

DOCUMENT RESUME

02102 - [A1312272]

[Grant-Related Procurement Complaint Is for Consideration by GAO] B-187205; B-187999. May 4, 1977. 10 pp.

Decision by: EER Prestressed Tanks; by Paul G. Deabling (for Elmer B. Staats, Comptroller General).

Issue Area: Federal Procurement of Goods and Services (1900).  
Contact: Office of the General Counsel: Procurement Law II.  
Budget Function: General Government: Other General Government (806).

Organization Concerned: Environmental Protection Agency.

Authority: Federal Water Pollution Control Act of 1972 (33 U.S.C. 1251, et seq. (Supp. V)). 31 U.S.C. 53, 54. 31 U.S.C. 74. 40 Fed. Reg. 42406. 40 C.F.R. 35.936-13(a)(1). A.S.P.R. 1-1201(a). F.P.E. 1-1.307.

Environmental Protection Agency (EPA) construction grants for wastewater treatment plants were protested because of an unduly restrictive specification, and EPA questioned GAO's jurisdiction to consider the complaint. Grant-related procurement complaints are for consideration by GAO. Upon review, GAO found that the restrictive specification was not unreasonable. (RRS)

Bert Japikse

Proc. II

**DECISION**



**THE COMPTROLLER GENERAL  
OF THE UNITED STATES**  
WASHINGTON, D. C. 20548

FILE: B-187205, B-187999

DATE: May 4, 1977

MATTER OF: BBR Prestressed Tanks

**DIGEST:**

1. Grant related procurement complaint is for consideration by GAO in accordance with announcement published at 40 Fed. Reg. 42406. Moreover, consideration is appropriate where, as here, grantor agency has requested advisory opinion.
2. Federal Water Pollution Control Act of 1972, 33 U. S. C. § 1284 (Supp. V, 1975) together with implementing regulations import Federal norm for full and free competition, requiring that grantees avoid use of restrictive specifications. Upon review GAO finds restrictive specification was not unreasonable. However, it is recommended that grantor agency assume a more activist role in future cases to insure maximization of competition rather than acquiesce in very cautious specifications used in instant cases.

This matter concerns two construction grants awarded by the U. S. Environmental Protection Agency (EPA), Region IX, under Title II of the Federal Water Pollution Control Act (33 U. S. C. § 1251, et seq. (Supp. V, 1975)), to the Sacramento, California, Regional County Sanitation District and to the City of Oxnard, California. Grants for 75 percent of the total estimated eligible project costs were awarded to assist construction of wastewater treatment plants.

BBR Prestressed Tanks, Inc. (BBR), complains that the specifications for prestressing the sewage digester tanks (3 million gallon cylindrical tanks (See Figure 1) in which sewage is anaerobically digested) are unduly restrictive. Due to the size of the structures and the hydrostatic pressure created when filled, the concrete tanks are to be prestressed. Prestressing increases the ability of a concrete shell of given thickness to withstand outwardly directed forces by applying an external inward radial force by wrapping the tank with rods, cable or wire under tension. The specifications for both projects require the use of steel rods and thereby exclude the use of steel cable used

