

DREAMLAND MOBILE HOME PARK

WATER SYSTEM UPGRADE SEWERAGE SYSTEM UPGRADE Pearl River County

Owner: Mr. Frank Mangano

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DAMMON ENGINEERS

554 Old Spanish Trail

Slidell, LA 70458

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DREAMLAND MOBILE HOME PARK

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September 17, 2013

Attention: Gene Herring
Division of Onsite Wastewater
805 South Wheatley Street, Suite 340
Ridgeland, Ms. 39157

Re: Dreamland Mobile Home Park
Water System Upgrade
Wastewater Treatment Facility Upgrade
Pearl River County, Mississippi

Dear Mr. Herring,

Submitted for your approval is a proposal to upgrade and rehabilitate the Dreamland Mobile Home Park wastewater treatment system and potable water distribution system.

The current wastewater treatment system, consisting of old filter beds and field lines, is failing. To remediate the current deficiencies, the following proposal is suggested.

Essentially the old sewerage system is to be upgraded and rehabilitated by:

- 1) Installation of a new 8" PVC collection line with manholes.
- 2) Installation of a 2500 gallon solids separator tank
- 3) Installation of a 65 GPM duplex lift station with a 3" SCH 40 PVC Force Main line
- 4) Installation of a 12,000 Gallon per day extended aeration treatment plant
- 5) a 1,500 Gallon Effluent holding tank
- 6) a pumping station with controls for spray field, and
- 7) a 2.2 acre spray field

An onsite treatment and disposal system was chosen for the Park as the existing Nicholson Sewerage System has indicated that their infrastructure is incapable of handling the extra capacity (12,000 gallons per day) from the park. The inability of the Pearl River County Utility Authority to provide adequate sewerage for the Park has hampered the project. Thus, onsite treatment is indicated.

Re: Dreamland Mobile Home Park
Water System Upgrade
Wastewater Treatment Facility Upgrade
Pearl River County, Mississippi

The wastewater from the mobile homes shall enter an 8" SDR 35 PVC collection line with 6" laterals, 4" services, and 48" diameter Manholes. All wastewater shall pass thru a 2500 Gallon solids separator tank. This tank is necessary for 2 reasons, 1) to remove trash & debris that could possibly clog the spray field matrix and 2) to liquefy the waste to improve encapsulation rate within the treatment plant. From the separator tank wastewater passes to the 65 gallon per minute lift station and then to a 12,000 GPD extended aeration wastewater treatment plant.

The treated wastewater effluent, after disinfection, shall enter a 1500 Gallon holding tank then a pump station that leads to 16 spray heads that covers 106,368 sqft. (96,000 sqft coverage is required)

The sewer treatment plant capacity is based on 40 mobile home sites with a maximum water usage of 300 gallons per day per trailer site. The preliminary design capacity was derived from Table 3-2 (see attached) from *WASTEWATER ENGINEERING – Treatment and Use, Metcalf & Eddy, Fourth Edition*. The Dreamland Mobile Home Park currently has older type trailers, most are 70' and less in length. Half of the lots will not accommodate larger size trailers, thus there are many 2 bedroom trailers. There are only 2 residents in many of these trailers, and 1 in some. In an adjacent State, 300 gallons per trailer per day is the design standard. It is felt that the design of 300 gallons/trailer/day is adequate for this upgrade. This design will provide adequate treatment facilities for the process and disposal of wastewater effluent for Dreamland Mobile Home Park.

A 6" SDR 26 PVC water distribution line with valves and 2 hydrants shall replace the current water distribution line. This shall be connected to the Nicholson Public Water Supply.

The attached project proposed will remedy the current sewerage and water deficiencies and bring Dreamland Mobile Home Park back into compliance with the Mississippi Department of Health and Mississippi Department of Environmental Quality as well as Environmental Protection Agency.

Respectfully,

Brian A. Mistich, P.E.
Mississippi Registration #20971

Xc: Mr. Jim Weston, Mississippi Department of Health

WATER SPECIFICATIONS

TECHNICAL SPECIFICATIONS

ALL PIPE AND FITTINGS SHALL BE FURNISHED BY MANUFACTURERS WHO ARE FULLY EXPERIENCED, REPUTABLE AND QUALIFIED IN THE MANUFACTURE OF THE MATERIAL TO BE FURNISHED.

WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL LOCAL, COUNTY, STATE, AND FEDERAL CODES.

CONTRACTOR SHALL BE RESPONSIBLE FOR FEES AND PERMITS ASSOCIATED WITH CONSTRUCTION.

CLEARING AND GRUBBING COSTS ARE TO BE ABSORBED INTO THE PIPE LAYING BUDGET. DISPOSAL IS TO BE FURNISHED BY CONTRACTOR.

CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION AND LOCATION OF ALL UTILITIES WITHIN THE WORK SITE.

PLASTIC PIPE SHALL BE POLYVINYL CHLORIDE (PVC) CONFORMING TO ASTM 1)1784 AND ASTM 1)2241, LATEST REVISIONS, WITH INTEGRAL BELL PUSH- ON GASKETED JOINTS CONFORMING TO ASTM D3139. THE REQUIREMENTS FOR THE SPECIFIC TYPE OF PLASTIC PIPE FOR MAINS TO BE USED FOR THIS PROJECT SHALL BE;

C - 900

THE PIPE SHALL HAVE AN INTEGRAL BELL, RUBBER GASKET PUSH-ON JOINT AND SHALL BE CAPABLE OF DIRECT TAPPING. THE PVC PIPE SHALL BE APPROVED BY THE NATIONAL SANITATION FOUNDATION FOR POTABLE WATER PIPE AND SAID STAMP BE INCLUSIVE ON THE PIPE FURNISHED ALONG WITH THE NOMINAL SIZE O.D., PRESSURE CLASS, DIMENSIONAL RATIO, AND THE MANUFACTURERS NAME OR TRADEMARK WHICH MAY BE CERTAINTeed CORPORATION, H & W INDUSTRIES, INC., EXTRUSION TECHNOLOGIES, INC, OR APPROVED EQUAL.

FITTINGS FOR PVC PIPE THREE (3) INCHES AND LARGER IN DIAMETER SHALL BE MECHANICAL JOINT, UNLESS OTHERWISE SHOWN ON THE DRAWINGS AND SHALL BE MADE OF DUCTILE IRON WITH A PRESSURE RATING OF 350 PSI AND CEMENT LINED AND ASPHALT COATED. ALL FITTINGS SHALL MEET OR EXCEED ANSI/AWWA C153/A21.53 AND ANSI/AWWA C111/A21.11 SPECIFICATIONS. FITTINGS TWO (2) INCHES AND SMALLER SHALL BE PVC DR 21 GASKETED FITTINGS UNLESS OTHERWISE SHOWN ON THE DRAWINGS.

DUCTILE IRON (D.I.) PIPE USED UNDERGROUND SHALL BE DESIGNED IN ACCORDANCE WITH ANSI/AWWA C151/A21.51 AND ANSI/AWWA C111/A21.11 SPECIFICATIONS AND HAVE MECHANICAL JOINTS UNLESS OTHERWISE SHOWN ON THE DRAWINGS. DUCTILE IRON PIPE SHALL BE CLASS 50, 350 PSI WORKING PRESSURE.

ALL FIRE HYDRANT LEAD PIPING SHALL BE SIX (6) INCH DUCTILE IRON AS SPECIFIED HEREIN.

FITTINGS FOR DUCTILE IRON PIPE SHALL BE

MECHANICAL JOINT AS SPECIFIED HEREIN.

ALL UNDERGROUND DUCTILE IRON PIPE SHALL BE WRAPPED WITH POLYETHYLENE WRAP INCLUDING VALVES, FITTINGS, PIPING, etc... THE POLYETHYLENE WRAP FOR D.I. PIPE AND RELATED D.I. APPURTENANCES SHALL CONFORM TO AWWA C105 SPECIFICATIONS AND SHALL **BE** A MINIMUM OF 0.008 INCHES (8 MILS) THICK.

NON CORROSIVE METALLIC LOCATOR WIRE SHALL BE INSTALLED DIRECTLY ABOVE ALL PLASTIC WATER MAINS AND PIPES AND SHALL **BE** 14 GA. AWG. STRANDED COPPER.

THE CONTRACTOR SHALL INSTALL ALL WATER MAINS SO AS TO MAINTAIN A MINIMUM HORIZONTAL DISTANCE OF ten (10) FEET FROM ALL SEWER LINES AND A MINIMUM VERTICAL DISTANCE OF EIGHTEEN (18) INCHES FROM ALL SEWER LINES. ALL DISTANCES SHALL BE MEASURED FROM THE OUTSIDE DIAMETER OF EACH PIPE.

ALL VALVES AND VALVE BOXES SHALL BE BACKFILLED WITH FLUME SAND AS SHOWN ON THE DRAWINGS.

CONCRETE VALVE BOX PADS SHALL BE INSTALLED ONLY WHERE REQUESTED BY THE ENGINEER.

TAPPING WORK SHALL BE PERFORMED UNDER THE DIRECT SUPERVISION OF THE ENGINEER. THE ENGINEER SHALL BE NOTIFIED AT LEAST 24 HOURS IN ADVANCE OF ANY TAPPING.

ALL FIRE HYDRANTS SHALL BE INSTALLED AT THE LOCATIONS AS SHOWN ON THE DRAWINGS UNLESS OTHERWISE REQUESTED BY THE ENGINEER.

ALL FIRE HYDRANTS WILL BE PROPERLY BLOCKED AGAINST UNDISTURBED SOIL WITH CONCRETE IN CONFORMANCE WITH AWWA C600 SPECIFICATIONS AND IN CONFORMANCE WITH THE DRAWINGS.

ALL FIRE HYDRANTS SHALL BE FACED TOWARDS THE STREET AND WILL HAVE AMPLE BARREL LENGTH FOR THE SPECIFIED THIRTY SIX (36) INCH MINIMUM COVER AND TO PROVIDE AT LEAST TWO (2) INCHES FROM BOTTOM FLANGE TO FINISHED GRADE OR BOTTOM FLANGE AT THE SAME ELEVATION AS THE CENTERLINE ELEVATION OF THE ADJACENT STREET AS MAY BE REQUIRED OR AS DIRECTED BY THE ENGINEER.

FIRE HYDRANTS (BELOW GROUND APPURTENANCES) SHALL BE WRAPPED AS SPECIFIED HEREIN.

THE "FIRE HYDRANT ASSEMBLY" INCLUDES THE MAIN LINE SWIVEL TEE, MECHANICAL JOINT GATE VALVE, CAST IRON VALVE BOX, CONCRETE VALVE PAD WHEN REQUESTED BY THE ENGINEER, SWIVEL BY SOLID ADAPTER, 6" DUCTILE IRON LEAD PIPING, MECHANICAL JOINT HYDRANT, AND ALL ASSOCIATED BLOCKING AS SHOWN ON THE DRAWINGS.

ALL FIRE HYDRANTS SHALL BE NEATLY PAINTED AS RECOMMENDED BY THE HYDRANT MANUFACTURER WITH COLORS COMPLYING WITH THE

OWNERS OR THE CONTROLLING REGULATORY AGENCIES SPECIFICATIONS.

CONCRETE THRUST BLOCKING SHALL BE PROVIDED AGAINST UNDISTURBED SOIL FOR ALL FITTINGS, VALVES, etc. AS SHOWN ON THE DRAWINGS. NO ALTERNATE BLOCKING WILL BE CONSIDERED OTHER THAN THAT SPECIFIED HEREIN AND AS SHOWN ON THE DRAWINGS.

THRUST BLOCKING WILL NOT BE PAID FOR SEPARATELY. THRUST BLOCKING IS A SUBSIDIARY ITEM AS PART OF THE PIPELINE WORK.

ALL WATER MAINS SHALL BE HYDROSTATICALLY TESTED IN CONFORMANCE WITH AWWA C600 SECTION 4 EXCEPT AS MODIFIED AS FOLLOWS;

1. MAXIMUM ALLOWABLE LEAKAGE SHALL NOT EXCEED TEN (10) GALLONS PER INCH OF PIPE DIAMETER PER MILE OF PIPE PER 24 HOURS.
2. THE TEST SHALL BE APPLIED TO THE WHOLE OR INDIVIDUAL VALVED OFF SECTIONS OF THE MAINS AFTER THE TRENCH IS BACKFILLED.
3. THE CONTRACTOR SHALL FURNISH ALL EQUIPMENT AND LABOR AS REQUIRED TO PRESSURE TEST ALL WATER LINES IN CONFORMANCE WITH THESE SPECIFICATIONS.
4. THE TEST PRESSURE SHALL BE 150 PSI AND SHALL BE MAINTAINED FOR A MINIMUM OF FOUR (4) HOURS. THE TEST PRESSURE WILL BE BASED UPON THE LOWEST ELEVATION POINT OF THE LINE OR SECTION TO BE TESTED.
5. CONTRACTOR SHALL PROVIDE WRITTEN RESULTS OF TESTING TO THE ENGINEER

SHOULD THE AMOUNT OF LEAKAGE EXCEED THAT SPECIFIED, THE CONTRACTOR AT HIS OWN EXPENSE SHALL LOCATE AND REPAIR THE DEFECTIVE WORK UNTIL ALL WORK HAS PASSED THE SPECIFIED TESTING SPECIFICATIONS.

