

## SECTION 01312

### BAR GRAPH SCHEDULE

#### **PART 1 - GENERAL**

- 1.1 DESCRIPTION - The Work specified in this Section consists of developing and maintaining a bar graph schedule in sufficient detail to show sequence in which Contractor proposes to carry out Work required under this Contract. Planning, scheduling, management, and execution of construction in accordance with Contract Drawings and Specifications are Contractor's responsibility. The following are related General Conditions Articles, Special Provisions Articles and Specification Sections.
- A. General Conditions Article, Differing Site Conditions.
  - B. General Conditions Article, Extension of Time.
  - C. General Conditions Article, Liquidated Damages.
  - D. General Conditions Article, Increased or Decreased Quantities.
  - E. Special Provisions for Liquidated Damages and Delays caused by severe weather.
  - F. Sections 01010, Summary of the Work.
  - G. Section 01018, Authority Furnished Equipment Interface.
  - H. Section 01200, Contract Meetings.
  - I. Section 01300, Submittals.
  - J. Section 01460, Contractor Construction Control Requirements.
  - K. Section 01505, Mobilization.

#### **PART 2 - PRODUCTS**

- 2.1 SUBMITTALS - Submit one reproducible original and five copies of Schedule unless specified otherwise in this Section. Provide specified submittals to Authority or its designee for review and acceptance.
- A. Baseline Bar Graph Schedule Submittal - Submit Baseline Bar Graph Schedule and narrative describing Contractor's approach for meeting required interim milestone and final completion dates to the Authority or its designee within 14 calendar days after date of Notice to Proceed (NTP). Upon receipt of MTA comments, confer with the Authority or its designee in appraisal and evaluation of proposed schedule. Make necessary revisions resulting from review and resubmit schedule within ten days. Contractor agrees that if Contractor's Baseline Bar Graph Schedule duration is less than time allowed by Contract for completion of Work or of any interim milestone, Contract completion time shall be shortened only by a Change Order to equal Contractor's proposed baseline contract schedule duration. Use accepted schedule, unless subsequently changed with acceptance by, or at direction of, the Authority or its designee, for planning, scheduling, managing, and executing the Work to be

accomplished. Submittal and acceptance of Baseline Bar Graph Schedule - Condition precedent to making payment by the Authority.

- B. Schedule Updates Update Baseline Bar Graph Schedule monthly with Data Date designated by Authority or its designee. Submit updated Schedule to Authority or its designee within two working days after the Data Date. Use updated schedule for subsequent planning, scheduling, managing, and execution of Work to be accomplished. Obtain Authority or its designee's prior acceptance before making deviations in sequencing and work item duration in the Baseline Bar Graph Schedule.
- C. Participate with Authority or its designee in periodic meetings, at least monthly, on dates directed by Authority or its designee for purposes of reviewing changes to schedule and Project status. Provide preliminary updated Working Schedule which estimates Project status through Data Date and contains actual start and actual finish dates for work items in progress or completed, remaining duration of work items in progress, new or deleted work items, and new Change Orders.
- D. As-Built Schedule Submittal - Submit As-Built Schedule covering Work performed under this Contract within 30 calendar days after final completion. As-Built Schedule - Certified by Contractor's project manager as being manner in which Contract Work was performed. Submittal - Condition precedent to reduction/release of retainage at end of Project.

## 2.2 BASELINE CONTRACT BAR GRAPH SCHEDULE

- A. Computer generated tabular reports listing activity descriptions, durations, and actual or planned start and finish dates.
- B. Computer generated bar graph.
- C. Written narrative of Baseline Schedule assumptions.

## 2.3 MONTHLY UPDATED BAR GRAPH SCHEDULE

- A. Computer generated tabular reports listing activity descriptions, durations, and actual or planned start and finish dates.
- B. Computer generated bar graph.
- C. Written narrative of updated Bar Graph Schedule assumptions.

## 2.4 AS-BUILT SCHEDULE

- A. Computer generated tabular reports listing activity descriptions, actual durations, and actual start and finish dates.
- B. Computer generated bar chart.
- C. Certification from Project Manager that As-Built Schedule submitted pursuant to this Section is a true and accurate.

