

Construction Time Determination Schedule

Guidelines

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ENGINEERING DEPARTMENT

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1. Construction Time Determination Schedule

The Construction Time Determination Schedule (CTD) is a design-phase planning tool used to establish a reasonable anticipated construction duration for a proposed contract. It documents how the work may be constructed based on the design documents, known constraints, anticipated staging, hours of work, access restrictions, submittal, approval and permit requirements, procurement needs, long-lead materials, testing, commissioning, and closeout requirements. The CTD is a critical path method (CPM) bar chart schedule that identifies construction activities in detail.

The schedule is intended to support development of the contract documents, construction cost estimate, project authorization materials, facility coordination, stakeholder review, and Authority review of the Contractor's baseline schedule after award. It is not intended to prescribe the Contractor's means and methods.

The preliminary CTD shall be developed early enough to inform design decisions where construction duration, phasing, access, staging, cost, or operational impacts may influence the preferred design solution. As such, for complex projects, the Authority may require preliminary CTD submissions during Stage I or Stage II, followed by a more detailed CTD during Stage III. For simpler projects, the Authority may require only a Stage III (Final Design) CTD. In all cases, the schedule shall be developed by the Design Consultant as part of the Stage III final design deliverables and shall be coordinated with the drawings, specifications, Engineer's Estimate, conditions and precautions, staging plans, permit requirements, operational requirements, and applicable Attachment A requirements.

These Guidelines establish the standard requirements for CTD's. Project-specific requirements may be added, reduced, or modified in the Consultants Attachment A based on project size, complexity, delivery method, operational constraints, funding requirements, stakeholder needs, and anticipated construction risk.

1.1 Software

The CTD shall be prepared using the latest available Oracle Primavera P6 software and submitted in XER format and in PDF as the standard format for CTD's, unless Attachment A permits another scheduling platform.

1.2 Scheduler Requirements

The design consultant scheduler shall meet one of the following criteria:

a. A scheduler who is an employee of the design consultant with 5 years' minimum hands-on experience in the development and updating of CPM schedule networks for projects of a complexity comparable to the work of this Task Order; or

b. An outside entity engaged by the design consultant with similar experience as set forth in (a).

Upon request by the Authority, the design consultant shall submit the scheduler's resume and professional references. The scheduler shall not develop the schedule in isolation. The Consultant's project manager, discipline leads, staging lead, estimator, and other appropriate staff shall participate in developing and reviewing the schedule assumptions.

2. CTD SUBMISSION

2.1 CTD SUBMISSION REQUIREMENTS

The Design Consultant shall submit the CTD at the design milestone identified in Attachment A. Unless otherwise directed, a Stage III CTD shall be submitted at 60% milestone, 100% PA Wide Review Submission and updated with the final contract documents.

The standard submission shall include:

a. Oracle Primavera P6 XER file or Authority-approved compatible file.

b. PDF schedule report showing all activities.

c. PDF schedule report showing the Critical Path, Longest Path and all Near Critical Path(s) (Total Float < 20 Working days)

d. Critical path or longest path.

e. Schedule Narrative.

f. Calendar report identifying workdays, non-workdays, holidays, moratoriums, seasonal restrictions, and special work windows.

g. Milestone report identifying interim milestones, substantial completion, beneficial use, testing, commissioning, turnover, and final completion.

h. List of long-lead materials, equipment, specialty items, and assumed delivery durations.

i. List of permits, approvals, third-party coordination items, and utility coordination activities included in the schedule.

j. Documentation of major assumptions, risks, constraints, and unresolved schedule issues.

At a minimum, the schedule submission shall allow the Authority to review activity logic, calendars, constraints, milestones, critical path, near-critical activities, work sequencing, staging, permit activities, procurement activities, and long-lead items.

Attachment A may require additional schedule formats, graphics, summary bar charts, PowerPoint schedule exhibits, cash flow curves, or other presentation materials.

The Authority will review the CTD as part of the (1) 60% -Stage III and (2) as part of Port Authority Wide Review (PAWR) or as noted in Attachment A and return it to the design consultant with an indication of the review status and comments, if any. The design consultant shall update the CTD and resubmit it along with the corresponding Engineer's Estimate and Contract Plans as final for bid.

