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1929

Outlet Pipes for Echo Dam

U.S. Department of the Interior, Bureau of Reclamation

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Specifications No. 486

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

SPECIFICATIONS, SCHEDULE, AND DRAWING

OUTLET PIPES FOR ECHO DAM

SALT LAKE BASIN PROJECT, UTAH
WEBER RIVER DIVISION

Bids will be received at the office of the Bureau of Reclamation, Denver, Colo., until 3 o'clock p. m. February 27, 1929.

CONTENTS

	Page		Page
Invitation for bids.....	1	Riveted pipe:	
Form of bid.....	3	11. Fabrication.....	6
Schedule.....	4	12. Riveted joints.....	7
SPECIFICATIONS		13. Angle sections.....	7
General conditions:		14. Beveling and scarfing.....	7
1. Performance bond.....	5	15. Expansion joints, manholes, and pipe	
2. Shipment.....	5	connections.....	7
3. Extras.....	5	16. Shop assembly and marking.....	7
4. Failure of Congress to appropriate		17. Painting.....	7
funds.....	5	Materials:	
5. Patents.....	5	18. General specifications for metals.....	7
Special conditions:		19. Federal Specifications Board specifi-	
6. The requirement.....	5	cations.....	7
7. Drawings.....	5	20. Patterns.....	7
8. Delays—liquidated damages.....	6	21. Cast iron.....	7
9. Payment.....	6	22. Cast steel.....	8
10. Preference for domestic articles or		23. Steel plates.....	8
materials.....	6	24. Rivet steel.....	8
30059—29			

STANDARD GOVERNMENT FORM OF BID
(SUPPLY CONTRACT)

Opening Date for this Bid

January 10, 1929

(Advertisement)

Standard Form No. 30
Approved by the President
June 10, 1927

STANDARD GOVERNMENT FORM OF INVITATION FOR BIDS
(SUPPLY CONTRACT)

JANUARY 10, 1929.

SEALED BIDS (single) will be received in this office until the date and hour named in the accompanying schedule and then publicly opened, for furnishing the materials and supplies called for therein.

Bids must be submitted upon the Standard Government Form of Bid (Standard Form No. 31) and in accordance with the Standard Government Instructions to Bidders (Standard Form No. 22) and any special instructions supplementary thereto.

Envelopes containing bids must be sealed and marked on the upper left-hand corner with the name and address of the bidder and the date and hour of opening and addressed to the purchasing agency named below:

Chief Engineer
Bureau of Reclamation,
Denver, Colorado

The specifications cover two 72-inch riveted plate steel pipes, length of each pipe 339 feet 7½ inches, made of 7/16-inch steel plate with all rivets countersunk on the inside; estimated total weight of the two pipes, 280,000 pounds.

Guaranty will be required with each bid in an amount not less than ten (10) per cent of the total price bid.

Performance bond will be required in an amount not less than fifty (50) per cent of the estimated payments to be made under the contract.

(1)

STANDARD GOVERNMENT FORM OF BID

(SUPPLY CONTRACT)

Opening Date for this Bid

3 o'clock p. m., February 27, 1929

To CHIEF ENGINEER,
Bureau of Reclamation,
Denver, Colorado

PLACE-----

DATE-----

In compliance with your invitation for bids to furnish materials and supplies listed on the reverse hereof:

the undersigned,

a corporation organized and existing under the laws of the State of
a partnership consisting of

an individual trading as

of the city of

hereby proposes to furnish, within the time specified, the materials and supplies at the prices stated opposite the respective items listed on the schedule and agrees upon receipt of written notice of the acceptance of this bid within ----- days (60 days if no shorter period be specified) after the date of opening of the bids, to execute, if required, the Standard Government Form of Contract (Standard Form No. 32) in accordance with the bid as accepted, and to give bond, if required, with good and sufficient surety or sureties, for the faithful performance of the contract, within 10 days after the prescribed forms are presented for signature.

