January 1988 Number 9

Published as an informational service to Owners and Engineers of Steel Water Storage Tanks by TANK INDUSTRY CONSULTANTS, INC., P.O. Box 24359, Speedway, IN 46224, E. Crone Knoy, P.E., Pres. Speedway, IN 317/244-3221 * Millersville, MD 301/987-9366 * Houston, TX 713/789-0989

EDITOR'S CORNER

I've almost done it! -- Published TANK TALK® on an every six months basis. This has always been my goal, and with this being the New Year, I decided that I should keep at least one of my resolutions. (I'd rather do this than clean my desk and office, anyway!) Here it is, 1988, and TIC® is well into its ninth year of existence.

The past 8½ years have gone quite rapidly. Never have I worked harder, had more fun, or felt as though I was doing anything more worthwhile. TIC has developed into a respected, nationwide engineering firm by meeting needs in the market-place. TIC is truly a product of the American Free Enterprise System. When I responded to calls from tank owners, consulting engineers, and contractors during the fall of 1979, I had no idea of the scope of services which we would be offering concerning steel plate structures in so few years.

We have become generalists in tank engineering — from foundation to finial ball, and from design conception to dismantling and moving or scrapping. We have performed our services from coast to coast and border to border. A breakdown of our range of services follows:

► Maintenance Engineering (70%)

Prebid Inspections

Specifications & Contracts

Work In Process Inspections

► New Tank Services (15%)

Design & Specifications

Inspection

Contract Administration

- ►Seminars (5%)
- ▶ Design Services for Fabricators (5%)
- Expert Opinions, Witness, & Dispute Resolution (5%)

I cannot state too many times the pride that I have in our Field Technicians who came to us with experience in supervising crews performing work on steel plate structures. It is their industry experience which lets TIC personnel be known not as problem makers, but as problem solvers.

What separates TIC from the ordinary inspection organization is the engineering back-up that each of our technicians has at the end of a telephone line. Our technicians can talk to Greg Howearth, Chemical Engineer, about coatings; Todd Moore, Structural Engineer, about structural aspects; and Steve Roetter, Engineering Manager, about contract administration. Doc Reed and I combined have 60 years experience in tank construction and maintenance to share with the organization. Mike Doolittle's practical experience and NACE International Coatings Inspector Certification training experiences are always available. Ed Knoy, who now heads up our East Coast activities, lends his 8 years experience to technicians and clients in the Mid-Atlantic States. The Southwest (Houston) area is bustling with several projects underway at this time when tank maintenance activities are at a standstill north of the "Mason-Dixon Line" during winter weather.

Our three centers of operations (Midwest, Southwest, and East Coast) seem to be working well in serving our clients effectively and efficiently.

August brought Bill Daugherty to our organization. He has a Civil Engineering degree from Rose-Hulman Institute of Technology. His background in construction and his quick wit have made him a welcome addition to the staff of TANK INDUSTRY CONSULTANTS, INC. -- "The Professional Tank Design, Specification, and Inspection Service".

COMMUNICATING

What is engineering? Engineering has been defined as the utilization of natural resources for the benefit of mankind. This means that not only must the engineer determine the optimum solution, but he/she must also implement it. To implement a solution, instructions must be communicated to the persons responsible for performing the work.

In our business, communication with the contractor is done by means of clear, concise specifications and drawings. Specifications cover the scope of work, the materials to be utilized, the items on which work is to be performed, the conditions under which the work may be performed, and the desired results to be attained. In addition, it is necessary to establish other contractual items such as when the work is to be done, how much the contractor is to be paid, and how the owner is to be protected from damages incurred by persons due to actions of the contractor.

It takes over 100 pages of contract documents and specifications to encompass the items mentioned in the above paragraph. A more detailed discussion of specifications follows this article.

Other elements of our work which require skilled communications are our PREBID INSPECTION reports and our INSPECTION OF WORK IN PROCESS reports.

Without presenting the findings of the PREBID INSPECTION (tank evaluation) in such a way which communicates the desired impact to the persons controlling the purse strings for tank rehabilitation or new tank projects, some projects might never come to be. It is our job to advise the tank owner of the urgency for the repair, replacement, or repainting. Projects sometimes take place even though our evaluation has determined that the work is not yet necessary from a structural standpoint. This may be because of the present availability of funds (the bean counters say that now is the time), aesthetic concerns or political motivations.

It is the goal of our report writing to make the reports easily understood by the lay person, who may be a board member without engineering or technical experience. It is also our goal to not lose the technical meaning of the findings. We strive to write so that it won't be insulting to the reader who has a PhD in Structural Engineering, but can be understood by all levels of decision makers.

Inspection of the work being done on the project is of value only if the quality of the project is improved by the inspection. Inspection was discussed at greater length in TANK TALK® 7. (Copies of all previous issues of TANK TALK are available upon request.) Only with explicit verbal, written, and visual communication with the contractor, engineer, owner, and other participating parties will the project be completed in a timely, quality, and profitable manner.

SPECIFICATIONS

In order to get a new tank built or an existing tank repaired or repainted, a complete set of specifications and contract documents is required. A "standard spec" will probably not be applicable for your project. In fact, TIC® will write a specification for a tank repainting or rehabilitation project only if we have evaluated the tank by performing a PREBID INSPECTION.

We have been questioned as to why we copyright our specifications. We do that for two reasons. One is to minimize the probability that a specification will be used on a job for which it is not applicable. The other reason is that we have worked hard to develop specifications which we think are the very best available for our type of work. We would prefer that we get paid when these specifications are utilized.

The objective of a good set of specifications is to define the work in such a way that there are no disputes or change orders. There are two general parts of specifications. One is the Detailed Technical Specifications. The other is the "Front End Documents" which is the legal portion of the contract. "The Front End Documents" usually consist of:

- ► Notice to Bidders
- ▶Instructions for Bidders
- ▶Proposal Forms
- ▶Bidders Qualification Forms
- ► Contract Agreement
- ► Supplementary Conditions
- ▶General Conditions

The above items are used to outline the responsibilities of the owner, contractor, engineer, inspector, and other parties. Items included will be insurance, bonds, payment, wage rates, and time of completion.

The Detailed Technical Specifications (DTS) deal with the actual work to be done. Materials to be used are delineated. In the case of painting or coating materials, they may be stated by brandname with "or equal" clauses, or by performance specifications. Performance specifications seem to be the trend, but the question of what short period test results are really meaningful in predicting 15 to 20 year performance is always difficult to answer. Application or installation methods and conditions are also defined in the DTS. The specifier should always keep in mind that the goal is a quality end product resulting from the proper installation or application. Protective coating application requires that proper techniques be used and that the work be done only under conditions that are in accordance with the manufacturer's recommendations. This makes writing a DTS for painting a very difficult task without restricting the work methods of the contractor.

The Construction Specifications Institute (CSI) has a format for preparing specifications which separates the types of work into different categories with respect to types of materials and locations to be installed. This means that the contractor must refer to several sections of the DTS. Items of work may not all be together as they were "in the old days", but it appears that the CSI format yields a clearer, more standardized specification.

>>>>>>

You will note that we have been adding (copyright) to our issues of TANK TALK. We do this not to keep you from copying this material, but only to have you check with us to obtain our permission before you use it. With today's changing technology and regulations, what I say today may not be applicable tomorrow.

Copyright 1988 TANK INDUSTRY CONSULTANTS, INC. All Rights Reserved