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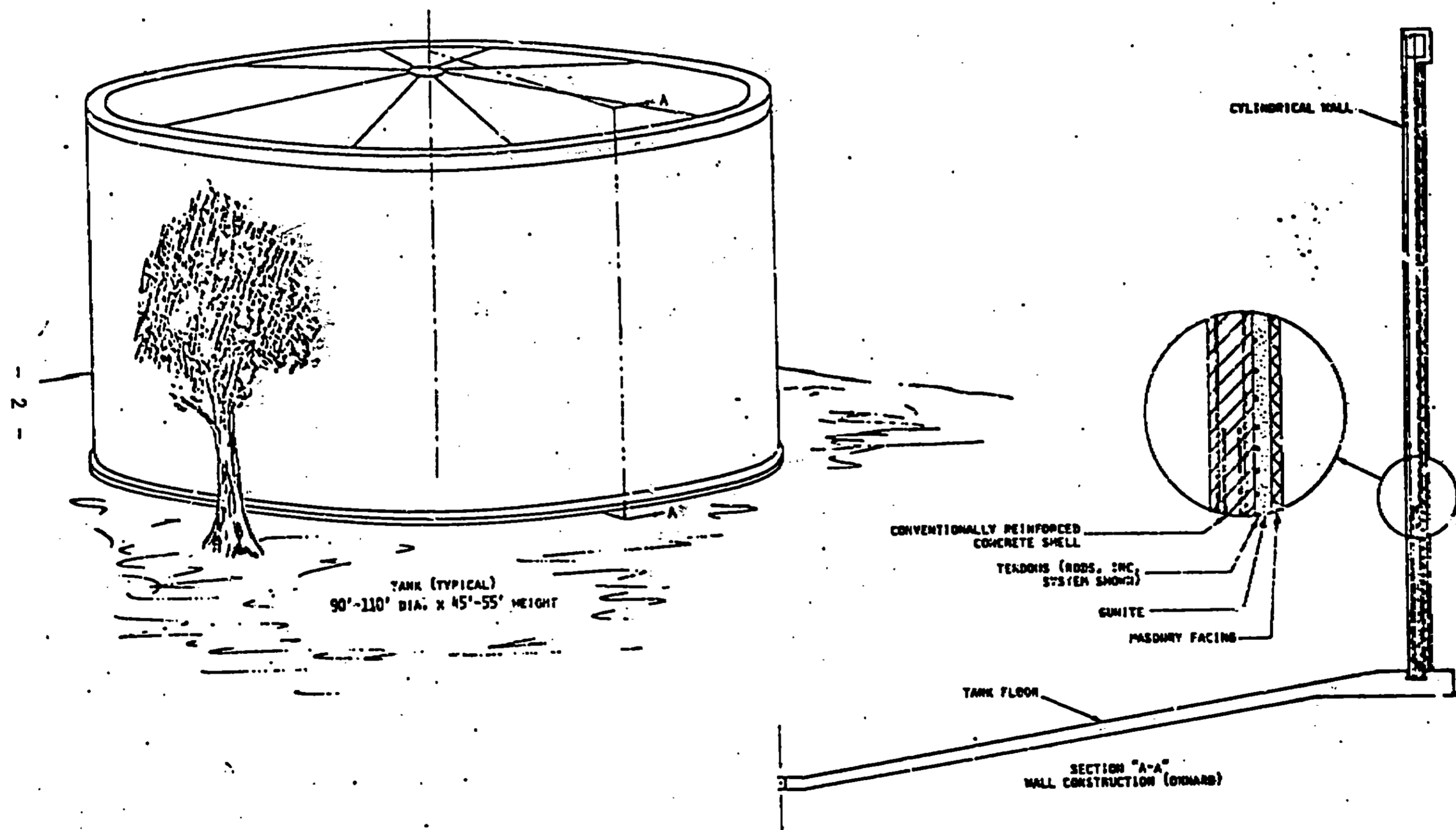


FIGURE 1 — DIGESTER DESIGN

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in the protester's prestressing technique. The protester argues that its "electro-servo" cable wrapping system is at least equal to the performance of the methods specified and, therefore, argues that the specifications improperly restrict competition.

At the outset we note that the grantees and initially EPA questioned our jurisdiction to consider the merits of BBR's complaint. BBR's complaints were filed and considered pursuant to the announcement published at 40 Fed. Reg. 42406, September 12, 1975. Although various arguments are raised, including whether our processes are preempted by EPA's subsequent adoption of its review procedures, we continue to believe that our review serves a useful function, and is appropriate to the exercise of our statutory responsibility to investigate all matters relating to the application of public funds. 31 U.S.C. §§ 53, 54 (1970). Moreover, during the course of these proceedings, EPA requested an "advisory" opinion on BBR's complaint "pursuant to 31 U.S.C. § 74." We think it is unnecessary to decide under which authority the matter is considered.

