

Specifications for Repair of Giant Wurburg
Antenna Mirror

The work involves the rehabilitation of the three sections of a mirror now located at the Sterling Field Station of the National Bureau of Standards. The mirror frame is a lattice construction with a punched metal skin covering the parabolic surface. The skin and lattice framework are made of steel, held together by welding.

The proposed repairs are to be made in such fashion that the completed job is structurally as strong as the original and the parabolic surface is to be maintained. Broken, damaged, and missing members of the frame are to be replaced by equivalent members formed from new material. The same over-all size of the parts are to be maintained, altho the circular perforations of the various channels may be omitted. Suitable crane hooks are to be attached at places and in manner approved by Bureau.

To facilitate assembly welded construction may be used. If desired, and with Bureau approval, old, broken and twisted members may be straightened, tears welded and used in the assembly. Where a member is broken, but all the original metal is still present, it may be welded and then the joint covered by a channel formed from new material welded in place as reinforcing.

Most of the work will be on the center section of mirror where one end is in bad shape. Here, and at such other places as the frame needs straightening, the skin is to be removed. The new frame is then to be properly assembled to correct position and size. Then the skin is to be straightened out and welded back to frame. If desired, new skin may be used of a material approved by Bureau.

Tears in the skin are to be repaired by patching on the back with new skin if a proper material can be obtained and approved by the Bureau. Since such material may be difficult to secure an alternative procedure may be used. This consists of first straightening out the skin, then binding or sewing in place with soft wire and finally welding on a criss-cross pattern of $3/32$ " rod to front and back of tear. Each wire of mesh need not be so repaired, but a sufficient number must be joined so that a strong patch of good conductivity results. The details of a given patch are to be worked out in conjunction with and by approval of the Bureau's representative. The contractor shall supply himself with a suitable variety of jacks and clamps for straightening the frame and holding the various pieces in position. When the repairs are complete the three section of mirror shall be so proportioned and dimensioned that they may readily be bolted together without further deforming or altering. Where a part is distorted or missing the correct dimensions are to be found by measuring a similar member of the frame which is in good condition. The Bureau's representative will be available to aid in determining proper dimensions and spacing. $1\frac{1}{2}$ " T irons are to be fastened along top and bottom edges of center section and along one edge of side sections. These are to be used to hold mirror sections together. All new material is to be supplied by contractor.

- 2 -

Several other small jobs are to be performed when contractor has his equipment on the premises. These include; patching two cabins and fix door on one, fastening a dozen or so members which have been broken loose, on another mirror and weld together about forty joints in rolled angles and channels. Details of this work will be explained to bidder by member of Bureau staff.

Details of welding techniques are left to discretion of contractor. 110 V, 60 cps, single or three phase power will be supplied by the Bureau. It is urged the prospective bidder visit and thoroughly inspect the job. Arrangements may be made for a visit to Sterling by contacting the Bureau's radio division (ORDway 4040, ext. 7118) and asking for Mr. Reber or by calling (REpublic 1611) and asking for Mr. Sands. All material, rod and gas for completion of work are to be supplied by contractor.

The procedure on rehabilitating the mirror will be as follows:

First - The welding contractor will complete the repairs on the separate sections outlined above.

Second - The Bureau will have the three sections sandblasted and painted.

Third. - The welding contractor will return to the job and assemble the 3 sections into a complete mirror. If at that time the three sections do not properly fit, the welding contractor will make such alterations as are necessary to get a good fit and create a smooth mirror.

*done got the job
for \$1810*

Specifications for Sandblasting
Steel Mirror Sections

It is desired to recondition several pieces of heavy equipment which comprise a Giant Wurzburg antenna. This equipment is located on the grounds of the National Bureau of Standards Radio Propagation Field Station, Sterling, Virginia. The reconditioning shall consist of removing rust and paint from the surfaces of the equipment by sandblasting. Provision will be made by the National Bureau of Standards for turning the various parts over so that the contractor may have access to all sides.

The work to be done is given in detail below:

Sandblasting

The pieces of equipment listed below are to have all loose rust and paint removed from both inside and outside surfaces by sandblasting:

1. 1 mirror center section
2. 2 mirror side sections
3. 6 small metal mirror fittings

The National Bureau of Standards will place the various items on planks or blocks. No attempt need be made by the contractor to smooth out pitting or to necessarily produce a bright finish. However, the sandblasting must be sufficiently good so that when the items are painted the paint will not flake off due to loose material on the surface of the metal.

After sandblasting all loose sand must be removed from mirror sections by an air blast so that the sections may be readily painted without further cleaning.

Completion date of this work should be on or about July 15, 1948.

Further information may be obtained by calling Mr. G. Reber, CRdway 4040, extension 7118 or Mr. D. Sands, REpublic 1611.

