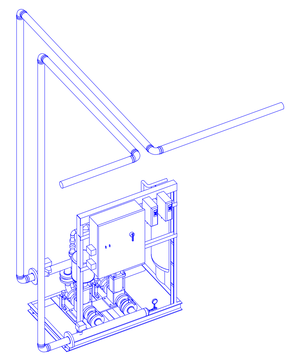


NOTES:

- BOOSTER SYSTEM TO BE PACKED, FACTORY ASSEMBLED US PUMPS CO. OR APPROVED EQUIVALENT CONTROL PANEL TO BE 508A LISTED AS AN ASSEMBLY. STANDARD FEATURES INCLUDE: MAIN DISCONNECT SWITCH, MOTOR BRANCH CIRCUITS WITH FUSES COMPLYING WITH LATEST EDITION OF THE NEC ARTICLES AND IEC STYLE CONTACTORS AND OVERLOAD RELAYS. CONTROL BRANCH CIRCUIT WITH PRIMARY AND SECONDARY FUSING ON THE CONTROL TRANSFORMER, AND PLC CONTROL OF THE BOOSTER.
- EACH SYSTEM TO BE UL LABELED AS A COMPLETE SYSTEM UNDER UL 9F35 FOR CATEGORIES OF FACTORY AUTOMATION EQUIPMENT AND PACKAGED PUMPING SYSTEMS.
- INDICATING LIGHT FOR AVAILABLE CONTROL POWER.
- PROGRAMMABLE LOGIC CONTROLLER (PLC) PERFORMS ALL CONTROL DIGITAL AND ANALOG (IF APPLICABLE) INPUT/OUTPUT FUNCTIONS, AND INCLUDES MUST RUN TIMERS FOR MOTOR OPERATION TO HELP PREVENT SHORT CYCLING.
- LEAD SELECT SWITCH FOR EQUAL PUMPS (ONLY) ALLOWING MANUAL SELECTION OF LEAD PUMP OR 24 HOUR AUTOMATION SELECTION OF LEAD PUMP. ALTERNATION TIMING IS INCLUDED WITHIN THE PLC.
- LOW SYSTEM PRESSURE ALARM WITH AUTOMATIC RESET TO STAGE PUMPS INDIVIDUALLY IN CASE OF SUSTAINED LOW SYSTEM PRESSURE FROM ANY CAUSE. VISUAL INDICATION AND ADJUSTABLE PRESSURE SET POINT ARE STANDARD.
- LOW SUCTION PRESSURE ALARM WITH AUTOMATIC RESET AND DELAY ON RESTART STOPS ALL PUMPS IMMEDIATELY, AND WILL NOT ALLOW THEM TO RESTART UNTIL SUCTION PRESSURE IS ADEQUATE AND THE DELAY HAS EXPIRED. VISUAL INDICATION AND ADJUSTABLE PRESSURE SET POINT ARE STANDARD.
- FLOW SWITCH SEQUENCING TO ASSURE SMOOTH TRANSITION BETWEEN PUMP STAGES, DEPENDING ON THE FLOW DEMAND OF THE SYSTEM.
- CHECK VALVE (SILENT TYPE) ON EACH PUMP.
- COMPLETE FACTORY FLOW TEST AT ZERO, 25%, 50%, 75%, AND 100% OF RATED FLOW OF EACH PUMP AND OF THE SYSTEM, AT THE SPECIFIED VOLTAGE, TO ASSURE THAT THE SYSTEM COMPLIES WITH THE SPECIFICATION AND THE NEEDS OF THE PROJECT.
- ESS (ENERGY SAVING SYSTEM) CONTROL IS REQUIRED FOR LEAD PUMP SHUT DOWN AT NEAR ZERO FLOW CONDITIONS. ESS INCLUDES A TANK FOR DRAW-DOWN PURPOSES (USUALLY A BLADDER TANK), A PRESSURE SWITCH FOR PUMP OPERATION AND POSITIVE TANK FILL, A LOW FLOW SWITCH WHICH CAN START THE PUMP AT 8+ GPM, AND CAN ALLOW THE PUMP TO STOP AT 4-GPM, AND MUST RUN TIMER (IN THE PLC) FOR THE LEAD PUMP. THE LEAD PUMP, THEN, WILL START EITHER AT A PRESSURE DROP OR A HIGH FLOW RATE (8 GPM OR MORE), AND WILL STOP WHEN THE PRESSURE IN THE TANK IS HIGH AND FLOW IS LOW (4 GPM OR LESS) AND WHEN THE LEAD PUMP'S MUST RUN TIME HAS EXPIRED. A PRESSURE RELIEF VALVE, SET FOR PRESSURE RATING OF THE TANK, IS INCLUDED WITH THE TANK IF US PUMPS CO. SUPPLIES THE TANK.
