
Date: _____
Contract or Project File No.: _____

ATTACHMENT I

SAMPLE DESIGN-BID-BUILD CTD

(CONTRACT TIME DETERMINATION)

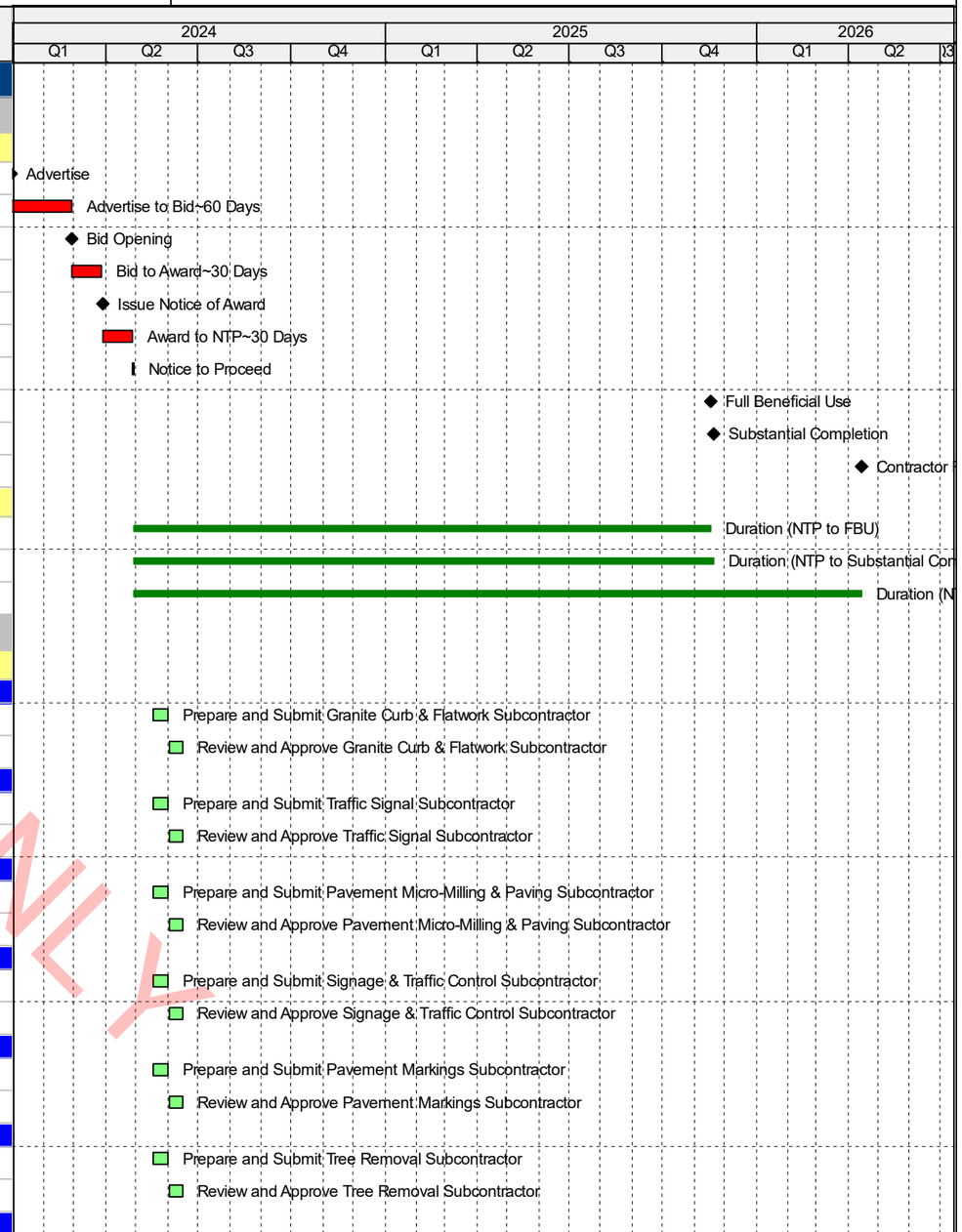
DEVELOPED FOR ***CONSTRUCTION PLANNING***

DURING THE ***DESIGN PHASE***

REV3 – 03MAR2024

Project Name: 609254 100% CTD03 DD12.30.2023 Intersection Improvements - Broadway St. Lynn - Final PUC, Project ID 609254 CTD03	CST01-Baseline-All	MassDOT: Highway

Activity ID	Activity Name	OD	Start	Finish	Calendar
609254 100% CTD03 DD12.30.2023 Intersection Improvements - Broadway St. Lynn - Final PUC					
Milestones					
General					
ADV	Advertise	0	30-Dec-23		7 Day Milestone / Procurem
ADVBID	Advertise to Bid~60 Days	60	30-Dec-23	27-Feb-24	7 Day Milestone / Procurem
BID	Bid Opening	0	28-Feb-24		7 Day Milestone / Procurem
BIDAWD	Bid to Award~30 Days	30	28-Feb-24	28-Mar-24	7 Day Milestone / Procurem
AWD	Issue Notice of Award	0	29-Mar-24		7 Day Milestone / Procurem
AWDNTP	Award to NTP~30 Days	30	29-Mar-24	27-Apr-24	7 Day Milestone / Procurem
NTP	Notice to Proceed	1	28-Apr-24	28-Apr-24	7 Day Milestone / Procurem
MS03	Full Beneficial Use	0		17-Nov-25	7 Day Milestone / Procurem
MS02	Substantial Completion	0		20-Nov-25	7 Day Milestone / Procurem
MS01	Contractor Field Completion	0		14-Apr-26	7 Day Milestone / Procurem
Durations					
1030	Duration (NTP to FBU)	568	29-Apr-24	17-Nov-25	7 Day Milestone / Procurem
1000	Duration (NTP to Substantial Comp)	571	29-Apr-24	20-Nov-25	7 Day Milestone / Procurem
1010	Duration (NTP to Final Comp)	716	29-Apr-24	14-Apr-26	7 Day Milestone / Procurem
Submittals / Procurements					
Subcontractors					
Granite Curb & Flatwork Subcontractor					
A104	Prepare and Submit Granite Curb & Flatwork Subcontractor	15	18-May-24	01-Jun-24	7 Day Milestone / Procurem
A164	Review and Approve Granite Curb & Flatwork Subcontractor	15	02-Jun-24	16-Jun-24	7 Day Milestone / Procurem
Traffic Signal Subcontractor					
A108	Prepare and Submit Traffic Signal Subcontractor	15	18-May-24	01-Jun-24	7 Day Milestone / Procurem
A166	Review and Approve Traffic Signal Subcontractor	15	02-Jun-24	16-Jun-24	7 Day Milestone / Procurem
Pavement Micro-Milling & Paving Subcontractor					
A110	Prepare and Submit Pavement Micro-Milling & Paving Subcontractor	15	18-May-24	01-Jun-24	7 Day Milestone / Procurem
A168	Review and Approve Pavement Micro-Milling & Paving Subcontractor	15	02-Jun-24	16-Jun-24	7 Day Milestone / Procurem
Signage & Traffic Control Subcontractor					
A112	Prepare and Submit Signage & Traffic Control Subcontractor	15	18-May-24	01-Jun-24	7 Day Milestone / Procurem
A170	Review and Approve Signage & Traffic Control Subcontractor	15	02-Jun-24	16-Jun-24	7 Day Milestone / Procurem
Pavement Markings Subcontractor					
A114	Prepare and Submit Pavement Markings Subcontractor	15	18-May-24	01-Jun-24	7 Day Milestone / Procurem
A172	Review and Approve Pavement Markings Subcontractor	15	02-Jun-24	16-Jun-24	7 Day Milestone / Procurem
Tree Removal Subcontractor					
A116	Prepare and Submit Tree Removal Subcontractor	15	18-May-24	01-Jun-24	7 Day Milestone / Procurem
A174	Review and Approve Tree Removal Subcontractor	15	02-Jun-24	16-Jun-24	7 Day Milestone / Procurem
Landscape & Erosion Control Subcontractor					



Remaining Level of Effort ◆ Milestone
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work

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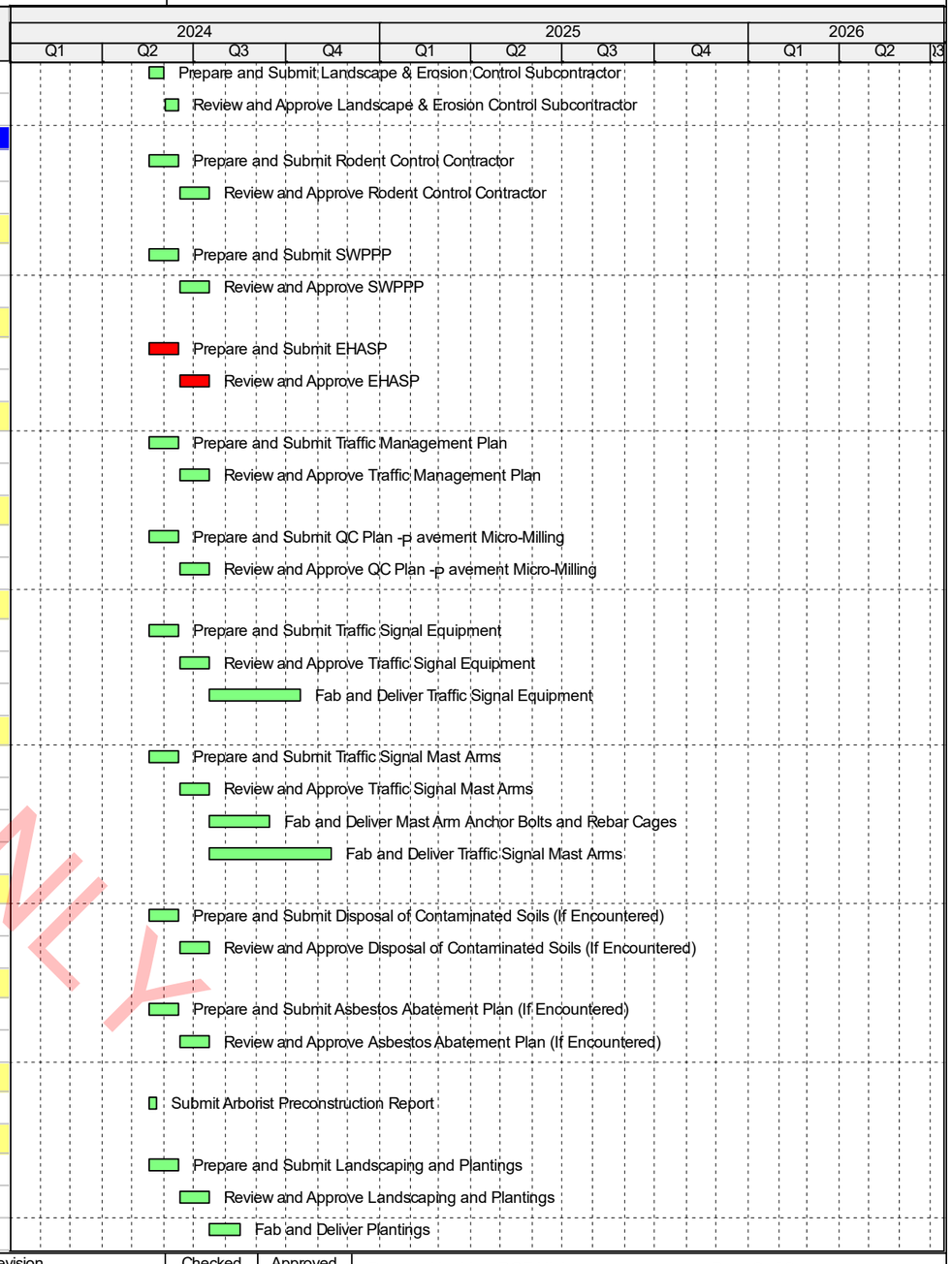
Data Date = 30-Dec-23, Run Date = 19-Dec-23, 09:14
Project Start = 30-Dec-23 Project Finish = 14-Apr-26

Date	Revision	Checked	Approved

Prepared by MassDOT Highway

Activity ID	Activity Name	OD	Start	Finish	Calendar
A118	Prepare and Submit Landscape & Erosion Control Subcontractor	15	18-May-24	01-Jun-24	7 Day Milestone / Procurem
A176	Review and Approve Landscape & Erosion Control Subcontractor	15	02-Jun-24	16-Jun-24	7 Day Milestone / Procurem
Licensed Rodent Control Qualifications					
A136	Prepare and Submit Rodent Control Contractor	30	18-May-24	16-Jun-24	7 Day Milestone / Procurem
A194	Review and Approve Rodent Control Contractor	30	17-Jun-24	16-Jul-24	7 Day Milestone / Procurem
Stormwater Pollution Prevention Plan (SWPPP)					
A120	Prepare and Submit SWPPP	30	18-May-24	16-Jun-24	7 Day Milestone / Procurem
A178	Review and Approve SWPPP	30	17-Jun-24	16-Jul-24	7 Day Milestone / Procurem
Environmental Health and Safety Plan (EHASP)					
A122	Prepare and Submit EHASP	30	18-May-24	16-Jun-24	7 Day Milestone / Procurem
A180	Review and Approve EHASP	30	17-Jun-24	16-Jul-24	7 Day Milestone / Procurem
Traffic Management Plan					
A124	Prepare and Submit Traffic Management Plan	30	18-May-24	16-Jun-24	7 Day Milestone / Procurem
A182	Review and Approve Traffic Management Plan	30	17-Jun-24	16-Jul-24	7 Day Milestone / Procurem
Quality Control (QC) Plan -pPavement Micro-Milling					
A126	Prepare and Submit QC Plan -p avement Micro-Milling	30	18-May-24	16-Jun-24	7 Day Milestone / Procurem
A184	Review and Approve QC Plan -p avement Micro-Milling	30	17-Jun-24	16-Jul-24	7 Day Milestone / Procurem
Traffic Signal Equipment					
A128	Prepare and Submit Traffic Signal Equipment	30	18-May-24	16-Jun-24	7 Day Milestone / Procurem
A186	Review and Approve Traffic Signal Equipment	30	17-Jun-24	16-Jul-24	7 Day Milestone / Procurem
A224	Fab and Deliver Traffic Signal Equipment	90	17-Jul-24	14-Oct-24	7 Day Milestone / Procurem
Traffic Signal Mast Arms					
A130	Prepare and Submit Traffic Signal Mast Arms	30	18-May-24	16-Jun-24	7 Day Milestone / Procurem
A188	Review and Approve Traffic Signal Mast Arms	30	17-Jun-24	16-Jul-24	7 Day Milestone / Procurem
A238	Fab and Deliver Mast Arm Anchor Bolts and Rebar Cages	60	17-Jul-24	14-Sep-24	7 Day Milestone / Procurem
A222	Fab and Deliver Traffic Signal Mast Arms	120	17-Jul-24	13-Nov-24	7 Day Milestone / Procurem
Disposal of Contaminated Soils (If Encountered)					
A132	Prepare and Submit Disposal of Contaminated Soils (If Encountered)	30	18-May-24	16-Jun-24	7 Day Milestone / Procurem
A190	Review and Approve Disposal of Contaminated Soils (If Encountered)	30	17-Jun-24	16-Jul-24	7 Day Milestone / Procurem
Asbestos Abatement Plan (If Encountered)					
A134	Prepare and Submit Asbestos Abatement Plan (If Encountered)	30	18-May-24	16-Jun-24	7 Day Milestone / Procurem
A192	Review and Approve Asbestos Abatement Plan (If Encountered)	30	17-Jun-24	16-Jul-24	7 Day Milestone / Procurem
Arborist Preconstruction Report					
A138	Submit Arborist Preconstruction Report	7	18-May-24	24-May-24	7 Day Milestone / Procurem
Landscaping and Plantings					
A140	Prepare and Submit Landscaping and Plantings	30	18-May-24	16-Jun-24	7 Day Milestone / Procurem
A196	Review and Approve Landscaping and Plantings	30	17-Jun-24	16-Jul-24	7 Day Milestone / Procurem
A236	Fab and Deliver Plantings	30	17-Jul-24	15-Aug-24	7 Day Milestone / Procurem



Remaining Level of Effort ◆ ◆ Milestone
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work

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Data Date = 30-Dec-23, Run Date = 19-Dec-23, 09:14
Project Start = 30-Dec-23 Project Finish = 14-Apr-26

Date	Revision	Checked	Approved

Activity ID	Activity Name	OD	Start	Finish	Calendar
Precast Drainage Structures					
A142	Prepare and Submit Precast Drainage Structures	30	18-May-24	16-Jun-24	7 Day Milestone / Procurem
A198	Review and Approve Precast Drainage Structures	30	17-Jun-24	16-Jul-24	7 Day Milestone / Procurem
A240	Fab and Deliver Drainage Pipe	14	17-Jul-24	30-Jul-24	7 Day Milestone / Procurem
A226	Fab and Deliver Precast Drainage Structures	21	17-Jul-24	06-Aug-24	7 Day Milestone / Procurem
Granite Curb Plan					
A150	Prepare and Submit Granite Curb Plan	30	18-May-24	16-Jun-24	7 Day Milestone / Procurem
A206	Review and Approve Granite Curb Plan	30	17-Jun-24	16-Jul-24	7 Day Milestone / Procurem
A234	Fab and Deliver Granite Curb	60	17-Jul-24	14-Sep-24	7 Day Milestone / Procurem
Precast Handholes, Pullboxes & Ped. Foundations					
A144	Prepare and Submit Precast Handholes, Pullboxes & Ped. Foundations	30	18-May-24	16-Jun-24	7 Day Milestone / Procurem
A200	Review and Approve Precast Handholes, Pullboxes & Ped. Foundations	30	17-Jun-24	16-Jul-24	7 Day Milestone / Procurem
A228	Fab and Deliver Precast Handholes, Pullboxes & Ped. Foundations	21	17-Jul-24	06-Aug-24	7 Day Milestone / Procurem
Castings Frame & Covers or Grates					
A146	Prepare and Submit Castings Frame & Covers or Grates	30	18-May-24	16-Jun-24	7 Day Milestone / Procurem
A202	Review and Approve Castings Frame & Covers or Grates	30	17-Jun-24	16-Jul-24	7 Day Milestone / Procurem
A230	Fab and Deliver Castings Frame & Covers or Grates	30	17-Jul-24	15-Aug-24	7 Day Milestone / Procurem
Permanent Signage					
A148	Prepare and Submit Permanent Signage	30	18-May-24	16-Jun-24	7 Day Milestone / Procurem
A204	Review and Approve Permanent Signage	30	17-Jun-24	16-Jul-24	7 Day Milestone / Procurem
A232	Fab and Deliver Permanent Signage	30	17-Jul-24	15-Aug-24	7 Day Milestone / Procurem
Utility Service Connections					
A160	Contractor Requests Work Order Number from Utility Company	1	18-May-24	18-May-24	7 Day Milestone / Procurem
A162	Utility Company Designs Service Connection	30	19-May-24	17-Jun-24	7 Day Milestone / Procurem
A210	Contractor Pays for Service Connection	1	18-Jun-24	18-Jun-24	7 Day Milestone / Procurem
A212	Contractor Contacts Utility Company to Request Service Connection	1	19-Jun-24	19-Jun-24	7 Day Milestone / Procurem
A214	Utility Company Provides/Installs Service Connection	7	20-Jun-24	26-Jun-24	7 Day Milestone / Procurem
Utilities (By Others)					
Notifications					
A106	Utility Notifications -C ontractor Submits Utility Schedule	31	18-May-24	17-Jun-24	7 Day Milestone / Procurem
A208	Utility Notifications -M assDOT Reviews / Issues NTP	7	18-Jun-24	24-Jun-24	7 Day Milestone / Procurem
A216	Utility Notifications -3 0 Day Utility Mobilization	30	25-Jun-24	24-Jul-24	7 Day Milestone / Procurem
Enabling Work by the Contractor					
A248	Layout Mast Arm & Drainage Locations	3	24-Jul-24	26-Jul-24	5 Day w/ Holidays -W inter S
A218	On Site Utility Coordination Meeting	1	01-Aug-24	01-Aug-24	5 Day w/ Holidays -W inter S
A246	Clear & Grub for Utility Work	2	02-Aug-24	05-Aug-24	5 Day w/ Holidays -W inter S
Disconnect/Connect Work Request					

Remaining Level of Effort ◆ ◆ Milestone
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work

Layout = CST01-Baseline-All, Filter = TASK filter: All Activities
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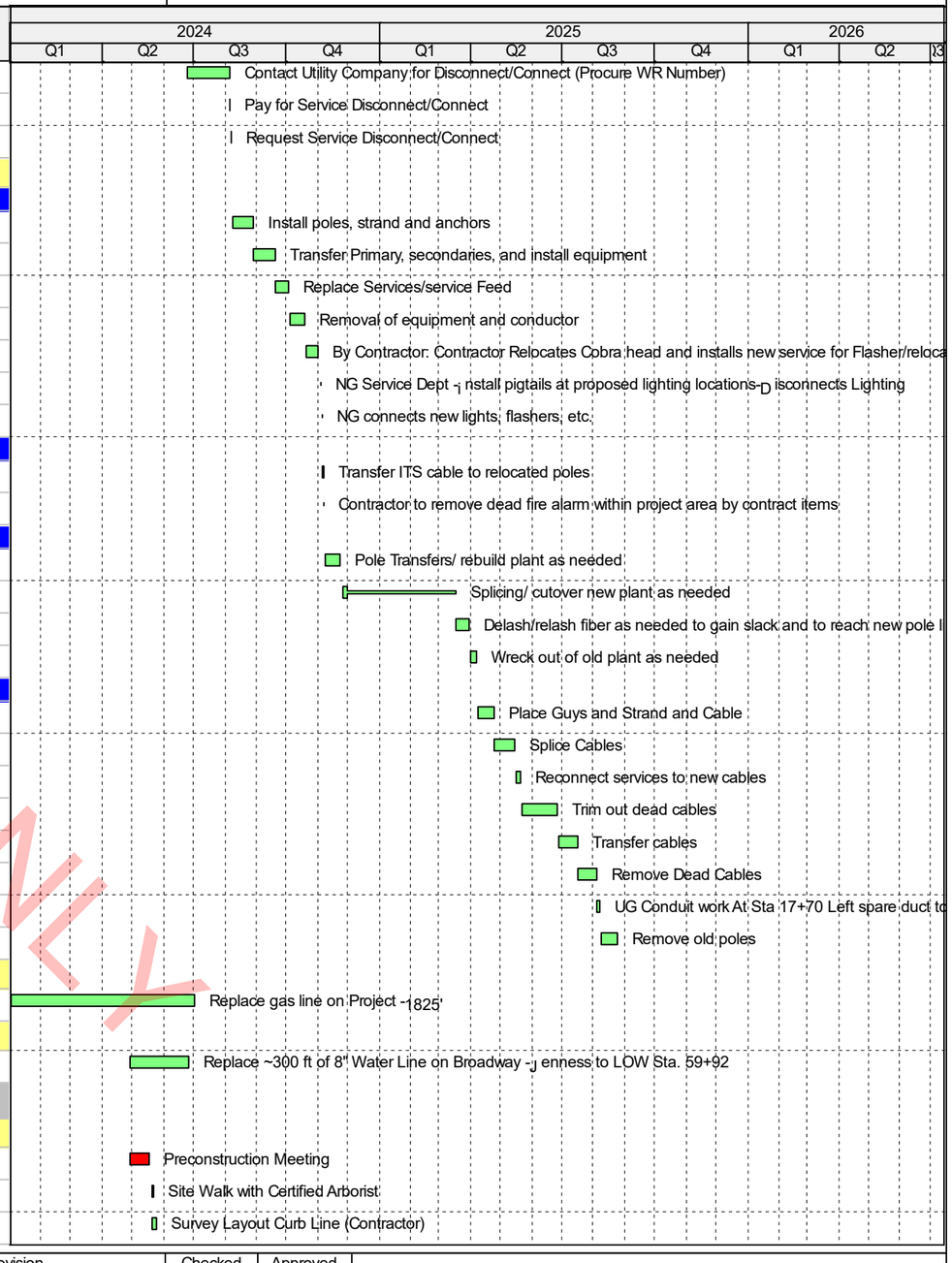
Date	Revision	Checked	Approved