ALL WATER MAINS SHALL BE DISINFECTED IN CONFORMANCE WITH STATE OF MISSISSIPPI DEPARTMENT OF HEALTH LATEST REQUIREMENTS

WATER SAMPLES SHALL BE COLLECTED AND ANALYZED BY THE LOCAL HEALTH AUTHORITY WITH THE ASSISTANCE OF THE CONTRACTOR. ALL TEST RESULTS SHALL BE DELIVERED BY THE CONTRACTOR TO THE ENGINEER. NO WATER SYSTEM WILL BE

USED UNTIL APPROVAL IS GRANTED FROM THE HEALTH AUTHORITY.

CONTRACTOR SHALL PAY FOR ALL WATER SYSTEM TESTING INCLUDING HYDROSTATIC AND DISINFECTION OR ADDITIONAL TESTING AS MAY BE REQUIRED TO INSURE SYSTEM CONFORMS TO STATE HEALTH REGULATIONS.

WATER SERVICE TUBING SHALL **BE** PE 3408 SDR 9.

LINE VALVES FOR TWO (2) INCH AND LARGER LINES SHALL BE DOUBLE DISK, PARALLEL SEAT, BRASS MOUNTED, NONRISING STEM GATE VALVES AS ANUFACTURED BY MUELLER COMPANY OR APPROVED EQUAL. THE GATE VALVES SHALL BE IN CONFORMANCE WITH AWWA C500. ALL GATE VALVES SHALL BE MECHANICAL JOINT UNLESS OTHERWISE SHOWN ON THE DRAWINGS. GATE VALVES SHALL BE WRAPPED AS SPECIFIED HEREIN.

VALVE BOXES SHALL CONFORM TO REQUIREMENTS OF WATER SUPPLY.

TAPPING SLEEVES SHALL BE OF HEAVY CAST IRON, MECHANICAL JOINT END CONNECTIONS, 200 PSI MINIMUM WORKING PRESSURE, DESIGNED TO MEET OR EXCEED AWWA STANDARDS.

TAPPING VALVES SHALL HAVE FLANGED INLETS WHICH CONFORM TO CLASS 125, ANSI B16.1 SPECIFICATIONS AND MECHANICAL JOINT OUTLETS. VALVES SHALL HAVE A WORKING PRESSURE OF 200 PSI. TAPPING VALVES SHALL **BE** OF THE SAME BRAND AS THE TAPPING TEE ON WHICH IT IS TO MOUNT AND SHALL BE NONRISING STEM TYPE.

ALL FIRE HYDRANTS SHALL BE MANUFACTURED BY MUELLER COMPANY AND CONFORM THE AWWA STANDARD C502 AND BE EQUIPPED WITH THREE (3) NOZZLES, TWO (2) TWO AND ONE HALF (2 1/2) INCH HOSE CONNECTIONS, AND ONE (1) FOUR (4) INCH PUMPER NOZZLE CONNECTION. HYDRANTS SHALL BE PAINTED IN CONFORMANCE WITH THE OWNERS OR CONTROLLING REGULATORY AGENCIES SPECIFICATIONS. ALL COMPONENTS SHALL BE DESIGNED TO - "BREAK AWAY" AT A POINT ABOVE GROUND LEVEL IN THE EVENT OF TRAFFIC IMPACT.

CONCRETE REQUIRED FOR VALVE BOX PADS SHALL BE CLASS A, 3000 PSI AT 28 DAYS.

ALL PIPE, VALVES AND APPURTENANCES SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS. ANY DEVIATIONS MUST BE APPROVED BY THE ENGINEER BEFORE INSTALLATION.

ALL PIPES AND OTHER RELATED ITEMS SHALL BE LAID IN OPEN TRENCHED EXCAVATIONS AND SHALL BE HAUNCHED AND BEDDED"AND UNIFORMLY SUPPORTED OVER THEIR FULL LENGTH. TRENCHES SHALL BE EXCAVATED WITH FLAT BOTTOMS AND DEWATERED. ALL WORK SHALL BE PERFORMED IN A DRY TRENCH UNLESS INSITU CONDITIONS ABSOLUTELY FORBID SUCH IN WHICH SUCH CASES WILL BE EVALUATED ON A CASE BY CASE BASIS BY THE ENGINEER.

CONTRACTOR SHALL BE PAID FOR SPECIAL BEDDING MATERIAL REQUESTED BY THE ENGINEER. SPECIAL BEDDING MATERIAL REQUIRED

DUE TO CONTRACTORS NEGLIGENCE WILL NOT BE PAID FOR.

ALL PIPE, FITTINGS AND RELATED APPURTENANCES SHALL BE CAREFULLY INSPECTED IN THE FIELD BEFORE LOWERING INTO THE TRENCH. ANY BROKEN, CRACKED OR DEFECTIVE MATERIAL AS DETERMINED BY THE CONTRACTOR OR ENGINEER SHALL BE CLEARLY TAGGED AND REMOVED FROM THE JOB SITE AT THE CONTRACTORS EXPENSE.

ALL PIPE, VALVES, FITTINGS AND RELATED APPURTENANCES SHALL BE INSTALLED IN STRICT CONFORMANCE WITH THE RESPECTIVE MANUFACTURERS RECOMMENDATIONS.

WATER MAINS SHALL BE INSTALLED IN CONFORMANCE WITH ANSI/AWWA C600 PIPE SPECIFICATIONS.

TRENCH WIDTHS SHALL PROVIDE A MINIMUM SPACE OF FOUR (4) INCHES ON EACH SIDE OF THE PIPE TO ALLOW FOR PROPER COMPACTION.

EVERY PRECAUTION SHALL BE TAKEN TO PREVENT FOREIGN MATERIAL FROM ENTERING THE WATER PIPE WHILE IT IS BEING INSTALLED. DURING PERIODS WHERE PIPE IS BEING LAID, THE OPEN ENDS OF PIPES IN TRENCHES SHALL BE TEMPORARILY SEALED. NO PIPE SHALL BE LAID IN WATER OR WHEN IN THE OPINION OF THE ENGINEER, TRENCH CONDITIONS ARE UNSUITABLE.

WATER MAINS SHALL BE LAID SO AS TO HAVE A MINIMUM COVER OF THREE (3) FEET TO THE TOP OF THE PIPE. IF THE CARRIER PIPE IS IN A CASING, THE COVER BENEATH THE ROAD SURFACE SHALL BE FIVE (5) FEET MINIMUM TO THE TOP OF THE CASING AND IN ALL CASES A MINIMUM OF THREE (3) FEET OF COVER BENEATH ALL DITCH BOTTOMS.

EROSION CONTROL DEVICES SHALL BE UTILIZED BY THE CONTRACTOR TO INSURE SILT DOES NOT LEAVE THE PROJECT SITE DURING CONSTRUCTION.

SEWER SPECIFICATIONS

TECHNICAL SPECIFICATIONS

ALL PIPE AND FITTINGS SHALL BE FURNISHED BY MANUFACTURERS WHO ARE FULLY EXPERIENCED, REPUTABLE AND QUALIFIED IN THE MANUFACTURE OF THE MATERIAL TO BE FURNISHED.

WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL LOCAL, COUNTY, STATE, AND FEDERAL CODES.

CONTRACTOR SHALL BE RESPONSIBLE FOR FEES AND PERMITS ASSOCIATED WITH CONSTRUCTION.

CLEARING AND GRUBBING COSTS ARE TO BE ABSORBED INTO THE PIPE LAYING BUDGET. DISPOSAL IS TO BE FURNISHED BY CONTRACTOR.

CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION AND LOCATION OF ALL UTILITIES WITHIN THE WORK SITE.

CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SHORING, BRACING AND/OR A GROUND SUPPORT SYSTEM TO PREVENT FAILURE OF GROUND STABILITY DURING CONSTRUCTION.

PIPES SHALL BE LAID TRUE TO GRADE AS SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE ENGINEER. THE GRADES AS SHOWN ON THE DRAWINGS ARE THE INVERT GRADES TO WHICH THE WORK SHALL CONFORM. CONTRACTOR AT HIS OWN EXPENSE SHALL REPLACE OR REPAIR ALL WORK NOT ON GRADE. CONTRACTOR ALSO AT HIS OWN EXPENSE SHALL PROVIDE TO OWNER RECORD INFORMATION AS TO THE EXACT INVERTS OF ALL SEWER FACILITIES WHICH SHALL BE VERIFIED BY A LICENSED PROFESSIONAL LAND SURVEYOR.

ALL SEWER PIPE 8" GRAVITY MAINS, 6" COLLECTION LINES AND 4" SERVICE LATERALS SHALL BE P.V.C. (POLY VINYL CHLORIDE) SEWER PIPE AND SHALL COMPLY WITH ASTM D3034 OR UNI-B-4. THE PIPE SHALL BE OF TYPE PSM POLY VINYL CHLORIDE WITH A STANDARD DIMENSION RATION (SDR) OF 35 (SDR 35). PIPE AND FITTING SHALL HAVE AN INTEGRAL BELL WITH ELASTOMERIC SEAL JOINTS. THE JOINTS SHALL COMPLY WITH ASTM D3212 OR UNI-B-1. GASKETS SHALL COMPLY WITH ASTM F477. JOINT LUBRICANTS SHALL BE AS RECOMMENDED BY THE PIPE MANUFACTURER.

PVC FITTINGS SHALL BE MANUFACTURED BY THE SAME COMPANY THAT MANUFACTURED THE PIPE TO WHICH IT IS TO BE ATTACHED.

PIPE BEDDING MATERIAL WHEN AUTHORIZED BY THE ENGINEER SHALL BE ROAD GRAVEL TO THE WIDTH AND THICKNESSES AS

OUTLINED ON THE DETAILS. CONTRACTOR WILL BE PAID FOR BEDDING MATERIAL ONLY WHEN REQUESTED BY THE ENGINEER BECAUSE OF INSITU FIELD CONDITIONS. CONTRACTOR WILL NOT BE PAID FOR BEDDING MATERIAL WHERE REQUESTED BY ENGINEER DUE TO CONTRACTORS NEGLIGENCE SUCH AS MISALIGNMENT, OVERCUT, etc.

ALL PIPE, MANHOLES AND RELATED SEWER APPURTENANCES SHALL BE INSTALLED TRUE TO LINES, GRADES AND LOCATIONS AS SHOWN ON THE DRAWINGS. ANY DEVIATIONS MUST BE APPROVED BY THE ENGINEER BEFORE INSTALLATION. CONTRACTOR SHALL REPAIR OR REPLACE ANY AND ALL MODIFICATIONS REQUIRED DUE TO CHANGES MADE WITHOUT CONSENT OF THE ENGINEER.

ALL PIPE, FITTINGS, MANHOLES AND RELATED APPURTENANCES SHALL BE INSPECTED BY THE CONTRACTOR BEFORE INSTALLATION. ALL DEFECTIVE MATERIALS AS DETERMINED BY THE ENGINEER OR CONTRACTOR SHALL BE PULLED AND NOT INSTALLED. DEFECTIVE MATERIALS SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.

ALL MATERIALS SHALL BE INSTALLED IN STRICT CONFORMANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

ALL PIPES SHALL BE INSTALLED WITH THE BELL END FACING UPSTREAM.

THE INTERIOR AND ENDS OF ALL SEWER PIPES SHALL BE THOROUGHLY CLEANED OF ALL FOREIGN MATTER BEFORE JOINING WITH THE NEXT SECTION OR FITTING. ALL MATERIALS SHALL BE CLEANED AND KEPT FREE OF FOREIGN MATTER THROUGHOUT THE CONSTRUCTION PROCESS.

ALL NEWLY INSTALLED SEWER FACILITIES SHALL BE COMPLETELY TESTED IN CONFORMANCE WITH THE LATEST TESTING PROCEDURES INCLUDING LAMPING AND MANDREL TESTING. TESTING AND GRADE VERIFICATION SHALL BE AT THE CONTRACTOR EXPENSE.

NO MANHOLE, PIPE OR TANK SHALL BE LAID IN THE PRESENCE OF WATER.