2.1.1 NARRATIVE REQUIREMENTS

The CTD Narrative shall explain the basis of the contract time determination in sufficient detail for Authority review. The narrative shall include:

a) Overall construction approach, methodology assumed by the Design Consultant.

b) Major stages, phases, work areas, systems, and sequencing assumptions.

c) Critical path or longest path.

d) Near-critical activities and related schedule risks.

e) Recommended contract duration

f) Basis for the recommended construction duration.

g) Interim milestones and the reason each milestone are needed.

h) Security requirements and access badging.

i) Adjacent contracts and overlapping facility work.

j) Hours of work, work windows, shutdowns, outages, moratoriums, and restricted access periods.

k) Facility operations and customer impacts.

l) Traffic, pedestrian, rail, airport, marine, tenant, or adjacent facility constraints.

m) Other known constraints, risks, or unresolved issues that may affect the construction duration.

n) Activities defining access to and availability of work areas i.e., staging and phasing.

   i) Including: Port Authority holidays, Federal holidays, State recognized holidays where the Work is being performed, Planned regional events. (Port Authority Holidays: New Year's Day, Martin Luther King, Jr. Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day, Day After Thanksgiving, Christmas Day)

o) Temporary works, temporary supports, shoring, shielding, dewatering, and access systems.

p) Curing, settlement, inspection, testing, and waiting periods Weather, temperature, seasonal, environmental, and permit-related limitations.

q) Utility coordination, utility relocations, utility shutdowns, and service cutovers.

r) Procurement, fabrication, delivery, and installation assumptions for major and long-lead items.

s) Production rate assumptions for major construction activities.

t) Assumed crew size, number of crews, work fronts, and special equipment for major activities, where relevant.

u) Construction staging and access assumptions.

v) Submittals, reviews, approvals, resubmittals, and third-party reviews.

w) Testing, commissioning, training, turnover, punch list, and closeout assumptions.

x) Changes from prior CTD submissions, where applicable.

y) Beneficial use, substantial completion, punch list, demobilization, and final completion.

The narrative shall be consistent with the drawings, specifications, construction cost estimate, staging plans, permit assumptions, and project-specific requirements in Attachment A.

3. CTD Standards

The CTD shall represent the complete plan for the execution of the work in accordance with the contract documents. The design consultant shall ensure that all work sequences are logical and show a coordinated plan for the completed construction. See Appendix A for an example of a sample P6 Schedule.

The CTD shall comply with the following at a minimum:

a) The original duration of each Activity shall be defined in units of whole working days.

b) Activities shall be clear, measurable, and tied to the contract work or required project coordination.

c) Durations shall be based on documented assumptions, production rates, sequencing requirements, or professional judgment.

d) Calendars shall reflect the applicable work restrictions for each activity and must be defined as Project Calendars.

e) The CTD shall be recalculated/scheduled before submission.

f) The Consultant shall resolve obvious logic errors before submission.

g) Clearly assign predecessor(s) and successor(s) relationships to each activity, and assign appropriate logic ties between activities (e.g., Finish to Start, Start to Start, Finish to Finish). Do not have any open-ended activities, except for the first activity and last activity in the schedule. Do not include inappropriate logic ties with milestone activities (e.g., a finish milestone activity shall have a predecessor assigned with a Finish-to-Finish logic tie; or a start milestone shall have a successor assigned with a Start-to-Start logic tie).

h) Negative Float is not allowed in the CTD.

i) The design consultant shall not use Lags.

j) The design consultant shall not have any constrained activities, apart from contractual dates or outside coordination milestones, unless the Authority accepts such Constraints in writing.

k) The design consultant shall develop the schedule using standard Authority coding.

l) The Schedule Options shown in Figure 1 below shall be used unless approval to vary from these settings is given by the Authority.