- HIGH SYSTEM PRESSURE ALARM WILL STOP ALL PUMPS WHEN PRESSURE IN THE DISCHARGE MANIFOLD IS ABOVE THE SET POINT OF THE PRESSURE SWITCH. ALARM RESETS AUTOMATICALLY ON A DROP IN DISCHARGE MANIFOLD PRESSURE BELOW THE LOW SET POINT OF THE PRESSURE SWITCH. VISUAL INDICATION AND ADJUSTABLE PRESSURE SET POINT ARE STANDARD.
- HIGH SUCTION PRESSURE ALARM WILL STOP ALL PUMPS WHEN PRESSURE IN THE SUCTION MANIFOLD IS ABOVE THE SET POINT OF THE PRESSURE SWITCH. ALARM RESETS AUTOMATICALLY ON A DROP IN SUCTION MANIFOLD PRESSURE BELOW THE LOW SET POINT OF THE PRESSURE SWITCH. VISUAL INDICATION AND ADJUSTABLE PRESSURE SET POINT ARE STANDARD.
- MOTOR OVERLOAD ALARM LOCAL VISUAL INDICATION.
- LEAD PUMP FAIL ALARM WILL STOP LEAD PUMP (SHIFT TO LAG PUMP) WHEN THE LEAD PUMP IS REQUIRED BUT NOT RUNNING. ALARM RESETS AUTOMATICALLY WHEN LEAD PUMP IS NO LONGER REQUIRED. VISUAL INDICATION IS STANDARD.
- LOW SUCTION PRESSURE ALARM REPORTING DRY CONTACT FOR INTERFACE TO A BUILDING MANAGEMENT SYSTEM. CONTACT CLOSES WHEN THE LOW SUCTION PRESSURE (OR LEVEL) ALARM IS ACTIVE AND OPENS WHEN THE ALARM RESETS.
- HIGH SYSTEM PRESSURE ALARM REPORTING DRY CONTACT FOR INTERFACE TO A BUILDING MANAGEMENT SYSTEM. CONTACT CLOSES WHEN THE HIGH SYSTEM PRESSURE ALARM IS ACTIVE AND OPENS WHEN THE ALARM RESETS.
- HIGH SUCTION PRESSURE ALARM REPORTING DRY CONTACT FOR INTERFACE TO A BUILDING MANAGEMENT SYSTEM. CONTACT CLOSES WHEN THE HIGH SUCTION PRESSURE ALARM IS ACTIVE, AND OPENS WHEN THE ALARM RESETS.
- PUMP FAIL ALARM REPORTING DRY CONTACTS FOR INTERFACE TO A BUILDING MANAGEMENT SYSTEM. CONTACT CLOSES WHEN THE ALARM IS ACTIVE AND OPENS WHEN THE ALARM IS MANUALLY RESET.
- PUMP RUN – MOTOR CONTACTOR AUXILIARY DRY CONTACTS FOR INTERFACE TO A BUILDING MANAGEMENT SYSTEM. CONTACT CLOSES TO CONFIRM PUMP MOTOR CONTACTOR IS ENGAGED.
- ELECTRIC THERMAL PURGE SENSOR OPENS A SOLENOID PURGE VALVE WHEN PUMP WATER TEMPERATURE RISES, AND CLOSES WHEN WATER TEMPERATURE FALLS. PURGE CAN BE APPLIED TO EACH INDIVIDUAL PUMP OR TO ALL PUMPS. EACH PURGE VALVE REQUIRES PIPING TO DRAIN ON SITE.
- VARIABLE FREQUENCY DRIVE (VFD) FOR CONTROL OF EACH PUMP'S MOTOR SPEED. AUTOMATIC MODE CONTROLS PUMP SPEED VIA SYSTEM PRESSURE SIGNAL.
- AUDIBLE ALARM BUZZER AND GENERAL ALARM LOCAL INDICATOR LIGHT ACTUATE WITH ANY UNIT ALARM. ALARM BUZZER RESET VIA ALARM SILENCE PUSHBUTTON.
- VFD FAULT INITIATION WILL SHUTDOWN ITS VFD, ACTUATE NEXT PUMP IN LINE, AND BE INDICATED BY GENERAL ALARM LIGHT, UPON FAULT INITIALIZATION. ALARM RESETS AUTOMATICALLY WHEN VFD FAULT IS CLEARED. VISUAL FAULT INDICATION ALSO AT VFD.
- SYSTEM PRESSURE TRANSDUCER SHALL SENSE SYSTEM PRESSURE AND SEND A CORRESPONDING 4-20 MA DC SIGNAL TO THE PLC FOR VFD PUMP SPEED CONTROL (AND ALARM ACTUATION).
- SUCTION PRESSURE TRANSDUCER SHALL SENSE SUCTION PRESSURE AND SEND A CORRESPONDING 4-20 MA DC SIGNAL TO THE PLC FOR DISPLAY (AND ALARM ACTUATION).