WHERE THE A WATER MAIN IS WITHIN 10 FEET OF A SEWER MAIN HORIZONTALLY, THE WATE MAIN SHALL BE AT LEAST 18" ABOVE THE TOP OF THE SEWER MAIN.

CLEARING AND GRUBBING COSTS ARE TO BE ABSORBED INTO THE PIPE LAYING BUDGET. DISPOSAL IS TO BE FURNISHED BY CONTRACTOR.

PRECAST CONCRETE MANHOLE BASE, RISER AND ECCENTRIC TOP

SECTIONS SHALL CONFORM TO THE SPECIFICATIONS FOR PRECAST REINFORCED MANHOLE SECTIONS, ASTM C478. MANHOLE SECTIONS SHALL BE A MINIMUM OF 48" INSIDE DIAMETER AND A MINIMUM WALL THICKNESS OF 5". MANHOLE SECTIONS SHALL HAVE TONGUE AND GROOVE JOINTS. JOINTS SHALL HAV ROUND RUBBER GASKETS SET IN SPECIFICALLY PROVIDED INDENTATIONS. THE ROUND RUBBER "O" RING GASKET SHALL CONFORM TO ASTM C443 STANDARD SPECIFICATIONS.

PRECAST MANHOLES SHALL BE CONSTRUCTED WITH ASTM C150 TYPE II CEMENT.

THE DATE OF MANUFACTURE AND THE NAME OR TRADEMARK OF THE MANUFACTURER SHALL BE CLEARLY MARKED ON THE INSIDE OF EACH PRECAST SECTION.

SECTIONS SHALL BE SHOP CURED BY THE MANUFACTURER AND NOT SHIPPED UNTIL SUCH TIME AS TO ALLOW FOR COMPLETE CURING.

PRECAST FLAT SLAB TOP SECTIONS, WHERE REQUIRED FOR SHALLOW MANHOLES AS DETAILED, SHALL BE CAPABLE OF SUPPORTING THE OVERBURDEN PLUS A LIVE LOAD EQUIVALENT TO AASHTO H-20.

PRECAST BOTTOMS SHALL HAVE A THICKNESS OF EIGHT (8) INCHES FOR DEPTHS UNDER TWELVE (12) FEET AND TWELVE (12) INCHES. FOR DEPTHS TWELVE (12) FEET AND OVER.

PRECAST BASES SHALL BE INTEGRALLY CAST AND SHALL CONSIST OF MANHOLE BOTTOM AND WALLS WHICH SHALL EXTEND A MINIMUM OF SIX (6) INCHES ABOVE THE TOP OF THE HIGHEST INFLOWING SEWER. THE TOP OF THE BASE SECTION SHALL BE CAREFULLY FORMED TO RECEIVE THE TONGUE AND GROOVE OF THE BARREL SECTION. THERE SHALL BE A MINIMUM DISTANCE OF FOUR (4) INCHES BETWEEN THE INVERT OF THE LOWEST OUT- FLOWING SEWER AND FLOOR OF THE PRECAST BASE TO PROVIDE FOR THE CONSTRUCTION OF A FORMED INVERT AND BENCH WALL WITHIN MANHOLE FOR HYDRAULIC EFFICIENTLY. THE GROUTED INVERT BENCH SHALL BE CONSTRUCTED WITH THE SAME CEMENT MORTAR AS SPECIFIED HEREIN FOR BRICK MORTAR. NO MORE THAN TWO (2) LIFTHOLES SHALL BE CAST IN THE BASES. MANHOLES FOUR (4) FEET IN DIAMETER SHALL HAVE A BOTTOM OF AT LEAST EIGHT (8) INCHES THICK FOR DEPTHS UNDER TWELVE (12) FEET AND TWELVE (12) INCHES THICK FOR DEPTHS TWELVE (12) FEET AND GREATER AND A MINIMUM WALL THICKNESS OF FIVE (5) INCHES.

OPENINGS IN MANHOLES SIDES FOR SEWER MAIN PENETRATIONS SHALL UTILIZE FLEXIBLE NEOPRENE INFILTRATION BOOTS MECHANICALLY CLAMPED TO THE MANHOLE AND TO THE PIPE TO PROVIDE A WATER TIGHT SEAL AND PROVIDE FOR FLEXIBILITY IF SETTLEMENT OCCURS. THE INFILTRATION BOOTS SHALL BE AS DETAILED ON THE DRAWINGS.

MANHOLE COVERS AND FRAMES SHALL BE VULCAN FOUNDRY NO. V2480-1

WATERTIGHT WHEN DIRECTED BY ENGINEER ONLY, OR NORMALLY UNLESS DIRECTED OTHERWISE SHALL BE VULCAN FOUNDRY STANDARD V-1403 HEAVY DUTY TRAFFIC WEIGHT, OR APPROVED EQUAL. MANHOLES SHALL BE CONSTRUCTED TO THE DIMENSIONS, LOCATIONS AND ELEVATIONS AS SHOWN ON THE DRAWINGS. CONTRACTOR SHALL NOT MAKE ANY DEVIATIONS FROM THE DRAWINGS WITHOUT CONSENT OF THE ENGINEER.

ALL MANHOLE BASES SHALL BE INSTALLED ON AN AGGREGATE FOUNDATION (GRAVEL) MATERIAL CONFORMING TO LDOTD 1003.08(e)(1), 8" THICK MINIMUM.

MANHOLE INVERT CHANNELS SHALL BE CONSTRUCTED AS PER THE DETAILS.

PRECAST CONCRETE STRUCTURES SHALL BE INSTALLED TO WITHIN 1/4" TOLERANCES OUT OF PLUMB.

ALL LIFTING HOLES OR OTHER HOLES THROUGH THE PRECAST SECTIONS SHALL BE NEATLY AND COMPLETELY FILLED AND SEALED WITH NON SHRINK GROUT.

CONTRACTOR IS RESPONSIBLE FOR BY-PASS PUMPING OF WASTEWATER DURING CONSTRUCTION IF NECESSARY.

PIPE DESIGNATIONS ARE AS INDICATED ON PLANS.

NO OTHER ALTERNATE MANHOLE CONSTRUCTION WILL BE ALLOWED OTHER THAN AS OUTLINED HEREON UNLESS APPROVED BY THE ENGINEER.

SEWER MAINS AND APPURTENANCES SHALL BE TESTED IN CONFORMANCE WITH THE CONTROLLING REGULATORY AGENCIES AND OR OWNERS STANDARD GUIDELINES. IF NONE, AS DIRECTED BY THE ENGINEER AND SHALL INCLUDE AT A MINIMUM, INVERT AND SLOPE VERIFICATION BY A LICENSED PROFESSIONAL LAND SURVEYOR AND LAMPING WITH SUNLIGHT AND MIRRORS ONLY (NO FLASHLIGHT OR ARTIFICIAL LIGHTING WILL BE ACCEPTABLE). IF LESS THAN 90% OF A FULL CIRCLE IS VISIBLE A MANDREL SIZED AT 90% OF THE MAIN SIZE INSIDE DIAMETER SHALL BE PULLED. THE MAIN SHALL THEN BE RELAMPED. IF THE MAIN IS STILL LESS THAN 90% VISIBLE, REPAIR OR REPLACEMENT AT THE CONTRACTORS EXPENSE MAY BE DIRECTED. OTHER TESTING SUCH AS MANHOLE AND MAIN INFILTRATION AND EXFILTRATION MAY ALSO BE REQUIRED.

CONTRACTOR SHALL PAY FOR ALL SEWER SYSTEM TESTING INCLUDING INVERT AND SLOPE VERIFICATION, LAMPING, MANDREL PULLING OR ANY ADDITIONAL TESTING AS MAY BE REQUIRED TO INSURE SYSTEM CONFORMS TO STATE HEALTH REGULATIONS.

ANY OMISSIONS OF SEWER SPECIFICATION DETAILS ARE TO BE COORDINATED WITH PROJECT ENGINEER.

EROSION CONTROL DEVICES SHALL BE UTILIZED BY THE CONTRACTOR TO
INSURE SILT DOES NOT LEAVE THE PROJECT SITE DURING
CONSTRUCTION.

LIFT STATION PUMPS

65 GPM LIFT STATION



PUMP COMPANY

Zoeller Family of Water Solutions™

Your Peace of Mind is Our Top Priority®



North America / English Change

Home Our Products Pump Sizing Support Where to Buy About Us Log-In

Sewage & Dewatering

High Head Waste-Mate 292, 293, 294, 295, 4292, 4293, 4294, 4295

Features & Benefits

Product Specifications

Technical Data

Model Comparison Charts

Performance Curves

Dimensional Data Drawings

Literature / Documents



FEATURES & BENEFITS

Single and double seal submersible sewage or dewatering pumps

- Durable cast iron constructed switch case, base, motor and pump housing
- No sheet metal parts to rust or corrode
- All cast iron class 25-30 25000# tensile strength
- Stainless steel screws, bolts, float rod, handle, guard, arm and seal assembly
- Oil filled, hermetically sealed, automatic reset thermal overload protected (1 Ph only) motor
- Maximum temperature for sewage or dewatering: 130°F (54°C) standard
- If over 130°F (54°C), consult factory.
- Shaft seal - stainless steel carbon & ceramic rotary
- Corrosion-resistant, powder coated epoxy finish
- Upper and lower ball bearing running in a bath of oil
- Neoprene square ring & gasket
- All models pass 2" (50 mm) spherical solids
- Major width (single seal): 12-7/8" (32.7 cm)
- Major height (single seal): 19-5/16" (49 cm)
- Automatic units available with float operated, submersible (NEMA 6)2-pole mechanical switch
- On point: 14 3/4" (37.5 cm)
- Off point: 5" (12.7 cm)
- Specify 2" or 3" NPT female flanged vertical discharge
- 100% computerized tested
- Automatic units available in single phase 292, 293, 294 & 295 series

Models 4292, 4293, 4294, 4295 Double Seal Pumps (non-automatic only):

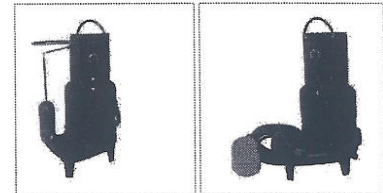
- Gives motor extra protection from seal leaks
- Improved bearing lubrication
- Helps eliminate seal and bearing damage from dry runs
- Major width: 12-7/8" (32.7 cm)
- Major height: 21-3/16" (31 cm)

The sizing of effluent systems normally requires variable level float(s) controls and properly sized basins to achieve required pumping cycles or dosing timers with non-automatic pumps.

Reserve powered design.

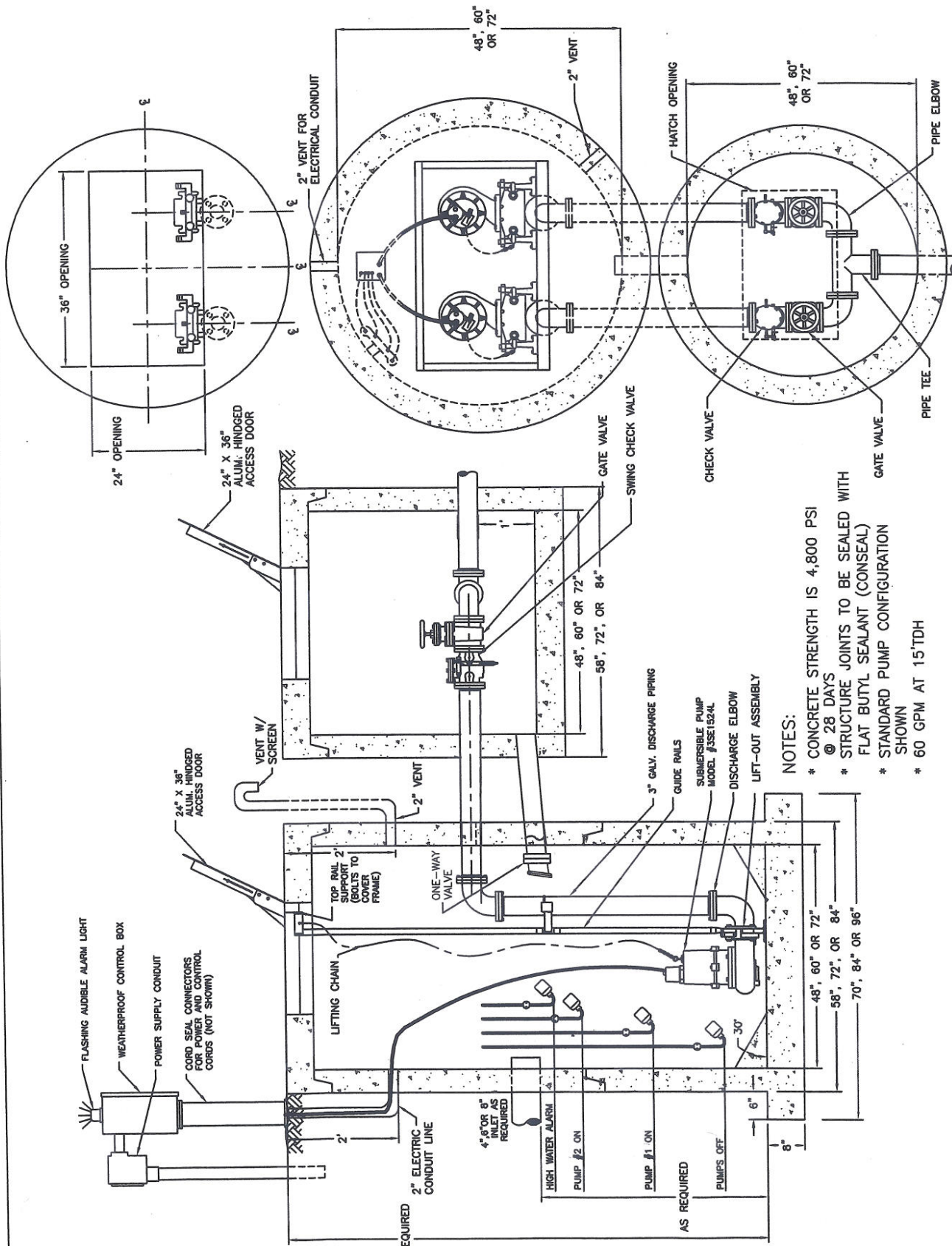
For unusual conditions a reserve safety factor is engineered into the design of every Zoeller pump.