Activity ID	Activity Name	OD	Start	Finish	Calendar
A105	Contact Utility Company for Disconnect/Connect (Procure WR Number)	30	25-Jun-24	05-Aug-24	Standard 5 Day Workweek-
A205	Pay for Service Disconnect/Connect	1	06-Aug-24	06-Aug-24	Standard 5 Day Workweek-
A305	Request Service Disconnect/Connect	1	07-Aug-24	07-Aug-24	Standard 5 Day Workweek-
Overhead relocations					
Task 1: NGrid electric					
A498	Install poles, strand and anchors	15	08-Aug-24	28-Aug-24	5 Day w/ Holidays -W inter S
A508	Transfer Primary, secondaries, and install equipment	15	29-Aug-24	19-Sep-24	5 Day w/ Holidays -W inter S
A518	Replace Services/service Feed	10	20-Sep-24	03-Oct-24	5 Day w/ Holidays -W inter S
A528	Removal of equipment and conductor	10	04-Oct-24	18-Oct-24	5 Day w/ Holidays -W inter S
A768	By Contractor: Contractor Relocates Cobra head and installs new service for Flasher/relocates temp	10	21-Oct-24	01-Nov-24	5 Day w/ Holidays -W inter S
A748	NG Service Dept -I nstall pigtails at proposed lighting locations-D isconnects Lighting	1	04-Nov-24	04-Nov-24	5 Day w/ Holidays -W inter S
A758	NG connects new lights, flashers, etc.	1	05-Nov-24	05-Nov-24	5 Day w/ Holidays -W inter S
Task 2: Comm-Tract					
A538	Transfer ITS cable to relocated poles	1	06-Nov-24	06-Nov-24	5 Day w/ Holidays -W inter S
A548	Contractor to remove dead fire alarm within project area by contract items	1	07-Nov-24	07-Nov-24	5 Day w/ Holidays -W inter S
Task 3: Comcast					
A558	Pole Transfers/ rebuild plant as needed	10	08-Nov-24	22-Nov-24	5 Day w/ Holidays -W inter S
A568	Splicing/ cutover new plant as needed	5	25-Nov-24	17-Mar-25	5 Day w/ Holidays -W inter S
A578	Delash/relash fiber as needed to gain slack and to reach new pole line	10	18-Mar-25	31-Mar-25	5 Day w/ Holidays -W inter S
A588	Wreck out of old plant as needed	5	01-Apr-25	07-Apr-25	5 Day w/ Holidays -W inter S
Task 4: Verizon					
A598	Place Guys and Strand and Cable	12	08-Apr-25	24-Apr-25	5 Day w/ Holidays -W inter S
A608	Splice Cables	15	25-Apr-25	15-May-25	5 Day w/ Holidays -W inter S
A618	Reconnect services to new cables	4	16-May-25	21-May-25	5 Day w/ Holidays -W inter S
A628	Trim out dead cables	25	22-May-25	26-Jun-25	5 Day w/ Holidays -W inter S
A638	Transfer cables	13	27-Jun-25	16-Jul-25	5 Day w/ Holidays -W inter S
A648	Remove Dead Cables	13	17-Jul-25	04-Aug-25	5 Day w/ Holidays -W inter S
A658	UG Conduit work At Sta 17+70 Left spare duct to new pole	3	05-Aug-25	07-Aug-25	5 Day w/ Holidays -W inter S
A668	Remove old poles	12	08-Aug-25	25-Aug-25	5 Day w/ Holidays -W inter S
NGrid Gas					
A678	Replace gas line on Project -1825'	126	02-Jan-24	01-Jul-24	5 Day w/ Holidays
City of Lynn Water					
A670	Replace ~300 ft of 8" Water Line on Broadway -J enness to LOW Sta. 59+92	42	29-Apr-24	26-Jun-24	5 Day w/ Holidays
Construction					
Project Start Up					
A100	Preconstruction Meeting	15	29-Apr-24	17-May-24	5 Day w/ Holidays
A156	Site Walk with Certified Arborist	2	20-May-24	21-May-24	5 Day w/ Holidays -W inter S
A154	Survey Layout Curb Line (Contractor)	5	20-May-24	24-May-24	5 Day w/ Holidays -W inter S



Remaining Level of Effort ◆ ◆ Milestone
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work

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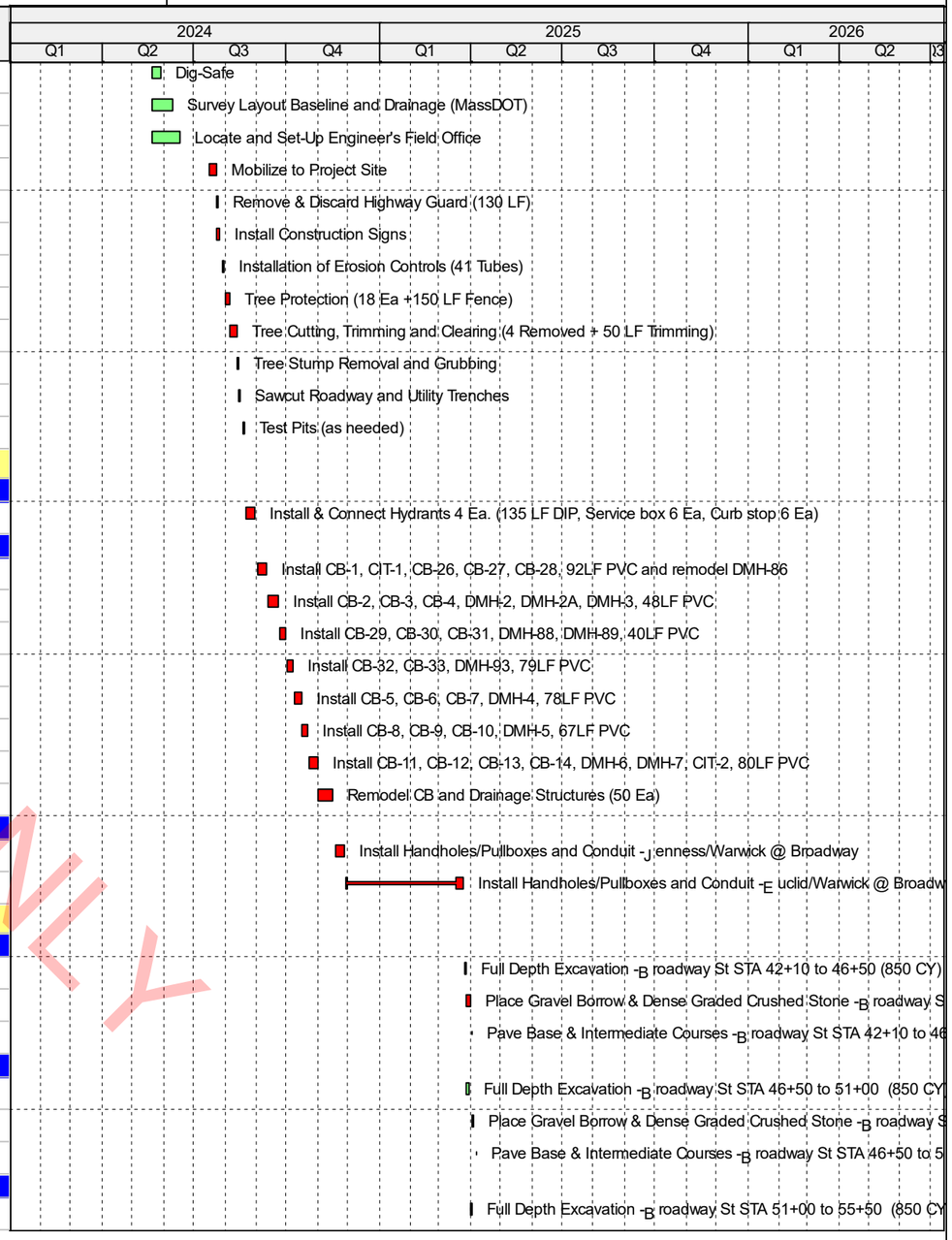
Date	Revision	Checked	Approved

Project Name: 609254 100% CTD03 DD12.30.2023 Intersection Improvements - Broadway St. Lynn - Final PUC,
Project ID 609254 CTD03

CST01-Baseline-All

MassDOT: Highway

Activity ID	Activity Name	OD	Start	Finish	Calendar
A158	Dig-Safe	7	20-May-24	29-May-24	5 Day w/ Holidays -W inter S
A152	Survey Layout Baseline and Drainage (MassDOT)	15	20-May-24	10-Jun-24	5 Day w/ Holidays -W inter S
A102	Locate and Set-Up Engineer's Field Office	20	20-May-24	17-Jun-24	5 Day w/ Holidays
A220	Mobilize to Project Site	5	17-Jul-24	23-Jul-24	5 Day w/ Holidays -W inter S
A244	Remove & Discard Highway Guard (130 LF)	1	24-Jul-24	24-Jul-24	5 Day w/ Holidays -W inter S
A242	Install Construction Signs	3	24-Jul-24	26-Jul-24	5 Day w/ Holidays -W inter S
A250	Installation of Erosion Controls (41 Tubes)	3	29-Jul-24	31-Jul-24	5 Day w/ Holidays -W inter S
A254	Tree Protection (18 Ea +150 LF Fence)	3	01-Aug-24	05-Aug-24	5 Day w/ Holidays -W inter S
A258	Tree Cutting, Trimming and Clearing (4 Removed + 50 LF Trimming)	5	06-Aug-24	12-Aug-24	5 Day w/ Holidays -W inter S
A260	Tree Stump Removal and Grubbing	2	13-Aug-24	14-Aug-24	5 Day w/ Holidays -W inter S
A262	Sawcut Roadway and Utility Trenches	2	15-Aug-24	16-Aug-24	5 Day w/ Holidays -W inter S
A264	Test Pits (as needed)	2	19-Aug-24	20-Aug-24	5 Day w/ Holidays -W inter S
Underground Utility					
Hydrants					
A288	Install & Connect Hydrants 4 Ea. (135 LF DIP, Service box 6 Ea, Curb stop 6 Ea)	8	21-Aug-24	30-Aug-24	5 Day w/ Holidays -W inter S
Drainage					
A266	Install CB-1, CIT-1, CB-26, CB-27, CB-28, 92LF PVC and remodel DMH-86	7	03-Sep-24	11-Sep-24	5 Day w/ Holidays -W inter S
A268	Install CB-2, CB-3, CB-4, DMH-2, DMH-2A, DMH-3, 48LF PVC	8	12-Sep-24	23-Sep-24	5 Day w/ Holidays -W inter S
A269	Install CB-29, CB-30, CB-31, DMH-88, DMH-89, 40LF PVC	5	24-Sep-24	30-Sep-24	5 Day w/ Holidays -W inter S
A270	Install CB-32, CB-33, DMH-93, 79LF PVC	5	01-Oct-24	07-Oct-24	5 Day w/ Holidays -W inter S
A271	Install CB-5, CB-6, CB-7, DMH-4, 78LF PVC	5	08-Oct-24	15-Oct-24	5 Day w/ Holidays -W inter S
A272	Install CB-8, CB-9, CB-10, DMH-5, 67LF PVC	5	16-Oct-24	22-Oct-24	5 Day w/ Holidays -W inter S
A276	Install CB-11, CB-12, CB-13, CB-14, DMH-6, DMH-7, CIT-2, 80LF PVC	7	23-Oct-24	31-Oct-24	5 Day w/ Holidays -W inter S
A284	Remodel CB and Drainage Structures (50 Ea)	10	01-Nov-24	15-Nov-24	5 Day w/ Holidays -W inter S
Traffic Signal Conduits/Pull boxes					
A298	Install Handholes/Pullboxes and Conduit -J enness/Warwick @ Broadway	8	18-Nov-24	27-Nov-24	5 Day w/ Holidays -W inter S
A292	Install Handholes/Pullboxes and Conduit -E uclid/Warwick @ Broadway	8	29-Nov-24	25-Mar-25	5 Day w/ Holidays -W inter S
Full Depth Roadway Reconstruction					
Broadway Street 42+46 to 46+75					
A296	Full Depth Excavation -B roadway St STA 42+10 to 46+50 (850 CY)	2	26-Mar-25	27-Mar-25	5 Day w/ Holidays -W inter S
A302	Place Gravel Borrow & Dense Graded Crushed Stone -B roadway St STA 42+10 to 46+50 (450 CY)	3	28-Mar-25	01-Apr-25	5 Day w/ Holidays -W inter S
A312	Pave Base & Intermediate Courses -B roadway St STA 42+10 to 46+50 (1000 Tons)	1	02-Apr-25	02-Apr-25	5 Day w/ Holidays -P aving
Broadway Street 46+75 to 51+00					
A332	Full Depth Excavation -B roadway St STA 46+50 to 51+00 (850 CY)	2	28-Mar-25	31-Mar-25	5 Day w/ Holidays -W inter S
A334	Place Gravel Borrow & Dense Graded Crushed Stone -B roadway St STA 46+50 to 51+00 (450 CY)	3	02-Apr-25	04-Apr-25	5 Day w/ Holidays -W inter S
A338	Pave Base & Intermediate Courses -B roadway St STA 46+50 to 51+00 (1000 Tons)	1	07-Apr-25	07-Apr-25	5 Day w/ Holidays -P aving
Broadway Street 51+00 to 55+75					
A434	Full Depth Excavation -B roadway St STA 51+00 to 55+50 (850 CY)	2	01-Apr-25	02-Apr-25	5 Day w/ Holidays -W inter S



Remaining Level of Effort ◆ Milestone
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work

Layout = CST01-Baseline-All, Filter = TASK filter: All Activities
Data Date = 30-Dec-23, Run Date = 19-Dec-23, 09:14
Project Start = 30-Dec-23 Project Finish = 14-Apr-26

Date	Revision	Checked	Approved

Prepared by MassDOT Highway

Activity ID	Activity Name	OD	Start	Finish	Calendar
A437	Place Gravel Borrow & Dense Graded Crushed Stone -B roadway St 51+00 to 55+50 (450 CY)	3	07-Apr-25	09-Apr-25	5 Day w/ Holidays -W inter S
A440	Pave Base & Intermediate Courses -B roadway St STA 51+00 to 55+50 (1000 Tons)	1	10-Apr-25	10-Apr-25	5 Day w/ Holidays -P aving
Broadway Street 55+75 to 59+56					
A443	Full Depth Excavation -B roadway St STA 55+50 to 59+92 (850 CY)	2	03-Apr-25	04-Apr-25	5 Day w/ Holidays -W inter S
A446	Place Gravel Borrow & Dense Graded Crushed Stone -B roadway St STA 55+50 to 59+92 (450 CY)	3	10-Apr-25	14-Apr-25	5 Day w/ Holidays -W inter S
A449	Pave Base & Intermediate Courses -B roadway St STA 55+50 to 59+92 (1000 Tons)	1	15-Apr-25	15-Apr-25	5 Day w/ Holidays -P aving
Euclid Street					
A364	Full Depth Excavation -E uclid St STA 93+00 to 90+35 LT (400 CY)	2	07-Apr-25	08-Apr-25	5 Day w/ Holidays -W inter S
A366	Place Gravel Borrow & Dense Graded Crushed Stone -E uclid St STA 93+00 to 90+35 LT (300 CY)	2	15-Apr-25	16-Apr-25	5 Day w/ Holidays -W inter S
A370	Pave Base & Intermediate Courses -E uclid St STA 93+00 to 90+35 LT (800 Tons)	1	17-Apr-25	17-Apr-25	5 Day w/ Holidays -P aving
Sidewalks & Driveways					
Broadway Street -Right					
A482	Remove Existing Granite Curb and sidewalks-B roadway St STA 59+92 to 42+10 RT	3	18-Apr-25	23-Apr-25	5 Day w/ Holidays -W inter S
A485	Remove Castings and Plate all Existing Structures -B roadway St STA 59+92 to 42+10 RT	5	24-Apr-25	30-Apr-25	5 Day w/ Holidays -W inter S
A473	Install Granite Curb -B roadway St STA 59+92 to 42+10 RT (1850 LF)	14	01-May-25	20-May-25	5 Day w/ Holidays -W inter S
A476	Gravel and Grade Sidewalk -B roadway St STA 59+92 to 42+10 RT (100 CY)	5	21-May-25	28-May-25	5 Day w/ Holidays -W inter S
A479	Form & Place Concrete Sidewalks & WCRs - B roadway St STA 59+92 to 42+10 RT (1800 SY)	14	29-May-25	17-Jun-25	5 Day w/ Holidays -W inter S
A488	Place HMA Driveways -B roadway St STA 59+92 to 42+10 RT (40 Tons)	2	18-Jun-25	19-Jun-25	5 Day w/ Holidays -W inter S
Broadway Street -Left					
A452	Remove Existing Granite Curb and sidewalks-B roadway St STA 42+10 to 59+92 LT	3	20-Jun-25	24-Jun-25	5 Day w/ Holidays -W inter S
A455	Remove Castings and Plate all Existing Structures -B roadway St STA 42+10 to 59+92 LT	5	25-Jun-25	01-Jul-25	5 Day w/ Holidays -W inter S
A458	Install Granite Curb -B roadway St STA 42+10 to 59+92 LT (1850 LF)	14	02-Jul-25	22-Jul-25	5 Day w/ Holidays -W inter S
A461	Gravel and Grade Sidewalk - B roadway St STA 42+10 to 59+92 LT (100 CY)	5	23-Jul-25	29-Jul-25	5 Day w/ Holidays -W inter S
A464	Form & Place Concrete Sidewalks & WCRs -B roadway St STA 42+10 to 59+92 LT (1800 SY)	14	30-Jul-25	18-Aug-25	5 Day w/ Holidays -W inter S
A470	Place HMA Driveways -B roadway St STA 42+10 to 59+92 LT (40 Tons)	2	19-Aug-25	20-Aug-25	5 Day w/ Holidays -W inter S
A467	Build Stone Masonry Wall (20 CY)	5	21-Aug-25	27-Aug-25	5 Day w/ Holidays -W inter S
Euclid Street -Right					
A344	Remove Existing Granite Curb and sidewalks -E uclid St STA 90+35 to 93+00 RT	3	19-Aug-25	21-Aug-25	5 Day w/ Holidays -W inter S
A350	Install Granite Curb -E uclid St STA 90+35 to 93+00 RT (300 LF)	4	22-Aug-25	27-Aug-25	5 Day w/ Holidays -W inter S
A354	Gravel and Grade Sidewalk -E uclid St STA 90+35 to 93+00 RT	2	28-Aug-25	29-Aug-25	5 Day w/ Holidays -W inter S
A356	Form and Place Concrete Sidewalk & WCRs - E uclid St STA 90+35 to 93+00 RT (300 SY)	4	02-Sep-25	05-Sep-25	5 Day w/ Holidays -W inter S
A419	Place HMA Driveway -E uclid St STA 90+35 to 93+00 RT (22 Tons)	1	08-Sep-25	08-Sep-25	5 Day w/ Holidays -W inter S
Euclid Street -Left					
A362	Remove Existing Granite Curb and sidewalks -E uclid St STA 93+00 to 90+35 LT	3	08-Sep-25	10-Sep-25	5 Day w/ Holidays -P aving
A368	Install Granite Curb -E uclid St STA 93+00 to 90+35 LT (300 LF)	4	11-Sep-25	16-Sep-25	5 Day w/ Holidays -W inter S
A372	Gravel and Grade Sidewalk -E uclid St STA 93+00 to 90+35 LT	2	17-Sep-25	18-Sep-25	5 Day w/ Holidays -W inter S
A374	Form and Place Concrete Sidewalk & WCRs - E uclid St STA 93+00 to 90+35 LT (300 SY)	4	19-Sep-25	24-Sep-25	5 Day w/ Holidays -W inter S
A422	Place HMA Driveways - E uclid St STA 93+00 to 90+35 LT (22 Tons)	1	25-Sep-25	25-Sep-25	5 Day w/ Holidays -W inter S

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Critical Remaining Work

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Data Date = 30-Dec-23, Run Date = 19-Dec-23, 09:14
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Date	Revision	Checked	Approved

Project Name: 609254 100% CTD03 DD12.30.2023 Intersection Improvements - Broadway St. Lynn - Final PUC,
Project ID 609254 CTD03

CST01-Baseline-All

MassDOT: Highway

Activity ID	Activity Name	OD	Start	Finish	Calendar
Traffic Signal Work					
Intersection - Euclid/Pickering/Broadway					
A274	FRP Mast Arm Foundations - Euclid/Warwick @ Broadway (2 Ea)	5	18-Apr-25	25-Apr-25	5 Day w/ Holidays - Winter S
A278	Cure Mast Arm Foundation - Euclid/Warwick @ Broadway	28	26-Apr-25	23-May-25	7 Day Milestone / Procurem
A300	Install Ped. Signal Foundation and Conduit - Euclid/Warwick @ Broadway (8 Ea)	6	28-Apr-25	05-May-25	5 Day w/ Holidays - Winter S
A306	Install Mast Arms - Euclid/Warwick @ Broadway (3 Ea)	4	19-Aug-25	22-Aug-25	5 Day w/ Holidays - Winter S
A310	Install Signal Equipment and Control Cabinet - Euclid/Warwick @ Broadway	8	25-Aug-25	04-Sep-25	5 Day w/ Holidays - Winter S
A320	Activite & Test System - Euclid/Warwick @ Broadway	30	05-Sep-25	04-Oct-25	7 Day Milestone / Procurem
Intersection - Jenness/Warwick/Broadway					
A280	FRP Mast Arm Foundations - Jenness/Warwick @ Broadway (3 Ea)	6	28-Apr-25	05-May-25	5 Day w/ Holidays - Winter S
A308	Install Ped. Signal Foundation and Conduit - Jenness/Warwick @ Broadway (9 Ea)	6	06-May-25	13-May-25	5 Day w/ Holidays - Winter S
A286	Cure Mast Arm Foundation - Jenness/Warwick @ Broadway	28	06-May-25	02-Jun-25	7 Day Milestone / Procurem
A316	Install Mast Arms - Jenness/Warwick @ Broadway	4	25-Aug-25	28-Aug-25	5 Day w/ Holidays - Winter S
A322	Install Signal Equipment and Control Cabinet - Jenness/Warwick @ Broadway	8	05-Sep-25	16-Sep-25	5 Day w/ Holidays - Winter S
A324	Activite & Test System - Jenness/Warwick @ Broadway	30	17-Sep-25	16-Oct-25	7 Day Milestone / Procurem
Rapid Flashing Beacons					
A428	Install RRFB Foundations - (2 Locations)	2	29-Aug-24	30-Aug-24	5 Day w/ Holidays - Winter S
A431	Install and activate two RRFB - (2 Locations)	4	03-Sep-24	06-Sep-24	5 Day w/ Holidays - Winter S
Final Paving					
A378	Pavement Micromilling (1100 SY)	1	25-Sep-25	25-Sep-25	5 Day w/ Holidays - Paving
A380	Structure Adjustments (EMH, TMH, gas gates, etc.) - Project Wide	10	26-Sep-25	09-Oct-25	5 Day w/ Holidays - Paving
A388	Surface Course Paving - Project Wide (1400 Tons)	2	10-Oct-25	14-Oct-25	5 Day w/ Holidays - Paving
A390	Pavement Recessed Markings & Bike Lane High Friction Green Paint - Project Wide (16,000 LF)	7	15-Oct-25	23-Oct-25	5 Day w/ Holidays - Paving
A425	Pavement Arrows & Legends - Project Wide (830 SF)	2	24-Oct-25	27-Oct-25	5 Day w/ Holidays - Paving
Site Finishes					
A358	Remove and Reset Street Lights (10 Ea)	2	25-Aug-25	26-Aug-25	5 Day w/ Holidays - Winter S
A360	Remove Drainage Sediment from Structures and Pipe - Project Wide (30 CY)	3	27-Aug-25	29-Aug-25	5 Day w/ Holidays - Winter S
A376	Install / Reset Fence (100 LF)	2	25-Sep-25	26-Sep-25	5 Day w/ Holidays - Winter S
A384	Landscaping & Place Mulch - Project Wide	5	25-Sep-25	01-Oct-25	5 Day w/ Holidays - Seeding
A382	Lay Brick Walk (10 SY)	2	29-Sep-25	30-Sep-25	5 Day w/ Holidays - Winter S
A386	Reset Mail Boxes - Project Wide	1	01-Oct-25	01-Oct-25	5 Day w/ Holidays - Winter S
A394	Loam & Seed - Project Wide (660 SY)	3	02-Oct-25	06-Oct-25	5 Day w/ Holidays - Seeding
A392	Install Permanent Signage and Street Names - Project Wide (60 traffic Signs, 240 SF; 30 street Nam	4	15-Oct-25	20-Oct-25	5 Day w/ Holidays - Paving
Close-Out					
Full Beneficial Use - FBU					
A396	Contractor's Request for Validation of FBU	1	27-Oct-25	28-Oct-25	Standard 5 Day Workweek-
A398	Department's Confirmation of completed Work to allow for FBU	14	28-Oct-25	17-Nov-25	Standard 5 Day Workweek-
Substantial Completion - SC					