Discount will be allowed for prompt payments as follows: 10 calendar days ----- per cent;

20 calendar days ----- per cent; 30 calendar days ----- per cent; or as stated in the schedule.

(Time will be computed from date of the delivery of the supplies to carrier when final inspection and acceptance are at point of origin, or from date of delivery at destination or port of embarkation when final inspection and acceptance are at those points, or from date correct bill or voucher properly certified by the contractor is received if the latter date is later than the date of delivery.)

(Witness to signature)

(Full name of bidder)

(Address)

NOTE.—See Standard Government Instructions to Bidders and copy of the Standard Government Form of Contract, Bid Bond, and Performance Bond, which may be obtained upon application.

To insure prompt payment bills should be certified as follows: "I certify that the above bill is correct and just and that payment therefor has not been received."

SCHEDULE

Standard Form No. 33
Approved by the President
June 16, 1933

Item No.	Articles or services	Quantity	Unit	Unit price	Amount	
					Dollars	Cents
1	<p>Two (2) 72-inch riveted plate-steel outlet pipes, one made right hand and one made left hand, with manholes, expansion joints, and appurtenances, complete in accordance with the attached specifications and drawing No. 179-D-80.</p> <p>Lump-sum price f. o. b. cars at factory shipping point, shipment to be made on Government bills of lading-----</p> <p style="text-align: center;"><i>or:</i></p> <p>Lump-sum price f. o. b. cars at Brim Siding, near Echo, Utah, shipment to be made on commercial bills of lading-----</p> <p>The bidder agrees to deliver the materials f. o. b. cars at factory shipping point at -----, within ----- calendar days after receipt of written notice of acceptance of this bid.</p> <p>The approximate shipping weight will be ----- pounds.</p> <p><i>Delivery—Urgency of.</i>—Delivery of materials is important and is desired at the factory shipping point within one hundred and twenty (120) calendar days after receipt of written notice of acceptance of bid, and all bids specifying delivery within said number of days will be considered on an equal basis as regards time of delivery. Where the time of delivery specified by the bidder is greater than said number of days, each day in excess thereof will be evaluated at twenty dollars (\$20) and bids will be compared on this basis for award of contract.</p>	Lot.			\$	
		Lot.			\$	

Time will be computed from date of the delivery of the supplies to carrier when final inspection and acceptance are at point of origin or from date of delivery at destination or port of embarkation when final inspection and acceptance are at those points or from date correct bill or voucher properly certified by the contractor is received if the latter date is later than the date of delivery.

(Full name of bidder) (Where to sign)

(Address)

Note—See Standard Government Instructions to Bidders and copy of the Standard Government Form of Contract, Bid Bond, and Performance Bond, which may be obtained upon application. To insure prompt payment bills should be certified as follows: "I certify that the above bill is correct and true and that payment therefor has not been received."

SPECIFICATIONS

GENERAL CONDITIONS

1. Performance bond.—Unless another sum is specified in the invitation for bids, the contractor shall furnish bond in an amount not less than 20 per cent of the estimated aggregate payments to be made under the contract. Bonds in amounts of \$1,000 or less will be made in multiples of \$100; in amounts exceeding \$1,000 but not exceeding \$5,000, in multiples of \$500; in amounts exceeding \$5,000, in multiples of \$1,000: *Provided*, That the amount of the bond shall be fixed by the contracting officer at the lowest sum that fulfills all conditions of the contract.

2. Shipment.—Material or machinery furnished and delivered f. o. b. cars at factory shipping point shall be shipped on Government bills of lading furnished by the contracting officer. The contractor shall prepare all materials and articles for shipment in such manner as to protect them from damage in transit, and shall be responsible for and make good any and all damage due to improper preparation or loading for shipment. Where necessary, heavy parts or machines shall be mounted on skids or crated, and any articles or materials that might otherwise be lost shall be boxed or wired in bundles and plainly marked for identification.

