

**READ THIS FIRST**

This Project Spec Document may need additional modifications to suit your project. It is recommended that you proofread each section, paying attention to any “Notes” boxes such as this one--you should remove these “Notes” sections as you go. Also, do a search for all bracket characters “ [ ] “ as they are used to show you areas containing options or project specific details (you can use Microsoft Word’s Find feature {Ctrl-F} to jump to an open bracket “ [ “ character quickly). Again, these bracket characters should be removed.

It is important that every paragraph be numbered to allow for easy referencing. If you use the document’s built in styles and formatting your outline should be fine (turn on the formatting toolbar by going to View > Toolbars > Formatting). Most paragraphs will use the style “Numbered Material” and can be promoted (Shift) or demoted (Shift-Tab).

You should not have to manually enter extra spaces, carriage returns or outline characters such as A, B, C, or 1.01, 1.02; the formatting will do this for you. The entire document is 11 pt. Arial. If you paste items in, you may need to reapply the “Numbered Material” format.

**PART 1 GENERAL**

**1.01 DESCRIPTION OF WORK**

- A. Throughout the progress of the Work the Contractor shall maintain accurate set of As-built Redline Drawings (including shop and Contractor bidder-design drawings).
- B. As-Built (Redline) Drawings will be used by the Port at a future time as the basis of revision to the CAD drawing files and therefore must clearly communicate the changes in graphics and text to the CAD operator performing the drawing revisions.

**1.02 QUALITY ASSURANCE**

- A. The responsibility for maintenance of changes to the As-Built Redline Drawings shall be assigned to one person on the Contractor’s staff.
- B. As-Built Redline Drawings:
  - 1. Shall be kept accurate and current per the requirements of paragraph 3.01, Maintenance of As-Built Record Documents.
  - 2. Thoroughly coordinate all changes by making red-line entries on an ongoing basis on a single set of full size Contract and Working Documents maintained at the job site. Accuracy shall be such that future users of information showing the as-built condition of the Work may reasonably rely on the information shown.
  - 3. As-Built Redline Drawings Kick-off Meeting
    - a. Convene a meeting with the Engineer prior to making entries in the As-Built Redline Drawings set to clarify level and style of information requirements.
    - b. Attendees should include the Contractor's field manager, the Contractor's staff member responsible for making the entries, the Engineer and Inspector(s) responsible for monthly review of the As-built Redline Drawings.

4. Inspection and Quality of As-Built Redline Drawings
  - a. A checklist is appended to this Section: (Appendix # 1-- Red-Lines Quality Checklist). This checklist will be used by Port personnel reviewing the Red-Lines for currency and quality prior to the Engineer's acceptance of the Progress Payment requests. The checklist will serve to define Contract requirements for quality and content of entries.

### 1.03 SUBMITTALS

- A. Progress Submittals:
  1. The Engineer's acceptance of the current status of changes to the As-Built Redline will be a prerequisite to the Engineer's acceptance of requests for each Progress Payment. Appropriate payment may be withheld if documents are not up to date at the time of the Progress Payment request(s).
- B. Substantial Completion :
  1. At the time of Substantial Completion, provide a draft hard-copy and an electronic copy of the As-Built Redline Drawings including shop drawings and bidder-design drawings to the Engineer.
- C. Final As-Built Redline Drawings Submittal:
  1. After acceptance of the final As-Built Redline Drawings by the Engineer, submit a final electronic PDF file and hard copy as required for Physical Completion.

### PART 2 PRODUCTS - Not used

### PART 3 EXECUTION

#### 3.01 MAINTENANCE OF AS-BUILT PROJECT RECORDS

- A. During construction of the Work, the Contractor shall use all means necessary to maintain a record of changes to the Contract documents completely protected from deterioration and from loss and damage.
- B. As-Built Redline Drawings
  1. All change directives in the Work generated by Change Orders (CO), Design Bulletins (DB), Construction Bulletins (CB), Requests for Information (RFIs) and accepted substitutions shall be recorded on the Contract Documents.
  2. The Contractor shall revise (1) set of full size Contract Documents by red-line process to show the as-built conditions during the course of the project. Identify documents with the title RED-LINES.
    - a. Define an accepted method for protecting the project As-Built Redline Drawings for the duration of the Contract.
    - b. Do not use the As-Built Redline Drawings for any purpose except entry of new data and for review by the Engineer.
    - c. Maintain and protect the drawings at the site of Work.