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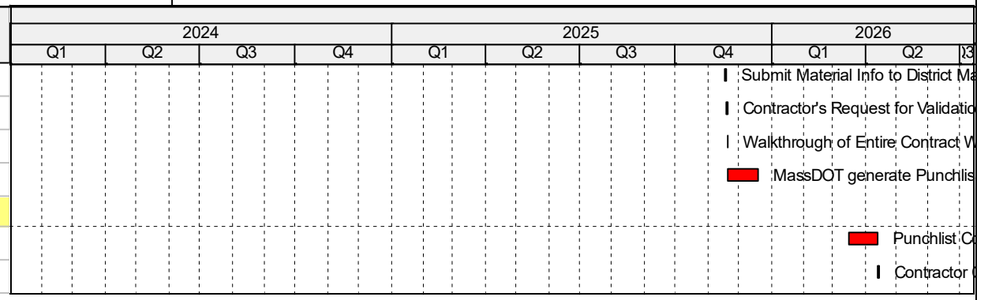
Critical Remaining Work

Layout = CST01-Baseline-All, Filter = TASK filter: All Activities
Data Date = 30-Dec-23, Run Date = 19-Dec-23, 09:14
Project Start = 30-Dec-23 Project Finish = 14-Apr-26

Date	Revision	Checked	Approved

Prepared by MassDOT Highway

Activity ID	Activity Name	OD	Start	Finish	Calendar
A400	Submit Material Info to District Materials Lab - Documentation	1	17-Nov-25	18-Nov-25	Standard 5 Day Workweek-
A402	Contractor's Request for Validation of SC	1	18-Nov-25	19-Nov-25	Standard 5 Day Workweek-
A404	Walkthrough of Entire Contract Work by MassDOT RE	1	19-Nov-25	20-Nov-25	Standard 5 Day Workweek-
A406	MassDOT generate Punchlist	21	20-Nov-25	19-Dec-25	Standard 5 Day Workweek-
Contract Field Completion - CFC					
A408	Punchlist Completion Period	21	16-Mar-26	13-Apr-26	5 Day w/ Holidays - Winter S
A410	Contractor Confirmation - All Punchlist Work & Documentation Complete	1	13-Apr-26	14-Apr-26	Standard 5 Day Workweek-



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Date	Revision	Checked	Approved

ATTACHMENT J

SAMPLE DESIGN-BUILD CTD

(CONTRACT TIME DETERMINATION)

BASED ON BASE TECHNICAL CONCEPT (BTC)

DEVELOPED FOR ***CONSTRUCTION PLANNING***

DURING THE ***DESIGN PHASE***

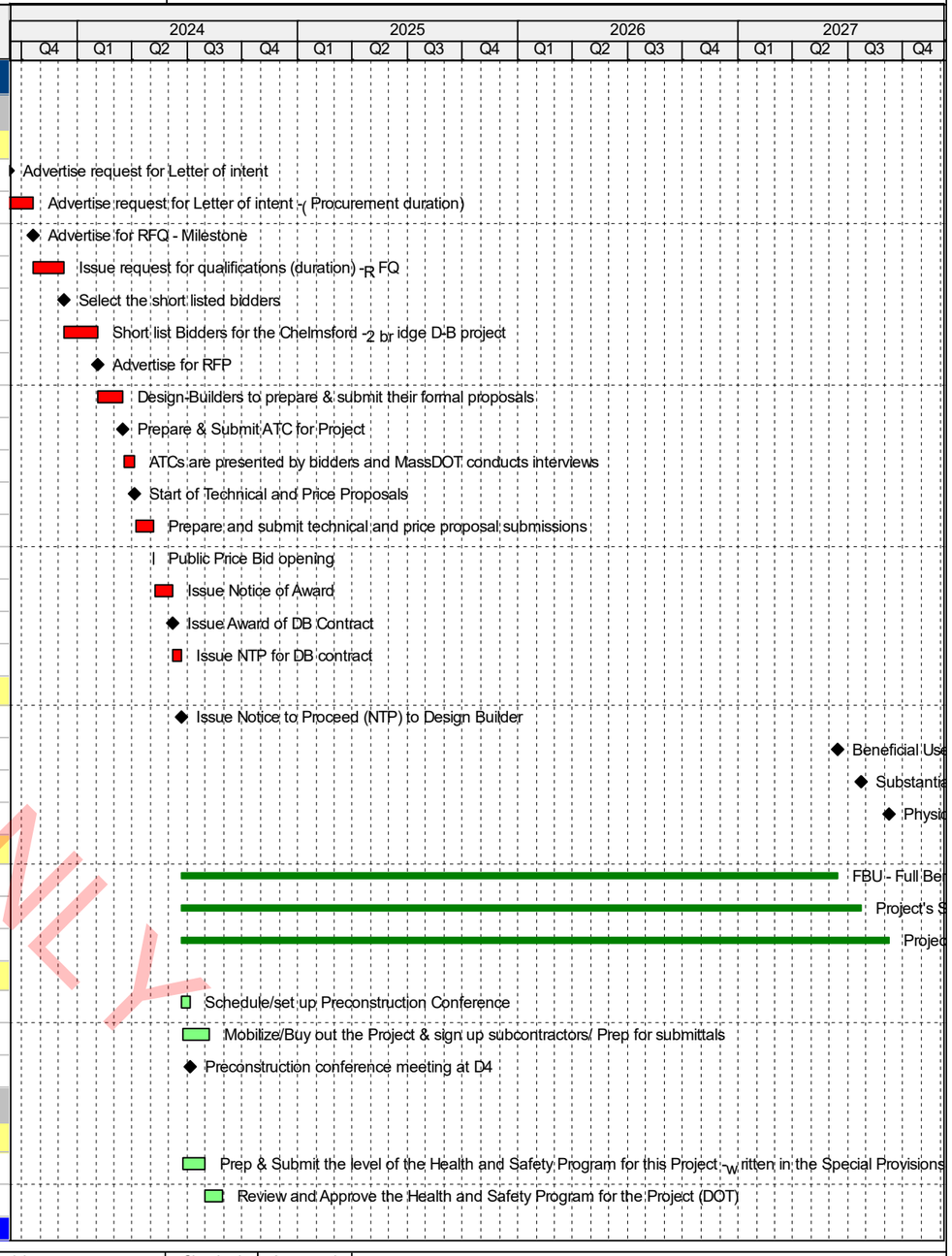
REV3 – 05MAR2024

Project Name: 612631 - Chelmsford: Bridge Replacements Gorham St Westford St over 1-495 25% plans, DB DD Revised,
Project ID 612631 CTD01

CST01-Baseline-All

MassDOT: Highway

Activity ID	Activity Name	OD	Start	Finish	Calendar
612631 - Chelmsford: Bridge Replacements Gorham St & Westford St over 1-495 25% plans, DB DD Revised					
Milestones					
Design Builder Selection					
612631-LOI	Advertise request for Letter of intent	0	09-Sep-23		Milestone calendar 24 hrs /
612631-LOI Proc	Advertise request for Letter of intent - Procurement duration)	42	09-Sep-23	20-Oct-23	7D/8Hr - No Hol (MS Cal)
612631-RFQ	Advertise for RFQ - Milestone	0	20-Oct-23		Milestone calendar 24 hrs /
612631-RFQ Dur	Issue request for qualifications (duration) - RFQ	51	21-Oct-23	10-Dec-23	7D/8Hr - No Hol (MS Cal)
612631-SLB	Select the short listed bidders	0	10-Dec-23		Milestone calendar 24 hrs /
612631-SLB Dur	Short list Bidders for the Chelmsford - 2 br idge D-B project	55	11-Dec-23	03-Feb-24	7D/8Hr - No Hol (MS Cal)
612631-RFP	Advertise for RFP	0	03-Feb-24		Milestone calendar 24 hrs /
612631-RFP Dur	Design-Builders to prepare & submit their formal proposals	42	04-Feb-24	16-Mar-24	7D/8Hr - No Hol (MS Cal)
612631-ATC	Prepare & Submit ATC for Project	0	16-Mar-24		Milestone calendar 24 hrs /
612631-ATC Dur	ATCs are presented by bidders and MassDOT conducts interviews	15	18-Mar-24	05-Apr-24	5D/8Hr - 1 1 Hol
612631-TPP	Start of Technical and Price Proposals	0	05-Apr-24		Milestone calendar 24 hrs /
612631-TPP Dur	Prepare and submit technical and price proposal submissions	20	08-Apr-24	06-May-24	5D/8Hr - 1 1 Hol
612631-B ID	Public Price Bid opening	1	07-May-24	07-May-24	5D/8Hr - 1 1 Hol
612631-NOA Dur	Issue Notice of Award	30	08-May-24	06-Jun-24	7D/8Hr - No Hol (MS Cal)
612631-NOA	Issue Award of DB Contract	0	06-Jun-24		Milestone calendar 24 hrs /
612631-NTPD	Issue NTP for DB contract	15	07-Jun-24	21-Jun-24	7D/8Hr - No Hol (MS Cal)
Construction Milestones					
612631-NTP	Issue Notice to Proceed (NTP) to Design Builder	0	21-Jun-24		Milestone calendar 24 hrs /
612631D-FBU	Beneficial Use - F BU 8.03	0		14-Jun-27	7D/8Hr - No Hol (MS Cal)
612631-SC	Substantial Completion - S C 7.15 & 8.03	0		23-Jul-27	7D/8Hr - No Hol (MS Cal)
612631-CFC	Physical Completion of Work - C FC	0		07-Sep-27	7D/8Hr - No Hol (MS Cal)
Project Durations					
612631-1000	FBU - F ull Beneficial Use or Occupancy	1088	22-Jun-24	14-Jun-27	7D/8Hr - No Hol (MS Cal)
612631-1010	Project's Substantial Completion - S C	1127	22-Jun-24	23-Jul-27	7D/8Hr - No Hol (MS Cal)
612631-1020	Project CFC - C ontractor's Field Completion	1173	22-Jun-24	07-Sep-27	7D/8Hr - No Hol (MS Cal)
Post Award/NTP Work					
612631-NTP PreC	Schedule/set up Preconstruction Conference	14	22-Jun-24	05-Jul-24	7D/8Hr - No Hol (MS Cal)
612631-SU2510	Mobilize/Buy out the Project & sign up subcontractors/ Prep for submittals	30	24-Jun-24	06-Aug-24	5D/8Hr - 1 1 Hol
612631-Pre Con	Preconstruction conference meeting at D4	0	06-Jul-24		7D/8Hr - No Hol (MS Cal)
Design Packages					
Early Release Work Items - Submittal/Approval					
612631-PS1000	Prep & Submit the level of the Health and Safety Program for this Project - W ritten in the Special Pro	25	24-Jun-24	30-Jul-24	5D/8Hr - 1 1 Hol
612631-PS1010	Review and Approve the Health and Safety Program for the Project (DOT)	30	31-Jul-24	29-Aug-24	7D/8Hr - No Hol (MS Cal)
Project Traffic Mangement Phasing /Plans					



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Layout = CST01-Baseline-All, Filter = TASK filter: All Activities
Data Date = 09-Sep-23, Run Date = 19-Dec-23, 09:11
Project Start = 09-Sep-23 Project Finish = 07-Sep-27

Date	Revision	Checked	Approved

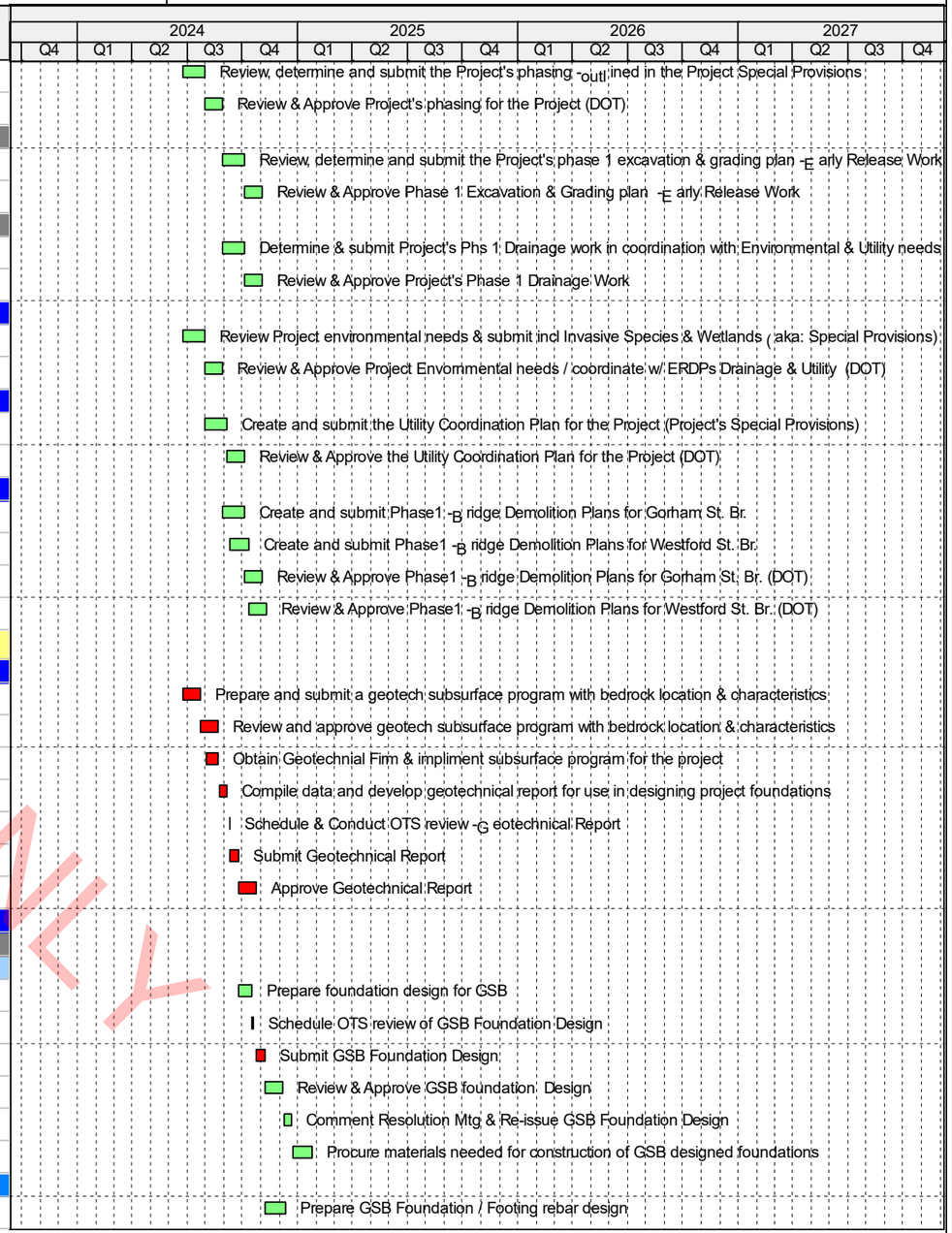
Prepared by MassDOT Highway

Project Name: 612631 - Chelmsford: Bridge Replacements Gorham St Westford St over I-495 25% plans, DB DD Revised,
Project ID 612631 CTD01

CST01-Baseline-All

MassDOT: Highway

Activity ID	Activity Name	OD	Start	Finish	Calendar
612631-TMP100	Review, determine and submit the Project's phasing -outlined in the Project Special Provisions	25	24-Jun-24	30-Jul-24	5D/8Hr -1 1 Hol
612631-TMP110	Review & Approve Project's phasing for the Project (DOT)	30	31-Jul-24	29-Aug-24	7D/8Hr -No Hol (MS Cal)
Phase 1 Excavation and Grading Plan					
612631-E1100	Review, determine and submit the Project's phase 1 excavation & grading plan -Early Release Work	25	30-Aug-24	04-Oct-24	5D/8Hr -1 1 Hol
612631-E1110	Review & Approve Phase 1 Excavation & Grading plan -Early Release Work	30	05-Oct-24	03-Nov-24	7D/8Hr -No Hol (MS Cal)
Phase 1 Drainage Plan -Gorham & Westford Streets					
612631-D1100	Determine & submit Project's Phs 1 Drainage work in coordination with Environmental & Utility needs	25	30-Aug-24	04-Oct-24	5D/8Hr -1 1 Hol
612631-D1110	Review & Approve Project's Phase 1 Drainage Work	30	05-Oct-24	03-Nov-24	7D/8Hr -No Hol (MS Cal)
Pre Ph 1 & Ph 1 Environmental Coordination, Notices, & Design					
612631-E1000	Review Project environmental needs & submit incl Invasive Species & Wetlands (aka: Special Provis	25	24-Jun-24	30-Jul-24	5D/8Hr -1 1 Hol
612631-E1010	Review & Approve Project Envornmental needs / coordinate w/ ERDPs Drainage & Utility (DOT)	30	31-Jul-24	29-Aug-24	7D/8Hr -No Hol (MS Cal)
Utility Coordination, Notices, Work orders, and Desgin					
612631-U1000	Create and submit the Utility Coordination Plan for the Project (Project's Special Provisions)	25	31-Jul-24	04-Sep-24	5D/8Hr -1 1 Hol
612631-U1010	Review & Approve the Utility Coordination Plan for the Project (DOT)	30	05-Sep-24	04-Oct-24	7D/8Hr -No Hol (MS Cal)
Bridge Demolition Plans					
612631-BDG100	Create and submit Phase1 -Bridge Demolition Plans for Gorham St. Br.	25	30-Aug-24	04-Oct-24	5D/8Hr -1 1 Hol
612631-BDW100	Create and submit Phase1 -Bridge Demolition Plans for Westford St. Br.	25	09-Sep-24	11-Oct-24	5D/8Hr -1 1 Hol
612631-BDG110	Review & Approve Phase1 -Bridge Demolition Plans for Gorham St. Br. (DOT)	30	05-Oct-24	03-Nov-24	7D/8Hr -No Hol (MS Cal)
612631-BDW110	Review & Approve Phase1 -Bridge Demolition Plans for Westford St. Br. (DOT)	30	12-Oct-24	10-Nov-24	7D/8Hr -No Hol (MS Cal)
Early Release Design Packages					
Geotechnical program					
612631-GT00	Prepare and submit a geotech subsurface program with bedrock location & characteristics	20	24-Jun-24	23-Jul-24	5D/8Hr -1 1 Hol
612631-GT10	Review and approve geotech subsurface program with bedrock location & characteristics	30	24-Jul-24	22-Aug-24	7D/8Hr -No Hol (MS Cal)
612631-GT20	Obtain Geotechnial Firm & impliment subsurface program for the project	15	02-Aug-24	22-Aug-24	5D/8Hr -1 1 Hol
612631-GT30	Compile data and develop geotechnical report for use in designing project foundations	10	23-Aug-24	06-Sep-24	5D/8Hr -1 1 Hol
612631-GT40	Schedule & Conduct OTS review -Geotechnical Report	2	09-Sep-24	10-Sep-24	5D/8Hr -1 1 Hol
612631-GT50	Submit Geotechnical Report	10	11-Sep-24	24-Sep-24	5D/8Hr -1 1 Hol
612631-GT60	Approve Geotechnical Report	30	25-Sep-24	24-Oct-24	7D/8Hr -No Hol (MS Cal)
Substructure					
Gorham Street Bridge Substructure Design					
GSB - Foundation Design					
612631-GSB100	Prepare foundation design for GSB	15	25-Sep-24	16-Oct-24	5D/8Hr -1 1 Hol
612631-GSB110	Schedule OTS review of GSB Foundation Design	2	17-Oct-24	18-Oct-24	5D/8Hr -1 1 Hol
612631-GSB120	Submit GSB Foundation Design	10	25-Oct-24	07-Nov-24	5D/8Hr -1 1 Hol
612631-GSB130	Review & Approve GSB foundation Design	30	08-Nov-24	07-Dec-24	7D/8Hr -No Hol (MS Cal)
612631-GSB140	Comment Resolution Mtg & Re-issue GSB Foundation Design	10	09-Dec-24	20-Dec-24	5D/8Hr -1 1 Hol
612631-GSB145	Procure materials needed for construction of GSB designed foundations	20	23-Dec-24	23-Jan-25	5D/8Hr -1 1 Hol
GSB - Foundation Rebar					
612631-GSB150	Prepare GSB Foundation / Footing rebar design	20	08-Nov-24	11-Dec-24	5D/8Hr -1 1 Hol



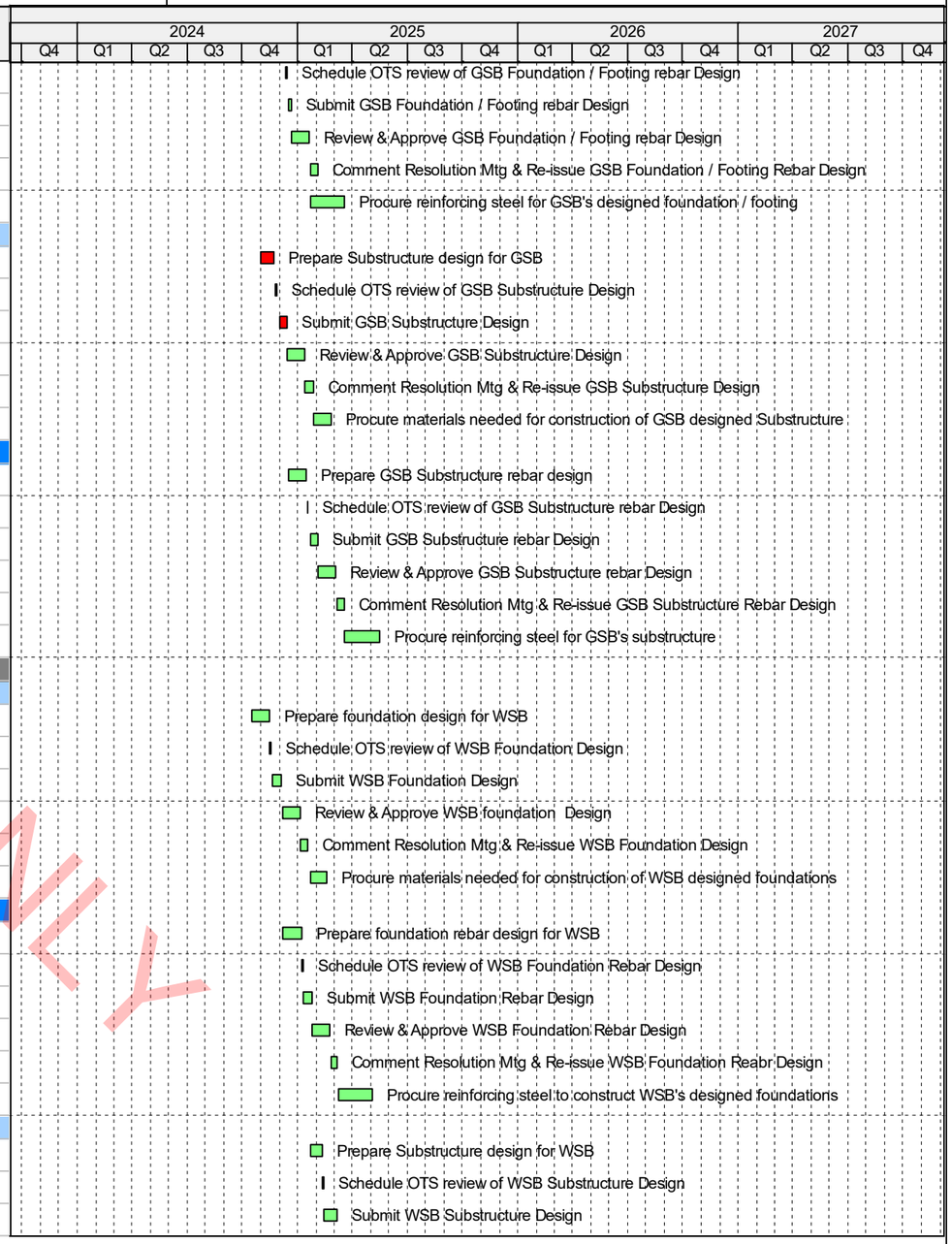
Remaining Level of Effort ◆ Milestone
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work