3. Extras.—The contractor shall, when ordered in writing by the contracting officer, perform extra work and furnish extra material, not covered by the specifications or included in the schedules, but forming an inseparable part of the work contracted for. Extra work and material will ordinarily be paid for at a lump sum or unit price agreed upon by the contractor and the contracting officer and stated in the order. Whenever, in the judgment of the contracting officer, it is impracticable, because of the nature of the work or for any other reason, to fix the price in the order, the extra work and material shall be paid for at actual necessary cost as determined by the contracting officer, plus 15 per cent for superintendence, general expense, and profit. The actual necessary cost will include all expenditures for material, labor, and supplies furnished by the contractor, and a reasonable allowance for the use of his plant and equipment, where required, to be agreed upon in writing before the work is begun, but will in no case include any allowance for office expenses, general superintendence, or other general expenses.

4. Failure of Congress to appropriate funds.—If the operations of this contract extend beyond the current fiscal year, it is understood that the contract is made contingent upon Congress making the necessary appropriation for expenditures thereunder after such current year has expired. In case such appropriation as may be necessary to carry out this contract is not made, the contractor hereby releases the Government from all liability due to the failure of Congress to make such appropriation.

5. Patents.—The contractor shall hold and save the Government, its officers, agents, servants, and employees harmless from liability of any nature or kind for or on account of the use of any patented or unpatented invention, article, or appliance furnished or used in the performance of this contract, excepting patented articles required by the Government in its specifications, the use of which the contractor does not control.

SPECIAL CONDITIONS

Detailed Specifications

6. The requirement.—It is required that there be furnished and delivered, complete in accordance with these specifications and attached drawing, two 72-inch riveted plate-steel outlet pipes and accessories for the outlet works at Echo Dam, Weber River division, Salt Lake Basin project, Utah. Bids will be considered for the materials delivered f. o. b. cars at the factory shipping point named by the bidder in the schedule, shipment to be made at the expense of the Government on Government bills of lading, or for the materials delivered f. o. b. cars at Brim Siding, near Echo, Utah, shipment to be made on commercial bills of lading with the cost of shipment included in the price bid. Bidders may state one or both prices. The pipes will be installed in the field by the Government.

7. Drawings.—Drawing No. 179-D-80 is made a part of these specifications. The contractor will not be held responsible for the correctness or sufficiency of designs, but he shall carefully check the drawing and advise the contracting officer of any errors or omissions discovered by him. The contractor shall prepare, without charge to the Government, all necessary shop drawings and he shall be held responsible for the correct fitting of all of the parts. Unless otherwise specifically provided in the specifications or on the drawing, the contractor shall furnish all of the materials, accessories and appurtenant parts called for in the specifications

or shown on the drawing. Anything called for on the drawing and not mentioned in the specifications, or called for in the specifications and not shown on the drawing shall be furnished the same as if called for or mentioned in or on both. Such additional copies of the specifications and blue prints from the original tracing as are necessary for carrying on the work will be furnished to the contractor.

8. Delays—liquidated damages.—The article "Delays—liquidated damages," given in paragraph 5 of the directions for preparation of contract, Standard Government Form of Contract (Standard Form No. 32) will by this reference be substituted for article 5 of the contract. This article reads as follows:

Article ---- Delays—liquidated damages.—If the contractor refuses or fails to make delivery of the materials or supplies within the time specified in article 1, or any extension thereof, the actual damage to the Government for the delay will be impossible to determine, and in lieu thereof the contractor shall pay to the Government, as fixed, agreed, and liquidated damages for each calendar day of delay in making delivery, the amount as set forth in the specifications or accompanying papers, and the contractor and his sureties shall be liable for the amount thereof: *Provided, however,* That the Government reserves the right to terminate the right of the contractor to proceed and to purchase similar material or supplies in the open market or secure the manufacture and delivery thereof by contract or otherwise, charging against the contractor and his sureties any excess cost occasioned the Government thereby, together with liquidated damages accruing until such time as the Government may reasonably procure similar material or supplies elsewhere: *Provided further,* That the contractor shall not be charged with liquidated damages or any excess cost when the delay in delivery is due to unforeseeable causes beyond the control and without the fault or negligence of the contractor, including, but not restricted to, acts of God or the public enemy, acts of the Government, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather but not including delays caused by subcontractors: *Provided further,* That the contractor shall, within ten days from the beginning of any such delay, notify the contracting officer in writing of the causes of delay, who shall ascertain the facts and extent of the delay and his findings of facts thereon shall be final and conclusive on the parties hereto, subject only to appeal, within thirty days, by the contractor to the head of the department concerned, whose decision on such appeal as to the facts of delay shall be final and conclusive on the parties hereto.

