

San Antonio Water System Standard Specifications for Construction

ITEM NO. 816
STEEL PIPE INSTALLATION

816.1 **DESCRIPTION:** This item shall consist of steel pipe installation in accordance with these specifications and as directed by the Engineer.

816.2 **MATERIALS:** The materials for steel pipe shall conform to the specifications contained within the latest revision of SAWS' Material Specification, "Steel Pipe", Item No. 05-30.

816.3 **CONSTRUCTION:**

1. General: Steel pipe shall be installed as specified within "Water Main Installation", Item No. 812 of these specifications. The Contractor shall furnish all steel piping including fittings, couplings, specials, pipe supports, eyebolts, nuts, and accessories which are shown on the plans and as required for proper connection to existing piping. The Contractor's attention is directed to the fact that the exact location and elevation of existing piping must be determined in the field prior to fabrication of connecting piping.

All steel pipe and specials may be either mill pipe or fabricated pipe and, in either case, shall be fabricated to the sizes, dimensions and shapes as indicated on the plans and as shown on the plans. Unless otherwise indicated on the plans, all steel pipe, bends, or specials shall have an outside diameter minimum wall thickness and unit weights as shown in Standard Drawing DD- 856-01.

Any pipe section, fitting, or special which shows dents, kinks, abrupt changes of curvature other than specified, or any other damage will be rejected. Any pipe section, fittings, or special section that has been dropped from a truck or crane will be rejected. The Contractor shall, at his expense, replace or recondition each rejected section. Reconditioning procedures must be acceptable to the Engineer.

2. Ends of Sections: Ends of pipe sections, bends, and specials shall be beveled for field welding, unless shown otherwise on the plans.
3. Seams: All piping shall be made from steel plate rolled into cylinders or sections thereof, with not more than two longitudinal butt welds, or shall

San Antonio Water System Standard Specifications for Construction

be spirally formed and butt welded. Girth seams shall be butt welded and shall not be closer than 6 feet apart except in specials and bends.

4. Length Tolerance: Standard and special sections shall be within 1/16 inch (plus or minus) of the specified or theoretical lengths.
5. Welded Joints: Except where ends are shown on the plans to be joined by mechanical couplings, all joints for steel pipe installed on the bridge structure and in open trench shall be welded.

Welders appointed to do welding on steel pipe shall be certified with 4F and 5G certification. All welds shall be sound, free from embedded scale and slag, shall have a tensile strength across the weld not less than that of the thinner of the connected sections, and shall be watertight. Butt welds shall be used for all welded joints in line-pipe assemblies and in the fabrication of bends and other specials. All welds shall be subject to Pre-Manufacturing inspection and available to SAWS by request.

Welding for field joints shall conform to the applicable requirements of the AWWA "Standard Specifications for Field Welding of Steel Water Pipe Joints, C206." Parties involved in the construction of main(s) shall pay special attention to the AWWA "Standard Specifications for Field Welding of Steel Water Pipe Joints, C206, "Control of Temperature Stresses". After welding, the joints shall be prepared, primed, and painted, or wrapped in accordance with "Protective Coating", Item No. 816.3.6 of these Specifications.

Leaks in welds shall be repaired by chipping out the defective material and re-welding. No hammering will be permitted.

6. Protective Coatings: All steel pipe, bends, and specials shall be prepared, primed, painted, or wrapped in the field as specified herein.
 - a. Exterior Surfaces Above Ground: Exterior surfaces of all new pipe and appurtenances installed shall be thoroughly cleaned to bare metal by high speed wire brushing, scraping, or other suitable methods approved by the Engineer, given a single coat of industrial grade, rust inhibitive primer, and two finish coats of aluminum paint.
 - b. Exterior Surfaces Underground: Exterior surfaces of all steel pipe, bends, and specials which are to be installed in open trench shall

San Antonio Water System Standard Specifications for Construction

be thoroughly cleaned to bare metal by high speed wire brushing, scraping, or other suitable methods approved by the Engineer, given a single coat of rust inhibitive primer, and wrapped with polyvinyl tape in accordance with AWWA C203-91, "Protective Coatings for Steel Water Pipelines," (Appendix C).

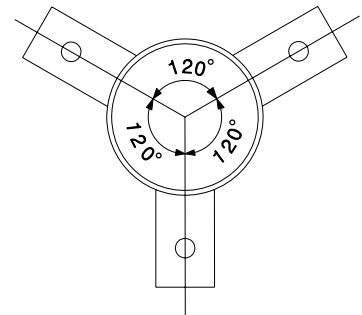
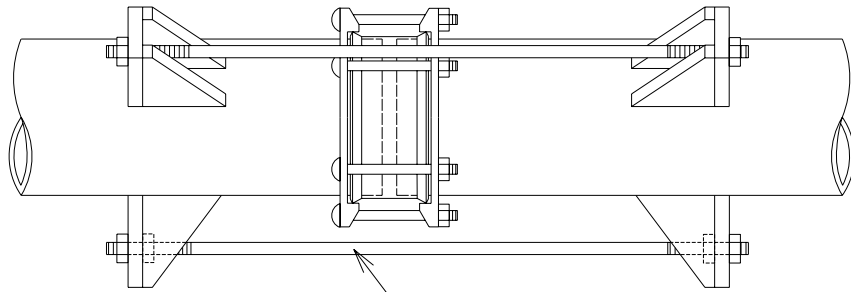
- c. Buried Couplings: Mechanical couplings which are to be installed underground shall be protected in accordance with "Protective Coatings", Item No. 816.3.6 of these Specifications.
- d. Field Welded Joints: After installation of pipe, bends, and specials, all ends of pipe adjacent to welded field joints, including the weld proper, shall be cleaned, primed, painted or wrapped as specified for the pipe adjacent to the weld.
- e. Interior Surfaces: The interior surfaces of all steel pipe, fittings and specials shall be cleaned by sandblasting and then primed and coated in the shop with coal tar enamel.