Layout = CST01-Baseline-All, Filter = TASK filter: All Activities
Data Date = 09-Sep-23, Run Date = 19-Dec-23, 09:11
Project Start = 09-Sep-23 Project Finish = 07-Sep-27

Date	Revision	Checked	Approved

Prepared by MassDOT Highway

Activity ID	Activity Name	OD	Start	Finish	Calendar
612631-GSB160	Schedule OTS review of GSB Foundation / Footing rebar Design	2	12-Dec-24	13-Dec-24	5D/8Hr -1 1 Hol
612631-GSB170	Submit GSB Foundation / Footing rebar Design	5	16-Dec-24	20-Dec-24	5D/8Hr -1 1 Hol
612631-GSB180	Review & Approve GSB Foundation / Footing rebar Design	30	21-Dec-24	19-Jan-25	7D/8Hr -No Hol (MS Cal)
612631-GSB190	Comment Resolution Mtg & Re-issue GSB Foundation / Footing Rebar Design	10	21-Jan-25	03-Feb-25	5D/8Hr -1 1 Hol
612631-GSB195	Procure reinforcing steel for GSB's designed foundation / footing	40	21-Jan-25	18-Mar-25	5D/8Hr -1 1 Hol
GSB - Substructure Design					
612631-GSB200	Prepare Substructure design for GSB	15	01-Nov-24	22-Nov-24	5D/8Hr -1 1 Hol
612631-GSB210	Schedule OTS review of GSB Substructure Design	2	25-Nov-24	26-Nov-24	5D/8Hr -1 1 Hol
612631-GSB220	Submit GSB Substructure Design	10	02-Dec-24	13-Dec-24	5D/8Hr -1 1 Hol
612631-GSB230	Review & Approve GSB Substructure Design	30	14-Dec-24	12-Jan-25	7D/8Hr -No Hol (MS Cal)
612631-GSB240	Comment Resolution Mtg & Re-issue GSB Substructure Design	10	13-Jan-25	27-Jan-25	5D/8Hr -1 1 Hol
612631-GSB245	Procure materials needed for construction of GSB designed Substructure	20	28-Jan-25	25-Feb-25	5D/8Hr -1 1 Hol
GSB - Substructure Rebar					
612631-GSB250	Prepare GSB Substructure rebar design	20	16-Dec-24	15-Jan-25	5D/8Hr -1 1 Hol
612631-GSB260	Schedule OTS review of GSB Substructure rebar Design	2	16-Jan-25	17-Jan-25	5D/8Hr -1 1 Hol
612631-GSB270	Submit GSB Substructure rebar Design	10	21-Jan-25	03-Feb-25	5D/8Hr -1 1 Hol
612631-GSB280	Review & Approve GSB Substructure rebar Design	30	04-Feb-25	05-Mar-25	7D/8Hr -No Hol (MS Cal)
612631-GSB290	Comment Resolution Mtg & Re-issue GSB Substructure Rebar Design	10	06-Mar-25	19-Mar-25	5D/8Hr -1 1 Hol
612631-GSB295	Procure reinforcing steel for GSB's substructure	40	20-Mar-25	15-May-25	5D/8Hr -1 1 Hol
Westford Street Bridge Substructure Design					
WSB - Foundation Design					
612631-WSB100	Prepare foundation design for WSB	20	17-Oct-24	14-Nov-24	5D/8Hr -1 1 Hol
612631-WSB110	Schedule OTS review of WSB Foundation Design	2	15-Nov-24	18-Nov-24	5D/8Hr -1 1 Hol
612631-WSB120	Submit WSB Foundation Design	10	19-Nov-24	05-Dec-24	5D/8Hr -1 1 Hol
612631-WSB130	Review & Approve WSB foundation Design	30	06-Dec-24	04-Jan-25	7D/8Hr -No Hol (MS Cal)
612631-WSB140	Comment Resolution Mtg & Re-issue WSB Foundation Design	10	06-Jan-25	17-Jan-25	5D/8Hr -1 1 Hol
612631-WSB145	Procure materials needed for construction of WSB designed foundations	20	21-Jan-25	18-Feb-25	5D/8Hr -1 1 Hol
WSB - Foundation Rebar					
612631-WSB150	Prepare foundation rebar design for WSB	20	06-Dec-24	07-Jan-25	5D/8Hr -1 1 Hol
612631-WSB160	Schedule OTS review of WSB Foundation Rebar Design	2	08-Jan-25	09-Jan-25	5D/8Hr -1 1 Hol
612631-WSB170	Submit WSB Foundation Rebar Design	10	10-Jan-25	24-Jan-25	5D/8Hr -1 1 Hol
612631-WSB180	Review & Approve WSB Foundation Rebar Design	30	25-Jan-25	23-Feb-25	7D/8Hr -No Hol (MS Cal)
612631-WSB190	Comment Resolution Mtg & Re-issue WSB Foundation Reabr Design	10	24-Feb-25	07-Mar-25	5D/8Hr -1 1 Hol
612631-WSB195	Procure reinforcing steel to construct WSB's designed foundations	40	10-Mar-25	05-May-25	5D/8Hr -1 1 Hol
WSB - Substructure Design					
612631-WSB200	Prepare Substructure design for WSB	15	21-Jan-25	10-Feb-25	5D/8Hr -1 1 Hol
612631-WSB210	Schedule OTS review of WSB Substructure Design	2	11-Feb-25	12-Feb-25	5D/8Hr -1 1 Hol
612631-WSB220	Submit WSB Substructure Design	15	13-Feb-25	06-Mar-25	5D/8Hr -1 1 Hol



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Project Start = 09-Sep-23 Project Finish = 07-Sep-27

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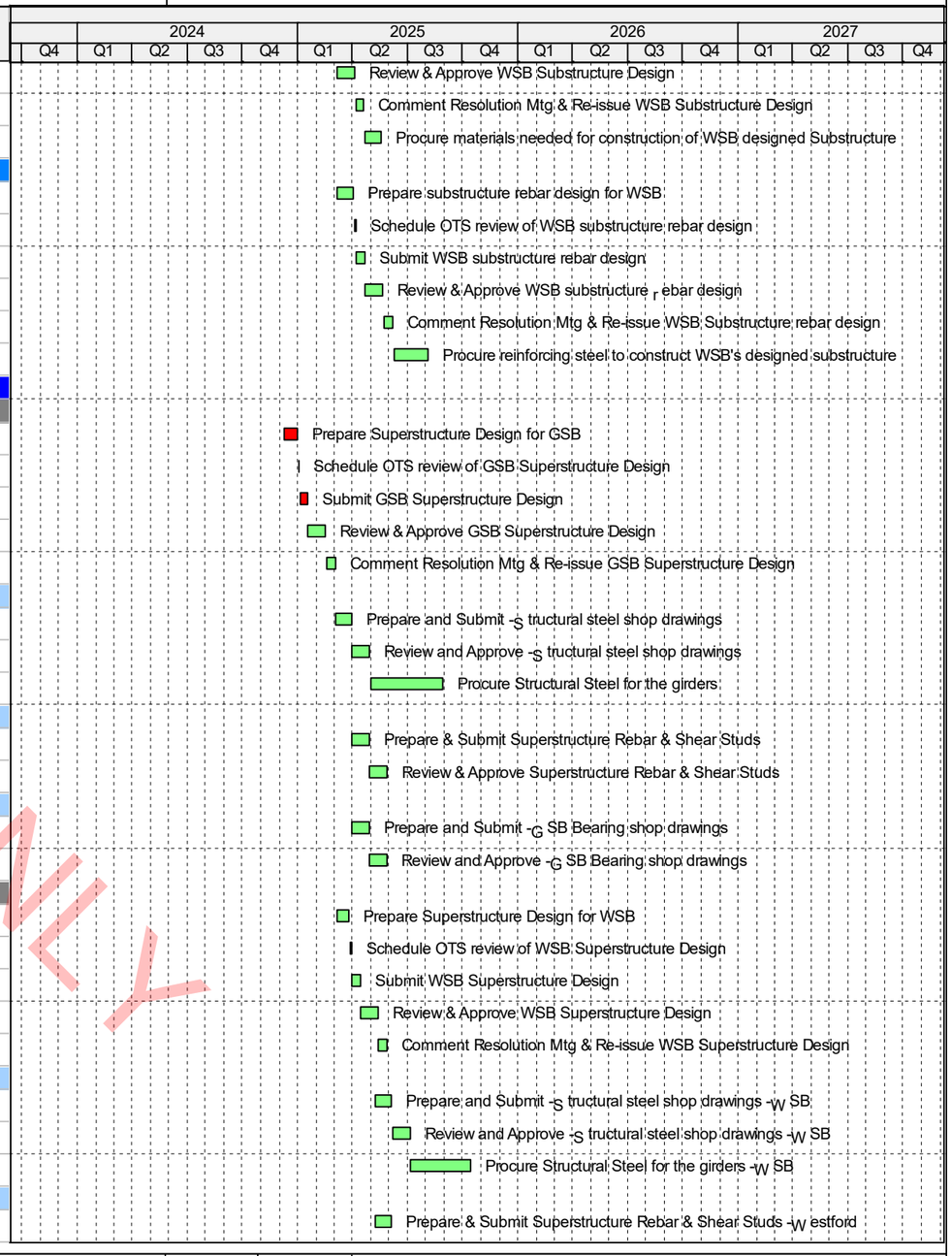
Activity ID	Activity Name	OD	Start	Finish	Calendar
612631-WSB230	Review & Approve WSB Substructure Design	30	07-Mar-25	05-Apr-25	7D/8Hr -No Hol (MS Cal)
612631-WSB240	Comment Resolution Mtg & Re-issue WSB Substructure Design	10	07-Apr-25	18-Apr-25	5D/8Hr -1 1 Hol
612631-WSB245	Procure materials needed for construction of WSB designed Substructure	20	22-Apr-25	19-May-25	5D/8Hr -1 1 Hol
WSB Substructure Rebar					
612631-WSB270	Prepare substructure rebar design for WSB	20	07-Mar-25	03-Apr-25	5D/8Hr -1 1 Hol
612631-WSB280	Schedule OTS review of WSB substructure rebar design	2	04-Apr-25	07-Apr-25	5D/8Hr -1 1 Hol
612631-WSB290	Submit WSB substructure rebar design	10	08-Apr-25	22-Apr-25	5D/8Hr -1 1 Hol
612631-WSB295	Review & Approve WSB substructure r ebar design	30	23-Apr-25	22-May-25	7D/8Hr -No Hol (MS Cal)
612631-WSB250	Comment Resolution Mtg & Re-issue WSB Substructure rebar design	10	23-May-25	06-Jun-25	5D/8Hr -1 1 Hol
612631-WSB260	Procure reinforcing steel to construct WSB's designed substructure	40	09-Jun-25	05-Aug-25	5D/8Hr -1 1 Hol
Superstructure					
Gorham Street Bridge Superstructure Design					
612631-GSB300	Prepare Superstructure Design for GSB	15	09-Dec-24	31-Dec-24	5D/8Hr -1 1 Hol
612631-GSB310	Schedule OTS review of GSB Superstructure Design	2	02-Jan-25	03-Jan-25	5D/8Hr -1 1 Hol
612631-GSB320	Submit GSB Superstructure Design	10	06-Jan-25	17-Jan-25	5D/8Hr -1 1 Hol
612631-GSB330	Review & Approve GSB Superstructure Design	30	18-Jan-25	16-Feb-25	7D/8Hr -No Hol (MS Cal)
612631-GSB340	Comment Resolution Mtg & Re-issue GSB Superstructure Design	10	18-Feb-25	03-Mar-25	5D/8Hr -1 1 Hol
GSB -Structural Steel					
612631-GSB355	Prepare and Submit -S tructural steel shop drawings	20	04-Mar-25	31-Mar-25	5D/8Hr -1 1 Hol
612631-GSB360	Review and Approve -S tructural steel shop drawings	30	01-Apr-25	30-Apr-25	7D/8Hr -No Hol (MS Cal)
612631-GSB365	Procure Structural Steel for the girders	120	01-May-25	28-Aug-25	7D/8Hr -No Hol (MS Cal)
GSB -Deck Rebar & Shear Studs					
612631-GSB385	Prepare & Submit Superstructure Rebar & Shear Studs	20	01-Apr-25	29-Apr-25	5D/8Hr -1 1 Hol
612631-GSB395	Review & Approve Superstructure Rebar & Shear Studs	30	30-Apr-25	29-May-25	7D/8Hr -No Hol (MS Cal)
GSB -Bearings					
612631-GSB375	Prepare and Submit -G SB Bearing shop drawings	20	01-Apr-25	29-Apr-25	5D/8Hr -1 1 Hol
612631-GSB380	Review and Approve -G SB Bearing shop drawings	30	30-Apr-25	29-May-25	7D/8Hr -No Hol (MS Cal)
Westford Street Bridge Superstructure Design					
612631-WSB300	Prepare Superstructure Design for WSB	15	07-Mar-25	27-Mar-25	5D/8Hr -1 1 Hol
612631-WSB305	Schedule OTS review of WSB Superstructure Design	2	28-Mar-25	31-Mar-25	5D/8Hr -1 1 Hol
612631-WSB310	Submit WSB Superstructure Design	10	01-Apr-25	14-Apr-25	5D/8Hr -1 1 Hol
612631-WSB315	Review & Approve WSB Superstructure Design	30	15-Apr-25	14-May-25	7D/8Hr -No Hol (MS Cal)
612631-WSB320	Comment Resolution Mtg & Re-issue WSB Superstructure Design	10	15-May-25	29-May-25	5D/8Hr -1 1 Hol
WSB -Structural Steel					
612631-WSB355	Prepare and Submit -S tructural steel shop drawings -W SB	20	08-May-25	05-Jun-25	5D/8Hr -1 1 Hol
612631-WSB360	Review and Approve -S tructural steel shop drawings -W SB	30	06-Jun-25	05-Jul-25	7D/8Hr -No Hol (MS Cal)
612631-WSB365	Procure Structural Steel for the girders -W SB	100	06-Jul-25	13-Oct-25	7D/8Hr -No Hol (MS Cal)
WSB -Deck Rebar and Shear Studs					
612631-WSB385	Prepare & Submit Superstructure Rebar & Shear Studs -W estford	20	08-May-25	05-Jun-25	5D/8Hr -1 1 Hol



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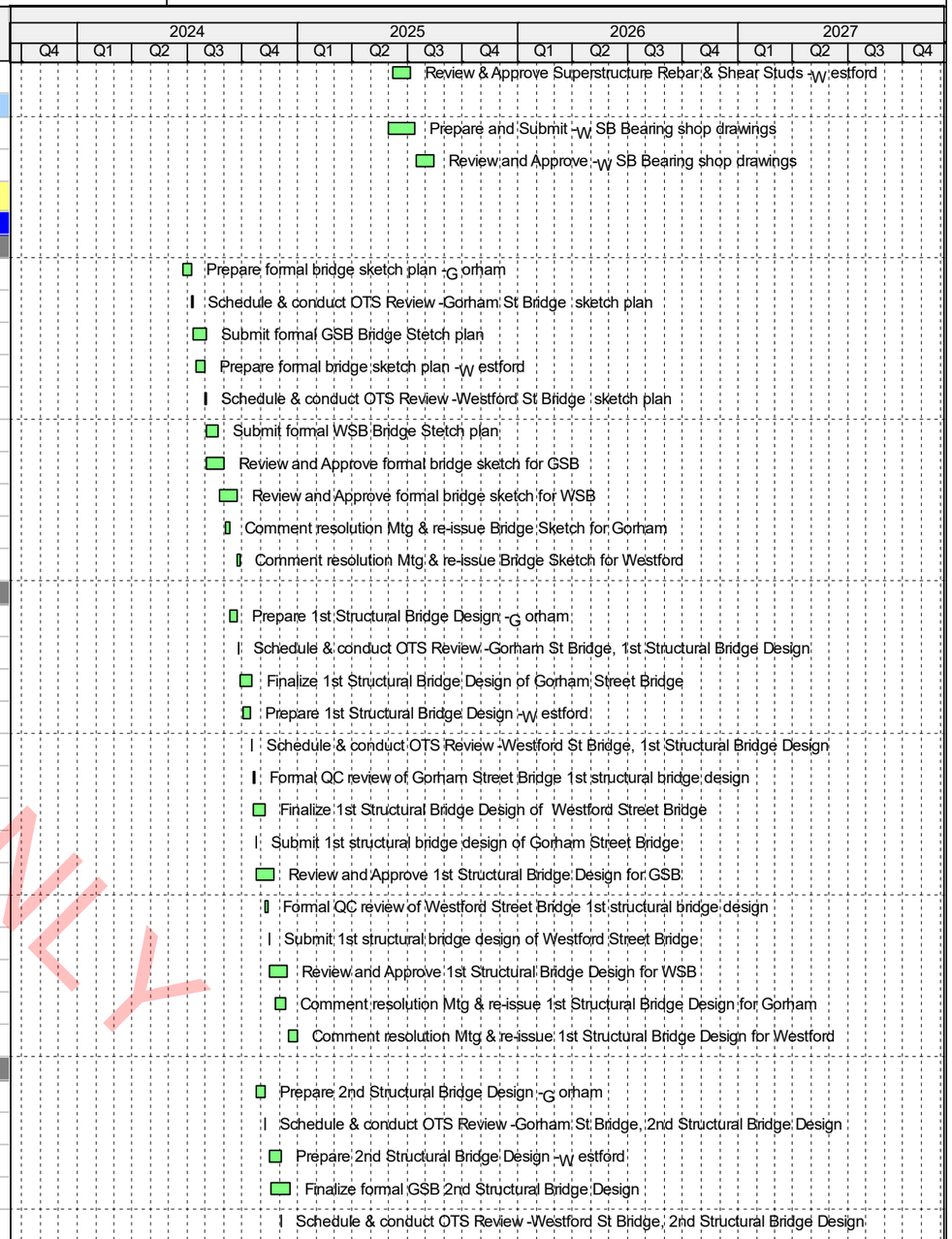
Activity ID	Activity Name	OD	Start	Finish	Calendar
612631-WSB395	Review & Approve Superstructure Rebar & Shear Studs -W estford	30	06-Jun-25	05-Jul-25	7D/8Hr -No Hol (MS Cal)
WSB -Bearings					
612631-WSB375	Prepare and Submit -W SB Bearing shop drawings	30	30-May-25	14-Jul-25	5D/8Hr -1 1 Hol
612631-WSB380	Review and Approve -W SB Bearing shop drawings	30	15-Jul-25	13-Aug-25	7D/8Hr -No Hol (MS Cal)
Design Submittals					
Bridge Designs					
Bridge Sketch					
612631-BS100G	Prepare formal bridge sketch plan -G orham	10	24-Jun-24	09-Jul-24	5D/8Hr -1 1 Hol
612631-BS110G	Schedule & conduct OTS Review -Gorham St Bridge sketch plan	2	10-Jul-24	11-Jul-24	5D/8Hr -1 1 Hol
612631-BS120G	Submit formal GSB Bridge Stetch plan	15	12-Jul-24	01-Aug-24	5D/8Hr -1 1 Hol
612631-BS100W	Prepare formal bridge sketch plan -W estford	10	17-Jul-24	30-Jul-24	5D/8Hr -1 1 Hol
612631-BS110W	Schedule & conduct OTS Review -Westford St Bridge sketch plan	2	31-Jul-24	01-Aug-24	5D/8Hr -1 1 Hol
612631-BS120W	Submit formal WSB Bridge Stetch plan	15	02-Aug-24	22-Aug-24	5D/8Hr -1 1 Hol
612631-BS130G	Review and Approve formal bridge sketch for GSB	30	02-Aug-24	31-Aug-24	7D/8Hr -No Hol (MS Cal)
612631-BS130W	Review and Approve formal bridge sketch for WSB	30	23-Aug-24	21-Sep-24	7D/8Hr -No Hol (MS Cal)
612631-BS140G	Comment resolution Mtg & re-issue Bridge Sketch for Gorham	5	03-Sep-24	09-Sep-24	5D/8Hr -1 1 Hol
612631-BS140W	Comment resolution Mtg & re-issue Bridge Sketch for Westford	5	23-Sep-24	27-Sep-24	5D/8Hr -1 1 Hol
1st -Structural Design					
612631-BS1100G	Prepare 1st Structural Bridge Design -G orham	10	10-Sep-24	23-Sep-24	5D/8Hr -1 1 Hol
612631-BS1110G	Schedule & conduct OTS Review -Gorham St Bridge, 1st Structural Bridge Design	2	24-Sep-24	25-Sep-24	5D/8Hr -1 1 Hol
612631-BS1120G	Finalize 1st Structural Bridge Design of Gorham Street Bridge	15	26-Sep-24	17-Oct-24	5D/8Hr -1 1 Hol
612631-BS1100W	Prepare 1st Structural Bridge Design -W estford	10	01-Oct-24	15-Oct-24	5D/8Hr -1 1 Hol
612631-BS1110W	Schedule & conduct OTS Review -Westford St Bridge, 1st Structural Bridge Design	2	16-Oct-24	17-Oct-24	5D/8Hr -1 1 Hol
612631-BS1125G	Formal QC review of Gorham Street Bridge 1st structural bridge design	3	18-Oct-24	22-Oct-24	5D/8Hr -1 1 Hol
612631-BS1120W	Finalize 1st Structural Bridge Design of Westford Street Bridge	15	18-Oct-24	07-Nov-24	5D/8Hr -1 1 Hol
612631-BS1130G	Submit 1st structural bridge design of Gorham Street Bridge	1	23-Oct-24	23-Oct-24	5D/8Hr -1 1 Hol
612631-BS1135G	Review and Approve 1st Structural Bridge Design for GSB	30	24-Oct-24	22-Nov-24	7D/8Hr -No Hol (MS Cal)
612631-BS1125W	Formal QC review of Westford Street Bridge 1st structural bridge design	3	08-Nov-24	13-Nov-24	5D/8Hr -1 1 Hol
612631-BS1130W	Submit 1st structural bridge design of Westford Street Bridge	1	14-Nov-24	14-Nov-24	5D/8Hr -1 1 Hol
612631-BS1135W	Review and Approve 1st Structural Bridge Design for WSB	30	15-Nov-24	14-Dec-24	7D/8Hr -No Hol (MS Cal)
612631-BS1140G	Comment resolution Mtg & re-issue 1st Structural Bridge Design for Gorham	10	25-Nov-24	11-Dec-24	5D/8Hr -1 1 Hol
612631-BS1140W	Comment resolution Mtg & re-issue 1st Structural Bridge Design for Westford	10	16-Dec-24	31-Dec-24	5D/8Hr -1 1 Hol
2nd -Structural Design					
612631-BS2100G	Prepare 2nd Structural Bridge Design -G orham	10	24-Oct-24	06-Nov-24	5D/8Hr -1 1 Hol
612631-BS2110G	Schedule & conduct OTS Review -Gorham St Bridge, 2nd Structural Bridge Design	2	07-Nov-24	08-Nov-24	5D/8Hr -1 1 Hol
612631-BS2100W	Prepare 2nd Structural Bridge Design -W estford	10	15-Nov-24	03-Dec-24	5D/8Hr -1 1 Hol
612631-BS2120G	Finalize formal GSB 2nd Structural Bridge Design	20	18-Nov-24	18-Dec-24	5D/8Hr -1 1 Hol
612631-BS2110W	Schedule & conduct OTS Review -Westford St Bridge, 2nd Structural Bridge Design	2	04-Dec-24	05-Dec-24	5D/8Hr -1 1 Hol



