CITY OF MIAMI GARDENS BRENTWOOD PARK
HOOVER GREEN

SPECIFICATIONS

SINGLE CENTRIFUGAL PUMP SYSTEM
PRESSURE DEMAND VFD

PURPOSE:
To provide a complete prefabricated variable frequency drive skid mounted pressure demand centrifugal pump system from a sole source company, herein after referred to as the "manufacturer", whose primary business is the manufacture of prefabricated pump systems. The manufacturer will manufacture, flow test, install and warrant the system to meet all specified operating requirements described below and in the system detail. The system shall be a Model HCF-15PDV-230/3-M,W,Z as manufactured by Hoover Pumping Systems of Pompano Beach, Florida USA 954-971-7350 specified below and shown on the plan details. This specification describes the general components and minimal operating requirements and shall not be construed as a manufacturing guide or complete list of required system components and appurtenances.

The contractor shall submit seven (7) complete copies of the shop drawings to the designer for approval, prior to system order placement. The submittal shall contain cut sheets for all system components. To be considered an equal, the contractor must submit the following 12 days prior to bid opening: manufacturer brochure showing prefabricated pump systems manufacturing is the primary business of the manufacturer or division proposed to manufacture the system, written specifications, dimensioned layout detail, electrical schematic, product sheets for all main components, Underwriters Laboratory electrical control panel and "Packaged Pumping System" manufacturer's file numbers, list of 6 projects with similar operating systems with current name and phone number of person responsible for system operation, manufacturer's insurance certificate for general liability showing minimum coverage of $1 million, and written certification from the manufacturer stating the proposed system meets all requirements described in this specification, the detail and the bid documents.

If the data submitted is determined to be an equal by the designer the bidder will be notified prior to the bid date.

FIBERGLASS ENCLOSURE: The pump station shall be protected by a fiberglass enclosure with chemical and ultraviolet resistant open mold resin with exterior finish that is uniform in color and texture, reinforced with fiberglass and stiffeners for rigidity. The enclosure shall open clear of the equipment for ease of service with the aid of gas filled struts, a stainless steel hinge and latching lockable handle. The enclosure shall be of dimensions adequate to contain the pump system mounted on the skid as shown on the system detail.

MOUNTING ASSEMBLY:
The pump station shall be mounted on a prefabricated aluminum or hot dipped galvanized skid. Pedestals shall be provided to mount the pump motor and control panel assemblies. The entire station shall be installed on a reinforced concrete slab sized as noted on the system detail.

PUMP AND MOTOR:
The pump shall be a single-stage end-suction centrifugal type, with the liquid end mounted directly to the motor enclosure to allow rear pull out of the entire motor. A pressure sensor for loss of prime protection and thermal sensor for pump overheat protection shall be mounted into the pump volute.

The system will be designed for operation at 3,450 RPM. The pump driving motor shall be of the squirrel cage induction type. The motor shall be suitable for full voltage starting at 60 Hz. The motor enclosure shall be totally enclosed fan cooled for all motors greater than 4 horsepower and open drip proof (ODP) for 5.5 horsepower and smaller, configured to allow direct mounting of the pump's liquid end.

The main motor shall be rated at 15 HP at 60 Hz. Motor will not exceed 10HP when only single phase electric service is available.

PUMP STATION PERFORMANCE:
The required pump performance with a maximum of 10 ft. of suction lift is as follows: a) discharge pressure of 70 psi b) maximum required flow of 175 GPM for the main pump, and c) minimum required flow of 35 GPM.

IRRIGATION PUMP CONTROL PANEL:
The control panel assembly shall be Underwriters Laboratories listed in accordance with section 508A for "enclosed industrial control panels." All control devices and electronic auto-sensory circuitry shall be housed in a self-contained weather-resistant NEMA 4 control cabinet. The control panel shall be identified with a permanent label approved by Underwriters Laboratories Inc. containing the word "LISTED", the name and / or symbol of Underwriters Laboratories Inc., a control number and the product name "Enclosed Industrial Control Panel". An electrical schematic shall be permanently mounted inside the cabinet. The control cabinet shall contain the following protection and control equipment:

Operation
This station operates as a Variable Frequency Drive (VFD) pressure demand start, reduced-flow retirement system. The station automatically maintains a constant discharge pressure from a pressure transducer input regardless of varying flow demands within the station operating range. The operator interface allows for viewing of system setup parameters.

Software features include flow, diagnostic information, Phase Loss protection, Phase Unbalance protection, Voltage monitoring and protection, Hoover Drive control.

Pressure Demand
The main pump starts when the mainline pressure drops below the setting of the start pressure switch.

No-flow Retirement
The pump shuts off if water stops flowing.

Loss of Prime Protection
If the system pressure remains below the start pressure, and there is no flow of water through the system during pump operation, the pump will shut off. The system will remain off until 'Reset'.

