AQUAGATOR INSTALLATION & TROUBLESHOOTING MANUAL

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AQUAGATOR

TABLE of CONTENTS

DESCRIPTION *PAGE*

DESCRIPTION ***PAGE***

DESCRIPTION ***PAGE***

DESCRIPTION ***PAGE***

DESCRIPTION ***PAGE***

AQUAGATOR - *Operations, Installation & Troubleshooting Manual*

INTRODUCTION:

Thank you for choosing Rain Bird's Hydraulic Control Module, the AQUAGATOR.

The AQUAGATOR allows your electric (24 VAC or 26.5 VAC) station output controller to hydraulically operate up to 24 stations of ***NORMALLY OPEN*** type hydraulic valve-in-head rotors or hydraulic remote control valves.

The AQUAGATOR is available in 12, 16 or 24 station modules, which can be used with any 24 VAC or 26.5 VAC station output electric controller, such as; the Rain Bird SBM, PAR, PAR+, MSC, MSC+ or COM-PP type controllers or other 24 VAC or 26.5 VAC output controllers.

SECTION 1 - PRE-INSTALLATION REQUIREMENTS:

Before installing the AQUAGATOR module, please insure the following:

*** The AQUAGATOR needs to have a clean and pressurized water supply. A city water supply is MOST commonly used, although the irrigation system water may be used if pressurized ***AT ALL TIMES***. Whatever source of water is used it is necessary to assure that the pressure is adequate and that the water is properly filtered.

*** Water pressure at the AQUAGATOR needs to be ***AT OR ABOVE*** the inlet pressure to the remote control valve or the valve-in-head sprinkler. However, the pressure shall ***NOT BE GREATER THAN 150 PSI (10 Bars or 100 K Pa)***.

*** A shut-off or ball valve shall be installed in the main hydraulic control water line at the base of each controller or group of controllers in a given location, as shown in ***FIGURE #1*** below or as shown in detail in the various controller installation details shown later in this manual.

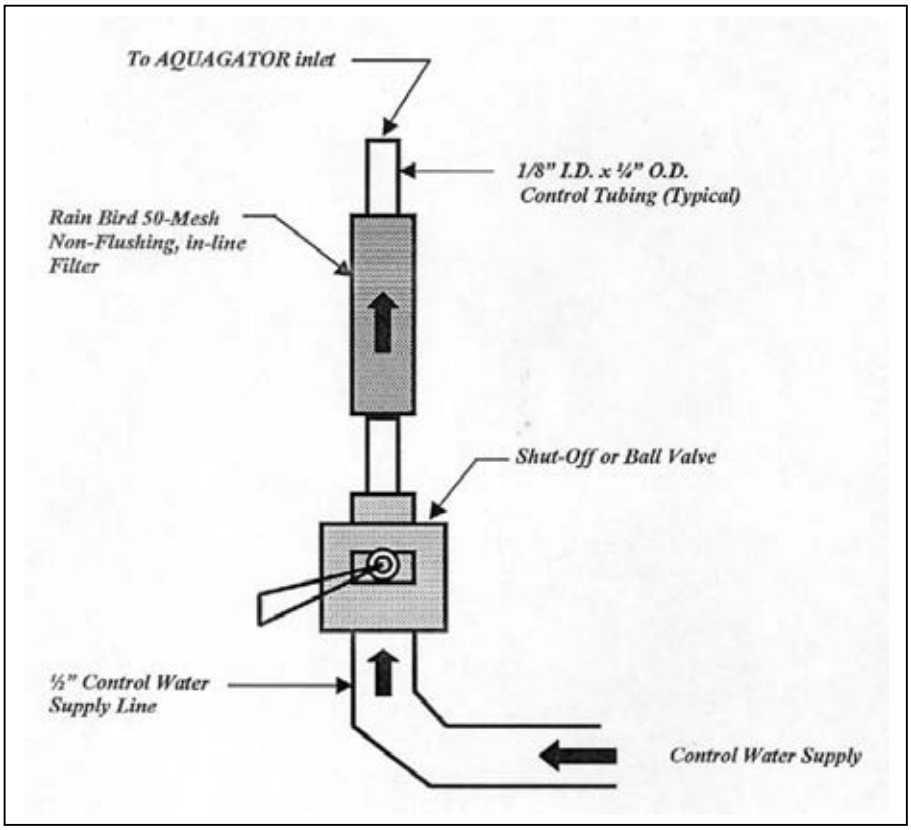

FIGURE #1 - Control Water Supply at AQUAGATOR

*** Figure #1 and the installation details, in this manual, show that the Rain Bird "In-Line" filter, which is provided as part of the AQUAGATOR unit, shall be installed on the downstream side of the main shut-off valve and before the control water enters the AQUAGATOR unit. If irrigation water is used as the HYDRAULIC CONTROL WATER, a ***MAIN SYSTEM FILTER*** will also be required.

*** The hydraulic control tubing between the AQUAGATOR module and the hydraulic valve-in-head rotors or the hydraulic remote control valves shall be **1/8" I.D. x ¼" O.D.** tubing. (3.2 mm x 6.4 mm for metric tubing size).

*** When installing the AQUAGATOR unit, in a Rain Bird Stainless Steel or Plastic pedestal, install the water supply main *shut-off valve* and the *"in-line" filter* in a pit formed in the concrete base for the pedestal as shown in the controller/pedestal installation instruction details, located elsewhere in this manual. An alternate method of installing the water supply main *shut-off valve* and the *"in-line" filter* in a rectangular valve box, located near the controllers, may be used.

SECTION 2 - LOCATION OF CONTROLLER:

One of the important aspects of a hydraulic system is the ***proper location*** of the ***controller***. As mentioned above it is important that during operation of the irrigation system that the control water pressure to the AQUAGATOR unit be ***AT OR ABOVE*** the pressure, that will be experienced at the valve-in-head sprinkler or the remote control valve.

ELEVATION VARIATIONS CAN GREATLY AFFECT THE OPERATION OF THE SYSTEM!

LOW elevations of valve-in-head sprinklers or remote control valves in ***relationship*** to the controller can result in a residual pressure, due to elevation, remaining in the control tube even though it has been vented to the atmosphere. This pressure may be great enough to ***greatly slow*** down the operation of the valve or may result in the valve ***not opening*** at all. Referring to ***FIGURE #2*** below, you will not that the sprinkler to the LEFT of the controller is 50 feet (15.2 meters) ***LOWER*** than the controller location. Thus when the control tube is vented to the atmosphere the residual pressure, due to elevation, is 22 PSI. (1.5 bars of 150 K Pa).

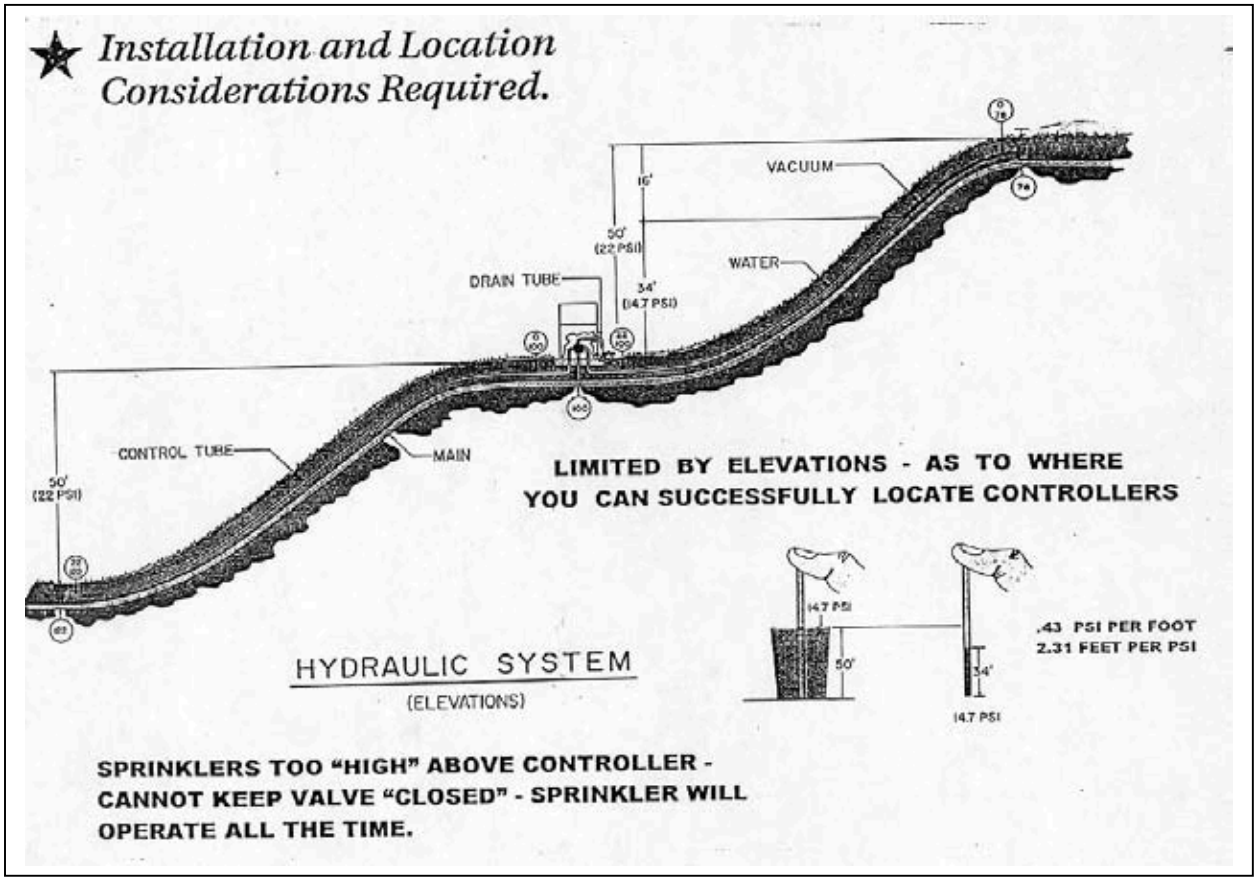

FIGURE #2 - EFFECTS OF ELEVATION

HIGH elevations of valve-in-head sprinklers of remote control valves in ***relationship*** to the controller, can result in the creation of a column of air in the control tube. Atmospheric pressure (14.7 PSI) is only capable of holding back 34 feet (10.4 M) of elevation. This can of course greatly affect the closing speed of the valve, as much as 1500%. Referring to ***FIGURE #2*** above, you will note that the sprinkler to the RIGHT of the controller is 50 feet higher than the controller location. Thus since the atmospheric pressure can only hold back 34 feet (10.4 M0 of elevation, 16 feet (4.9 M) of water will be drained out the exhaust tube from the control tube. Air replacing this water will result in an air pocket in the control tube. Air being compressible will then cause the closing speed of the valve to be greatly effected.

IRRIGATION WATER AS CONTROL WATER. Using Irrigation Water for the Control Water requires that the controller be placed ***"UPSTREAM"*** of the sprinklers of remote control valves that it controls. This assures that the control pressure will always be ***EQUAL TO OR GREATER THAN*** the working pressure at the valve-in-head sprinkler or remote control valve. **Refer to the top diagram in *FIGURE #3*, shown below**.

If the controller is placed ***"DOWNSTREAM"*** of the sprinklers or valves that it is controlling, the control pressure will be ***LESS THAN*** the working pressure at the sprinklers or valves. You may be unable to *"close"* the valves. **Refer to the bottom diagram in *FIGURE #3* below**.

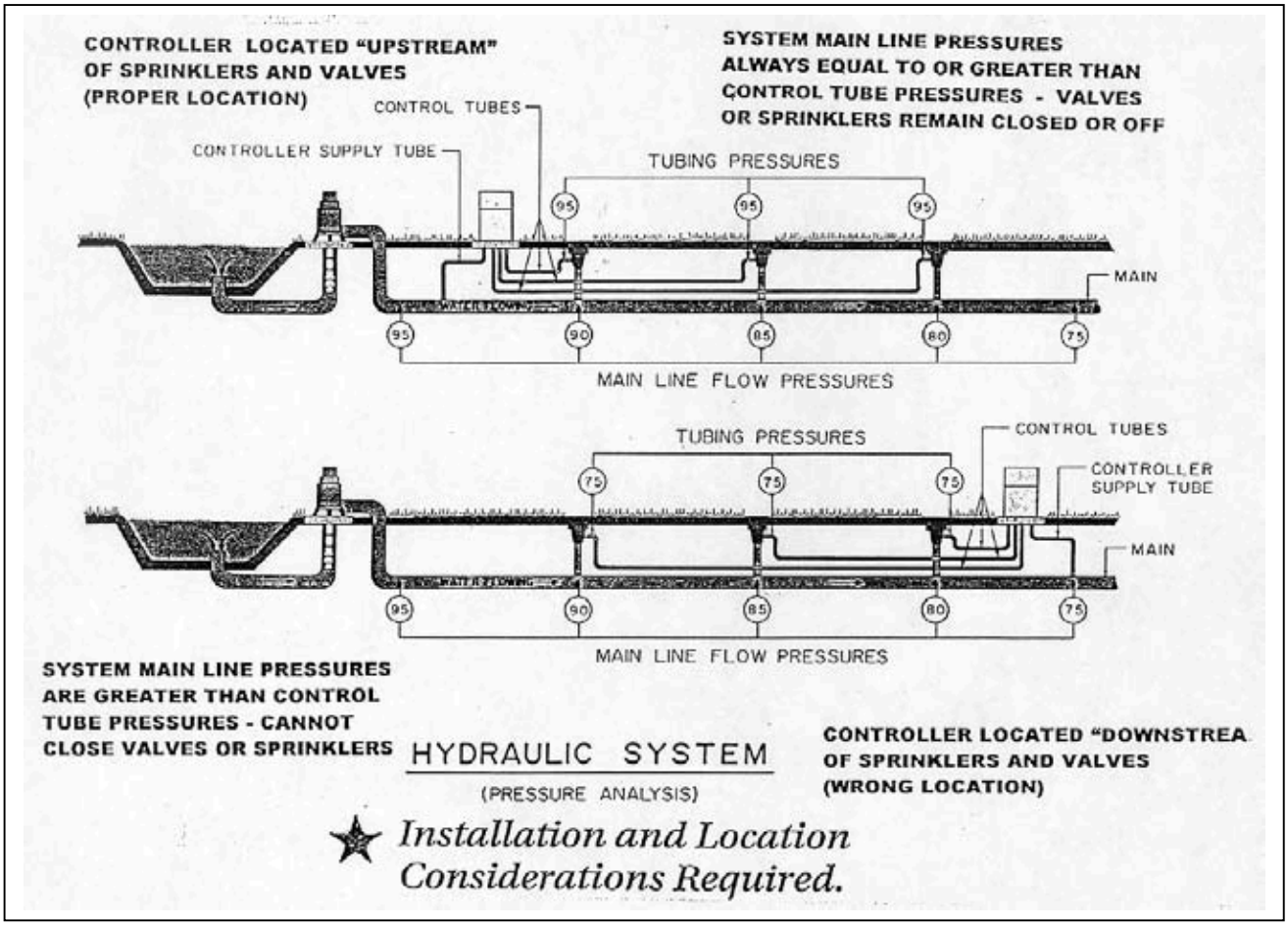

FIGURE #3 - PROPER LOCATION OF CONTROLLER

SECTION 3 - LOCATION OF CONTROLLER:

You need to plan the connections between the AQUAGATOR module and the valve-in-head sprinklers or remote control valves so as to minimize the valve closing time. This is the time it takes for pressure to build up in the control tube and turn off the control valve.

Factors which increase valve closing time are:

*** Number of valve-in-head sprinklers or remote control valves per station on the controller

*** The length of the control tubing from the controller out to the valve-in-head sprinkler or remote control valve.

*** Any increase or decrease in elevation between the controller and the valve-in-head sprinkler or remote control valve.

The following guidelines will help to ensure that you will have acceptable opening and closing times for the valves on your system.

*** **TWO** or **MORE** valve-in-head sprinklers or remote control valves connected to the same station of the controller may result in an unacceptable valve closing time.

*** When connecting more than ONE valve-in-head sprinkler or remote control valve to a station of the controller, run ***SEPARATE*** CONTROL TUBES from ***EACH*** valve-in-head sprinkler or remote control valve, back to the controller and "join" them together ***CLOSE*** to the AQUAGATOR module. **Refer to *FIGURE #4* below**.

If you run a SINGLE Control tube from the controller out to the valve-in-head sprinklers or remote control valves, and then split the tubing NEAR the valves, you will dramatically INCREASE the closing time of these valves. Perhaps to a time that will be unacceptable. **Refer to *FIGURE #4* below**.

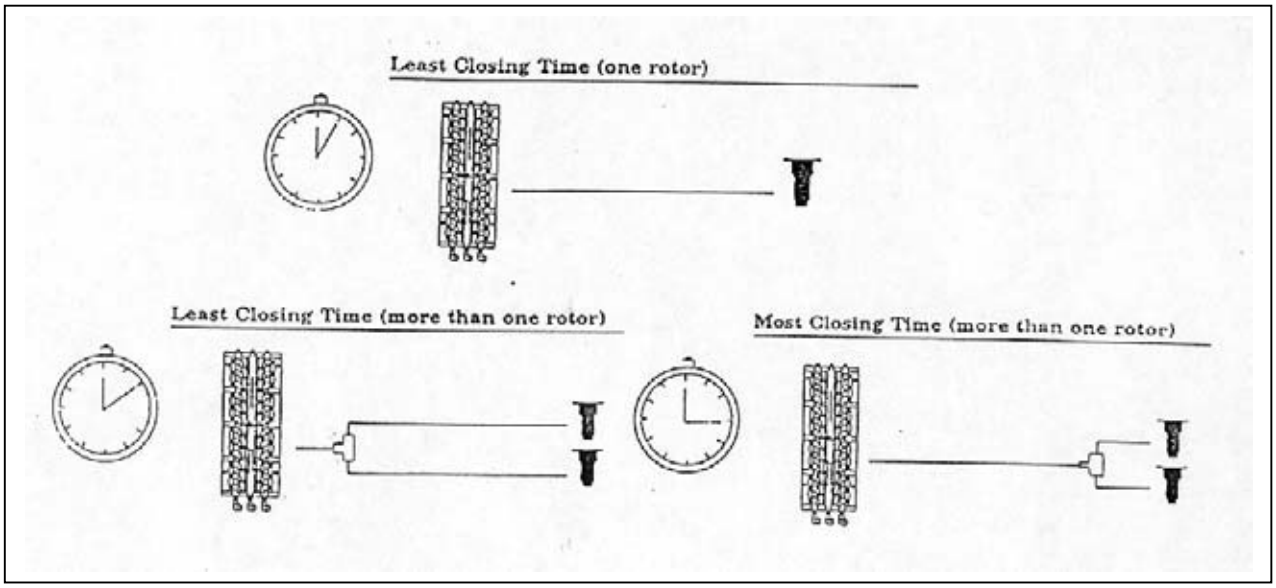

FIGURE #4 - VALVE "CLOSING" TIMES

*** Do not have more than 2,000 feet (615 meters) of hydraulic tubing per station. A longer length may result in an unacceptable closing time for the valve.

*** Position the AQUAGATOR at the same elevation as the valve-in-head sprinklers or the remote control valves. Valves at a higher elevation may close too slowly, due to air entering the control tube. **Refer to *FIGURE #2* above**.

Valves at a much lower elevation may not open fast enough, due to gravitational water pressure. **Refer to *FIGURE #2* above**.

Remember that each foot of elevation will produce 0.433 PSI of pressure (0.03 Bars) in the control tube. If the elevation is too great the valve may not open at all.

SECTION 4 - INSTALLING THE AQUAGATOR:

Stainless Steel Pedestal!

STEP #1: Open the top cover of the Stainless Steel pedestal and lift out the front access panel. **Refer to *FIGURE #5* below**.

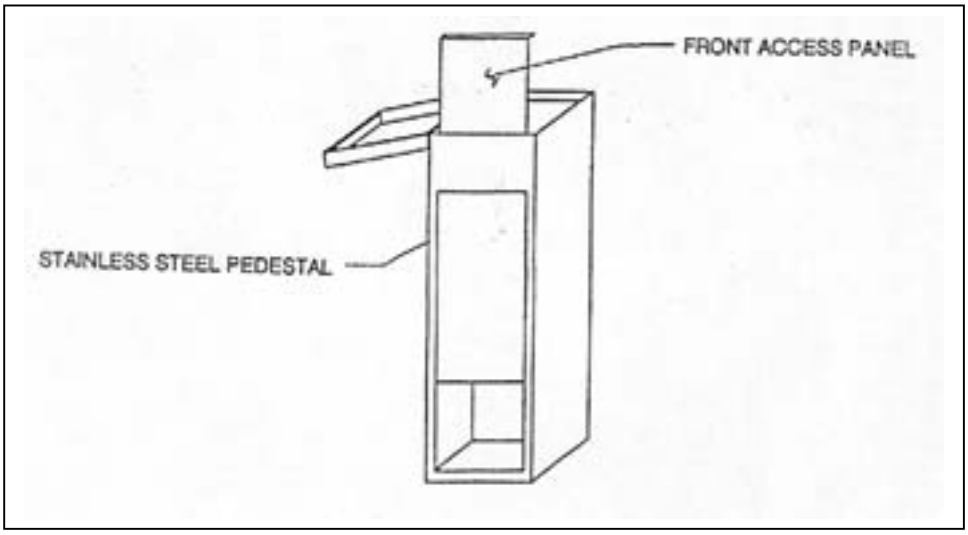

FIGURE #5 - SS PEDESTAL ACCESS PANEL

STEP #2: Unplug the controller station output connector cable from the terminal strip, that is located on the back wall of the pedestal, in the bottom access compartment. **Refer to *FIGURE #6* below**. **(On next page)**.

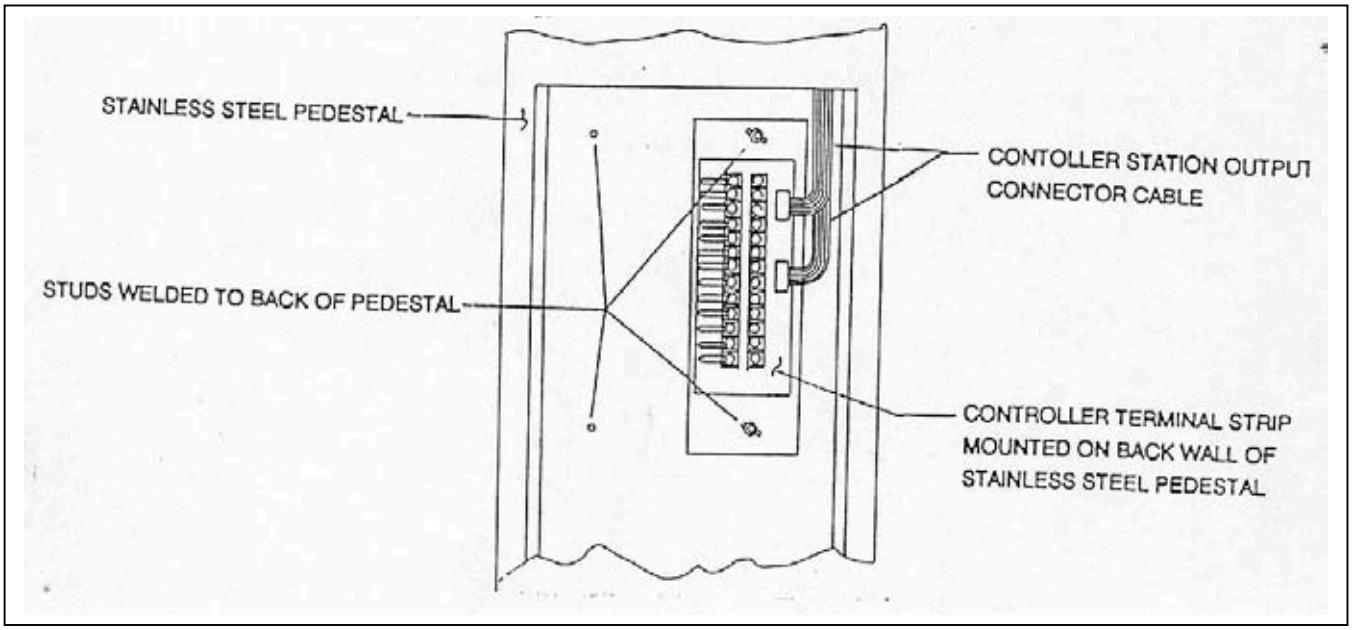

FIGURE #6 - OUTPUT CABLE & TERMINAL STRIP

STEP #3: Remove the terminal strip from the pedestal by undoing the two wing nuts. Then pull the terminal strip off the studs of the pedestal wall. This terminal strip ***WILL NOT*** be used with the AQUAGATOR Hydraulic Control Module. **Refer to *FIGURE #7* below**.