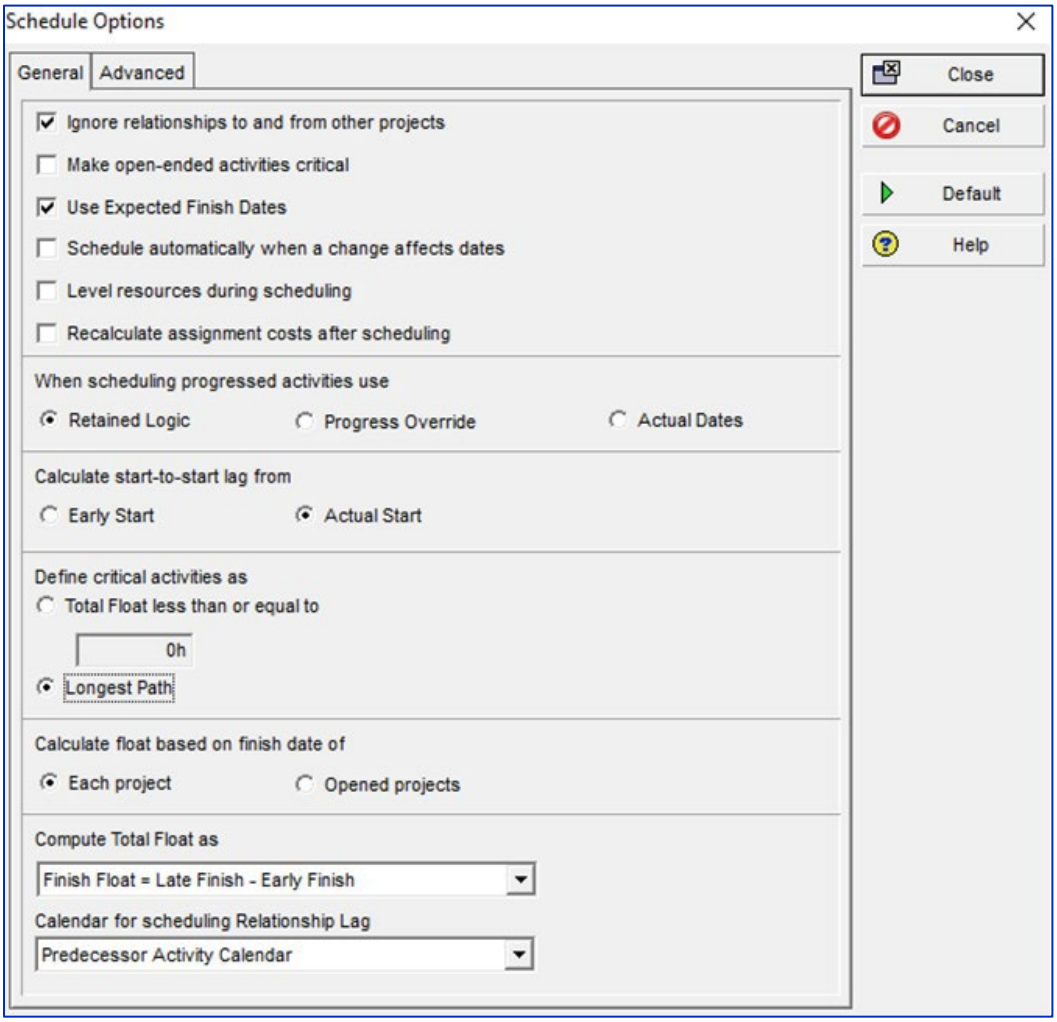


Figure 1: Schedule Option settings in Primavera (P6)

3.1 MINIMUM CONSIDERATIONS

The CTD shall, at minimum, incorporate all items listed in the Narrative Requirements and Schedule Standards, or as amended in Attachment A. The recommended contract duration shall not be based only on a target completion date or historical project duration. It shall be supported by schedule logic, activity durations, work calendars, staging, permit assumptions, procurement durations, testing, commissioning, and closeout requirements.

3.1.1 LEVEL OF DETAIL REQUIRED

The CTD shall be detailed enough to allow the Authority to evaluate whether the proposed construction duration is reasonable. The level of detail shall be scaled to the project.

For simple projects, the schedule may be organized around major work activities, submittals, approvals, permits, procurement, staging, testing, and closeout. For complex projects, the schedule may require detailed breakdowns by stage, area, system, utility, outage, work window, discipline, or construction package.

The schedule should include every bid item, however, bid items do not need to be separately defined. Activities shall be selected and grouped to show the work that drives construction sequencing, duration, staging, access, permits, procurement, testing, commissioning, and closeout. Minor work that does not affect the sequence or duration may be grouped with related activities.