The amount of liquidated damages to be charged for failure to deliver the material within the time specified by the bidder will be twenty dollars (\$20) per day for each calendar day of delay.

9. Payment.—Eighty-five (85) per cent of the contract price will be paid within thirty (30) days after receipt by the Bureau of Reclamation, Denver, Colorado, of proper invoices and Government bills of lading, properly receipted, covering complete shipment of the materials. When all of the material has been received at the railway destination, checked, and accepted by the contracting officer, final payment will be made of the balance due under the contract: *Provided,* That if such acceptance is delayed beyond a period of thirty (30) days from receipt of said material at the railway destination final payment will be made of the balance due at the end of said thirty (30) day period. Earlier payment may be made if a discount is allowed as provided for in Standard Government Form of Bid (Standard Form No. 31).

10. Preference for domestic articles or materials.—Preference will be given to articles or materials of domestic production, conditions of quality and price, including duty, being equal. Unless otherwise stated in the bid, it will be understood that domestic articles or materials only will be used, and the use of foreign articles or materials will not be permitted unless (1) they are of better quality, or (2) being equal in quality, will be furnished at lower cost to the Government, or (3) domestic articles or materials are not available. The term "domestic articles or materials" in this connection means articles or materials manufactured or assembled in the United States or its possessions.

RIVETED PIPE

11. Fabrication.—The pipes shall be 72 inches inside diameter, with outside butt strap, riveted joints, and with all rivets countersunk on the inside so that the completed pipe presents a smooth interior surface. The pipe shall be fabricated in the shop in approximately 18 to 20 foot lengths, and each of these lengths shall consist of two sections of pipe completely riveted together and calked, with rivet holes in the ends subpunched, reamed, and countersunk for field riveting of the girth joints. Each pipe section shall be made from a single plate. The plates shall be rolled to practically true circles at all points, and flat sections at the ends after rolling will not be allowed. The edges of all plates shall be resquared and planed, if necessary, and shall be in contact in both longitudinal and girth joints after fabrication, the maximum allowable separation being three-thirty-seconds inch. Cone head or button head rivets shall be used, with the rivet head on the outside of the pipe, the shank of the rivet to be driven into the countersunk holes on the inside. Drift pins shall not be used except to bring together the several parts, and drifting with such force as to disturb the metal will not be allowed, nor shall wrongly punched plates be used by plugging holes or patching.

12. Riveted joints.—All riveted joints shall be outside butt strap joints. The size and spacing of rivets are shown on the drawing. A slight variation in rivet spacing will be allowed, with the approval of the contracting officer, to accommodate the contractor's shop tools, provided the efficiency of the riveted joints is not decreased more than 2 per cent. All rivet holes shall be subpunched at least three-sixteenths inch smaller than the rivet diameter, and reamed to one-sixteenth inch larger than the rivet diameter, and the holes on the inside of the pipe shall be countersunk. Such reaming and countersinking, however, shall be done only after the pipe sections and outside straps have been properly assembled with bolts. Countersunk holes shall be as shown on the drawing, and special care shall be taken when countersinking to insure that at least one-sixteenth inch of straight section of hole is left at the bottom of the countersunk hole. All rivets shall be driven hot, and shall completely fill the holes. They shall be formed as shown on the drawing, and any projections at the rim of the rivet shall be chipped or ground flush with the plate. All loose, burned, or otherwise defective rivets shall be cut out or removed by drilling, if necessary, and replaced. All joints shall form a tight fit with each other and all angular joints shall be shop closed. A supply of erection bolts and rivets for field fabrication, with an excess of not less than 10 per cent, shall be shipped with the pipes.