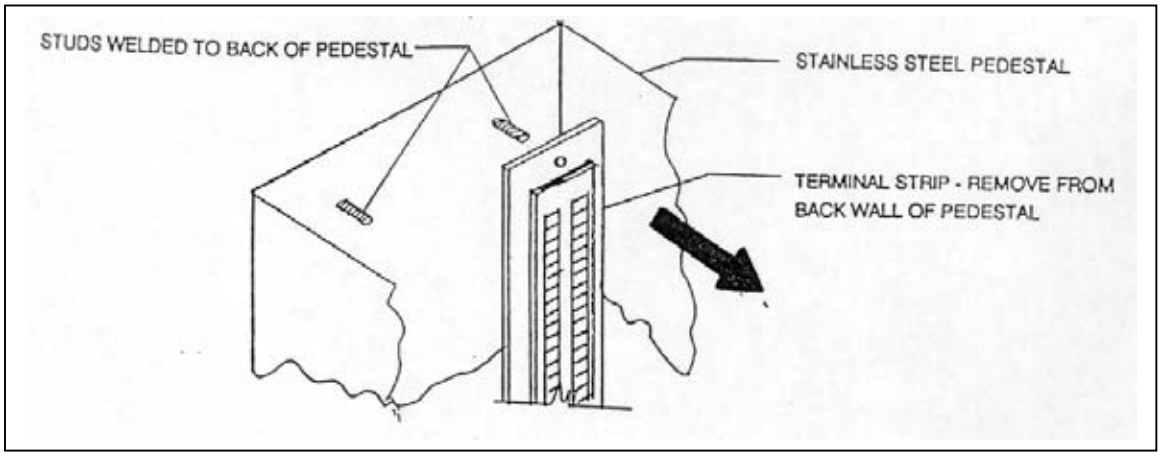

FIGURE #7 - CONTROLLER TERMINAL STRIP

STEP #4: Mount the AQUAGATOR module on the four studs welded to the back wall of the stainless steel pedestal, in place of the original terminal strip. **Refer to *FIGURE #8* below**

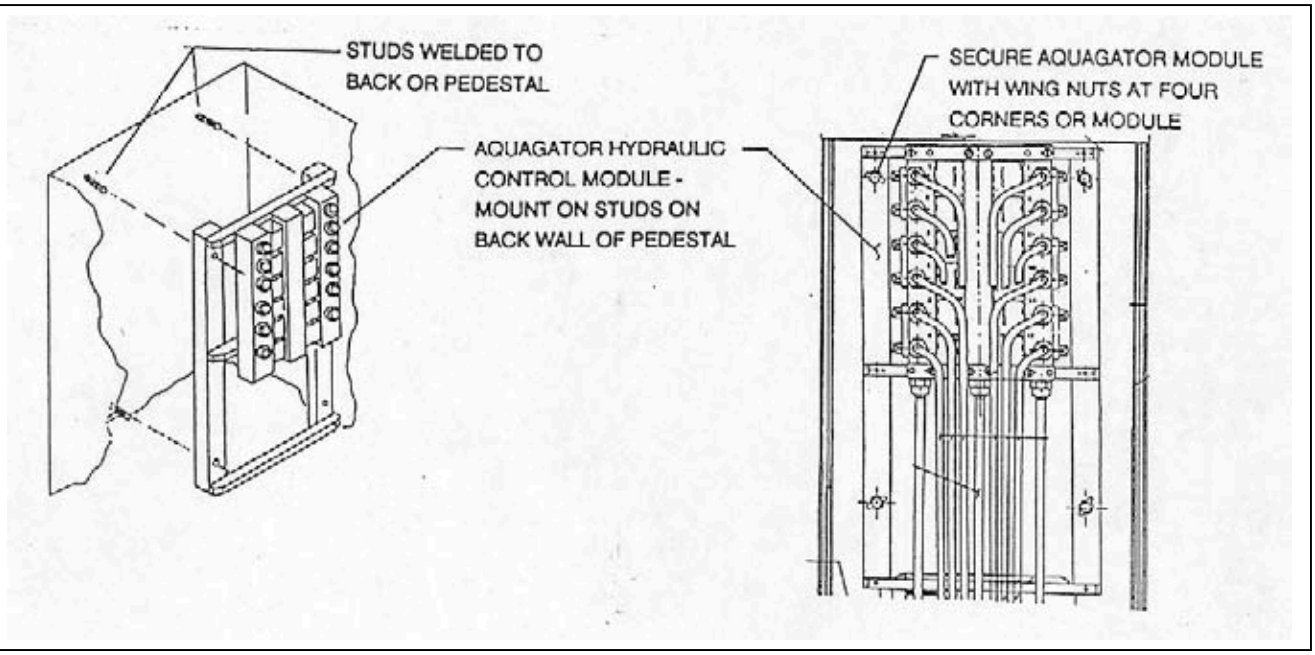

FIGURE #8 - MOUNTING AQUAGATOR MODULE INTO THE STAINLESS STEEL PEDESTAL

STEP #5: Secure the AQUAGATOR module to the wall with the wing nuts.

STEP #6: Connect the AQUAGATOR wire harness to the station output plug, coming form the controller panel assembly, on the **SBM-SS** or **ISC-SS** type controllers.

For the **PAR-SS** or **MSC-SS** type controllers, connect the corresponding station wire of the AQUAGATOR module, to the station terminal on the terminal strip of the controller, according to the Wiring Chart on the detailed installation drawings, contained in this manual.

STEP #7: Connect the hydraulic control tubing to each station of the AQUAGATOR module according to the instructions given in SECTION 6 - CONNECTING HYDRAULIC TUBING.

Plastic Pedestal!

STEP #1: With the Plastic Pedestal, open the top cover of the plastic pedestal and remove the front access panel. **Refer to *FIGURE #9* below**.

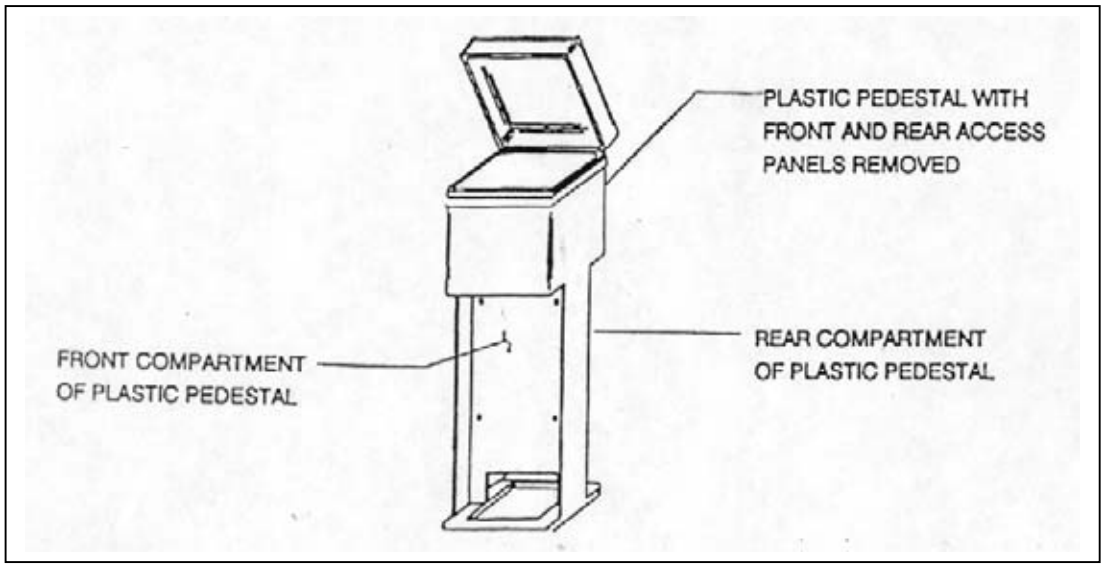

FIGURE #9 - MOUNTING AQUAGATOR MODULE INTO THE PLASTIC PEDESTAL

STEP #2: Mount the AQUAGATOR Module, in the front compartment of the plastic pedestal, on the four studs that are located on the center wall of the plastic pedestal. Secure the module with the wing nuts. **Refer to *FIGURE #9* below**.

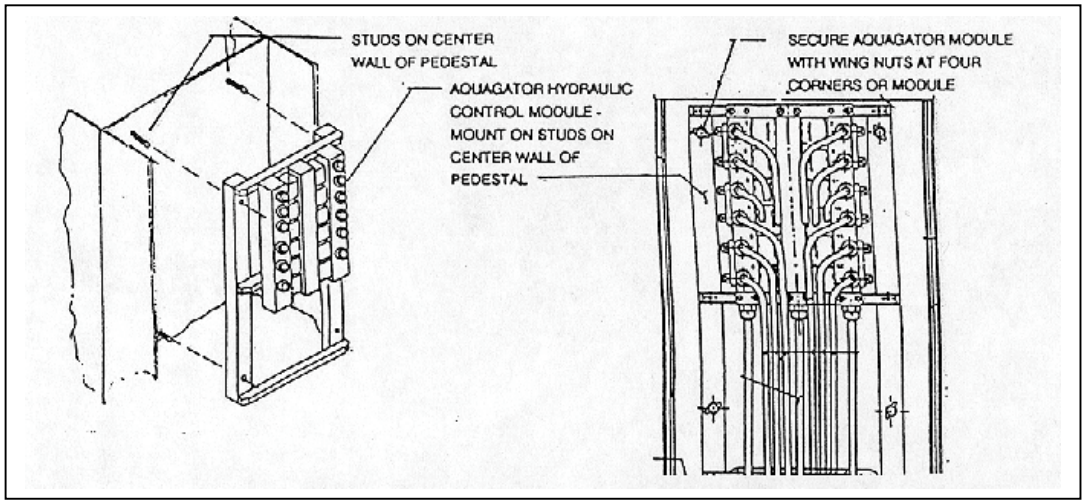

FIGURE #9 - MOUNTING THE AQUAGATOR MODULE INTO THE PLASTIC PEDESTAL

STEP #3: Connect the AQUAGATOR wire harness to the controller station output, as shown for each individual model of controller.

STEP #4: Connect the hydraulic control tubing to each station of the AQUAGATOR module according to the instructions given in SECTION 6 - CONNECTING HYDRAULIC TUBING.

Other Type Enclosure!

STEP #1: The AQUAGATOR Module needs to be mounted close enough to the controller so that the station output harness, of the AQUAGATOR, is long enough to reach to the plugs or the terminal strip of the controller.

STEP #2: Plug the AQUAGATOR station output harness into the station output plug of the controller or connect the AQUAGATOR station wires to the proper terminals of the controller's terminal strip.

STEP #3: Connect the hydraulic control tubing to each station of the AQUAGATOR module according to the instructions given in SECTION 6 - CONNECTING HYDRAULIC TUBING.

SECTION 5 - CONNECTING HYDRAULIC CONTROL WATER

Connecting Control Water Supply!

STEP #1: Bring the source of hydraulic control water into the base of the controller, as shown in the installation drawings, for each individual model of controller.

STEP #2: Install a shut-off or ball type valve on the control water source, as well as the AQUAGATOR"IN-LINE" filter, which is furnished as part of the AQUAGATOR module. Filter shall be installed on the AQUAGATOR side of the shut-off valve and before the inlet to the AQUAGATOR module. **Refer to Installation Drawings for each model of controller**.

STEP #3: Connect a control water supply tube from the AQUAGATOR "IN-LINE" filter to the inlet tube connection on the AQUAGATOR module. **Refer to Installation Drawings for each model of controller**.

Connecting Exhaust Water Tubing!

STEP #1: Connect an exhaust water tube (1/8" I.D. x ¼" O.D. or 3.2 mm x 6.4 mm for metric size) to each of the two exhaust port connectors on the AQUAGATOR Module.

STEP #2: Extend each exhaust tube to the outside of the controller pedestal near the base, so that exhaust water will be discharged outside the controller pedestal. The necessary holes to exit this tubing will need to be drilled in the pedestal wall. **Refer to Installation Drawings for each model of controller**.

SECTION 6 - CONNECTING HYDRAULIC TUBING

STEP #1: Connect the filtered water supply tubing to the AQUAGATOR inlet port fitting. **Refer to *Figure #11* below**. This fitting takes the standard 1/8" I.D. x ¼" O.D. tubing (3.2 mm x 6.4 mm metric tubing size). Cut the tubing coming from the AQUAGATOR "IN-LINE" filter to the proper length and inset the end of the tubing into the fitting. Using a flat blade screwdriver **PRESS IN** on the fitting ferrule (point A in Figure #11) and while doing so seat the tubing into the fitting. Release the ferrule to lock the tubing into the fitting.

STEP #2: To DISCONNECT tubing from a fitting, **PRESS IN** on the fitting ferrule, (point A in Figure #11) using a flat blade screwdriver and while doing so, **PULL** the tubing from the fitting (point B in Figure #11 below).

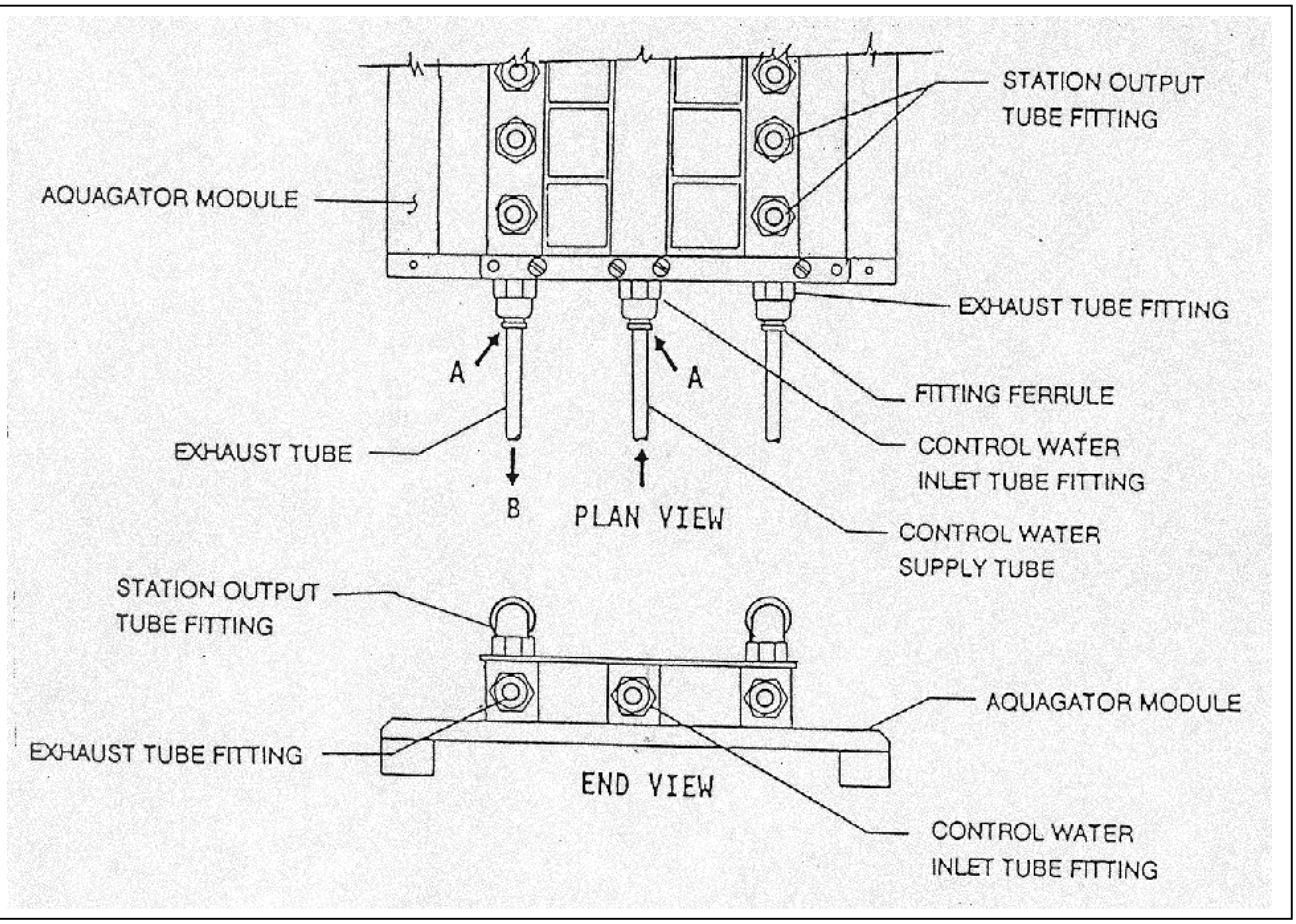

FIGURE #11 - CONNECTING HYDRAULIC TUBING TO AQUAGATOR MODULE

STEP #3: Connect a length of tubing to each of the two (2) exhaust ports on the AQUAGATOR Module. The exhaust ports (**Refer to *FIGURE #11* above**) emit a small amount of water when the pressure is released in the control tube, to a valve-in-head sprinkler or remote control valve, in order to open the valve. Therefore, this exhaust tubing needs to be run to a drainage site that should be located outside of the controller pedestal. **Refer to Installation Drawings for each of the individual model controllers**.

The installation of the exhaust tubing will require the drilling of holes in the side of the pedestal in order to run the tubing to the outside.

STEP #4: The hydraulic tubing going to the various valve-in-head sprinklers or remote control valves, need to be connected to the AQUAGATOR station outlet fittings. **Refer to *FIGURE #11* above**. These station output tubing fittings are located on each solenoid of the AQUAGATOR Module.

Each station output port of the AQUAGATOR is a station controlled by the corresponding station on the controller.

- Connect the hydraulic control tubing to each station output of the AQUAGATOR that is going to the valve-in-head sprinklers or remote control valves in the field. The connections can be made similar to those for the supply tube and the exhause tubes. **Refer to *FIGURE #11* above**.

- Any ***unused*** stations on the AQUAGATOR module shall have its outlet port connected to another unused station output port. If there is no other unused station to connect to - then a short length of tubing shall be connected to the outlet fitting and the end of the tube ***"turned back on itself"*** and clamped off to make a pressure tight cap.

STEP #5: The upper left station outlet fitting, on the AQUAGATOR, is station #1. Stations are numbered from top to bottom in numerical sequence, with the upper right station outlet fitting being station #7 (on a 12 station AQUAGATOR unit), or station #9 (on a 16 station AQUAGATOR unit) or station #13 (on a 24 station AQUAGATOR unit). This indicates the station number on the controller that will operate this station on the AQUAGATOR module. This will help in programming the operation of the various valve-in-head sprinklers or remote control valves on the controller.

STEP #6: ***DO NOT*** connect the hydraulic control tubing to the valve-in-head sprinklers or remote control valves at this time. This will be done later as the tubes need to be bled of air first.

STEP #7: Temporarily open the water supply line to the inlet port of the AQUAGATOR module to flush debris out of the control lines.

STEP #8: With the hydraulic control water supply line turned "ON" to the AQUAGATOR module, hydraulic control water should be admitted to each control tube in the field. Let the water bleed from the tube until all of the AIR has been expelled from the control tube. Be patient and allow sufficient time to assure that all the air has been bled from the control tube. Air pockets can exist in several places along the length of the tube so although only water is bleeding from the tube for a period of time, every so often air may discharge. Depending upon how many total stations there are, it may be better to have only a portion of the control tubes bleeding at one time. This can be accomplished by clamping off some of the tubes.

STEP #9: When ***ALL*** of the air has been bled from the control tube, connect the control tube to the inlet port of the valve-in-head sprinkler of the remote control valve.

CAUTION! It is very important to be careful to get ***ALL OF THE AIR*** out of the control tubes. The amount of time it takes to bleed the tube depends on the length of the tube, the pressure, elevation differences, and the amount of air in the tube. It can take a considerable amount of time but this is ***extremely critical*** to the proper operation of the system.

STEP #10: With all control tube connections having been made, and the valve-in-head sprinklers or remote control valves and with the control water turned "ON" to the AQUAGATOR module, ALL valves should then be ***"CLOSED"***.

STEP #11: Turn the hydraulic supply water to the AQUAGATOR module **"OFF"** and then **"REOPEN"** the shut-off valve and re-pressurize the system. If connections have been properly made, the valve-in-head sprinklers or remote control valves shall **NOT** turn **"ON"**.

STEP #12: Program the controller according to its operating instructions.

STEP #13: Operate each station of the controller electrically to verify that the connections of the AQUAGATOR harness the terminal strip or valve output connector of the controller are correct and that each station of the AQUAGATOR module function properly. As you energize each station, the valve-in-head sprinkler or remote control valve operating in the field should have the same outlet port number on the AQUAGATOR module as that of the controller.

SECTION 7 - WINTERIZING THE SYSTEM!

In freezing winter climate areas it is necessary for the hydraulic control system, and ***most important***, for the AQUAGATOR module itself to be properly winterized. This is to prevent system and AQUAGATOR freeze damage.

Winterizing the Aquagator Module!

STEP #1: Shut "OFF" the hydraulic supply water shut-off valve at the AQUAGATOR module.

STEP #2: Disconnect the Supply Water Tube to the inlet port of the AQUAGATOR module. Leave it disconnected for the winter months during the period when freezing may occur. **Refer to *FIGURE #11* above - for the location of the inlet port**.

STEP #3: Energize EACH station of the controller and AQUAGATOR module for several minutes to release any water that may be trapped in the AQUAGATOR module.

NOTE! To assure that the AQUAGATOR unit will not be damaged from freezing, it is ***ESSENTIAL*** that ALL water be expelled from the unit. The most efficient way to expel water is to blow out the unit with compressed air.

Winterizing the Hydraulic Supply Water Piping Network!

STEP #1: Shut "OFF" the main shut-off valve for the hydraulic control water supply.

STEP #2: Properly DRAIN the supply piping network.

STEP #3: Blow out the entire piping system with air to be sure all of the water has been expelled from the system. By use of the shut-off valves at each controller location you can control the flow of air in the piping branches and assure that each is properly drained.

STEP #4: Leave the shut-off valves at each controller location in the OPEN condition during the winter months when freezing may occur.

SECTION 8 - SPRING START-UP OF SYSTEM!

In the spring, when all danger of freezing has passed, the system may again be ***"re-charged"*** with hydraulic control water.

STEP #1: Reconnect the supply water tube to the AQUAGATOR module, at each controller.

STEP #2: ***CLOSE*** the shut-off valve on the supply water at each controller.

STEP #3: Re-pressurize the hydraulic control water supply piping network.

STEP #4: Bleed all AIR from this supply tube piping network.

STEP #5: Operate each station of the AQUAGATOR module from the controller to see if each functions properly.

STEP #6: Bleed the AIR from each control tube, at the valve-in-head sprinkler or remote control valve, that does not function correctly. Use the same method as described in the initial start-up of the system.

SECTION 9 - TROUBLESHOOTING!

The Valve Won't Turn "ON"!

STEP #1: Check to see if the valve will operate when the control tube is disconnected from the AQUAGATOR outlet fitting. Water should bleed from the control tube.

- Water should ***NOT*** bleed from the AQUAGATOR station output fitting. If it does, check for proper operation of the solenoid for this station of the AQUAGATOR.

- Water should bleed from the control tube and the valve-in-head sprinkler or remote control valve should "OPEN". If it does NOT "OPEN" there is a problem with the valve-in-head sprinkler or remote control valve itself.

- If NO water bleeds from the control tube it would indicate that there is a problem with the control tube - either a leak in the tube or the tube is "clogged".

STEP #2: Check to see if the valve-in-head sprinkler or remote control valve will "OPEN" when the control tube is disconnected from the inlet fitting of the sprinkler or remote control valve. If it will NOT "OPEN" there is a problem with the valve-in-head sprinkler or remote control valve itself.

STEP #3: Check to see if there is power to the controller.

STEP #4: Check to see if there is voltage output from the controller stations.

STEP #5: Check to see if the AQUAGATOR solenoid is activating. These solenoids are normally open and will continue to supply water pressure to the control tubes to keep the valves "CLOSED". When the solenoid is energized it closes off the incoming supply water to the control tube. This allows the pressure in the control tube to be relieved and water bleeds through the exhaust port.

STEP #6: Check to see that the exhaust ports of the AQUAGATOR are not "clogged".

STEP #7: Check to see that the AQUAGATOR is not at an elevation that is much higher than the valve-in-head sprinkler or remote control valve. Gravitation may be maintaining the water pressure at the valve at a higher pressure than the line pressure can overcome. **Refer to *FIGURE #2* near the front of this manual**.

The Valve Won't Turn "OFF"!

STEP #1: Check to see that the AQUAGATOR has not lost its control water pressure. The water pressure on the control tubes keeps the valve-in-head sprinkler valves or the remote control valve "CLOSED". The valves will stay "OPEN" until the water pressure is restored.

STEP #2: A leak in the hydraulic control tube could be losing pressure in the tube and thus allowing the valve to "OPEN".

STEP #3: Check to see if the AQUAGATOR is at a much lower elevation than the valve-in-head sprinklers or remote control valves that won't turn "OFF". A great difference in elevation may be preventing enough pressure build up in the control tube to turn the valve "OFF". **Refer to *FIGURE #2* at the front part of this manual**.

STEP #4: Verify that the AQUAGATOR "IN-LINE" filter is NOT "clogged" and that it does not need to be replaced.

STEP #5: Verify that the shut-off valve on the hydraulic control supply water is "OPEN".

STEP #6: Verify that the supply water tube, from the "in-line" filter up to the AQUAGATOR inlet port has not been broken or "pinched off".

STEP #7: Verify that the solenoid has NOT "Hung-Up" or malfunctioned thus preventing the control tube from being pressurized.

INSTALLATION DETAILS - SBM CONTROLLER with STAINLESS STEEL PEDESTAL

For the SBM Controller with Stainless Steel Pedestal, the Model AHM-12 twelve (12) station AQUAGATOR Hydraulic Control Module will be used.

REFER TO FIGURES #12 and #13

STEP #1: Pour a concrete pad to mount the controllers on. This pad shall have a 7" wide x 10" long x 6" deep recess to house the Main Water Supply "Shut-Off" valve and the "In-Line" filter. Use the plastic mounting template and the "U" bolts furnished with the controller.

STEP #2: Provide the necessary sleeves in the concrete pad for the Power Supply wiring to the controller, the Main Water Supply line to the AQUAGATOR module, the 2-wire path wiring to and from the controller and for the Hydraulic Station Control Tubes.

STEP #3: Install a "Shut-Off" valve on the Main Water Supply line coming into the base of the concrete pad recess. **Refer to SECTION 5 of this manual**.

STEP #4: After the shut-off valve and before the inlet port to the AQUAGATOR install the "In-Line" filter. **Refer to SECTION 5 of this manual**.

STEP #5: Mount the controller to the plastic template on the concrete pad.

STEP #6: Disconnect the station wire harness, coming from the terminal strip, from the harness coming from the panel assembly.

STEP #7: Remove the terminal strip and station wire harness from the Stainless Steel Pedestal. This can be discarded as it will not be used.

STEP #8: Install the AQUAGATOR module into the pedestal using the four studs on the back panel of the pedestal and the wing nuts provided. Connect the station wire harness connector, of the AQUAGATOR module, to the station output harness connector coming from the controller panel assembly.

STEP #9: Connect a hydraulic control water supply tube from the "In-Line" filter outlet to the control water inlet fitting on the AQUAGATOR module. **Refer to SECTION 6 - Connecting Hydraulic Control water Supply**.

STEP #10: Connect the exhaust tube to each of the two (2) exhaust port fittings on the bottom of the AQUAGATOR module and extend it out the side of the pedestal to a suitable discharge location. **Refer to SECTION 5 - Connecting Exhaust Water Tubing**.

STEP #11: Route the station control tubes, coming from the valve-in-head sprinklers or remote control valves in the field up through the sleeve into the bottom of the controller pedestal. Connect each station supply tube to the corresponding station output fitting on the AQUAGATOR module. **Refer to SECTION 6 - Connecting Hydraulic Tubing**.

STEP #12: Route the 2-Wire path cable into the bottom of the controller pedestal. Furnish and install an MSP-1 2-wire path surge arrestor, in the bottom of the pedestal, using the stainless steel bracket.