As indicated above, prestressing generally may be accomplished in several ways, and is principally done by encircling the tank with a series of rods or tendons, much like barrel hoops, or by wrapping the structure with wire or cable. (See Figures 2A and 2B.) In any case, the applied material is stretched either when applied or as part of a separate tensioning operation and then may be covered with a layer of concrete (gunite) to prevent corrosion, and in BBR's system, to bond the cable to the tank wall. While BBR practices both methods of prestressing structures, our review will be concerned principally with its objection to the fact that the specifications do not permit prestressing by the wire or cable wrapping technique.

BBR initially requested consideration of its complaint by the respective grantees. In both cases the grantees relied upon very similar reports by the consulting engineers and determined, in part, that the wire wrap system of prestressing digester tanks was technically unacceptable or not suited to the particular needs and requirements of the project. Sacramento County employed the services of Sacramento Area Consultants, a partnership

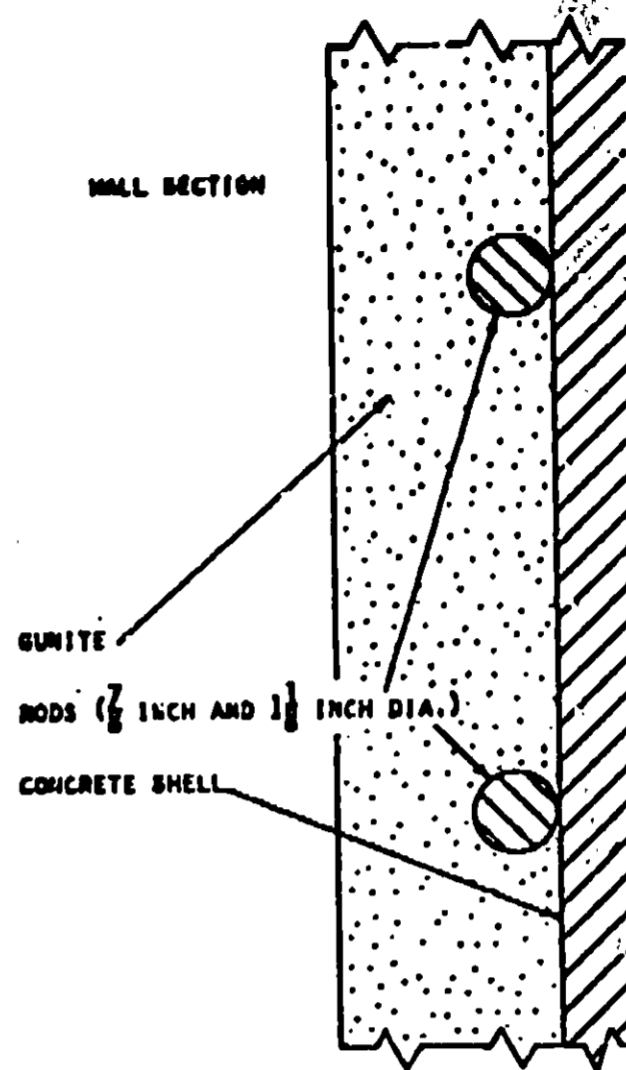
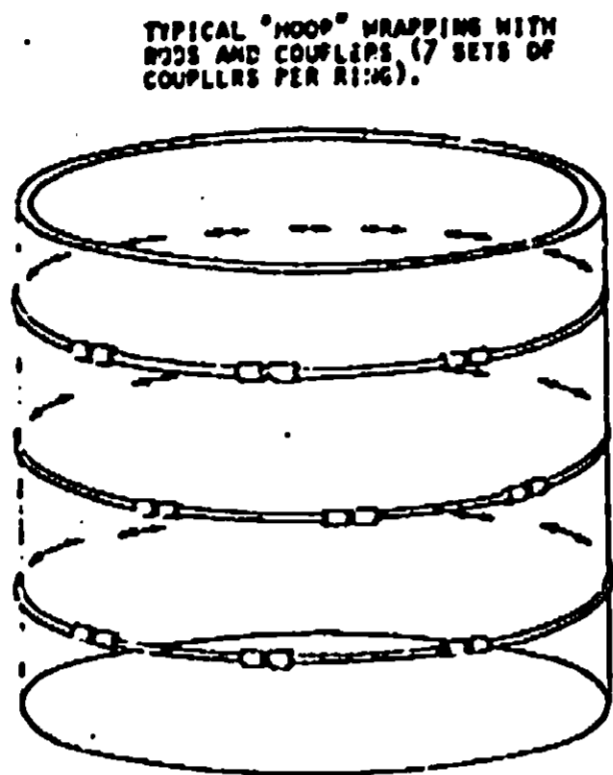
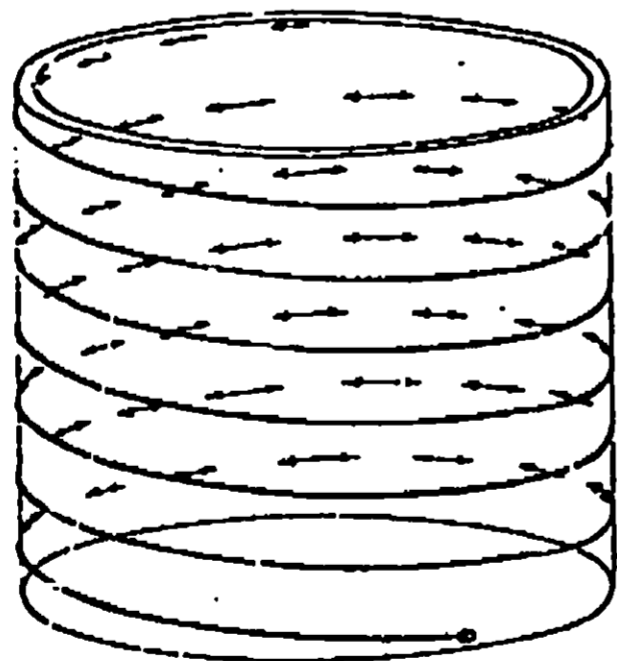
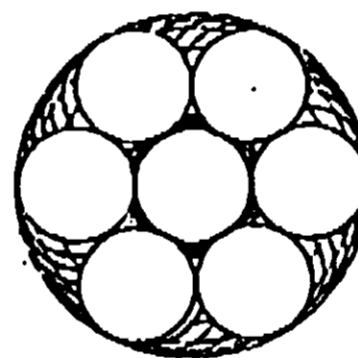


FIGURE 2A  
PRESTRESSING -- ROD OR "HOOP" SYSTEM



CABLE CROSS-SECTION  
( $\frac{3}{4}$ " DIA. OVERALL)



SEVEN STRAND  
TWISTED CABLE

GUNITE

CONCRETE SHELL

TYPICAL HELICAL WRAPPING  
WITH CABLE ANCHORED AT  
BOTH ENDS.