13. Angle sections.—Where angles or curves occur in the alignment of the pipe, the plates must be cut to the required lines for forming a small oblique angle to the circumferential seams, embracing as many sections as may be required to procure the total curvature, the course being arranged with longitudinal seams staggered.

14. Beveling and scarfing.—The edges of all outside straps shall be beveled and carefully calked with a round-nose tool. The ends of all longitudinal outside straps shall be reduced by planing, or hammering, or both, to a fine edge, with rivets properly placed to insure water-tightness.

15. Expansion joints, manholes, and pipe connections.—Expansion joints, manholes, and pipe connections shall be furnished as shown on the drawing. The inner tube of expansion joints shall be of the thickness specified on the drawing and not less than 30 inches in length, with longitudinal seams welded and the weld ground flush with the surface on the outside. All necessary bolts and packing shall be furnished with the expansion joints. Manholes and drain connections shall be provided, located as shown on the drawing. Bolts and gaskets for manholes shall be included.

16. Shop assembly and marking.—Before shipment the pipes shall be assembled with bolts at the factory, in lengths according to the space available for inspection and marking. The sections, together with all special connections, shall be properly marked and match-marked for identification in the field in accordance with an erection diagram to be furnished by the contractor, for use in distributing the material and erecting the pipes in the field.

17. Painting.—After the pipes have been inspected and accepted by the inspector they shall be thoroughly cleaned of all mill scale, rust, and grease, and painted inside and outside with one shop coat of black Valdura asphalt paint, or a similar refined bituminous preservative paint that, in the opinion of the contracting officer, is equally effective. A quantity of the paint, sufficient to cover field-riveted joints and damaged places in the original paint coating shall be shipped with the pipe and included in the price bid.

MATERIALS

18. General specifications for metals.—Unless otherwise specifically stated herein, all metals covered by these specifications shall be furnished in accordance with the requirements of the "United States Government General Specification for Metals," Federal Specifications Board specification No. 339, which specification covers certain requirements which are common to all detail specifications for metals and provides means for determining whether the technical requirements of the detail specifications and drawings are being met.

19. Federal Specifications Board specifications.—Copies of the Federal Specifications Board specifications referred to herein may be procured at a nominal cost from the Federal Specifications Board, care Bureau of Standards, Washington, D. C.

20. Patterns.—The prices bid in the schedule shall include the cost of all necessary patterns. Care shall be taken to avoid sharp corners or abrupt changes in cross section by the use of ample fillets. Patterns will remain the property of the contractor.

21. Cast iron.—Iron castings shall be of gray iron made by the cupola process, free from injurious defects and shall not be plugged or welded without permission from the inspector. Such permission will be given only when the defects are small and do not adversely affect the strength, use, or machinability of the castings. In all respects not specifically mentioned herein, the castings shall conform to the "United States Government Master Specification for Gray Iron Castings," Federal Specifications Board specification No. 141, adopted May 1, 1924. There shall be three classes of gray-iron castings, as follows:

- (a) *Light castings*, having a section less than one-half inch in thickness;
- (b) *Medium castings*, falling between the other two classes;
- (c) *Heavy castings*, having no section less than 2 inches in thickness.

The castings shall be of such a character that transverse test bars $1\frac{1}{4}$ inches in diameter and 15 inches long, placed on supports 12 inches apart, will have physical properties not less than the following:

Class	Load at center	Deflection at center	Tensile strength
	Pounds	Inch	Pounds per square inch
Light castings.....	2,800	0.10	20,000
Medium castings.....	2,900	.10	21,000
Heavy castings.....	3,300	.10	24,000

Two sets (two bars per set) of transverse test bars shall be cast from each melt; one set from the first and the other set from the last iron going into the castings. Each set of two bars shall be cast in a single mold. Tension tests of cast iron will not be required.

