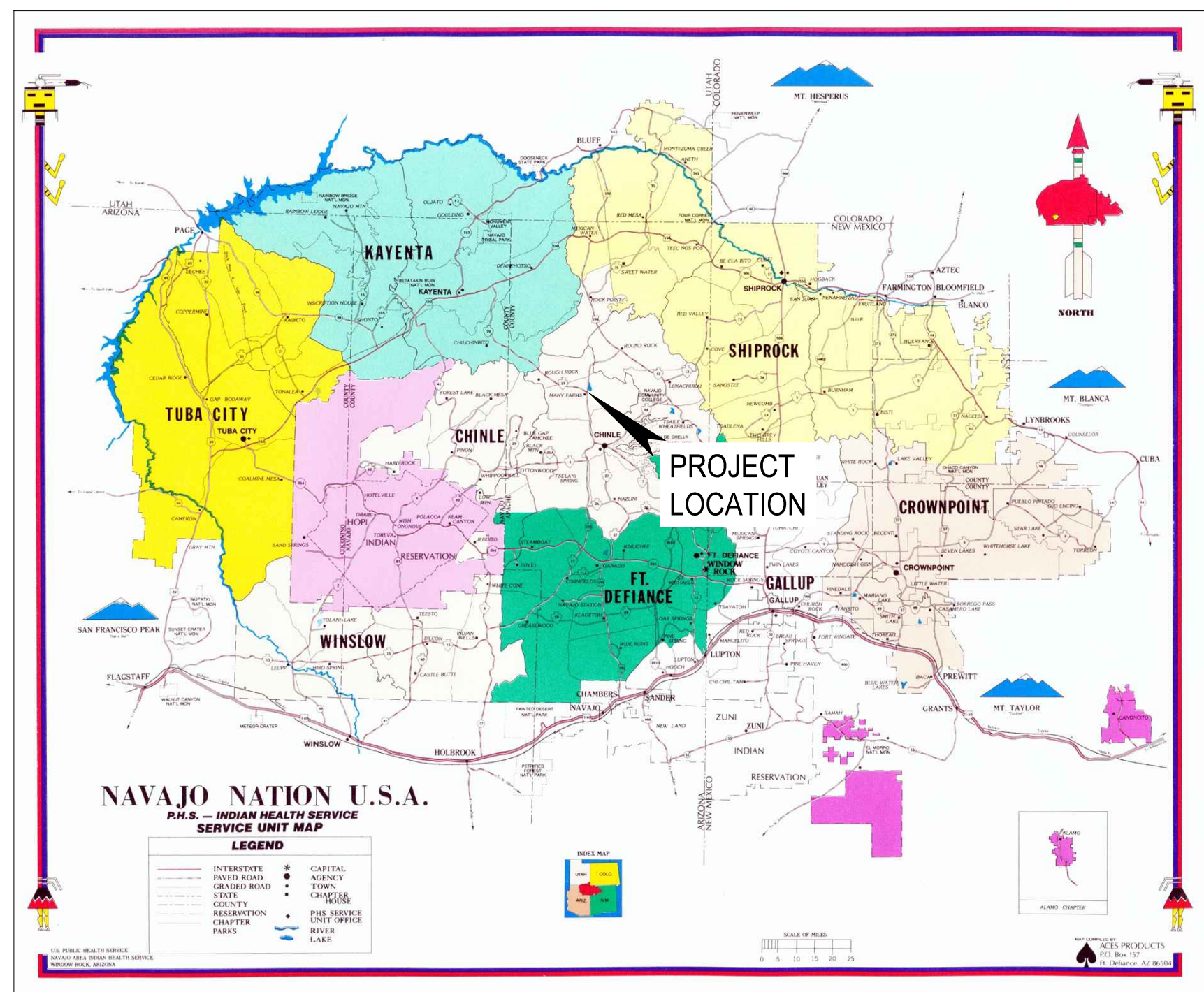


REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION

MANY FARMS CHAPTER, APACHE COUNTY, ARIZONA
OCTOBER 2020

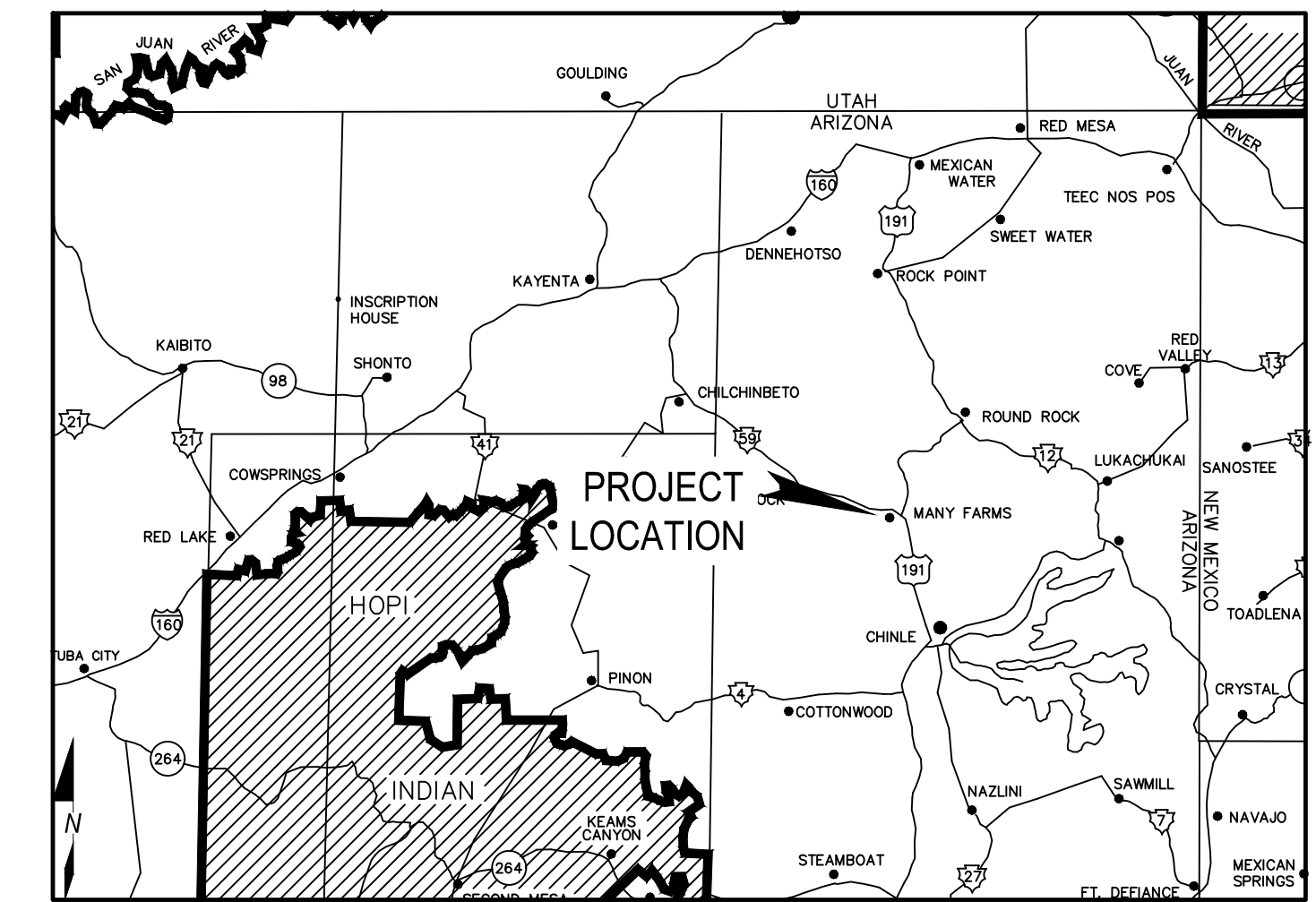


SITE LOCATION MAP
(NOT TO SCALE)



100% PLANS
ISSUED FOR CONSTRUCTION

BY: LASPAAS DATE: Oct 12, 2020 4:30pm



VICINITY MAP
(NOT TO SCALE)

REFURBISHMENT & UPGRADE OF LIFT STATION-MANY FARMS SHEET INDEX:

DRAWINGS

- G-01 EXISTING FACILITY PLAN
- G-02 EXISTING SITE CONDITIONS LAYOUT
- G-03 BILL OF MATERIALS
- G-04 SITE PLAN
- G-05 MECHANICAL SPECIFICATIONS
- D-01 INSTRUMENTATION AND CONTROL STANDARDS
- D-02 PROCESS AND INSTRUMENTATION DIAGRAM
- M-01 MECHANICAL PLAN
- M-02 MECHANICAL SECTIONS
- S-01 STRUCTURAL SECTIONS
- EI-604 ELECTRICAL ONE-LINE DIAGRAM
- EI-704 ELECTRICAL INSTRUMENTATION PANEL

PREPARED FOR:

NAVAJO TRIBAL UTILITY AUTHORITY
P.O. BOX 170
FORT DEFIANCE, AZ 86504

PREPARED BY:



iinábá, Inc.

www.iinaba.com

1812 Schofield Lane P.O. BOX 2606
Farmington, NM 87401 Farmington, NM 87499



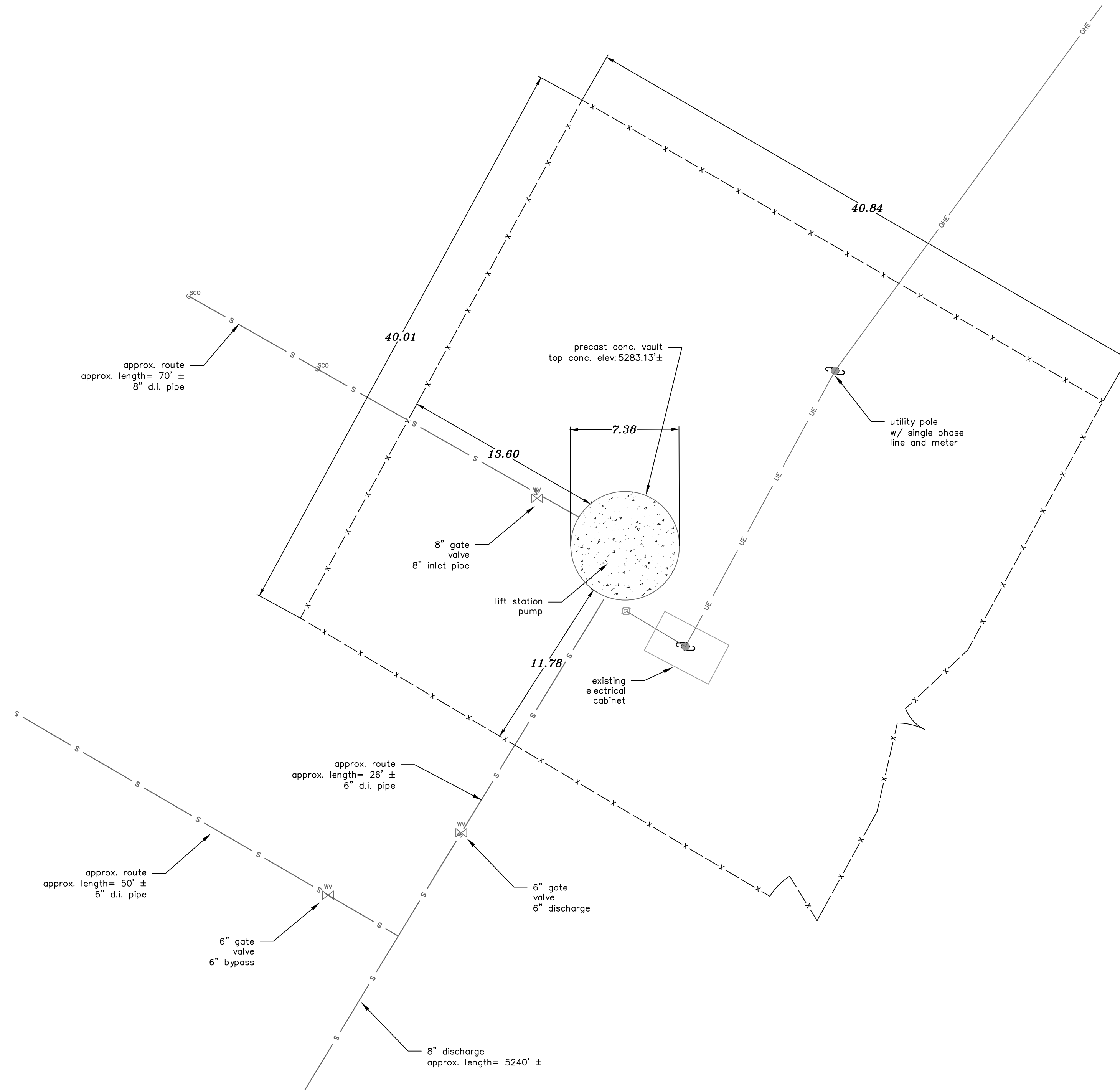
EXPIRES: _____

LEGEND

---	TRACT LIMITS (SEE NOTE 4)
---	EXISTING GRADE CONTOUR
---	EDGE OF GRAVEL
W	DOMESTIC WATER
UE	UNDERGROUND ELECTRIC
OHE	OVERHEAD ELECTRIC
GAS	PROPANE GAS
X-X	FENCE
⊙	UTILITY POLE
⊙	LIGHT POLE
⊙	PROPANE TANK
⊙	WATER MANHOLE
⊙	SEWER CLEANOUT
⊙	WATER VALVE
⊙	WATER METER
⊙	WATER MANHOLE
⊙	WATER SHUTOFF
⊙	WATER SPIGOT
⊙	ANTENNA
⊙	ELECTRIC JUNCTION BOX
⊙	VENT PIPE
---	GRAVEL SURFACE
---	CONCRETE SURFACE

NOTES:

1. TOPOGRAPHIC AND PHYSICAL FEATURES AS SHOWN ARE BASED ON A GROUND SURVEY PERFORMED BY IINA BA, INC. DURING AUGUST 2020.
2. THE LOCATION OF THE EXISTING BELOW GRADE UTILITIES ON THE PROPERTY ARE BASED ON OBSERVED SURFACE EVIDENCE. NO SUBSURFACE INVESTIGATIONS HAVE BEEN PERFORMED BY IINA BA, INC.
3. NORTH AS SHOWN IS BASED ON ARIZONA STATE PLANE COORDINATES (EAST ZONE) NAD 83 BASED ON GPS OBSERVATIONS.
4. ELEVATIONS AS SHOWN ARE REFERENCED TO NAVD 88.