3. Changes shall show the actual Work with the same level of accuracy and completeness as the original Contract Documents. As-built Redline Drawings should include changes in location, identification and sizes of material, equipment, utilities and elements of the project and reflect the correct scale, grade, elevations, dimensions and coordinates of changes.
    - a. Use an erasable red-colored pencil (not ink or indelible pencil) to clearly indicate the changed graphics or text. The change directive (CO/RFI/DB/CB) number should be identified on the drawing with the “clouded” changes. It is not necessary to describe the directive, when, why or who authorized the change.
    - b. Distinguish between annotations intended to be copied exactly by a future drafter creating As-Built Redline Drawings files and information that is supplemental and not meant to be copied. Examples of supplemental information would include notes to the drafter and information purely for the Contractor’s information in monitoring the change. A suggested approach is to make all markings not to be copied by a CAD operator in a color other than red, reserving red for information to be copied exactly.
    - c. Do not include markings or reference to documents that do not generate a graphic or text change.
  4. Complex or complicated changes can be noted in the As-built Redline Drawings with a cloud and reference to the directive attached to the drawing sheet or the back of the sheet preceding it.
  5. Include changes or modifications that result from final inspection.
- C. Shop drawings and Contractor bidder-design drawings shall be maintained accurate and current and show, as a minimum, the following information:
1. Changes from approved detail drawings prepared and/or furnished by the Contractor; including but not limited to shop drawings, installation plans and dimensions of equipment.
  2. The actual bidder-design work by the Contractor to meet performance specifications, such as HVAC controls, Fire Alarm, Sprinkler systems and Data Management systems, to the same level of detail as the submitted and approved bidder-design drawings.

#### PART 4 MEASUREMENT AND PAYMENT

##### 4.01 GENERAL

- A. No separate measurement or payment will be made for the Work required by this section. The cost for this portion of the Work will be considered incidental to, and included in the payments made for the applicable bid items in the [Schedule of Unit Prices] [Lump Sum price] bid for the Project.

End of Section

## Appendix #1: Red-Lines Quality Checklist

CHECK ITEM	EXAMPLE/COMMENT
<p>Check that supplementary information is coded in such a way that it will not be transferred to the final record documents</p>	<p>Example: lines or notes not to be copied might be marked in a different color.</p> <p>An example of supplementary information might be references to dates or meetings or field conversations that the Contractor may want recorded on the Red-Lines for record purposes but that are not relevant to the physical as-built condition.</p>
<p>Check that the changes are marked exactly as they should be indicated in revised drawings</p>	<p>An example of unacceptability would be a relocated light fixture shown by a circle around the item with an arrow leader pointing to the new location.</p> <p>Correctly it should be drawn in the final location in which it was actually installed exactly as a drafter would be intended to draw it with all circuits or connections included and previous circuits and connections shown deleted.</p>
<p>Check that a drafter could access the information from which the change was constructed</p>	<p>The change should be clouded or otherwise identified with a reference to the actual change directive from which it was constructed (CO, CB, FA,RFI, etc.) - this may not necessarily be the official Change Order. The traditional practice of attaching the directive to the back of the preceding sheet is recommended.</p>
<p>Check that the original information superseded by a sketch attachment to the change directive is clearly identified</p>	<p>It is not necessary for the Contractor to redraw what is clearly shown and dimensioned on the sketch. However it should be clear what information the sketch replaces.</p>
<p>Check that the Contractor is keeping some kind of log or checklist of changes pending completion of the installation or construction in the cases where the Contractor does not record the change until the</p>	<p>This is important when the practice adopted is to not mark the changes until the work is completed to assure accurate “as-built” information. Without the checklist, the Contractor can easily lose track and it will be more difficult for the Port Inspector to check the status.</p>

**DIVISION 1 - GENERAL REQUIREMENTS**  
**Section 01 78 29 – As-Built Redline Documents**

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work is completed	
In the case of Item 5 above, check the Contractor's method for verifying that the change directive does reflect the in-place (As built) work	If the work is not constructed exactly per the sketch accompanying the change directive, the variation should be noted in a way that would be clear to a drafter.