STEP #13: Connect the 2-Wire path to the "LINE" side of the MSP-1 surge arrestor - being sure that the red wire, in the cable, connects to the red wire on the surge arrestor and the black wire, in the cable, connects to the black wire on the surge arrestor.

STEP #14: Extend the 2-Wire path from the "EQUIP" end of the MSP-1 surge arrestor up to the 2-Wire path wire harness coming from the panel assembly. Connect the red wire to the red of the harness and the black wire to the black of the harness.

STEP #15: Connect the 120-volt AC power supply to the transformer of the controller. Extend the ½" power conduit up from the pedestal pad to a 4" x 4" metal electrical junction box, attached to the nipple of the transformer. In a knock-out of the junction box furnish and install an Intermatic model #AG2401 Surge Arrestor wired into the power supply. Route a #10 ground wire from the surge arrestor ground wire, down the pedestal and pick up the ground wires from the MSP-1 surge arrestor (if there is one) and route this ground out to a rod of a 3-rod grounding grid.

STEP #16: Temporarily open the water supply line to the inlet port of the AQUAGATOR module to flush debris out of the control lines. **Refer to SECTION 6 - STEP #7**.

STEP #17: Bleed all air from each of the station control tubes at the valve-in-head sprinkler or at the remote control valve. **Refer to SECTION 6 - STEP #8**

STEP #18: When you are sure all air has been bled from a given station control tube, then connect the tube to the valve-in-head sprinkler or remote control valve inlet fitting. **Refer to SECTION 6 - STEP #10**.

STEP #19: Place the AQUAGATOR module into operation - following **STEPS #11 THROUGH #13 in SECTION 6**.

THE INSTALLATION OF THE SBM CONTROLLER and THE AQUAGATOR MODULE SHOULD NOW BE COMPLETE AND THE UNIT FULLY OPERATIONAL

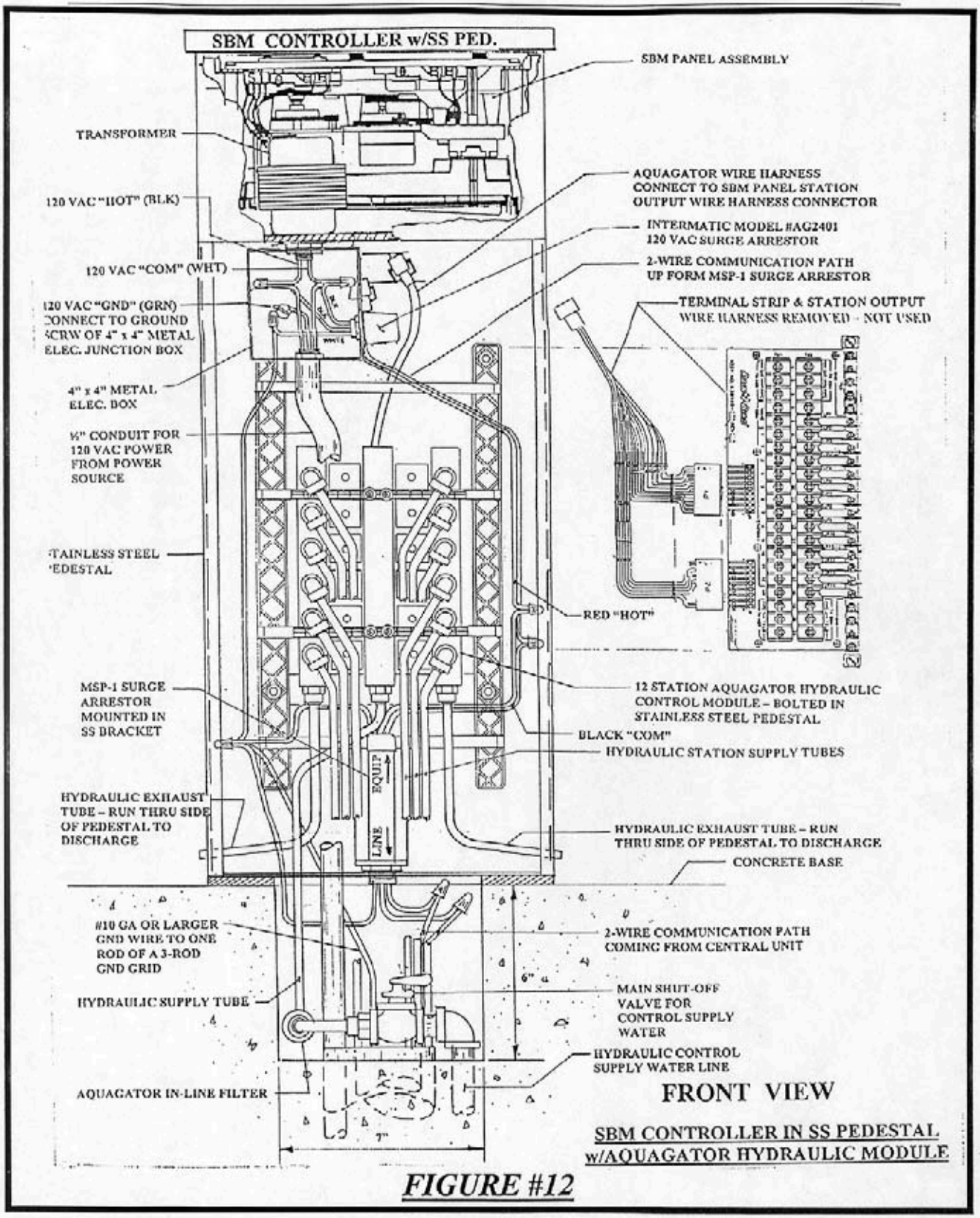
SBM CONTROLLER w/SS PED.
SBM PANEL ASSEMBLY
TRANSFORMER
120 VAC "HOT" (BLK)
120 VAC "COM" (WHT)
120 VAC "GND" (GRN) CONNECT TO GROUND SCRW OF 4" x 4" METAL ELEC. JUNCTION BOX
4" x 4" METAL ELEC. BOX
½" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
STAINLESS STEEL PEDESTAL
MSP-1 SURGE ARRESTOR MOUNTED IN SS BRACKET
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
#10 GA OR LARGER GND WIRE TO ONE ROD OF A 3-ROD GND GRID
HYDRAULIC SUPPLY TUBE
AQUAGATOR IN-LINE FILTER
AQUAGATOR WIRE HARNESS CONNECT TO SBM PANEL STATION OUTPUT WIRE HARNESS CONNECTOR
INTERMATIC MODEL #AG2401 120 VAC SURGE ARRESTOR
2-WIRE COMMUNICATION PATH UP FORM MSP-1 SURGE ARRESTOR
TERMINAL STRIP & STATION OUTPUT WIRE HARNESS REMOVED - NOT USED
RED "HOT"
12 STATION AQUAGATOR HYDRAULIC CONTROL MODULE – BOLTED IN STAINLESS STEEL PEDESTAL
BLACK "COM"
HYDRAULIC STATION SUPPLY TUBES
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
CONCRETE BASE
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT
6"
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
HYDRAULIC CONTROL SUPPLY WATER LINE
7"
EQUIP
LINE
FRONT VIEW
SBM CONTROLLER IN SS PEDESTAL w/AQUAGATOR HYDRAULIC MODULE

FIGURE #12

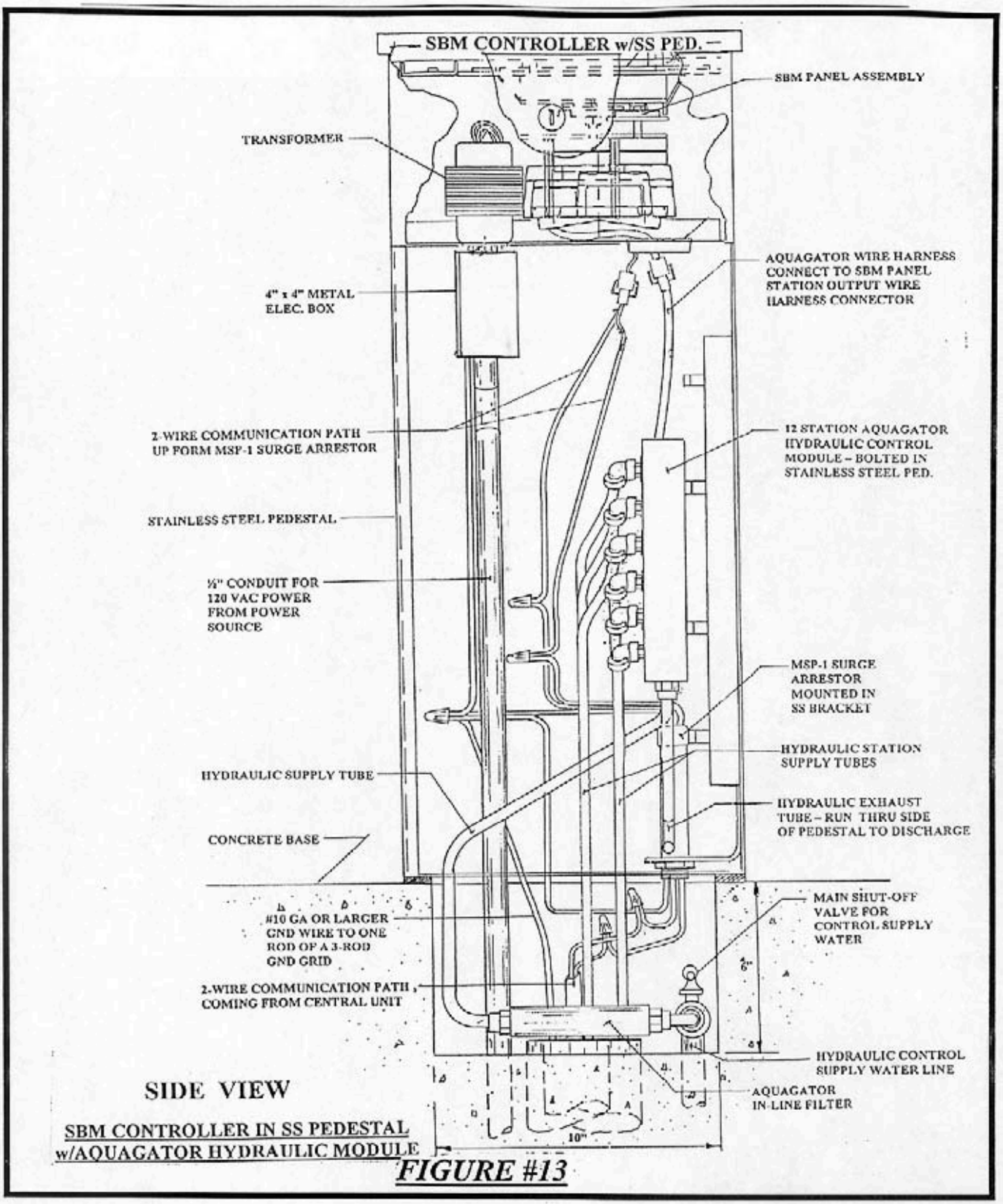
SBM CONTROLLER w/SS PED.
SBM PANEL ASSEMBLY
TRANSFORMER
AQUAGATOR WIRE HARNESS CONNECT TO SBM PANEL STATION OUTPUT WIRE HARNESS CONNECTOR
4" x 4" METAL ELEC. BOX
2-WIRE COMMUNICATION PATH UP FORM MSP-1 SURGE ARRESTOR
12 STATION AQUAGATOR HYDRAULIC CONTROL MODULE – BOLTED IN STAINLESS STEEL PED.
STAINLESS STEEL PEDESTAL
½" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
MSP-1 SURGE ARRESTOR MOUNTED IN SS BRACKET
HYDRAULIC STATION SUPPLY TUBES
HYDRAULIC SUPPLY TUBE
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
CONCRETE BASE
#10 GA OR LARGER GND WIRE TO ONE ROD OF A 3-ROD GND GRID
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT
HYDRAULIC CONTROL SUPPLY WATER LINE
AQUAGATOR IN-LINE FILTER
10"
SIDE VIEW
SBM CONTROLLER IN SS PEDESTAL w/AQUAGATOR HYDRAULIC MODULE

FIGURE #13

INSTALLATION DETAILS - SBM CONTROLLER with PLASTIC PEDESTAL

For the SBM Controller with Plastic Pedestal, the Model AHM-12 twelve (12) station AQUAGATOR Hydraulic Control Module will be used.

REFER TO FIGURES #14, #15, and #16

STEP #1: Pour a concrete pad to mount the controllers on. This pad shall have a 7" wide x 10" long x 6" deep recess to house the Main Water Supply "Shut-Off" valve and the "In-Line" filter. Use the plastic mounting template and the "U" bolts furnished with the controller.

STEP #2: Provide the necessary sleeves in the concrete pad for the Power Supply wiring to the controller, the Main Water Supply line to the AQUAGATOR module, the 2-wire path wiring to and from the controller and for the Hydraulic Station Control Tubes.

STEP #3: Install a "Shut-Off" valve on the Main Water Supply line forming into the base of the concrete pad recess. **Refer to SECTION 5 of this manual**.

STEP #4: After the shut-off valve and before the inlet port to the AQUAGATOR install the "In-Line" filter. **Refer to SECTION 5 of this manual**.

STEP #5: Mount the controller to the plastic template on the concrete pad.

STEP #6: Disconnect the station wire harness, coming from the terminal strip, from the harness coming from the panel assembly.

STEP #7: Remove the terminal strip and station wire harness from the Plastic Pedestal. This can be discarded as it will not be used.

STEP #8: On the pedestal center divider and in the back compartment of the pedestal install the AQUAGATOR module into the pedestal using the four studs on the center divider of the pedestal and the wing nuts provided. Connect the station wire harness connector, of the AQUAGATOR module, to the station output harness connector coming from the controller panel assembly.

STEP #9: Connect a hydraulic control water supply tube from the "In-Line" filter outlet to the control water inlet fitting on the AQUAGATOR module. **Refer to SECTION 6 - Connecting Hydraulic Control Water Supply**.

STEP #10: Connect an exhaust tube to each of the two (2) exhaust port fittings on the bottom of the AQUAGATOR module and extend it out the side of the pedestal to a suitable discharge location. **Refer to SECTION 5 - Connecting Exhaust Water Tubing**.

STEP #11: Route the station control tubes, coming from the valve-in-head sprinklers or remote control valves in the field, up through the sleeve into the bottom of the controller pedestal. Connect each station supply tube to the corresponding station output fitting on the AQUAGATOR module. **Refer to SECTION 6 - Connecting Hydraulic Tubing**.

STEP #12: Route the 2-Wire path cable into the bottom of the controller pedestal. Furnish and install an MSP-1 2-wire path surge arrestor, at the bottom of the front compartment of the pedestal, using the stainless steel bracket.

STEP #13: Connect the 2-wire path to the "LINE" side of the MSP-1 surge arrestor - being sure that the red wire, in the cable, connects to the red wire on the surge arrestor and the black wire, in the cable, connects to the black waire on the surge arrestor.

STEP #14: Extend the 2-Wire path from the "EQUIP" end of the MSP-1 surge arrestor up to the 2-wire path wire harness coming from the panel assembly. Connect the red wire to the red of the harness and the black wire to the black of the harness.

STEP #15: Connect the 120-volt AC power supply to the transformer of the controller. Extend the ½" power conduit up from the pedestal pad to a 4" x 4" metal electrical junction box, attached to the nipple of the transformer. In a knock-out of the junction box furnish and install an Intermatic model #AG2401 Surge Arrestor wired into the power supply. Route a #10 ground wire from the surge arrestor ground wire, down the pedestal and pick up the ground wires from the MSP-1 surge arrestor (if there is one) and route this ground out and connect it to a rod of a 3-rod grounding grid.

STEP #16: Temporarily open the water supply line to the inlet port of the AQUAGATOR module to flush drbris out of the control lines. **Refer to SECTION 6 - STEP #7**.

STEP #17: Bleed all air from each of the station control tubes as the valve-in-head sprinkler or at the control remote valve. **Refer to SECTION 6 - STEP #8**

STEP #18: When you are sure all air has been bled from a given station control tube, then connect the tube to the valve-in-head sprinkler or remote control valve inlet fitting. **Refer to SECTION 6 - STEP #10**.

STEP #19: Place the AQUAGATOR module into operation - following **STEPS #11 THROUGH #13 in SECTION 6**.

THE INSTALLATION OF THE SBM CONTROLLER and THE AQUAGATOR MODULE SHOULD NOW BE COMPLETE AND THE UNIT FULLY OPERATIONAL

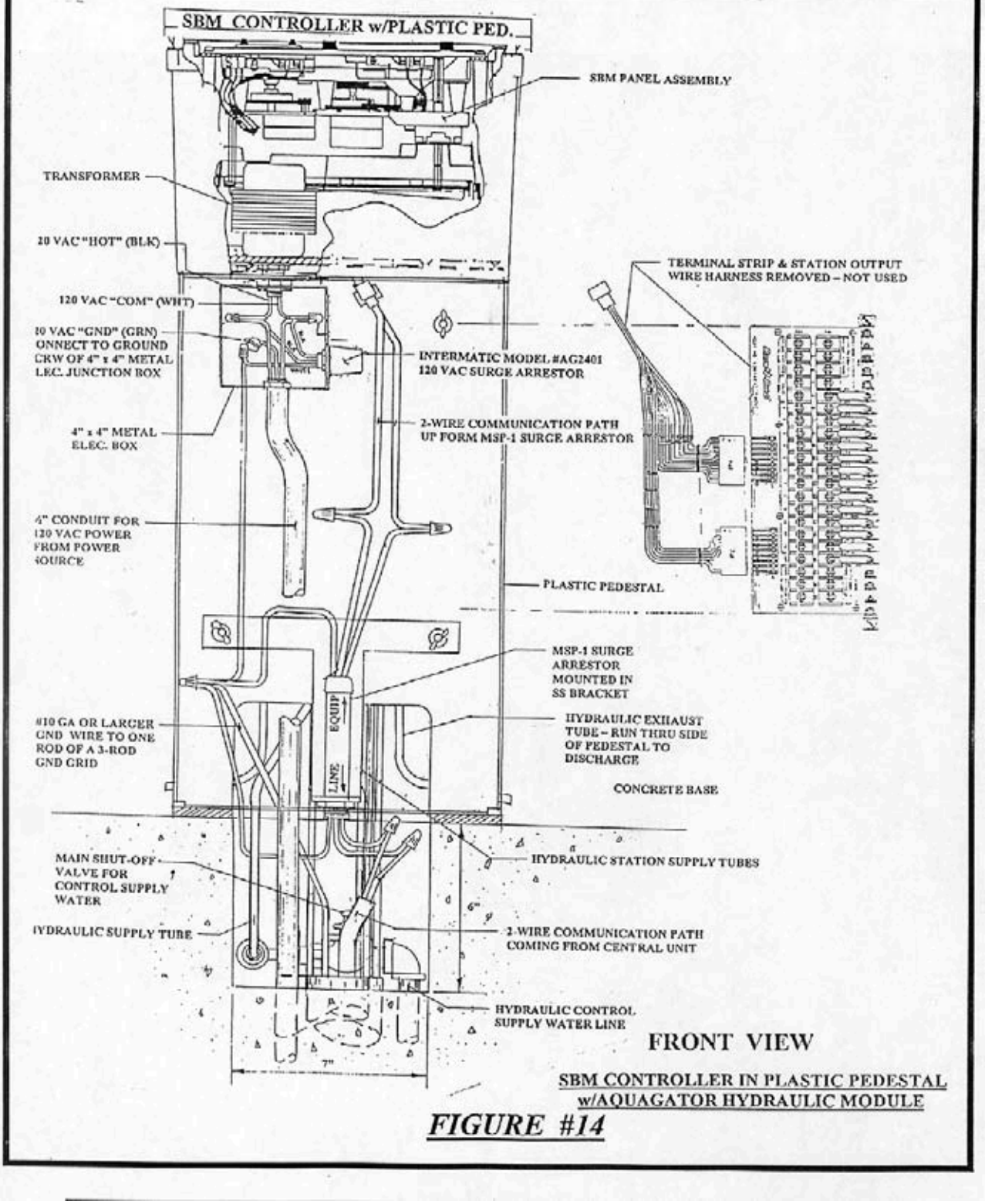
SBM CONTROLLER w/PLASTIC PED.
SBM PANEL ASSEMBLY
TRANSFORMER
20 VAC "HOT" (BLK)
120 VAC "COM" (WHT)
10 VAC "GND" (GRN)
ONNECT TO GROUND
CRW OF 4" x 4" METAL
LEC. JUNCTION BOX
4" x 4" METAL
ELEC. BOX
4" CONDUIT FOR
120 VAC POWER
FROM POWER
OURCE
#10 GA OR LARGER
GND WIRE TO ONE
ROD OF A 3-ROD
GND GRID
MAIN SHUT-OFF
VALVE FOR
CONTROL SUPPLY
WATER
IYDRAULIC SUPPLY TUBE
INTERMATIC MODEL #AG2401
120 VAC SURGE ARRESTOR
2-WIRE COMMUNICATION PATH
UP FORM MSP-1 SURGE ARRESTOR
TERMINAL STRIP & STATION OUTPUT
WIRE HARNESS REMOVED – NOT USED
PLASTIC PEDESTAL
MSP-1 SURGE
ARRESTOR
MOUNTED IN
SS BRACKET
HYDRAULIC EXHAUST
TUBE – RUN THRU SIDE
OF PEDESTAL TO
DISCHARGE
CONCRETE BASE
EQUIP
LINE
HYDRAULIC STATION SUPPLY TUBES
2-WIRE COMMUNICATION PATH
COMING FROM CENTRAL UNIT
HYDRAULIC CONTROL
SUPPLY WATER LINE
7"
FRONT VIEW
SBM CONTROLLER IN PLASTIC PEDESTAL
w/AQUAGATOR HYDRAULIC MODULE

FIGURE #14

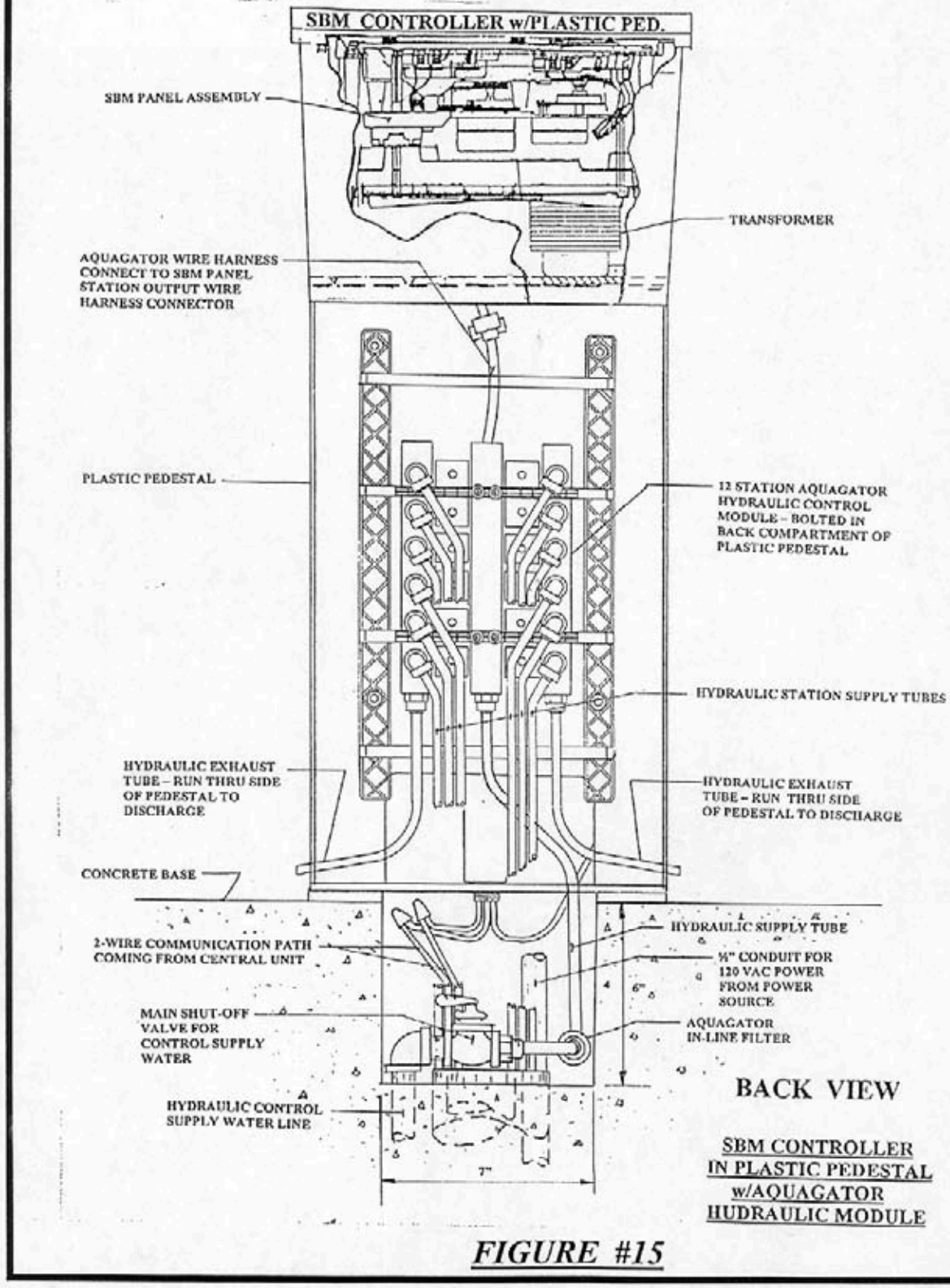
SBM CONTROLLER w/PLASTIC PED.
SBM PANEL ASSEMBLY
TRANSFORMER
AQUAGATOR WIRE HARNESS CONNECT TO SBM PANEL STATION OUTPUT WIRE HARNESS CONNECTOR
PLASTIC PEDESTAL
12 STATION AQUAGATOR HYDRAULIC CONTROL MODULE – BOLTED IN BACK COMPARTMENT OF PLASTIC PEDESTAL
HYDRAULIC STATION SUPPLY TUBES
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
CONCRETE BASE
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT
HYDRAULIC SUPPLY TUBE
½" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
6"
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
AQUAGATOR IN-LINE FILTER
HYDRAULIC CONTROL SUPPLY WATER LINE
7"
BACK VIEW
SBM CONTROLLER IN PLASTIC PEDESTAL w/AQUAGATOR HUDRAULIC MODULE