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**NAVAJO TRIBAL UTILITY
AUTHORITY**
P.O. BOX 170
Ft. Defiance, AZ, 86504

PROJECT:
**REFURBISHMENT & UPGRADE OF
EXISTING LIFT STATION**

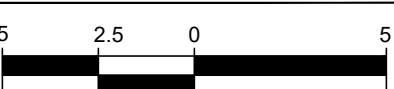
36°22'18.30"N, 109°35'57.14"W
MANY FARMS, ARIZONA, 86538

ONLY VALID WITH ORIGINAL STAMP

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

PROJECT NUMBER:	20-055-02
ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	1" = 5'



DRAWING TITLE:

EXISTING FACILITY PLAN

DRAWING NUMBER:

G-01

LEGEND

- TRACT LIMITS (SEE NOTE 4)
- - - - - EXISTING GRADE CONTOUR
- EDGE OF GRAVEL
- DOMESTIC WATER
- W ----- UNDERGROUND ELECTRIC
- UE ----- OVERHEAD ELECTRIC
- OHE ----- PROpane GAS
- GAS ----- FENCE
- X - - - - X
- U UTILITY POLE
- L LIGHT POLE
- P PROPANE TANK
- M WATER MANHOLE
- S SEWER CLEANOUT
- V WATER VALVE
- M WATER METER
- M WATER MANHOLE
- S WATER SHUTOFF
- S WATER SPIGOT
- A ANTENNA
- E ELECTRIC JUNCTION BOX
- V VENT PIPE
- G GRAVEL SURFACE
- C CONCRETE SURFACE



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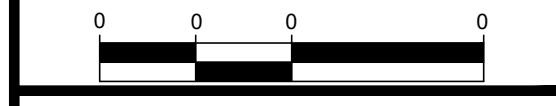
PROJECT:
**REFURBISHMENT & UPGRADE OF
EXISTING LIFT STATION**
36°22'18.30"N, 109°35'57.14"W
MANY FARMS, ARIZONA, 86538

ONLY VALID WITH ORIGINAL STAMP

REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

PROJECT NUMBER: 20-055-02
ENGINEER: XXX
DRAWING SIZE: ANS/D
DRAWING SCALE: NTS



DRAWING TITLE:

EXISTING CONDITIONS SITE LAYOUT

DRAWING NUMBER:

G-02

BILL OF MATERIALS					
EDWG	ITEM NUMBER	QUANTITY	PART NUMBER	MANUFACTURER	DESCRIPTION
M-02	4	2	HPE 4MXP300FB	PENTAIR HYDROMATIC	SUBMERSIBLE PUMP
M-02	-	2	(INCLUDED)	PENTAIR HYDROMATIC	POWER CABLE
M-02	17	2	(INCLUDED)	PENTAIR HYDROMATIC	LIFTING BAIL
M-02	18	2	XP - 5 HP	PENTAIR HYDROMATIC	MOTOR
M-02	7	2	(INCLUDED)	PENTAIR HYDROMATIC	DISCHARGE ELBOW
M-02	5	2	(INCLUDED)	PENTAIR HYDROMATIC	GUIDE BAR BRACKETS
M-02	-	2	(INCLUDED)	PENTAIR HYDROMATIC	ACCESS FRAMES AND COVERS
M-02	8	2	CLASS 150	PENTAIR HYDROMATIC	6" X 10' DI SPOOL FL
M-02	20	2	CLASS 150	PENTAIR HYDROMATIC	6" X 4'-6" DI SPOOL FL X FL
M-02	21	2	CLASS 150	PENTAIR HYDROMATIC	6" X 4'-0" DI SPOOL FL X FL
M-02	13	2	CLASS 150	DeZurik	6" ECCENTRIC PLUG VALVES
M-02	12	2	CLASS 150	PENTAIR HYDROMATIC	6" SWING CHECK VALVES FL X FL
M-02	9	4	CLASS 150	PENTAIR HYDROMATIC	6" 90 ELLS DI, FL X FL
M-02	22	1	CLASS 150	PENTAIR HYDROMATIC	6" TEE FL X FL X FL
M-02	23	1	CLASS 150	PENTAIR HYDROMATIC	6" X 4'-0" DI SPOOL FL X FL
M-02	24	1	CLASS 150	PENTAIR HYDROMATIC	6" X 8" DI ECCENTRIC INCREASER FL X FL
M-02	25	1	CLASS 150	DRESSER	8" STYLE 38 SLEEVE COUPLING
S-01	1	1	S2R5454	HALLIDAY	ACCESS HATCH AND SAFETY SCREEN
S-01	2	1	D3A24E	HALLIDAY PRODUCTS	PORTABLE HOIST - 1,500 LB LIMIT; SST
S-01	3	1	SERIES D3S	HALLIDAY PRODUCTS	HOIST SOCKET; LINED

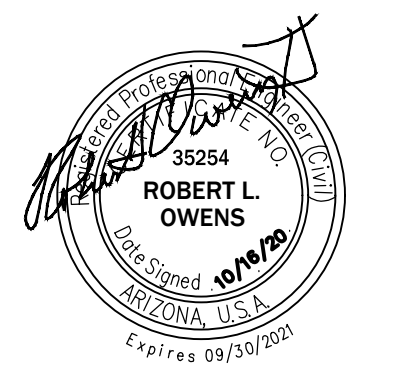


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P.O. BOX 170
Ft. Defiance, AZ, 86504

PROJECT:
**REFURBISHMENT & UPGRADE OF
EXISTING LIFT STATION**
36°22'18.30"N, 109°35'57.14"W
MANY FARMS, ARIZONA, 86538



REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

PROJECT NUMBER: 20-050-02
ENGINEER: XXXX
DRAWING SIZE: ANSI D
DRAWING SCALE: 1" = 5'



DRAWING TITLE:

BILL OF MATERIALS

DRAWING NUMBER:

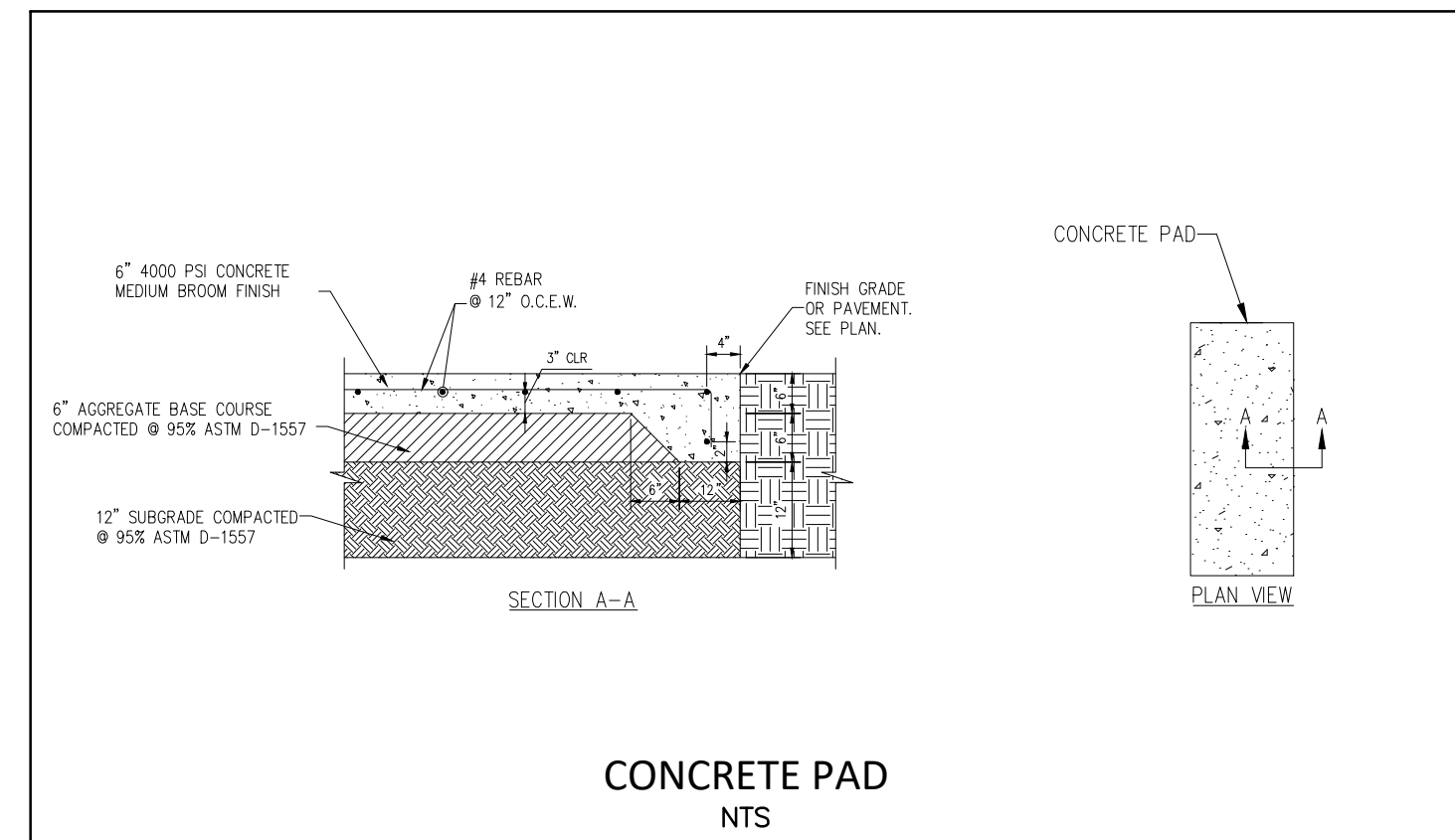
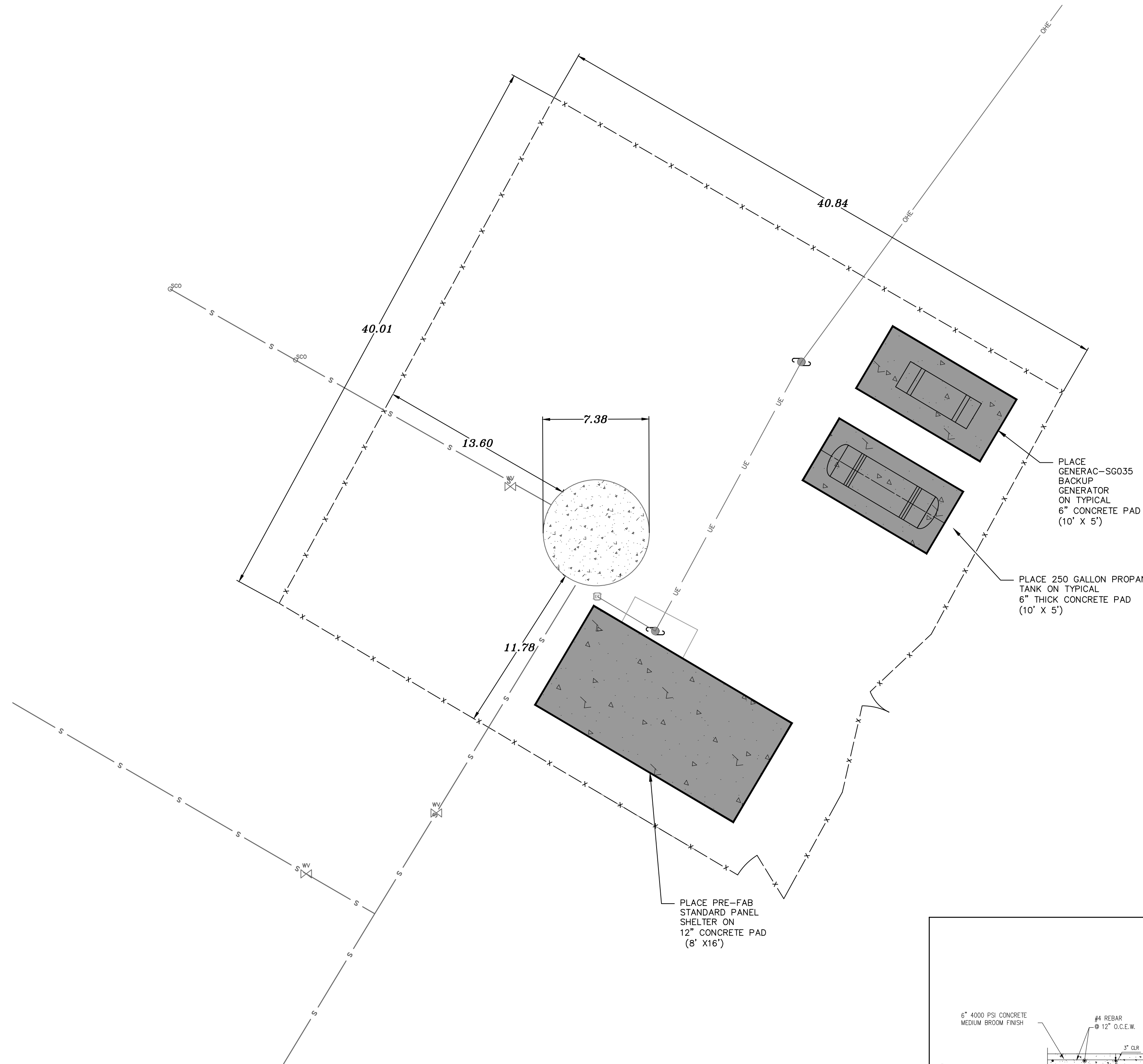
G-03

LEGEND

- TRACT LIMITS (SEE NOTE 4)
- - - EXISTING GRADE CONTOUR
- EDGE OF GRAVEL
- W --- DOMESTIC WATER
- UE --- UNDERGROUND ELECTRIC
- OHE --- OVERHEAD ELECTRIC
- GAS --- PROPRANE GAS
- X-X FENCE
- UTILITY POLE
- LIGHT POLE
- PROPANE TANK
- WATER MANHOLE
- SEWER CLEANOUT
- WATER VALVE
- WATER METER
- WATER MANHOLE
- WATER SHUTOFF
- WATER SPIGOT
- ANTENNA
- ELECTRIC JUNCTION BOX
- VENT PIPE
- GRAVEL SURFACE
- CONCRETE SURFACE
- PROPOSED CONCRETE SURFACE

NOTES:

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PROJECT:
REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION
36°22'18.30"N, 109°35'57.14"W
MANY FARMS, ARIZONA, 86538



REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

PROJECT NUMBER: 20-055-02
ENGINEER: XXX
DRAWING SIZE: ANSI D
DRAWING SCALE: 1" = 5'

DRAWING TITLE:
SITE PLAN

DRAWING NUMBER:
G-04

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MANY FARMS PUMPING STATION

GENERAL

This section applies to all mechanical equipment specified in all divisions. The contractor is responsible for ensuring that all mechanical equipment meets the requirements of this section in addition to the specific requirements of the individual equipment specification.

- A. Arrangement – the arrangement of equipment shown is based on information available at the time of design and site surveys. It is not intended to show exact dimensions peculiar to a specific manufacturer. The drawings are in part diagrammatic and some features of the equipment may require revision to meet actual equipment installation requirements. Structural supports, foundations, connected piping, valves, and electrical conduit specified may have to be altered to accommodate the equipment provided.
- B. Standards – this section contains references to the following standards. They are a part of this section as specified and modified.
- C. Unit responsibility – equipment systems made up of two or more components shall be provided as a unit by a single manufacturer. Unless otherwise specified, the Contractor shall obtain each system by the supplier of the driven equipment.
- D. Nameplates – nameplates shall be provided on each item of equipment including valves, and shall contain the specified equipment name or abbreviation and equipment number as listed on the master equipment list or as directed by the field engineer. Equipment nameplates shall be engraved or stamped stainless steel and fastened to the equipment in an accessible location with stainless steel screws or drive pins.
- E. Protection Against Electrolysis – where dissimilar metals are used in conjunction with each other, provide suitable insulation between adjacent surfaces so as to eliminate direct contact and any transient electrolysis. Connections of dissimilar piping materials shall utilize dielectric unions, flanges, couplings or bushings.
- F. Tools loose parts and lubricants – provide an inventory of tools and loose parts required to be supplied under the project. Turn over inventory and parts to the field engineer. Also provide a list of recommended spare parts and supplies for each equipment furnished with the current prices and a source of supply.

MOTORS

REFERENCE STANDARDS

- A. National Electrical Manufacturers Association (NEMA) Standard:
 - 1. MG 1 Motors and Generators
- B. Institute of Electrical and Electronics Engineers (IEEE) Standard:
 - 1. 112 Test Procedure for Polyphase Induction Motors and Generators
- C. Underwriters Laboratories (UL) Publication: Recognized Component Directory

SUBMITTALS

- e. Listed by either UL or FM for Class 1, Division 1, Groups C and D hazardous locations.
- f. Suitable for operating in free air continuously (i.e., not submerged in sewage).
- g. Bearing B10 life 18,000 hours minimum.
- h. Tungsten carbide seals.
- i. Lower bearings of either the ball or roller type.
- j. If required by the manufacturer to not void the motor warranty, provide a moisture detection system and a motor winding thermostat system. These systems shall be complete, including all necessary interfaces, control panels, conduits, and wires, even though these may not be shown on the Drawings.