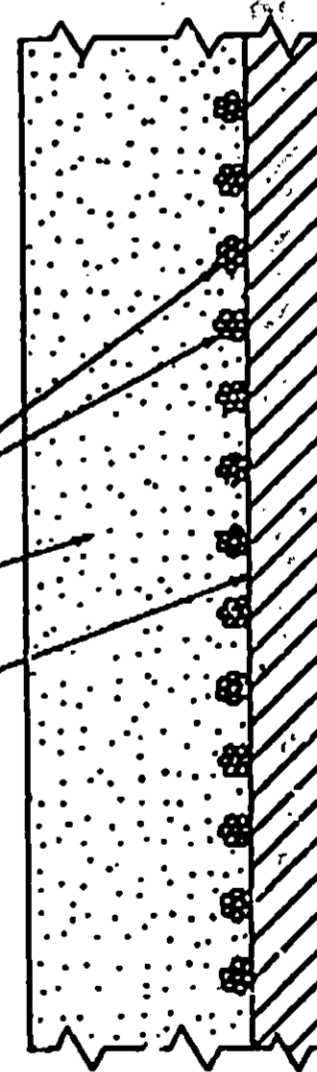


FIGURE 2B  
PRESTRESSING BY  
WIRE OR CABLE WRAPPING

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in which the engineering firm of Brown and Caldwell is the leading partner while the City of Oxnard hired Brown and Caldwell. For convenience, we will refer to the consultants as B & C.

It is argued that the grantees did not comply with EPA's policies and minimum standards for procuring construction contracts imposed by 40 C.F.R. § 35.936-13(a)(1)(1976). This regulation implements the statutory requirement of § 204 of the Federal Water Pollution Control Act of 1972, 33 U.S.C. § 1284 (Supp. V 1975). Paragraph (a)(6) of § 1284 provides that before approving grants for treatment works projects, the Administrator is required to determine:

"(6) that no specification for bids in connection with such works shall be written in such a manner as to contain proprietary, exclusionary, or discriminatory requirements other than those based on performance, unless \* \* \* at least two brand names or trade names of comparable quality or utility are listed and are followed by the words 'or equal'."

The language of the cited regulation is identical to that part of the statute quoted, providing further that if a single material is specified, the grantee must be prepared to substantiate the basis for the selection of the material. In addition subparagraph (2) of the cited regulation provides:

"(2) Project specifications shall, to the extent practicable, provide for maximum use of \* \* \* construction methods and equipment which are readily available, through competitive procurement, or through standard or proven production techniques, methods and processes \* \* \*."

In our opinion the statute and implementing regulations require the Administrator to assure that grantees expending Federal sewage treatment works grant funds will not include restrictive provisions in their solicitations insofar as is practicable except as may be necessary to reflect the grantee's bona fide performance requirements. In exceptional circumstances two brand names may be specified with an "or equal" qualification. In our view, the statute and EPA's regulations import the Federal norm regarding

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the requirement for full and free competition and the avoidance of restrictive specifications. Also see 40 C.F.R. § 35.936-3 (1976), which states EPA's policy of encouraging free and open competition. As a general rule, plans, drawings, specifications or purchase descriptions for Federal procurements shall state only actual minimum needs and describe the desired supplies and services in a manner which will encourage maximum competition and eliminate, insofar as possible, any restrictive features which might limit acceptable offers to one supplier's product or to the products of a relatively few suppliers. Cf. Armed Services Procurement Regulation 1-1201(a) (1976 ed.) and Federal Procurement Regulations § 1-1.307.

As we see it, the basic question is whether there was a rational basis for excluding BBR's method of prestressing which does not use solid rods. Unless there is an adequate justification for requiring the use of rods, BBR's exclusion conflicts with the requirement for full and free competition, notwithstanding that a rod and turnbuckle system was specified as an alternate system.

It was stated that in many wire wrapped tanks, corrosion has occurred primarily in areas where the closely spaced wire must pass around an opening in the tank, such as a pipe penetration or manhole. Where wires are so bundled it is difficult to properly coat the wires with the gunite protection and hence becomes an area where corrosion may occur. B & C insists that extreme care is necessary during the gunite operation to ensure that the gunite totally encases the wires and does not cause "shadows," which are areas behind the wires which are not totally covered. While B & C states that "shadowing" can also occur with the use of rods, it considers it to be a more obvious situation which can be corrected during application of gunite. It believes that should corrosion occur because of a failure of the protection system in the wire or cable wrapped method the risk of structural failure is greater because loss of a relatively small amount of metal in the prestressing wires will result in a much higher unit stress. By contrast, the rod system was viewed as having the additional safety factor of more steel and less surface area for corrosion. In addition, B & C cites cases of severe corrosion damage in wire wrapped concrete tanks as justifying its concern.