Thermal Protection
If the temperature at the pump volute exceeds 43C after at least 3 minutes of pump operation, the pump will shut off, and the 'Pump Overheat' light will turn on. The system will remain off until 'Reset'.

Drive Fault
In case of a drive fault, including under or over voltage, over current, heat sink thermal, and ground fault, the affected pump will shut off, the operator interface will display 'Drive Fault'. The pump will remain off until the system is 'Reset'.

PROTECTION EQUIPMENT
- Front operated main power disconnect
- Motor fuses for motor and drive short circuit and ground fault protection
- Metal oxide varistors (MOV) for transient voltage suppression per phase
- Fused control circuitry with blown fuse lighted indicator for each circuit

PENETRATION STANDARD REQUIREMENTS:
All control panel penetrations shall be performed by a licensed electrician to minimum NEMA 4X requirements, and compliant with International Electrotechnical Commissions (IEC) IP56 rating under its IP code, to protect against duct ingression and against any harmful effects from water projected in powerful jets from any direction and protection against corrosion.

VARIABLE FREQUENCY DRIVES (VFD):
Variable Frequency Drive with the following characteristics shall be provided for the pump motor: 32-bit microprocessor controlled Pulse Width Modulated output, IGBT transistors, line reactors, built-in adjustable PID control, and acceleration ramp up and down, single pump VFD systems 25 hp or less NEMA 4 VFD with forced-air cooling. All other VFD system cooling is by industrial air conditioner. Variable torque control, 32 character alphanumeric English full text parameter display, single function keys, block parameter access, dual analog outputs, automatic and manual reset, opto-isolated outputs, log of last 30 events retained in memory.

PRESSURE TRANSMITTER:
A 4-20mA-pressure transmitter shall provide a feedback signal to drive PID loops and for system pressure control. The transmitter shall be CE & UL recognized and built with an all stainless steel housing and pressure port, rated to NEMA 4, and able to withstand shock and vibration levels to MIL-STD-810E. The transmitter sensor element will provide a signal over 0-150 PSIG range while rated for 600-PSI overpressure minimum. Conformity error will be less than or equal to 0.50% and the transmitter shall be capable of operation from -40 to +120C.

DISCHARGE PIPE MANIFOLD:
The pipe discharge manifold shall be constructed of galvanized steel pipe with galvanized roll groove fittings. A flow-switch, pressure gauge and hose bib will be provided on the station discharge. A wafer type butterfly valve will be provided at pump station discharge. A hydropneumatic tank with air/water separation bladder will be connected to the discharge header as shown on the system detail to supply replacement water when the pump is not operating.

SUCTION LINE:
The minimum size suction line shall be 3" diameter or larger as required for a maximum of 5 feet per second velocity flow. If a reducing fitting is required at the pump suction, an eccentric reducer shall be installed. Any above ground pipe at the pump system exposed to sunlight shall be schedule 40 galvanized steel with galvanized roll groove fittings. Suction pipe and fittings shall be HDPE heat fused.

Well Source: The pump suction line shall run from the pump to the customer supplied well tee with hot dipped galvanized or high density polyethylene HDPE piping. Swing check valve placed at the well tee.

WARRANTIES:
Prior to shipping, the manufacturer shall flow test the system and submit a certified report to the designer stating the system is within 1% + or – of the specified flow rate and pressure, and meets the operational requirements.

The manufacturer of the pumping station shall warrant all components for a period of one (1) year from date of manufacture.

PN11749

The system will be manufactured based on one of the following electrical configurations:

Voltage	Phase	Hertz	Panel Connections
08	3	60	5 Wires (A, B, C, Neutral, Ground)
230	3	60	5 Wires (A, B, C, Neutral, Ground)
460	3	60	4 Wires (A, B, C, Ground)

Note: Three phase power is required for systems over 10 horsepower.

The Hoover Pumping Systems pump system is supplied with an Underwriters Laboratory® listed enclosed Industrial Control Panel assembly. The Control Panel assembly contains all of the pump system controls, a main disconnect, and a ground connection. A separate service disconnect is required for systems less than 40 total horsepower.

The pump station will include the following pump motor loads:

Load	Horsepower	Amps [1]	Service Factor
Pump#1	15	Based on voltage/phase	1.15
Control Panel	N/A	4	N/A

The data here may be used for selection of appropriate electrical supply equipment, including feeder, branch circuit protection, and disconnects.

Please contact Hoover Pumping Systems at (954) 971-7350 for assistance with voltage drop or other application considerations. Thank you.