INSULATION

- A. Unless otherwise specified with the driven equipment, provide motors with Class B or F insulation, non-hygroscopic. [For motors located in altitudes between 3,300 and 6,600 feet or in ambient temperatures exceeding 40°C, provide Class F insulation with Class B temperature rise. In motors to be used with adjustable frequency drives, provide Class F insulation with Class B temperature rise]. In single phase motors 1/2 horsepower or smaller, provide Class A insulation or better.

- B. Where called for in the Specifications for the driven equipment, provide the following type of insulation:
 - 1. Moderate Moisture Resistant: Provide extra dip and bake of epoxy or polyester varnish to resist somewhat higher than normal moisture in the atmosphere.

MOTOR HORSEPOWER

- A. The maximum permissible motor loading:
 - 1. Motors with service factor 1.15 or greater: 100% of nameplate horsepower.
 - 2. Motors with service factor less than 1.15: 90% of nameplate horsepower.

MOTOR NOMINAL EFFICIENCIES AT FULL LOAD

HP	900 RPM	1,200 RPM	1,800 RPM	3,600 RPM
Open Drip-Proof and Weather Protected Type 1 Motors				
1	78.5	78.5	82.5	80.0
1.5	80.0	80.0	84.0	81.5
2	85.5	82.5	82.5	85.5
3	85.5	82.5	82.5	84.0
5	86.5	86.5	85.5	86.5
7.5	87.5	89.5	87.5	88.5
10	90.2	90.2	89.5	86.5

- A. For each motor, include the following data in the shop drawing submittal for the driven equipment:
 - 1. Manufacturer's name.
 - 2. Manufacturer's type and frame designation.
 - 3. Horsepower output.
 - 4. Time rating.
 - 5. Maximum ambient temperature rating.
 - 6. Insulation system designation.
 - 7. Rpm at full load.
 - 8. Voltage, number of phases, frequency and full load amperes.
 - 9. Code letter for locked rotor kVA.
 - 10. Service factor at 40°C ambient.
 - 11. NEMA design letter.
 - 12. Enclosure type.
 - 13. Lubrication requirements, including type and frequency.
 - 14. KW input power and power factor at 75% and 100% of rated horsepower output.
 - 15. Guaranteed minimum efficiency and nominal efficiency per MG1-12.55.
 - 16. Nominal efficiency.

COORDINATION

- A. General: Coordinate motors with driven equipment requirements. Unless otherwise specified, equipment manufacturers or suppliers shall select and provide motors for their equipment in conformance with these Specifications. Give particular attention to coordination of requirements for:
 - 1. Power.
 - 2. Starting torque.
 - 3. Speed.
 - 4. Bearing load.
 - 5. Ambient temperature.
 - 6. Frequency of starting.
 - 7. Moisture exposure.
 - 8. Adjustable speed control, where applicable.
- B. Suppliers of motors to be used with adjustable speed systems shall:
 - 1. Provide all relevant motor data to the adjustable speed control manufacturer for analysis. Provide motors in conformance with and compatible with the adjustable speed control manufacturer's equipment and requirements.
 - 2. Provide all relevant motor data to the pump manufacturer for vibration, reed critical frequency and other required analyses.

SPECIFIC REQUIREMENTS

- A. The following motor characteristics are specified with the driven equipment in all cases:
 - 1. Speed.
 - 2. Horsepower or supplier responsibility to determine.

HP	900 RPM	1,200 RPM	1,800 RPM	3,600 RPM
10	90.2	90.2	89.5	86.5
15	90.2	91.7	90.2	89.5
20	91.7	91.7	91.0	90.2
25	91.7	92.4	91.7	90.2
30	92.4	93.0	92.4	92.4
40	91.7	93.0	93.6	93.6
50	93.0	93.0	93.6	93.6
60	93.6	93.6	94.1	94.1
75	94.1	93.6	94.1	93.6
100	94.5	94.5	94.5	94.1
125	94.5	95.0	95.0	94.1
150	95.0	94.5	95.0	94.1
200	95.0	95.0	95.0	94.1
250	94.5	95.0	95.0	94.5
300-500	95.0	95.8	95.8	94.5
Total Enclosed Fan Cooled Motors				
1	78.5	78.5	82.5	80.0
1.5	80.0	80.0	84.0	81.5
2	85.5	82.5	82.5	85.5
3	86.5	86.5	82.5	84.0
5	88.5	87.5	85.5	86.5
7.5	89.5	90.2	87.5	88.5
10	90.2	91.0	89.5	90.2
15	90.2	92.4	91.0	91.7
20	91.7	92.4	91.0	91.7
25	91.7	93.0	92.4	92.4
30	92.4	93.0	93.0	93.0
40	92.4	93.6	94.1	94.1
50	93.6	93.6	94.1	94.1
60	93.6	94.1	94.1	94.1
75	94.1	94.1	94.1	94.5
100	94.5	95.0	95.0	94.5
125	94.5	95.0	95.4	95.0
150	94.5	95.0	95.4	95.4
200	95.0	95.0	95.4	95.4
250	95.0	95.4	95.8	95.8
300-500	95.0	95.8	95.8	95.8

PRODUCTS

GENERAL

- A. Motors shall be designed, built, and installed in the driven equipment, to provide long, trouble-free life in industrial service and shall be rated in conformance with NEMA MG1. Motors rated 100 horsepower or less and rated 600V or less shall be listed in UL Recognized Component Directory or shall be listed and labeled by other organizations acceptable to the authority having code enforcement jurisdiction.
- B. Unless otherwise specified with the driven equipment, provide motors with the following typical characteristics:
 - 1. Motors shall be single speed, and designed for continuous duty and full voltage starting. Motors shall provide standard starting torque.
 - 2. Voltage Ratings:
 - a. 1/2 horsepower or less: 115 volts, single phase, 60 Hz, capacitor start. Small fan motors may be split phase or shaded pole type if standard for the equipment.
 - b. Above 1/2 horsepower: 460 volts, three phase, 60 Hz, squirrel cage induction motors.
 - 3. All motors shall have a service factor of 1.15 in an ambient temperature of 40°C.
 - a. Exceptions: Motors, which have special enclosures or winding configurations, may carry a Unity (1.0) Service Factor. Examples are totally enclosed, explosion proof, or submersible motors.
 - 4. Windings shall be copper.
 - 5. Provide ground lug inside the terminal box.
 - 6. Provide lifting eye on each motor weighing more than 50 pounds.
 - 7. Each motor shall be suitable for six starts per hour (5 minutes on and 5 minutes off, continuously) when powering the specific driven equipment required for this project.
 - 8. Each motor shall have an overall sound power level at no load not greater than given in NEMA MG1-12.49.
 - 9. Motors, which have special operating characteristics such as multi-speed, high torque/high slip, short time intermittent ratings shall be nameplated to show how these characteristics differ from standard design.
- C. Motors used with adjustable frequency drives shall have inverter duty complying with NEMA MG-1, Section IV, Part 31.

NAMEPLATE

above, under normal operation. Motor horsepower shall not be less than those specified in driven equipment sections. If a larger horsepower rating is required by the driven equipment, provide all changes required to motor starting and control equipment and to the conduit and wiring system without any additional cost to NTUA.

EFFICIENCY

- A. For motors 1 Horsepower and Larger:
 - 1. Provide premium efficiency motors unless otherwise specified. Premium efficiency motors shall have nominal efficiencies at full load not less than those listed in Table 11002-1.
 - 2. Guaranteed minimum efficiencies of premium efficiency motors shall correspond to nominal values as tabulated in NEMA MG-1, Table 12-8.
- B. Efficiencies shall be determined by using the IEEE 112, Test Method B using segregated loss determination.
- C. Single-phase fractional horsepower motors 1/4 HP through 3/4 HP motors shall be high-efficiency split-capacitor types having minimum efficiency ratings of not less than 64% and power factors of not less than 94.5%.

LOCKED ROTOR KVA - CODE LETTER

- A. Provide motors with locked rotor kVA values less than or equal to those corresponding to the following:

Horsepower	Code Letter
≤5	M
7-1/2-10	H
≥15	G

THERMAL PROTECTION

- A. In each motor to be used with adjustable speed drives, in all motors 60 horsepower and larger, or where called for in the Specifications for the driven equipment, provide integral thermostats or other approved devices to protect the motor from overheating. Thermostats or other devices shall be rated 125 Vac, 1 amp.

SPACE HEATERS

- 3. Horizontal or vertical arrangement.
- 4. Indoor or outdoor location.

- B. Additional motor characteristics are specified with the driven equipment only where the required motor differs from the typical characteristics described below or where additional properties or characteristics are required that are not specified in this Section.

- A. Provide stainless steel nameplate for each motor, attached to the motor by stainless steel screws or drive pins. Nameplates shall indicate clearly the information required by NEMA MG1, Part 10 and Part 12.

ENCLOSURE TYPE BY LOCATION

- A. Unless otherwise specified with the driven equipment, provide motors with the following typical enclosures:
 - 1. Indoors: Horizontal motors shall be open, drip-proof; vertical motors shall be drip-proof with guard.
 - 2. Outdoors: Vertical motors shall be weather-protected type I. Horizontal motors shall be totally enclosed, fan cooled. All motors shall have the following features:
 - a. Bearing protection.
 - b. Anti-corrosion treatment of external hardware and internal metal parts.
 - c. Weatherproof terminal box with gaskets between the motor, terminal box and terminal box cover.
 - d. Guard screens on ventilation openings.
 - e. Moderate moisture resistant insulation, specified hereinafter.
 - f. Interior and exterior corrosion protection coatings.
 - g. Special attention to leads into terminal box.
- B. When specifically called for in the Specifications for the driven equipment or required by Code, provide the following enclosure types:
 - 1. Hazardous locations: Motors shall be explosion-proof and shall be UL listed for Class I, Division 1, Groups C and D locations; motors shall bear the UL label.
 - 2. Severe duty: Motors shall have the following features:
 - a. Totally enclosed, fan cooled enclosure.
 - b. Stainless steel nameplate.
 - c. Cast iron housing, bearing brackets and fan guard.
 - d. Cast iron conduit box with threaded conduit entrance.
 - e. Corrosion resistant fan.
 - f. Corrosion resistant hardware.
 - g. Automatic breather/drain.
 - h. Ground lug.
 - i. Regreaseable bearings.
 - j. Provision for excluding water and dust from bearings.
 - k. Class F insulation.
 - l. Service factor of 1.15.
 - m. Epoxy coating on all external surfaces.
 - 3. Submersible: Submersible motors shall comply with the following:
 - a. Air filled or oil filled squirrel cage induction type.
 - b. Service factor of 1.15 or better.
 - c. Class F insulation, Class B temperature rise.
 - d. Rated for 6 starts per hour.

- A. Where called for in the Specifications for the driven equipment, provide space heaters or solid state motor winding heating systems for motors. Heaters shall be 120 or 240 volts, single phase, as required by the control circuit voltage or be of the SCR voltage controlled type. Heater wattage and voltage ratings shall be indicated on motor nameplate. Motor winding heating systems shall be as recommended by manufacturer.

INSTALLATION

- A. Install motors in driven equipment in conformance with motor manufacturer's recommendations and requirements. Motor nameplate shall be visible when installed on the driven equipment.

SUBMERSIBLE PUMPING UNITS

THIS SECTION SPECIFIES SUBMERSIBLE PUMPS COMPLETE WITH MOTOR, DISCHARGE ELBOW, GUIDE BAR BRACKETS, ACCESS FRAMES AND COVERS AND ACCESSORIES. PUMPS PROVIDED UNDER THIS SPECIFICATION ARE LIMITED TO UNITS WITH DISCHARGE CONNECTIONS 4 INCHES IN DIAMETER OR LARGER. EACH PUMP SHALL BE OF THE HEAVY-DUTY SUBMERSIBLE, VERTICAL SHAFT, CENTRIFUGAL NONCLOG TYPE, SUITABLE FOR PUMPING FLUIDS CONTAINING SEWAGE SOLIDS. PUMPS SHALL BE DESIGNED FOR CONTINUOUS OPERATION UNDER SUBMERGED, PARTIALLY SUBMERGED, OR TOTALLY DRY CONDITION WITHOUT DAMAGE TO PUMP AND MOTOR. THE FLUID TO BE PUMPED IN ANTICIPATED TO RANGE BETWEEN 60 DEGREES F AND 120 DEGREES F AND CONTAIN UP TO 10,000 mg/L OF SOLIDS CONSISTING OF GRIT AND ORGANIC MATERIAL WITH SMALL QUANTITIES OF PETROLEUM PRODUCTS AND ANIMAL FATS AND GREASES.

THE RATED DESIGN CONDITION AT OR NEAR THE BEST EFFICIENCY POINT SHALL BE APPROXIMATELY:

- 300 GALLONS PER MINUTE, AT
- 21 FEET OF TOTAL DYNAMIC HEAD

ACCEPTABLE PRODUCTS INCLUDE:

- HYDROMATIC MODEL S4MXP300FB, IMPELLER SIZE 8" INCHES, WITH A 3 HORSEPOWER 460V PREMIUM EFFICIENCY XP MOTOR.

MATERIAL OF CONSTRUCTION SHALL BE:

- PUMP AND MOTOR CASING -- CAST IRON, ASTM A48, CLASS 30
- DISCHARGE ELBOW - CAST IRON, ASTM A48, CLASS 30
- IMPELLER - CAST IRON, ASTM A48, CLASS 30
- MOTOR AND PUMP SHAFT - CARBON STEEL, OR STAINLESS STEEL, ASTM A276, SERIES 400
- WEARING RING - NITRILE OR STAINLESS STEEL, ASTM A276, SERIES 400
- EXTERNAL BOLTS AND NUTS - STAINLESS STEEL, ASTM A276, TYPE 304
- GUIDE BAR BRACKETS - STAINLESS STEEL, ASTM A276, TYPE 304
- ANCHORS BOLTS - STAINLESS STEEL,
- GUIDE RAILS, LIFTING CHAIN AND HOOK ASSEMBLIES, STAINLESS STEEL, ASTM, TYPE 316



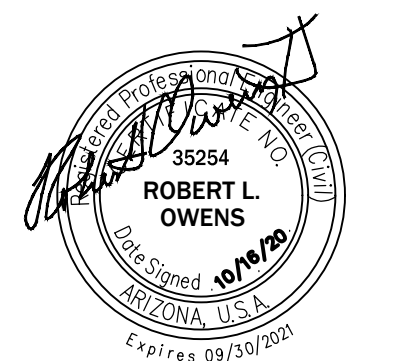
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1812 Schofield Lane
Farmington, NM 87401
P.O. BOX 2606
Farmington, NM 87499

CLIENT:

NAVAJO TRIBAL UTILITY AUTHORITY
P.O. BOX 170
Ft. Defiance, AZ, 86504

PROJECT:
REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION
36°22'18.30"N, 109°35'57.14"W
MANY FARMS, ARIZONA, 86538



REVISIONS:

REV	DESCRIPTION	DATE	IDFR	CHKR

PROJECT NUMBER:	20-050-02
ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	1" = 5'



DRAWING TITLE:

MECHANICAL SPECIFICATIONS

DRAWING NUMBER:

G-05

LEGEND

INSTRUMENT SYMBOL IDENTIFIERS		IDENTIFICATION LETTERS (SEE TABLE BELOW)		FUNCTION BLOCK (SEE TABLE BELOW)	
FIRST LETTER		SUCCEEDING LETTERS		HANDSWITCH DESIGNATOR (SEE BELOW)	
MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER	
ANALYSIS	PROPANE TANK	ALARM			
BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE	
USER'S CHOICE	CLEANOUT		CONTROL	CLOSED	
DENSITY	WATER VALVE	DIFFERENTIAL	DAMPER		
VOLTAGE	WATER METER		SENSOR (PRIMARY ELEMENT)		
FLOW RATE	WATER SHUTOFF	RATIO (FRACTION)			
USER'S CHOICE	WATER SPIGOT		GLASS, VIEWING DEVICE		
HAND	ANTENNA			HIGH	
CURRENT (ELECTRICAL)	ELECTRIC JUNCTION BOX		INDICATE		
POWER	VENT PIPE	SCAN			
TIME, TIME SCHEDULE	GRAVEL SURFACE	TIME RATE OF CHANGE		CONTROL STATION	
LEVEL			LIGHT	LOW	
MOISTURE		MOMENTARY		MIDDLE, INTERMEDIATE	
USER'S CHOICE			USER'S CHOICE	USER'S CHOICE	
USER'S CHOICE			ORIFICE, RESTRICTION	OPEN	
QUANTITY		INTEGRATE, TOTALIZE	POINT (TEST) CONNECTION		
TEMPERATURE		RECORD			
TEMPERATURE		SWITCH			
TEMPERATURE			TRANSMIT		
TEMPERATURE			MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
TEMPERATURE			VALVE, DAMPER, OR LOUVER		
TEMPERATURE					
WEIGHT, FORCE		WELL			
UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	
EVENT, STATE, PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT		
POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT		

GENERAL INSTRUMENT OR FUNCTION SYMBOLS	FIELD MOUNTED	PRIMARY LOCATION ACCESSIBLE TO OPERATOR	AUXILIARY LOCATION ACCESSIBLE TO OPERATOR	NORMALLY INACCESSIBLE OR BEHIND THE PANEL
DISCRETE INSTRUMENTS				
SHARED DISPLAY, SHARED CONTROL				
COMPUTER FUNCTION				
PROGRAMMABLE LOGIC CONTROL				

J-4 FUNCTION BLOCK DESIGNATORS	
SUMMING	ROOT EXTRACTION
DIFFERENCE	SQUARE ROOT
INTEGRAL	EXPONENTIAL
DERIVATIVE	HIGH SELECTING
MULTIPLYING	LOW SELECTING
DIVIDING	BIAS
CONVERT:	NONLINEAR OR UNSPECIFIED FUNCTION
* E - VOLTAGE	H - HYDRAULIC
I - CURRENT	O - ELECTROMAGNETIC, SONIC
P - PNEUMATIC	R - RESISTANCE (ELECT)
A - ANALOG	D - DIGITAL
B - BINARY	

J-6 HANDSWITCH DESIGNATORS	
HOA HAND-OFF-AUTO	LR LOCAL-REMOTE
HOR HAND-OFF-REMOTE	OC OPEN-CLOSE
F-R FORWARD-REVERSE	OCA OPEN-CLOSE-AUTO
1-O ON-OFF	

INSTRUMENT SERVICES	
AS>	INSTRUMENT AIR SUPPLY (NOTE 4)
>	120 VAC ELECTRICAL SERVICE (DIFFERENT VOLTAGES ARE SPECIFICALLY NOTED)

PLC INPUT/OUTPUT			
	DISCRETE INPUT		ANALOG INPUT
	DISCRETE OUTPUT		ANALOG OUTPUT

FLOW PRIMARY ELEMENTS	
	ORIFICE PLATE
	SINGLE PORT PITOT TUBE OR PITOT-VENTURI TUBE
	VENTURI TUBE
	AVERAGING PITOT TUBE
	FLUME
	WEIR
	TURBINE OR PROPELLER-TYPE PRIMARY ELEMENT
	ROTAMETER
	ROTAMETER WITH INTEGRAL VALVE
	THERMAL MASS FLOWMETER
	POSITIVE DISPLACEMENT TYPE FLOW TOTALIZING INDICATOR
	VORTEX SENSOR
	TARGET TYPE SENSOR
	FLOW NOZZLE
	MAGNETIC FLOWMETER
	SONIC FLOWMETER

LINES	
	MAIN PROCESS
	SECONDARY PROCESS
	DOUBLE CONTAINED PIPE
	REFERENCES TO OTHER SHEET
	LINE CONTINUATION DRAWING REFERENCE
	PIPE SYSTEM
	PIPE SIZE IN INCHES
	PNEUMATIC
	ELECTRICAL SIGNAL ANALOG
	ELECTRICAL SIGNAL DISCRETE
	HYDRAULIC
	CAPILLARY TUBE
	SOFTWARE OR DATA LINK
	ELECTROMAGNETIC OR SONIC (GUIDED)
	MECHANICAL CONNECTED
	ELECTRICAL CONNECTED
	MECHANICAL NOT CONNECTED
	ELECTRICAL NOT CONNECTED

VALVES	
	GATE VALVE
	GLOBE VALVE
	PLUG VALVE
	CHECK VALVE
	PINCH VALVE
	DIAPHRAGM VALVE
	BUTTERFLY VALVE
	BALL VALVE
	NEEDLE VALVE
	PLUG (COCK)
	PRESSURE REDUCING REGULATING VALVE, SELF-CONTAINED
	BACK PRESSURE REGULATING VALVE, SELF-CONTAINED
	PRESSURE REDUCING REGULATOR WITH EXTERNAL PRESSURE TAP
	3-WAY VALVE
	4-WAY VALVE
	ANGLE VALVE
	PRESSURE RELIEF VALVE
	* FC = FAIL CLOSED
	FO = FAIL OPEN
	LC = LOCKED CLOSED
	LO = LOCKED OPEN
	CLOSED DURING NORMAL OPERATION
	SHADING INDICATES PORT TO BE CLOSED DURING NORMAL OPERATION. DOT INDICATES PORT TO BE CLOSED DURING ALTERNATE OPERATION.

VALVE OPERATORS	
	DIAPHRAGM
	DIAPHRAGM PRESSURE BALANCED
	HAND
	MOTOR
	CYLINDER OPERATOR
	SOLENOID
	SOLENOID VALVE

TYPICAL CONNECTION	
	DIRECT CONNECTION TO PROCESS
	TEMPERATURE ELEMENT WITH WELL
	IN-LINE DEVICE
	RADIATION OR SONIC SENSING
	FILLED SYSTEM, DIAPHRAGM SEAL CONNECTION

EQUIPMENT	
	PUMP
	SUBMERSIBLE PUMP
	BLOWER
	CHEMICAL PUMP
	INJECTOR
	DOUBLE DIAPHRAGM AIR DRIVEN PUMP
	MIXER
	TURBINE PUMP
	PERISTALTIC PUMP

MISCELLANEOUS	
	FLANGE
	UNION
	Y STRAINER
	FLOW STRAIGHTENING VANE
	TEE
	SCREWED CAP
	WELDED CAP
	BLIND FLANGE
	REDUCER
	HOSE BIBB CONNECTION
	DIAPHRAGM SEAL
	RUPTURE DISK, PRESSURE
	RUPTURE DISK, VACUUM
	PURGE
	DRAIN
	THERMOMETER WELL
	TORQUE SWITCH
	INTERLOCK. NUMBER IS THE CROSS REFERENCE TO A SPECIFIC ELEMENTARY DIAGRAM OR TO A SPECIFIC CONTROL STRATEGY DESCRIBED IN THE SPECS
	EXPANSION JOINT
	FLEXIBLE COUPLING
	SLUICE GATE OR SLIDE GATE
	WATER
	* AV - AIR VALVE
	F - FILTER
	T - TRAP
	FH - FIRE HYDRANT

NOTES	
1. THIS IS A GENERALIZED LEGEND SHEET. THIS CONTRACT MAY NOT USE ALL INFORMATION SHOWN.	3. INSTRUMENTS MARKED WITH AN ASTERISK ARE FURNISHED WITH THE EQUIPMENT.
2. INFORMATION SHOWN MAY NOT BE ALL INCLUSIVE. SEE ALSO ISA S5.1, S5.3 AND S7.3.	4. REFER TO ISA RP7.7 FOR INSTRUMENT AIR QUALITY STANDARDS.

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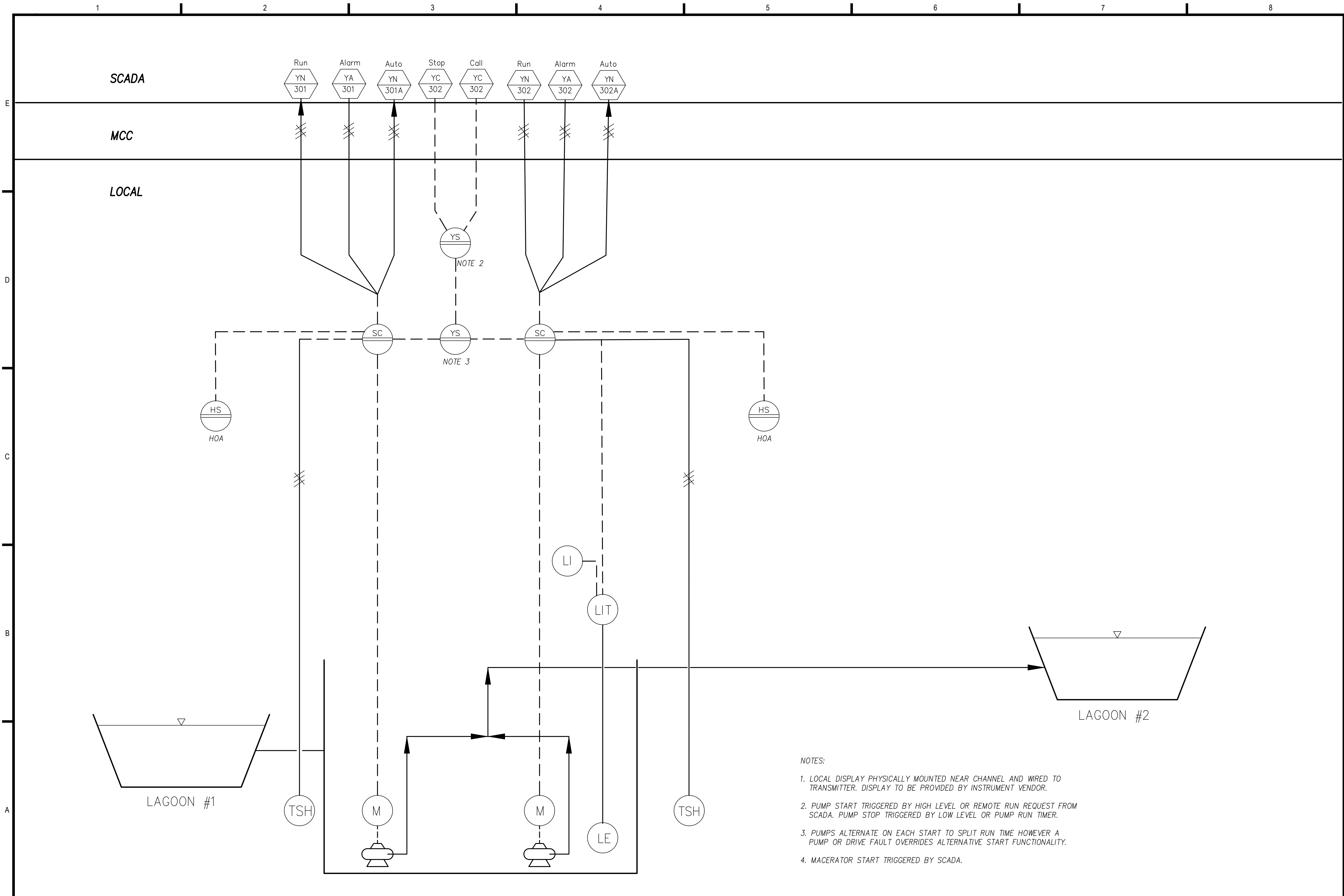
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PROJECT:
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MANY FARMS, ARIZONA, 86538

REV	DESCRIPTION	DATE	DFTR	CHKR

PROJECT NUMBER: 20-050-02
ENGINEER: XXX
DRAWING SIZE: ANSI D
DRAWING SCALE: 1"=5'

DRAWING TITLE:
INSTRUMENTATION AND CONTROL
STANDARDS
DRAWING NUMBER:
D-01



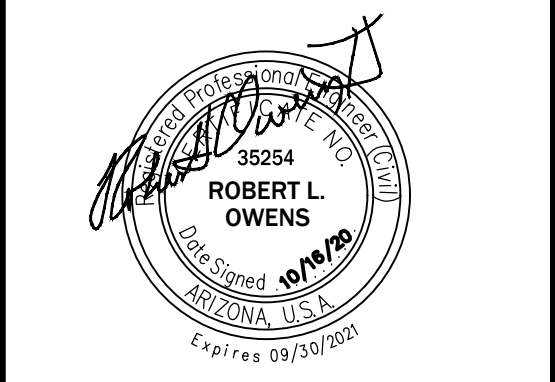

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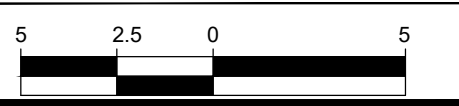
PROJECT:
REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION
 36°22'18.30"N, 109°35'57.14"W
 MANY FARMS, ARIZONA, 86538



REVISIONS:

REV	DESCRIPTION	DATE	DFTR	CHKR

PROJECT NUMBER: 20-050-02
 ENGINEER: XXXX
 DRAWING SIZE: ANSI D
 DRAWING SCALE: 1" = 5'



DRAWING TITLE:
PROCESS AND INSTRUMENTATION DIAGRAM

DRAWING NUMBER:
D-02

- NOTES:
1. LOCAL DISPLAY PHYSICALLY MOUNTED NEAR CHANNEL AND WIRED TO TRANSMITTER. DISPLAY TO BE PROVIDED BY INSTRUMENT VENDOR.
 2. PUMP START TRIGGERED BY HIGH LEVEL OR REMOTE RUN REQUEST FROM SCADA. PUMP STOP TRIGGERED BY LOW LEVEL OR PUMP RUN TIMER.
 3. PUMPS ALTERNATE ON EACH START TO SPLIT RUN TIME HOWEVER A PUMP OR DRIVE FAULT OVERRIDES ALTERNATIVE START FUNCTIONALITY.
 4. MACERATOR START TRIGGERED BY SCADA.