Project Name: 612631 - Chelmsford: Bridge Replacements Gorham St Westford St over I-495 25% plans, DB DD Revised,
Project ID 612631 CTD01

CST01-Baseline-All

MassDOT: Highway

Activity ID	Activity Name	OD	Start	Finish	Calendar
612631-BS2120W	Finalize formal WSB Bridge, 2nd Structural Bridge Design	20	09-Dec-24	08-Jan-25	5D/8Hr -1 1 Hol
612631-BS2125G	Formal QC review of Gorham Street Bridge 2nd structural bridge design	4	19-Dec-24	26-Dec-24	5D/8Hr -1 1 Hol
612631-BS2130G	Submit 2nd structural bridge design of Gorham Street Bridge	1	27-Dec-24	27-Dec-24	5D/8Hr -1 1 Hol
612631-BS2135G	Review and Approve 2nd Structural Bridge Design for GSB	30	28-Dec-24	26-Jan-25	7D/8Hr -No Hol (MS Cal)
612631-BS2125W	Formal QC review of Westford Street Bridge 2nd structural bridge design	4	09-Jan-25	14-Jan-25	5D/8Hr -1 1 Hol
612631-BS2130W	Submit 2nd structural bridge design of Westford Street Bridge	1	15-Jan-25	15-Jan-25	5D/8Hr -1 1 Hol
612631-BS2135W	Review and Approve 2nd Structural Bridge Design for WSB	30	16-Jan-25	14-Feb-25	7D/8Hr -No Hol (MS Cal)
612631-BS2140G	Comment resolution Mtg & re-issue 2nd Structural Bridge Design for Gorham	10	27-Jan-25	07-Feb-25	5D/8Hr -1 1 Hol
612631-BS2140W	Comment resolution Mtg & re-issue 2nd Structural Bridge Design for Westford	10	18-Feb-25	03-Mar-25	5D/8Hr -1 1 Hol
Roadway Design					
75% Roadway Design Plans					
612631-R1100	Prepare 75% Roadway Design for Gorham and Westford Streets	20	14-Aug-24	11-Sep-24	5D/8Hr -1 1 Hol
612631-R1110	Schedule & conduct OTS Review -7 5% Roadway Design G & W Streets	2	12-Sep-24	13-Sep-24	5D/8Hr -1 1 Hol
612631-R1115	Finalize 75% Roadway Design for Gorham & Westford Streets	40	16-Sep-24	12-Nov-24	5D/8Hr -1 1 Hol
612631-R1120	Formal QC review of 75% Roadway Design for Gorham & Westford Streets	3	13-Nov-24	15-Nov-24	5D/8Hr -1 1 Hol
612631-R1125	Submit 75% Roadway Design for Gorham & Westford Streets	1	18-Nov-24	18-Nov-24	5D/8Hr -1 1 Hol
612631-R1130	Review and Approve 75% Roadway Design for Gorham & Westford Streets	30	19-Nov-24	18-Dec-24	7D/8Hr -No Hol (MS Cal)
612631-R1135	Comment resolution Mtg & re-issue 75% Roadway Design	8	19-Dec-24	02-Jan-25	5D/8Hr -1 1 Hol
612631-R1140	Submit 75% Roadway Design -R ev1 use 15 days, not expected -go to 100% Design	0	03-Jan-25	03-Jan-25	5D/8Hr -1 1 Hol
612631-R1145	R&A 75% Roadway Design -R ev1 use 30 days, not expected -go to 100% Design	0	03-Jan-25	03-Jan-25	5D/8Hr -1 1 Hol
100% Roadway Design Plans					
612631-R2100	Prepare 100% Roadway Design for Gorham and Westford Streets	15	10-Dec-24	02-Jan-25	5D/8Hr -1 1 Hol
612631-R2110	Schedule & conduct OTS Review -1 00% Roadway Design G & W Streets	2	03-Jan-25	06-Jan-25	5D/8Hr -1 1 Hol
612631-R2115	Finalize 100% Roadway Design for Gorham & Westford Streets	20	07-Jan-25	04-Feb-25	5D/8Hr -1 1 Hol
612631-R2120	Formal QC review of 100% Roadway Design for Gorham & Westford Streets	4	05-Feb-25	10-Feb-25	5D/8Hr -1 1 Hol
612631-R2125	Submit 100% Roadway Design for Gorham & Westford Streets	1	11-Feb-25	11-Feb-25	5D/8Hr -1 1 Hol
612631-R2130	Review and Approve 100% Roadway Design for Gorham & Westford Streets	30	12-Feb-25	13-Mar-25	7D/8Hr -No Hol (MS Cal)
612631-R2135	Comment resolution Mtg & re-issue 100% Roadway Design	5	14-Mar-25	20-Mar-25	5D/8Hr -1 1 Hol
Final -PS&E -Roadway & Bridges plans					
612631-F3100	Prepare RFC Project Design for Gorham and Westford Bridges & Streets	30	12-Feb-25	26-Mar-25	5D/8Hr -1 1 Hol
612631-F3110	Schedule & conduct OTS Review -R FC Bridge and Roadway Design for Gorham & Westford Sts.	2	27-Mar-25	28-Mar-25	5D/8Hr -1 1 Hol
612631-F3115	Finalize RFC Bridge & Roadway Design for Gorham & Westford Streets	4	31-Mar-25	03-Apr-25	5D/8Hr -1 1 Hol
612631-F3120	Formal QC review of RFC Final Bridge and Roadway Design for Gorham & Westford Streets	4	04-Apr-25	09-Apr-25	5D/8Hr -1 1 Hol
612631-F3125	Submit RFC Final Bridge & Roadway Design for Gorham & Westford Streets	1	10-Apr-25	10-Apr-25	5D/8Hr -1 1 Hol
612631-F3130	Review & Approve RFC Final Bridge & Roadway Design for Gorham & Westford Streets	30	11-Apr-25	10-May-25	7D/8Hr -No Hol (MS Cal)
612631-F3135	Comment resolution Mtg & re-issue RFC Final Bridge & Roadway Design G&W	5	12-May-25	16-May-25	5D/8Hr -1 1 Hol
Construction Submittals					

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Project Name: 612631 - Chelmsford: Bridge Replacements Gorham St Westford St over I-495 25% plans, DB DD Revised, Project ID 612631 CTD01

CST01-Baseline-All

MassDOT: Highway

Activity ID	Activity Name	OD	Start	Finish	Calendar
Prepare and submit Project Subcontractors					
612631-2630	Prepare & Submit Early work Subcontractor Approval (Drainage, LSP, Invasive Species, & Excavatio	10	08-Jul-24	19-Jul-24	5D/8Hr -1 1 Hol
612631-2640	Review & Approve Subcontractors (Drainage, LSP, Invasive Species Sub, & Excavation)	15	20-Jul-24	03-Aug-24	7D/8Hr -No Hol (MS Cal)
612631-7220	Prepare & Submit Subcontractors	20	07-Aug-24	04-Sep-24	5D/8Hr -1 1 Hol
612631-7230	Review & Approve Subcontractors	15	05-Sep-24	19-Sep-24	7D/8Hr -No Hol (MS Cal)
Certified Asbestos subcontractor w licensed supervision					
612631-7200	Prepare & Submit Certified Asbestos contractor with supervision	10	14-Aug-24	27-Aug-24	5D/8Hr -1 1 Hol
612631-7210	Review & Approve Certified Asbestos contractor with supervision	30	28-Aug-24	26-Sep-24	7D/8Hr -No Hol (MS Cal)
Licensed Site Professional					
612631-LSP110	Prepare & Submit Licenced Site Professional	10	31-Jul-24	13-Aug-24	5D/8Hr -1 1 Hol
612631-LSP120	Review & Approve Licenced Site Professional	30	14-Aug-24	12-Sep-24	7D/8Hr -No Hol (MS Cal)
Health and Safety Plan					
612631-HS100	Prepare & Submit Environmental Health and Safety Plan	10	30-Aug-24	13-Sep-24	5D/8Hr -1 1 Hol
612631-HS110	Review & Approve Environmental Health and Safety Plan	30	14-Sep-24	13-Oct-24	7D/8Hr -No Hol (MS Cal)
NPDES - Storm Water Pollution Prevention Plan					
612631-SWPPP100	Prepare & Submit Project's SWPPP	10	30-Aug-24	13-Sep-24	5D/8Hr -1 1 Hol
612631-SWPPP110	Review & Approve Project's SWPPP	30	14-Sep-24	13-Oct-24	7D/8Hr -No Hol (MS Cal)
Drainage					
612631-D5160	Prepare & Submit Stormwater drainliie submittal package - pi pe, MHs, and joints	10	04-Nov-24	18-Nov-24	5D/8Hr -1 1 Hol
612631-D5170	Review & Approve Stormwater drainline submittal package - pi pe, MHs, and joints	30	19-Nov-24	18-Dec-24	7D/8Hr -No Hol (MS Cal)
612631-D5180	Procure Stormwater drainline materials	15	19-Dec-24	13-Jan-25	5D/8Hr -1 1 Hol
Waterline Pipe, valves, and joints					
612631-WP100	Prepare & Submit Water line submittal package - pi pe, values, and joints	20	20-Sep-24	18-Oct-24	5D/8Hr -1 1 Hol
612631-WP110	Review & Approve Water line submittal package - pi pe, values, and joints	30	19-Oct-24	17-Nov-24	7D/8Hr -No Hol (MS Cal)
612631-WP120	Procure waterline materials	30	18-Nov-24	06-Jan-25	5D/8Hr -1 1 Hol
Invasive Plant Management Strategy					
612631-IP100	Prepare & Submit Invasive PMS: Qualification & Company License	10	22-Jul-24	02-Aug-24	5D/8Hr -1 1 Hol
612631-IP110	Review & Approve Invasive PMS: Qualification & Company License	30	03-Aug-24	01-Sep-24	7D/8Hr -No Hol (MS Cal)
612631-D5190	Prepare & Submit Invasive PMS submittal package	10	03-Sep-24	16-Sep-24	5D/8Hr -1 1 Hol
612631-D5200	Review & Approve Invasive PMS submittal package	30	17-Sep-24	16-Oct-24	7D/8Hr -No Hol (MS Cal)
612631-D5210	Procure Herbicides to spray for Invasive plants	20	17-Oct-24	14-Nov-24	5D/8Hr -1 1 Hol
Concrete Repairs					
612631-GI120	Prepare & Submit Method of concrete removal & equipment	20	05-Aug-24	30-Aug-24	5D/8Hr -1 1 Hol
612631-GI130	Review & Approve Method of concrete removal & equipment	30	31-Aug-24	29-Sep-24	7D/8Hr -No Hol (MS Cal)
Bridge Demo Plan					
612631-GI100	Prepare & Submit Demolition procedure w/ calcs & drawings PE stamped	15	05-Aug-24	23-Aug-24	5D/8Hr -1 1 Hol
612631-GI110	Review & Approve Demolition procedure w/ calcs & drawings PE stamped	30	13-Oct-24	11-Nov-24	7D/8Hr -No Hol (MS Cal)

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Date	Revision	Checked	Approved

Prepared by MassDOT Highway

Project Name: 612631 - Chelmsford: Bridge Replacements Gorham St Westford St over 1-495 25% plans, DB DD Revised,
Project ID 612631 CTD01

CST01-Baseline-All

MassDOT: Highway

Activity ID	Activity Name	OD	Start	Finish	Calendar
Bridge Foundation / Footing					
612631-FRG100	Prepare & Submit Spread footing for Gorham Street Bridge	25	23-Dec-24	30-Jan-25	5D/8Hr -1 1 Hol
612631-FRG120	Review & Approve Spread Footing for Gorham Street Bridge	30	31-Jan-25	01-Mar-25	7D/8Hr -No Hol (MS Cal)
612631-FRW100	Prepare & Submit Spread Footing design S drwgs for Westford Street Bridge	25	31-Jan-25	07-Mar-25	5D/8Hr -1 1 Hol
612631-FRG140	Prepare & Submit Rebar for Spread footings for the Gorham Street Bridge	20	06-Feb-25	06-Mar-25	5D/8Hr -1 1 Hol
612631-FRG150	Review & Approve Rebar for Spread footing for the Gorham Street Bridge	30	07-Mar-25	05-Apr-25	7D/8Hr -No Hol (MS Cal)
612631-FRW120	Review & Approve Spread Footing design S drwgs for Westford Street Bridge	30	08-Mar-25	06-Apr-25	7D/8Hr -No Hol (MS Cal)
612631-FRW130	Prepare & Submit Spread Footing Rebar S drwgs for Westford Street Bridge	25	10-Mar-25	11-Apr-25	5D/8Hr -1 1 Hol
612631-FRG130	Procure Footing Rebar for Gorham Street Bridge	20	19-Mar-25	15-Apr-25	5D/8Hr -1 1 Hol
612631-FRW140	Review & Approve Spread Footing Rebar S drwgs for Westford Street Bridge	30	12-Apr-25	11-May-25	7D/8Hr -No Hol (MS Cal)
612631-FRW150	Procure Footing Rebar for Westford Street Bridge	40	12-May-25	09-Jul-25	5D/8Hr -1 1 Hol
Bridge Submittals and Shop Drawings					
612631-SS130	Prepare & Submit Structural Steel Shop Drawings -Gorham Street Bridge	50	21-Jan-25	01-Apr-25	5D/8Hr -1 1 Hol
612631-SS160	P & S Laminated Elastomeric Bearings w/o anchor bolts -Gorham Street Bridge	20	05-Mar-25	01-Apr-25	5D/8Hr -1 1 Hol
612631-SS140	Review & Approve Structural Steel Shop Drawings -Gorham Street Bridge	30	02-Apr-25	01-May-25	7D/8Hr -No Hol (MS Cal)
612631-SS100	Prepare & Submit Structural Steel Shop Drawings -Westford Street Bridge	50	15-Apr-25	26-Jun-25	5D/8Hr -1 1 Hol
612631-SS170	R & A Laminated Elastomeric Bearings w/o anchor bolts-Gorham Street Bridge	30	30-Apr-25	29-May-25	7D/8Hr -No Hol (MS Cal)
612631-SS150	Fabricate Str. Steel -Gorham Steet Bridge over I-495	100	02-May-25	24-Sep-25	5D/8Hr -1 1 Hol
612631-SS180	Fabricate Laminated Elastomeric Bearings w/o anchor bolts -Gorham Street Bridge	40	30-May-25	28-Jul-25	5D/8Hr -1 1 Hol
612631-SS250	P & S Laminated Elastomeric Bearings w/o anchor bolts -Westford Street Bridge	20	27-Jun-25	25-Jul-25	5D/8Hr -1 1 Hol
612631-SS110	Review & Approve Structural Steel Shop Drawings -Westford Street Bridge	30	27-Jun-25	26-Jul-25	7D/8Hr -No Hol (MS Cal)
612631-SS210	Fabricate Str.all elements for Westford Street Bridge over I-495	100	27-Jun-25	19-Nov-25	5D/8Hr -1 1 Hol
612631-SS260	R & A Laminated Elastomeric Bearings w/o anchor bolts-Westford Street Bridge	30	26-Jul-25	24-Aug-25	7D/8Hr -No Hol (MS Cal)
612631-SS270	Fabricate Laminated Elastomeric Bearings w/o anchor bolts -Westfrod Street Bridge	40	25-Aug-25	21-Oct-25	5D/8Hr -1 1 Hol
612631-SS120	Fabricate Str. Steel -Westford Street Bridge over I-495	100	29-Aug-25	28-Jan-26	5D/8Hr -1 1 Hol
Superstructure Rebar Shop Drawings					
612631-GSR100	Prepare & Submit Superstructure Rebar -GSB	30	25-Mar-25	06-May-25	5D/8Hr -1 1 Hol
612631-WSD100	Prepare & Submit Superstructure Rebar -WSB	30	01-May-25	12-Jun-25	5D/8Hr -1 1 Hol
612631-GSR110	Review & Approve Superstructure Rebar -GSB	30	07-May-25	05-Jun-25	7D/8Hr -No Hol (MS Cal)
612631-GSR120	Fabricate Superstructure Rebar -GSB	40	06-Jun-25	04-Aug-25	5D/8Hr -1 1 Hol
612631-WSD110	Review & Approve Superstructure Rebar -WSB	30	13-Jun-25	12-Jul-25	7D/8Hr -No Hol (MS Cal)
612631-WSD120	Fabricate Superstructure Rebar -WSB	40	15-Aug-25	10-Oct-25	5D/8Hr -1 1 Hol
Substructure Rebar Shop Drawings					
612631-SSR100	Prepare & Submit Substructure Rebar -GSB	40	15-Oct-24	13-Dec-24	5D/8Hr -1 1 Hol
612631-SSR110	Review & Approve Substructure Rebar -GSB	30	18-Feb-25	19-Mar-25	7D/8Hr -No Hol (MS Cal)
612631-SSR120	Fabricate substructure Rebar -GSB	30	03-Apr-25	15-May-25	5D/8Hr -1 1 Hol
612631-SSR290	Prepare & Submit Substructure Rebar -WSBridge	40	09-Apr-25	05-Jun-25	5D/8Hr -1 1 Hol

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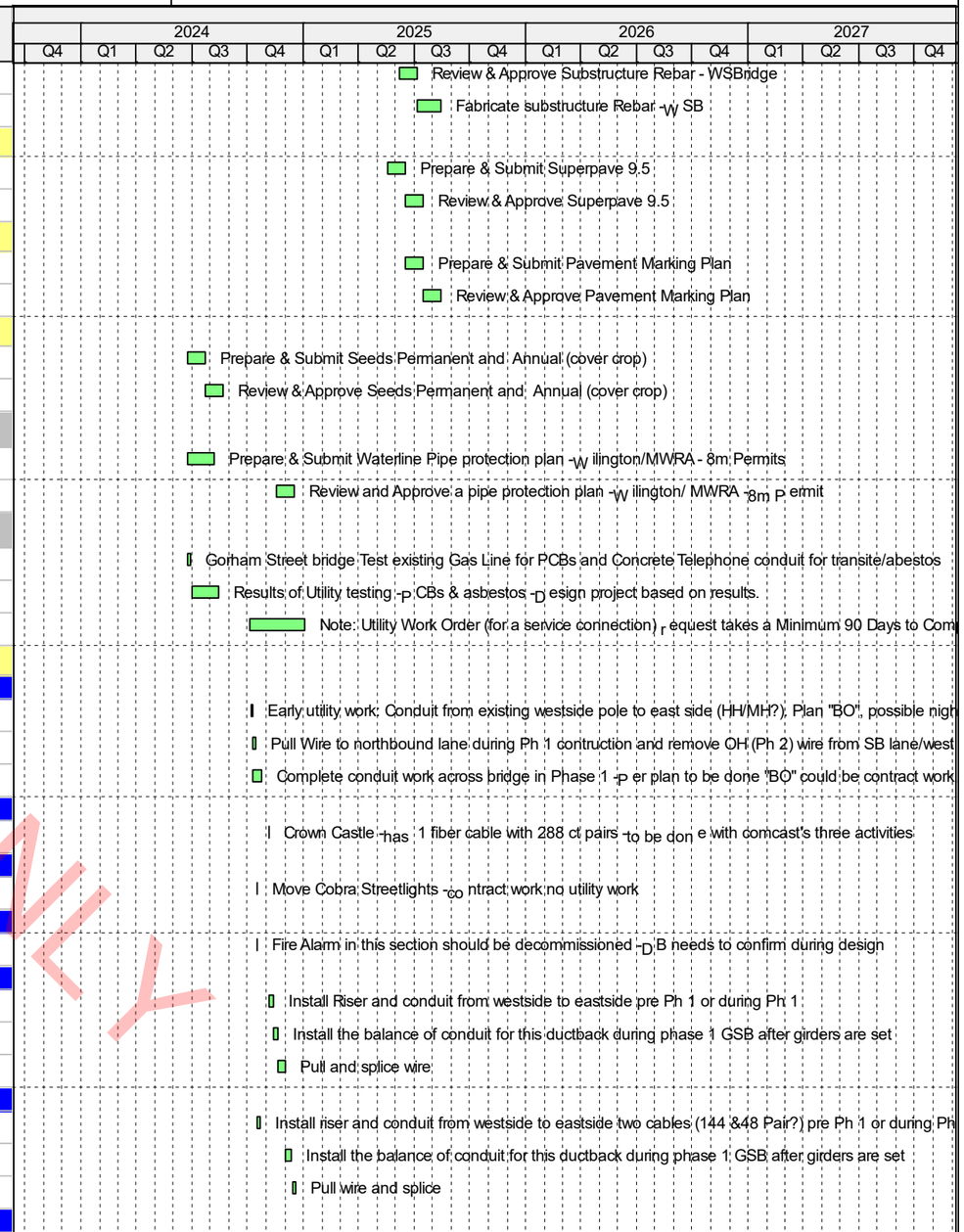
612631-SSR300	Review & Approve Substructure Rebar - WSBridge	30	06-Jun-25	05-Jul-25	7D/8Hr - No Hol (MS Cal)
612631-SSR310	Fabricate substructure Rebar - W SB	30	07-Jul-25	15-Aug-25	5D/8Hr - 1 1 Hol
Superpave 9.5					
612631-HMA100	Prepare & Submit Superpave 9.5	20	19-May-25	16-Jun-25	5D/8Hr - 1 1 Hol
612631-HMA110	Review & Approve Superpave 9.5	30	17-Jun-25	16-Jul-25	7D/8Hr - No Hol (MS Cal)
Pavement Marking Plan					
612631-PM100	Prepare & Submit Pavement Marking Plan	20	17-Jun-25	16-Jul-25	5D/8Hr - 1 1 Hol
612631-PM110	Review & Approve Pavement Marking Plan	30	17-Jul-25	15-Aug-25	7D/8Hr - No Hol (MS Cal)
Native Seeding and establishment					
612631-HMA120	Prepare & Submit Seeds Permanent and Annual (cover crop)	20	24-Jun-24	23-Jul-24	5D/8Hr - 1 1 Hol
612631-HMA130	Review & Approve Seeds Permanent and Annual (cover crop)	30	24-Jul-24	22-Aug-24	7D/8Hr - No Hol (MS Cal)
Permits & MBTA Coordination					
612631-P100	Prepare & Submit Waterline Pipe protection plan - W ilington/MWRA - 8m P ermits	30	24-Jun-24	06-Aug-24	5D/8Hr - 1 1 Hol
612631-P110	Review and Approve a pipe protection plan - W ilington/ MWRA - 8 m Permit	30	18-Nov-24	17-Dec-24	7D/8Hr - No Hol (MS Cal)
Utilities					
612631-PU1010	Gorham Street bridge Test existing Gas Line for PCBs and Concrete Telephone conduit for transite/a	5	24-Jun-24	28-Jun-24	5D/8Hr - 1 1 Hol
612631-PU1020	Results of Utility testing - P CBs & asbestos - D esign project based on results.	30	01-Jul-24	13-Aug-24	5D/8Hr - 1 1 Hol
612631-PU1000	Note: Utility Work Order (for a service connection) - r equest takes a Minimum 90 Days to Compete.	90	05-Oct-24	02-Jan-25	7D/8Hr - No Hol (MS Cal)
Utility work on Gorham Roadway & Bridge					
National Grid -Gorham - onto bridge					
612631-NGE1000	Early utility work: Conduit from existing westside pole to east side (HH/MH?). Plan "BO", possible nigh	3	07-Oct-24	09-Oct-24	5D/8Hr - 1 1 Hol
612631-NGE1020	Pull Wire to northbound lane during Ph 1 contruction and remove OH (Ph 2) wire from SB lane/west	3	10-Oct-24	15-Oct-24	5D/8Hr - 1 1 Hol
612631-NGE1010	Complete conduit work across bridge in Phase 1 - P er plan to be done "BO" could be contract work,c	10	10-Oct-24	24-Oct-24	5D/8Hr - 1 1 Hol
Crown Castle - f iber cable with 288ct					
612631- C C100	Crown Castle - has 1 fiber cable with 288 ct pairs - to be done w ith comcast's three activities	1	05-Nov-24	05-Nov-24	5D/8Hr - 1 1 Hol
Town of Chelmsford - G orham - C obras contract item					
612631-CG200	Move Cobra Streetlights - co ntract work no utility work	0	16-Oct-24	16-Oct-24	5D/8Hr - 1 1 Hol
Chelmsford - F ire Alarm - D ecommission this section					
612631-FA100	Fire Alarm in this section should be decommissioned - D B needs to confirm during design	0	16-Oct-24	16-Oct-24	5D/8Hr - 1 1 Hol
Lightpath - 1 Fiber, U nder seconary (OH)					
612631-LP100	Install Riser and conduit from westside to eastside pre Ph 1 or during Ph 1	4	06-Nov-24	12-Nov-24	5D/8Hr - 1 1 Hol
612631-LP110	Install the balance of conduit for this ductback during phase 1 GSB after girders are set	5	13-Nov-24	19-Nov-24	5D/8Hr - 1 1 Hol
612631-LP120	Pull and splice wire	6	20-Nov-24	02-Dec-24	5D/8Hr - 1 1 Hol
Verizon/ MCI - G orham - 2 cables (144 & 48) requests a 1" conduit					
612631-V-MCI-100	Install riser and conduit from westside to eastside two cables (144 &48 Pair?) pre Ph 1 or during Ph1	4	16-Oct-24	21-Oct-24	5D/8Hr - 1 1 Hol
612631-V-MCI-110	Install the balance of conduit for this ductback during phase 1 GSB after girders are set	8	03-Dec-24	12-Dec-24	5D/8Hr - 1 1 Hol
612631-V-MCI-120	Pull wire and splice	5	13-Dec-24	19-Dec-24	5D/8Hr - 1 1 Hol
AT&T / Siena - G orham - I n Lumen duct in Median					



