TECHNICAL NOTE 02-00
WATER RESTRAINT SYSTEM
ELECTRICAL AND WATER UTILITY
REQUIREMENTS AND CONNECTIONS

Dated June 30, 2000

INTRODUCTION

The Hydro-Force Water Restraint System (HFWRS), Stationary installation requires connection to the facility electrical and water utilities. This document has been prepared to describe the utility requirements and connection recommendations.

BACKGROUND

The HFWRS utilizes a motor and pump to develop the water pressure needed to deliver water and chemical for distances up to 200 feet. The motor power can be provided by either an electrical motor or a diesel motor. The electrical utility connections will be different for the electrically powered or the diesel motor powered systems.

In addition, some installations in cold climates may require the addition of an electrical water tank heater and heat tape on the water piping to maintain system effectiveness under freezing conditions.

All HFWRS systems require a connection to the facility water system. The water supply is needed to refill the water tank during and following HFWRS operations. The size of the water supply line and the water pressure will determine the water tank refilling speed.

REQUIREMENTS

Electrical System

The electrical system requirements are different for the electrically powered system and the diesel motor powered system.

Electrically Powered System (See figure 1)

1. The electrically powered system includes a 60 HP electrical motor with water pump and a 3 HP air compressor. The power for this system is 480 volt, 100 ampere, three phase, delta or wye connected, three or four wire, electrical service. This service should be provided with a 100 ampere fused disconnect located within five feet of the HFWRS power control panel.

2. In addition, the electrically powered system also requires a 120-volt, single phase, 20-ampere standard electrical outlet for powering the video system and the low voltage power supply. This electrical outlet can be provided at the power control panel or near the control panel location.
3. Some facilities located in cold weather climates may require the installation of a water heater in the water tank and heat tape with insulation on the water piping. This installation is recommended if the average ambient air temperature is below 32 degrees F for longer than 6 hours in any part of the day. The heat tape installation must be designed for each installation due the differences in piping installation. The information will be included in the installation drawings if discussed at the initial engineering meeting. The power requirements for the water heater and heat tape should be a separate 120 VAC, 20-ampere electrical outlet. The water heater/heat tape installation can also be powered from 208 volts if necessary. Please contact Hydro-Force for details.

Alternate Installations

1. Some facilities do not have 480 volt, three phase power located in the area of the HFWRS installation. However they do have 208 volt, three-phase power. A good example is CSP Sacramento which has 208 volt distribution located to the rear of the buildings where the HFWRS is being installed. Figure 3 shows the transformer installation and connections they are using at that facility.
2. Some facilities wish to supply the 120 VAC, single-phase electrical outlet from the same supply as the 480 VAC, three-phase connection. This will require the installation of a dry transformer as shown in the lower right hand corner of Figure 3.
3. If any facility wishes to utilize either of these alternate installations, please inform Hydro-Force at the initial engineering meeting and this information will be added to the installation drawings.

Diesel Motor Powered System (See figure 2)

1. The diesel motor powered system includes a 57 HP diesel engine with water pump. The diesel motor removes the need for providing the 480 volt three phase power.
2. The diesel motor powered system requires electrical power from a 240 volt, 30-ampere single-phase outlet with neutral electrical outlet. This electrical outlet should be provided at the power control panel location.
3. Some facilities located in cold weather climates may require the installation of a water heater in the water tank and heat tape with insulation on the water piping, the same as for the electrical powered system described above. If needed, the requirements for this system will be the same as for the electrically powered system. Please contact Hydro-Force for details.

Utility Water System

The water system requirements are the same for both the electrically powered system and the diesel motor powered system. The facility must provide a water connection to the pumping unit. This water connection supplies water to the HFWRS as the system is used. The water connection should be a 1-½ inch water line at approximately 65-psi water pressure. A smaller water line or lower water pressure will provide a slower than normal water reserve tank refill. The water line should be routed from the building water supply system. Any required anti-siphon valves must be supplied in accordance with local building codes.

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