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**REFURBISHMENT & UPGRADE OF
EXISTING LIFT STATION**
36°22'18.30"N, 109°35'57.14"W
MANY FARMS, ARIZONA, 86538

10/18/20

REVISIONS:

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ENGINEER:	XXX
DRAWING SIZE:	ANSI D
DRAWING SCALE:	1" = 5'

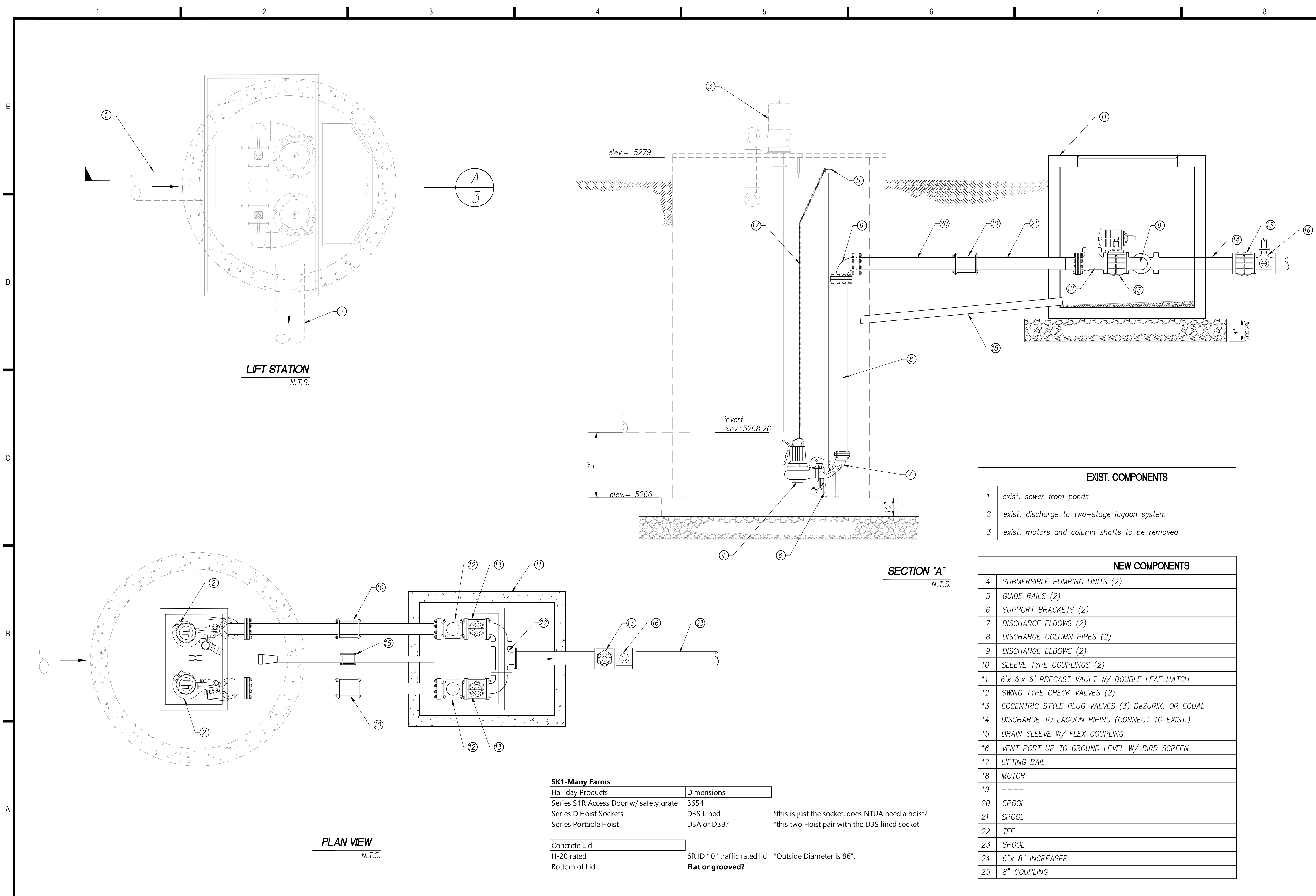


DRAWING TITLE:

MECHANICAL SECTIONS

DRAWING NUMBER:

M-02



LIFT STATION
N.T.S.

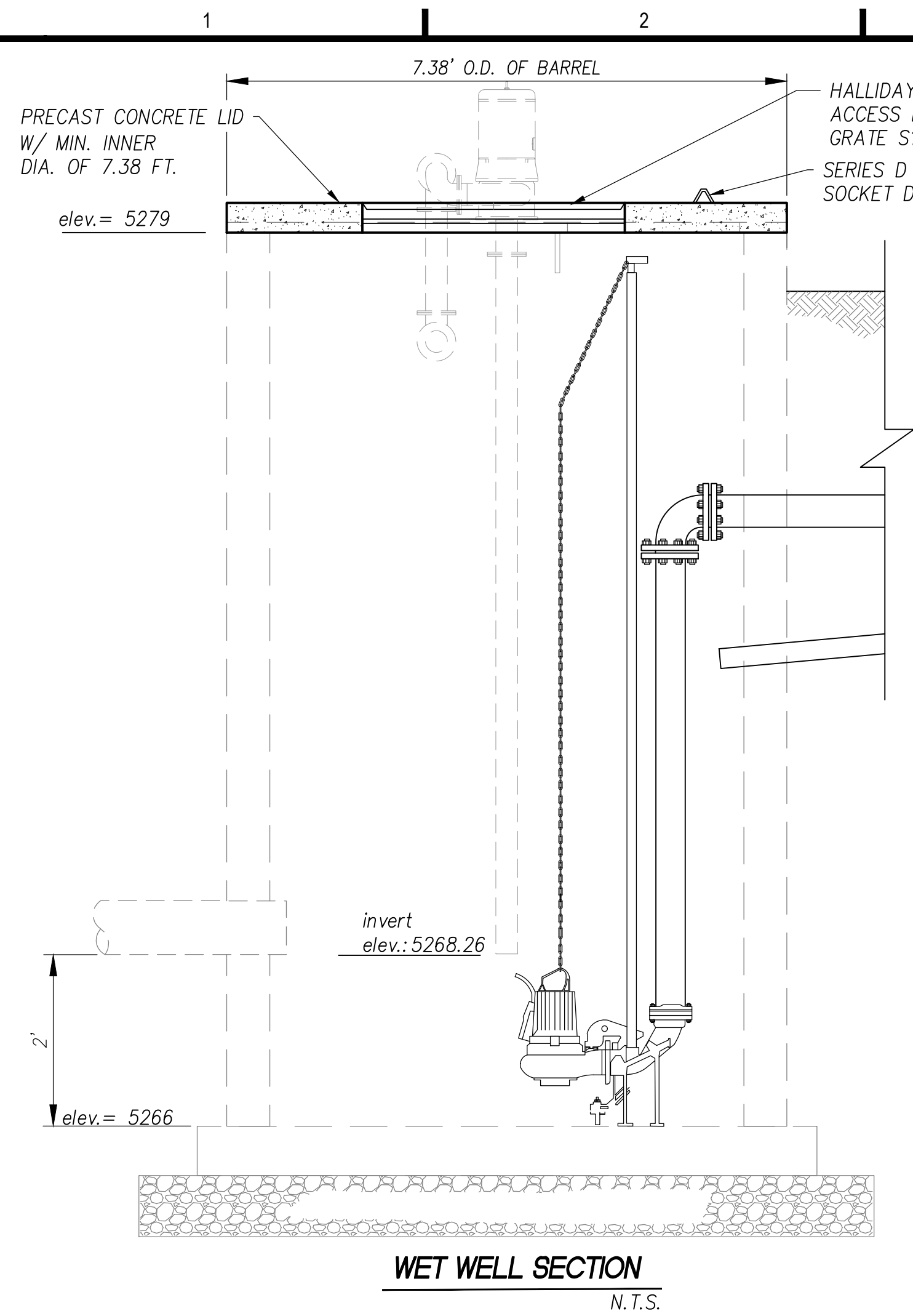
PLAN VIEW
N.T.S.

SECTION "A"
N.T.S.

EXIST. COMPONENTS	
1	exist. sewer from ponds
2	exist. discharge to two-stage lagoon system
3	exist. motors and column shafts to be removed

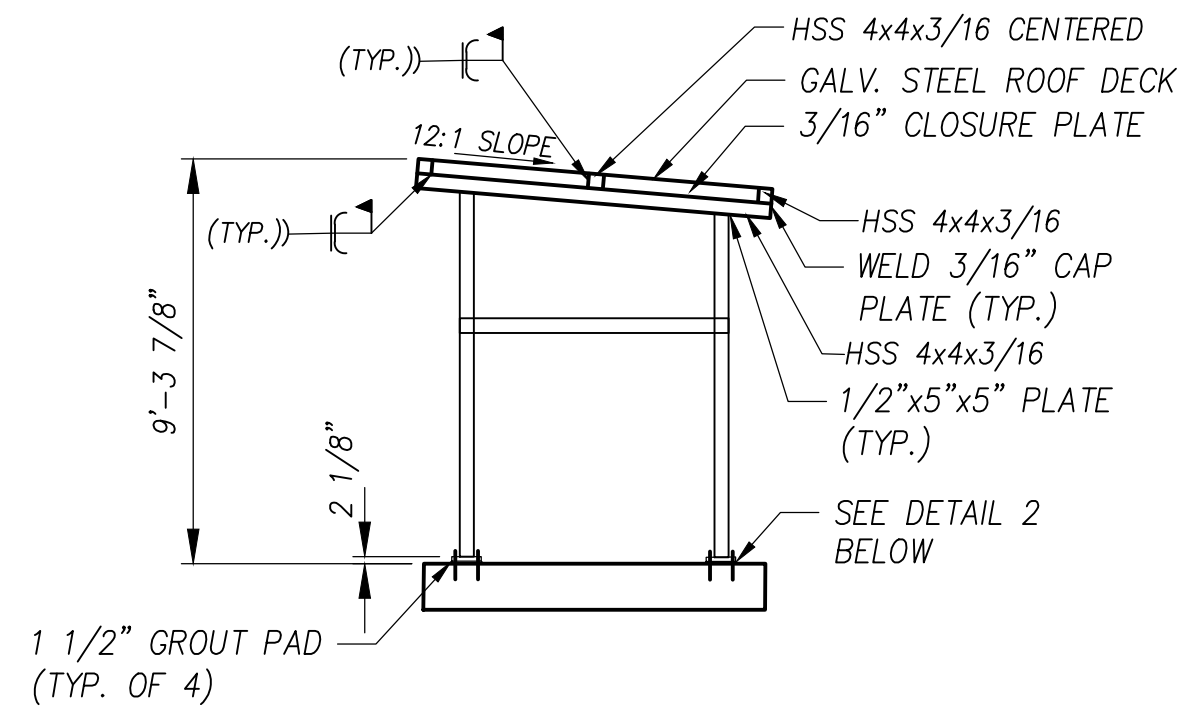
NEW COMPONENTS	
4	SUBMERSIBLE PUMPING UNITS (2)
5	GUIDE RAILS (2)
6	SUPPORT BRACKETS (2)
7	DISCHARGE ELBOWS (2)
8	DISCHARGE COLUMN PIPES (2)
9	DISCHARGE ELBOWS (2)
10	SLEEVE TYPE COUPLINGS (2)
11	6'x 6'x 6' PRECAST VAULT W/ DOUBLE LEAF HATCH
12	SWING TYPE CHECK VALVES (2)
13	ECCENTRIC STYLE PLUG VALVES (3) DeZURIK, OR EQUAL
14	DISCHARGE TO LAGOON PIPING (CONNECT TO EXIST.)
15	DRAIN SLEEVE W/ FLEX COUPLING
16	VENT PORT UP TO GROUND LEVEL W/ BIRD SCREEN
17	LIFTING BAIL
18	MOTOR
19	----
20	SPOOL
21	SPOOL
22	TEE
23	SPOOL
24	6"x 8" INCREASER
25	8" COUPLING

SK1-Many Farms	
Halliday Products	Dimensions
Series S1R Access Door w/ safety grate	3654
Series D Hoist Sockets	D3S Lined
Series Portable Hoist	D3A or D3B?
	*this is just the socket, does NTUA need a hoist?
	*this two Hoist pair with the D3S lined socket.
Concrete Lid	
H-20 rated	6ft ID 10" traffic rated lid *Outside Diameter is 86".
Bottom of Lid	Flat or grooved?

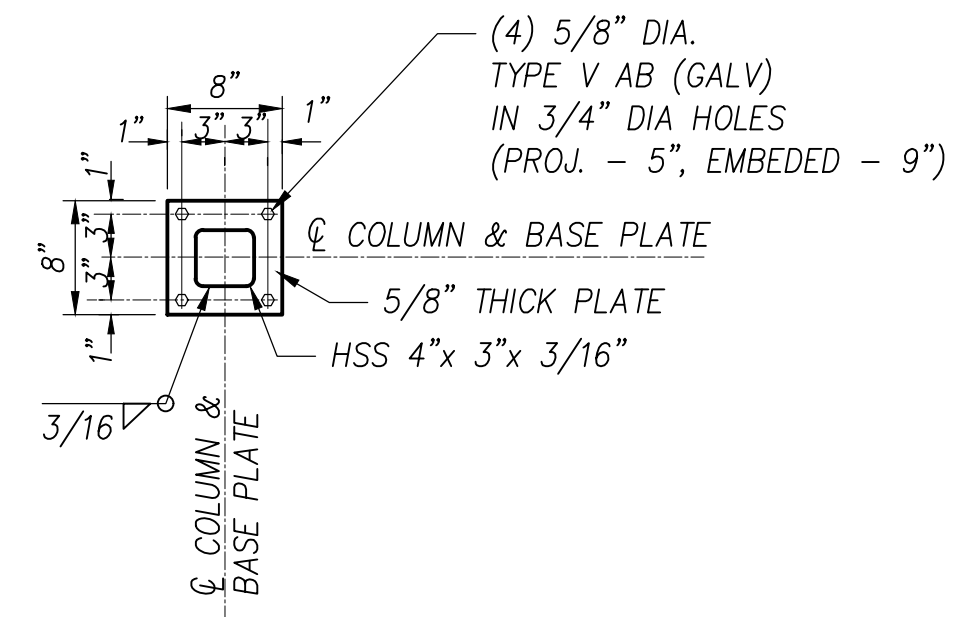


WET WELL SECTION
N.T.S.

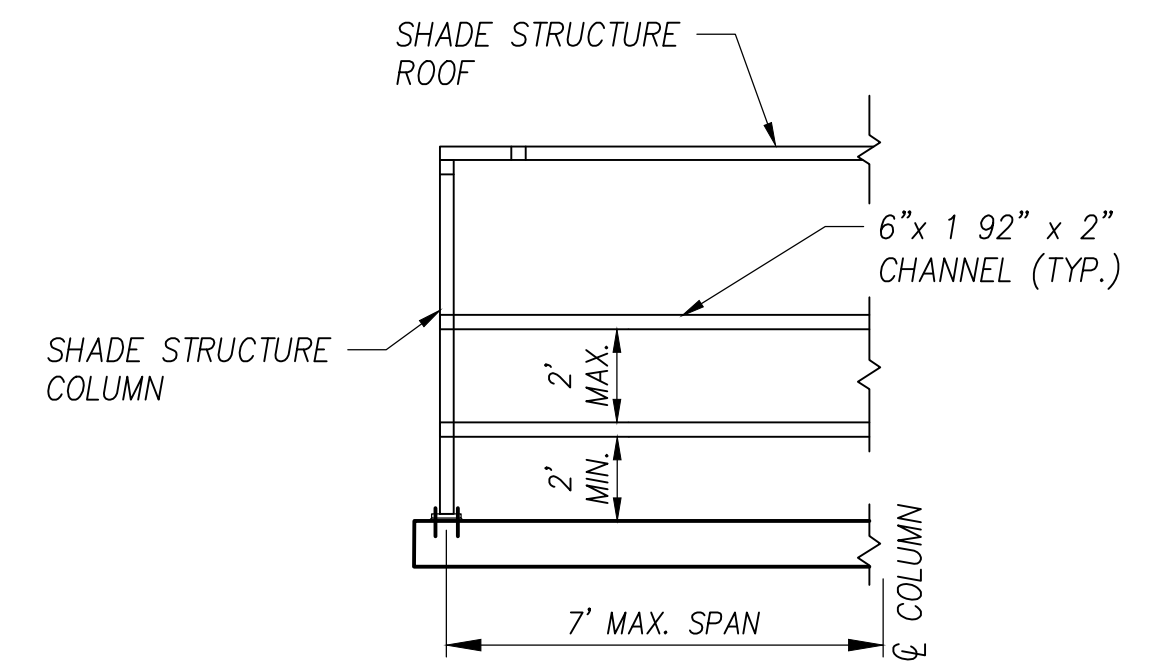
NOTE:
ALL CONCRETE SHALL COMPLY WITH THE LATEST EDITION OF ACI 318.



① **SIDE VIEW**
NTUA STANDARD DETAIL N.T.S.



② **POST BASE DETAIL**
NTUA STANDARD DETAIL N.T.S.



③ **RACK SUPPORT DETAIL**
NTUA STANDARD DETAIL N.T.S.

NOTE:
SHADE STRUCTURE TO SUPPORT ALL CROSS MEMBERS. CROSS MEMBERS SHALL BE INSTALLED AS NEEDED IN ORDER TO MOUNT AND SUPPORT ALL ELECTRICAL PANELS.