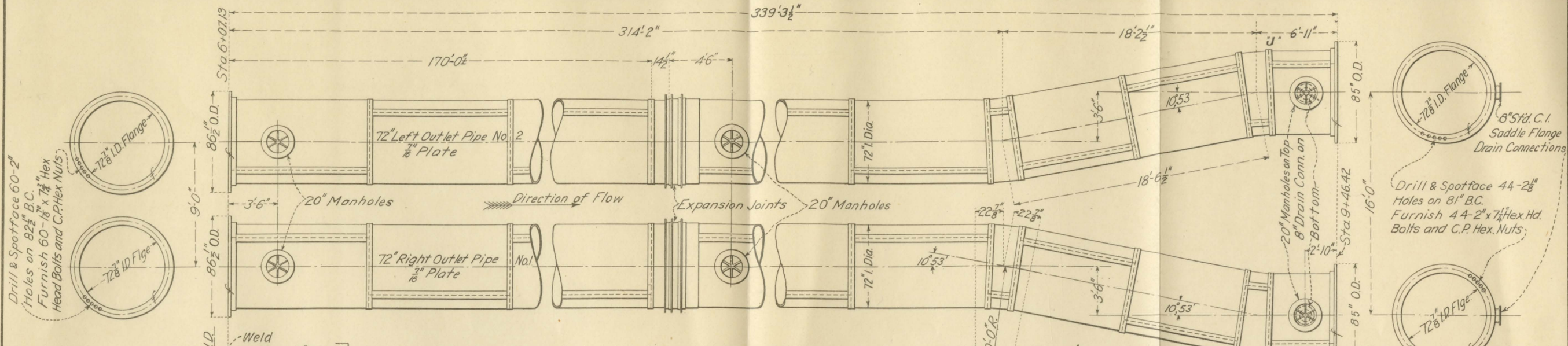
22. Cast steel.—Steel castings shall be sound and free from injurious defects. They shall be well cleaned, with heads and gates removed for inspection in the green. When heads and gates are removed by burning, this burning shall be done at least one-half inch from the body of the casting, the remaining metal to be removed by grinding, cutting, or machining. Castings shall not be repaired, plugged, or welded without specific authority from the inspector. Such permission will be given only for welding to be completed prior to final heat treatment, and when the defects, after being thoroughly cleaned out to sound metal, are judged not to affect the strength, use, or machinability of the castings. Castings shall be annealed in a properly constructed pit or furnace, and they shall be held at the treatment temperature at least long enough for each casting to be uniformly heated throughout its mass. They shall not be removed from the furnace until they have been cooled down to a temperature of about 700° F. Rapid cooling of castings, or any further heat treatment other than reannealing, shall not be undertaken without specific authority from the contracting officer. All castings shall be annealed so that the fracture of any part shall show to the eye a fine-grain structure. They shall be well cleaned for final inspection. In all respects not specifically mentioned herein the castings shall conform to the "United States Government Master Specification for Steel Castings (Medium Grade)," Federal Specifications Board specification No. 170. Tension-test pieces properly machined shall be furnished by the contractor in accordance with the above specification. The physical properties shall be not less than the following:

Ultimate tensile strength.....	70,000 pounds per square inch.
Yield point.....	45 per cent of tensile strength obtained.
Elongation in 2 inches.....	20 per cent.
Reduction of area.....	30 per cent.

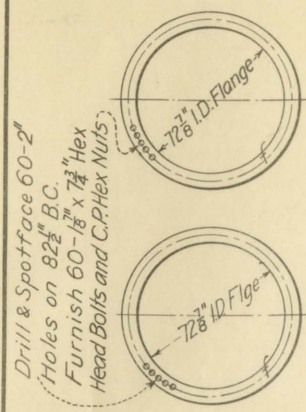
Cold-bend tests will not be required.