[1] Pump motor Full Load Amps (FLA) per N.E.C. tables 430-148 & 430-150

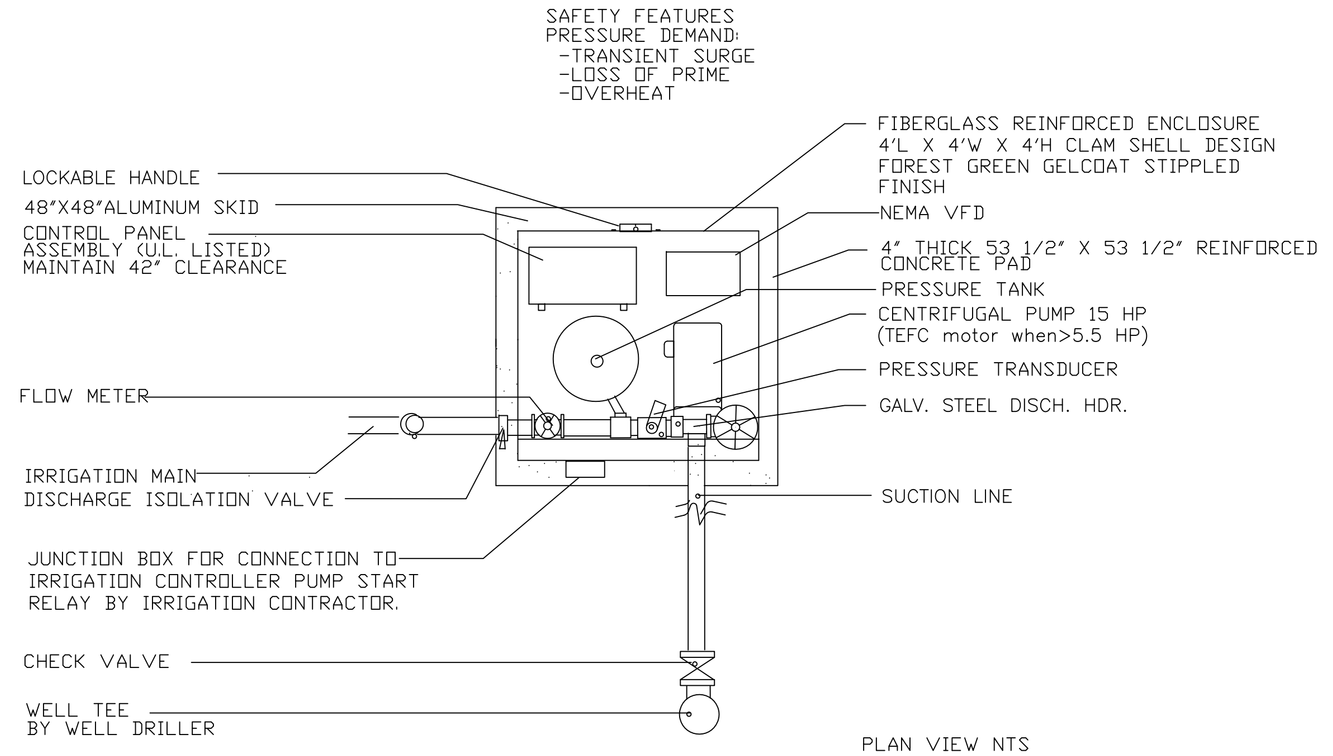
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NOTE: SUCTION PIPE SHALL BE SCHED 40 GALVANIZED STEEL WITH GALVANIZED ROLL GROOVE FITTINGS FROM THE PUMP TO THE WELL TEE. CHECK VALVES 3" AND LARGER SHALL BE SWING TYPE, 2" AND SMALLER SHALL BE POPPET STYLE

PROVIDE MINIMUM OF 4' CLEARANCE ON ALL SIDES OF PUMP SYSTEM

* OPTIONAL FEATURES ARE INCLUDED IF MARKED WITH AN "X"
___ PRESSURE CONTROL VALVE
___ IRRIGATION CONTROLLER _STATIONS,

X PRESSURE TANK FOR PRESSURE DEMAND SYSTEMS



PLAN VIEW NTS

PUMP PERFORMANCE
175 GPM @ 188 TDH

HOOVER PUMPING MODEL: HCF-15PDV-230/3-M,W,Z FILE PN11749.DWG 04/11
Pompano Beach, Florida, Tel: 954-971-7350

MIAMI GARDENS BRENTWOOD PARK
CENTRIFUGAL PUMP SYSTEM DETAIL
FIBERGLASS ENCLOSED SINGLE WELL SUCTION PRESSURE DEMAND VARIABALE FREQUENCY DRIVE HOOVER GREEN

GENERAL BIDDING NOTES:

1. Any deviations from these pump specifications will need approval from the Landscape Architect and the Owner.

IRRIGATION PUMP DETAILS

LANDSCAPE STUDIO DESIGN, INC.
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Plantation, Florida 33317
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SEAL:

Date:
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NO.	DATE:	REVISIONS/DESCRIPTION:
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PROJECT: *BRENTWOOD PARK*
ADDRESS: *MIAMI GARDENS*

Design/Drawn By:	Scale:
KVZ	NTS
Submittal:	**Date:**
DD - CD - CA	2.24-11

PROJECT NO.
211-01

SHEET:
IR-1 of 3