SERIES DA PORTABLE HOIST

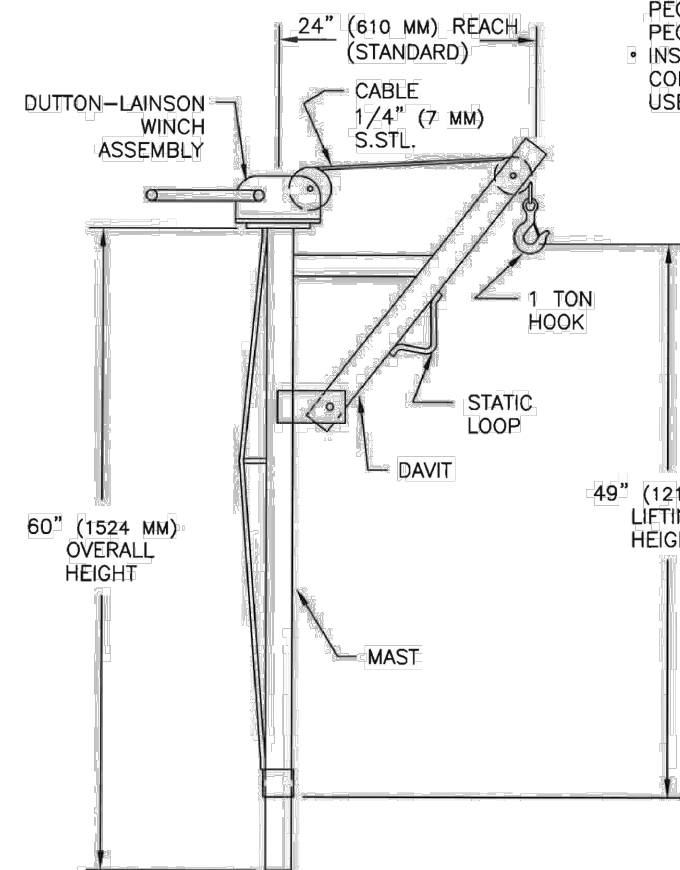
- STANDARD FEATURES:**
- TYPE-304 STAINLESS STEEL CONSTRUCTION
 - 30 FEET (9 METERS) OF 1/4" (7 MM) STAINLESS STEEL CABLE
 - GALVANIZED 1 TON HOOK
 - DUTTON-LAINSON MARINE GRADE BRAKE WINCH
 - 3 YEAR GUARANTEE

- OPTIONS:**
- TYPE-316 CONSTRUCTION
 - ADDITIONAL CABLE AVAILABLE (SPECIFY LENGTH)
 - STAINLESS STEEL WINCH
 - STAINLESS STEEL HOOK
 - OTHER REACHES AVAILABLE UPON REQUEST (CONSULT FACTORY)

STANDARD SIZES			
QTY.	MODEL NO.	MAX. LOAD LBS. (KG.)	UNIT WT. LBS. (KG.)
	D1A24C	500 (227)	85 (40)
	D2A24D	1000 (454)	88 (40)
	D3A24E	1500 (680)	103 (48)

NOTICE:

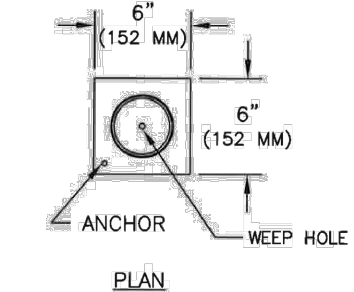
- HALLIDAY PRODUCTS STAINLESS STEEL PORTABLE HOIST SHOULD NOT BE USED TO MOVE PEOPLE OR LOADS ABOVE PEOPLE.
- INSPECT CABLE AND HOOK CONNECTIONS BEFORE EACH USE.



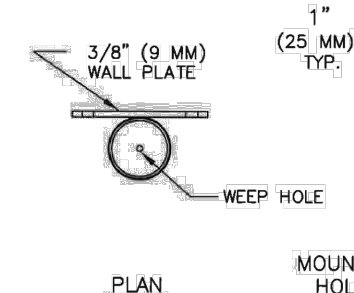
SR-DA-0 8/5/21

SERIES D HOIST SOCKETS

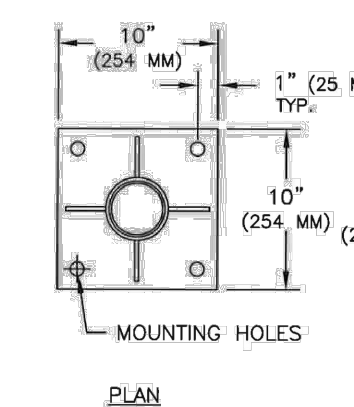
- STANDARD FEATURES:**
- STAINLESS STEEL TYPE-304 (STANDARD) OR TYPE-316 (OPTIONAL) CONSTRUCTION
 - AVAILABLE IN 3 STYLES
 - SUPPLIED WITH POLYMER LINING FOR SMOOTHER ROTATION
 - 3 YEAR GUARANTEE



EMBED STYLE HOIST SOCKETS		FOR HOIST MODELS	
SOCKET MODEL #	D1R LINED	D2R LINED	D3R LINED
	D1A AND D1B	D2A AND D2B	D3A AND D3B



WALL STYLE HOIST SOCKETS		FOR HOIST MODELS	
SOCKET MODEL #	D1V LINED	D2V LINED	NOT AVAILABLE
	D1A AND D1B	D2A AND D2B	D3A AND D3B



FLOOR STYLE HOIST SOCKETS		FOR HOIST MODELS	
SOCKET MODEL #	D1S LINED	D2S LINED	D3S LINED
	D1A AND D1B	D2A AND D2B	D3A AND D3B

NOTES:
MOUNTING HOLES ARE #3/4" (#19 MM)

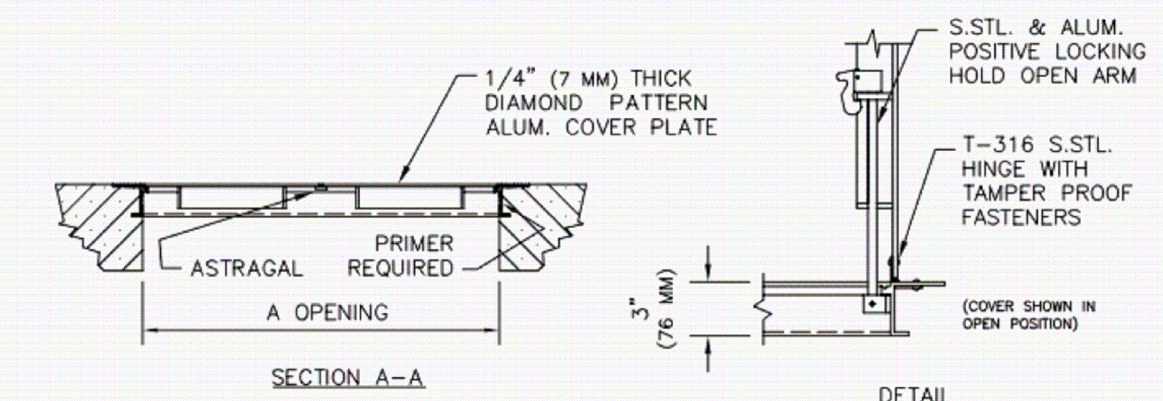
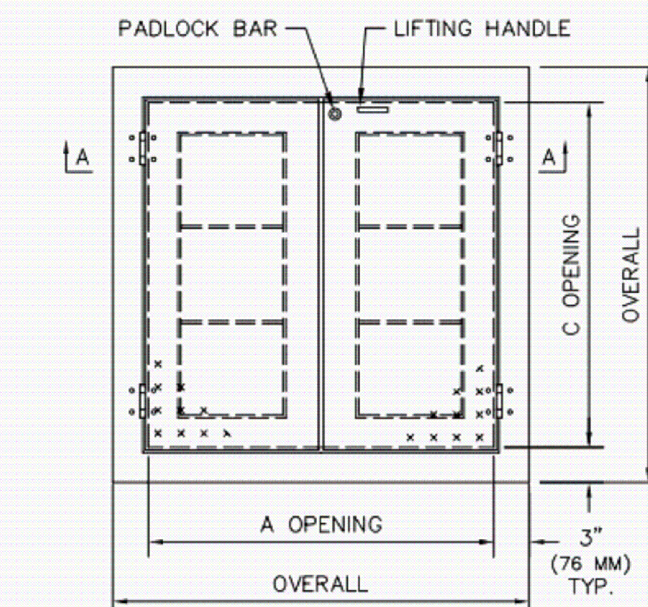
SR-D-0 8/5/21

SERIES S2R ACCESS DOOR

STANDARD FEATURES:

- AUTO-LOCK T-316 STAINLESS STEEL HOLD OPEN ARM WITH RELEASE HANDLE
- T-316 STAINLESS STEEL HINGES AND ATTACHING HARDWARE
- NON-CORROSIVE PADLOCK BAR
- DOUBLE LEAF CONSTRUCTION
- 300 LBS. PER SQ. FT. LOAD RATING (1484 KG. PER SQ. METER LOAD RATING)
- EXTRUDED ALUMINUM FRAME
- RECESSED LIFTING HANDLE
- LIFETIME GUARANTEE

STANDARD SIZES			
QTY.	MODEL NO.	A DIM. INCHES (MM)	C DIM. INCHES (MM)
	S2R242	42 (1067)	42 (1067)
	S2R482	48 (1219)	42 (1067)
	S2R484	48 (1219)	48 (1219)
	S2R442	54 (1372)	42 (1067)
	S2R444	54 (1372)	48 (1219)
	S2R454	54 (1372)	54 (1372)
	S2R6030	60 (1524)	30 (762)
	S2R6036	60 (1524)	36 (914)
	S2R6042	60 (1524)	42 (1067)
	S2R6048	60 (1524)	48 (1219)
	S2R6054	60 (1524)	54 (1372)
	S2R6060	60 (1524)	60 (1524)
	S2R6636	66 (1676)	36 (914)
	S2R6648	66 (1676)	48 (1219)
	S2R7236	72 (1829)	36 (914)
	S2R7242	72 (1829)	42 (1067)
	S2R7248	72 (1829)	48 (1219)
	S2R7254	72 (1829)	54 (1372)
	S2R7260	72 (1829)	60 (1524)



iiina ba Response
54 x 54
D3A24E (specify 20 ft. cable)