* See charts for UL & CSA listings



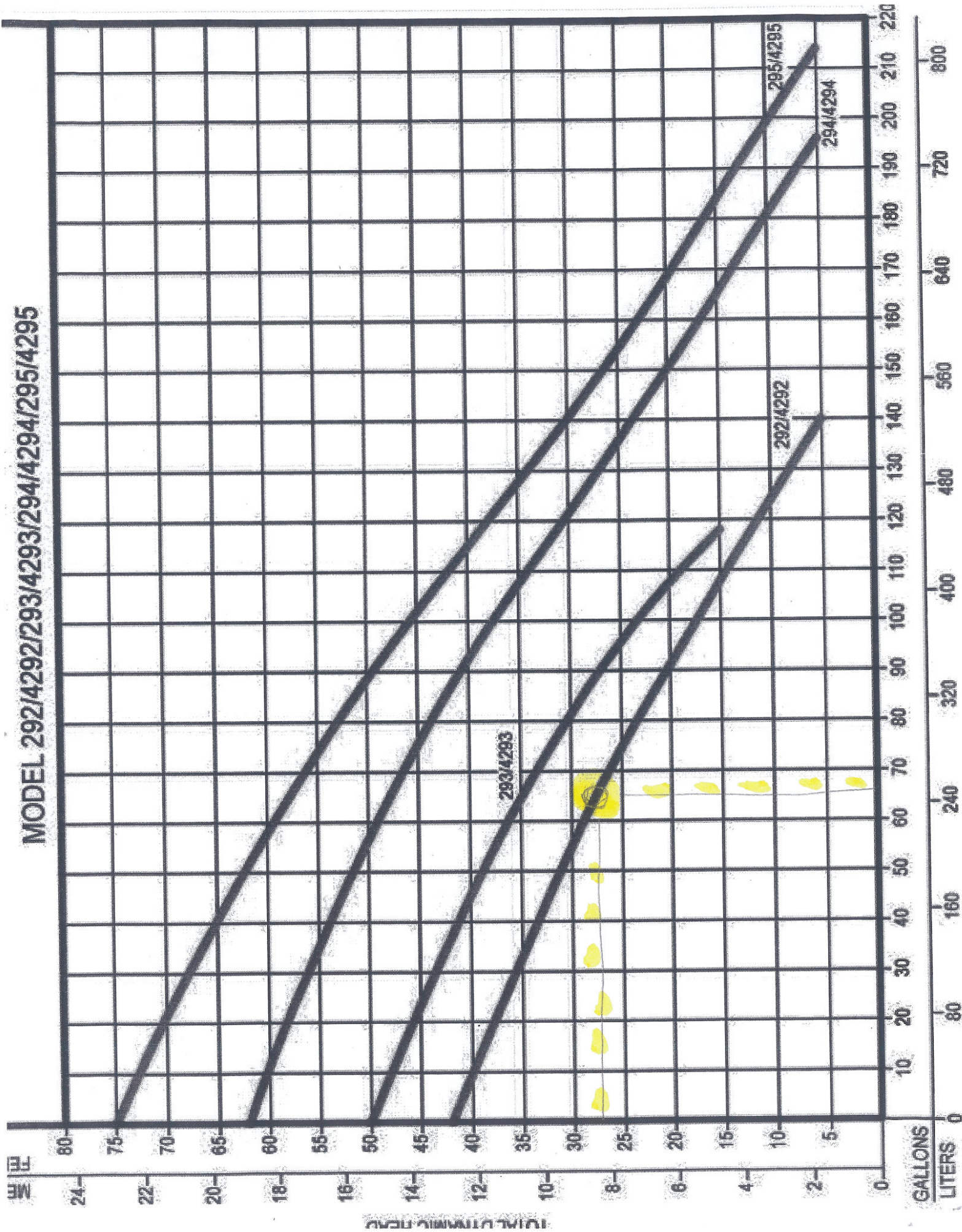
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PRODUCT DEMO



- NOTES:
- * CONCRETE STRENGTH IS 4,800 PSI @ 28 DAYS
 - * STRUCTURE JOINTS TO BE SEALED WITH FLAT BUTYL SEALANT (CONSEAL)
 - * STANDARD PUMP CONFIGURATION SHOWN
 - * 60 GPM AT 15'TDH

MODEL 292/4292/293/4293/294/4294/295/4295





PUMP COMPANY

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Sewage & Dewatering

High Head Waste-Mate 292, 293, 294, 295, 4292, 4293, 4294, 4295

Features & Benefits

Product Specifications

Technical Data

Model Comparison Charts

Performance Curves

Dimensional Data

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FEATURES & BENEFITS

Single and double seal submersible sewage or dewatering pumps

- Durable cast iron constructed switch case, base, motor and pump housing
- No sheet metal parts to rust or corrode
- All cast iron class 25-30 25000# tensile strength
- Stainless steel screws, bolts, float rod, handle, guard, arm and seal assembly
- Oil filled, hermetically sealed, automatic reset thermal overload protected (1 Ph only) motor
- Maximum temperature for sewage or dewatering: 130°F (54°C) standard
- If over 130°F (54°C), consult factory.
- Shaft seal - stainless steel carbon & ceramic rotary
- Corrosion-resistant, powder coated epoxy finish
- Upper and lower ball bearing running in a bath of oil
- Neoprene square ring & gasket
- All models pass 2" (50 mm) spherical solids
- Major width (single seal): 12-7/8" (32.7 cm)
- Major height (single seal): 19-5/16" (49 cm)
- Automatic units available with float operated, submersible (NEMA 6) 2-pole mechanical switch
- On point: 14 3/4" (37.5 cm)
- Off point: 5" (12.7 cm)
- Specify 2" or 3" NPT female flanged vertical discharge
- 100% computerized tested
- Automatic units available in single phase 292, 293, 294 & 295 series

Models 4292, 4293, 4294, 4295 Double Seal Pumps (non-automatic only):

- Gives motor extra protection from seal leaks
- Improved bearing lubrication
- Helps eliminate seal and bearing damage from dry runs
- Major width: 12-7/8" (32.7 cm)
- Major height: 21-3/16" (31 cm)

The sizing of effluent systems normally requires variable level float(s) controls and properly sized basins to achieve required pumping cycles or dosing timers with non-automatic pumps.

Reserve powered design.

For unusual conditions a reserve safety factor is engineered into the design of every Zoeller pump.

* See charts for UL & CSA listings



Click Image to Enlarge

[PRODUCT DEMO](#)

TREATMENT PLANT SPECIFICATIONS

Treatment Plant Specifications

EXTENDED AERATION FACTORY BUILT PACKAGE PLANT WITH HOPPER CLARIFIER(S)

GENERAL

In accordance with these specifications and drawings, the Contractor shall furnish and install one (1) wastewater treatment system. The system shall be an activated sludge process operated in the extended aeration mode. The system shall be a 12,000 Gallon per Day treatment Unit.

The system shall be capable of treating a total flow of 12,000 gallons *per day* (24 hours) of domestic waste. The plant shall operate efficiently if the average daily flow rate fluctuates within 60% to 100% of design flow and peak hourly flow rates not to exceed 250% of design. The complete wastewater treatment plant shall consist of the necessary tankage and components for proper operation of process.

The plant shall be factory assembled and shipped to the job site in the fewest number of pieces to facilitate ease of installation. Larger treatment plants will require field assembly of tanks, including bolting or welding by Contractor.

CONSTRUCTION

The treatment plant side walls, bottoms and partitions shall be constructed of minimum 1/4-in. thick structural grade low carbon ASTM A-36 steel plate, joined together by arc welding with fillets of adequate strength for the joint involved. All welds above and below water level shall be seat welded. The use of caulking, or other sealants for this purpose is prohibited. The tankage shall be adequately reinforced to withstand normal pressures inside and outside of (above/below) grade installations. All partition walls shall be reinforced to withstand hydraulic differentials when dewatered. The tanks shall be constructed in accordance with the latest requirements of AISC Specification for *Buildings* and the *American Welding Society's Code*.

All piping shall be minimum Schedule 40 painted steel. All control valves, where possible, shall be located on the outer perimeter of the tank wall, and shall be easily accessible without the use of walkways or extension handles. The influent and effluent pipe connections shall be grouted. The grout rings shall be an integral part of the tank structure.

INFLUENT BAR SCREEN

If necessary to remove obtrusive debris which may clog piping or pump, a bar screen device shall be furnished at the inlet to the aeration chamber. The bar screen shall remove debris larger than 1- in. diameter. The bars shall be steel flat

SPECIFICATIONS

bar 3/8-in. by 1-in, with a 1-in. opening. The bar screen shall be an integral part of the treatment plant. The bar screen shall be sloped for ease of cleaning, and shall have a drying tray. The bar screen shall be readily accessible from the perimeter of the tank service walkway.

AERATION CHAMBER

The **aeration** chamber shall have a minimum capacity of 12,000 gallons providing a 24 hour retention based on a 24 hour average flow rate, and/or a maximum organic loading of 15 lbs. of 5 day BOD per 1,000 cubic feet of tank volume. The tank profile shall **eliminate sludge** accumulation, and enhance rotation of the tank contents plus prevent any froth or scum

accumulation. The chamber shall have a 1-ft. 6-in. freeboard. To insure adequate circulation velocity the proportion of the chamber width to depth, in the direction of rotation, shall not exceed 1.33 to 1. The velocity of rotation shall be sufficient to scour the bottom and prevent sludge filleting.

The chamber shall be equipped with two (2) types of baffles. Flow control baffles shall be provided to enhance the spiral rotation of the contents of the chamber. To help eliminate floating debris from entering the settling tank a baffle shall be provided at the transfer port between the aeration and settling chambers.

AIR DIFFUSION SYSTEM

An air diffusion system shall be an integral part of the aeration chamber. The aeration system shall be located longitudinally along one side of the basin to insure maximum hydraulic retention and eliminate short circuiting of the organic particles. The aeration system shall provide the needed kinetic energy to "roll" the tank contents at a velocity to prevent the escape to the surface of minuscule air diffusion bubbles, causing their entrapment to provide maximum oxygenation efficiency.

The air diffusion system is made up of various components consisting of: an air manifold, air regulation/shut-off valves, disconnecting unions, stainless steel drop pipes, diffuser header, and non-clog type diffusers with a diaphragm type check valve. All diffuser components shall be properly sized to distribute the volume of air required for biological treatment with minimum pressure drop throughout the system.

The air distribution header shall be installed longitudinally along one side at the top of the aeration chamber. The header shall be rectangular shaped, capped at each end, and provided with couplings for riser connections. The risers shall be adequately spaced along the length of the chamber. Attached to the bottom of each riser pipe is a diffuser header with diffuser nozzles spaced

SPECIFICATIONS

approximately 6-in. on center. The header shall be spaced approximately 12-in. from the side wall and 12-in. from the bottom of the tank which will ensure optimum diffusion and mixing of the tank contents. Each diffuser assembly shall be light enough for one man to remove without the aid of lifting device. Each diffuser nozzle shall be constructed of corrosion resistant PVC. Each diffuser shall be capable of operating at a flow rate of 1 to 5 cubic feet per minute. The oxygen transfer capacity of each diffuser shall be such that an adequate supply of oxygen will be maintained in the aeration chamber to meet treatment requirements of the design sewage load.