FIGURE #15

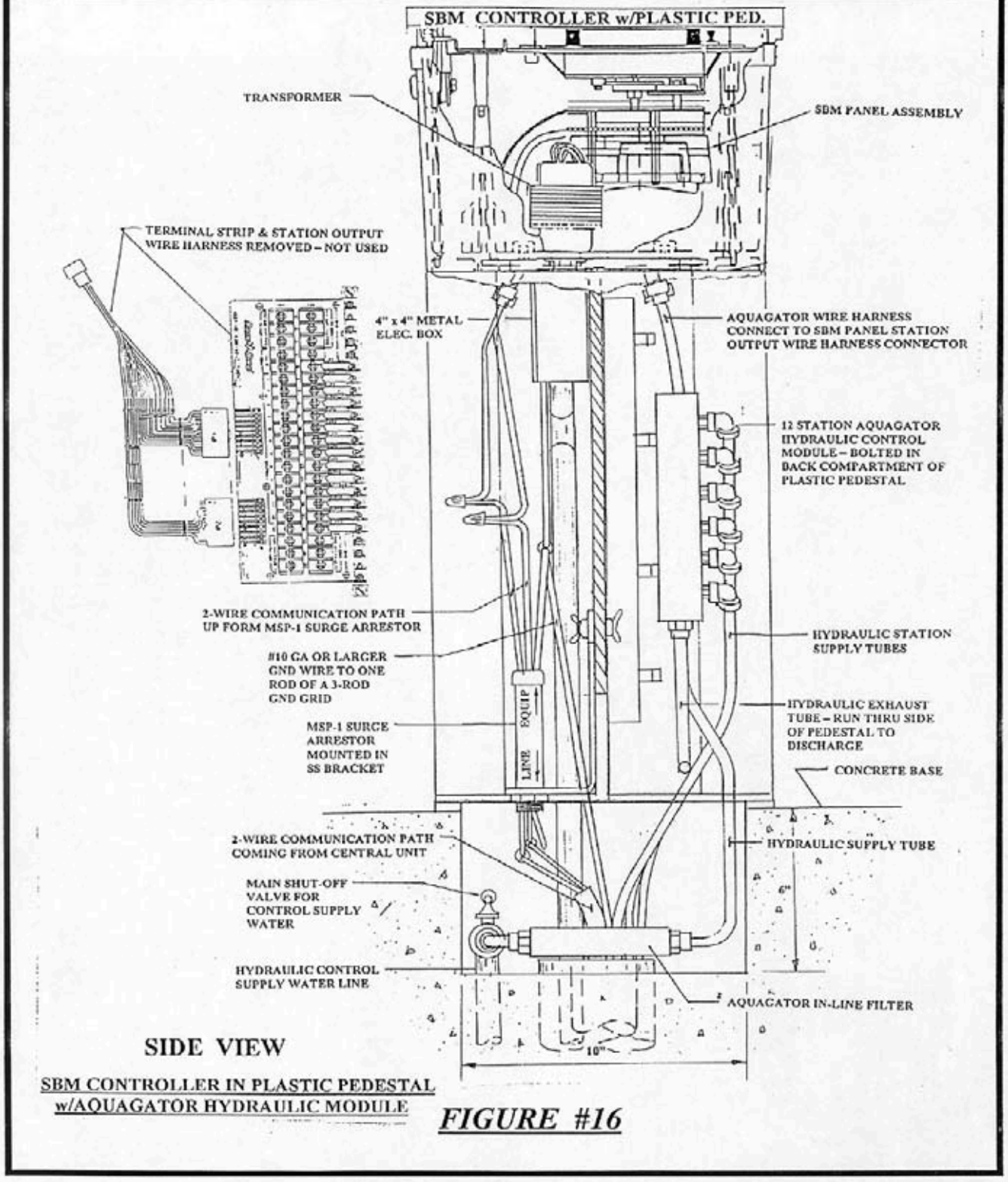
SBM CONTROLLER w/PLASTIC PED.
TRANSPORMER
SBM PANEL ASSEMBLY
TERMINAL STRIP & STATION OUTPUT WIRE HARNESS REMOVED – NOT USED
4" x 4" METAL ELEC. BOX
AQUAGATOR WIRE HARNESS CONNECT TO SBM PANEL STATION OUTPUT WIRE HARNESS CONNECTOR
12 STATION AQUAGATOR HYDRAULIC CONTROL MODULE – BOLTED IN BACK COMPARTMENT OF PLASTIC PEDESTAL
2-WIRE COMMUNICATION PATH UP FORM MSP-1 SURGE ARRESTOR
#10 GA OR LARGER GND WIRE TO ONE ROD OF A 3-ROD GND GRID
HYDRAULIC STATION SUPPLY TUBES
MSP-1 SURGE ARRESTOR MOUNTED IN SS BRACKET
EQUIP
LINE
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
CONCRETE BASE
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT
HYDRAULIC SUPPLY TUBE
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
6"
HYDRAULIC CONTROL SUPPLY WATER LINE
AQUAGATOR IN-LINE FILTER
10"
SIDE VIEW
SBM CONTROLLER IN PLASTIC PEDESTAL w/AQUAGATOR HYDRAULIC MODULE

FIGURE #16

INSTALLATION DETAILS - PAR CONTROLLER with STAINLESS STEEL PEDESTAL

For the PAR Controller with Stainless Steel pedestal, the model AHM-12 (twelve) station, the AHM-16 (sixteen) station, or AHM-24 (twenty-four) station AQUAGATOR Hydraulic Control Module will be used.

REFER TO FIGURES #17 and #18

STEP #1: Pour a concrete pad to mount the controllers on. This pad shall have a 7" wide x 10" long x 6" deep recess to house the Main Water Supply "Shut-Off" valve and the "In-Line" filter. Use the plastic mounting template and the "U" bolts furnished with the controller.

STEP #2: Provide the necessary sleeves in the concrete pad for the Power Supply wiring to the controller, the Main Water Supply line to the AQUAGATOR module, the 2-wire path wiring to and from the controller and for the Hydraulic Station Control Tubes.

STEP #3: Install a "Shut-Off" valve on the Main Water Supply line coming into the base of the concrete pad recess. **Refer to SECTION 5 of this manual**.

STEP #4: After the shut-off valve and before the inlet port to the AQUAGATOR, install the "In-Line" filter. **Refer to SECTION 5 of this manual**.

STEP #5: Mount the controller to the plastic template on the concrete pad.

STEP #6: Disconnect the station wire harness, coming from the terminal strip or strips, from the terminal strip on the panel assembly.

STEP #7: Remove the terminal strip(s) and station wire harness from the back panel of the Stainless Steel Pedestal. This can be discarded as it will not be used.

STEP #8: On the back panel of the stainless steel pedestal, install the AQUAGATOR module into the pedestal using the four studs on the back panel of the stainless steel pedestal and the wing nuts provided. Connect the station wire harness, of the AQUAGATOR module, to the station output terminals on the controller panel assembly.

STEP #9: Connect a hydraulic control water supply tube from the "In-Line" filter outlet to the control water inlet fitting on the AQUAGATOR module. **Refer to SECTION 6 - Connecting Hydraulic Control Water Supply**

STEP #10: Connect an exhaust tube to each of the two (2) exhaust port fittings on the bottom of the AQUAGATOR module and extend it out the side of the pedestal to a suitable discharge location. **Refer to SECTION 5 - Connecting Exhaust Water Tubing**.

STEP #11: Route the station control tubes, coming from the valve-in-head sprinklers or remote control valves in the field up through the sleeve into the bottom of the controller pedestal. Connect each station supply tube to the corresponding station output fitting on the AQUAGATOR module. **Refer to SECTION 6 - Connecting Hydraulic Tubing**.

STEP #12: Route the 2-Wire path cable into the bottom of the controller pedestal. Furnish and install an MSP-1 surge arrestor and wire it into the 2-wire path coming to the controller.

STEP #13: Connect the 2-wire path to the "LINE" side of the MSP-1 surge arrestor - being sure that the red wire, in the cable, connects to the red wire on the surge arrestor and the black wire in the cable, connects to the black wire on the surge arrestor.

STEP #14: Extend the 2-Wire path form the "EQUIP" end of the MSP-1 surge arrestor up to the 2-wire path "MAXI" wire terminals on the panel assembly (located on the far right side of the panel assembly). Connect the red wire to the #1 terminal and the black wire to the #3 terminal.

STEP #15: Extend the ½" power conduit up from the pedestal pad to a 4" x 4" metal electrical junction box, attached to the nipple of the transformer. Connect the 120-volt AC power supply to the transformer of the controller. In a knock-out of the junction box furnish and install an Intermatic model #AG2401 Surge Arrestor wired into the power supply. Route a #10 ga. ground wire from the surge arrestor ground wire, down the pedestal and pick up the ground wires from the MSP-1 surge arrestor (if there is one) and route this ground out and connect it to a rod of a 3-rod grounding grid.

STEP #16: Temporarily open the water supply line to the inlet port of the AQUAGATOR module to flush debris out of the control lines. **Refer to SECTION 6 - STEP #7**.

STEP #17: Bleed all air from each of the station control tubes as the valve-in-head sprinkler or at the remote control valve. **Refer to SECTION 6 - STEP #8**.

STEP #18: When you are sure all of the air has been bled from a given station control tube, then connect the tube to the valve-in-head sprinkler or remote control valve inlet fitting. **Refer to SECTION 6 - STEP #10**.

STEP #19: Place the AQUAGATOR module into operation - following **STEPS #11 THROUGH #13 in SECTION 6**.

THE INSTALLATION OF THE PAR CONTROLLER and THE AQUAGATOR MODULE SHOULD NOW BE COMPLETE AND THE UNIT FULLY OPERATIONAL

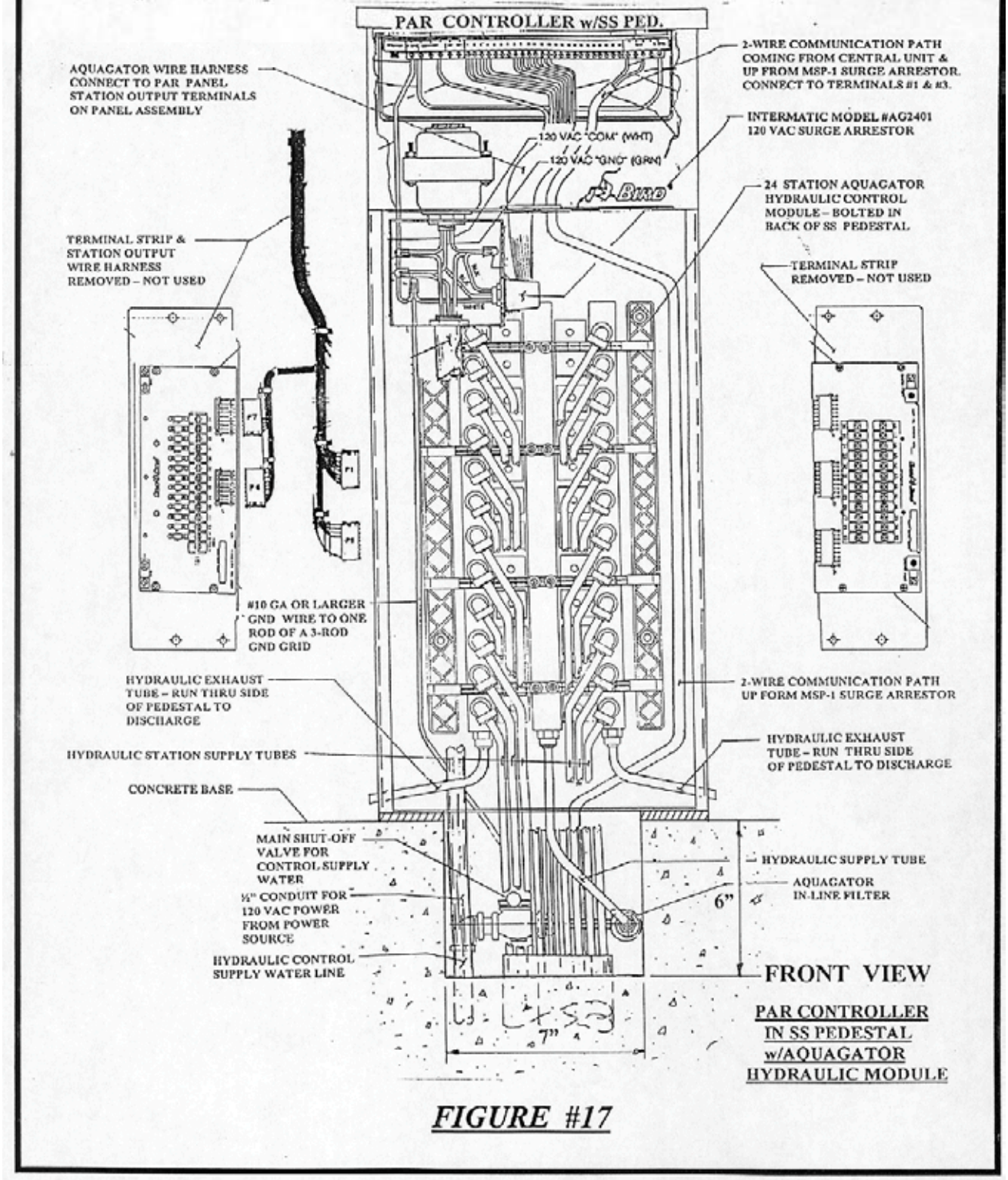
PAR CONTROLLER w/SS PED.
AQUAGATOR WIRE HARNESS CONNECT TO PAR PANEL STATION OUTPUT TERMINALS ON PANEL ASSEMBLY
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT & UP FROM MSP-1 SURGE ARRESTOR. CONNECT TO TERMINALS #1 & #3.
INTERMATIC MODEL #AG2401 120 VAC SURGE ARRESTOR
120 VAC "COM" (WHT)
120 VAC "GND" (GRN)
24 STATION AQUAGATOR HYDRAULIC CONTROL MODULE – BOLTED IN BACK OF SS PEDESTAL
TERMINAL STRIP & STATION OUTPUT WIRE HARNESS REMOVED – NOT USED
TERMINAL STRIP REMOVED – NOT USED
#10 GA OR LARGER GND WIRE TO ONE ROD OF A 3-ROD GND GRID
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
2-WIRE COMMUNICATION PATH UP FORM MSP-1 SURGE ARRESTOR
HYDRAULIC STATION SUPPLY TUBES
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
CONCRETE BASE
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
HYDRAULIC SUPPLY TUBE
AQUAGATOR IN-LINE FILTER
½" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
6"
HYDRAULIC CONTROL SUPPLY WATER LINE
7"
FRONT VIEW
PAR CONTROLLER IN SS PEDESTAL w/AQUAGATOR HYDRAULIC MODULE

FIGURE #17

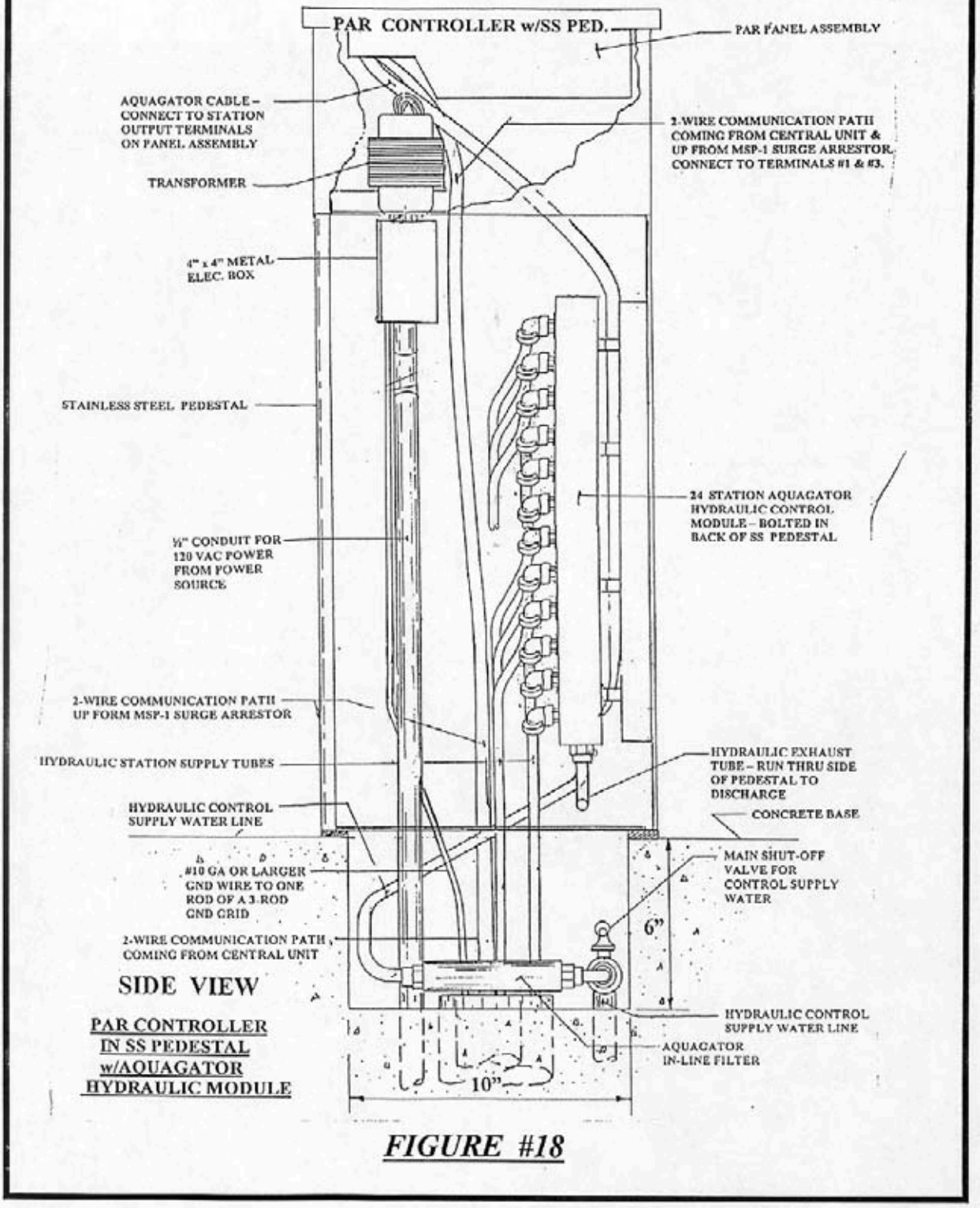
PAR CONTROLLER w/SS PED.
PAR PANEL ASSEMBLY
AQUAGATOR CABLE – CONNECT TO STATION OUTPUT TERMINALS ON PANEL ASSEMBLY
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT & UP FROM MSP-1 SURGE ARRESTOR. CONNECT TO TERMINALS #1 & #3.
TRANSFORMER
4" x 4" METAL ELEC. BOX
STAINLESS STEEL PEDESTAL
24 STATION AQUAGATOR HYDRAULIC CONTROL MODULE – BOLTED IN BACK OF SS PEDESTAL
½" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
2-WIRE COMMUNICATION PATH UP FORM MSP-1 SURGE ARRESTOR
HYDRAULIC STATION SUPPLY TUBES
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
HYDRAULIC CONTROL SUPPLY WATER LINE
CONCRETE BASE
#10 GA OR LARGER GND WIRE TO ONE ROD OF A 3-ROD GND GRID
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT
6"
SIDE VIEW
HYDRAULIC CONTROL SUPPLY WATER LINE
AQUAGATOR IN-LINE FILTER
10"
PAR CONTROLLER IN SS PEDESTAL w/AQUAGATOR HYDRAULIC MODULE

FIGURE #18

INSTALLATION DETAILS - PAR CONTROLLER with PLASTIC PEDESTAL

For the PAR Controller with plastic pedestal, the model AHM-12 (twelve) station, AHM-16 (sixteen) station, or AHM-24 (twenty-four) station AQUAGATOR Hydraulic Control Module will be used.

REFER TO FIGURES #19, #20, and #21

STEP #1: Pour a concrete pad to mount the controllers on. This pad shall have a 7" wide x 10" long by 6" deep recess to house the Main Water Supply "Shut-Off" valve and the "In-Line" filter. Use the plastic mounting template and the "U" bolts furnished with the controller.

STEP #2: Provide the necessary sleeves in the concrete pad for the Power Supply wiring to the controller, the Main Water Supply line to the AQUAGATOR module, the 2-wire path wiring to and from the controller and for the Hydraulic Station Control Tubes.

STEP #3: Install a "Shut-Off" valve on the Main Water Supply line coming into the base of the concrete pad recess. **Refer to SECTION 5 of this manual**.

STEP #4: After the shut-off valve and before the inlet port to the AQUAGATOR install the "In-Line" filter. **Refer to SECTION 5 of this manual**.

STEP #5: Mount the controller to the plastic template on the concrete pad.

STEP #6: Leave the station wire harness, coming from the terminal strip on the panel assembly going to the terminal strip or strips in the front compartment of the plastic pedestal.

STEP #7: Leave the terminal strip(s) and station wire harness, coming from the panel assembly and going to the terminal strip(s). These terminal strips will be used with the AQUAGATOR module.

STEP #8: On the pedestal center divider and in the back compartment of the pedestal install the AQUAGATOR module into the pedestal using the four studs on the center divider of the pedestal and the wing nuts provided. Connect the station wire harness wires, of the AQUAGATOR module, to the station output terminals on the terminal strip(s) in the front compartment of the plastic pedestal.

STEP #9: Connect a hydraulic control water supply tube from the "In-Line" filter outlet to the control water inlet fitting on the AQUAGATOR module. **Refer to SECTION 6 - Connecting Hydraulic Control Water Supply**.

STEP #10: Connect an exhaust tube to each of the two (2) exhaust port fittings on the bottom of the AQUAGATOR module and extend it out the side of the pedestal to a suitable discharge location. **Refer to SECTION 5 - Connecting Exhaust Water Tubing**

STEP #11: Route the station control tubes, coming from the valve-in-head sprinklers or remote control valves in the field up through the sleeve into the bottom of the controller pedestal. Connect each station supply tube to the corresponding station output fitting on the AQUAGATOR module. **Refer to SECTION 6 - Connecting Hydraulic Tubing**.

STEP #12: Route the 2-Wire path cable into the bottom of the controller pedestal. Furnish and install an MSP-1 2-wire path surge arrestor, at the bottom of the front compartment of the pedestal, using the stainless steel bracket.

STEP #13: Connect the 2-wire path to the "LINE" side of the MSP-1 surge arrestor - being sure that the red wire, in the cable, connects to the red wire on the surge arrestor and the black wire, in the cable, connects to the black wire on the surge arrestor.

STEP #14: Extend the 2-Wire path from the "EQUIP" and of the MSP-1 surge arrestor up to the 2-wire path terminals on the station output terminal strips assembly.

STEP #15: Extend the ½" power conduit up from the pedestal pad to a ½" - 90 degree electrical condulet, with the side outlet attached to the nipple of the transformer. Connect the 120-volt AC power supply to the transformer of the controller.

STEP #16: Temporarily open the water supply line to the inlet port of the AQUAGATOR module to flush debris out of the control lines. **Refer to SECTION 6 - STEP #7**.

STEP #17: Bleed all air from each of the station control tubes at the valve-in-head sprinkler or at the remote control valve. **Refer to SECTION 6 - STEP #8**.

STEP #18: When you are sure all of the air has been bled from a given station control tube, then connect the tube to the valve-in-head sprinkler or remote control valve inlet fitting. **Refer to SECTION 6 - STEP #10**.

STEP #19: Place the AQUAGATOR module into operation - following **STEPS #11 THROUGH #13 in SECTION 6**.