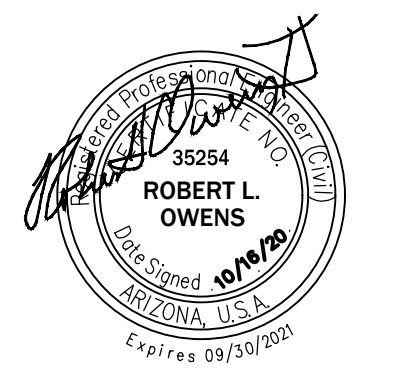


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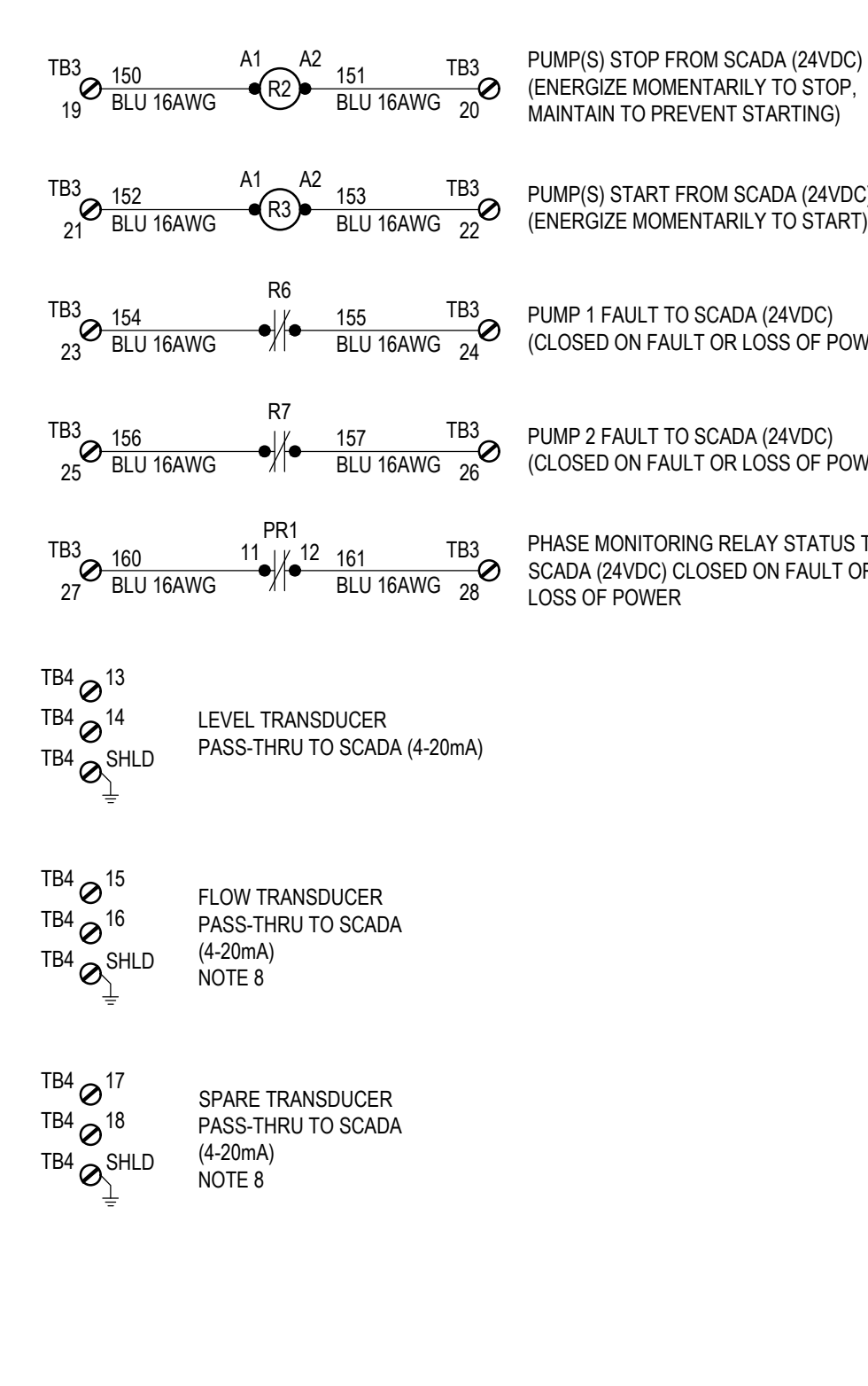
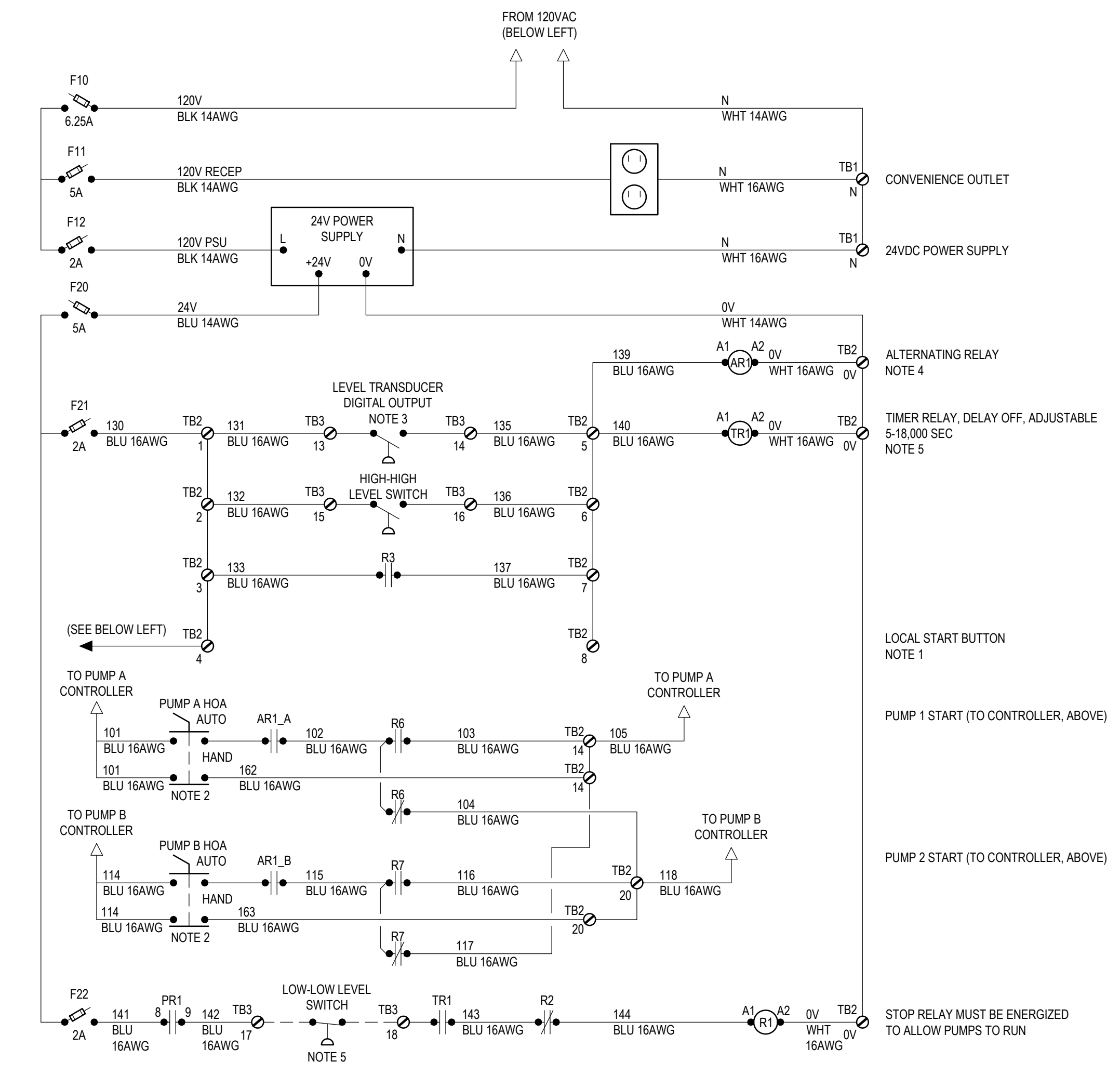
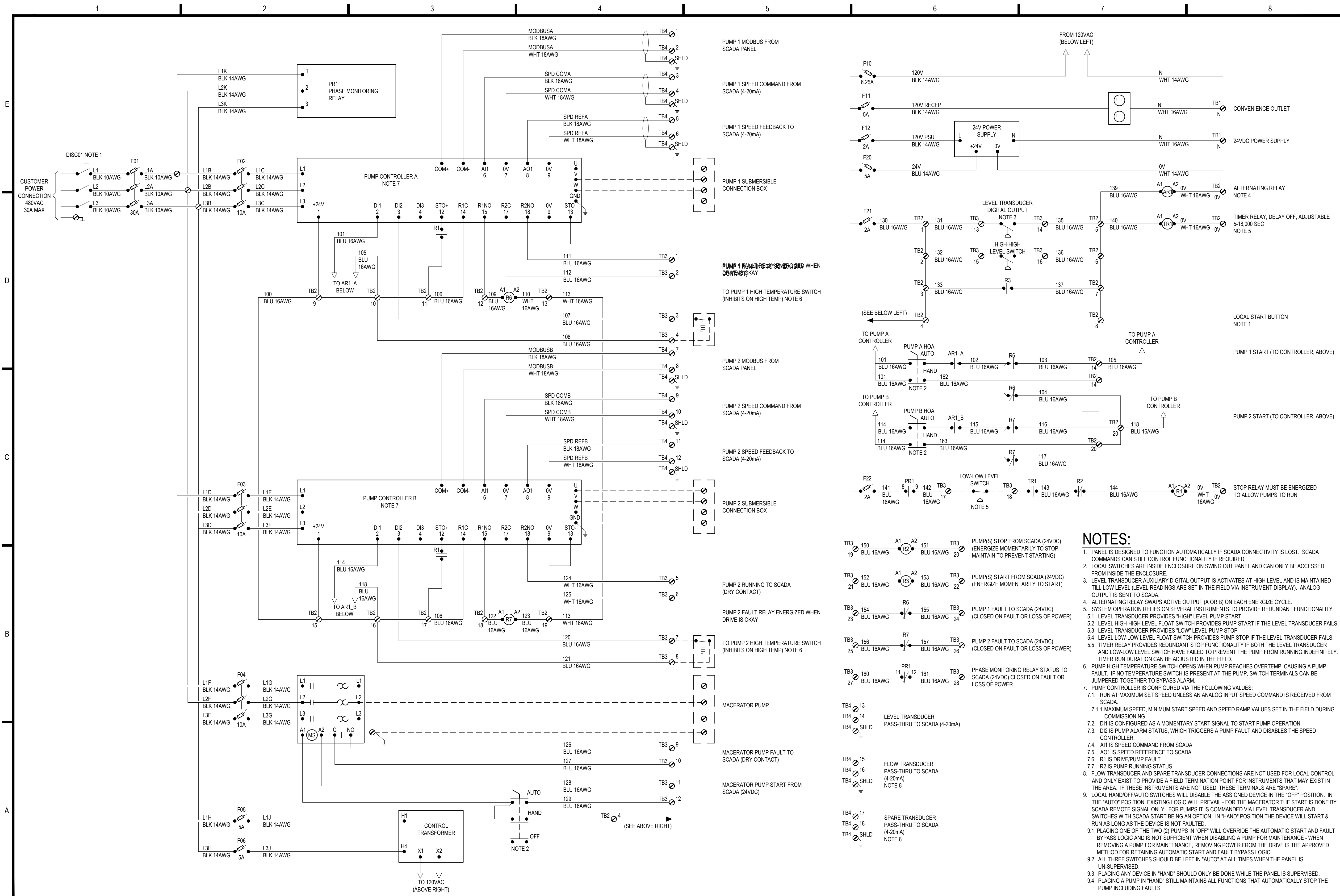
REV	DESCRIPTION	DATE	DFTR	CHKR

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DRAWING SIZE: ANSI D
DRAWING SCALE: 1" = 5'




DRAWING TITLE:
SPECIFICATIONS DETAILS

DRAWING NUMBER:
S-01




- NOTES:**
- PANEL IS DESIGNED TO FUNCTION AUTOMATICALLY IF SCADA CONNECTIVITY IS LOST. SCADA COMMANDS CAN STILL CONTROL FUNCTIONALITY IF REQUIRED.
 - LOCAL SWITCHES ARE INSIDE ENCLOSURE ON SWING OUT PANEL AND CAN ONLY BE ACCESSED FROM INSIDE THE ENCLOSURE.
 - LEVEL TRANSDUCER AUXILIARY DIGITAL OUTPUT IS ACTIVATES AT HIGH LEVEL AND IS MAINTAINED TILL LOW LEVEL (LEVEL READINGS ARE SET IN THE FIELD VIA INSTRUMENT DISPLAY). ANALOG OUTPUT IS SENT TO SCADA.
 - ALTERNATING RELAY SWAPS ACTIVE OUTPUT (A OR B) ON EACH ENERGIZE CYCLE.
 - SYSTEM OPERATION RELIES ON SEVERAL INSTRUMENTS TO PROVIDE REDUNDANT FUNCTIONALITY.
 - LEVEL TRANSDUCER PROVIDES "HIGH" LEVEL PUMP START
 - LEVEL HIGH-HIGH LEVEL FLOAT SWITCH PROVIDES PUMP START IF THE LEVEL TRANSDUCER FAILS.
 - LEVEL TRANSDUCER PROVIDES "LOW" LEVEL PUMP STOP
 - LEVEL LOW-LOW LEVEL FLOAT SWITCH PROVIDES PUMP STOP IF THE LEVEL TRANSDUCER FAILS.
 - TIMER RELAY PROVIDES REDUNDANT STOP FUNCTIONALITY IF BOTH THE LEVEL TRANSDUCER AND LOW-LOW LEVEL SWITCH HAVE FAILED TO PREVENT THE PUMP FROM RUNNING INDEFINITELY. TIMER RUN DURATION CAN BE ADJUSTED IN THE FIELD.
 - PUMP HIGH TEMPERATURE SWITCH OPENS WHEN PUMP REACHES OVERTEMP, CAUSING A PUMP FAULT. IF NO TEMPERATURE SWITCH IS PRESENT AT THE PUMP, SWITCH TERMINALS CAN BE JUMPERED TOGETHER TO BYPASS ALARM.
 - PUMP CONTROLLER IS CONFIGURED VIA THE FOLLOWING VALUES:
 - RUN AT MAXIMUM SET SPEED UNLESS AN ANALOG INPUT SPEED COMMAND IS RECEIVED FROM SCADA.
 - 1.1. MAXIMUM SPEED, MINIMUM START SPEED AND SPEED RAMP VALUES SET IN THE FIELD DURING COMMISSIONING
 - DI1 IS CONFIGURED AS A MOMENTARY START SIGNAL TO START PUMP OPERATION
 - DI2 IS PUMP ALARM STATUS, WHICH TRIGGERS A PUMP FAULT AND DISABLES THE SPEED CONTROLLER.
 - A1 IS SPEED COMMAND FROM SCADA
 - A01 IS SPEED REFERENCE TO SCADA
 - R1 IS DRIVE/PUMP FAULT
 - R2 IS PUMP RUNNING STATUS
 - FLOW TRANSDUCER AND SPARE TRANSDUCER CONNECTIONS ARE NOT USED FOR LOCAL CONTROL AND ONLY EXIST TO PROVIDE A FIELD TERMINATION POINT FOR INSTRUMENTS THAT MAY EXIST IN THE AREA. IF THESE INSTRUMENTS ARE NOT USED, THESE TERMINALS ARE "SPARE"
 - LOCAL HAND/OFF/AUTO SWITCHES WILL DISABLE THE ASSIGNED DEVICE IN THE "OFF" POSITION. IN THE "AUTO" POSITION, EXISTING LOGIC WILL PREVAIL. FOR THE MACERATOR THE START IS DONE BY SCADA REMOTE SIGNAL ONLY. FOR PUMPS IT IS COMMANDED VIA LEVEL TRANSDUCER AND SWITCHES WITH SCADA START BEING AN OPTION. IN "HAND" POSITION THE DEVICE WILL START & RUN AS LONG AS THE DEVICE IS NOT FAULTED.
 - PLACING ONE OF THE TWO (2) PUMPS IN "OFF" WILL OVERRIDE THE AUTOMATIC START AND FAULT BYPASS LOGIC AND IS NOT SUFFICIENT WHEN DISABLING A PUMP FOR MAINTENANCE - WHEN REMOVING A PUMP FOR MAINTENANCE, REMOVING POWER FROM THE DRIVE IS THE APPROVED METHOD FOR RETAINING AUTOMATIC START AND FAULT BYPASS LOGIC.
 - ALL THREE SWITCHES SHOULD BE LEFT IN "AUTO" AT ALL TIMES WHEN THE PANEL IS UNSUPERVISED.
 - PLACING ANY DEVICE IN "HAND" SHOULD ONLY BE DONE WHILE THE PANEL IS SUPERVISED.
 - PLACING A PUMP IN "HAND" STILL MAINTAINS ALL FUNCTIONS THAT AUTOMATICALLY STOP THE PUMP INCLUDING FAULTS.



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PROJECT:
REFURBISHMENT & UPGRADE OF EXISTING LIFT STATION

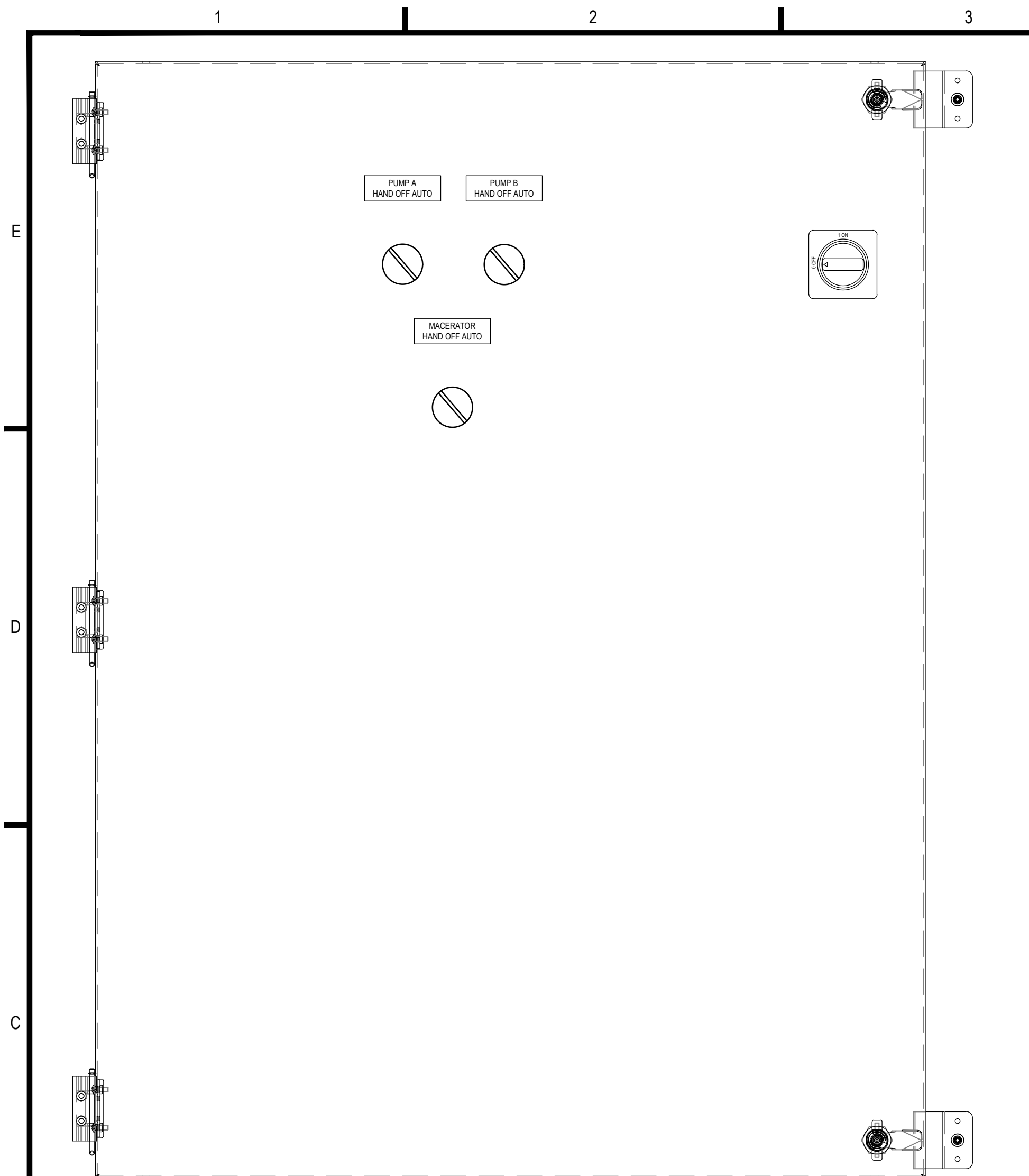
36°22'18.30"N, 109°35'57.14"W
MANY FARMS, ARIZONA, 86538