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Admitting that its position may be conservative, B & C has taken the view that the specifications reflect its best engineering judgment, and that it recommended the use of the rod technique due to the need for an assured 50-year tank life, and because difficulties have been experienced generally with the use of wire wrap systems. B & C classifies the BBR cable system as a wire wrap technique because the overall diameter of the cable used by BBR is less than that of the specified rods (which are required to be 1-1/8 and 7/8 inches in diameter, the lighter rods being used in the upper portion of the tank), and because the cable is composed of seven strands of wire. The consulting engineers advised Sacramento and Oxnard that the biggest single problem with the wire wrapping technique is the greater susceptibility to corrosion of the thinner wire members. In the case of the heavier rod, a single rod or two may corrode but the chance of total failure was viewed as markedly less because the surface area exposed is less for comparable amounts of steel, while the use generally of higher stress levels in wire systems exaggerates the impact any corrosion will have.

The protester argues that it has been prejudiced by B & C's refusal to consider its automated "electro-servo" cable wrapping system as distinguished from other wire wrapping methods and by B & C's alleged misunderstanding of prestressing technology. BBR claims this misunderstanding is illustrated by B & C's definition of "wire wrapping" as a

"\* \* \* method of construction [which] consists of a lightly reinforced concrete structure further reinforced with 1/8 to 1/4" diameter wire which is spirally drawn around the tank through dies, or other methods of tensioning, at variable spacing."

BBR's system does not use dies, but applies the 3/8 inch stranded galvanized steel cable using automated servo-tensioning techniques, at precisely controlled tension and without permanent deformation of the "wire." Moreover it has developed a mechanized system for preparing the tanks and applying grout to the prestressed tanks and claims to have overcome the problems experienced with other wire wrap systems (See Figure 3). BBR acknowledges that wrapping systems using ungalvanized single strand wire, deformed by drawing it through dies, without adequate tension regulation, have experienced difficulties in past applications,



**BBR DYK STRAND WINDER**

EQUIPMENT MOVES AUTOMATICALLY  
AROUND YARK BY PULLING AGAINST  
ENDLESS CHAIN. SAME STRUCTURE  
IS USED TO PERFORM ALL REQUIRED  
OPERATIONS (WINDING, SANDBLAST-  
ING AND GRITTING). STRUCTURE,  
AS WELL AS WRAPPING MACHINE,  
IS ABLE TO BE SUPPORTED IN ALTERN-  
ATE WAYS, IN ADDITION TO METHOD  
SHOWN.