THE INSTALLATION OF THE PAR CONTROLLER and THE AQUAGATOR MODULE SHOULD NOW BE COMPLETE AND THE UNIT FULLY OPERATIONAL

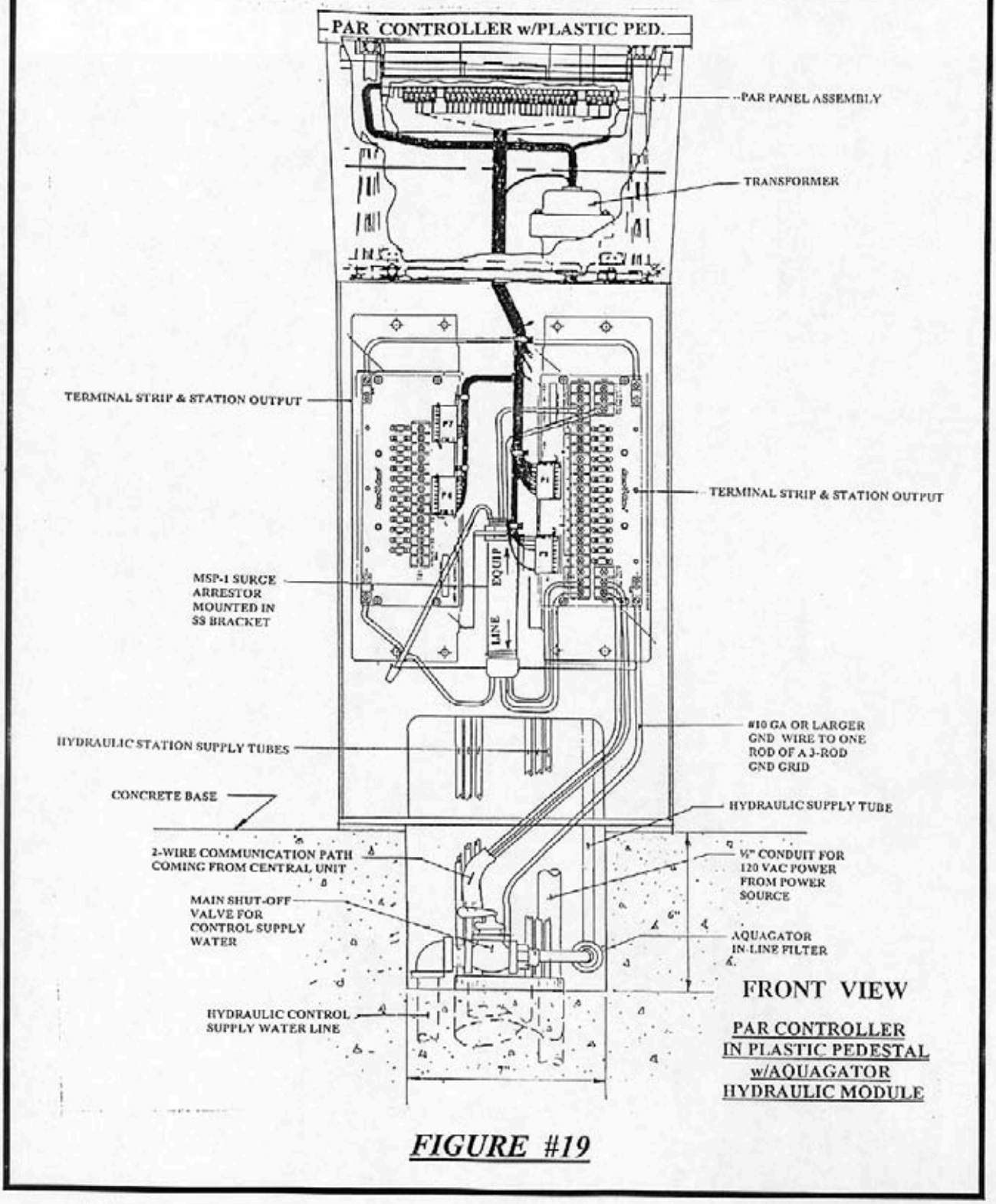
PAR CONTROLLER w/PLASTIC PED.
PAR PANEL ASSEMBLY
TRANSFORMER
TERMINAL STRIP & STATION OUTPUT
TERMINAL STRIP & STATION OUTPUT
MSP-1 SURGE ARRESTOR MOUNTED IN SS BRACKET
EQUIP
LINE
HYDRAULIC STATION SUPPLY TUBES
#10 GA OR LARGER GND WIRE TO ONE ROD OF A 3-ROD GND GRID
CONCRETE BASE
HYDRAULIC SUPPLY TUBE
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT
½" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
AQUAGATOR IN-LINE FILTER
HYDRAULIC CONTROL SUPPLY WATER LINE
FRONT VIEW
PAR CONTROLLER IN PLASTIC PEDESTAL w/AQUAGATOR HYDRAULIC MODULE

FIGURE #19

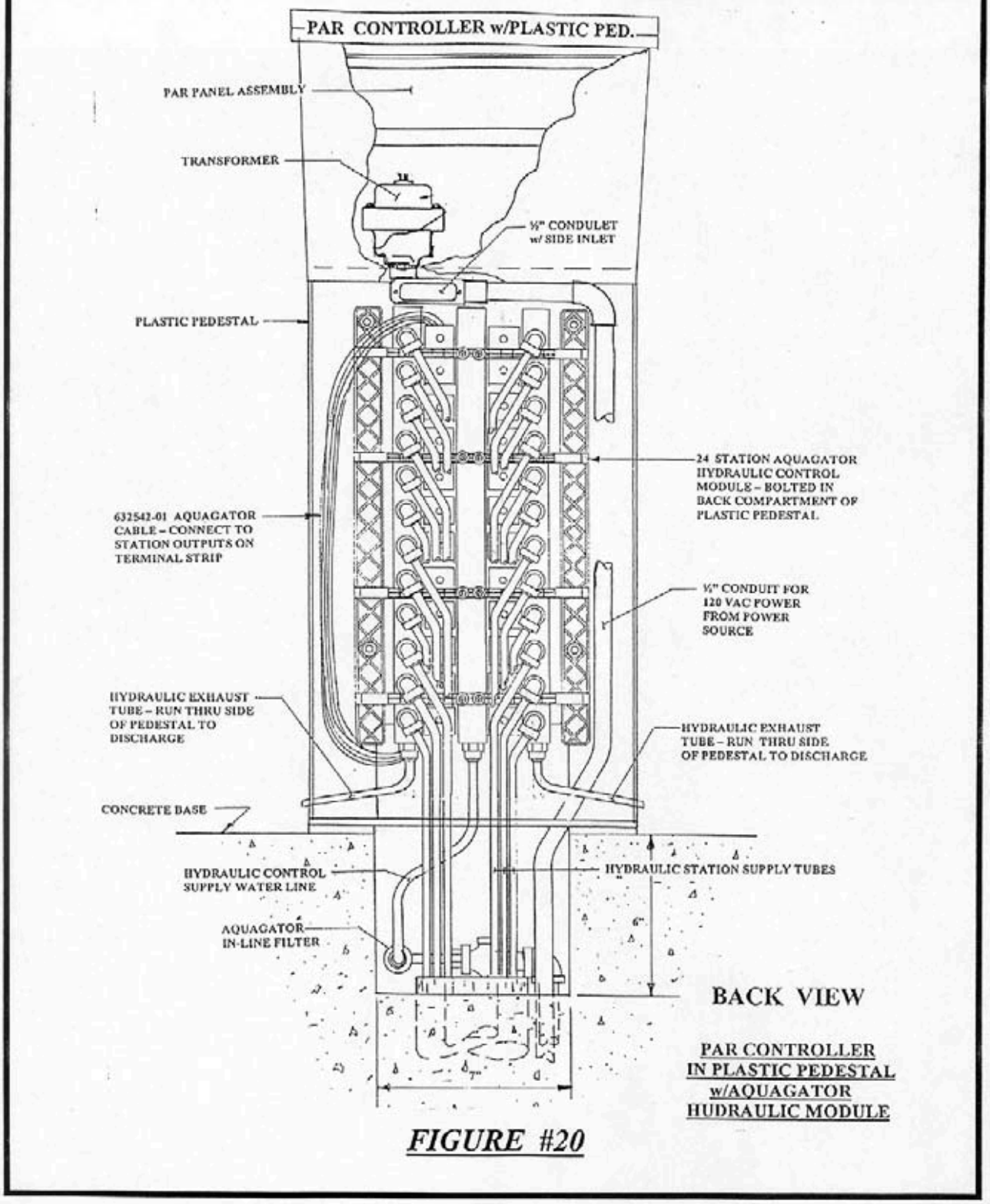
PAR CONTROLLER w/PLASTIC PED.
PAR PANEL ASSEMBLY
TRANSFORMER
½" CONDULET w/ SIDE INLET
PLASTIC PEDESTAL
24 STATION AQUAGATOR HYDRAULIC CONTROL MODULE – BOLTED IN BACK COMPARTMENT OF PLASTIC PEDESTAL
632542-01 AQUAGATOR CABLE – CONNECT TO STATION OUTPUTS ON TERMINAL STRIP
½" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
CONCRETE BASE
HYDRAULIC CONTROL SUPPLY WATER LINE
HYDRAULIC STATION SUPPLY TUBES
AQUAGATOR IN-LINE FILTER
BACK VIEW
PAR CONTROLLER IN PLASTIC PEDESTAL w/AQUAGATOR HUDRAULIC MODULE

FIGURE #20

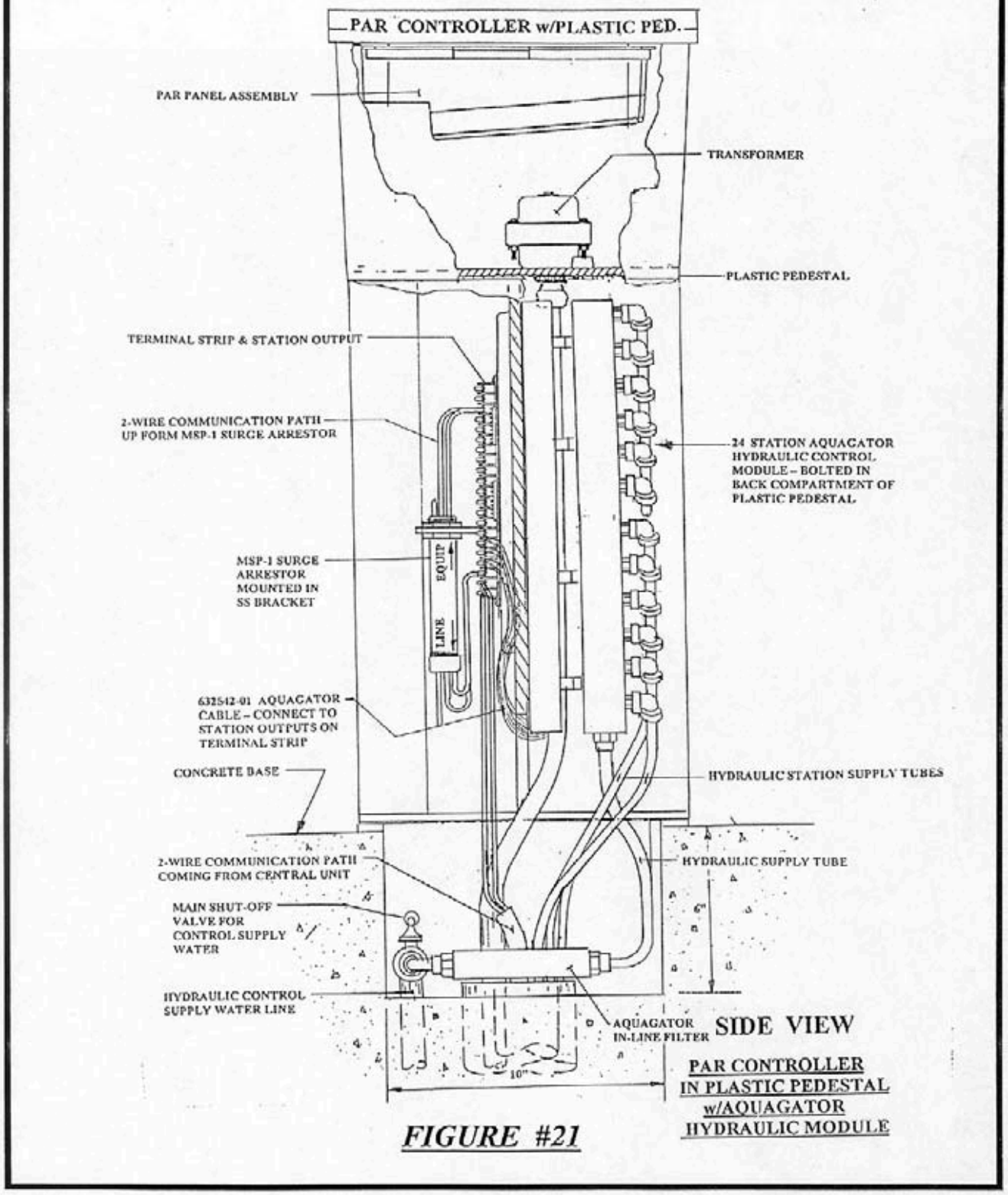
PAR CONTROLLER w/PLASTIC PED.
PAR PANEL ASSEMBLY
TRANSFORMER
PLASTIC PEDESTAL
TERMINAL STRIP & STATION OUTPUT
2-WIRE COMMUNICATION PATH UP FORM MSP-1 SURGE ARRESTOR
24 STATION AQUAGATOR HYDRAULIC CONTROL MODULE – BOLTED IN BACK COMPARTMENT OF PLASTIC PEDESTAL
MSP-1 SURGE ARRESTOR MOUNTED IN SS BRACKET
EQUIP
LINE
632542-01 AQUAGATOR CABLE – CONNECT TO STATION OUTPUTS ON TERMINAL STRIP
CONCRETE BASE
HYDRAULIC STATION SUPPLY TUBES
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT
HYDRAULIC SUPPLY TUBE
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
HYDRAULIC CONTROL SUPPLY WATER LINE
AQUAGATOR IN-LINE FILTER
6"
10"
SIDE VIEW
PAR CONTROLLER IN PLASTIC PEDESTAL w/AQUAGATOR HYDRAULIC MODULE

FIGURE #21

INSTALLATION DETAILS - MSC CONTROLLER with STAINLESS STEEL PEDESTAL

For the MSC Controller with Stainless Steel pedestal, the model AHM-12 (twelve) station, the AHM-16 (sixteen) station, or AHM-24 (twenty-four) station AQUAGATOR Hydraulic Control Module will be used.

REFER TO FIGURES #22 and #23

STEP #1: Pour a concrete pad to mount the controllers on. This pad shall have a 7" wide x 10" long x 6" deep recess to house the Main Water Supply "Shut-Off" valve and the "In-Line" filter. Use the plastic mounting template and the "U" bolts furnished with the controller.

STEP #2: Provide the necessary sleeves in the concrete pad for the Power Supply wiring to the controller, the Main Water Supply line to the AQUAGATOR module, the 2-wire path wiring to and from the controller and for the Hydraulic Station Control Tubes.

STEP #3: Install a "Shut-Off" valve on the Main Water Supply line coming into the base of the concrete pad recess. **Refer to SECTION 5 of this manual**.

STEP #4: After the shut-off valve and before the inlet port to the AQUAGATOR, install the "In-Line" filter. **Refer to SECTION 5 of this manual**.

STEP #5: Mount the controller to the plastic template on the concrete pad.

STEP #6: Disconnect the station wire harness, coming from the panel assembly and going to the terminal strip, from the terminal strip by use of the connectors.

STEP #7: Remove the terminal strip from the back panel of the Stainless Steel Pedestal. This can be discarded as it will not be used. Leave the station output wire harness connected to the panel assembly as it will be used with the AQUAGATOR module.

STEP #8: On the back panel of the stainless steel pedestal, install the AQUAGATOR module into the pedestal using the four studs on the back panel of the stainless steel pedestal and the wing nuts provided. Connect the station wire harness, of the AQUAGATOR module, to the station output terminals on the controller panel assembly. This will require cutting off the connectors and splicing the various station wires together.

STEP #9: Connect a hydraulic control water supply tube from the "In-Line" filter outlet to the control water inlet fitting on the AQUAGATOR module. **Refer to SECTION 6 - Connecting Hydraulic Control Water Supply**.

STEP #10: Connect an exhaust tube to each of the two (2) exhaust port fittings on the bottom of the AQUAGATOR module and extend it out the side of the pedestal to a suitable discharge location. **Refer to SECTION 5 - Connecting Exhaust Water Tubing**

STEP #11: Route the station control tubes, coming from the valve-in-head sprinklers or remote control valves in the field up through the sleeve into the bottom of the controller pedestal. Connect each station supply tube to the corresponding station output fitting on the AQUAGATOR module. **Refer to SECTION 6 - Connecting Hydraulic Tubing**.

STEP #12: Route the 2-Wire path cable into the bottom of the controller pedestal. Furnish and install an MSP-1 2-wire path surge arrestor, at the bottom of the front compartment of the pedestal, using the stainless steel bracket.

STEP #13: Connect the 2-wire path to the "LINE" side of the MSP-1 surge arrestor - being sure that the red wire, in the cable, connects to the red wire on the surge arrestor and the black wire, in the cable, connects to the black wire on the surge arrestor.

STEP #14: Extend the 2-Wire path from the "EQUIP" end of the MSP-1 surge arrestor up to the 2-wire path harness of the panel assembly. Connect the red wire of the cable to the red wire of the harness and the black wire of the cable to the black wire of the harness.

STEP #15: Extend the ½" power conduit up from the pedestal pad to a 4" x 4" metal electrical junction box, attached to the nipple of the transformer. Connect the 120-volt AC power supply to the transformer of the controller. In a knock-out of the junction box furnish and install an Intermatic model #AG2401 Surge Arrestor wired into the power supply. Route a #10 ga. ground wire from the surge arrestor ground wire, down the pedestal and pick up the ground wires from the MSP-1 surge arrestor (if there is one) and route this ground out and connect it to a rod of a 3-rod grounding grid.

STEP #16: Temporarily open the water supply line to the inlet port of the AQUAGATOR module to flush debris out of the control lines. **Refer to SECTION 6 - STEP #7**.

STEP #17: Bleed all air from each of the station control tubes as the valve-in-head sprinkler or at the remote control valve. **Refer to SECTION 6 - STEP #8**.

STEP #18: When you are sure all of the air has been bled from a given station control tube, then connect the tube to the valve-in-head sprinkler or remote control valve inlet fitting. **Refer to SECTION 6 - STEP #10**.

STEP #19: Place the AQUAGATOR module into operation - following **STEPS #11 THROUGH #13 in SECTION 6**.

THE INSTALLATION OF THE MSC CONTROLLER with THE AQUAGATOR MODULE SHOULD NOW BE COMPLETE AND THE UNIT FULLY OPERATIONAL

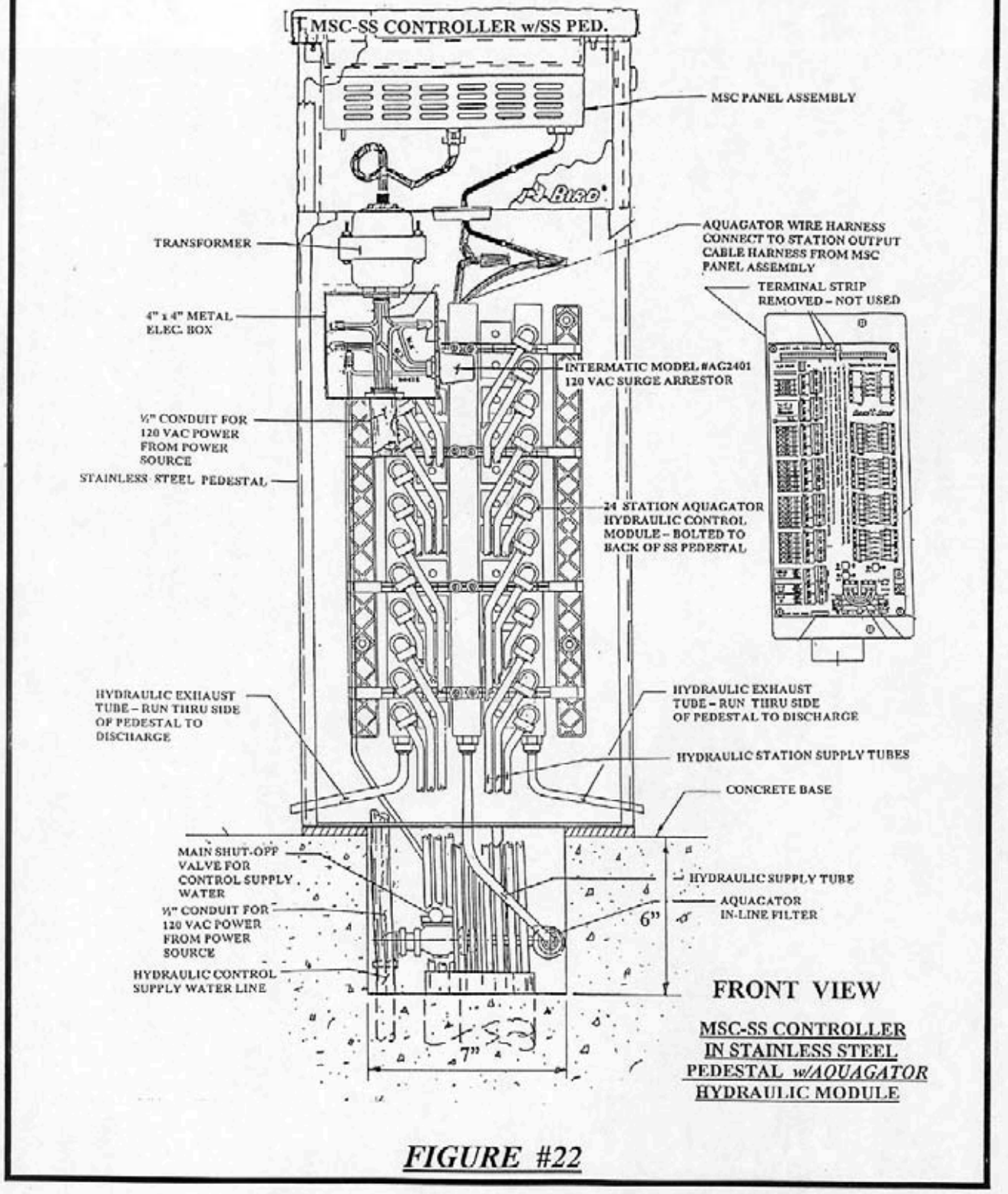
MSC-SS CONTROLLER w/SS PED.
MSC PANEL ASSEMBLY
TRANSFORMER
AQUAGATOR WIRE HARNESS CONNECT TO STATION OUTPUT CABLE HARNESS FROM MSC PANEL ASSEMBLY
TERMINAL STRIP REMOVED – NOT USED
4" x 4" METAL ELEC. BOX
INTERMATIC MODEL #AG2401 120 VAC SURGE ARRESTOR
½" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
STAINLESS STEEL PEDESTAL
24 STATION AQUAGATOR HYDRAULIC CONTROL MODULE – BOLTED TO BACK OF SS PEDESTAL
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
HYDRAULIC STATION SUPPLY TUBES
CONCRETE BASE
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
HYDRAULIC SUPPLY TUBE
AQUACATOR IN-LINE FILTER
½" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
6"
HYDRAULIC CONTROL SUPPLY WATER LINE
7"
FRONT VIEW
MSC-SS CONTROLLER IN STAINLESS STEEL PEDESTAL w/AQUAGATOR HYDRAULIC MODULE

FIGURE #22

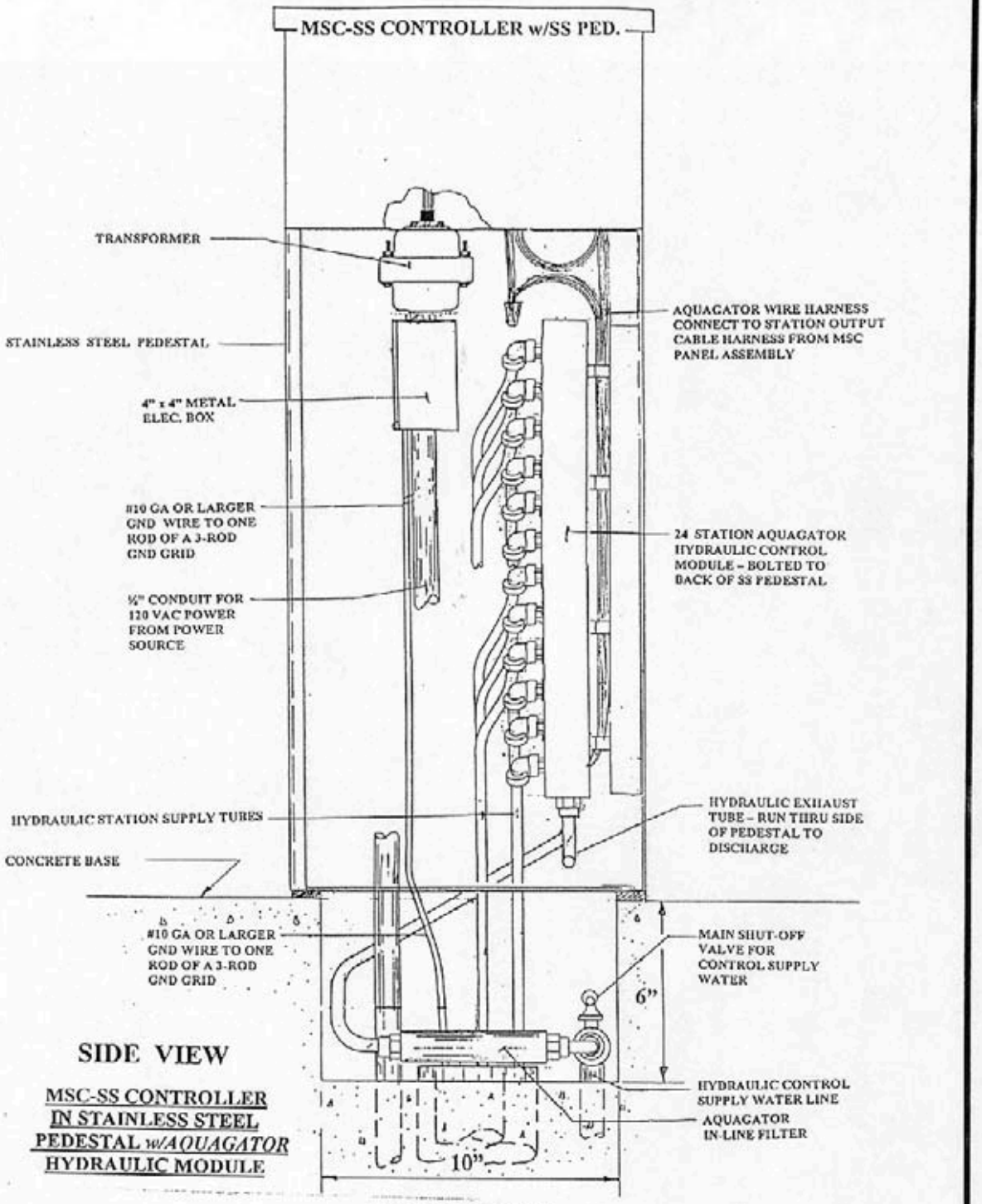
MSC-SS CONTROLLER w/SS PED.
TRANSFORMER
STAINLESS STEEL PEDESTAL
4" x 4" METAL ELEC. BOX
#10 GA OR LARGER GND WIRE TO ONE ROD OF A 3-ROD GND GRID
½" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
HYDRAULIC STATION SUPPLY TUBES
CONCRETE BASE
#10 GA OR LARGER GND WIRE TO ONE ROD OF A 3-ROD GND GRID
AQUAGATOR WIRE HARNESS CONNECT TO STATION OUTPUT CABLE HARNESS FROM MSC PANEL ASSEMBLY
24 STATION AQUAGATOR HYDRAULIC CONTROL MODULE - BOLTED TO BACK OF SS PEDESTAL
HYDRAULIC EXHAUST TUBE - RUN THRU SIDE OF PEDESTAL TO DISCHARGE
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
6"
HYDRAULIC CONTROL SUPPLY WATER LINE
AQUAGATOR IN-LINE FILTER
10"
SIDE VIEW
MSC-SS CONTROLLER IN STAINLESS STEEL PEDESTAL w/AQUAGATOR HYDRAULIC MODULE

FIGURE #23

INSTALLATION DETAILS - MSC CONTROLLER with PLASTIC PEDESTAL

For the MSC Controller with Plastic pedestal, the model AHM-12 (twelve) station, the AHM-16 (sixteen) station, or AHM-24 (twenty-four) station AQUAGATOR Hydraulic Control Module will be used.

REFER TO FIGURES #24, #25 and #26

STEP #1: Pour a concrete pad to mount the controllers on. This pad shall have a 7" wide x 10" long x 6" deep recess to house the Main Water Supply "Shut-Off" valve and the "In-Line" filter. Use the plastic mounting template and the "U" bolts furnished with the controller.

STEP #2: Provide the necessary sleeves in the concrete pad for the Power Supply wiring to the controller, the Main Water Supply line to the AQUAGATOR module, the 2-wire path wiring to and from the controller and for the Hydraulic Station Control Tubes.

STEP #3: Install a "Shut-Off" valve on the Main Water Supply line coming into the base of the concrete pad recess. **Refer to SECTION 5 of this manual**.