CLARIFIER CHAMBER

A clarifier chamber shall be provided to operate as a quiescent zone to permit settleable solids in the mixed liquor to be removed by gravity. The clarifier shall have a capacity of 2000 gallons which will provide a 4 hour retention at the average design flow rate. The effective volume of the clarifier shall include the upper one third of the hopper plus the area above the hopper. The bottom two thirds of the hopper shall not be considered as part of the effective volume. The bottom of the clarifier shall be formed into an inverted pyramidal hopper or hoppers. The hoppers shall not exceed a slope of 1.7 vertical to 1.0 horizontal. The bottom of each hoppers shall form a flat area of one square foot.

The clarifier shall have baffling to enhance the operation of the settling zone. The inlet of the clarifier shall have a stilling baffle designed to absorb hydraulic shocks and ,disperse the flow uniformly along one side of the clarifier without short circuiting. A scum baffle shall be located longitudinally with the effluent trough. The baffle shall prevent floating debris which may enter the clarifier from passing over the effluent weir plate.

An effluent trough with adjustable steel weir plates shall be provided to ensure a uniform collection of the effluent flow. The weir plate shall have machine cut V-notches and slotted holes for adjustment. The weir plate shall be fastened to the effluent trough with stainless steel fasteners. The trough and weir plate shall be sized to accommodate the flow rate.

SLUDGE RECIRCULATION SYSTEM

The activated sludge which settles to the bottom of the clarifier, shall be recycled and/or disposed of by means of air operated pump. The airlift pump shall provide a positive means of transferring the sludge to the inlet end of the aeration chamber where it will seed the incoming raw sewage with an active culture of bacteria or to the sludge holding tank for further digestion_

SPECIFICATIONS

The airlifts eductor shall be a minimum 4-in. diameter Schedule 40 painted steel pipe. The airlift shall provide a recirculation capacity of 0% to 150% of the average daily flow. The airlift shall be designed for high efficiency by utilizing the maximum submergence possible. The air supply line to the eductor shall inject air at the same elevation as the discharge point of the aeration diffusers to ensure a uniform pressure drop throughout the air supply system. The air supply line shall have a needle valve to accurately adjust the volume of air to the eductor pipe. At the top of the airlift pump a cleanout plug shall be provided for easy dean out and maintenance.

SCUM RECIRCULATION SYSTEM

A **system** to remove floating debris in the clarifier chamber shall be provided. The system shall provide a positive method of returning the floating debris to the aeration chamber by means of an airlift pumps. There shall be two (2) airlifts provided constructed of 2-1/2-in. diameter Schedule 40 steel pipe with an adjustable steel inlet cone which will enable exact positioning to the water level. The airlifts shall be located strategically to provide maximum surface skimming. The airlifts shall provide a recirculation from 0% to 150% of the average daily flow. The variable flow rate is accomplished by changing the air rate to the airlift by means of a needle valve. The airlifts shall be furnished with a dean-out plug for easy cleaning and maintenance.

PLANT AIR SUPPLY

The air required for biological process and operation of the various airlift pumps shall be supplied by a dual blower system consisting of two (2) properly sized positive displacement blowers. The blowers shall be located on the treatment plant or in a blower building supplied by the owner. Each blower/motor assembly shall consist of a positive displacement blower, motor OOP (TE) sheaves, V-belts, base, belt guard, inlet air filter silencer, pressure relief valve, pressure gauge, adjustable motor base, vibration dampeners, check valve, and flexible discharge coupling.

Each blower shall provide 100% of the air required for proper plant operation. The blower units shall be manufactured by *Roots*, *Sutorbitt*, *Spencer* or approved equal. The blower shall be capable of delivering 2100 cubic feet per minute of air per pound BOD per day.

Each motor shall be open drip-proof, 1750 rpm, operating on 3 phase, 230/460 volts, 60 HZ. The motor shall be mounted on an adjustable base for proper tensioning of the belts. The motor shall be connected to the blower by means of belts and sheaves. The blower/motor assemblies which do not have a cover shall be provided with an OSHA approved belt guard.

Each blower assembly shall be equipped with an inlet air filter/silencer to reduce noise levels and protect the blower from abrasive air particles. Vibration

SPECIFICATIONS

welded area and recoat with the same coating as originally supplied. Touch up paint shall be supplied by the manufacturer.

FIELD ASSEMBLY

The treatment plant shall be factory built and pre-assembled prior to shipment. In most cases, due to shipping limitations, some of the ancillary equipment will be shipped unattached. This will require **minor** assembly on the job site Utilizing bolted **connections**. **Other fragile items may be shipped unattached because of special crating or packaging.**

The control system shall be completely factory wired and tested. The enclosure shall have a pocket to store color coded electrical schematic. The terminal blocks shall be numbered for easy wiring connections. The main power supply shall be 230 volts, 3 phase, 80 cycle. The control circuitry shall operate on 120 volt, 1 phase_

The Contractor shall provide all electrical wiring, conduit and other appurtenances from the control panel to the electrical power service. AU wiring and conduit from the control panel to the various electrical components shall be supplied by the Contractor.

SURFACE PREPARATION AND COATING

All steel fabrications shall be surface prepared in accordance with the coating manufacturers requirements. All 'painting shall be done in a building under controlled environmental conditions. The tankage shall be thoroughly dean of any abrasive materials used for surface preparation prior to applying any coatings. The use of any filler materials such as putty or caulking is not permitted. All tank seams shall be seal welded to prevent corrosion. The manufacturer shall certify *that* the tankage has been tested for voids and holidays and verify the actual dry film thickness of the coating. All surfaces with the exception of stainless steel, fiberglass, aluminum, galvanized, PVC, or components such as blowers and motors shall be coated with Bitumastic coal tar or equal applied with a total dry thickness of 8-10 mils DFT. The manufacturer shall supply touch up paint to recoat surfaces marred during installation_

CATHODIC PROTECTION (for below grade installation)

To minimize corrosion due to electrolytic reaction with the soil the plant snail be furnished with sacrificial anodes. There shall be four (4) cathodic anode bags furnished. Each bag shall be a 35 lb. magnesium anode with copper leads fastened to a core packed in its own low resistant backfill material. The anode bags shall be securely attached to the tank with stainless fasteners. The anodes shall be buried approximately 4 to 5 feet from the tank at about 5 feet

SPECIFICATIONS

depth. The anodes shall be installed equally spaced around the tank perimeter.

FOUNDATION AND ANCHORAGE

The Contractor shall provide a reinforced concrete pad in accordance with the project Engineers design requirements. The concrete pad shall stabilize the plant and prevent flotation as necessitated by the soil conditions and the ground elevation. Anchorage rods (re- bars) supplied by the Contractor shall be cast into the concrete slab and welded to the anchor clips on the treatment plant. The number and spacing of the anchor rods shall be in accordance with the anchorage drawing supplied by the manufacturer of the treatment plant. After attaching the anchor rods to the treatment plant the Contractor will clean the welded area and recoat with the same coating as originally supplied. Touch up paint shall be supplied by the manufacturer.

FIELD ASSEMBLY

The treatment plant shall be factory built and pre-assembled prior to shipment. In most cases, due to shipping limitations, some of the ancillary equipment will be shipped unattached. This will require **minor assembly** on the job site Utilizing **bolted connections**. **Other fragile items may be shipped unattached because of special crating or packaging.**

Shipping limitations may require the treatment plant to be shipped in sections and on special lowboy- trailers requiring a permit for over width or height loads. The Contractor shall provide an adequately sized crane to lift and set the tanks on the foundation slab. The manufacturer shall provide lifting lugs. The Contractor shall be given the weight of the heaviest piece prior to shipment. The manufacturer shall coordinate shipment of the tanks with the Contractor and freight company to minimize time required for crane services. The freight company shall be responsible for delivering the tankage to the nearest accessible roadway.

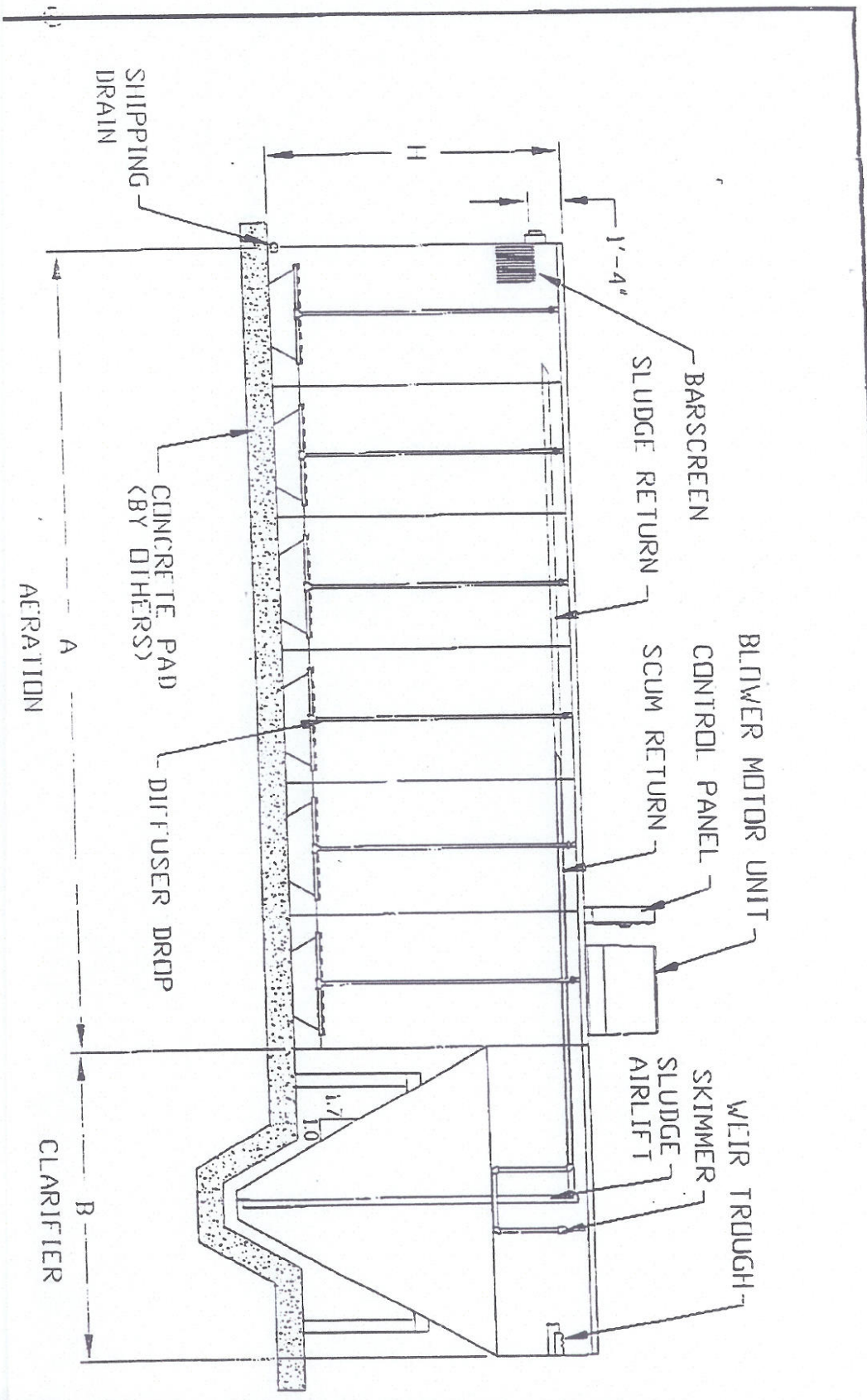
The following is a general overview of the responsibilities of the Contractor during the installation of the equipment