23. Steel plates.—Steel plates shall be not less than 108 inches nor more than 120 inches in width and shall contain from 0.2 to 0.3 per cent of copper. In all other respects they shall conform to the "United States Government Master Specification for Structural Steel for Buildings," Federal Specifications Board specification No. 352.

24. Rivet steel.—All rivet steel shall contain from 0.2 to 0.3 per cent of copper. In all other respects rivet steel shall conform to the "United States Government Master Specification for Structural Steel for Buildings," Federal Specifications Board specification No. 352.

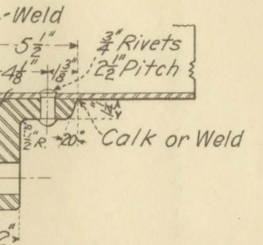


72" OUTLET PIPES
 7/8" STEEL PLATES
 ONE REQUIRED - RIGHT HAND - No.1
 ONE REQUIRED - LEFT HAND - No.2

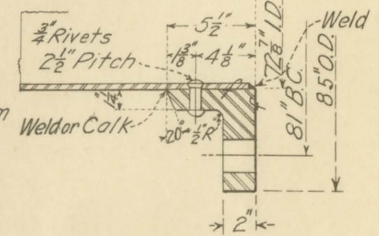


Drill & Spotface 44-28" Holes on 81" B.C. Furnish 44-2" x 7/8" Hex. Hd. Bolts and C.P. Hex. Nuts.

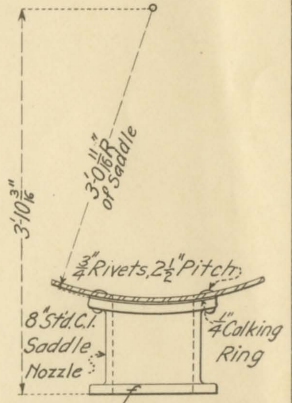
DETAIL OF FLANGE-CAST STEEL
 Connecting to Transition of 5x6' High Pressure Gate



This row of holes to be drilled and Csk. in shop in shell Pl. only. Holes in strap Pl. to be drilled from shell in field after installation.



DETAIL OF FLANGE-CAST STEEL
 Connecting to 60" Balanced Needle Valve

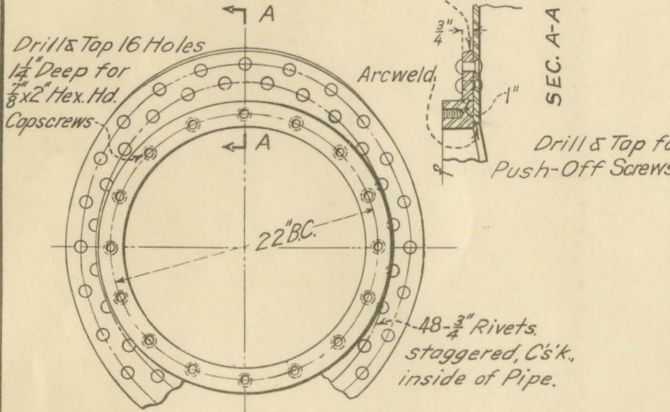


DRAIN CONNECTION
 Downstream End
 2 Required

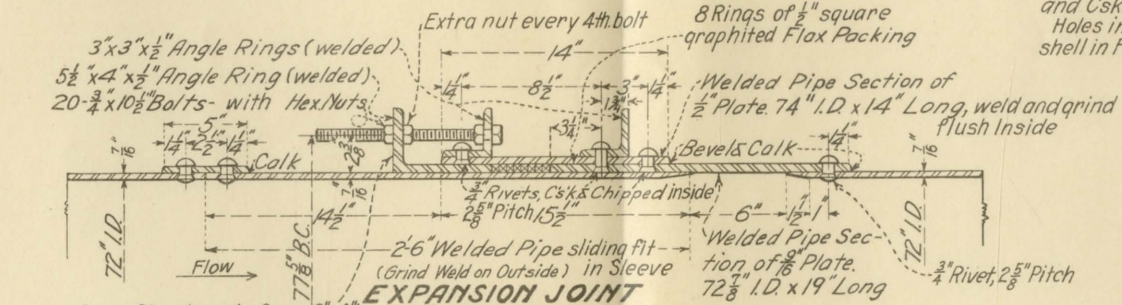
DETAIL - 3/4" RIVET (After Driving)
 In countersinking for the Rivets, a shoulder should be left in plate at base of Rivethead and a straight section 1/8" deep at top of Head as shown above