STEP #4: After the shut-off valve and before the inlet port to the AQUAGATOR, install the "In-Line" filter. **Refer to SECTION 5 of this manual**.

STEP #5: Mount the controller to the plastic template on the concrete pad.

STEP #6: Leave the station wire harness, coming from the terminal strip on the panel assembly going to the terminal strip in the front compartment of the plastic pedestal.

STEP #7: Leave the terminal strip(s) and station wire harness, coming from the panel assembly and going to the terminal strip(s). These terminal strips will be used with the AQUAGATOR module.

STEP #8: On the pedestal center divider and in the back compartment of the pedestal install the AQUAGATOR module into the pedestal using the four studs on the center divider of the pedestal and the wing nuts provided. Connect the station wire harness wires, of the AQUAGATOR module, to the station output terminals on the terminal strip(s) in the front compartment of the plastic pedestal.

STEP #9: Connect a hydraulic control water supply tube from the "In-Line" filter outlet to the control water inlet fitting on the AQUAGATOR module. **Refer to SECTION 6 - Connecting Hydraulic Control Water Supply**.

STEP #10: Connect an exhaust tube to each of the two (2) exhaust port fittings on the bottom of the AQUAGATOR module and extend it out the side of the pedestal to a suitable discharge location. **Refer to SECTION 5 - Connecting Exhaust Water Tubing**

STEP #11: Route the station control tubes, coming from the valve-in-head sprinklers or remote control valves in the field up through the sleeve into the bottom of the controller pedestal. Connect each station supply tube to the corresponding station output fitting on the AQUAGATOR module. **Refer to SECTION 6 - Connecting Hydraulic Tubing**.

STEP #12: Route the 2-Wire path cable into the bottom of the controller pedestal. Furnish and install an MSP-1 surge arrestor and mount it in the stainless steel bracket on the terminal strip.

STEP #13: Connect the 2-wire path to the terminals on the terminal strip marked "MAXI IN".

STEP #14: Extend the ½" power conduit up from the pedestal pad to a ½" – 90 degree electrical condulet, with the side outlet attached to the nipple of the transformer. Connect the 120-volt AC power supply to the transformer of the controller.

STEP #15: Temporarily open the water supply line to the inlet port of the AQUAGATOR module to flush debris out of the control lines. **Refer to SECTION 6 - STEP #7**.

STEP #16: Bleed all air from each of the station control tubes as the valve-in-head sprinkler or at the control remote valve. **Refer to SECTION 6 - STEP #8**

STEP #17: When you are sure all air has been bled from a given station control tube, then connect the tube to the valve-in-head sprinkler or remote control valve inlet fitting. **Refer to SECTION 6 - STEP #10**.

STEP #18: Place the AQUAGATOR module into operation - following **STEPS #11 THROUGH #13 in SECTION 6**.

THE INSTALLATION OF THE MSC CONTROLLER and THE AQUAGATOR MODULE SHOULD NOW BE COMPLETE AND THE UNIT FULLY OPERATIONAL

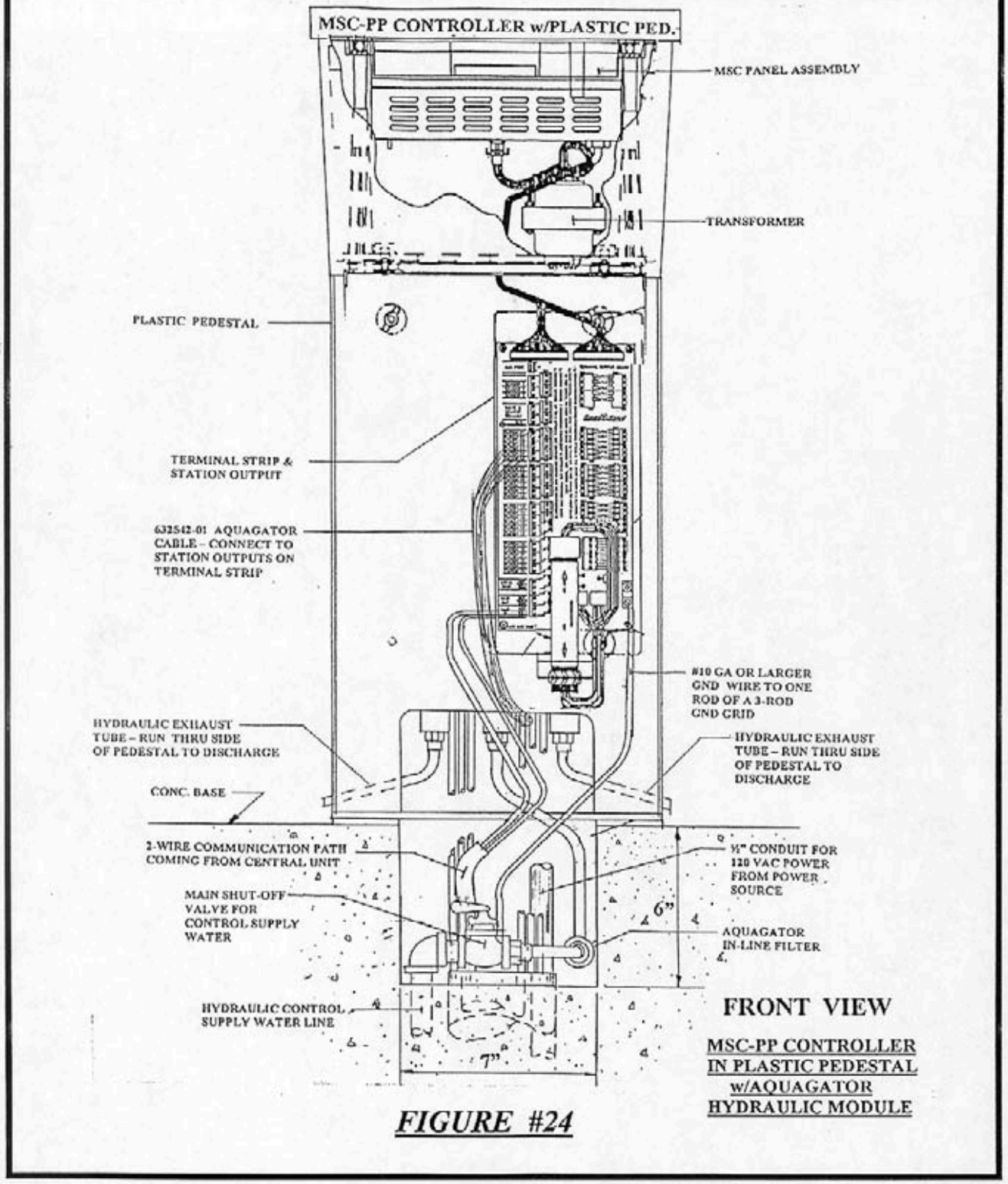
MSC-PP CONTROLLER w/PLASTIC PED.
MSC PANEL ASSEMBLY
TRANSFORMER
PLASTIC PEDESTAL
TERMINAL STRIP & STATION OUTPUT
632542-01 AQUAGATOR CABLE – CONNECT TO STATION OUTPUTS ON TERMINAL STRIP
#10 GA OR LARGER GND WIRE TO ONE ROD OF A 3-ROD GND GRID
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
CONC. BASE
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT
½" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
6"
AQUAGATOR IN-LINE FILTER
HYDRAULIC CONTROL SUPPLY WATER LINE
7"
FRONT VIEW
MSC-PP CONTROLLER IN PLASTIC PEDESTAL w/AQUAGATOR HYDRAULIC MODULE

FIGURE #24

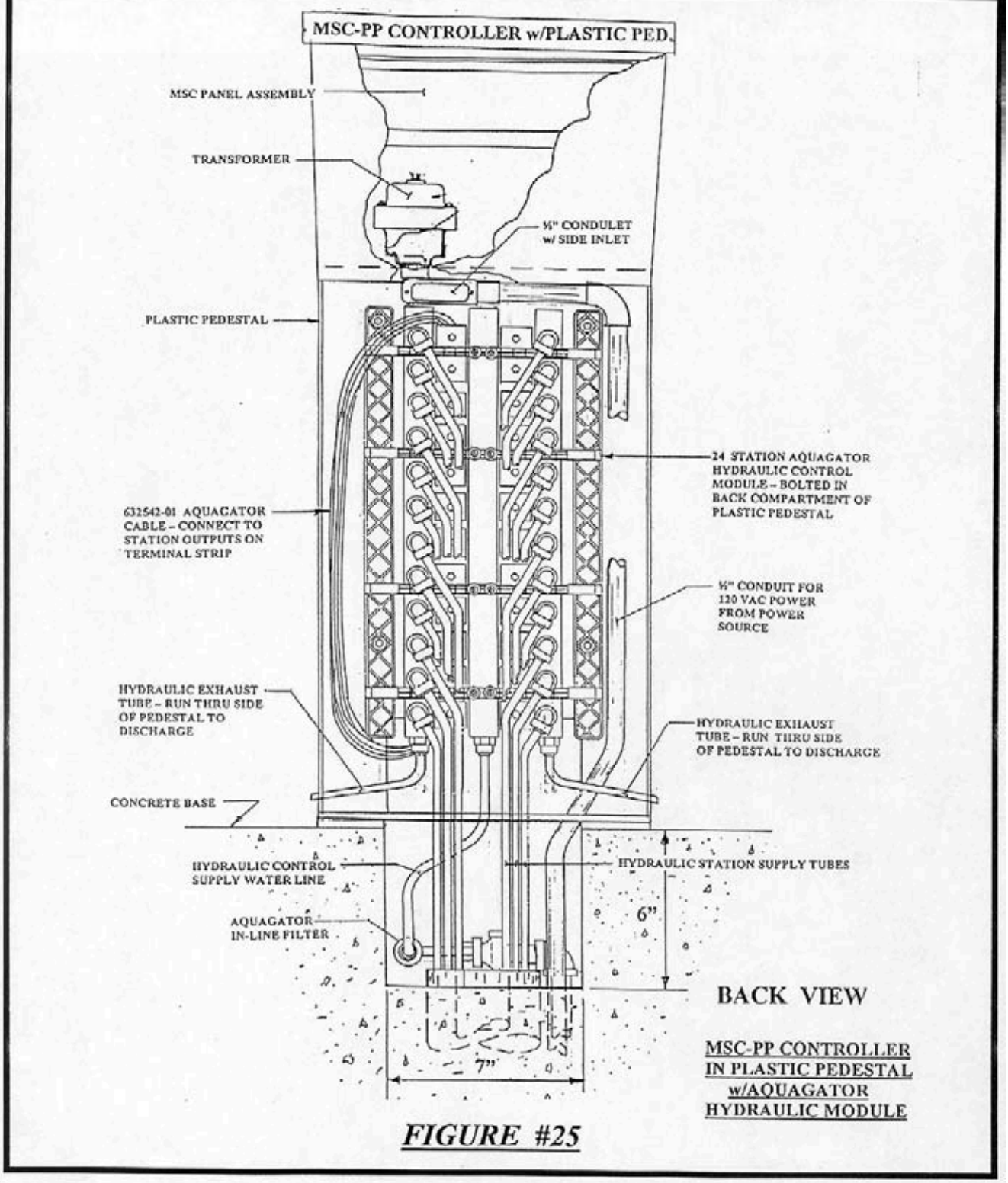
MSC-PP CONTROLLER w/PLASTIC PED.
MSC PANEL ASSEMBLY
TRANSFORMER
½" CONDULET w/ SIDE INLET
PLASTIC PEDESTAL
24 STATION AQUAGATOR HYDRAULIC CONTROL MODULE – BOLTED IN BACK COMPARTMENT OF PLASTIC PEDESTAL
631542-01 AQUAGATOR CABLE – CONNECT TO STATION OUTPUTS ON TERMINAL STRIP
½" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
CONCRETE BASE
HYDRAULIC CONTROL SUPPLY WATER LINE
HYDRAULIC STATION SUPPLY TUBES
AQUAGATOR IN-LINE FILTER
6"
7"
BACK VIEW
MSC-PP CONTROLLER IN PLASTIC PEDESTAL w/AQUAGATOR HYDRAULIC MODULE

FIGURE #25

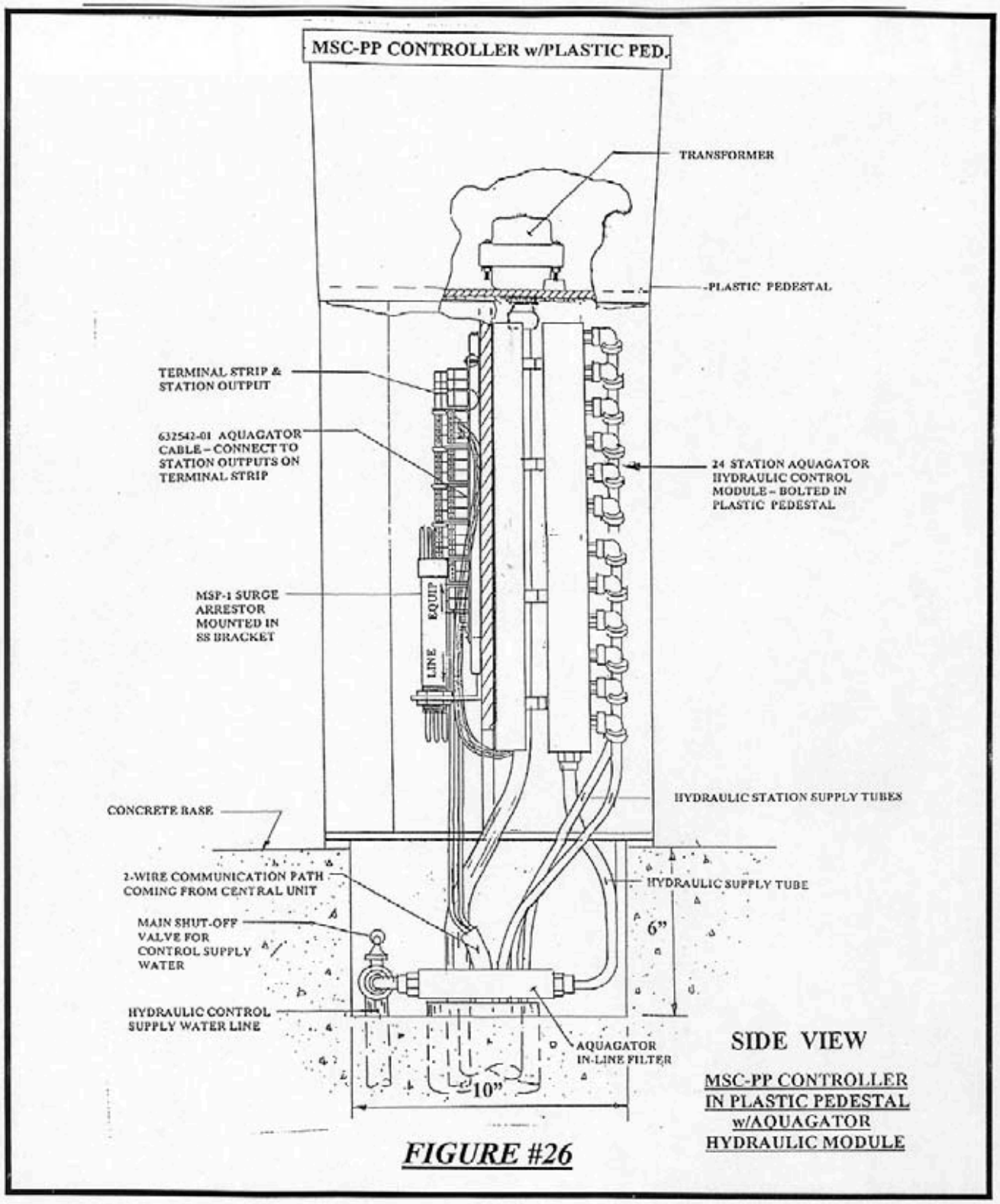
MSC-PP CONTROLLER w/PLASTIC PED.
TRANSFORMER
PLASTIC PEDESTAL
TERMINAL STRIP & STATION OUTPUT
632542-01 AQUAGATOR CABLE – CONNECT TO STATION OUTPUTS ON TERMINAL STRIP
24 STATION AQUAGATOR HYDRAULIC CONTROL MODULE – BOLTED IN PLASTIC PEDESTAL
MSP-1 SURGE ARRESTOR MOUNTED IN SS BRACKET
LINE
EQUIP
HYDRAULIC STATION SUPPLY TUBES
CONCRETE BASE
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT
HYDRAULIC SUPPLY TUBE
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
6"
HYDRAULIC CONTROL SUPPLY WATER LINE
AQUAGATOR IN-LINE FILTER
10"
SIDE VIEW
MSC-PP CONTROLLER IN PLASTIC PEDESTAL w/AQUAGATOR HYDRAULIC MODULE

FIGURE #26

INSTALLATION DETAILS - COM CONTROLLER with PLASTIC PEDESTAL - 24 STATIONS OR LESS

For the COM-12 station, COM-16 station or the COM-24 station Controller with Plastic pedestal, the model AHM-12 (twelve) station, the AHM-16 (sixteen) station, or AHM-24 (twenty-four) station AQUAGATOR Hydraulic Control Module will be used.

REFER TO FIGURES #27, #28 and #29

STEP #1: Pour a concrete pad to mount the controllers on. This pad shall have a 7" wide x 10" long x 6" deep recess to house the Main Water Supply "Shut-Off" valve and the "In-Line" filter. Use the plastic mounting template and the "U" bolts furnished with the controller.

STEP #2: Provide the necessary sleeves in the concrete pad for the Power Supply wiring to the controller, the Main Water Supply line to the AQUAGATOR module, the 2-wire path wiring to and from the controller and for the Hydraulic Station Control Tubes.

STEP #3: Install a "Shut-Off" valve on the Main Water Supply line coming into the base of the concrete pad recess. **Refer to SECTION 5 of this manual**.

STEP #4: After the shut-off valve and before the inlet port to the AQUAGATOR, install the "In-Line" filter. **Refer to SECTION 5 of this manual**.

STEP #5: Mount the controller to the plastic template on the concrete pad.

STEP #6: Leave the station wire harness, coming from the panel assembly and going to the terminal strip in the front compartment of the plastic pedestal.

STEP #7: Leave the station output terminal strip mounted in the front compartment of the pedestal and on the center divider. This terminal strip will be used with the AQUAGATOR module.

STEP #8: On the pedestal center divider and in the back compartment of the pedestal install the AQUAGATOR module into the pedestal using the four studs on the center divider of the pedestal and the wing nuts provided. Connect the station wire harness wires, of the AQUAGATOR module, to the station output terminals on the terminal strip in the front compartment of the plastic pedestal.

STEP #9: Connect a hydraulic control water supply tube from the "In-Line" filter outlet to the control water inlet fitting on the AQUAGATOR module. **Refer to SECTION 6 - Connecting Hydraulic Control Water Supply**.

STEP #10: Connect an exhaust tube to each of the two (2) exhaust port fittings on the bottom of the AQUAGATOR module and extend it out the side of the pedestal to a suitable discharge location. **Refer to SECTION 5 - Connecting Exhaust Water Tubing**

STEP #11: Route the station control tubes, coming from the valve-in-head sprinklers or remote control valves in the field up through the sleeve into the bottom of the controller pedestal. Connect each station supply tube to the corresponding station output fitting on the AQUAGATOR module. **Refer to SECTION 6 - Connecting Hydraulic Tubing**.

STEP #12: Route the 2-Wire path cable into the bottom of the controller pedestal. Furnish and install an MSP-1 surge arrestor and mount it along side the terminal strip and using a stainless steel bracket for holding the MSP-1 surge arrestor.

STEP #13: Connect the Hot (red) wire coming from the "LINE" end of the MSP-1 surge arrestor to the terminal on the terminal strip marked "TW HOT - PIPE" and connect the "Com" (black) wire coming from the "LINE" end of the MSP-1 surge arrestor to the terminal on the terminal strip marked "TW COM - PIPE", both located at the bottom of the terminal strip.

STEP #14: Connect the Hot (red) wire coming from the "EQUIP" end of the MSP-1 surge arrestor to the terminal on the terminal strip marked "TW HOT - PIPE" and connect the "Com" (black) wire coming from the "EQUIP" end of the MSP-1 surge

arrestor to the terminal on the terminal strip marked “TW COM - PIPE”, both located at the top of the terminal strip.

STEP #15: The 2-wire path, coming from the central unit, shall have the Hot (red) wire connected to one of the terminals, on the terminal strip, marked “TW HOT - FIELD” and the Com (black) wire connected to one of the terminals, on the terminal strip, marked “TW COM - FIELD”, both located at the bottom of the terminal strip.

STEP #16: Extend the ½” power conduit up from the pedestal pad to a 4” x 4” ***shallow*** electrical junction box mounted in the top compartment of the plastic pedestal. Using a short piece of flexible conduit and cable - extend the 120-volt AC power supply, from the junction box to the transformer wiring compartment of the COM unit. Connect the power to the transformer of the COM controller.

STEP #17: Temporarily open the water supply line to the inlet port of the AQUAGATOR module to flush debris out of the control lines. **Refer to SECTION 6 - STEP #7**.

STEP #18: Bleed all air from each of the station control tubes as the valve-in-head sprinkler or at the remote control valve. **Refer to SECTION 6 - STEP #8**.

STEP #19: When you are sure all of the air has been bled from a given station control tube, then connect the tube to the valve-in-head sprinkler or remote control valve inlet fitting. **Refer to SECTION 6 - STEP #10**.

STEP #20: Place the AQUAGATOR module into operation - following **STEPS #11 THROUGH #13 in SECTION 6**.

THE INSTALLATION OF THE MSC CONTROLLER with THE AQUAGATOR MODULE SHOULD NOW BE COMPLETE AND THE UNIT FULLY OPERATIONAL

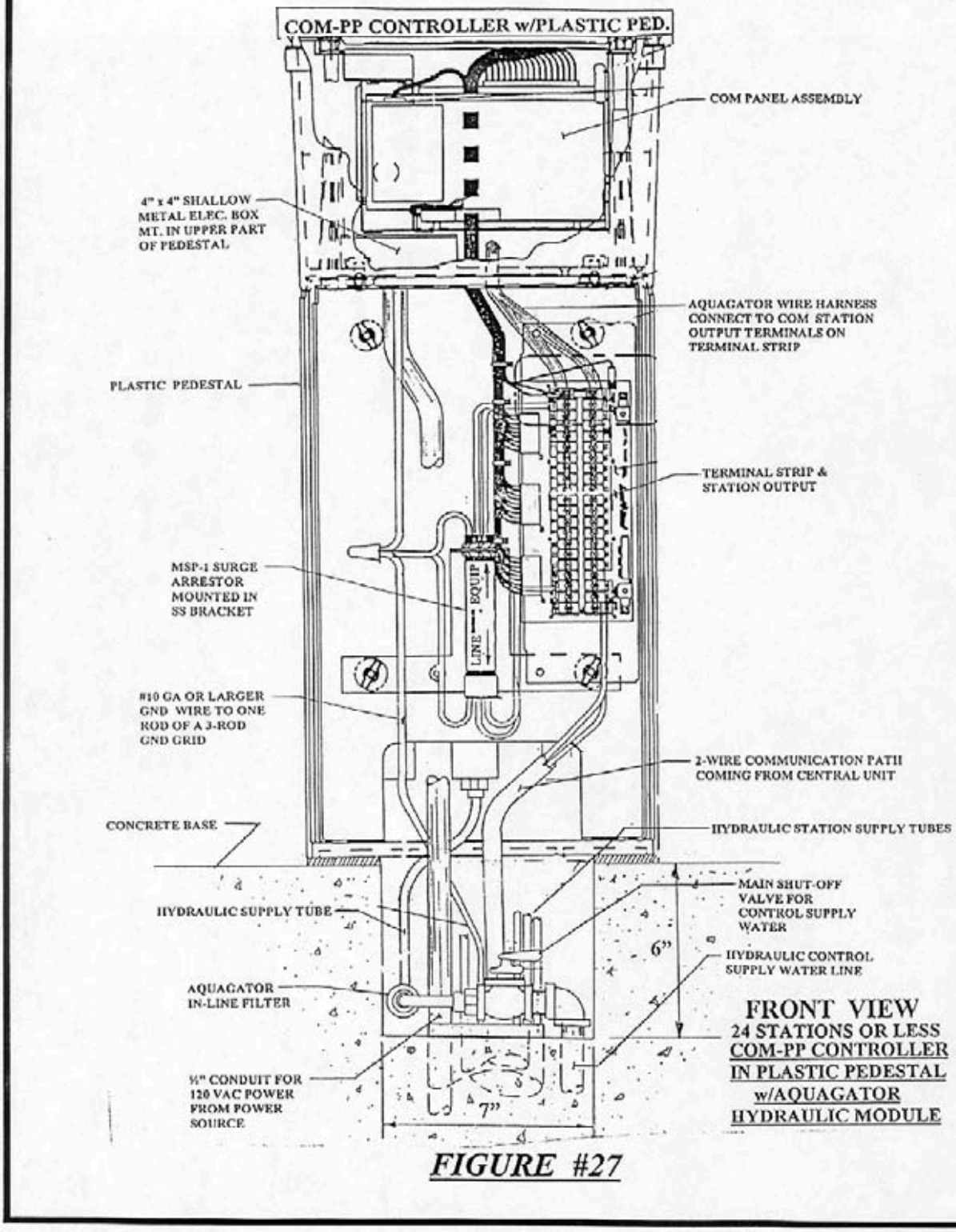
COM-PP CONTROLLER w/PLASTIC PED.
COM PANEL ASSEMDLY
4" x 4" SHALLOW METAL ELEC. BOX MT. IN UPPER PART OF PEDESTAL
AQUAGATOR WIRE HARNESS CONNECT TO COM STATION OUTPUT TERMINALS ON TERMINAL STRIP
PLASTIC PEDESTAL
TERMINAL STRIP & STATION OUTPUT
MSP-1 SURGE ARRESTOR MOUNTED IN SS BRACKET
LINE
EQUIP
#10 GA OR LARGER GND WIRE TO ONE ROD OF A 3-ROD GND GRID
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT
CONCRETE BASE
HYDRAULIC STATION SUPPLY TUBES
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
HYDRAULIC SUPPLY TUBE
6"
HYDRAULIC CONTROL SUPPLY WATER LINE
AQUAGATOR IN-LINE FILTER
FRONT VIEW
24 STATIONS OR LESS
COM-PP CONTROLLER
IN PLASTIC PEDESTAL
w/AQUAGATOR
HYDRAULIC MODULE
½" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
7"