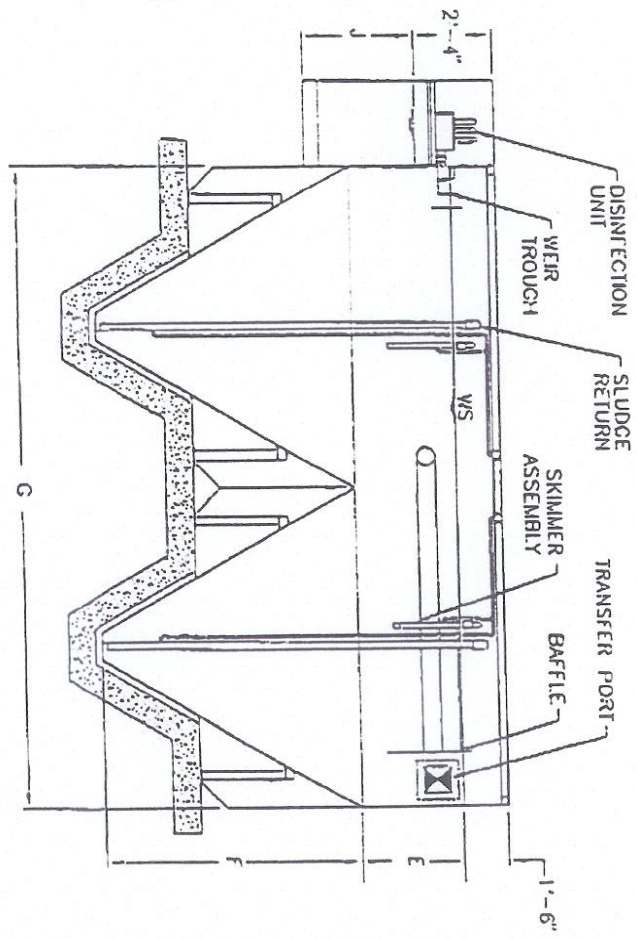
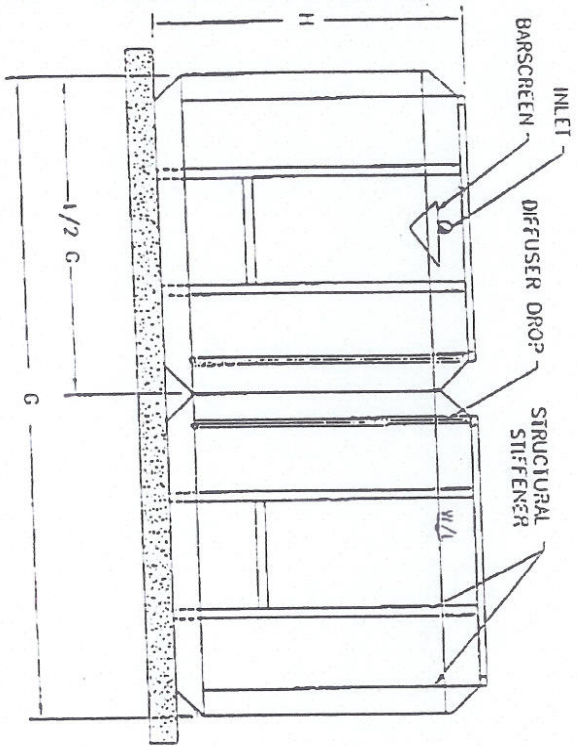
- Site preparation including excavation, concrete foundation, electrical utilities, dewatering and accessible roadway.
- Unloading and storage of equipment in accordance with the manufacturers requirements.

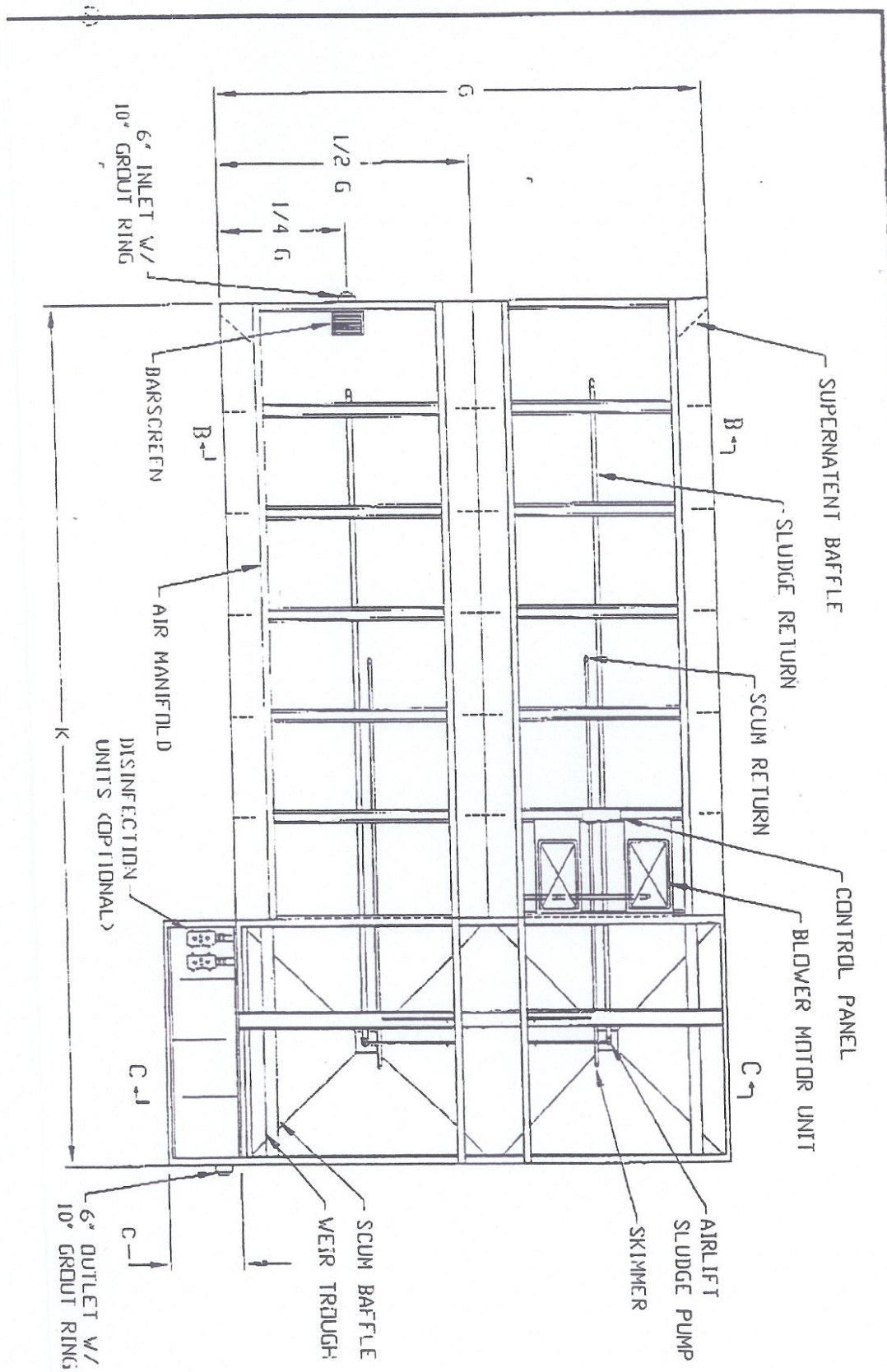
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- Position tankage on the foundation and splice by welding or bolting as required by the specifications.
 - Fasten anchorage in accordance with the manufacturers instructions_
 - Supply and install all yard piping and valves including interconnecting process piping between the various tanks.
 - Provide electrical service including power pole, transformers, electrical meters, wiring all necessary appurtenances to supply power to the treatment control panel. Connect wiring and conduit to the control panel_ Provide and install wiring and conduit from the control panel to the motors and other elecuical devices.
 - Install all ancillary equipment such as blower units, comminutor handrail, service walkway, etc.
 - Prior to backfilling install drain plugs, and fill tanks with clean water to prevent flotation.
 - Install anode bags.
 - Inspect tanks for surface scratches and repair with touch-up paint
 - Backfill around the treatment plant with care to avoid damaging the tank wall_
 - Check oil levels and lubricate all mechanical equipment.
 - Check motors for proper rotation and electrical connections.
 - Level and seal the weir plates with caulking (provided by Contractor).

FIELD SERVICE AND COMMISSIONING

The Contractor shall notify the Engineer and the manufacturer after the treatment plant has been completely installed. The manufacturer shall provide the service of a factory trained representative or factory technician to inspect the installation. The technician shall make final adjustments on the equipment and instruct the plant operator on the maintenance and operation of the equipment At this time the operator will be presented with two (2) bound copies of the operation and maintenance manuals. The manuals shall include complete operational instructions, trouble shooting charts, parts lists and lubrication schedules. The manuals shall include the phone numbers of the local representative and the manufacturer for assistance in operational difficulties and placing parts orders.







SPRAY FIELD PUMP



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Sump, Effluent, Dewatering

180 Series and 191 Single Seal Drip Pump 185, 186, 188, 189, 4185, 4186, 4188, 4189, 191

Features & Benefits

Product Specifications

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Model Comparison Charts

Performance Curves

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FEATURES & BENEFITS

Effluent or dewatering submersible pump for septic tank, low pressure pipe (LPP) and enhanced flow STEP systems.

- Non-clogging vortex impeller design bronze class 88-8-0-4 (180 series)
- Enclosed impeller design (model 191)
- Float operated, submersible (NEMA 6) 2 pole mechanical switch
- Durable cast iron construction
- Cast iron switch case, base, motor and pump housing
- No sheet metal parts to rust or corrode
- Stainless steel screws, bolts, float rod, handle, guard, arm and seal assembly
- Oil filled, hermetically sealed, automatic reset thermal overload protection (1 Ph only)
- Maximum temperature for effluent or dewatering: 130°F (54°C), WD189 120°F (49°C)
- Variable level control systems available
- Neoprene square ring & gasket
- Stainless steel carbon and ceramic rotary shaft seal
- Upper and lower ball bearing running in bath of oil
- All 180/4180 series pumps pass 3/4" (19 mm) spherical solids.
- Model 191 passes 5/8" (16 mm) spherical solids.
- On point: 14-3/4" (37.5 cm)
- Off point: 5-1/4" (12.7 cm) (automatic units)
- Major width: 12-3/4" (32.4 cm) (single seal pumps)
- Major height: 19-5/16" (49.1 cm) (single seal pumps)
- 1 1/2" NPT discharge with 2" or 3" flange available
- Model 191 not available with 3" flange
- Corrosion-resistant, powder coated epoxy finish
- Automatic units not recommended for use in effluent systems
- Automatic reset thermal overload protection (single phase only)

Models 4185, 4186, 4188, 4189 Double Seal Pumps (nonautomatic only)

- Protects motor from seal leaks
- Improved bearing lubrication
- Helps eliminate seal and bearing damage from dry runs
- Major width: 12-3/4" (32.4 cm)
- Major height: 21-3/16" (53.8 cm)

Note: The sizing of effluent systems normally requires variable level float(s) controls and properly sized basins to achieve required pumping cycles or dosing timers with non-automatic pumps.

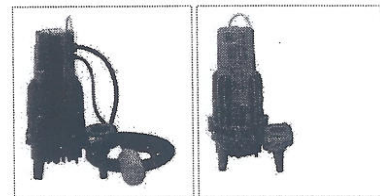
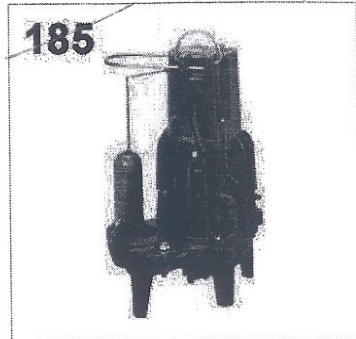
Note: No UL listing for 200/208 1 Phase pumps, Model 186 & 191, or double seal series. See charts for UL & CSA listings.

Reserve Powered Design.

For unusual conditions a reserve safety factor is engineered into the design of every Zoeller pump.