*Abbott got the job
for \$425*

Specifications for Foundation for Radiometer

It is desirable to construct a concrete pier and foundation to support a giant steel radiometer on the grounds of the National Bureau of Standards Sterling Laboratory located at Sterling, Virginia. The work involves excavating, setting up forms, placing reinforced rods, pouring concrete, removing forms, backfilling, removing surplus excavated dirt and supplying all necessary materials.

Details of construction are given in National Bureau of Standards drawing No. 168-C herewith attached. This drawing is a part of these specifications. The contractor shall supply all materials and perform all the work indicated in these specifications. The workmanship should be of a professional standard.

It is essential that the center of the foundation shall lie on a true north-south line, and no deviations will be permitted. The National Bureau of Standards will establish this north-south line and will supply suitable reference stakes for the use of the contractor.

Excavation should be to rock, the forms should be tight fitting and smooth. The concrete should be of a 1:2:4 mixture, the sand should be free from clay or earthy materials, and should preferably be pit sand; the aggregate should be free from dirt and of different sizes, so that the smaller pieces will fit in spaces between the larger, the concrete should not be dumped but should be spread in layers and tamped enough to compact the mass well.

The concrete may be poured in two parts, first the slab and then the pier. Suitable indentations about 8' long, 4" wide and 2" deep are to be made in the slab so that keys will be formed in the pier when it is poured.

No deviation in the placement of the reinforcing rods (threaded or plain) will be permitted; the dimensions shown in the drawings and the tolerances given have to be adhered to by the contractor.

Suitable drainage near the foundation shall be installed by the contractor.

All excess dirt from the excavation should be removed by the contractor to some location on the field as will be indicated by the government representative.

Construction of the concrete pier and foundation shall be completed on or before July 15, 1948.

Further information may be obtained by calling the National Bureau of Standards, ORdway 4040, extension 7118 and asking for Mr. Reber or by calling REpublic 1611 and asking for Mr. Sands.

*Printl got the job
for \$2000*

After award is made to a bidder, if he fails to complete the contract within 100 days, there will be deducted from payment to him as a liquidated damage, not as a penalty, \$20.00 per day for each calendar day of delay, including Sundays and holidays. Delivery time will be reckoned in terms of calendar days after the date of receipt by the bidder of purchase order or other formal notice to proceed. The calendar day is the smallest unit of time that will be considered.

Specifications for Structural Steel Components-
Wurzburg Antenna

This steel is to be used on a Wurzburg antenna. The two attached drawing NBS 135-C-1, 135-C-2 give details of the work to be done. Quantities of the items are as follows:

Item	A	B	C	D	E ₁	E ₂	F	G	H	I	J
Qty.	1	2	1	1	1	1	2	2	2	2	2

Parts A, B, C & D form a base assembly and it is imperative that the holes be positioned so that these members will fit together using $\frac{1}{2}$ " bolts without further alternations. A tolerance of plus or minus $1/16$ " may be had on the position of all other holes.

The contractor is to procure; bend and drill all plates, channels and beams on the attached drawings. They are to be delivered complete to either the NBS field station at Sterling, Va. by truck or to the Herndon, Va. station of the Washington and Old Dominion R. R. by freight car not later than July 15, 1948.

Atlas got the job for \$350

Specifications on Arm Extensions

Two extension arms are to be constructed of 1/4" steel plate according to the attached drawing, NBS-133-C. This drawing depicts a right hand extension. One extension is to be made as shown. The other is to be a left hand extension. The section A-A views of both right and left hand extensions will be the same. However, the plan and end views for a left hand extension will be suitably inverted from those shown.

The hand holes shown on plan and end views are to be centered in the plate at the distances shown from the base. The three brace tubes are shown 6" diameter and 1/4" wall. If this size tubing is not available something similar may be used provided approval is first secured from NBS.

All joints between the various metal pieces are to be welded inside and out. The assembly should preferably be first tacked together at a variety of places, so that the dimensions shown will not vary more than plus or minus 1/16". This tolerance will be satisfactory except on the four 1" diameter holes in blocks, which dimensions may not vary more than 1/32" from those shown.

After the two arm extensions are completed and approved by NBS it will be required that the contractor ship the extensions to the NBS field station at Sterling, Virginia. There the arm extensions are to be welded to two mirror mounting side arms which will be designated by the Bureau. A small amount of cutting will be necessary to remove a few protrusions from the side arms which may interfere with fastening the arm extensions to the side arms. Since it is likely that only an external weld will be possible between side arms and arm extensions; the various surfaces will have to be suitably chamfered so that a full metal thickness weld will result.

If desired by the contractor and approved by NBS, the arm extensions may be welded to the side arms in the contractors shop.

Further information may be obtained and arrangements to inspect the Wurzburg equipment may be made by calling Mr. Grote Reber, Ordway 4040, Extension 7118 or Mr. D. Sands, Republic 1611.

*Atlas got the job
for \$650*