FIGURE #27

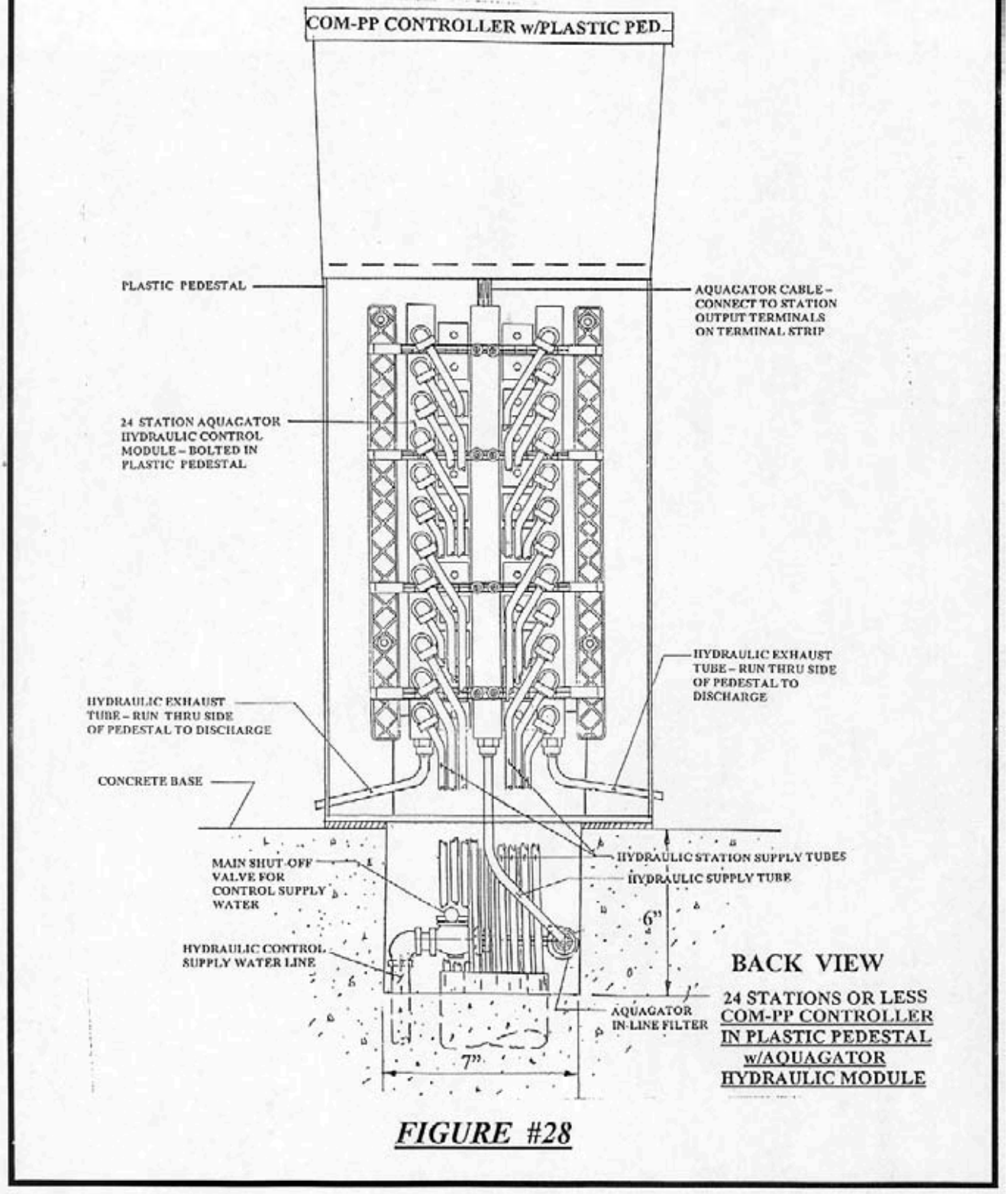
COM-PP CONTROLLER w/PLASTIC PED.
PLASTIC PEDESTAL
AQUAGATOR CABLE – CONNECT TO STATION OUTPUT TERMINALS ON TERMINAL STRIP
24 STATION AQUAGATOR HYDRAULIC CONTROL MODULE – BOLTED IN PLASTIC PEDESTAL
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
CONCRETE BASE
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
HYDRAULIC STATION SUPPLY TUBES
HYDRAULIC SUPPLY TUBE
6"
HYDRAULIC CONTROL SUPPLY WATER LINE
AQUAGATOR IN-LINE FILTER
7"
BACK VIEW
24 STATIONS OR LESS
COM-PP CONTROLLER
IN PLASTIC PEDESTAL
w/AQUAGATOR
HYDRAULIC MODULE

FIGURE #28

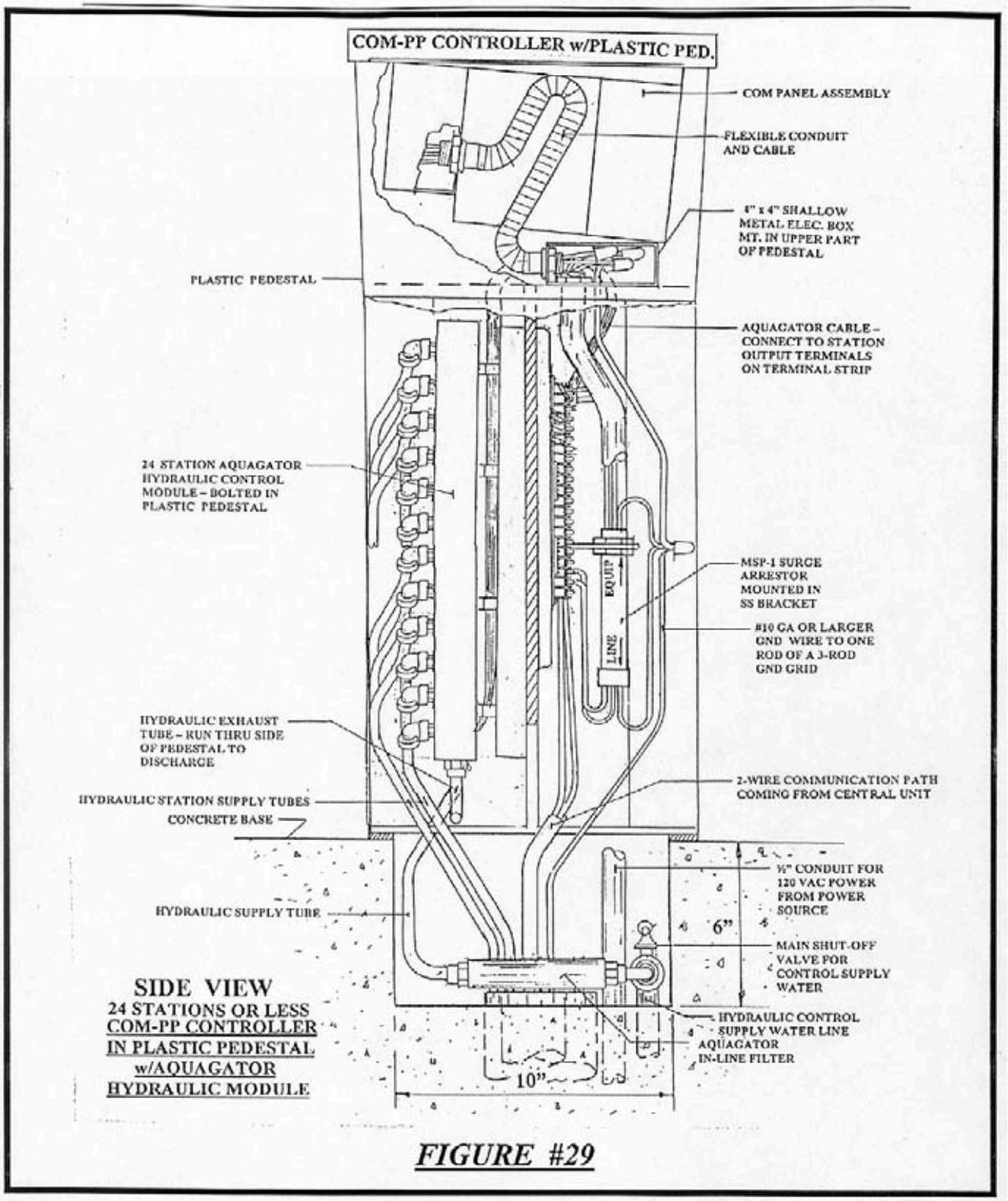
COM-PP CONTROLLER w/PLASTIC PED.
COM PANEL ASSEMBLY
FLEXIBLE CONDUIT AND CABLE
4" x 4" SHALLOW METAL ELEC. BOX MT. IN UPPER PART OF PEDESTAL
PLASTIC PEDESTAL
AQUAGATOR CABLE – CONNECT TO STATION OUTPUT TERMINALS ON TERMINAL STRIP
24 STATION AQUAGATOR HYDRAULIC CONTROL MODULE – BOLTED IN PLASTIC PEDESTAL
MSP-1 SURGE ARRESTOR MOUNTED IN SS BRACKET
#10 GA OR LARGER GND WIRE TO ONE ROD OF A 3-ROD GND GRID
EQUIP
LINE
HYDRAULIC EXHAUST TUBE – RUN THRU SIDE OF PEDESTAL TO DISCHARGE
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT
HYDRAULIC STATION SUPPLY TUBES
CONCRETE BASE
½" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
HYDRAULIC SUPPLY TUBE
6"
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
HYDRAULIC CONTROL SUPPLY WATER LINE
AQUAGATOR IN-LINE FILTER
10"
SIDE VIEW
24 STATIONS OR LESS
COM-PP CONTROLLER
IN PLASTIC PEDESTAL
w/AQUAGATOR
HYDRAULIC MODULE

FIGURE #29

INSTALLATION DETAILS - COM CONTROLLER with PLASTIC PEDESTAL - FOR GREATER THAN 24 STATIONS

For the COM Controller with greater than 24 stations and with Plastic pedestal, use **two** (2) Model AHM, AQUAGATOR Hydraulic Control Modules. ***A Plastic Pedestal Assembly, mounted next to the COM controller will also be needed for housing the two AQUAGATOR modules***.

REFER TO FIGURE #30

STEP #1: Pour a concrete pad, on which to mount the controller and accompanying plastic pedestal. This pad shall have a 7" wide x 10" long x 6" deep recess, below both the COM unit and the blank plastic pedestal. The recess below the blank plastic pedestal shall be used to house the Main Water Supply "Shut-Off" valve and the "In-Line" filter for the AQUAGATOR modules. Use the plastic pedestal for mounting the two units.

STEP #2: Provide the necessary sleeves in the concrete pad for the Power Supply wiring to the controller, the Main Water Supply line to the AQUAGATOR module, the 2-wire path wiring to and from the controller and for the Hydraulic Station Control Tubes.

STEP #3: Install a "Shut-Off" valve on the Main Water Supply line coming into the base of the concrete pad recess for the plastic pedestal to house the AQUAGATOR modules. **Refer to SECTION 5 of this manual**.

STEP #4: After the shut-off valve and before the inlet port to the AQUAGATOR install the "In-Line" filter. **Refer to SECTION 5 of this manual**.

STEP #5: Mount the COM controller to the plastic template on the concrete pad and the blank plastic pedestal to its plastic template.

STEP #6: The COM unit shall have nothing changed on it, but shall remain as received from the factory.

STEP #7: Leave the station output terminal strips mounted in the front compartment of the COM pedestal and on the center divider. This terminal strip will be used with the AQUAGATOR module.

STEP #8: In the blank plastic pedestal, on the center divider mount the two (2) AQUAGATOR modules, one in the back compartment of the pedestal and the other in the front compartment. Install the AQUAGATOR modules into the pedestal using the four studs on the center divider of the pedestal and the wing nuts provided. Connect the station wire harness wires, of the AQUAGATOR modules, to the station output terminals on the terminal strips in the COM unit pedestal. The wire harnesses shall be routed from the AQUAGATOR pedestal over to the COM unit pedestal through a suitable sized sleeve, going from one recess to the other recess.

STEP #9: Connect a hydraulic control water supply tube from the “In-Line” filter outlet to the control water inlet fitting on each of the AQUAGATOR modules. **Refer to SECTION 6 - Connecting Hydraulic Control Water Supply**.

STEP #10: Connect an exhaust tube to each of the two (2) exhaust port fittings on the bottom of each of the AQUAGATOR modules and extend it out the side of the pedestal to a suitable discharge location. **Refer to SECTION 5 - Connecting Exhaust Water Tubing**

STEP #11: Route the station control tubes, coming from the valve-in-head sprinklers or remote control valves in the field, up through the sleeve into the bottom of the AQUAGATOR plastic pedestal. Connect each station supply tube to the corresponding station output fitting on the AQUAGATOR modules. **Refer to SECTION 6 - Connecting Hydraulic Tubing**.

STEP #12: Route the 2-Wire path cable into the bottom of the COM controller pedestal. Furnish and install an MSP-1 surge arrestor and mount it along side and between the terminal strips, using a stainless steel bracket for holding the MSP-1 surge arrestor.

STEP #13: Connect the Hot (red) wire coming from the "LINE" end of the MSP-1 surge arrestor to the terminal on the terminal strip marked "TW HOT - PIPE" and connect the Com (black) wire coming from the "LINE" end of the MSP-1 surge arrestor to the terminal on the terminal strip marked "TW COM - PIPE", both located at the bottom of the terminal strip.

STEP #14: Connect the Hot (red) wire coming from the "EQUIP" end of the MSP-1 surge arrestor to the terminal on the terminal strip marked "TW HOT - PIPE" and connect the Com (black) wire coming from the "EQUIP" end of the MSP-1 surge arrestor to the terminal on the terminal strip marked "TW COM - PIPE", both located at the top of the terminal strip.

STEP #15: The 2-wire path, coming from the central unit, shall have the Hot (red) wire connected to one of the terminals, on the terminal strip, marked "TW HOT - FIELD" and the Com (black) wire connected to one of the terminals, on the terminal strip, marked "TW COM - FIELD", both located at the bottom of the terminal strip.

STEP #16: Extend the ½" power conduit up from the pedestal pad to a 4" x 4" ***shallow*** electrical junction box mounted in the top compartment of the plastic pedestal. Using a short piece of flexible conduit and cable - extend the 120-volt AC power supply, from the junction box to the transformer wiring compartment of the COM unit. Connect the power to the transformer of the COM controller.

STEP #17: Temporarily open the water supply line to the inlet port of the AQUAGATOR modules to flush debris out of the control lines. **Refer to SECTION 6 - STEP #7**.

STEP #18: Bleed all air from each of the station control tubes at the valve-in-head sprinkler or at the remote control valve. **Refer to SECTION 6 - STEP #8**.

STEP #19: When you are sure all of the air has been bled from a given station control tube, then connect the tube to the valve-in-head sprinkler or remote control valve inlet fitting. **Refer to SECTION 6 - STEP #10**.

STEP #20: Place the AQUAGATOR module into operation - following **STEPS #11 THROUGH #13 in SECTION 6**.

THE INSTALLATION OF THE MSC CONTROLLER with THE AQUAGATOR MODULE SHOULD NOW BE COMPLETE AND THE UNIT FULLY OPERATIONAL

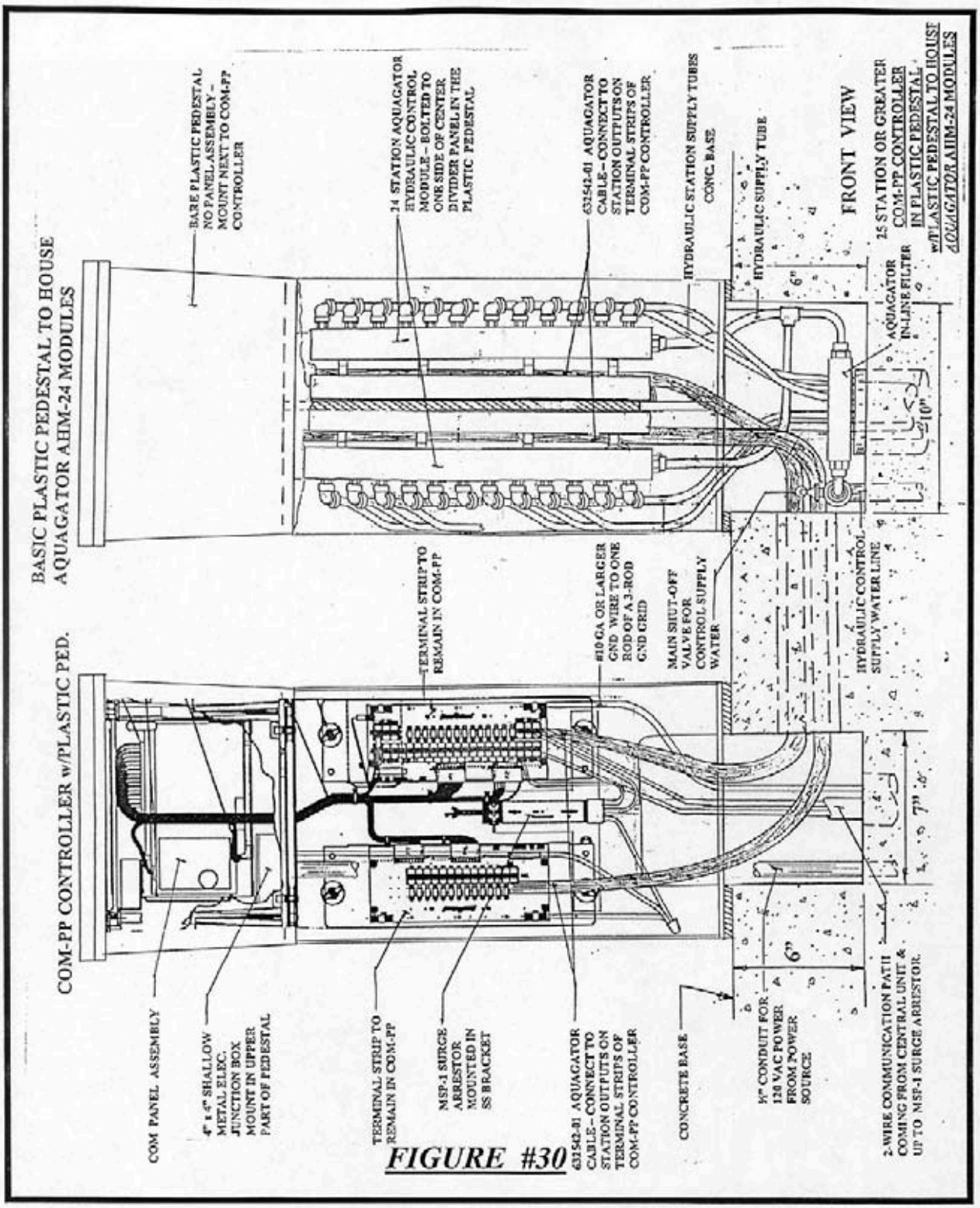
BASIC PLASTIC PEDESTAL TO HOUSE
AQUAGATOR AHM-24 MODULES
COM-PP CONTROLLER w/PLASTIC PED.
FRONT VIEW
BASE PLASTIC PEDESTAL NO PANEL ASSEMBLY - MOUNT NEXT TO COM-PP CONTROLLER
24 STATION AQUAGATOR HYDRAULIC CONTROL MODULE - BOLTED TO ONE SIDE OF CENTER DIVIDER PANEL IN THE PLASTIC PEDESTAL
632542-01 AQUAGATOR CABLE - CONNECT TO STATION OUTPUTS ON TERMINAL STRIPS OF COM-PP CONTROLLER
HYDRAULIC STATION SUPPLY TUBES
CONC. BASE
HYDRAULIC SUPPLY TUBE
AQUAGATOR IN-LINE FILTER
25 STATION OR GREATER COM-PP CONTROLLER IN PLASTIC PEDESTAL w/PLASTIC PEDESTAL TO HOUSE AQUAGATOR AHM-24 MODULES
TERMINAL STRIP TO REMAIN IN COM-PP
#10 GA OR LARGER GND WIRE TO ONE ROD OF A 3-ROD GND GRID
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
HYDRAULIC CONTROL SUPPLY WATER LINE
COM PANEL ASSEMBLY
4" x 4" SHALLOW METAL ELEC. JUNCTION BOX MOUNT IN UPPER PART OF PEDESTAL
TERMINAL STRIP TO REMAIN IN COM-PP
MSP-1 SURGE ARRESTOR MOUNTED IN SS BRACKET
632542-01 AQUAGATOR CABLE - CONNECT TO STATION OUTPUTS ON TERMINAL STRIPS OF COM-PP CONTROLLER
CONCRETE BASE
½" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT & UP TO MSP-1 SURGE ARRESTOR.
6"
7"
10"

FIGURE #30

INSTALLATION DETAILS - PAR+ CONTROLLER with PLASTIC PEDESTAL

For the PAR+ Controller, with Plastic pedestal, **one** (1) or **two** (2) Model AHM, AQUAGATOR Hydraulic Control Modules will be used. ***A Plastic Pedal Assembly, mounted next to the PAR+ controller, for housing the AQUAGATOR modules will also be needed***.

REFER TO FIGURES #31 and #32

STEP #1: Pour a concrete pad, on which to mount the controller and accompanying plastic pedestal. This pad shall have a 7" wide x 10" long x 6" deep recess, below both the PAR+ unit and the blank plastic pedestal. The recess below the blank plastic pedestal shall be used to house the Main Water Supply "Shut-Off" valve and the "In-Line" filter for the AQUAGATOR modules. Use the plastic mounting template and the "U" bolts furnished with the controller and plastic pedestal for mounting the two units.

STEP #2: Provide the necessary sleeves in the concrete pad recesses for the Power Supply wiring to the controller, the Main Water Supply line to the AQUAGATOR module, the 2-wire path wiring to and from the controller and for the Hydraulic Station Control Tubes.

STEP #3: Install a "Shut-Off" valve on the Main Water Supply line coming into the base of the concrete pad recess for the plastic pedestal to house the AQUAGATOR modules. **Refer to SECTION 5 of this manual**.

STEP #4: After the shut-off valve and before the inlet port to the AQUAGATOR install the "In-Line" filter. **Refer to SECTION 5 of this manual**.

STEP #5: Mount the PAR+ controller to the plastic template on the concrete pad and the blank plastic pedestal to its plastic template, next to the PAR+ unit on the concrete pad.

STEP #6: The PAR+ unit shall have nothing changed on it, but shall remain as received from the factory.

STEP #7: Leave the station output terminal strips mounted in the front compartment of the PAR+ pedestal and on the center divider. This terminal strip will be used with the AQUAGATOR module.

STEP #8: In the blank plastic pedestal, on the center divider mount the two (2) AQUAGATOR modules (if required), one in the back compartment of the pedestal and the other in the front compartment. Install the AQUAGATOR modules into the pedestal using the four studs on the center divider of the pedestal and the wing nuts provided. Connect the station wire harness wires, of the AQUAGATOR modules, to the station output terminals on the terminal strips in the COM unit pedestal. The wire harnesses shall be routed from the AQUAGATOR pedestal over to the PAR+ unit pedestal through a suitable sized sleeve, going from one recess to the other recess.

STEP #9: Connect a hydraulic control water supply tube from the “In-Line” filter outlet to the control water inlet fitting on each of the AQUAGATOR modules. **Refer to SECTION 6 - Connecting Hydraulic Control Water Supply**.

STEP #10: Connect an exhaust tube to each of the two (2) exhaust port fittings on the bottom of each of the AQUAGATOR modules and extend it out the side of the pedestal to a suitable discharge location. **Refer to SECTION 5 - Connecting Exhaust Water Tubing**

STEP #11: Route the station control tubes, coming from the valve-in-head sprinklers or remote control valves in the field, up through the sleeve into the bottom of the AQUAGATOR plastic pedestal. Connect each station supply tube to the corresponding station output fitting on the AQUAGATOR modules. **Refer to SECTION 6 - Connecting Hydraulic Tubing**.

STEP #12: Route the 2-Wire path cable into the bottom of the PAR+ controller pedestal. Furnish and install an MSP-1 surge arrestor and mount it along side and between the terminal strips, using a stainless steel bracket for holding the MSP-1 surge arrestor.

STEP #13: Connect the Hot (red) wire coming from the "LINE" end of the MSP-1 surge arrestor to the terminal on the terminal strip marked "TW HOT - PIPE" and connect the Com (black) wire coming from the "LINE" end of the MSP-1 surge arrestor to the terminal on the terminal strip marked "TW COM - PIPE", both located at the bottom of the terminal strip.

STEP #14: Connect the Hot (red) wire coming from the "EQUIP" end of the MSP-1 surge arrestor to the terminal on the terminal strip marked "TW HOT - PIPE" and connect the Com (black) wire coming from the "EQUIP" end of the MSP-1 surge arrestor to the terminal on the terminal strip marked "TW COM - PIPE", both located at the top of the terminal strip.

STEP #15: The 2-wire path, coming from the central unit, shall have the Hot (red) wire connected to one of the terminals, on the terminal strip, marked "TW HOT - FIELD" and the Com (black) wire connected to one of the terminals, on the terminal strip, marked "TW COM - FIELD", both located at the bottom of the terminal strip.

STEP #16: Extend the ½" power conduit up from the pedestal pad to the electrical junction box for the transformer of the PAR+ controller. Connect the 120-volt AC power supply wires to the appropriate terminals, per instructions at the transformer or the PAR+ controller.

STEP #17: Temporarily open the water supply line to the inlet ports of the AQUAGATOR modules to flush debris out of the control lines. **Refer to SECTION 6 - STEP #7**.

STEP #18: Bleed all air from each of the station control tubes at the valve-in-head sprinkler or at the remote control valve. **Refer to SECTION 6 - STEP #8**.

STEP #19: When you are sure all of the air has been bled from a given station control tube, then connect the tube to the valve-in-head sprinkler or remote control valve inlet fitting. **Refer to SECTION 6 - STEP #10**.

STEP #20: Place the AQUAGATOR module into operation - following **STEPS #11 THROUGH #13 in SECTION 6**.