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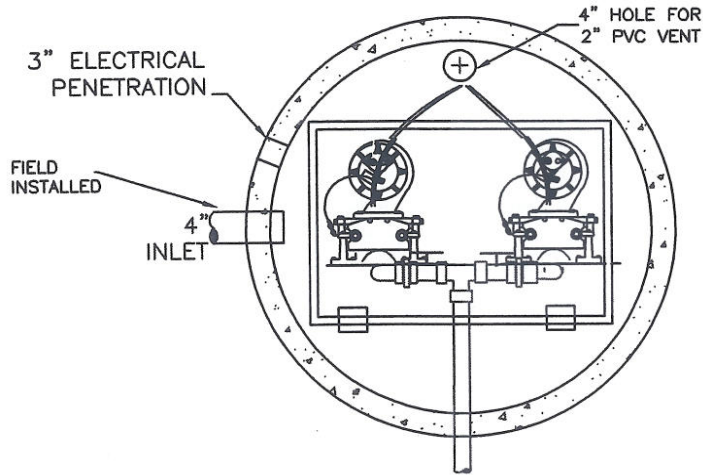
188



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230

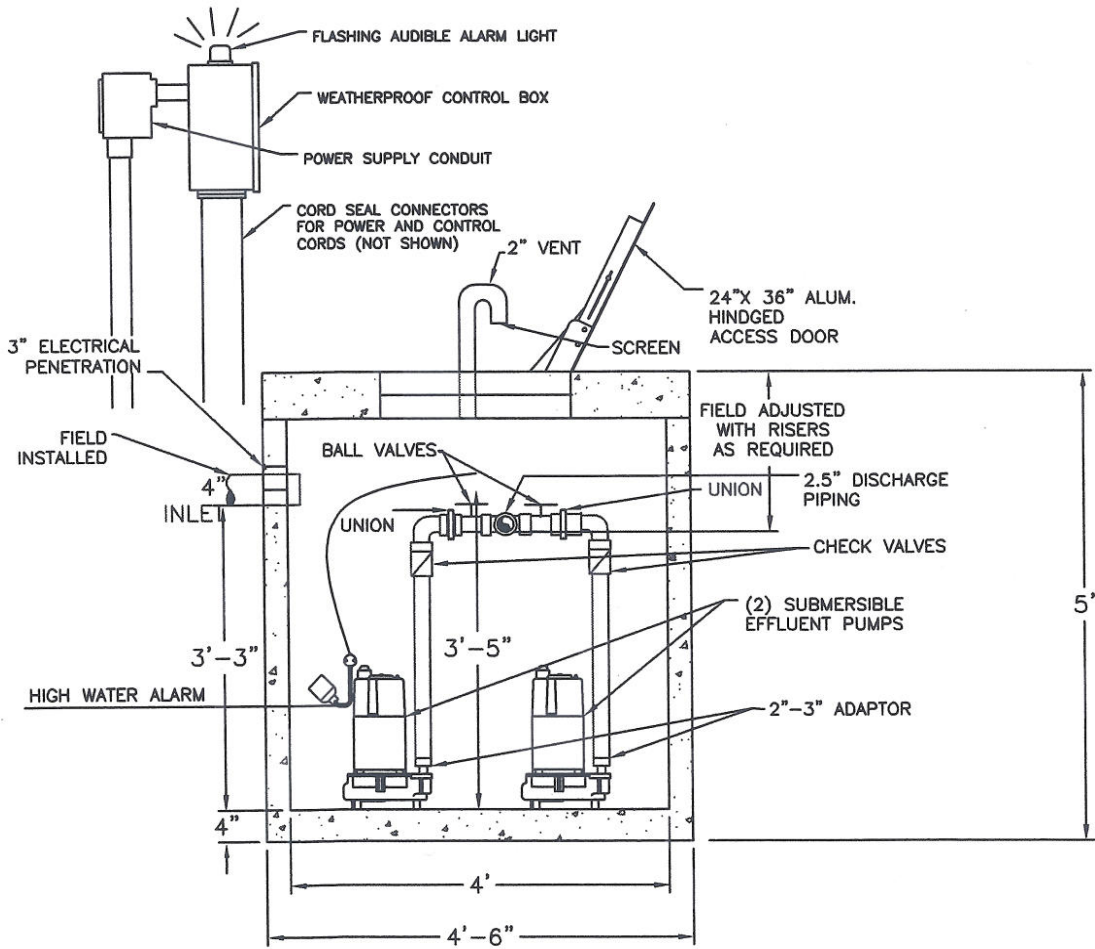
10300 HP & PHASE



APPROVED FOR PRODUCTION: _____

APPROVED FOR PRODUCTION
W/ CHANGES: _____

RESUBMITTAL REQUIRED: _____



SPECIFICATIONS:

1. Class 1 concrete with design strength of 4500 PSI at 28 days.
2. Structure to be sealed with Flat Butyl Sealant (Ram-nek)

EFFLUENT LIFT STATION

MODEL # **GCP - 300EF-LS**

SCALE: NOT TO SCALE	DATE: 5/21/11	DRAWN: CG	CHECKED: CG
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28021 Coker-Vail Road
Phone (225) 567 - 2700

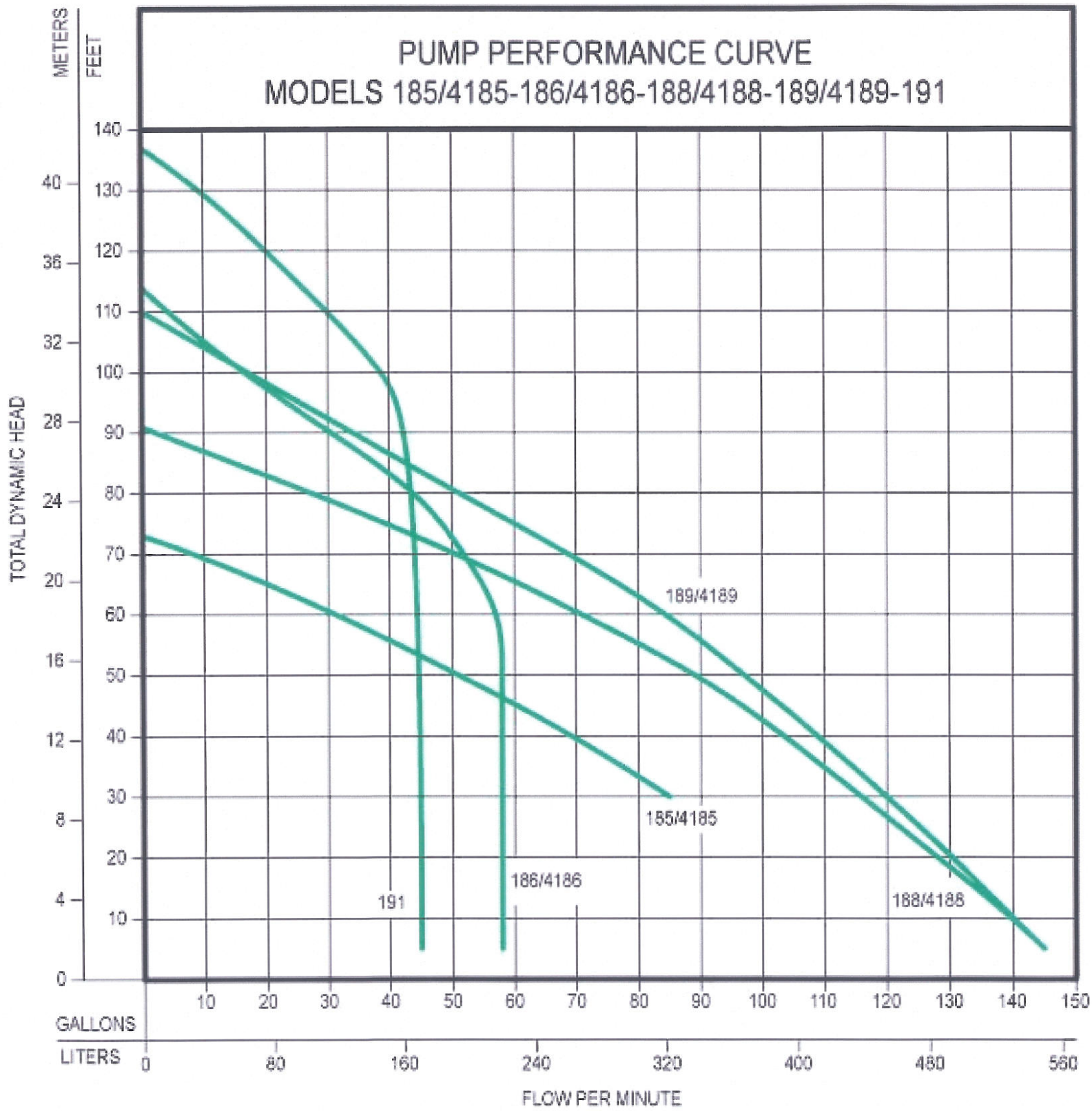
Holden, LA 70744
Fax (225) 567 - 3089

www.gaineyconcrete.com



PUMP PERFORMANCE CURVE

MODELS 185/4185-186/4186-188/4188-189/4189-191





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Sump, Effluent, Dewatering

180 Series and 191 Single Seal Drip Pump 185, 186, 188, 189, 4185, 4186, 4188, 4189, 191

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PRODUCT SPECIFICATIONS

HERTZ	60 Hz
MOTOR	1 - 2 HP
VOLTAGE	200 - 575 V
PHASE	1 or 3 Ph
RPM	3450 RPM
TYPE	Permanent split capacitor or 3 phase
INSULATION	Class B
AMPS	3.3 - 20.5 Amps
OPERATION	Automatic or nonautomatic
AUTO ON/ OFF POINTS	15-3/4" / 5-1/4" (40 cm / 13.3 cm)
DISCHARGE SIZE	1-1/2" NPT
SOLIDS HANDLING	3/4", 5/8" (19 mm, 15 mm) spherical solids
CORD LENGTH	20' (6 m) standard
CORD TYPE	UL listed, 3-wire neoprene cord and plug (1 Ph) or 4-wire cord with no plug (3 Ph)
MAX HEAD	137' (42 m)
MAX FLOW RATE	145 GPM (549 LPM)
MAX OPERATING TEMP	130° F (54° C)
COOLING	Oil filled
MOTOR PROTECTION	Auto reset thermal overload (1 Ph)
CAP	Cast iron
MOTOR HOUSING	Cast iron
PUMP HOUSING	Cast iron
BASE	Cast iron
UPPER BEARING	Ball bearing
LOWER BEARING	Ball bearing
MECHANICAL SEALS	Stainless steel carbon and ceramic
IMPELLER TYPE	Non-clogging vortex
IMPELLER	Bronze
HARDWARE	Stainless steel
MOTOR SHAFT	SAE 1117 carbon steel
GASKET	Neoprene
HERTZ	50 Hz
MOTOR	2.0 - 2.9 KW
VOLTAGE	220 or 380 V
PHASE	1 or 3 Ph
RPM	2800 RPM
TYPE	Permanent split capacitor or 3 Ph
INSULATION	Class B
AMPS	4.1 - 14.2 Amps
OPERATION	Automatic or nonautomatic

185



Click Image to Enlarge

AUTO ON/ OFF POINTS	40 cm / 13.3 cm (15-3/4" / 5-1/4")
DISCHARGE SIZE	1-1/2" NPT (optional 2" or 3" NPT flange)
SOLIDS HANDLING	19 mm (3/4") spherical solids
CORD LENGTH	6 m (20') standard
CORD TYPE	SOW/SOOW (CE model H07RN-F)
MAX HEAD	21.6 m (71')
MAX FLOW RATE	27.5 m3/hr (120 GPM)
MAX OPERATING TEMP	54°C (130°F)
COOLING	Oil filled
MOTOR PROTECTION	Auto reset thermal overload (1Ph)
CAP	Cast iron
MOTOR HOUSING	Cast iron
PUMP HOUSING	Cast iron
BASE	Cast iron
UPPER BEARING	Ball bearing
LOWER BEARING	Ball bearing
MECHANICAL SEALS	Carbon and ceramic
IMPELLER TYPE	Non-clogging vortex
IMPELLER	Bronze
HARDWARE	Stainless steel
MOTOR SHAFT	SAE 1117 carbon steel
GASKET	Neoprene

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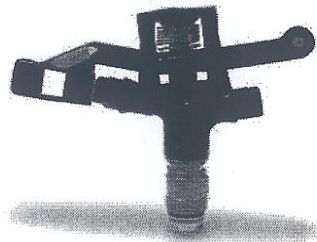
SPRAY HEADS



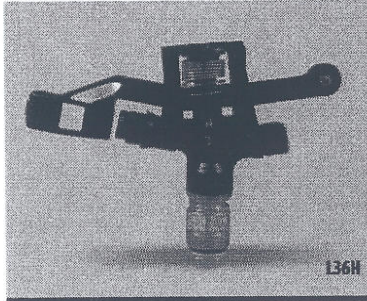
L36H / L36AH

3/4" Impact Sprinklers

These sprinklers are designed specifically for use on center pivots and linier machines. Major applications include Undertree, Nurseries, Pivots and Linears, Wastewater Systems and Permanent Systems.