Attachment A may require a higher level of detail, including:

a) Stage-by-stage schedule breakdown.

b) Area-by-area schedule breakdown.

c) System-by-system testing and commissioning activities.

d) Utility-specific relocation and cutover activities.

e) Permit-by-permit approval and compliance activities.

f) Detailed procurement and submittal sequences for long-lead items.

g) Alternate sequence analysis.

h) Cost loading or resource loading.

3.2 Basic Structure

The design consultant shall include each staging milestone in the CTD consistent with their submitted Staging Plans and/or Construction Sequencing.

The CTD shall be organized using a WBS that reflects how the construction work is expected to be planned, reviewed, and executed. The WBS shall be coordinated with the contract documents, staging plans, cost estimate, and project-specific requirements.

A typical schedule structure may include:

a) Milestones.

b) General / administrative activities.

c) Permits and third-party approvals.

d) Submittals and reviews.

e) Procurement, fabrication, and delivery.

f) Utility coordination and utility work.

g) Enabling work and temporary facilities.

h) Construction by stage, phase, area, or system.

i) Testing and commissioning.

j) Turnover, beneficial use, and substantial completion.

k) Punch list, demobilization, and final completion.

3.2.1 WORK BREAKDOWN STRUCTURE

The Work Breakdown Structure (WBS) is the schedule structure used to organize activities by stage, phase, area, system, discipline, work package, or other logical project grouping. The WBS shall be project specific and organized so the Authority can readily review the schedule by major project component.

The WBS may be expanded where Attachment A requires additional detail.

Unless otherwise directed in the Scheduling guidelines, the levels of the WBS shall include the following or similar at a minimum:

a) Level 1 - is the project level;

b) Level 2 - shall have the following nodes: "Milestones", "Preconstruction", "Construction" and "Post Construction";

c) Level 3 – "Preconstruction" shall have at least three sub nodes: "Administrative/Procurement", "Submittals/Shop Drawings" and "Fabrication/Delivery"; "Construction" shall have sub nodes for various geographic areas / stage / phase of Work;

3.2.2 STANDARD AUTHORITY ACTIVITY CODING

The Consultant shall use Authority-required activity codes when provided. If standard coding is not provided, the Consultant shall propose a coding structure for Authority review.

Activity coding should allow the schedule to be sorted by:

a) Responsibility (PATH, Contractor, Third-party stakeholder).

b) Stage or phase (if applicable).

c) Work area.

d) Discipline or trade.

e) Facility or asset.

f) Activity type, such as submittal, permit, procurement, utility, construction, testing, commissioning, or closeout.

g) Contract milestone.

Attachment A may require additional project-specific coding for funding, grant tracking, operational access, tenant coordination, shutdowns, outages, or cost reporting.

3.2.3 PRODUCTION RATES

The Consultant shall develop reasonable production assumptions for major construction activities. Production rates shall reflect the nature of the work, quantities, crew assumptions, work hours, access constraints, staging, equipment, traffic restrictions, site conditions, weather, seasonal limitations, and operational requirements.

Where possible, production assumptions should be based on comparable completed projects, available industry data, input from Engineering's Construction Management Division (CMD), estimating assumptions, vendor information, or other reasonable project-specific sources.

The Consultant shall document the basis for production assumptions for critical and near-critical activities. Where work-hour restrictions reduce productivity, the production assumptions shall be adjusted accordingly. For example, an activity based on a full workday shall be adjusted when the actual available work window is shorter.

The schedule and construction cost estimate shall be coordinated so that production assumptions, work hours, crew assumptions, and staging assumptions are not inconsistent.

3.3 Cost Loading

A Cost- Loaded Schedule is not required unless stated in Attachment A. A Cost-Loaded Schedule is a Construction Schedule in which cost values are assigned to selected activities, work packages, phases, stages, or WBS elements to support budget monitoring, cash flow forecasting, progress measurement, and funding analysis. When required for a Construction Schedule, the assigned costs shall be consistent with the Engineer's Estimate. Cost-Loaded schedules may be required for highly complex and high value projects. These specific requirements will be documented in the Attachment A.

Cost loading may be required to support:

a) Construction cash flow projections.

b) Funding analysis.

c) Grant reporting.

d) Multi-year capital planning.

e) Project authorization.

f) Comparison between planned progress and anticipated expenditures.

