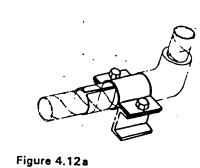


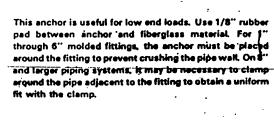
B. ANCHORS An anchor must positively restrain the movement of the pipe against all applied forces. Pipe anchors divide a pipe system into sections and must be attached to structural material capable of withstanding any applied forces. In some cases pumps, tanks and other similar equipment function as anchors. However, additional anchors are usually required where pipe sizes change and where A.O. Smith-Inland pipe is joined to pipe made of another material or by another manufacturer. Additional anchors are usually located at valves, changes in direction or piping and major branch connections. DO NOT use anchors which apply point loads directly to the bare pipe. Anchors that apply point loads can be used only if a protective sleeve is used between the pipe and the anchor. In all cases the pearing stress on the pipe wall must not exceed 85 psi Typical anchors are as shown in Figures 4.12 through 4.15. Operating experience with piping systems indicates that it is a good practice to anchor long straight runs of above ground piping at approximately 300 foot intervals. These anchors prevent pipe movement due to vibration, water



The clamp is placed between sleeves or a sleeve and a fitting bonded on pipe to prevent movement in either direction. The clamp must fit firmly but must not apply excessive force to the pipe wall. Sleeves made from pipe stock must be bonded in place with A.O. Smith-Inland epoxy adhesive compatible with the maximum operating temperature of the system. All bonded pipe and sleeve surfaces must first be sended. In some cases, two bonded sleeves (one on top of the other) must be used on each

side of the clamp to a thickness equal to or exceeding the thickness of the clamp. The length of the sleeve must be equal to the diameter of the pipe.

**Protective Sleeves and Anchors** 



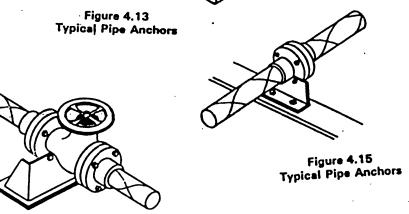


Figure 4.14 Typical Pipe Anchors

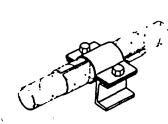


Figure 4.12b

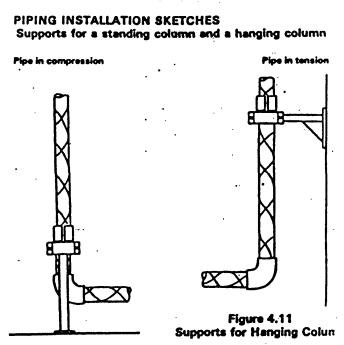


Figure 4.10 Supports for Standing Column

The clamp in Figure 4.10 and 4.11 is placed below sleeves that have been bonded to pipe Q.D. The clamp must fit firmly but must not apply excessive force to the pipe wall. Sleeves made from pipe stock must be bonded in place with A.O. Smith-Inland epoxy adhesive compatible with the maximum operating temperature of the system. All bonded pipe and sleeve surfaces must first be sanded. In some cases, two bonded sleeves (one on top of the other) must be used on each side of the clamp to a thickness equal to or exceeding the thickness of the clamp. The length of the sleeve must be equal to the diameter of the pipe.

A SUPPORTS Horizontal pipe should be supported at intervals recommended by the support spacing data in Tables 4.1 and 4.2 with adjustments for temperature and specific gravity. Supports that point load or have narrow supporting areas should be avoided, and valves or other heavy equipment should be supported independently of the pipe in both horizontal and vertical installations (Figures 4.2 and 4.3).

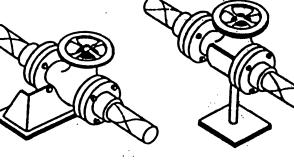
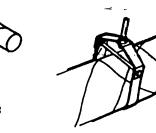


Figure 4.2



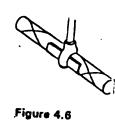
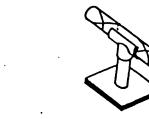


Figure 4.5 When possibility exists that valve will be removed periodically, pipe should be supported on both sides of valve.

Figures 4.5 thru 4.8



Standard sling, clamp and clevis hangers and shoe supports designed for use with steel pipe can be used to support A.O. Smith-Inland pipe. (Figures 4.5 through 4.8). Any other type of support that gives a wide band of contact with at least 120° of contact with pipe can be used. (See Table 4.0 for support width.)