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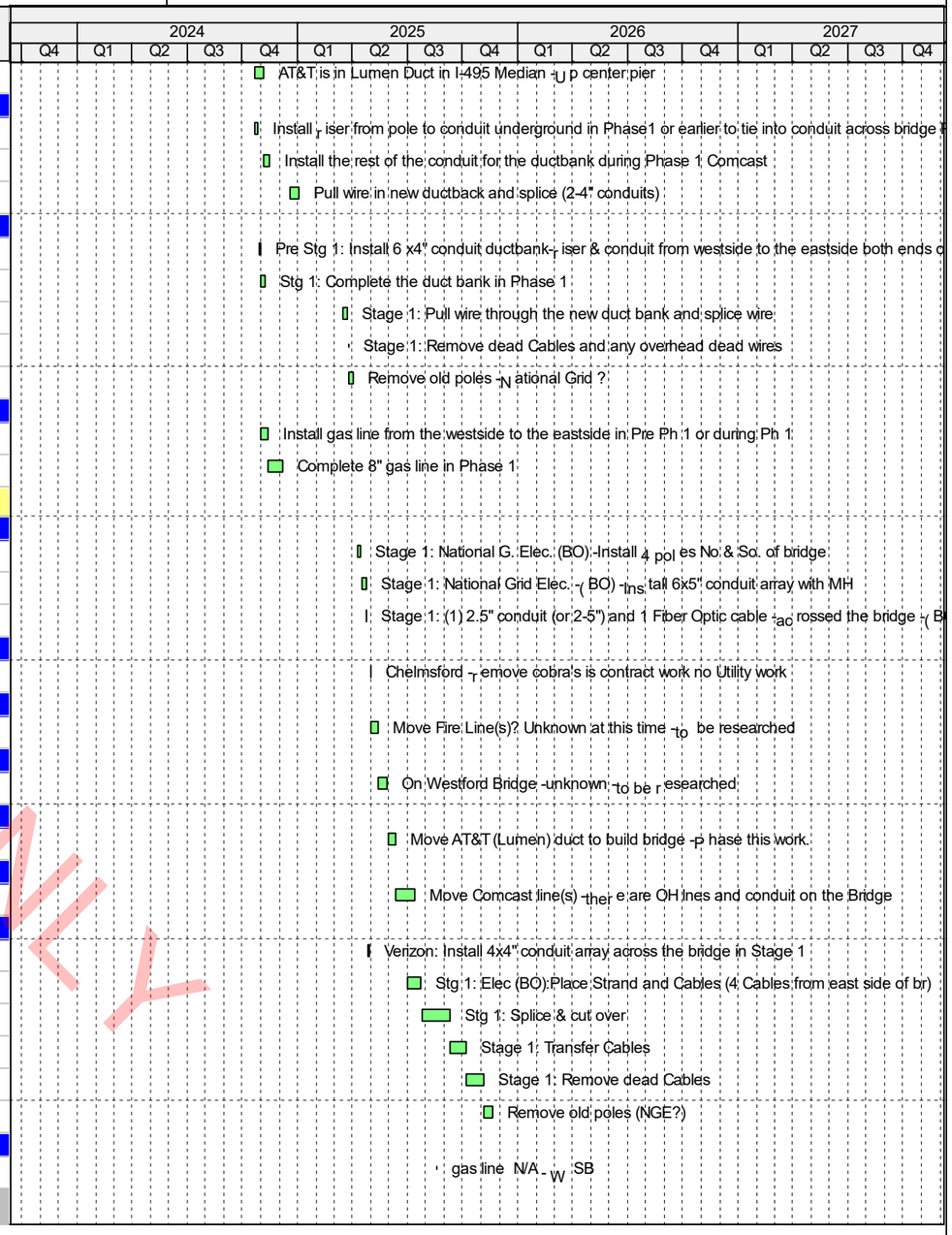
612631-ATT20	AT&T is in Lumen Duct in I-495 Median -U p center pier	10	22-Oct-24	04-Nov-24	5D/8Hr -1 1 Hol
Comcast -With AT&T Aerial on Gorham St.					
612631-C1000	Install r iser from pole to conduit underground in Phase1 or earlier to tie into conduit across bridge Pl	4	22-Oct-24	25-Oct-24	5D/8Hr -1 1 Hol
612631-C1010	Install the rest of the conduit for the ductbank during Phase 1 Comcast	8	05-Nov-24	15-Nov-24	5D/8Hr -1 1 Hol
612631-C1020	Pull wire in new ductback and splice (2-4" conduits)	8	20-Dec-24	03-Jan-25	5D/8Hr -1 1 Hol
Verizon -Gorham -3 copper & 2 Fiber with air pipe at bridge					
612631-VG100	Pre Stg 1: Install 6 x4" conduit ductbank-r iser & conduit from westside to the eastside both ends of I	3	28-Oct-24	30-Oct-24	5D/8Hr -1 1 Hol
612631-VG110	Stg 1: Complete the duct bank in Phase 1	5	31-Oct-24	06-Nov-24	5D/8Hr -1 1 Hol
612631-VG120	Stage 1: Pull wire through the new duct bank and splice wire	6	17-Mar-25	24-Mar-25	Winter SD - 5D/8Hr -1 1 Hol
612631-VG130	Stage 1: Remove dead Cables and any overhead dead wires	2	25-Mar-25	26-Mar-25	Winter SD - 5D/8Hr -1 1 Hol
612631-VG140	Remove old poles -N ational Grid ?	5	27-Mar-25	02-Apr-25	Winter SD - 5D/8Hr -1 1 Hol
National Grid Gas -gas on bridge can shut down to be upgraded to an 8" line					
612631-NGG1000	Install gas line from the westside to the eastside in Pre Ph 1 or during Ph 1	8	31-Oct-24	12-Nov-24	Winter SD - 5D/8Hr -1 1 Hol
612631-NGG1010	Complete 8" gas line in Phase 1	15	13-Nov-24	06-Dec-24	5D/8Hr -1 1 Hol
Utility Work on Westford Roadway & Bridge					
National Grid -Westford - as of 3/9/23 onto bridge					
612631-NGW1000	Stage 1: National G. Elec. (BO) -Install 4 pol es No & So. of bridge	5	09-Apr-25	15-Apr-25	5D/8Hr -1 1 Hol
612631-NGW1020	Stage 1: National Grid Elec. -(BO) - Install 6x5" conduit array with MH	5	16-Apr-25	23-Apr-25	5D/8Hr -1 1 Hol
612631-NGW1030	Stage 1: (1) 2.5" conduit (or 2-5") and 1 Fiber Optic cable -ac rossed the bridge -(BO)	2	24-Apr-25	25-Apr-25	5D/8Hr -1 1 Hol
Town of Chelmsford -Westford -Cobras are a contract item					
612631 -C CW10	Chelmsford -r emove cobra's is contract work no Utility work	0	01-May-25	01-May-25	5D/8Hr -1 1 Hol
Chelmsford -Fire Alarm & Fiber - Westford - unknown I					
612631 -F W100	Move Fire Line(s)? Unknown at this time -to be r esearched	10	01-May-25	14-May-25	5D/8Hr -1 1 Hol
Verizon/ MCI -Westford - unknown					
612631 -V -MCI10	On Westford Bridge -unknown -to b e researched	10	15-May-25	29-May-25	5D/8Hr -1 1 Hol
AT&T / Siena -Westford -in Lumen duct that needs to be moved here					
612631-ATTW10	Move AT&T(Lumen) duct to build bridge -P hase this work.	10	30-May-25	12-Jun-25	5D/8Hr -1 1 Hol
Comcast -Westford -OH & In conduit on Bridge					
612631 -C W100	Move Comcast line(s) -ther e are OH lnes and conduit on the Bridge	20	13-Jun-25	14-Jul-25	5D/8Hr -1 1 Hol
Verizon - Westford -					
612631-NGW1010	Verizon: Install 4x4" conduit array across the bridge in Stage 1	3	28-Apr-25	30-Apr-25	5D/8Hr -1 1 Hol
612631 -V W100	Stg 1: Elec (BO):Place Strand and Cables (4 Cables from east side of br)	17	01-Jul-25	24-Jul-25	5D/8Hr -1 1 Hol
612631 -V W110	Stg 1: Splice & cut over	32	25-Jul-25	09-Sep-25	5D/8Hr -1 1 Hol
612631 -V W120	Stage 1: Transfer Cables	20	10-Sep-25	07-Oct-25	Winter SD - 5D/8Hr -1 1 Hol
612631 -V W130	Stage 1: Remove dead Cables	19	08-Oct-25	04-Nov-25	Winter SD - 5D/8Hr -1 1 Hol
612631 -V W140	Remove old poles (NGE?)	10	05-Nov-25	19-Nov-25	Winter SD - 5D/8Hr -1 1 Hol
National Grid Gas -Westford - gas line is abondoned					
612631-GW100	gas line N/A - W SB	0	20-Aug-25	20-Aug-25	Winter SD - 5D/8Hr -1 1 Hol
Construction					



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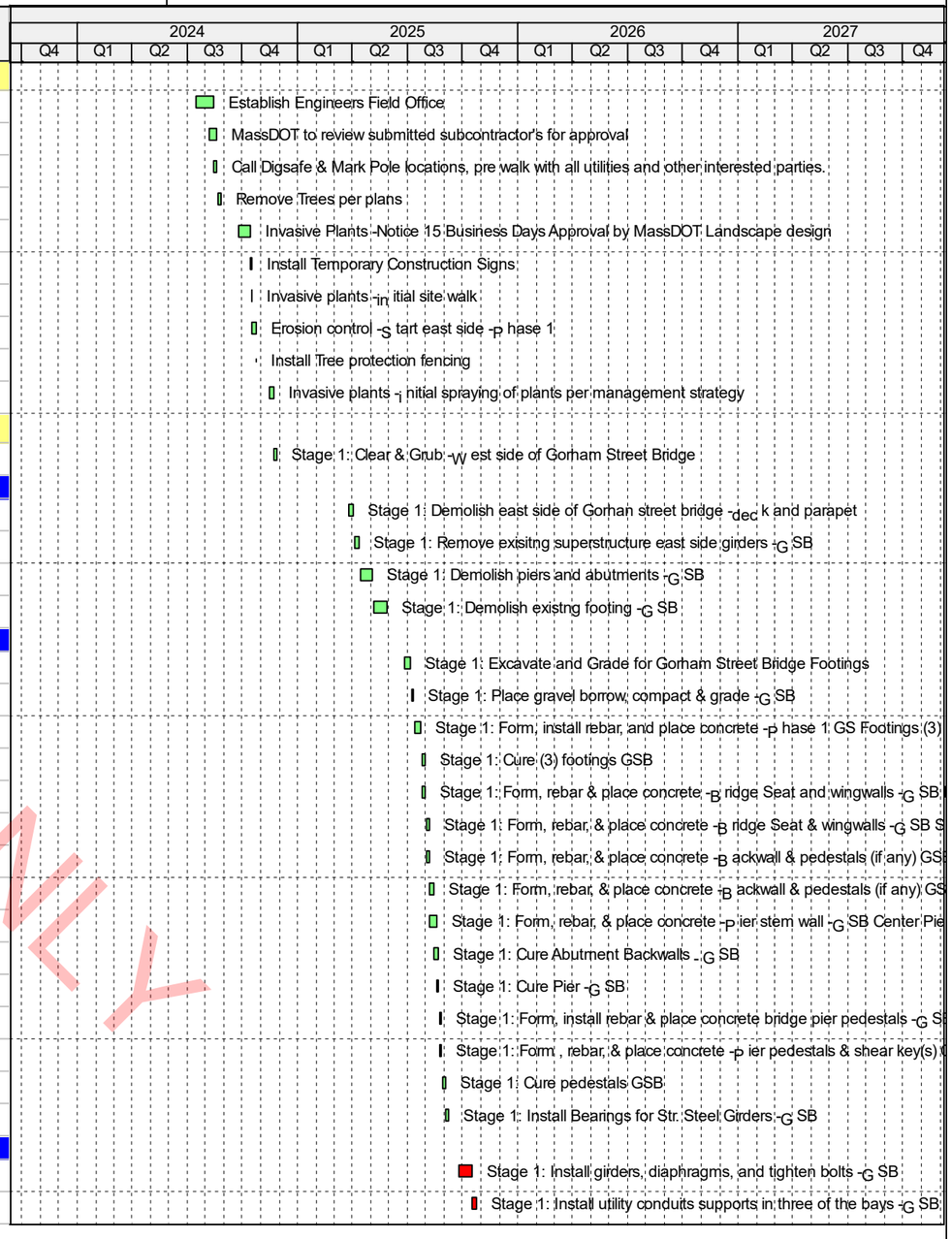
Project Name: 612631 - Chelmsford: Bridge Replacements Gorham St Westford St over 1-495 25% plans, DB DD Revised,
Project ID 612631 CTD01

CST01-Baseline-All

MassDOT: Highway

Activity ID	Activity Name	OD	Start	Finish	Calendar
Construction Startup & Environmental Controls					
612631-SU1000	Establish Engineers Field Office	20	17-Jul-24	13-Aug-24	5D/8Hr -1 1 Hol
612631-SU2520	MassDOT to review submitted subcontractor's for approval	14	07-Aug-24	20-Aug-24	7D/8Hr -No Hol (MS Cal)
612631-SU1015	Call Digsafe & Mark Pole locations, pre walk with all utilities and other interested parties.	5	14-Aug-24	20-Aug-24	5D/8Hr -1 1 Hol
612631-SU1025	Remove Trees per plans	5	21-Aug-24	27-Aug-24	5D/8Hr -1 1 Hol
612631-SU1010	Invasive Plants -Notice 15 Business Days Approval by MassDOT Landscape design	15	24-Sep-24	15-Oct-24	5D/8Hr -1 1 Hol
612631-SU1060	Install Temporary Construction Signs	2	15-Oct-24	16-Oct-24	Winter SD - 5D/8Hr -1 1 Hol
612631-SU1020	Invasive plants -in itial site walk	1	16-Oct-24	16-Oct-24	5D/8Hr -1 1 Hol
612631-SU1070	Erosion control -S tart east side -P hase 1	5	17-Oct-24	23-Oct-24	5D/8Hr -1 1 Hol
612631-SU1100	Install Tree protection fencing	1	24-Oct-24	24-Oct-24	Winter SD - 5D/8Hr -1 1 Hol
612631-SU1030	Invasive plants -i nitial spraying of plants per management strategy	5	15-Nov-24	21-Nov-24	Winter SD - 5D/8Hr -1 1 Hol
Stage 1 Construction of Gorham Street Bridge -C-08-039					
612631-GS1000	Stage 1: Clear & Grub -W est side of Gorham Street Bridge	3	22-Nov-24	26-Nov-24	Winter SD - 5D/8Hr -1 1 Hol
Stage 1 -GS Bridge Demolition					
612631-GBD1100	Stage 1: Demolish east side of Gorhan street bridge -dec k and parapet	8	25-Mar-25	03-Apr-25	Winter SD - 5D/8Hr -1 1 Hol
612631-GBD1110	Stage 1: Remove exisitng superstructure east side girders -G SB	6	04-Apr-25	11-Apr-25	Winter SD - 5D/8Hr -1 1 Hol
612631-GBD1120	Stage 1: Demolish piers and abutments -G SB	15	14-Apr-25	05-May-25	Winter SD - 5D/8Hr -1 1 Hol
612631-GBD1130	Stage 1: Demolish existng footing -G SB	15	06-May-25	27-May-25	Winter SD - 5D/8Hr -1 1 Hol
Stage 1 -GS Bridge Footing & Substructure					
612631-GSF1100	Stage 1: Excavate and Grade for Gorham Street Bridge Footings	6	27-Jun-25	07-Jul-25	5D/8Hr -1 1 Hol
612631-GSF1105	Stage 1: Place gravel borrow, compact & grade -G SB	4	08-Jul-25	11-Jul-25	Winter SD - 5D/8Hr -1 1 Hol
612631-GSF1110	Stage 1: Form, install rebar, and place concrete -P hase 1 GS Footings (3)	9	14-Jul-25	24-Jul-25	5D/8Hr -1 1 Hol
612631-GSF1115	Stage 1: Cure (3) footings GSB	7	25-Jul-25	31-Jul-25	7D/8Hr -No Hol (MS Cal)
612631-GSF1120	Stage 1: Form, rebar & place concrete -B ridge Seat and wingwalls -G SB North Abutment	5	25-Jul-25	31-Jul-25	5D/8Hr -1 1 Hol
612631-GSF1125	Stage 1: Form, rebar, & place concrete -B ridge Seat & wingwalls -G SB South Abutment	5	01-Aug-25	07-Aug-25	5D/8Hr -1 1 Hol
612631-GSF1145	Stage 1: Form, rebar, & place concrete -B ackwall & pedestals (if any) GSB North Abutment	5	01-Aug-25	07-Aug-25	5D/8Hr -1 1 Hol
612631-GSF1155	Stage 1: Form, rebar, & place concrete -B ackwall & pedestals (if any) GSB South Abutment	5	08-Aug-25	14-Aug-25	5D/8Hr -1 1 Hol
612631-GSF1150	Stage 1: Form, rebar, & place concrete -P ier stem wall -G SB Center Pier	8	08-Aug-25	19-Aug-25	5D/8Hr -1 1 Hol
612631-GSF1165	Stage 1: Cure Abutment Backwalls -G SB	7	15-Aug-25	21-Aug-25	7D/8Hr -No Hol (MS Cal)
612631-GSF1175	Stage 1: Cure Pier -G SB	3	20-Aug-25	22-Aug-25	7D/8Hr -No Hol (MS Cal)
612631-GSF1180	Stage 1: Form, install rebar & place concrete bridge pier pedestals -G SB	3	25-Aug-25	27-Aug-25	Winter SD - 5D/8Hr -1 1 Hol
612631-GSF1185	Stage 1: Form , rebar, & place concrete -P ier pedestals & shear key(s) GSB Center Pier	3	25-Aug-25	27-Aug-25	5D/8Hr -1 1 Hol
612631-GSF1190	Stage 1: Cure pedestals GSB	7	28-Aug-25	03-Sep-25	7D/8Hr -No Hol (MS Cal)
612631-GSF1195	Stage 1: Install Bearings for Str. Steel Girders -G SB	3	04-Sep-25	08-Sep-25	5D/8Hr -1 1 Hol
Stage 1 -GS Bridge Superstructure					
612631-GSS1100	Stage 1: Install girders, diaphragms, and tighten bolts -G SB	15	25-Sep-25	16-Oct-25	5D/8Hr -1 1 Hol
612631-GSS1105	Stage 1: Install utility conduits supports in three of the bays -G SB	5	17-Oct-25	23-Oct-25	5D/8Hr -1 1 Hol



Remaining Level of Effort ◆ Milestone
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Actual Work
Remaining Work
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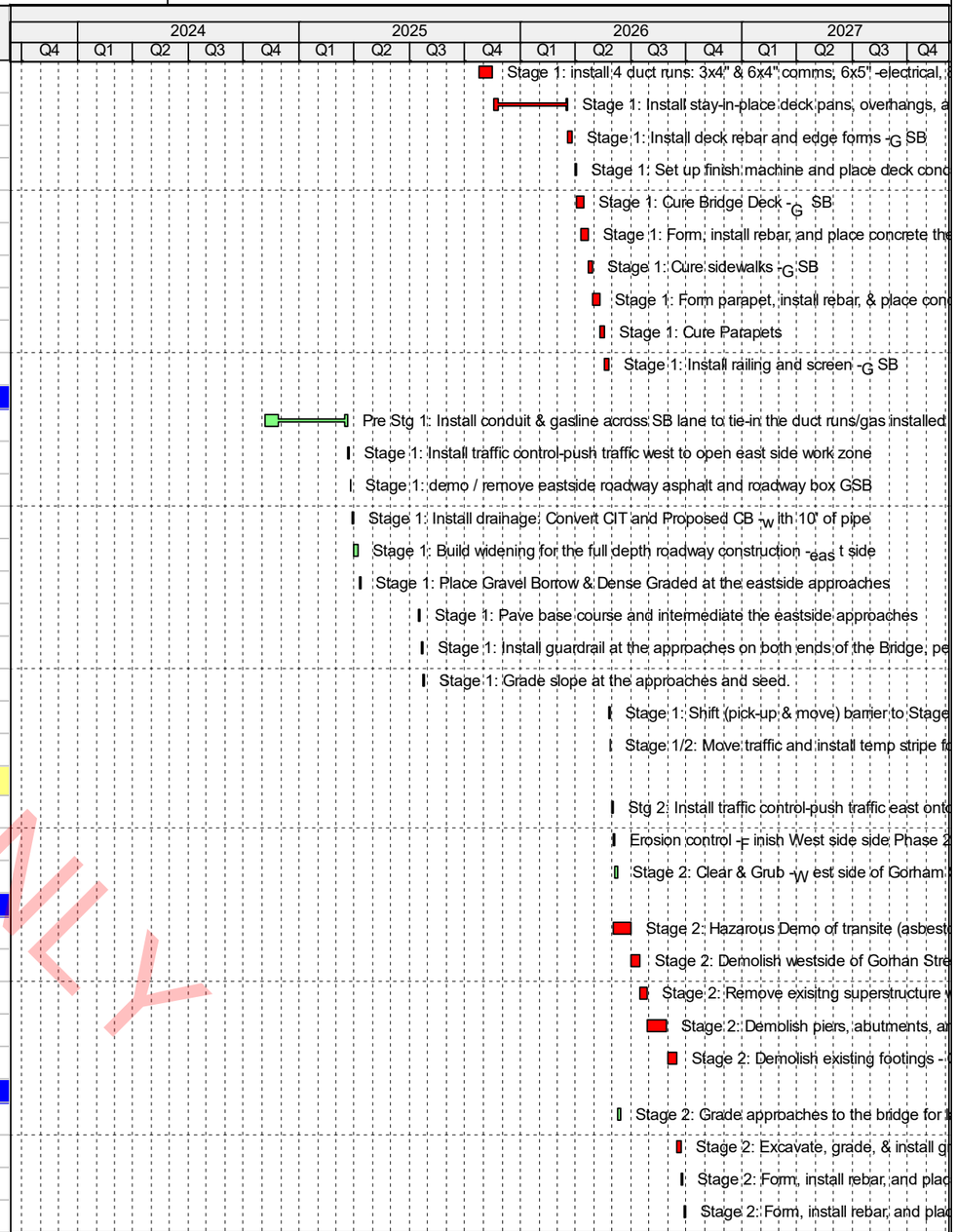
Date	Revision	Checked	Approved