3.3.1 Multi-Year Funding

When a project is expected to extend across multiple funding years, Attachment A may require the Consultant to prepare schedule-based cash flow projections. The Consultant shall identify the anticipated timing of major work packages and coordinate the schedule with the Authority's funding assumptions.

Where funding availability constrains the construction sequence, procurement, staging, or milestone dates, the Consultant shall identify the constraint in the Schedule Narrative.

3.4 Resource Loading

Resource loading is not required unless stated in Attachment A. When required, the Consultant shall assign labor, equipment, crew, workfront, or other resource assumptions to the schedule activities identified by the Authority.

Resource loading may be required to evaluate:

a) Feasibility of the assumed construction duration.

b) Number of crews or workfronts.

c) Use of overtime, shift work, or weekend work.

d) Equipment constraints.

e) Access constraints.

f) Concurrent work activities.

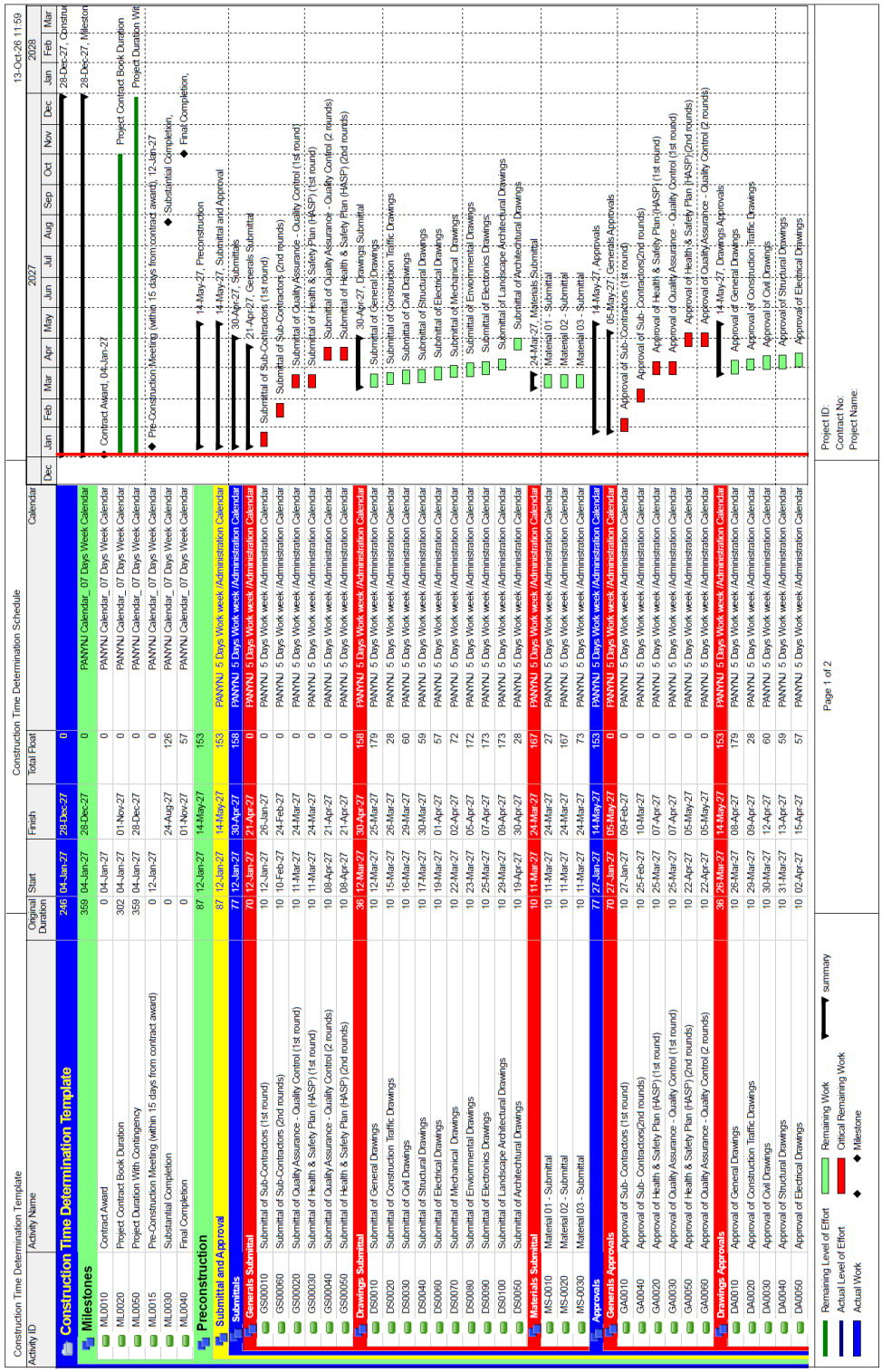
g) Facility operational impacts.