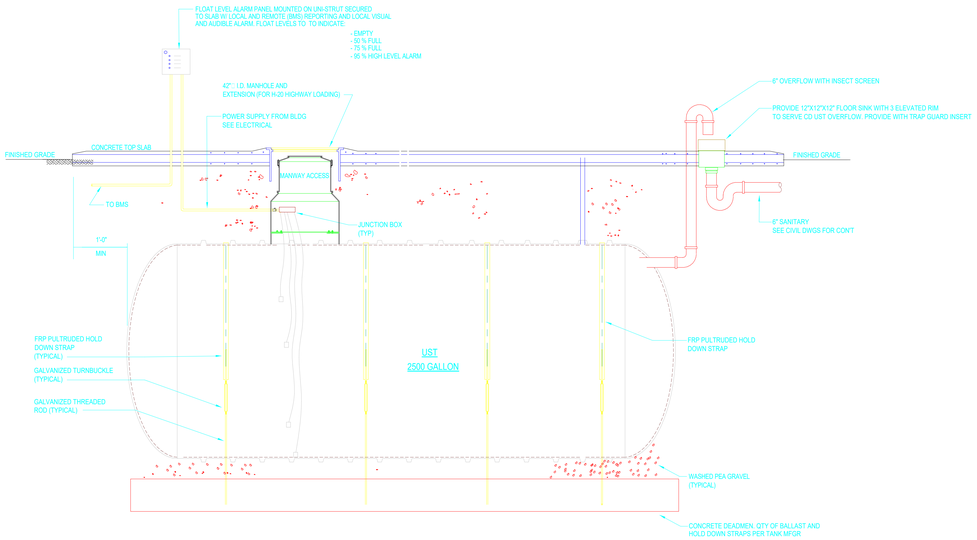
THE BOOSTER SYSTEM SHALL BE DELIVERED COMPLETELY TESTED AT THE FACTORY AT THE CORRECT VOLTAGE AND SUCTION PRESSURE. TESTS INCLUDE ADJUSTMENT OF PRV'S, SETTING OF FLOW SWITCHES, A TEST OF THE PUMPS TO BE CERTAIN THEY PRODUCE WHAT IS REQUIRED AND OBTAINING PROPER ROTATION OF THE MOTORS. ONCE THE BOOSTER IS SET IN PLACE, PER ENGINEER'S REQUIREMENTS AND MANUFACTURE'S WRITTEN RECOMMENDATIONS, ONLY THE FOLLOWING CONNECTIONS ARE REQUIRED:

- ANCHORING TO FOUNDATION.
- CONNECTION OF INCOMING POWER.
- SUCTION AND DISCHARGE PIPING CONNECTIONS.
- THERMAL PURGE DRAIN CONNECTION.
- INTERFACE WITH BUILDING OR PROJECT MONITORING SYSTEM (IF TERMINALS ARE SUPPLIED).

SEE ALSO SPECIFICATION SECTIONS:

- 220500 COMMON WORK RESULTS FOR PLUMBING
- 220519 METERS AND GAGES FOR PLUMBING PIPING
- 220523 HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT
- 220553 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

2 DUPLEX BOOSTER PUMP DETAIL



1 UST CONDENSATE DETAIL
12" = 1'-0"

serverfarm
CORGAN
TGRWA STRUCTURAL ENGINEERS
kW Mission Critical Engineering Member of WSP
EP ENGINEERING PLUS
Kimley»Horn

	ISSUES	
1	12.12.2025	30% SCHEMATIC DESIGN
2	01.23.2026	60% DESIGN DEVELOPMENT

REVISIONS

kW Mission Critical Engineering
Contact: Kyle Jenkins Phone: 518.268.2841
Engineer:
License #: Exp. Date:

NOT FOR CONSTRUCTION

Date of Issue:
01/23/2026

SF - ARK01
DESIGN DEVELOPMENT

Clarksville, AR 72830

PLUMBING DETAILS

JOB US0049903.5614
SHEET

P05-02

1/23/2026 3:26:00 PM P05-02 PLUMBING DETAILS