NOTES
 Shop Painting See Specifications
 All Rivets 3/4" Dia.
 All Rivet Holes to be punched 5/8" & reamed to 7/8", to be countersunk on inside of pipe as shown.
 All open joints on inside of pipe to be calked with Lead Wool after installation.
 Contractor to mark all separate sections of pipe for erection in accordance with Erection Diagram to be furnished by him.

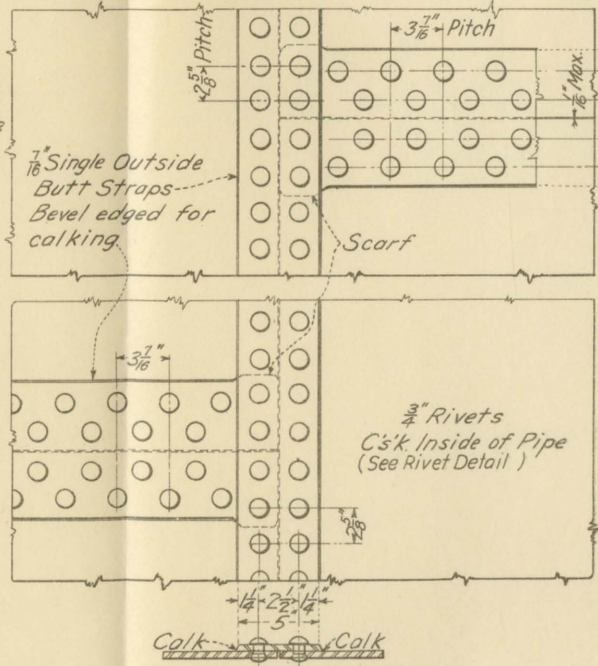
DETAIL OF FLANGE-CAST STEEL
 Connecting to Transition of 5x6' High Pressure Gate



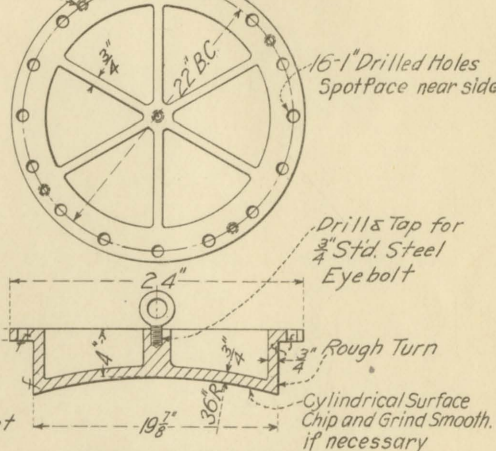
MANHOLE SADDLE
 CAST STEEL-6 REQ'D.



EXPANSION JOINT
 2 Required
 (One for each Pipe)



TYPICAL RIVETING DETAILS
 Longitudinal and Girth Joints



ENLARGED DETAIL OF MANHOLE
 Saddle and Cover in Place

DEPARTMENT OF THE INTERIOR
 BUREAU OF RECLAMATION
 SALT LAKE BASIN PROJECT-UTAH
 WEBER RIVER DIVISION
ECHO DAM-OUTLET WORKS
 72" OUTLET PIPES

Revised, Oct. 31, 1928.
 Recl. 1-8-29

DRAWN: P.B. RECOMMENDED: C.W. Day
 TRACED: A.B.S. CHECKED: L.H.B. APPROVED: J.B. Savage

23056 DENVER, COLO., DEC. 20, 1926 179-D-80