THE INSTALLATION OF THE PAR+ CONTROLLER and THE AQUAGATOR MODULES SHOULD NOW BE COMPLETE AND THE UNIT FULLY OPERATIONAL

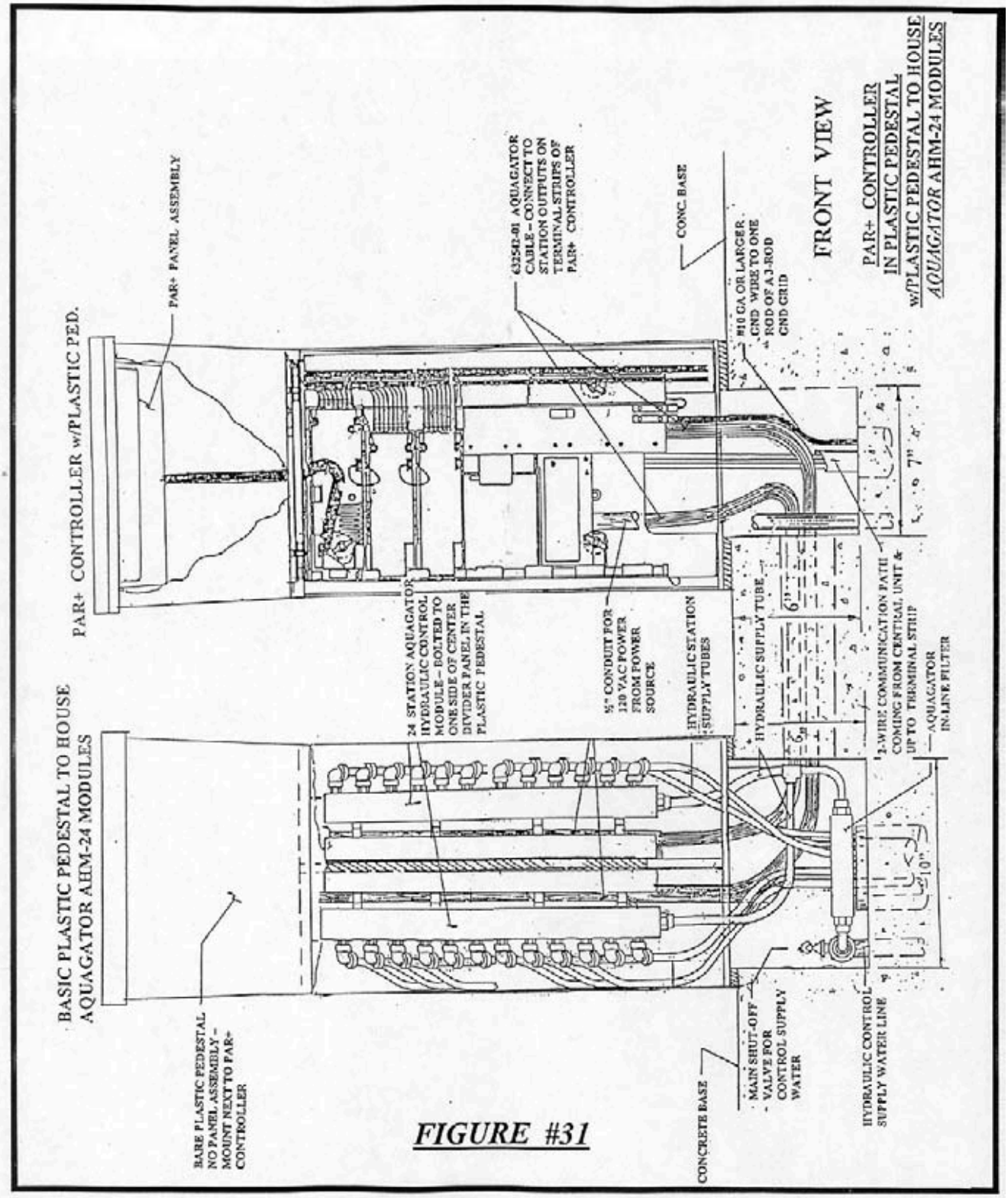
FRONT VIEW
PAR+ CONTROLLER
IN PLASTIC PEDESTAL TO HOUSE
w/PLASTIC PEDESTAL TO HOUSE
AQUAGATOR AHM-24 MODULES
PAR+ CONTROLLER w/PLASTIC PED.
PAR+ PANEL ASSEMBLY
632582-01 AQUAGATOR CABLE – CONNECT TO STATION OUTPUTS ON TERMINAL STRIPS OF PAR+ CONTROLLER
CONC. BASE
#10 GA OR LARGER GND WIRE TO ONE ROD OF A3-ROD GND GRID
7"
10"
24 STATION AQUAGATOR HYDRAULIC CONTROL MODULE – BOLTED TO ONE SIDE OF CENTER DIVIDER PANEL IN THE PLASTIC PEDESTAL
¾" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
HYDRAULIC STATION SUPPLY TUBES
HYDRAULIC SUPPLY TUBE
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT & UP TO TERMINAL STRIP
AQUAGATOR IN-LINE FILTER
BASIC PLASTIC PEDESTAL TO HOUSE
AQUAGATOR AHM-24 MODULES
BARE PLASTIC PEDESTAL NO PANEL ASSEMBLY – MOUNT NEXT TO PAR+ CONTROLLER
CONCRETE BASE
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
HYDRAULIC CONTROL SUPPLY WATER LINE

FIGURE #31

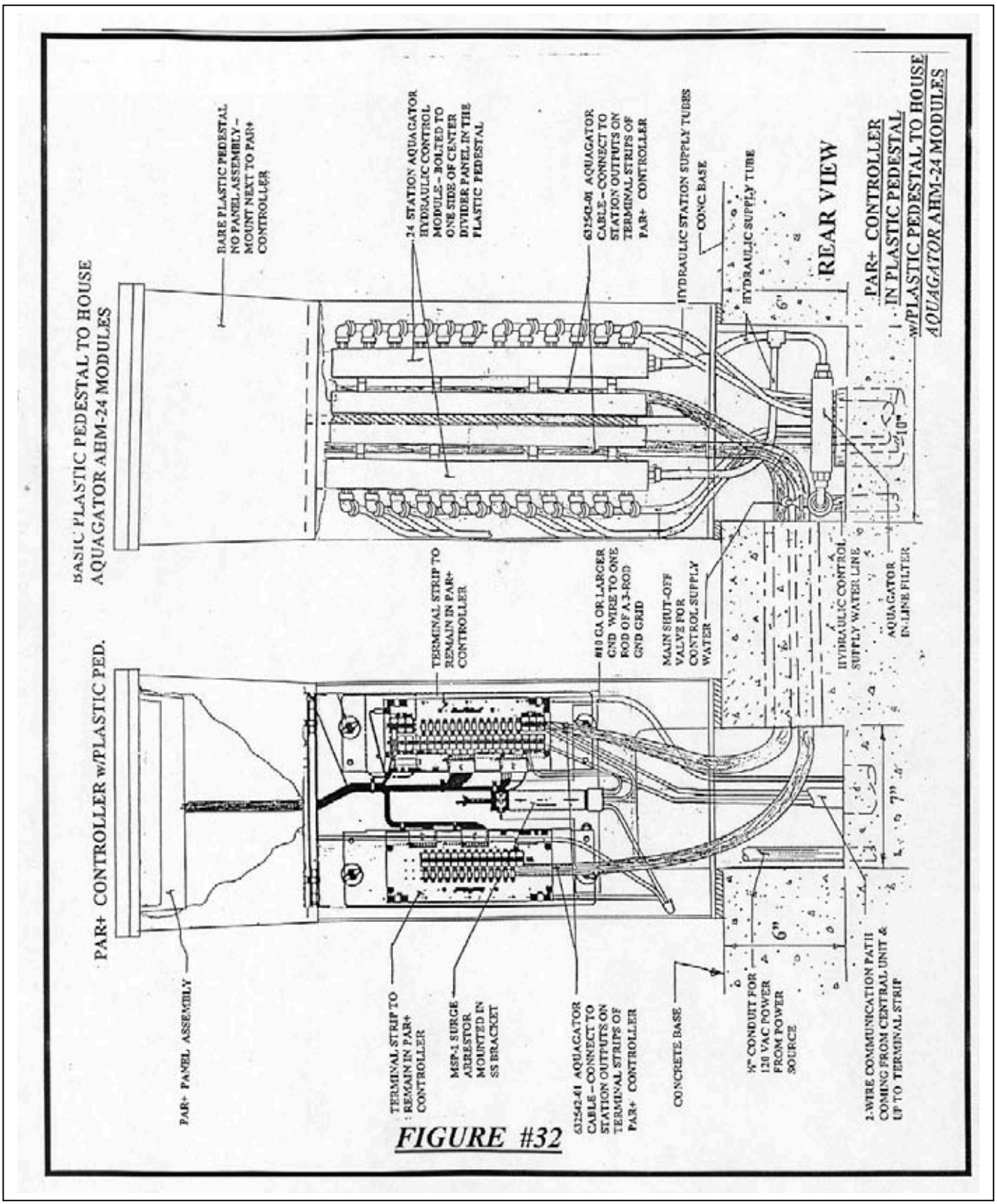
BASIC PLASTIC PEDESTAL TO HOUSE
AQUAGATOR AHM-24 MODULES
BARE PLASTIC PEDESTAL NO PANEL ASSEMBLY – MOUNT NEXT TO PAR+ CONTROLLER
24 STATION AQUAGATOR HYDRAULIC CONTROL MODULE – BOLTED TO ONE SIDE OF CENTER DIVIDER PANEL IN THE PLASTIC PEDESTAL
63252-01 AQUAGATOR CABLE – CONNECT TO STATION OUTPUTS ON TERMINAL STRIPS OF PAR+ CONTROLLER
HYDRAULIC STATION SUPPLY TUBES
CONC BASE
HYDRAULIC SUPPLY TUBE
REAR VIEW
PAR+ CONTROLLER IN PLASTIC PEDESTAL w/PLASTIC PEDESTAL TO HOUSE AQUAGATOR AHM-24 MODULES
PAR+ CONTROLLER w/PLASTIC PED.
TERMINAL STRIP TO REMAIN IN PAR+ CONTROLLER
#10 GA OR LARGER GND WIRE TO ONE ROD OF A 3-ROD GND GRID
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
HYDRAULIC CONTROL SUPPLY WATER LINE
AQUAGATOR IN-LINE FILTER
PAR+ PANEL ASSEMBLY
TERMINAL STRIP TO REMAIN IN PAR+ CONTROLLER
MSP-1 SURGE ARRESTOR MOUNTED IN SS BRACKET
63254-01 AQUAGATOR CABLE – CONNECT TO STATION OUTPUTS ON TERMINAL STRIPS OF PAR+ CONTROLLER
CONCRETE BASE
½" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT & UP TO TERMINAL STRIP
6"
7"
10"

FIGURE #32

INSTALLATION DETAILS - MSC+ CONTROLLER with PLASTIC PEDESTAL

For the MSC+ Controller, with Plastic pedestal, **one** (1) or **two** (2) Model AHM, AQUAGATOR Hydraulic Control Modules will be used. ***A Plastic Pedestal Assembly, mounted next to the MSC+ controller, for housing the AQUAGATOR modules will also be needed***.

REFER TO FIGURES #33 and #34

STEP #1: Pour a concrete pad, on which to mount the controller and accompanying plastic pedestal. This pad shall have a 7" wide x 10" long x 6" deep recess, below both the MSC+ unit and the blank plastic pedestal. The recess below the blank plastic pedestal shall be used to house the Main Water Supply "Shut-Off" valve and the "In-Line" filter for the AQUAGATOR modules. Use the plastic mounting template and the "U" bolts furnished with the controller and plastic pedestal for mounting the two units.

STEP #2: Provide the necessary sleeves in the concrete pad recesses for the Power Supply wiring to the controller, the Main Water Supply line to the AQUAGATOR module, the 2-wire path wiring to and from the controller and for the Hydraulic Station Control Tubes.

STEP #3: Install a "Shut-Off" valve on the Main Water Supply line coming into the base of the concrete pad recess for the plastic pedestal to house the AQUAGATOR modules. **Refer to SECTION 5 of this manual**.

STEP #4: After the shut-off valve and before the inlet port to the AQUAGATOR install the "In-Line" filter. **Refer to SECTION 5 of this manual**.

STEP #5: Mount the MSC+ controller to the plastic template on the concrete pad and the blank plastic pedestal to its plastic template, next to the MSC+ unit on the concrete pad.

STEP #6: The MSC+ unit shall have nothing changed on it, but shall remain as received from the factory.

STEP #7: Leave the station output terminal strips mounted in the front compartment of the MSC+ pedestal and on the center divider. This terminal strip will be used with the AQUAGATOR module.

STEP #8: In the blank plastic pedestal, on the center divider mount the two (2) AQUAGATOR modules (if required), one in the back compartment of the pedestal and the other in the front compartment. Install the AQUAGATOR modules into the pedestal using the four studs on the center divider of the pedestal and the wing nuts provided. Connect the station wire harness wires, of the AQUAGATOR modules, to the station output terminals on the terminal strips in the COM unit pedestal. The wire harnesses shall be routed from the AQUAGATOR pedestal over to the MSC+ unit pedestal through a suitable sized sleeve, going from one recess to the other recess.

STEP #9: Connect a hydraulic control water supply tube from the “In-Line” filter outlet to the control water inlet fitting on each of the AQUAGATOR modules. **Refer to SECTION 6 - Connecting Hydraulic Control Water Supply**.

STEP #10: Connect an exhaust tube to each of the two (2) exhaust port fittings on the bottom of each of the AQUAGATOR modules and extend it out the side of the pedestal to a suitable discharge location. **Refer to SECTION 5 - Connecting Exhaust Water Tubing**

STEP #11: Route the station control tubes, coming from the valve-in-head sprinklers or remote control valves in the field, up through the sleeve into the bottom of the AQUAGATOR plastic pedestal. Connect each station supply tube to the corresponding station output fitting on the AQUAGATOR modules. **Refer to SECTION 6 - Connecting Hydraulic Tubing**.

STEP #12: Route the 2-Wire path cable into the bottom of the MSC+ controller pedestal. Furnish and install an MSP-1 surge arrestor and mount it along side and between the terminal strips, using a stainless steel bracket for holding the MSP-1 surge arrestor.

STEP #13: Connect the Hot (red) wire coming from the "LINE" end of the MSP-1 surge arrestor to the terminal on the terminal strip marked "TW HOT - PIPE" and connect the Com (black) wire coming from the "LINE" end of the MSP-1 surge arrestor to the terminal on the terminal strip marked "TW COM - PIPE", both located at the bottom of the terminal strip.

STEP #14: Connect the Hot (red) wire coming from the "EQUIP" end of the MSP-1 surge arrestor to the terminal on the terminal strip marked "TW HOT - PIPE" and connect the Com (black) wire coming from the "EQUIP" end of the MSP-1 surge arrestor to the terminal on the terminal strip marked "TW COM - PIPE", both located at the top of the terminal strip.

STEP #15: The 2-wire path, coming from the central unit, shall have the Hot (red) wire connected to one of the terminals, on the terminal strip, marked "TW HOT - FIELD" and the Com (black) wire connected to one of the terminals, on the terminal strip, marked "TW COM - FIELD", both located at the bottom of the terminal strip.

STEP #16: Extend the ½" power conduit up from the pedestal pad to the electrical junction box for the transformer of the MSC+ controller. Connect the 120-volt AC power supply wires to the appropriate terminals, per instructions at the transformer or the MSC+ controller.

STEP #17: Temporarily open the water supply line to the inlet ports of the AQUAGATOR modules to flush debris out of the control lines. **Refer to SECTION 6 - STEP #7**.

STEP #18: Bleed all air from each of the station control tubes at the valve-in-head sprinkler or at the remote control valve. **Refer to SECTION 6 - STEP #8**.

STEP #19: When you are sure all of the air has been bled from a given station control tube, then connect the tube to the valve-in-head sprinkler or remote control valve inlet fitting. **Refer to SECTION 6 - STEP #10**.

STEP #20: Place the AQUAGATOR module into operation - following **STEPS #11 THROUGH #13 in SECTION 6**.

THE INSTALLATION OF THE MSC+ CONTROLLER and THE AQUAGATOR MODULES SHOULD NOW BE COMPLETE AND THE UNIT FULLY OPERATIONAL

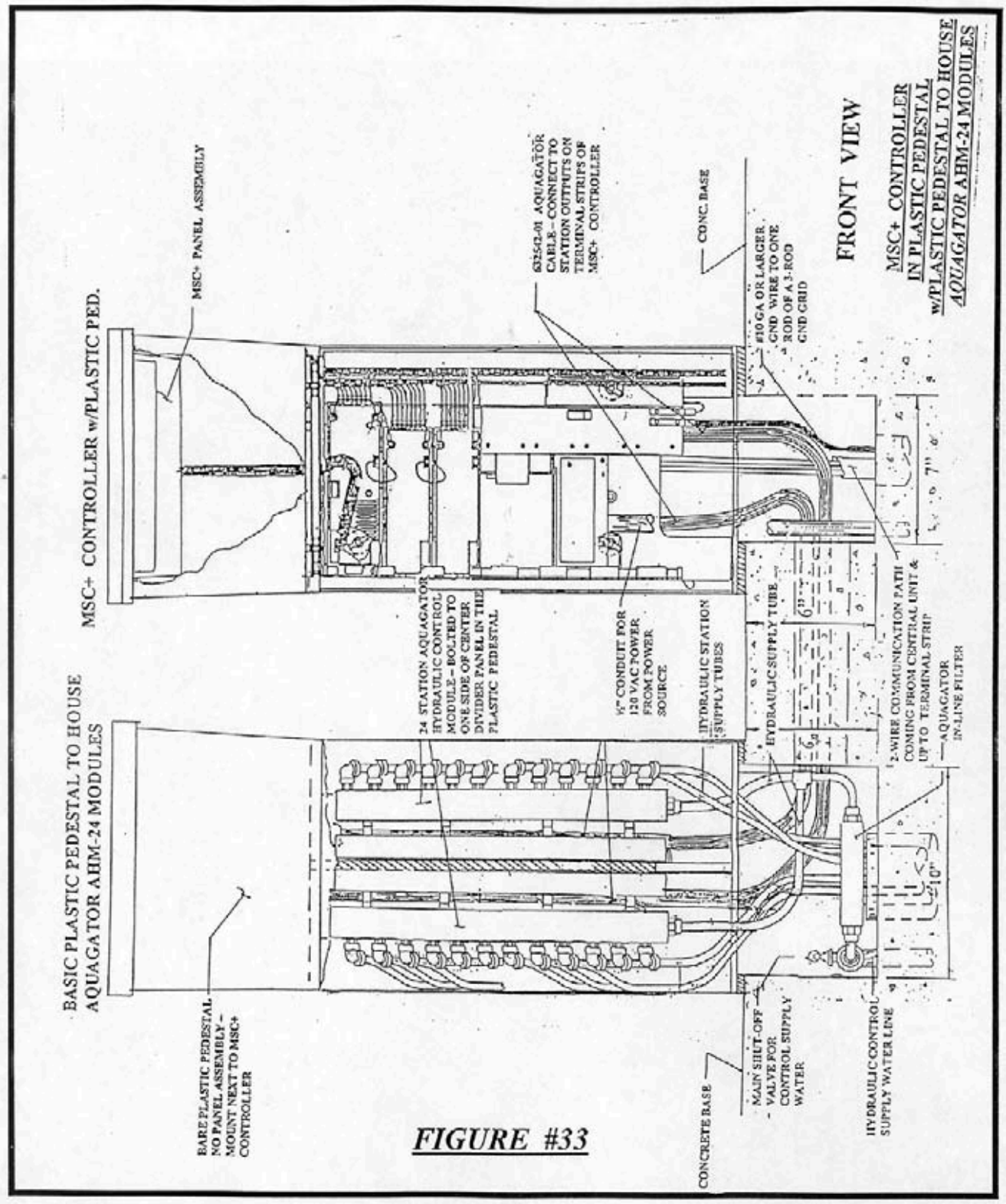
FRONT VIEW
MSC+ CONTROLLER
IN PLASTIC PEDESTAL
w/PLASTIC PEDESTAL TO HOUSE
AQUAGATOR AHM-24 MODULES
MSC+ CONTROLLER w/PLASTIC PED.
MSC+ PANEL ASSEMBLY
BASIC PLASTIC PEDESTAL TO HOUSE
AQUAGATOR AHM-24 MODULES
BARE PLASTIC PEDESTAL NO PANEL ASSEMBLY - MOUNT NEXT TO MSC+ CONTROLLER
CONCRETE BASE
MAIN SHUT-OFF - VALVE FOR CONTROL SUPPLY WATER
HYDRAULIC CONTROL SUPPLY WATER LINE
24 STATION AQUAGATOR HYDRAULIC CONTROL MODULE - BOLTED TO ONE SIDE OF CENTER DIVIDER PANEL IN THE PLASTIC PEDESTAL
HYDRAULIC STATION SUPPLY TUBES
HYDRAULIC SUPPLY TUBE
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT & UP TO TERMINAL STRIP
AQUAGATOR IN-LINE FILTER
CONC. BASE
#10 GA OR LARGER GND WIRE TO ONE ROD OF A 3-ROD GND GRID
7"
10"

FIGURE #33

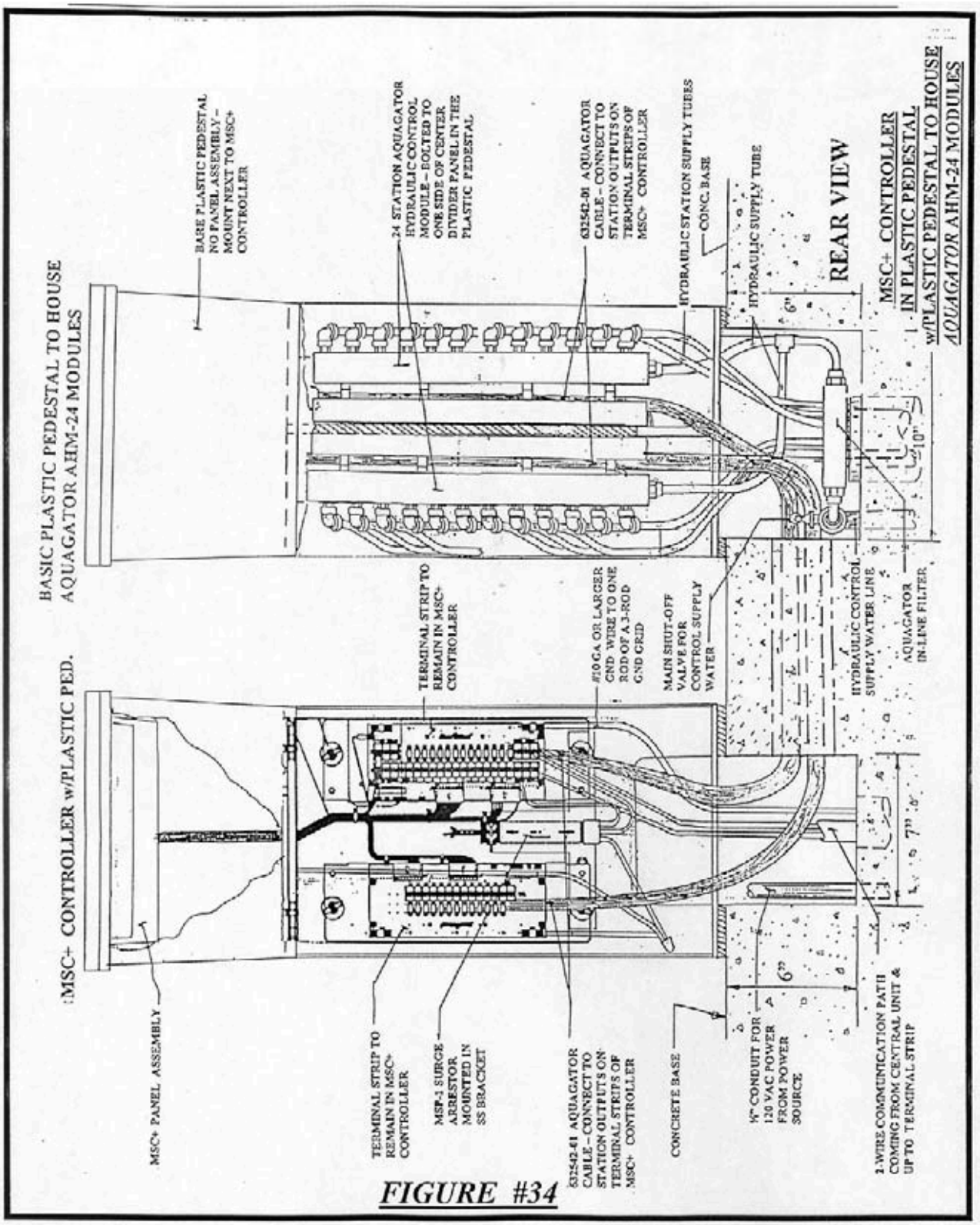
BASIC PLASTIC PEDESTAL TO HOUSE
AQUAGATOR AHM-24 MODULES
MSC+ CONTROLLER w/PLASTIC PED.
BARE PLASTIC PEDESTAL NO PANEL ASSEMBLY - MOUNT NEXT TO MSC+ CONTROLLER
24 STATION AQUAGATOR HYDRAULIC CONTROL MODULE - BOLTED TO ONE SIDE OF CENTER DIVIDER PANEL IN THE PLASTIC PEDESTAL
63242-01 AQUAGATOR CABLE - CONNECT TO STATION OUTPUTS ON TERMINAL STRIPS OF MSC+ CONTROLLER
HYDRAULIC STATION SUPPLY TUBES
CONC. BASE
HYDRAULIC SUPPLY TUBE
6"
REAR VIEW
MSC+ CONTROLLER IN PLASTIC PEDESTAL w/PLASTIC PEDESTAL TO HOUSE
AQUAGATOR AHM-24 MODULES
10"
TERMINAL STRIP TO REMAIN IN MSC+ CONTROLLER
#10GA OR LARGER GND WIRE TO ONE ROD OF A 3-ROD GND GRID
MAIN SHUT-OFF VALVE FOR CONTROL SUPPLY WATER
HYDRAULIC CONTROL SUPPLY WATER LINE
AQUAGATOR IN-LINE FILTER
7"
MSC+ PANEL ASSEMBLY
TERMINAL STRIP TO REMAIN IN MSC+ CONTROLLER
MSP-1 SURGE ARRESTOR MOUNTED IN SS BRACKET
63242-01 AQUAGATOR CABLE - CONNECT TO STATION OUTPUTS ON TERMINAL STRIPS OF MSC+ CONTROLLER
CONCRETE BASE
6"
¾" CONDUIT FOR 120 VAC POWER FROM POWER SOURCE
2-WIRE COMMUNICATION PATH COMING FROM CENTRAL UNIT & UP TO TERMINAL STRIP

FIGURE #34