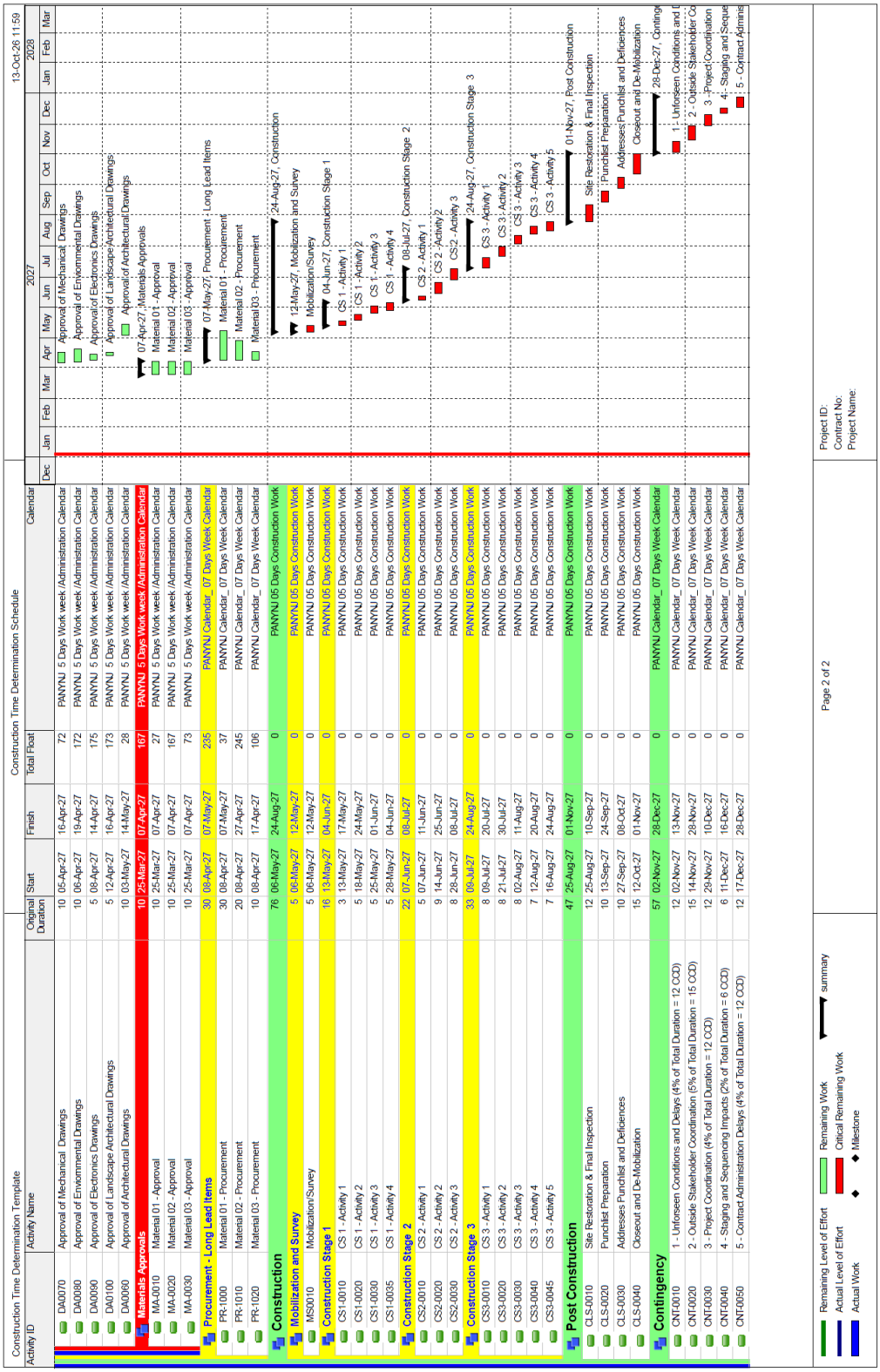
The Schedule Narrative shall document the basis for resource assumptions used in the schedule.