Prepared by MassDOT Highway

Activity ID	Activity Name	OD	Start	Finish	Calendar
612631-GSS1110	Stage 1: install 4 duct runs: 3x4" & 6x4" comms, 6x5" -electrical, 8x4" Tel, & gas line (BO) across br.	15	24-Oct-25	14-Nov-25	5D/8Hr -1 1 Hol
612631-GSS1115	Stage 1: Install stay-in-place deck pans, overhangs, and shear studs -G SB	10	17-Nov-25	18-Mar-26	Winter SD - 5D/8Hr -1 1 Hol
612631-GSS1120	Stage 1: Install deck rebar and edge forms -G SB	7	19-Mar-26	27-Mar-26	5D/8Hr -1 1 Hol
612631-GSS1130	Stage 1: Set up finish machine and place deck concrete -G SB	3	30-Mar-26	01-Apr-26	5D/8Hr -1 1 Hol
612631-GSS1135	Stage 1: Cure Bridge Deck -G SB	14	02-Apr-26	15-Apr-26	7D/8Hr -No Hol (MS Cal)
612631-GSS1140	Stage 1: Form, install rebar, and place concrete the bridge's sidewalks	9	09-Apr-26	22-Apr-26	5D/8Hr -1 1 Hol
612631-GSS1145	Stage 1: Cure sidewalks -G SB	7	23-Apr-26	29-Apr-26	7D/8Hr -No Hol (MS Cal)
612631-GSS1150	Stage 1: Form parapet, install rebar, & place concrete GSB	8	30-Apr-26	11-May-26	5D/8Hr -1 1 Hol
612631-GSS1160	Stage 1: Cure Parapets	7	12-May-26	18-May-26	7D/8Hr -No Hol (MS Cal)
612631-GSS1170	Stage 1: Install railing and screen -G SB	7	19-May-26	25-May-26	7D/8Hr -No Hol (MS Cal)
Stage 1 -GS Roadway -Gorham Street					
612631-GRPre100	Pre Stg 1: Install conduit & gasline across SB lane to tie-in the duct runs/gas installed later (BO)	20	04-Nov-24	20-Mar-25	Winter SD - 5D/8Hr -1 1 Hol
612631-GSR1000	Stage 1: Install traffic control-push traffic west to open east side work zone	2	21-Mar-25	24-Mar-25	Winter SD - 5D/8Hr -1 1 Hol
612631-GSR1005	Stage 1: demo / remove eastside roadway asphalt and roadway box GSB	3	25-Mar-25	27-Mar-25	5D/8Hr -1 1 Hol
612631-GSR1010	Stage 1: Install drainage: Convert CIT and Proposed CB -with 10' of pipe	2	28-Mar-25	31-Mar-25	Winter SD - 5D/8Hr -1 1 Hol
612631-GSR1015	Stage 1: Build widening for the full depth roadway construction -east side	6	01-Apr-25	08-Apr-25	Winter SD - 5D/8Hr -1 1 Hol
612631-GSR1020	Stage 1: Place Gravel Borrow & Dense Graded at the eastside approaches	3	09-Apr-25	11-Apr-25	5D/8Hr -1 1 Hol
612631-GSR1025	Stage 1: Pave base course and intermediate the eastside approaches	2	17-Jul-25	18-Jul-25	5D/8Hr -1 1 Hol
612631-GSR1030	Stage 1: Install guardrail at the approaches on both ends of the Bridge, per plan	2	21-Jul-25	22-Jul-25	5D/8Hr -1 1 Hol
612631-GSR1035	Stage 1: Grade slope at the approaches and seed.	3	23-Jul-25	25-Jul-25	5D/8Hr -1 1 Hol
612631-GSR1040	Stage 1: Shift (pick-up & move) barrier to Stage 2 aligment and remove stripe	2	26-May-26	27-May-26	5D/8Hr -1 1 Hol
612631-GSR1050	Stage 1/2: Move traffic and install temp stripe for Stage 2 GSB	2	28-May-26	29-May-26	5D/8Hr -1 1 Hol
Stage 2 Construct Gorham Street Bridge -C-08-039					
612631-GSR2000	Stg 2: Install traffic control-push traffic east onto new roadway widening	2	01-Jun-26	02-Jun-26	5D/8Hr -1 1 Hol
612631-SU1080	Erosion control -Finish West side side Phase 2 -G SB	2	03-Jun-26	04-Jun-26	Winter SD - 5D/8Hr -1 1 Hol
612631-GS2000	Stage 2: Clear & Grub -West side of Gorham Street Bridge	3	05-Jun-26	09-Jun-26	Winter SD - 5D/8Hr -1 1 Hol
Stage 2 -GS Bridge Demolition					
612631-GBD2100	Stage 2: Hazarous Demo of transite (asbestos) & Gas Line (PBC's)	20	03-Jun-26	01-Jul-26	5D/8Hr -1 1 Hol
612631-GBD2105	Stage 2: Demolish westside of Gorhan Street Bridge -deck and parapet	10	02-Jul-26	16-Jul-26	Winter SD - 5D/8Hr -1 1 Hol
612631-GBD2110	Stage 2: Remove exisitng superstructure westside girders -G SB	8	17-Jul-26	28-Jul-26	Winter SD - 5D/8Hr -1 1 Hol
612631-GBD2120	Stage 2: Demolish piers, abutments, and approaches -G SB	23	29-Jul-26	28-Aug-26	Winter SD - 5D/8Hr -1 1 Hol
612631-GBD2130	Stage 2: Demolish existing footings -G SB	10	31-Aug-26	14-Sep-26	5D/8Hr -1 1 Hol
Stage 2 -GS Bridge Footing & Substructure					
612631-GSF2005	Stage 2: Grade approaches to the bridge for laydown and acess to the bridge	4	10-Jun-26	15-Jun-26	Winter SD - 5D/8Hr -1 1 Hol
612631-GSF2010	Stage 2: Excavate, grade, & install gravel borrow for foundations set in bedrock	6	15-Sep-26	22-Sep-26	Winter SD - 5D/8Hr -1 1 Hol
612631-GSF2015	Stage 2: Form, install rebar, and place concrete for North Abutment foundation	3	23-Sep-26	25-Sep-26	Winter SD - 5D/8Hr -1 1 Hol
612631-GSF2020	Stage 2: Form, install rebar, and place concrete for South Abutment foundation	3	28-Sep-26	30-Sep-26	Winter SD - 5D/8Hr -1 1 Hol



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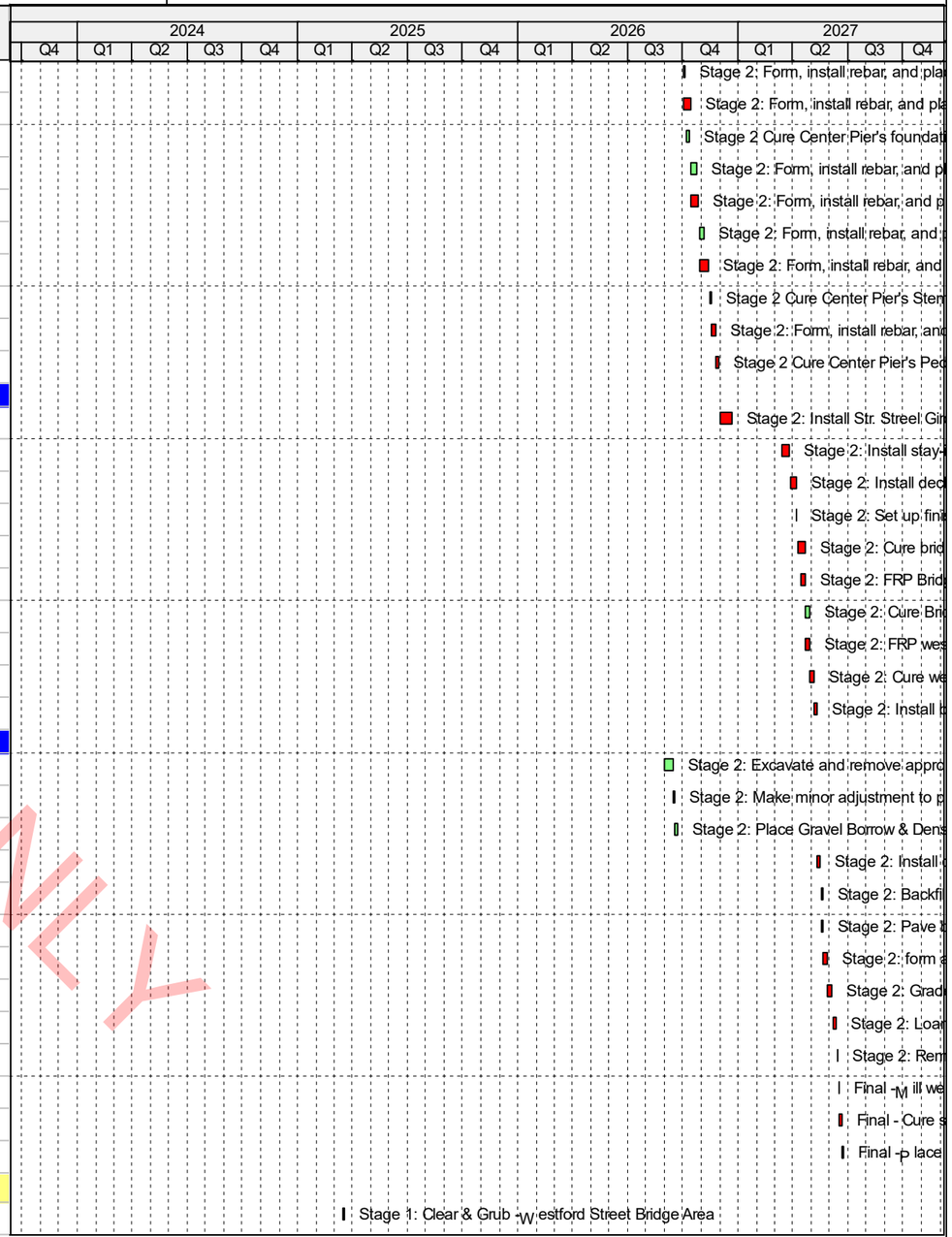
Date	Revision	Checked	Approved

Activity ID	Activity Name	OD	Start	Finish	Calendar
612631-GSF2025	Stage 2: Form, install rebar, and place concrete for Center Pier foundation	3	01-Oct-26	05-Oct-26	Winter SD - 5D/8Hr - 1 Hol
612631-GSF2040	Stage 2: Form, install rebar, and place concrete for North Abutment Bridge Seat & wingwall	9	01-Oct-26	14-Oct-26	Winter SD - 5D/8Hr - 1 Hol
612631-GSF2030	Stage 2 Cure Center Pier's foundation	7	06-Oct-26	12-Oct-26	7D/8Hr - No Hol (MS Cal)
612631-GSF2080	Stage 2: Form, install rebar, and place concrete for North Abutment Backwall & pedestals (if any)	7	15-Oct-26	23-Oct-26	Winter SD - 5D/8Hr - 1 Hol
612631-GSF2050	Stage 2: Form, install rebar, and place concrete for South Abutment Bridge Seat & wingwall	9	15-Oct-26	27-Oct-26	Winter SD - 5D/8Hr - 1 Hol
612631-GSF2090	Stage 2: Form, install rebar, and place concrete for South Abutment Backwall & pedestals (if any)	7	28-Oct-26	05-Nov-26	Winter SD - 5D/8Hr - 1 Hol
612631-GSF2060	Stage 2: Form, install rebar, and place concrete for Center Pier Stem Wall	12	28-Oct-26	13-Nov-26	Winter SD - 5D/8Hr - 1 Hol
612631-GSF2070	Stage 2 Cure Center Pier's Stem Wall	3	14-Nov-26	16-Nov-26	7D/8Hr - No Hol (MS Cal)
612631-GSF2100	Stage 2: Form, install rebar, and place concrete for Center Pier Pedestals and shear key(s)	5	17-Nov-26	23-Nov-26	Winter SD - 5D/8Hr - 1 Hol
612631-GSF2110	Stage 2 Cure Center Pier's Pedestals & Shear Key(s)	7	24-Nov-26	30-Nov-26	7D/8Hr - No Hol (MS Cal)
Stage 2 - GS Bridge: Superstructure					
612631-GSS2000	Stage 2: Install Str. Streel Girders over I-495 - N ight work GSB	15	01-Dec-26	21-Dec-26	5D/8Hr - 1 Hol
612631-GSS2005	Stage 2: Install stay-in-place deck pans, overhangs, and shear studs - G SB	10	15-Mar-27	26-Mar-27	Winter SD - 5D/8Hr - 1 Hol
612631-GSS2010	Stage 2: Install deck rebar and edge forms - G SB	7	29-Mar-27	06-Apr-27	5D/8Hr - 1 Hol
612631-GSS2020	Stage 2: Set up finish machine and place deck concrete - G SB	2	07-Apr-27	08-Apr-27	Winter SD - 5D/8Hr - 1 Hol
612631-GSS2030	Stage 2: Cure bridge deck - G SB	14	09-Apr-27	22-Apr-27	7D/8Hr - No Hol (MS Cal)
612631-GSS2040	Stage 2: FRP Bridge Sidewalk - W estside of bridge - G SB	6	14-Apr-27	22-Apr-27	Winter SD - 5D/8Hr - 1 Hol
612631-GSS2045	Stage 2: Cure Bridge Sidewalk - G SB	7	23-Apr-27	29-Apr-27	7D/8Hr - No Hol (MS Cal)
612631-GSS2050	Stage 2: FRP westside parapet/ barrier wall - G SB	5	23-Apr-27	29-Apr-27	Winter SD - 5D/8Hr - 1 Hol
612631-GSS2055	Stage 2: Cure westside parpaet / barrier wall -GSB	7	30-Apr-27	06-May-27	7D/8Hr - No Hol (MS Cal)
612631-GSS2060	Stage 2: Install barrier/ screen on westside parpet - G SB	3	07-May-27	11-May-27	5D/8Hr - 1 Hol
Stage 2 - GS Roadway					
612631-GSR2005	Stage 2: Excavate and remove approach pavement and access to the Bridge, westside of project	10	31-Aug-26	14-Sep-26	5D/8Hr - 1 Hol
612631-GSR2045	Stage 2: Make minor adjustment to project drainage: 2 CB adj, R&D Existing 4" VC pipe , Adj WG	2	15-Sep-26	16-Sep-26	Winter SD - 5D/8Hr - 1 Hol
612631-GSR2025	Stage 2: Place Gravel Borrow & Dense Graded westside of roadway	5	17-Sep-26	23-Sep-26	5D/8Hr - 1 Hol
612631-GSR2030	Stage 2: Install curb westside of the roadway	4	12-May-27	17-May-27	Winter SD - 5D/8Hr - 1 Hol
612631-GSR2040	Stage 2: Backfill grade, and compact for sidewalk	3	18-May-27	20-May-27	Winter SD - 5D/8Hr - 1 Hol
612631-GSR2035	Stage 2: Pave base and intermediate course - appr oach slab both sides of bridge	4	18-May-27	21-May-27	Pave Base 5D - 1 Hol
612631-GSR2050	Stage 2: form and place concrete for sidewalks up to the approaches	5	21-May-27	27-May-27	Winter SD - 5D/8Hr - 1 Hol
612631-GSR2055	Stage 2: Grade out slopes - S tage 2 -GS	5	28-May-27	04-Jun-27	Winter SD - 5D/8Hr - 1 Hol
612631-GSR2065	Stage 2: Loam and seed, Stage 2 - GS	5	07-Jun-27	11-Jun-27	5D/8Hr - 1 Hol
612631-GSR2070	Stage 2: Remove barrier and traffic control	2	14-Jun-27	15-Jun-27	5D/8Hr - 1 Hol
612631-GSR2075	Final - Mill were needed and pave surface course for all of Gorham Bridge	1	16-Jun-27	16-Jun-27	5D/8Hr - 1 Hol
612631-GSR2080	Final - Cure surface pavement for permanent pavement markings	3	17-Jun-27	21-Jun-27	5D/8Hr - 1 Hol
612631-GSR2085	Final - Place - i nstall Gorham Permanent Pavement Markings	3	22-Jun-27	24-Jun-27	5D/8Hr - 1 Hol
Stage 1 Construction Westford Street Bridge - C-08-036					
612631-WS1000	Stage 1: Clear & Grub - W estford Street Bridge Area	3	17-Mar-25	19-Mar-25	Winter SD - 5D/8Hr - 1 Hol



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Date	Revision	Checked	Approved

Activity ID	Activity Name	OD	Start	Finish	Calendar
Stage 1 -WS Bridge Demolition					
612631-WBD1100	Stage 1: Demolish southside of Westford Street Bridge (WSB) -de ck and parapet	8	28-May-25	06-Jun-25	Winter SD - 5D/8Hr -1 1 Hol
612631-WBD1110	Stage 1: Remove exisitng superstructure southside girders -W estford Street Bridge	5	09-Jun-25	13-Jun-25	Winter SD - 5D/8Hr -1 1 Hol
612631-WBD1120	Stage 1: Demolish piers and abutments -W SB	15	16-Jun-25	08-Jul-25	Winter SD - 5D/8Hr -1 1 Hol
612631-WBD1130	Stage 1: Demolish existng footing -W SB	10	09-Jul-25	22-Jul-25	Winter SD - 5D/8Hr -1 1 Hol
Stage 1 -WS Bridge Footing & Substructure					
612631-WBF1100	Stage 1: Excavate and Grade for Westford Street Bridge Footings	6	23-Jul-25	30-Jul-25	5D/8Hr -1 1 Hol
612631-WBF1110	Stage 1: Place gravel borrow, compact & grade for footings -W SB	4	31-Jul-25	05-Aug-25	Winter SD - 5D/8Hr -1 1 Hol
612631-WBF1115	Stage 1: Form, install rebar, and place concrete for the phase 1 WS Footings (3)	9	06-Aug-25	18-Aug-25	5D/8Hr -1 1 Hol
612631-WBF1120	Stage 1: Cure footings WSB	3	19-Aug-25	21-Aug-25	7D/8Hr -No Hol (MS Cal)
612631-WBF1125	Stage 1: Form, rebar, & place concrete -B ridge seat & wingwalls -W SB North Abutment	5	19-Aug-25	25-Aug-25	5D/8Hr -1 1 Hol
612631-WBF1130	Stage 1: Form, rebar, & place concrete -B ridge seat & wingalls -W SB South Abutment	5	26-Aug-25	02-Sep-25	5D/8Hr -1 1 Hol
612631-WBF1150	Stage 1: Cure WSB Abutment Bridge Seat & Wingwalls	3	03-Sep-25	05-Sep-25	7D/8Hr -No Hol (MS Cal)
612631-WBF1160	Stage 1: Form, rebar, & place concrete -B ackwall and pedestals (if any) WSB North Abutment	4	03-Sep-25	08-Sep-25	5D/8Hr -1 1 Hol
612631-WBF1135	Stage 1: Form, rebar, & place concrete -P ier Stem Wall -W SB Center Pier	7	03-Sep-25	11-Sep-25	5D/8Hr -1 1 Hol
612631-WBF1165	Stage 1: Form, rebar, & place concrete -B ackwall and pedestals (if any) WSB South Abutment	4	09-Sep-25	12-Sep-25	5D/8Hr -1 1 Hol
612631-WBF1140	Stage 1:Cure Pier -W SB	3	12-Sep-25	14-Sep-25	7D/8Hr -No Hol (MS Cal)
612631-WBF1175	Stage 1: Cure Backwalls WSB	7	13-Sep-25	19-Sep-25	7D/8Hr -No Hol (MS Cal)
612631-WBF1180	Stage 1: Form, install rebar & place concrete for bridge pedestals -W SB	3	15-Sep-25	17-Sep-25	Winter SD - 5D/8Hr -1 1 Hol
612631-WBF1190	Stage 1: Cure pedestals WSB	7	18-Sep-25	26-Sep-25	5D/8Hr -1 1 Hol
612631-WBF1195	Stage 1 -Ins tall Westford Street Bearings	3	22-Oct-25	24-Oct-25	Winter SD - 5D/8Hr -1 1 Hol
Stage 1 -WS Bridge Superstructure					
612631-WSS1100	Stage 1: Install girders, diaphragms, and tighten bolts -W SB	10	29-Jan-26	11-Feb-26	5D/8Hr -1 1 Hol
612631-WSS1105	Stage 1: Install utility conduits supports -W SB	3	12-Feb-26	17-Feb-26	5D/8Hr -1 1 Hol
612631-WSS1110	Stage 1: Install a 6 x 5" electric, 4x 4" verizon, 2.5" & 1 unknown fiber (BO) -W SB	10	18-Feb-26	03-Mar-26	5D/8Hr -1 1 Hol
612631-WSS1115	Stage 1: Install a 6" DIP waterline across the bridge -C ontract work -W SB	2	04-Mar-26	05-Mar-26	5D/8Hr -1 1 Hol
612631-WSS1125	Stage 1: Install stay-in-place forms & overhangs, shoot shear studs for bridge deck -WSB	10	16-Mar-26	27-Mar-26	Winter SD - 5D/8Hr -1 1 Hol
612631-WSS1130	Stage 1: Install bridge deck rebar and install edge form and bulkheads -WSB	7	30-Mar-26	07-Apr-26	5D/8Hr -1 1 Hol
612631-WSS1135	Stage 1: Install bridge deck finish machine and place bridge deck concrete -W SB	3	08-Apr-26	10-Apr-26	5D/8Hr -1 1 Hol
612631-WSS1140	Stage 1: Cure bridge deck -W SB	14	11-Apr-26	24-Apr-26	7D/8Hr -No Hol (MS Cal)
612631-WSS1145	Stage 1: Form, install rebar, and place concrete the bridge's sidewalk -WSB	7	16-Apr-26	27-Apr-26	5D/8Hr -1 1 Hol
612631-WSS1150	Stage 1: Cure superstructure sidewalk WSB	3	28-Apr-26	30-Apr-26	7D/8Hr -No Hol (MS Cal)
612631-WSS1155	Stage 1: Form (southside) parapet, install rebar, & place concrete WSB	4	28-Apr-26	01-May-26	5D/8Hr -1 1 Hol
612631-WSS1160	Stage 1: Cure Parapet -W SB	7	02-May-26	08-May-26	7D/8Hr -No Hol (MS Cal)
612631-WSS1170	Stage 1: Install Bridge Rail and / or Bridge Screening WSB	6	11-May-26	18-May-26	5D/8Hr -1 1 Hol
Stage 1 -WS Roadway					
612631-WSRPre100	Pre Stg 1: Crossover (both ends) SB lane -el ectric duct bank (BO)	5	20-Mar-25	26-Mar-25	5D/8Hr -1 1 Hol

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Project Name: 612631 - Chelmsford: Bridge Replacements Gorham St Westford St over 1-495 25% plans, DB DD Revised,
Project ID 612631 CTD01