REVISIONS:				
REV	DESCRIPTION	DATE	BY	CHKR
0	100% SUBMISSION	2020-10-06	SBV	GMC

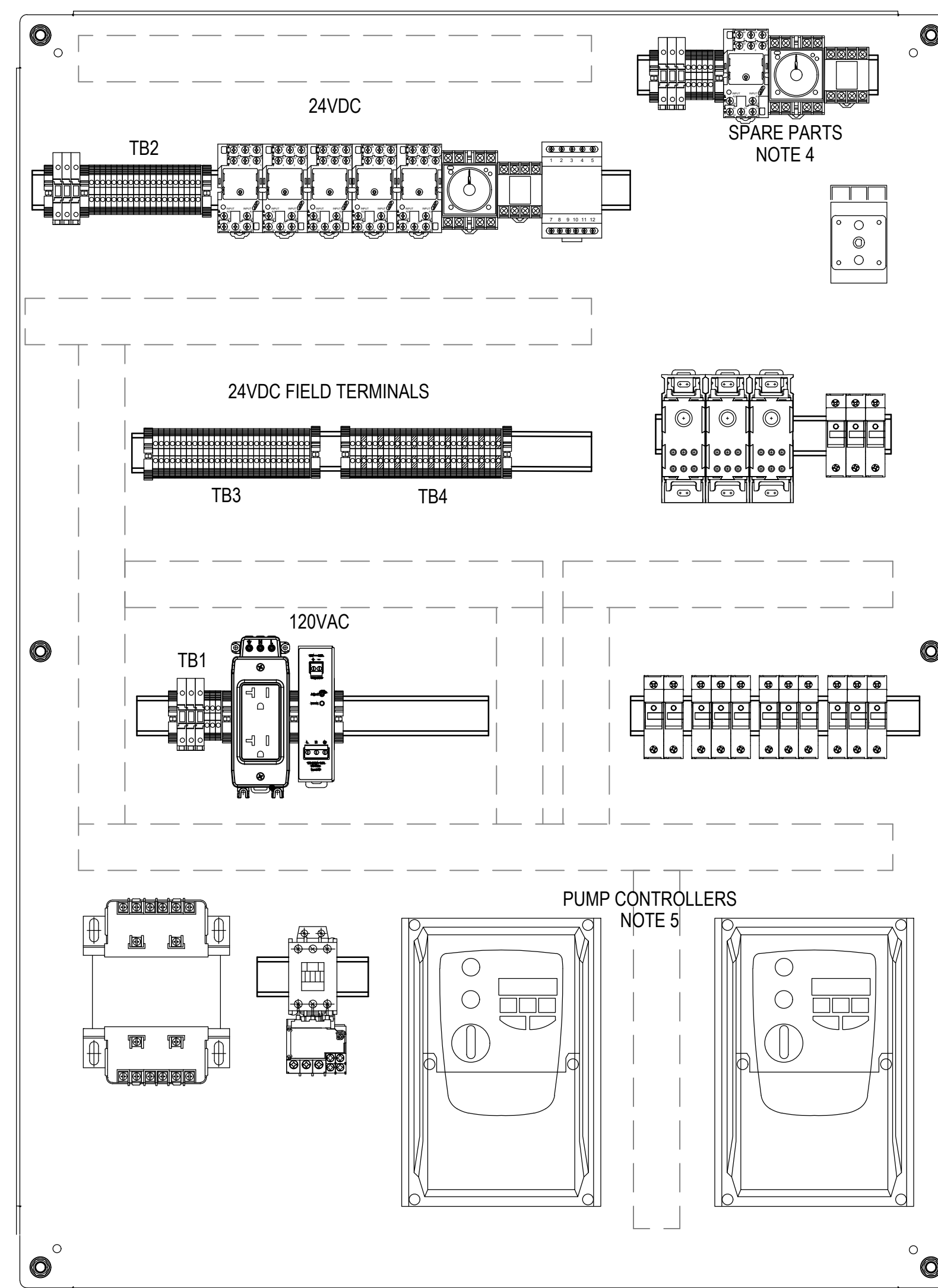
PROJECT NUMBER: 2034
ENGINEER: GMC
DRAWING SCALE: NTS
DRAWING SIZE: ANS I D

DRAWING TITLE:
MANY FARMS SITE PUMP PANEL 480V ONE-LINE DIAGRAM

DRAWING NUMBER:
EI604

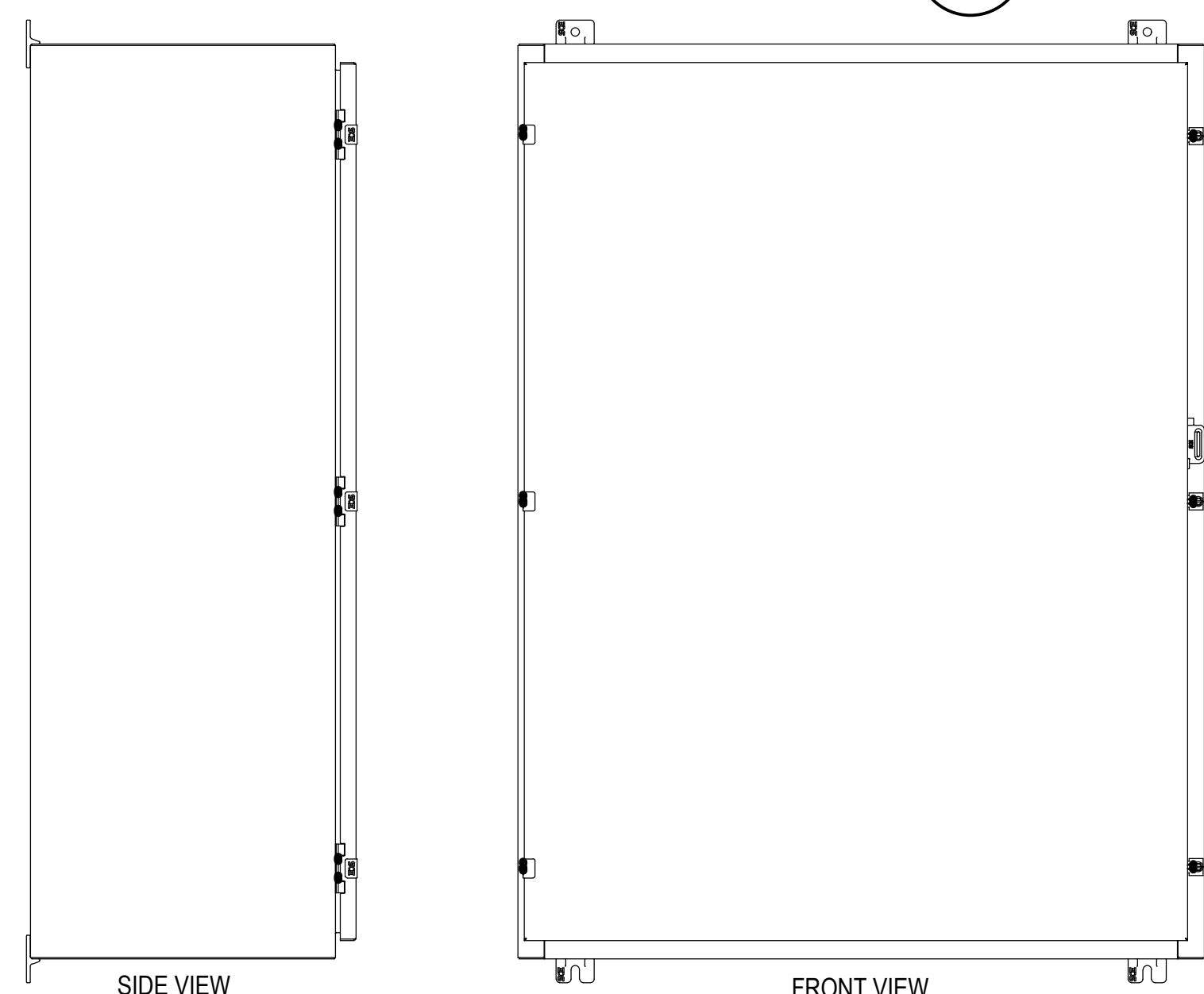


INTERIOR DEAD PANEL LAYOUT



INTERIOR SUB PANEL LAYOUT

1 PANEL LAYOUT
SCALE: 3" = 1'-0"



SIDE VIEW

FRONT VIEW

2 PANEL DOOR LAYOUT
SCALE: 1 1/2" = 1'-0"

SPARE PARTS				
ITEM	QTY	MANUFACTURER	PART NO	DESCRIPTION
1	2	AUTOMATION DIRECT	KN-F10L24DC	6.3A FUSE BLOCK, 24VDC LED
2	1	AUTOMATION DIRECT	KN-F10L110AC	6.3A FUSE BLOCK, 120VAC LED
3	1	AUTOMATION DIRECT	783-3C-24D	ICE CUBE RELAY, 24VDC, 3PDT, 15A
4	1	AUTOMATION DIRECT	783-3C-SKT	RELAY BASE, 3PDT
5	1	FUJII ELECTRIC	MS4SM-CE-ADC	TIMER RELAY, 24VDC, DPDT, ADJUSTABLE
6	1	FUJII ELECTRIC	TP411X	TIMER RELAY BASE FOR MS4SM SERIES
7	1	LITTELFUSE	ALT024-S-SW	ALTERNATING RELAY, 24VDC, INCLUDES MANUAL OVERRIDE SWITCH
8	1	LITTELFUSE	OT08PC	RELAY SOCKET, 10A
9	5	AUTOMATION DIRECT	KN-T12GRY	TERMINAL BLOCK, GREY, SINGLE TIER, 0.20 WIDE
10	1	AUTOMATION DIRECT	KN-ECT6GRY-25	TERMINAL BLOCK BARRIER, GREY
11	2	AUTOMATION DIRECT	KN-EB4-10	TERMINAL BLOCK END BRACKET, GREY
12	3			MIDGET FUSE, 30A
13	3			MIDGET FUSE, 10A
14	2			MIDGET FUSE, 5A
15	2			5 X 20MM FUSE, 6.25A
16	2			5 X 20MM FUSE, 5A
17	2			5 X 20MM FUSE, 2A

NOTES:

- PANEL EXTERNAL LABELS, WARNINGS AND TAGGING TO BE DETERMINED FOR EACH SITE. ENCLOSURE MUST INDICATE POWER DISCONNECT IS MOUNTED INTERNALLY.
- PANEL EXTERIOR HAS CAPABILITY FOR EXTERNALLY MOUNTED PADLOCK TO SECURE THE EXTERIOR DOOR. NO CONTROLS ARE ACCESSIBLE ON THE OUTSIDE OF THE ENCLOSURE.
- WHEN OPENED, PANEL REVEALS AN INTERIOR DEAD PANEL, LEAVING ROUGHLY 2.5" BETWEEN THE INNER FACE OF THE DOOR AND THE DEAD PANEL. PANEL CANNOT BE OPENED UNLESS THE PANEL IS DE-ENERGIZED.
- SPARE PARTS LISTED ARE TO BE INCLUDED AND MOUNTED TO DINRAIL (EXCEPT FUSES) WHICH SHALL BE CLEARLY LABELED AS "SPARE FUSES" AND PROTECTED INSIDE A CLEAR WATERPROOF BAG. BAG MUST BE SECURED TO THE PANEL INTERIOR BEFORE SHIPPING.
- PANEL HAS BEEN DESIGNED TO ACCOMMODATE TWO (2) FIVE HORSEPOWER PUMP DRIVES. THESE DRIVES SHALL BE SPECIFIED AND PROVIDED BY THE PUMP SUPPLIER AND INSTALLED IN THIS PANEL.
- PANEL HAS BEEN DESIGNED TO POWER A FIVE HORSEPOWER MACERATOR VIA REMOTE COMMAND.

BILL OF MATERIALS

ITEM	QTY	MANUFACTURER	PART NO	DESCRIPTION
1	1	SAGINAW CONTROL	SCE-48H3616LP	48 X 36 X 16 NEMA 4 ENCLOSURE
2	1	SAGINAW CONTROL	SCE-48P36	45 X 33 SUB PANEL FOR 48 X 36 ENCLOSURE
3	1	SAGINAW CONTROL	SCE-DF48EL36LP	DEAD FRONT SWING-OUT INTERNAL PANEL 2.5" FROM DEAD PANEL TO DOOR
4	1	C3 CONTROLS	DDS2-330-DHMRY	DISCONNECT, 32A, 3 POLE NON-FUSED
5	4	EDISON	EHM3DU	3 POLE FUSE HOLDER, 30A MAX, MIDGET FUSES
6	2	EDISON	EHM1DU	1 POLE FUSE HOLDER, 30A MAX, MIDGET FUSES
7	3	EDISON	EPDB306	DISTRIBUTION BLOCK, FINGER SAFE
9	3	AUTOMATION DIRECT	KN-F10L24DC	6.3A FUSE BLOCK, 24VDC LED
10	3	AUTOMATION DIRECT	KN-F10L110AC	6.3A FUSE BLOCK, 120VAC LED
11	1	HAMMOND MFG	PH750MQMJ	480V TO 120V TRANSFORMER, 750VA
12	1	RHINO	PSB24-060S	24VDC POWER SUPPLY, 60W
13	2	(BY VENDOR) NOTE 5	(BY VENDOR) NOTE 5	5HP PUMP CONTROLLER, VFD, INCLUDING RELAY CARD AND MODBUS COMMUNICATION
14	1	FUJII ELECTRIC	SC-E03G-24VDC	IEC CONTACTOR, 24VDC COIL, 12A FRAME
15	1	FUJII ELECTRIC	TK26E-007	THERMAL OVERLOAD RELAY, ADJUSTABLE, 7-10.5A
16	1	AUTOMATION DIRECT	FA-REC2	DIN RAIL MOUNT RECEPTACLE
17	5	AUTOMATION DIRECT	783-3C-24D	ICE CUBE RELAY, 24VDC, 3PDT, 15A
18	5	AUTOMATION DIRECT	783-3C-SKT	RELAY BASE, 3PDT
19	1	FUJII ELECTRIC	MS4SM-CE-ADC	TIMER RELAY, 24VDC, DPDT, ADJUSTABLE
20	1	FUJII ELECTRIC	TP411X	TIMER RELAY BASE FOR MS4SM SERIES
21	1	LITTELFUSE	ALT024-S-SW	ALTERNATING RELAY, 24VDC, INCLUDES MANUAL OVERRIDE SWITCH
22	1	LITTELFUSE	OT08PC	RELAY SOCKET, 10A
23	3	FUJII ELECTRIC	AR30PR-311BZC	30MM SWITCH, 3POS, MAINTAINED, 1NO/1NC
24	69	AUTOMATION DIRECT	KN-T12GRY	TERMINAL BLOCK, GREY, SINGLE TIER, 0.20 WIDE
25	4	AUTOMATION DIRECT	KN-ECT6GRY-25	TERMINAL BLOCK BARRIER, GREY
26	11	AUTOMATION DIRECT	KN-EB4-10	TERMINAL BLOCK END BRACKET, GREY
27	9	AUTOMATION DIRECT	KN-G12SP-10	GROUND BLOCK, GREEN_YEL, SINGLE TIER
28	3			MIDGET FUSE, 30A
29	9			MIDGET FUSE, 10A
30	2			MIDGET FUSE, 5A
31	1			5 X 20MM FUSE, 6.25A
32	2			5 X 20MM FUSE, 5A
33	3			5 X 20MM FUSE, 2A
34	1	EATON	D65VMLS480C	PHASE MONITORING RELAY



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MANY FARMS SITE PUMP PANEL 480V
FABRICATION DIAGRAM

DRAWING NUMBER:
E1704