# PART 3 - EXECUTION

## 3.1 BASELINE BAR GRAPH SCHEDULE

- A. Identify salient work items required to complete Work. Briefly convey scope of Work

indicated. Work items - Discrete items of Work that inherently must be accomplished under Contract and when complete, produce definable, recognizable entities or stages within Project. Show Work items including work associated with Contract deliverables.

- B. Work Items - Include deliverables identified in the master list of submittals for submittal and approval of samples of materials and acceptance of Shop Drawings, procurement of critical material and equipment, fabrication of special materials, and equipment and installation and testing, if applicable, and delivery of Authority-furnished items. Reflect Work items performed by the Authority that may affect progress as well as those of affected utilities and other similarly involved third parties.
  - C. Identify NTP date, interim milestones, as specified in Special Provisions, Work Completion Schedule, and Project Completion Date.
  - D. Include a time-scaled bar graph.
  - E. Include a data date.
  - F. Include title block, revision block, Contract number and legend.
  - G. Identify sequence in which Work is to be accomplished.
  - H. Scheduled start or completion dates imposed on schedule by the Contractor - Consistent with Contract milestone dates. Define milestone events as scheduled dates specified in Special Provisions and prominently identify. Each start milestone event - Constrain start of dependent work items. Finish work items included in scope of Work associated with completion milestone event before milestone event can occur. Failure to include any element of Work required for performance of this Contract shall not excuse Contractor from completing Work required to achieve applicable completion milestone event, notwithstanding acceptance of Baseline Bar Graph Schedule submittal.
  - I. Baseline Bar Graph Schedule - Clear, neat, and legible; submit on D-size (22 inches by 34 inches) or E-size (34 inches by 44 inches) on medium suitable for reproduction.
  - J. Baseline Bar Graph Schedule Submittal - Include written narrative sufficient to explain basis of Contractor's determination of duration and describe Contractor's approach for meeting required interim milestone and final completion dates, as specified by Contract. Include estimated quantities and production rates, hours per shift proposed, and work days per week in explanation. If the Authority or its designee require similar information on other work items, supply required information. Identify Work items that may be expedited by use of overtime or additional shifts. Identify and explain Sequencing and other constraints such as manpower, material, and equipment. Include listing of holidays and special non-work days.
- 3.2 UPDATED BASELINE BAR GRAPH SCHEDULE - At end of each month following NTP, submit to the Authority or its designee a bar graph of updated Bar Graph Schedule with data as of last day of pay period. Participate with the Authority or its designee in monthly meetings on dates and at locations as directed by the Authority or its designee. Purpose of meetings is joint review and agreement on Project progress. Project progress shall specifically include:
- A. Actual completion dates for work items completed during report period.
  - B. Actual start dates for work items started during report period.
  - C. Estimated remaining duration for work items in progress.

- D. Estimated start dates for work items scheduled to start during month following the report period.
- E. Changes in durations of work items and minor changes in sequencing.
- F. Work items not included in bar graph submittal.
- G. Prepare bar graph schedule as specified below and include a solid line representing Baseline Schedule.
- H. If Monthly Progress Status Report indicates an actual or potential delay to Contract completion date or interim milestone completion dates as specified under Special Provisions, treat delays in a narrative in one of following ways:
  - 1. If delay is within Contractor's scheduling control, e.g., normal weather conditions, crew inefficiency, or underestimated duration, identify problem, cause, and work items affected and provide explanation of proposed corrective action to meet milestone dates involved or to mitigate further delays.
  - 2. If delay is not within Contractor's scheduling control, identify problem, cause, duration, and specific work items affected.
- I. Extensions of time for Contract performance as specified in Contract will be granted only to extent required for equitable time adjustments to affected work item. Slippage of work items - Not basis for time extension to Contract unless, and until, such slipped work items are resolved as set forth in General Conditions Article, Extension of Time.
- J. Use currently accepted Baseline Bar Graph Schedule for planning, organizing, and directing Work, for reporting progress, and for determining delays in achieving milestone dates specified under Special Provisions.