DOCUMENT CHANGE CONTROL TABLE

N	Update Date	Version	Author	Update Description
1	07/30/2026	1.0	Engineering Operations, PCU – Scheduling	Original document creation

APPENDIX A


Construction Time Determination Template
Construction Time Determination Schedule
13-Oct-26 11:59
Activity ID
Activity Name
Original Duration
Start
Finish
Total Float
Calendar
2027
2028
Construction Time Determination Template
Milestones
Preconstruction
Submittals and Approval
Generals Submittal
Drawings Submittal
Materials Submittal
Generals Approvals
Drawings Approvals
Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
summary
Page 1 of 2
Project ID:
Contract No:
Project Name:


Construction Time Determination Template
Construction Time Determination Schedule
13-Oct-26 11:59
Activity ID
Activity Name
Original Duration
Start
Finish
Total Float
Calendar
2027
2028
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
DA0070 Approval of Mechanical Drawings 10 05-Apr-27 16-Apr-27 72 PANYNJ 5 Days Work week /Administration Calendar
DA0080 Approval of Environmental Drawings 10 06-Apr-27 19-Apr-27 172 PANYNJ 5 Days Work week /Administration Calendar
DA0090 Approval of Electronics Drawings 5 08-Apr-27 14-Apr-27 175 PANYNJ 5 Days Work week /Administration Calendar
DA0100 Approval of Landscape Architectural Drawings 5 12-Apr-27 16-Apr-27 173 PANYNJ 5 Days Work week /Administration Calendar
DA0060 Approval of Architectural Drawings 10 03-May-27 14-May-27 28 PANYNJ 5 Days Work week /Administration Calendar
Materials Approvals 10 25-Mar-27 07-Apr-27 167 PANYNJ 5 Days Work week /Administration Calendar
MA-0010 Material 01 - Approval 10 25-Mar-27 07-Apr-27 27 PANYNJ 5 Days Work week /Administration Calendar
MA-0020 Material 02 - Approval 10 25-Mar-27 07-Apr-27 167 PANYNJ 5 Days Work week /Administration Calendar
MA-0030 Material 03 - Approval 10 25-Mar-27 07-Apr-27 73 PANYNJ 5 Days Work week /Administration Calendar
Procurement - Long Lead Items 30 08-Apr-27 07-May-27 235 PANYNJ Calendar_ 07 Days Week Calendar
PR-1000 Material 01 - Procurement 30 08-Apr-27 07-May-27 37 PANYNJ Calendar_ 07 Days Week Calendar
PR-1010 Material 02 - Procurement 20 08-Apr-27 27-Apr-27 245 PANYNJ Calendar_ 07 Days Week Calendar
PR-1020 Material 03 - Procurement 10 08-Apr-27 17-Apr-27 106 PANYNJ Calendar_ 07 Days Week Calendar
Construction 76 06-May-27 24-Aug-27 0 PANYNJ 06 Days Construction Work
Mobilization and Survey 5 06-May-27 12-May-27 0 PANYNJ 06 Days Construction Work
MS0010 Mobilization/Survey 5 06-May-27 12-May-27 0 PANYNJ 06 Days Construction Work
Construction Stage 1 16 13-May-27 04-Jun-27 0 PANYNJ 06 Days Construction Work
CS1-0010 CS 1 - Activity 1 3 13-May-27 17-May-27 0 PANYNJ 06 Days Construction Work
CS1-0020 CS 1 - Activity 2 5 18-May-27 24-May-27 0 PANYNJ 06 Days Construction Work
CS1-0030 CS 1 - Activity 3 5 25-May-27 01-Jun-27 0 PANYNJ 06 Days Construction Work
CS1-0035 CS 1 - Activity 4 5 28-May-27 04-Jun-27 0 PANYNJ 06 Days Construction Work
Construction Stage 2 22 07-Jun-27 08-Jul-27 0 PANYNJ 06 Days Construction Work