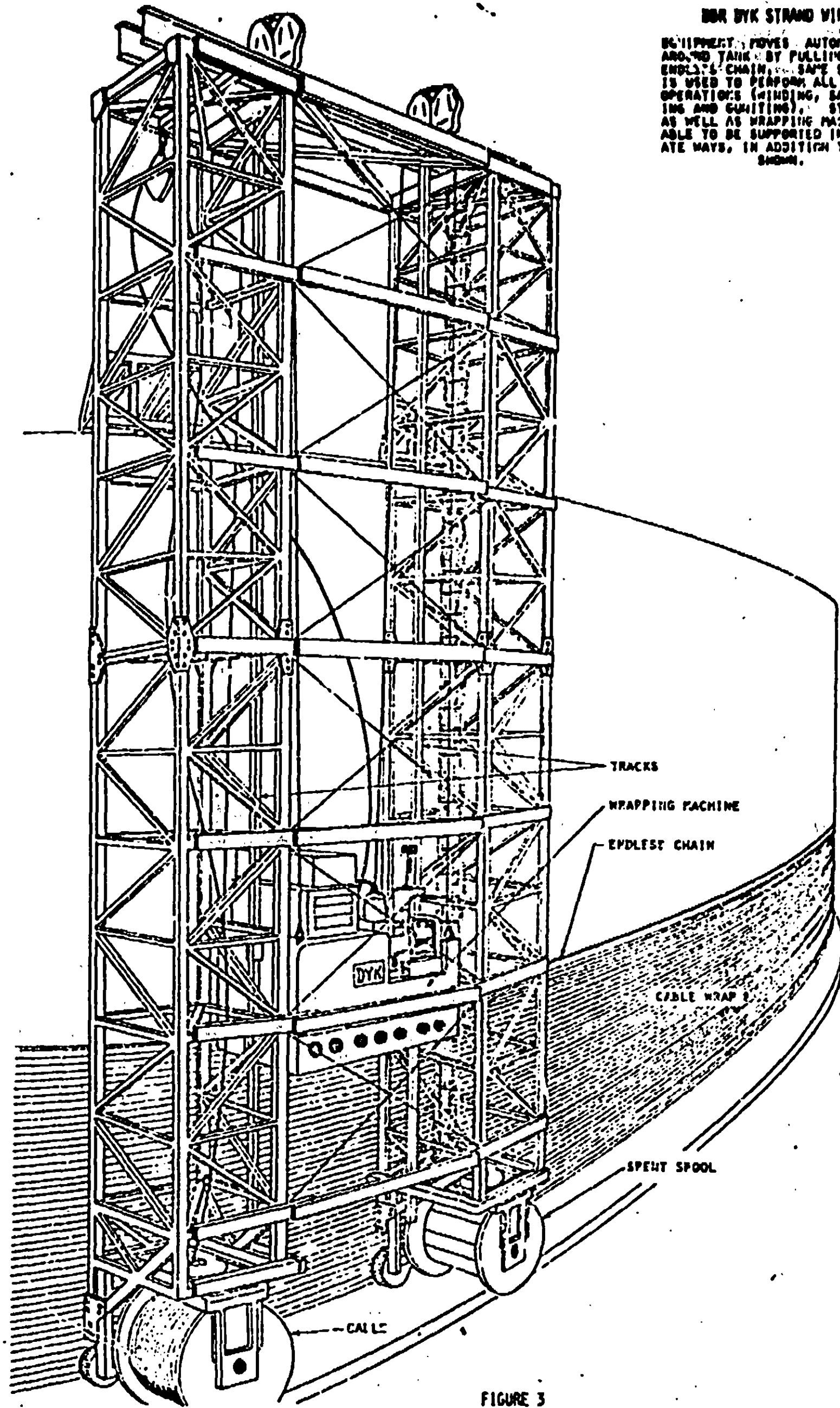


FIGURE 3

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but asserts that its system shares none of these deficiencies. BBR acknowledges that the Rods, Inc. system can be used effectively, but contends that the BBR system can perform at least as well as that technique, and vastly better than the rod and turnbuckle method, which it contends is not even a recognized, or feasible, prestressing technique.

On the basis of the record, we cannot say that the restriction was unreasonable. The use of wire or cable would expose more metal surface area to the possibility of corrosion and the loss of the same amount of metal from each will result in a proportionally higher increase in stress in the wire or cable than in the rods.