3.3 REVISED BASELINE BAR GRAPH SCHEDULE - Make revised Baseline bar graph submittals in same format and detail as original submittal and accompany with explanation of reasons for such revisions. Revisions - Subject to acceptance. Minor changes to accepted bar graph submittal may be accepted at monthly meetings; a minor change is not considered a revision in context of this Paragraph. Incorporate into revisions previously made changes, both major and minor, to reflect current as-built and as-planned conditions. Submit revised Baseline Bar Graph Schedule for review, when required by the Authority or its designee, for one of following reasons:

- A. When the Authority or its designee directs a change that affects milestone date(s) specified under Special Provisions.
- B. When a Change Order affects Contract completion date or sequence of work items.
- C. When Contractor elects to change sequence of work items which may affect planned sequence of Work in currently accepted Baseline Bar Graph Schedule, or which may affect interface with other contractors.
- D. Submit six copies of revised schedule using revision date as Data Date and reflecting as-built data through that date.

#### **PART 4 - MEASUREMENT AND PAYMENT**

4.1 MEASUREMENT - The Work of this Section will be measured as a unit, acceptably completed upon acceptance of submittals.

- 4.2 PAYMENT - The Work of this Section will be paid for as part of the Contract lump sum price for General Requirements.
- 4.3 CONTRACT PROGRESS PAYMENT SUSPENSION - Monthly progress payments are contingent upon submittal of updated Working Schedules by Contractor and acceptance by Authority or its designee. Therefore submittal and acceptance of the updated Working Schedule, as specified in this Section shall be a condition precedent to making monthly progress payments to Contractor. Contractor's entire progress payment shall be suspended for non-submittal, late submittal, or rejection of any required scheduling submittal in this Section. Payment suspension shall last until scheduling submittal in question is accepted by Authority or its designee.

**SUBMITTAL REQUIREMENTS LIST**  
**(Send to RE with copy to: "Copy to" column)**  
 A - Accept; V - Verify; 3rd - 3rd Party; M - MTA

Rev 2 - 6/10/96

Spec Section	Equip	Description	Copy to:			Notes
			EMC	CM	M/3	
01312-2.1	Bar schdle	Baseline Bar Graph Schedule Submittal		A	V	
01312-2.1	Bar schdle	Updated Working Schedule Submittal		A		
01312-2.1	Bar schdle	As-Built Schedule Submittal		A	V	

NOTE: THIS LIST IS FOR INFORMATION ONLY. IT DOES NOT TAKE PRIORITY OVER SPECIFICATION REQUIREMENTS.

**END OF SECTION**

Instructions to Specifier

Section **01312**

**BAR GRAPH SCHEDULE**

INCLUDE THIS SECTION IF WORK SPECIFIED HEREIN IS APPLICABLE TO THIS CONTRACT;  
EDIT THIS SECTION TO MAKE IT CONTRACT SPECIFIC.

# DOCUMENT CHANGE RECORD

## SECTION 01312, BAR GRAPH SCHEDULE

PRIMARY RESPONSIBILITY - RCC -

SECONDARY RESPONSIBILITY - PUM -

### BASELINE REVISIONS:

- > GAA =07.20.94 Baseline, Rev. 0
- GAB =05.19.95 APPROVED, Rev. 001, per SBCN No. 44, SWR# 2568, Operator I.D.:amp.0
- GAC =07.11.96 DRAFT, Rev.:002, SBCN#:63, SWR#:3194, I.D.:Ezi/RWV, Remarks:Added submittal lists to section and removed references to Certificates of Compliance per MTA .
- GAC =08.30.96 APPROVED, Rev.:002, SBCN#:63, SWR#:03304, I.D.:ezi/RWV, Remarks:Convert DRAFT SBCN#63 to APPROVED SBCN#63, affecting: 0
- GAD =11.08.96 DRAFT, Rev.:003, SBCN#:73, SWR#:03438, I.D.:dzm, Remarks:None, affecting: 0
- GAD =12.18.96 DRAFT, Rev.:003, SBCN#:73, SWR#:03532, I.D.:PJT, Remarks:None, affecting: **Error! Reference source not found.**
- GAD =02.04.97 APPROVED, Rev.:003, SBCN#:73, SWR#:03645, I.D.:BJ, Remarks:None, affecting: **Error! Reference source not found.**
- GAD =06.24.97, Rev.:003, SWR#:04034, I.D.:Ezi, Remarks:"Cancel EMC file-Transfer by disk to MTA per MTA letter#R95-DE100-DZ, dated June 10, 1997."

### CONTRACT REVISIONS:

Before Bid:

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Bid Level (Addenda):

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Conformed (Change Notice/Change Orders):

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