- 7. Trench, Bedding and Backfilling: All trenching, bedding and backfilling for steel piping to be laid in open trench shall be in accordance with the requirements specified for Concrete Steel Cylinder Pipe in according with Item No. 804, "Excavation, Trenching and Backfill."

816.4 MEASUREMENT: Steel Water main installed will be measured as outlined in "Water Main Installation", Item No. 812 of these Specifications.

816.5 PAYMENT: Payment for steel water main installed will be made as outlined in "Water Main Installation", Item No. 812 of these Specifications.

Harness Clips welded to pipe 120° apart

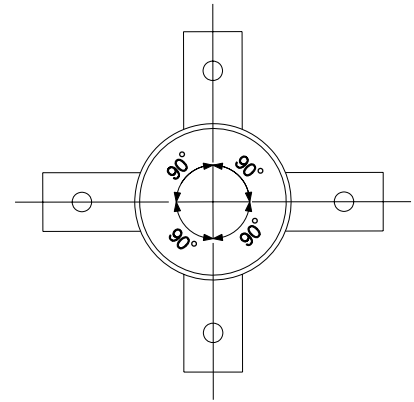
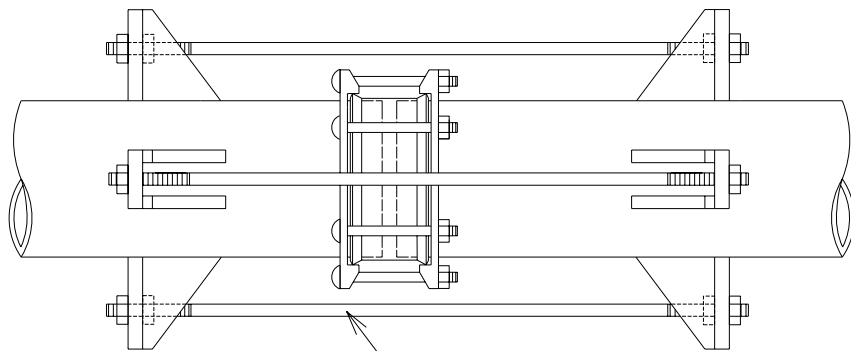


2 - C" Hex Nuts

C x G Steel Rod
Thd. 4" each end

C = Rod Diameter
G = Rod Length

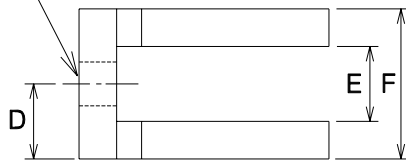
Harness Clips welded to pipe 90° apart



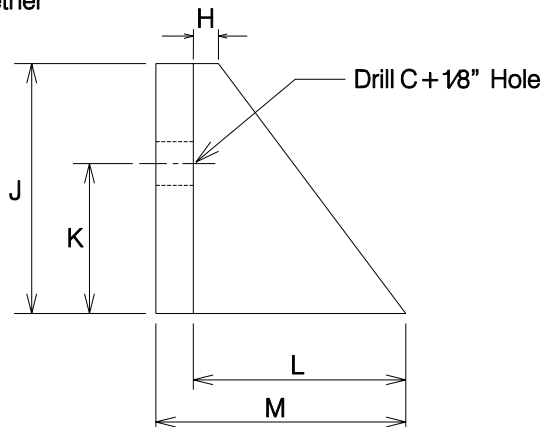
2 - C" Hex Nuts

C x G Steel Rod
Thd. 4" each end

Drill C + 1/8" Hole



3/4" Steel Plate welded together



Dimension Schedule In Inches										
Dim.	Pipe Size									
	8	12	16	20	24	30	36	42	48	54
A	8	8	8	8	8	12	12	13	13	13
B	12	12	12	12	12	16	16	17	17	17
C	5/8	3/4	7/8	1	1 1/8	1 1/8	1 1/8	1 1/4	1 3/8	1 1/2
D	1 1/2	1 1/2	1 1/2	1 3/4	2	2	2	2	2 1/4	2 1/4
E	1 1/2	1 1/2	1 1/2	2	2 1/2	2 1/2	2 1/2	2 1/2	3	3
F	3	3	3	3 1/2	4	4	4	4	4 1/2	4 1/2
G	32	32	34	35	37	45	49	51	56	56
H	1/2	1/2	1	1	1	1	1 1/4	1 1/4	1 1/4	1 1/4
I	3/4	3/4	3/4	3/4	3/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
J	5	5	5	5 1/2	5 1/2	5 1/2	6	6	6	6
K	3	3	3	4	4	4	4	4	4	4
L	4 1/4	4 1/4	5 1/4	5 1/4	6	6	8	8	10	10
M	5	5	6	6	6 3/4	6 3/4	8 3/4	8 3/4	10 3/4	10 3/4