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- Durable Delrin™ plastic and body arm
- AH unit has standard spoon for smaller nozzles
- H unit has slotted spoon for larger nozzles
- Exceptionally wide range of quick-fit nozzles
- Stainless steel springs and fulcrum pin
- Brass bearing sleeve
- Chemically resistant washers
- Two-year warranty
- Superior chemical and grit resistance
- Low angle fights strong wind conditions
- Great choice for pivot or under tree applications
- Easy maintenance
- Added design flexibility
- Built to last



L36H

L36H / L36AH

3/4" 19 mm Full Circle, Plastic, Low Angle Impact Sprinkler

Bearing: 3/4" Male NPT, Brass
Trajectory Angle: 10°

Operating Range: 20-60 psi 1.4-4.1 bars
Flow Rate: 1.6-17.8 GPM 0.36-4.04 m³/h
Radius: 40-61 ft. 12.2-18.76 meters

Features

- Durable Delrin™ plastic body and arm
- AH unit has standard spoon for smaller nozzles
- H unit has slotted spoon for larger nozzles
- Exceptionally wide range of quick-fit nozzles
- Stainless steel springs and fulcrum pin
- Brass bearing sleeve
- Chemically resistant washers
- Dual nozzle ports
- Two-year warranty

Benefits

- Superior chemical and grit resistance
- Low angle fights strong wind conditions
- Great choice for pivot or under tree applications
- Easy maintenance
- Added design flexibility
- Built to last

U.S. STANDARD DATA

PERFORMANCE DATA

L36H / L36AH

L36AH QUICK-FIT STRAIGHT BORE NOZZLE (QF-SBN-3)*

PSI @ Nozzle	NOZZLE SIZE US STANDARD					
	7/64"		1/8"		9/64"	
	Rad.	GPM	Rad.	GPM	Rad.	GPM
35	45	2.10	46	2.70	46	3.40
40	46	2.20	47	2.90	47	3.60
45	47	2.30	48	3.00	48	3.80
50	47	2.40	49	3.20	50	4.00
55	48	2.60	49	3.40	51	4.20
60	48	2.70	50	3.50	52	4.40

L36AH QUICK-FIT LOW PRESSURE NOZZLE (SQUARE HOLE) (QF-LPN-3)*

PSI @ Nozzle	NOZZLE SIZE US STANDARD					
	7/64"		1/8"		9/64"	
	Rad.	GPM	Rad.	GPM	Rad.	GPM
20	40	1.60	40	2.10	41	2.60
25	41	1.80	41	2.30	42	2.90
30	42	2.00	43	2.50	43	3.20
35	43	2.10	44	2.70	45	3.40
40	44	2.20	45	2.90	46	3.60
45	45	2.30	45	3.00	46	3.80
50	45	2.40	46	3.20	46	4.00

* Nozzles must be purchased separately. See Chart below.

L36H QUICK-FIT STRAIGHT BORE NOZZLE (QF-SBN-3) (STAR HOLE)*

PSI @ Nozzle	NOZZLE SIZE US STANDARD																	
	5/32"		11/64"		3/16"		13/64"		7/32"		15/64"		1/4"		17/64"		9/32"	
	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM
35	48	4.20	49	5.00	50	6.00	51	7.10	52	8.30	53	9.50	53	10.80	53	12.10	54	13.60
40	49	4.50	51	5.40	52	6.40	52	7.60	53	8.90	54	10.10	55	11.50	55	13.00	56	14.60
45	51	4.70	52	5.70	53	6.80	53	8.10	54	9.40	55	10.70	56	12.20	57	13.80	58	15.40
50	53	5.00	54	6.00	54	7.20	54	8.50	56	9.90	57	11.30	58	12.90	59	14.50	59	16.30
55	53	5.20	54	6.30	55	7.50	55	8.90	57	10.30	58	11.80	59	13.50	60	15.20	60	17.10
60	54	5.40	55	6.60	55	7.80	56	9.20	58	10.60	59	12.40	60	14.10	61	15.90	61	17.80

L36H QUICK-FIT LOW PRESSURE NOZZLE (QF-LPN-3)*

PSI @ Nozzle	NOZZLE SIZE US STANDARD																	
	5/32"		11/64"		3/16"		13/64"		7/32"		15/64"		1/4"		17/64"		9/32"	
	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM
20	43	3.20	45	3.80	35	4.50	36	5.30	38	6.00	38	7.20	38	8.20	39	9.30	39	10.40
25	45	3.50	46	4.20	38	5.00	39	5.90	39	6.80	40	8.00	40	9.10	40	10.30	41	11.50
30	46	3.90	48	4.60	40	5.50	41	6.50	41	7.60	41	8.80	41	10.00	42	11.20	42	12.60
35	47	4.20	49	5.00	42	6.00	42	7.10	42	8.30	43	9.50	43	10.80	43	12.10	43	13.60
40	48	4.50	50	5.40	43	6.40	43	7.60	43	8.90	44	10.10	44	11.50	45	13.00	45	14.60
45	49	4.70	50	5.70	43	6.80	44	8.10	44	9.40	45	10.70	45	12.20	45	13.80	45	15.40
50	49	5.00	51	6.00	44	7.20	45	8.50	45	9.90	45	11.30	45	12.90	46	14.50	46	16.30

Note: Performance data taken using 13' (4m) riser

Part Numbers and Ordering Information

Sprinkler Only	
U.S. Standard	
Sprinkler without Nozzle L36H	A07360
Sprinkler without Nozzle L36AH	A07350

Nozzle Only			XX = Nozzle Size															
U.S. Standard L36H Sprinkler			5/32"	11/64"	3/16"	13/64"	7/32"	15/64"	1/4"	17/64"	9/32"							
Plastic Quick-Fit Straight Bore Nozzle	QF-SBN-3	107881-XX	10	11	12	13	14	15	16	17	18							
Plastic Quick-Fit Low Pressure Nozzle	QF-LPN-3	109247-XX	10	11	12	13	14	15	16	17	18							
U.S. Standard L36AH Sprinkler			7/64"	1/8"	9/64"													
Plastic Quick-Fit Straight Bore Nozzle	QF-SBN-3	107881-XX	07	08	09													
Plastic Quick-Fit Low Pressure Nozzle	QF-LPN-3	109247-XX	07	08	09													
Plastic Quick-Fit Plug		10788199	Bold nozzle size numbers denote the most common nozzle choices.															

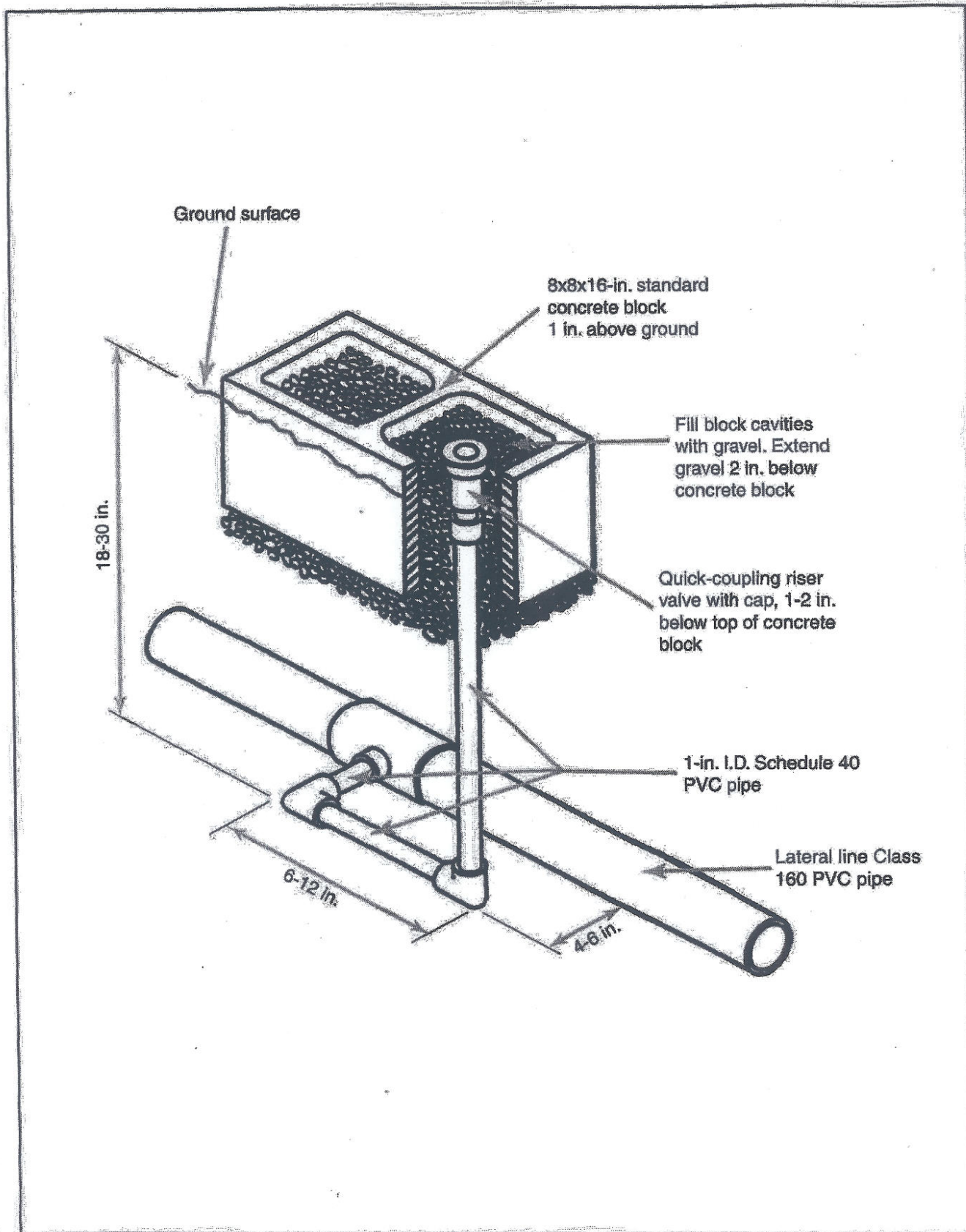


Figure 1. Swing Joint for Quick-Coupling Riser Valve.

FLOW JUSTIFICATION

FOURTH EDITION

Wastewater Engineering

Treatment and Reuse

METCALF & EDDY



Table 3-2

Typical wastewater flowrates from commercial sources in the United States^a

Source	Unit	Flowrate, gal/unit·d		Flowrate, L/unit·d	
		Range	Typical	Range	Typical
Airport	Passenger	3-5	4	11-19	15
Apartment	Bedroom	100-150	120	380-570	450
Automobile service station	Vehicle served	8-15	10	30-57	40
Bar/cocktail lounge	Employee	9-15	13	34-57	50
	Seat	12-25	20	45-95	80
Boarding house	Employee	10-16	13	38-60	50
	Person	25-65	45	95-250	170
Conference center	Person	6-10	8	40-60	30
Department store	Toilet room	350-600	400	1300-2300	1500
	Employee	8-15	10	30-57	40
Hotel	Guest	65-75	70	150-230	190
	Employee	8-15	10	30-57	40
Industrial building (sanitary waste only)	Employee	15-35	20	57-130	75
Laundry (self-service)	Machine	400-550	450	1500-2100	1700
	Customer	45-55	50	170-210	190
Mobile home park	Unit	125-150	140	470-570	530
Motel (with kitchen)	Guest	55-90	60	210-340	230
Motel (without kitchen)	Guest	50-75	55	190-290	210
Office	Employee	7-16	13	26-60	50
Public lavatory	User	3-5	4	11-19	15
Restaurant:					
Conventional	Customer	7-10	8	26-40	35
With bar/ cocktail lounge	Customer	9-12	10	34-45	40
Shopping center	Employee	7-13	10	26-50	40
	Parking space	1-3	2	4-11	8
Theater (Indoor)	Seat	2-4	3	8-15	10

^aAdapted from Metcalf & Eddy (1991), Salvato (1992), and Crites and Tchobanoglous (1998).

SOIL ANALYSIS

Soil Profile Sheet

Dreamland MHP

Name of Development/Applicant _____ Water Supply: Public x Private

Pearl River

County _____ No. of Lots _____ Acres _____ No. of Bedrooms _____ No. of Occupants _____

Subdivision Multi-Family Dwelling Manufactured Home Development Recreational Vehicle (RV) Campground

New Soil & Site Eval. *Existing* Soil & Site Eval. *Preliminary* Soil & Site Eval. *Repair* Soil & Site Eval.

Environmentalist _____ Date: _____

Soil Characteristics	Profile # 1	Profile # 2	Profile # 3	Profile # 4	Profile # 5
Landscape Position	Upland	Upland	Upland		
Slope	2-3%	2-3%	1-2%		
I. Horizon & Depth	0-5"	0-7"	0-6"		
Texture	Sandy loam	Sandy loam	Sandy loam		
Color	10yr 6/3	10yr 6/3	10yr 5/2		
Mottles					
II. Horizon & Depth	5-33"	7-40"	6-44"		
Texture	Sandy loam	Heavy loam	Sandy loam		
Color	7.5 yr 6/6	10yr 5/8	10yr 6/6		
Mottles					
III. Horizon & Depth	Bx 33"	Bx 40"	Bx 44"		
Texture	Sandy loam	Heavy loam	Sandy loam		
Color	10yr 6/6	10yr 5/8	10yr 6/6		
Mottles	10yr 6/2	10yr 6/2	10yr 6/2		
IV. Horizon & Depth					
Texture					
Color					
Mottles					
V. Horizon & Depth					
Texture					
Color					
Mottles					
Seasonal Water Table Depth	33"	40"	44"		
Restrictive Horizon Depth	33"	40"	44"		
Maximum Depth (if available)	21"	28"	32"		