

Construction As-Builts Process

Construction drawings need to be properly as-built by the constructor to reflect installed conditions. In addition to the drawing as-built mark-ups, the constructor must submit a completed CGT Construction As-Built and Pressure Report Checklist along with the additional construction documentation outlined on this form. See attachment for further detail on CGT Weld Documentation Requirements.

Posting requirements regarding the as-built information and the responsibilities of the various parties involved in the as-built process is outlined in the following paragraphs. The As-Builts/Job Close Process Flowchart provides additional detail on the process.

Drawing Markups from Construction

- ◇ Constructor provides field markups of drawings as follows
 - Main Gas Piping & Pipelines –
 - ✓ All modifications to piping installation. Locations of key items are clearly identified. This includes Changes in pipe data, corrosion protection related equipment, repair locations, tie-ins, taps, pipe fittings and other appurtenances
 - ✓ For all construction activities, including deactivation of pipelines, as-built verifies completion of tasks associated with the work
 - ✓ For bill of materials, update all major material changes, update all descriptions regarding information to establish minimum operating pressure (e.g. ANSI class, size and wall thickness, material yield strength), and include serial numbers of valves & other major equipment
 - Elementary and Wiring Drawings - All changes
 - Other - Significant design changes only. For bill of materials only show changes to main components
- ◇ Use the following colors for as-built information
 - ⇒ Red - Additions
 - ⇒ Green - Deletions
 - ⇒ Blue/Black - Comments Only
- ◇ Complete As-Builts as soon as the work is complete (Must be received by Walnut Creek office within 30 days)
- ◇ Provide one set of color-coded mark-ups and two additional copies with as-built information color-coded, highlighted or clouded on copies
- ◇ All as-builts should be dated and initialed (LAN ID) by person who marked-up the drawing
- ◇ Include Project Drawing List with each as-built package for Major Station Facilities. This form should be included with copies of drawings in construction package

Posting of As-Builts – All Facilities

- ◇ Project Manager or their designee (Project Engineer, District or GC-Gas personnel) provides markups of Operating Diagram and Operating Map drawings to Mapping within (1) one working day of operational date Mapping updates Operating Diagram and Map *Note Markups must also be provided to District or Division Operations and to GSO - Operations Planning and Control*
- ◇ Project Engineer reviews entire as-built package for accuracy and completeness Main gas piping as-built mark-ups are filed in job folder along with other required construction documentation and records
- ◇ For all station work, Design Engineering/Drafting receives a copy of the as-built package and determines in conjunction with the Project Engineer if a maintained “numbered” record drawing set exists for the facility and needs to be updated *Note New construction at stations with a maintained “numbered” record drawing set is sometimes accomplished utilizing sketches or “non-numbered” drawings and then later as-builting the record drawing set*
- ◇ For pipeline and station facilities with maintained “numbered” record drawing sets, Design Engineering/Drafting updates drawings in accordance with drawing as-built guidelines using field markups provided by constructor Project Engineer reviews and approves updated drawings Records distributes all as-built drawing sets Drawing list for as-builts filed in job folder
- ◇ Mapping provides copies of all Strength Test Pressure Reports and pressure charts to System Integrity for filing in MAOP records database

Additional Posting Requirements for Major Station Facilities

- ◇ Project Engineer identifies changes and updates drawings for Control System Philosophy and Operation & Maintenance Instructions

Additional Posting Requirements for Pipelines

- ◇ Mapping updates GIS database for newly installed pipe, and also for abandoned and removed pipe, using field markups provided by constructor
- ◇ Records scans and saves electronically as-built markups for pipeline drawings Mapping links electronic as-built files to GIS database

CGT Construction As-Built and Appropriate Reports Checklist

This checklist and associated as-built records shall be completed and sent to CGT within 30 calendar days of the operational date. Prepare three copies of as-built job package (red marked as-builts, pressure test reports, test charts, A-forms, facesheet, etc) and mail to Close Out Desk

Project Name	Operative Date
District/Division	Order Number

From Field Engineer _____

Today's Date _____

Mail to Close Out Desk, Gas System Maint , 375 N. Wiget Lane, Walnut Creek, 94598

Task	Yes	No	N/A	Comments
Job estimate marked up to indicate work completed, start & completion dates along with foreman's signature and initials are filled in				
As-Built changes to drawings and material lists are marked in red (changes on copies are highlighted)				
Following items are clearly identified by distance from a known point on existing pipe or other landmark/boundary that is identifiable by mapping or by a GPS coordinate (sub-meter accurate) <ul style="list-style-type: none"> • Changes in pipe data • Rectifier, ETS, and Leak locations • Repair locations (3rd party or weld repairs) • M-numbers (Tie-ins) • T-numbers (Taps) • Changes in alignment and or elevation of the pipe due to offsets, rolling offsets, dog legs, etc) • Other Appurtenances (PCFs, repair sleeves, sav-a-valves, threadolets, etc) 				
Horizontal distances are listed (as well as length installed distance) for all stationing on profile drawings and detail drawings				
Required STPR, charts and/or pressure log are attached and the following are completed <ul style="list-style-type: none"> • Sketch of tested section is attached (with angle points, footages and fittings) • Length tested matches length installed (if not, give explanation) • Pipe specifications on STPR matches bill of materials on drawings • STPR indicates correct test start and end time • STPR signed by Area Foreman (District Supervisor) and Test Supervisor (Field Engineer) • Pressure report falls within pressure test limits (any changes must first be authorized by Project Manager) • STPR indicates correct test start and end time • Test chart indicates date of last calibration 				
Weld inspection stamp signed by qualified weld inspector or 100% x-ray				
Gas Standard D-40 Attachment A for weld inspection is included				
Main Inspection reports (A-forms) completed for each section of pipeline exposed				

Rev 9/2004

CGT Weld Documentation Requirements

ALL PROJECTS

Tie-in welds and welds requiring repair must be clearly identified by distance from a known point on existing pipe or other landmark/boundary that is identifiable by mapping or by a GPS coordinate (sub-meter accurate)

Project requires 100% non-destructive inspection (NDT) of circumferential welds*

Ensure that Attachment A of GS&S D-40 is accurately and completely filled out and included in the closed out job file. Construction is responsible for this, and construction is expected to have a process in place for verifying that the NDT inspection billing is accurately charged.

Project requires non-destructive inspection (NDT) of a portion (less than 100%) of the circumferential welds*

Ensure that Attachment A of GS&S D-40 is accurately and completely filled out and included in the closed out job file. Construction is responsible for this, and construction is expected to have a process in place for ensuring the NDT inspection meets the requirements of GS&S D-40 and for verifying that the NDT inspection billing is accurately charged relative to number of NDT inspections performed. **It is not required that each circumferential weld be stationed but it is recommended.** The stationing of the welds allows construction the opportunity to verify that they have non-destructively tested the appropriate percentage of welds per GS&S D-40 and provides documentation for ensuring a sample of each welder's work is radiographically inspected each day. Stationing also allows construction an "audit path" for verifying that the NDT inspection billing is accurately charged relative to number of NDT inspections performed.

The accuracy of the stationing of these welds should be relative to each segment length installed but does not need to be surveyor accuracy. The stationing can also be achieved with the aid of a sub-meter accuracy GPS device and if this device is used it is not necessary to track the length of each segment of pipe.

- * Pipeline Engineer in conjunction with Project Manager will determine non-destructive inspection (NDT) requirements for each specific project

6/4/03

GSM & TS Design Drafting & Records Job Close Process Flowchart