Figure 4.4 Removable Valve Supports

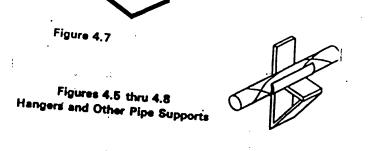


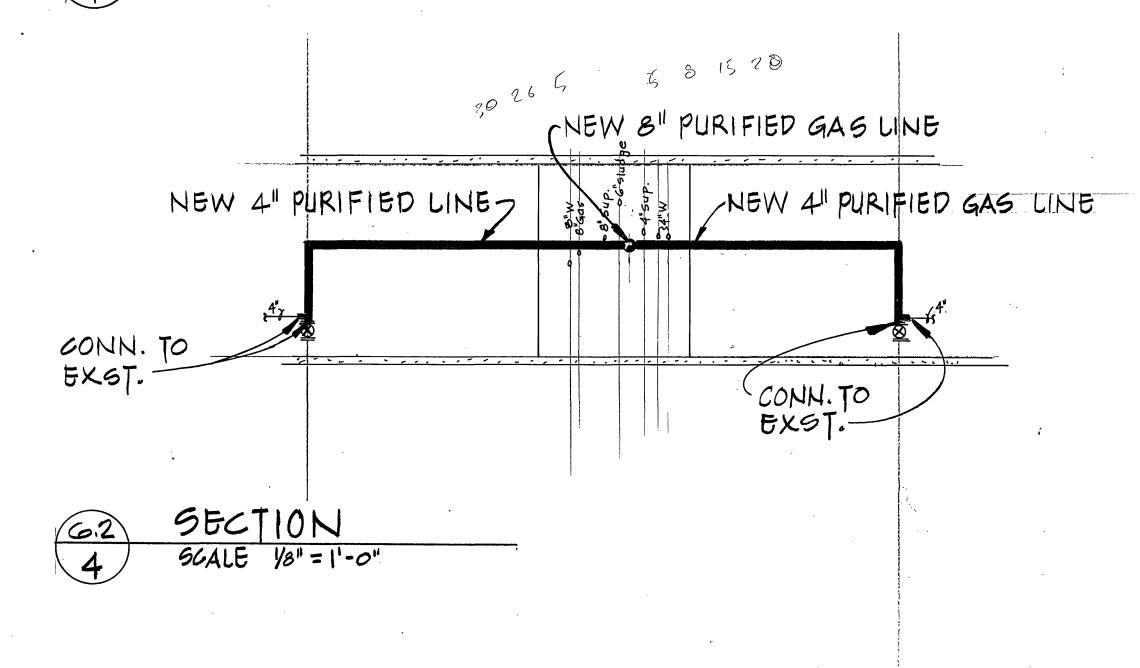
Figure 4.1.

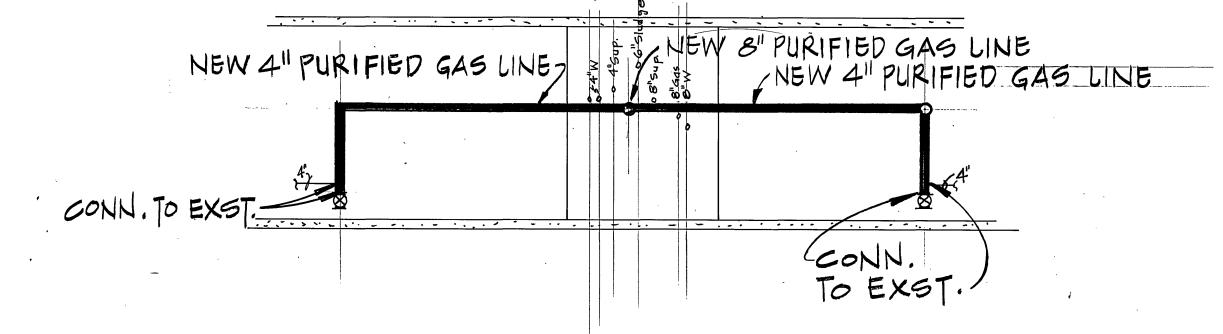
NEW 8" PURIFIED Expansion Tank GAG LINE-8"Gas Header from Digesters £ E1. 912.0 3" Ventl" Fill & \_\_ Drain from Pump & Blower Bldg. Automatic To Pump & Pressure relief Blower & Flame trap Building 5"Hot Water Supply & Return from Pump & Blower Bldg. CONNECT TO EXST. - NEW SAMPLE TAP PIPE ARRANGEMENT & WEST WALL

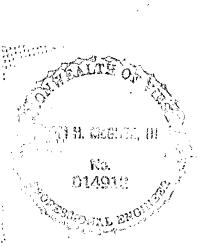
OF SLUGE CONTROL ROOM SCALE: 4" 1:0"

GECTION

THESE PLANS WERE TAKEN FROM THE ORIGINAL CONSTRUCTION DRAWINGS FOR THE ROANOKE SEWAGE TREATMENT PLANT AND ADDITIONS TO THE ROANOKE SEWAGE TREATMENT PLANT. THE WORK UNDER THIS CONTRACT INCLUDES THE REPLACEMENT OF THE PURIFIED GAS PIPE (LIMITS INDICATED ON DRAWINGS) & ASSOCIATED







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|     | CHECKED  | SHMI     | PURIFIED GAS LINE REPLACE | EME                    | NT   |

COULTED GAS TIME KELTACEMENT ROANOKE WATER POLLUTION CONTROL PLANT **VIRGINIA** ROANOKE,



APPROVED

SUBMITTED

1 COMM. 658 SCALE: NOTED DATE: AUG 86 SHEET