CST01-Baseline-All

MassDOT: Highway

Activity ID	Activity Name	OD	Start	Finish	Calendar
612631-WSR1000	Stage 1: Install traffic control-push traffic north to open southside work zone -WSB	5	27-Mar-25	02-Apr-25	Winter SD - 5D/8Hr -1 1 Hol
612631-WSR1005	Stage 1: Remove existing pavement at bridge approaches, provide bridge access WSB	4	03-Apr-25	08-Apr-25	5D/8Hr -1 1 Hol
612631-WSR1010	Stage 1: Install dr ainage: NB Lane -12" RCP 60' North Approach & 20' South Approach -W estford	3	09-Apr-25	11-Apr-25	Winter SD - 5D/8Hr -1 1 Hol
612631-WSR1012	Stage 1: Install 6 x 5" electric duct bank across bridge thru abutments (BO) -W estford	3	14-Apr-25	16-Apr-25	Winter SD - 5D/8Hr -1 1 Hol
612631-WSR1015	Stage 1: Build widening for the full depth roadway construction -S outhside -WSB aproaches	6	17-Apr-25	25-Apr-25	Winter SD - 5D/8Hr -1 1 Hol
612631-WSR1025	Stage 1: Place Gravel Borrow & Dense Graded southside of project -W B approaches	3	28-Apr-25	30-Apr-25	5D/8Hr -1 1 Hol
612631-WSR1030	Stage 1: Pave base course and intermediate course southside -W SB approaches	2	01-May-25	02-May-25	5D/8Hr -1 1 Hol
612631-WSR1020	Stage 1: Grade out slope and temp seed -W estford	5	05-May-25	09-May-25	5D/8Hr -1 1 Hol
612631-WSR1035	Stage 1: Install guardrail from bridge on both approaches per plan -W SB	2	15-May-26	18-May-26	5D/8Hr -1 1 Hol
612631-WSR1040	Stage 1: Shift (pick up & move) Barrier from Stage 1 to Stage 2 -W SB	3	19-May-26	21-May-26	5D/8Hr -1 1 Hol
612631-WSR1050	Stage 1/2: Remove Stg 1 signage & stripe & install/laydown Stg 2 signage & stripe -WSB	2	22-May-26	26-May-26	5D/8Hr -1 1 Hol
Stage 2 Construction Westford Street Bridge C-08-036					
612631-WSR2000	Stage 2: Install traffic control-push traffic south to open norhtside work zone -W SB	1	27-May-26	27-May-26	Winter SD - 5D/8Hr -1 1 Hol
612631-SU2530	Erosion control -F inish Northside Phase 2 -W SB	2	28-May-26	29-May-26	Winter SD - 5D/8Hr -1 1 Hol
612631-WS2000	Stage 2: Clear & Grub -W estford Street Bridge Area	3	01-Jun-26	03-Jun-26	Winter SD - 5D/8Hr -1 1 Hol
Stage 2 -WS Bridge Demolition					
612631-WBD2100	Stage 2: Demolish east side of Gorhan street briidge -dec k and parapet	8	04-Jun-26	15-Jun-26	Winter SD - 5D/8Hr -1 1 Hol
612631-WBD2110	Stage 2: Remove existing superstructure east side girders	6	16-Jun-26	24-Jun-26	Winter SD - 5D/8Hr -1 1 Hol
612631-WBD2120	Stage 2: Demolish piers and abutments	15	25-Jun-26	16-Jul-26	Winter SD - 5D/8Hr -1 1 Hol
612631-WBD2130	Stage 2: Demolish existng footing	15	17-Jul-26	06-Aug-26	Winter SD - 5D/8Hr -1 1 Hol
Stage 2 -WS Bridge Substructure					
612631-WSF2000	Stage 2: Excavate and Grade for Westford Street Bridge Footings	6	07-Aug-26	14-Aug-26	Winter SD - 5D/8Hr -1 1 Hol
612631-WSF2005	Stage 2: Place gravel borrow, compact & grade for footings -W SB	4	17-Aug-26	20-Aug-26	5D/8Hr -1 1 Hol
612631-WSF2010	Stage 2: Form, install rebar, and place concrete for the phase 1 WS Footings (3)	9	21-Aug-26	02-Sep-26	Winter SD - 5D/8Hr -1 1 Hol
612631-WSF2015	Stage 2: Cure Footings -W SB	7	03-Sep-26	09-Sep-26	7D/8Hr -No Hol (MS Cal)
612631-WSF2020	Stage 2: Form, rebar, & place concrete -B ridge seat & wingwalls -W SB North Abutment	5	10-Sep-26	16-Sep-26	Winter SD - 5D/8Hr -1 1 Hol
612631-WSF2030	Stage 2: Form, rebar, & place concrete -B ridge seat & wingalls -W SB South Abutment	5	17-Sep-26	23-Sep-26	5D/8Hr -1 1 Hol
612631-WSF2050	Stage 2: Cure WSB Abutment Bridge Seat & Wingwalls	3	24-Sep-26	26-Sep-26	7D/8Hr -No Hol (MS Cal)
612631-WSF2060	Stage 2: Form, rebar, & place concrete -B ackwall and pedestals (if any) WSB North Abutment	4	24-Sep-26	29-Sep-26	5D/8Hr -1 1 Hol
612631-WSF2035	Stage 2: Form, rebar, & place concrete -P ier Stem Wall -W SB Center Pier	7	24-Sep-26	02-Oct-26	5D/8Hr -1 1 Hol
612631-WSF2065	Stage 2: Form, rebar, & place concrete -B ackwall and pedestals (if any) -S outh Abutment WSB	4	30-Sep-26	05-Oct-26	5D/8Hr -1 1 Hol
612631-WSF2040	Stage 2: Cure Pier -W SB	3	03-Oct-26	05-Oct-26	7D/8Hr -No Hol (MS Cal)
612631-WSF2080	Stage 2: Form, install rebar & place concrete for bridge pedestals -W SB	3	06-Oct-26	08-Oct-26	Winter SD - 5D/8Hr -1 1 Hol
612631-WSF2075	Stage 2: Cure Backwalls -W SB	7	06-Oct-26	12-Oct-26	7D/8Hr -No Hol (MS Cal)
612631-WSF2090	Stage 2: Cure Pedestals -W SB	7	09-Oct-26	20-Oct-26	5D/8Hr -1 1 Hol
612631-WSF2095	Stage 2: Install Westford Street Bearings -W SB	3	21-Oct-26	23-Oct-26	Winter SD - 5D/8Hr -1 1 Hol
Stage 2 -WS Bridge: Superstructure					

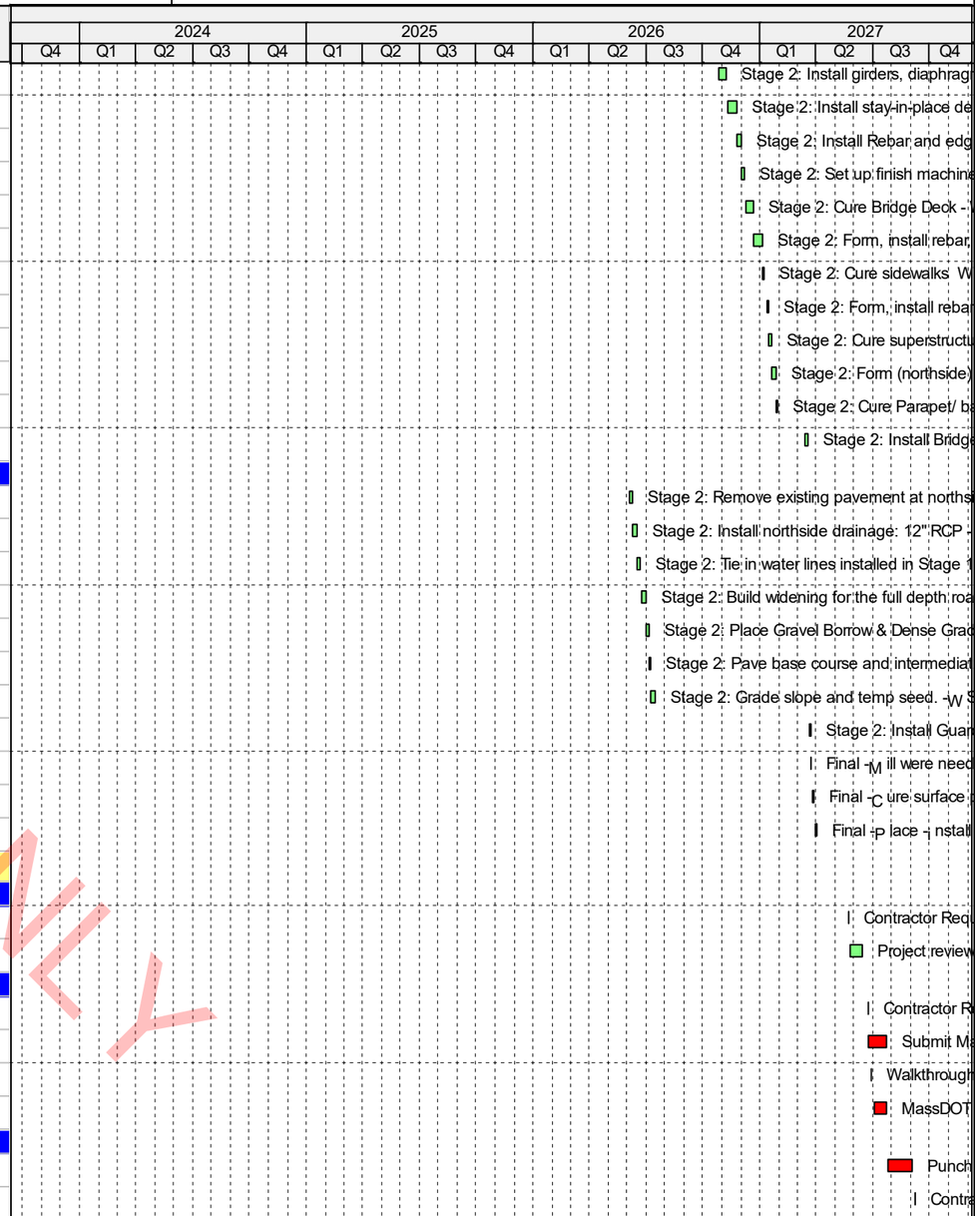
Remaining Level of Effort ◆ ◆ Milestone
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work

Layout = CST01-Baseline-All, Filter = TASK filter: All Activities
Data Date = 09-Sep-23, Run Date = 19-Dec-23, 09:11
Project Start = 09-Sep-23 Project Finish = 07-Sep-27

Date	Revision	Checked	Approved

Prepared by MassDOT Highway

Activity ID	Activity Name	OD	Start	Finish	Calendar
612631-WSS2000	Stage 2: Install girders, diaphragms, and tighten bolts -W SB	10	26-Oct-26	06-Nov-26	5D/8Hr -1 1 Hol
612631-WSS2005	Stage 2: Install stay-in-place deck forms & shoot shear studs -WSB	10	09-Nov-26	23-Nov-26	Winter SD - 5D/8Hr -1 1 Hol
612631-WSS2110	Stage 2: Install Rebar and edge & bulkhead forms for bridge deck -W SB	7	24-Nov-26	02-Dec-26	5D/8Hr -1 1 Hol
612631-WSS2115	Stage 2: Set up finish machine and place deck & diaphragm concrete -W SB	3	03-Dec-26	07-Dec-26	5D/8Hr -1 1 Hol
612631-WSS2120	Stage 2: Cure Bridge Deck -W SB	14	08-Dec-26	21-Dec-26	7D/8Hr -No Hol (MS Cal)
612631-WSS2125	Stage 2: Form, install rebar, and place concrete the bridge's sidewalks -W SB	9	22-Dec-26	05-Jan-27	5D/8Hr -1 1 Hol
612631-WSS2130	Stage 2: Cure sidewalks W SB	3	06-Jan-27	08-Jan-27	7D/8Hr -No Hol (MS Cal)
612631-WSS2140	Stage 2: Form, install rebar, and place concrete the bridge's sidewalk -WSB	4	11-Jan-27	14-Jan-27	5D/8Hr -1 1 Hol
612631-WSS2150	Stage 2: Cure superstructure sidewalk WSB	4	15-Jan-27	18-Jan-27	7D/8Hr -No Hol (MS Cal)
612631-WSS2160	Stage 2: Form (northside) parapet, install rebar, & place concrete WSB	6	19-Jan-27	26-Jan-27	5D/8Hr -1 1 Hol
612631-WSS2170	Stage 2: Cure Parapet/ barrier (northside) -W SB	3	27-Jan-27	29-Jan-27	7D/8Hr -No Hol (MS Cal)
612631-WSS2180	Stage 2: Install Bridge Rail and / or Bridge Screening WSB	5	15-Mar-27	19-Mar-27	Winter SD - 5D/8Hr -1 1 Hol
Stage 2 -WS Roadway					
612631-WSR2005	Stage 2: Remove existing pavement at northside bridge approaches & provide bridge access - WSB	4	04-Jun-26	09-Jun-26	5D/8Hr -1 1 Hol
612631-WSR2010	Stage 2: Install northside drainage: 12" RCP -70' & 3 Strs West Appr. & 80' & 6 Strs -W SB	6	10-Jun-26	17-Jun-26	Winter SD - 5D/8Hr -1 1 Hol
612631-WSR2020	Stage 2: Tie in water lines installed in Stage 1 both end at the approaches -W SB	2	18-Jun-26	22-Jun-26	5D/8Hr -1 1 Hol
612631-WSR2025	Stage 2: Build widening for the full depth roadway construction -n orthside -W SB	6	23-Jun-26	30-Jun-26	Winter SD - 5D/8Hr -1 1 Hol
612631-WSR2030	Stage 2: Place Gravel Borrow & Dense Graded northside of project -W SB	3	01-Jul-26	06-Jul-26	5D/8Hr -1 1 Hol
612631-WSR2035	Stage 2: Pave base course and intermediate course northside -W SB	2	07-Jul-26	08-Jul-26	5D/8Hr -1 1 Hol
612631-WSR2040	Stage 2: Grade slope and temp seed. -W SB	5	09-Jul-26	15-Jul-26	5D/8Hr -1 1 Hol
612631-WSR2045	Stage 2: Install Guard rail up to bridge on both sides -W SB	2	22-Mar-27	23-Mar-27	5D/8Hr -1 1 Hol
612631-WSR2050	Final - Mill were needed and pave surface course for all of Westford Bridge	1	24-Mar-27	24-Mar-27	5D/8Hr -1 1 Hol
612631-WSR2055	Final - Cure surface pavement for permanent pavement markings -W SB	3	25-Mar-27	29-Mar-27	5D/8Hr -1 1 Hol
612631-WSR2060	Final - Place -i nstall Westford Permanent Pavement Markings	3	30-Mar-27	01-Apr-27	5D/8Hr -1 1 Hol
Construction Closeout					
Full Beneficial Use -FBU					
612631-1050	Contractor Request for Validation of Full Benefical Use -F BU	1	24-May-27	24-May-27	5D/8Hr -1 1 Hol
612631-1060	Project reviews request for FBU	14	25-May-27	14-Jun-27	5D/8Hr -1 1 Hol
Substantial Completion - SC					
612631-7060	Contractor Request for Validation of Substantal Completion -S C	1	25-Jun-27	25-Jun-27	5D/8Hr -1 1 Hol
612631-7070	Submit Material Information to District Material Lab -C omplete Documentation	20	25-Jun-27	23-Jul-27	5D/8Hr -1 1 Hol
612631-7080	Walkthrough of Entire Contract Work by MassDOT after Contractor's Request for Substantial Comple	1	28-Jun-27	28-Jun-27	5D/8Hr -1 1 Hol
612631-7090	MassDOT Inspect Project, Confirm SC & Generate Punch List	21	03-Jul-27	23-Jul-27	7D/8Hr -No Hol (MS Cal)
Contract Field Completion - CFC					
612631-7150	Punchlist Completion Period	30	26-Jul-27	03-Sep-27	Winter SD - 5D/8Hr -1 1 Hol
612631-7190	Contractor Confirmation - All Punchlist Work & Documentation has been Completed	1	07-Sep-27	07-Sep-27	5D/8Hr -1 1 Hol



Remaining Level of Effort ◆ ◆ Milestone
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work

Layout = CST01-Baseline-All, Filter = TASK filter: All Activities
Data Date = 09-Sep-23, Run Date = 19-Dec-23, 09:11
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DESIGN SCHEDULES

FREQUENTLY ASKED QUESTIONS (FAQs)

Q - Can I just put a 'zero day duration' in tasks that I want to delete?

A – The answer to that is yes. We would like everyone to **NOT DELETE any tasks**. If you find that you do not need a task, please simply put a '0' in the duration and make a note "not applicable". Please also refrain from changing task descriptions. The purpose for both of these standard rules will be helpful with the review of the schedule and maintaining consistency with logic (predecessors and successors).
In order to avoid zero duration tasks to become milestones, you should double-click on the task, and under the "Advanced tab", un-check the "Mark Task as Milestone" checkbox. Also, if a non-applicable task has an associated relationship with a lag than the lag duration should be removed (set to zero).

Alternatively, if you are using Microsoft Project Professional, you could use the "Inactive" feature to remove unneeded tasks from the logic.

Q – What is the duration of MassDOT Review Tasks?

A – The MassDOT review times depend on the advertising date and shall be according to MassDOT's February 2021 Design Review Memo (see pdf file included in this section.)

In order to use the correct review durations you need to know when the "target" advertising date is. If the project is TIP funded, it's been "programmed" into a "fiscally constrained year program" and we need to work aggressively to keep its ad date in the programmed year. If using the various default durations push the project out of that year, notify the PM and try to find ways to get it back into its programmed year.

Q – Can I edit the schedule logic (predecessors and successors)?

A – The MassDOT templates have been developed with task relationships that are in line with typical projects. Major changes to the logic are not allowed. In case changes are required to reflect how the design development will proceed, the MassDOT PM's approval is required in advance.
Remember to add a predecessor and a successor to new unique tasks added to the schedule that are project specific.

Q – Can I manually enter dates or can I only adjust task durations to replicate our Ad date?

A – It is not recommended to manually enter the planned dates because this will automatically create a start or finish constraint on the task. In cases where you develop schedules for projects that are already in their mid-design life (i.e. 75%), you should enter the Actual dates of all past tasks as close as possible. If concurrent work happened in the past, you will be able to enter the Actual Dates and show work as progressed regardless of the project logic. For future tasks, you can coordinate with the MassDOT PM for potential changes in the schedule logic.

Q – Can I use the % Work Complete field to show the progress schedule?

A – The answer is No since the schedule is not resource loaded. Instead, you can use the "% Complete" field which is the percentage of the task's duration that has been completed. However, it is recommended to use the "Actual Start/Finish" and the "Actual Duration" fields and let the program calculate the "% Complete".

Q – When directed by the PM to add new tasks, how should I number the WBS codes for those new tasks?

A – Adding new tasks requires prior approval from the Section Director. The WBS codes have been set up as follows:

Area of work. Division of work from the Scoping workbook. Unique Identifier
i.e. HWY.300.090

- If you want to add a unique task, add it under the most relevant WBS. The first two number sets will auto populate (i.e. HWY.300). For the third set (unique identifier), enter the next sequential number followed by the letter N (New). See an example below:

HWY.300.060	43	Prepare 25% Design Responses
HWY.300.070	44	Comment Resolution Meeting @25% (Full Team)
HWY.300.080N	45	<New Task>

It is important not to modify the existing WBS codes, and if tasks are added, make sure the WBS does not create a duplicate. All WBS codes need to be unique per task for reporting purposes.

When adding a revision to an existing activity or set of activities, a fourth level may be used to designate revisions to existing activities with ".1" representing Revision 1 to the existing activity or activities. Se an example below:

ID	WBS	Name
183	**ROW**	**Right of Way**
184	**ROW.501**	**Preliminary ROW Plans**
185	ROW.501.010	Prepare 25% ROW Plans
186	ROW.501.020	Submit 25% ROW Plans
187	ROW.501.030	Review 25% ROW Plans
188	ROW.501.010.1	Prepare 25% ROW Plans Rev1
189	ROW.501.020.1	Submit 25% ROW Plans Rev1

ID	WBS	Name
190	ROW.501.030.1	Review 25% ROW Plans Rev1

Q – Can I enter Actual Dates for a task that its predecessor hasn't started yet?

A – Yes. In MS Project you should be able to enter Actual Dates as happened and the software will reschedule the tasks based on the dates entered and not the initial planned logic.

Q – Can I enter Actual Dates in the future?

A – No. In the Actual dates columns, you should enter only dates that are less or equal to the Status date.

Q – When I am updating the schedule, can I leave some tasks with planned dates before the Status date without updating them?

A – No. You need to update all tasks with planned dates before the Status Date. If they are already complete, you need to enter the Actual Dates as close as possible (Actual Start and/or Actual Finish). If they were planned to start but they didn't you need to reschedule them to start after the Status Date.

Q – When I am updating the schedule, how do I add a revision to a submittal (i.e. Prepare Bridge Sketch Plans Rev1)?

A – If you need to add a revision to a submittal, update tasks as follows:

- First, add a Revision ("Rev") number to the associated task's name, and a ".1" to the WBS

ID	WBS	Name
183	**ROW**	**Right of Way**
184	**ROW.501**	**Preliminary ROW Plans**
185	ROW.501.010	Prepare 25% ROW Plans
186	ROW.501.020	Submit 25% ROW Plans
187	ROW.501.030	Review 25% ROW Plans
188	ROW.501.010.1	Prepare 25% ROW Plans Rev1
189	ROW.501.020.1	Submit 25% ROW Plans Rev1
190	ROW.501.030.1	Review 25% ROW Plans Rev1

- Second, tie the logic Finish-to-Start (FS) from the previous Review task to the Rev Prepare task'
- Lastly, tie the new Rev Review task to the previous Review successors.

Q – Can I compare schedule updates in Microsoft Project?

A – Yes. Microsoft Project allows you to compare monthly schedule updates and generate a comparison report. When you click on 'Compare Projects' in the 'Projects' tab, a dialog box appears asking you to select another project and browse the file. Next, you will also be asked to select the Task table and the Resource Table that you want to compare. When you select the associated tables and

press 'OK', Microsoft Project compares the two project updates and generates a new view on the screen. The view compares the project columns and shows the combined view and a merged Gantt chart. If a task has been added or deleted, the combined view will also highlight this by putting a + or – next to the task. You can change views from the 'Compare Projects' tab. It is located in the 'Show-Items' section. This lets you quickly compare the projects in different views and easily identify the changes to the project.

Q – What should I do when the schedule approaches the Municipal ROW Task 205 "Hold Town Meeting (Verify Warrant Deadline)"?

A – The designer is asked to contact the MassDOT ROW department – Community Compliance Section to verify the warrant deadline and determine when the Town Meeting will take place.

Q – What should I do with the blank column field entitled "District"?

A – The designer is asked to populate the "District" column with the associated MassDOT District with jurisdiction of the project area.

Q – In what format should the schedule be submitted to the PM?

A – The designer is asked to submit the Updated PDS Schedule to the PM as a Microsoft project file (.mpp) and as a PDF file. The schedule must be produced using the "UD PDS Schedule" View (including the Gantt chart) illustrating work completed, in progress and remaining tasks sequenced by ID and reproduced on 11" x 17" pdf.

- The following Columns should be present: District, WBS, Name, Start, Finish, Duration, Responsibility, and Total Slack.
- The MassDOT project info number, project name and view name should appear in the center of the header, the MassDOT PM, and status date/report run date on the left footer and the Designer's name, contract #/ assignment # at the right footer.
- Additionally the report should be sorted by ID, the outline level should be set to 'All Subtasks' (no summarization), no filter or grouping should be applied.
- When printing the report to a *.PDF, make certain that the print is only one page wide and that the time scale spans the entire project; ideally the printout should be scaled to at least 60% of the original size.

Q – How should I deal with delays in the schedule due to third parties?

A – When dealing with delays due to third parties which are not accounted for in the schedule, such us railroad, utilities, municipalities, etc., the delayed task shall have the duration increased to more accurately reflect the actual duration. The duration change will need to be coordinated with the MassDOT PM since this can result in changes to the advertisement date. The change to the task duration may need to be done several times as the delay continues.