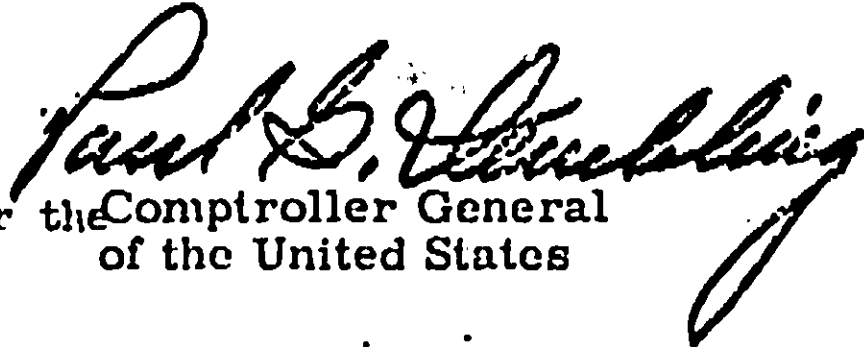
However, we are not entirely satisfied that the BBR technique has been fully analyzed. B & C's advice to the grantees in this case admittedly was very cautious and the ultimate rejection of the BBR system apparently was supported to a large extent on the basis of experiences with tanks prestressed by firms not using the BBR wire or cable wrapping technique. Although corrosion was cited as posing the biggest problem with the wire wrapping system and examples of defective wire wrapped tanks were pointed out, no claim was made or evidence adduced that any BBR cable prestressed tank had suffered corrosion induced distress or failure. It appears that the City of Sacramento constructed several wire wrapped tanks some 15 years before, and that remedial work was later required. Other examples of tank failure or distress indicating a need for repairs were cited--the focus again being on problems which occurred in the early 1960's, or before, or in tanks of unknown longevity, not evidently tanks prestressed using BBR's automated cable servo-tensioning technique. Due to the age of the tanks, it would appear that traditional wire wrap methods were used in those instances. Although some of the tanks with which difficulty was experienced may have been constructed by the Preload Company, a firm which now practices the BBR method, that of itself is inconclusive, save perhaps for suggesting that that firm has since discovered that the BBR system is better than the method it was then using.

We think BBR's automated system is sufficiently distinctive from other wrapping methods to justify consideration on its own merits. In this connection, B & C's final submission to this Office indicated that approval of the BBR technique by a registered structural engineer would merit serious consideration.

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In addition the record indicates that the BBR technique also may have been excluded, regardless of its merits, because of anticipated difficulty in preventing other firms from offering other unacceptable wire wrap systems. Assuming the acceptability of the BBR technique, there would be no legal objection to the exclusion of other methods which do not rise to the performance levels of the BBR technique.

For purpose of the instant procurements we recognize that it is impractical to conduct a thorough analysis of alternatives to the specified prestressing systems. However, we believe EPA could insure maximum competition in future cases by requiring a fuller investigation of the need for excluding all but the rod prestressing technique. EPA should not continue to approve such restrictive specifications unless improvements in other commercially available methods such as BBR's have been carefully analyzed and still found to be lacking based on directly pertinent data.

  
For the Comptroller General  
of the United States

Bert Japikae  
Proc. II



COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON, D.C. 20548

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MAY 4 1977

The Honorable Douglas M. Costle  
Administrator, Environmental  
Protection Agency

Dear Mr. Costle:

We are enclosing a copy of our decision of today in two cases filed by BBR Prestressed Tanks, Inc., complaining that unduly restrictive specifications were included in solicitations issued by two grantees of the Environmental Protection Agency.

Although we have not recommended that remedial action be taken, as to the grants involved in these cases, we request that your agency further evaluate the possibility of using less restrictive specifications to assure maximum competition in future procurements of this type.

It is requested that we be advised of whatever action is taken on our recommendations.

Sincerely yours,

Paul G. Dumbing

for the

Comptroller General  
of the United States

Enclosure



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COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON, D.C. 20548

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MAY 4 1977

The Honorable Robert J. Lagomarsino  
House of Representatives

Dear Mr. Lagomarsino:

Reference is made to your interest in the complaint filed by EBR Prestressed Tanks, Inc., relative to grant procurements by the County of Sacramento and the City of Oxnard, California.

Enclosed for your information is a copy of our decision of today in the matter.

Sincerely yours,

FRED U. DENBRO

For the  
Comptroller General  
of the United States

Enclosure