CS2-0010 CS 2 - Activity 1 5 07-Jun-27 11-Jun-27 0 PANYNJ 06 Days Construction Work
CS2-0020 CS 2 - Activity 2 9 14-Jun-27 25-Jun-27 0 PANYNJ 06 Days Construction Work
CS2-0030 CS 2 - Activity 3 8 28-Jun-27 08-Jul-27 0 PANYNJ 06 Days Construction Work
Construction Stage 3 33 09-Jul-27 24-Aug-27 0 PANYNJ 06 Days Construction Work
CS3-0010 CS 3 - Activity 1 8 09-Jul-27 20-Jul-27 0 PANYNJ 06 Days Construction Work
CS3-0020 CS 3 - Activity 2 8 21-Jul-27 30-Jul-27 0 PANYNJ 06 Days Construction Work
CS3-0030 CS 3 - Activity 3 8 02-Aug-27 11-Aug-27 0 PANYNJ 06 Days Construction Work
CS3-0040 CS 3 - Activity 4 7 12-Aug-27 20-Aug-27 0 PANYNJ 06 Days Construction Work
CS3-0045 CS 3 - Activity 5 7 16-Aug-27 24-Aug-27 0 PANYNJ 06 Days Construction Work
Post Construction 47 25-Aug-27 01-Nov-27 0 PANYNJ 06 Days Construction Work
CLS-0010 Site Restoration & Final Inspection 12 25-Aug-27 10-Sep-27 0 PANYNJ 06 Days Construction Work
CLS-0020 Punchlist Preparation 10 13-Sep-27 24-Sep-27 0 PANYNJ 06 Days Construction Work
CLS-0030 Addresses Punchlist and Deficiences 10 27-Sep-27 08-Oct-27 0 PANYNJ 06 Days Construction Work
CLS-0040 Closeout and De-Mobilization 15 12-Oct-27 01-Nov-27 0 PANYNJ 06 Days Construction Work
Contingency 57 02-Nov-27 28-Dec-27 0 PANYNJ Calendar_ 07 Days Week Calendar
CNT-0010 1 - Unforseen Conditions and Delays (4% of Total Duration = 12 CCD) 12 02-Nov-27 13-Nov-27 0 PANYNJ Calendar_ 07 Days Week Calendar
CNT-0020 2 - Outside Stakeholder Coordination (6% of Total Duration = 15 CCD) 15 14-Nov-27 28-Nov-27 0 PANYNJ Calendar_ 07 Days Week Calendar
CNT-0030 3 - Project Coordination (4% of Total Duration = 12 CCD) 12 29-Nov-27 10-Dec-27 0 PANYNJ Calendar_ 07 Days Week Calendar
CNT-0040 4 - Staging and Sequencing Impacts (2% of Total Duration = 6 CCD) 6 11-Dec-27 16-Dec-27 0 PANYNJ Calendar_ 07 Days Week Calendar
CNT-0050 5 - Contract Administration Delays (4% of Total Duration = 12 CCD) 12 17-Dec-27 28-Dec-27 0 PANYNJ Calendar_ 07 Days Week Calendar
07-Apr-27, Materials Approvals
Material 01 - Approval
Material 02 - Approval
Material 03 - Approval
07-May-27, Procurement - Long Lead Items
Material 01 - Procurement
Material 02 - Procurement
Material 03 - Procurement
24-Aug-27, Construction
12-May-27, Mobilization and Survey
Mobilization/Survey
04-Jun-27, Construction Stage 1
CS 1 - Activity 1
CS 1 - Activity 2
CS 1 - Activity 3
CS 1 - Activity 4
08-Jul-27, Construction Stage 2
CS 2 - Activity 1
CS 2 - Activity 2
CS 2 - Activity 3
24-Aug-27, Construction Stage 3
CS 3 - Activity 1
CS 3 - Activity 2
CS 3 - Activity 3
CS 3 - Activity 4
CS 3 - Activity 5
01-Nov-27, Post Construction
Site Restoration & Final Inspection
Punchlist Preparation
Addresses Punchlist and Deficiences
Closeout and De-Mobilization
28-Dec-27, Continge
1 - Unforseen Conditions and D
2 - Outside Stakeholder Co
3 - Project Coordination
4 - Staging and Seque
5 - Contract Admini
Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
summary
Page 2 of 2
Project ID:
Contract No:
Project Name: